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Singing the Russian Blues: An Argument for Culturally Basic Color Terms

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The universal inventory of basic color terms (BCTs) consists of 11 terms, including a single blue term. Russian has two terms for blue, sinij (dark blue) and goluboj (light blue). The proposed status of goluboj as the 12th basic term challenges theory stating the upper limit of BCTs. This article reviews a body of research on the Russian blues and draws on arguments from lexical-semantic analysis and linguistic and psycholinguistic studies. It is argued that goluboj, being symbolically charged, emerged in Russian as culturally basic. Counterparts of the Russian blues in other languages are considered. Within a context beyond Russian, the potential refinement of the blue area is suggested to follow perceptual-cognitive universals. This is reinforced by language and culturally specific semiotics. By drawing attention to a distinction between denotative and designative meaning, the issue of the Russian blues calls into question the proper definition of a basic color term.

Keywords: *Russian color terms; focals; color categories; cultural influences*

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The Russian language is known to have two contenders for the English language *blue*, 1 of 11 basic color terms (BCTs), according to the theory of Berlin and Kay (1969) and its more recent modifications (Kay, Berlin, & Merrifield, 1991; Kay & Maffi, 2000; Kay & McDaniel, 1978). The Russian blue terms, *sinij* and *goluboj*, are commonly translated as dark blue and light blue, respectively.

Native intuition of Russians is the viewpoint prevailing in abundant linguistic and psycholinguistic studies, namely that along with indisputable basic *sinij*, a basic color-term status is also rendered to *goluboj*—a view that is incompatible with Berlin and Kay's (1969) claims. Ethnographic studies revealed, on the contrary, no evidence of *goluboj* basicness, bestowing the two Russian blue terms a dominant-recessive semantic relationship.

The two Russian blues have raised a lively debate among linguists, psycholinguists, ethnographers, and psychologists, because they seem to challenge Berlin and Kay's firmly grounded theory of color-term universality. Russian's unusual case of two widely used terms for blue implies the more general question of whether the number of basic color categories (BCCs) is not restricted to 11 and might further evolve, thereby refining a grid of categories that conceptually filter color sensations. This issue, among others, has been raised in Kay and McDaniel's (1978) revision of the theory, wherein the authors leave the potential number of BCTs open.

Another related question is whether potential color-concept differentiation in other languages develops following a path similar to the Russian one or whether there are alternative areas representing color experience, which might undergo further semantic segmentation, as expressed by the nascent categories hypothesis (Kay & Maffi, 2000).

The last query, but not least, is on impetus and mechanisms that drive evolution of color term categories. The response to it depends on the view of mechanisms underlying evolution of BCCs, be they grounded in neurophysiology of the human color vision system, as was asserted in the original version of the Berlin and Kay's (1969)

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theory, or, rather, in the relational structure of color sensation representation (Jameson, in press), social activity pressure (MacLaury, 1997), or cultural system of references (Dedrick, 1998; Eco, 1985; Hardin, 1993; Kay & Maffi, 2000).

In the present article, linguistic and psycholinguistic aspects of the two Russian terms for blue are considered. An overview comprises a variety of studies, thus extending a short summary of arguments presented earlier (Paramei, 1999). It also invokes sociohistorical and cultural considerations on semantics and semiotics of *sinij* and *goluboj*. An analysis of findings from different disciplines purports to elucidate the controversial status of the Russian *goluboj*, thereby addressing a potential of further development of BCTs.

THE TWO RUSSIAN BLUES: A DIACHRONIC PERSPECTIVE AND LEXICAL-SEMANTIC ANALYSIS

Russian, as a language of Stage 7 classification, according to Berlin and Kay (1969), is considered to have greatly elaborate color nomenclature. This assertion is justified in particular with regards to lexical variety and semantic refinement of color terms mapped onto the blue area. As stated, Russian appears to differentiate, semantically, *sinij* (dark blue) and *goluboj* (light blue) that denote in Russian distinct colors, not different shades of the same color, as an English translation might suggest (Lyons, 1997).

Interestingly, native Russian speakers take for granted the two blues as phenomenologically distinct and separate colors. As Frumkina (1984) reports, Russians are invariably surprised when they learn that English has only one word for *sinij* and *goluboj*. It is also noteworthy that both *sinij* and *goluboj* are named by Russians among the seven rainbow colors. (The sequence is coded by the mnemonic *kazhdyj* (red), *okhotnik* (orange), *zhelaet* (yellow), *znat'* (green), *gde* (*goluboj*), *sidit* (*sinij*), *fazan* (purple)—“Each hunter wants to know where is a pheasant,” a loose analogue of the Richard-of-York-gave-battle-in-vain mnemonic that elicits the Newtonian rainbow sequence.)

Slavonic terms *sinij* and *goluboj* emerged in Russian as early as the 11th century, that is, along with the other primary BCTs and much earlier than the secondary BCTs (Baxilina, 1975). A chronicle suggests that both Russian blue terms have been basic since as early as 1230 (Srežnevskij citation in Corbett & Morgan, 1988).

Both adjectives emerged as designations of color; their usage reveals, however, initial difference with regards to objects named by the two blue terms—*sinij* is used for naming color of water, haze, skin, eyes, certain fabrics, precious stones, and so forth, whereas *goluboj* is used for naming color of animal hair, bird plumage, or fabrics and precious stones, other than those designated by *sinij* (Baxilina, 1975).

In addition, in morphology of both terms, one can trace other achromatic meanings, which implicate their opposition along the dark-light semantic dimension. Specifically, collocations of *sinij* in Old Russian texts, such as *sinij* as soot, indicate a relationship with black or dark (Baxilina, 1975; Pelevina, 1962; Surovceva, 1964). Conversely, *goluboj* was originally a cognate for gray (Baxilina, 1975) and, in this meaning, persisted until the 18th century for designation of a horse color (Grebenščikova, 2002). The adjective descends from the Russian noun *golub'* (dove); later, however, it has dissociated from its etymon altogether and attached itself, exclusively in the speakers' linguistic consciousness, to a different blue modal (Bulaxovskij, 1949).

The ancient achromatic meanings of the terms are still contained in contemporary Russian dialects, for example, *sinij* in expressions pertaining to dark rain-bearing and snow-bearing clouds, indicating that the word is used in an antonymic relation to white and light. By comparison, dialect meanings of *goluboj* (e.g., naming a gray kitten or the sky) span a gamut of shades from gray to *jarko-goluboj* (bright light blue; Piščal'nikova, 1982).

In modern Russian literary language and parlance, *sinij* and *goluboj* are both used in relation to the same objects, for example, to designate color of sky, eyes, or flowers. However, semantic context of their usage and collocations of each differ (Corbett & Morgan, 1988; Rakhilina, 2000). Differential naming of tints of natural blue objects, and especially artifacts by the two blue terms, reveals their ancient achromatic (1) that is, dark-versus-light opposition (Alimpieva, 1980).

In particular, *sinij* is related to sea, fog, haze, Neva-river ice in the corpus of Pushkin's poetry (Arapov, 1986), or, in general, to natural extents—ocean or sky—in the Russian literature of the 19th (Alimpieva, 1982a) and 20th century (Fateeva, 2002). Besides, *sinij* is associated with a variety of more restricted synonyms that indicate deep, dense, or dark blue—*vasil'kovyj* (cornflower blue), *indigovyj* (indigo), *ultramarinovyj* (ultramarine), *sapfirovyj* (sapphire; Alimpieva, 1982a), or *kubovyj*, the word locally distributed

in Siberian dialects for deep-blue dyes (Piščal'nikova, 1982). Based on lexical-semantic analysis of the adjectives of this group, Alimpieva (1982a) concludes that "sinij constructs its microsystems with a specification in them of the features 'bright', 'saturated' or 'dim', 'diluted' " (p. 58).

By comparison, in the literary language of the 19th and 20th century, goluboj is collocated with eyes, sky, heaven, vault, heights, and farness (Alimpieva, 1982b; Arapov, 1986; Grebenščikova, 2002) or calls forth allusions of frosty winter night (Fateeva, 2002). For goluboj, common loose synonyms, though more restricted in meaning, are *nebesnyj* (sky blue) and *lazurnyj*, or *lazorevyj* (azure; Alimpieva, 1980; Frumkina, 1984). The dominating feature in semantic structure of goluboj is serene; it implies light and clear blue tone, though excludes its high saturation (Alimpieva, 1982a, 1982b).

Apart from the function of direct designation of color experience, the two Russian blues function metonymically. In particular, they invoke quite distinct emotional connotations. In semantics of sinij, realization of extreme degrees of hue intensity (bright, saturated versus dim) is conceived to call for positive as well as negative emotional associations (Alimpieva, 1983).

By comparison, goluboj conveys positive emotional expressive features and is commonly associated with tender, affectionate, soft (Alimpieva, 1980, 1982b, 1983). The nuance of cloudless and serene has adhered to goluboj under the influence of German and French 19th-century romanticism. It thence has transferred to its abstract (poetic) connotations implying cloudless insouciance, unrealistically sanguine (Wade, 1985), or at the beginning of the 20th century, the unearthly or innocent (Grebenščikova, 2002).

Finally, the adjectives sinij and goluboj have culturally specific and distinct semiotics. As such, they are part of figurative speech, wherein they are in no way interchangeable for native speakers. This can be exemplified by such metaphors as *sinij čulok* (blue stocking), an equivalent and perhaps a borrowing from English (Šanskij, Zimin, & Filippov, 1987), as opposed to *golubaja krov'* (blue blood). Among relatively new Russian metaphors based on color terms, goluboj is among those that are particularly common, whereas absence of sinij is noteworthy (Wade, 1985). This observation is in accord with the point made by Corbett and Morgan (1988), who found that goluboj is more frequent than sinij in the 20th-century poetry, whereas the opposite was true for the 19th-century poetry. Both observations indicate further refinement of

the goluboj semantic field. In accord with this is a new and socially pronounced meaning of goluboj—as a noun, it denotes a homosexual person (Grebenščikova, 2002; Gusejnov, 2000).

The process of refinement of the Russian blues deserves more detailed linguistic and psycholinguistic investigation, especially taking into consideration intensive elaboration of the Russian language during last decade (Skljarevskaja, 1998), conceivably because of active involvement of the country in international exchange (including consumption of goods with a broad palette of dyes) and globalization.

LINGUISTIC AND PSYCHOLINGUISTIC STUDIES OF THE RUSSIAN BLUES

Grounded in perceptual experience, color categories, as Lyons (1997) notes, are the product of the lexical and grammatical structure of particular languages. Therefore, linguistics is in a position of making the distinction between basic and nonbasic color terms. This rests on a principal structural relation of inclusion (hyponymy) of a nonbasic color term by a basic term. For this reason, structural relations between the two disputable Russian terms for blue are in focus of reviewed psycholinguistic studies. Below are studies published in Russian, which are not broadly known, presented in more detail.

Moscow linguists group: Frumkina and associates. In Russia, the problem of the two blues was extensively investigated in psycholinguistic studies of Frumkina (1978, 1979, 1984) and her associates. At a preliminary stage of an experiment, an exhaustive set of Russian color terms was elicited from linguists, experts in Russian philology. The final set included the 11 basic color terms plus goluboj, as well as other frequently used colors; in total, it comprised 110 items. (For Russian glosses and their English translations, see Frumkina & Mikhejev, 1996, p. 86, as well as Davies & Corbett, 1997a). In these experiments, a group of representative informants were required to sort color terms (printed on separate cards) into separate piles, or groups, based on similarity of meanings. The resulting matrices were processed using an algorithm of multidimensional scaling analysis. Based on degrees of subjective proximities of meanings, this yielded compact blocks of color terms.

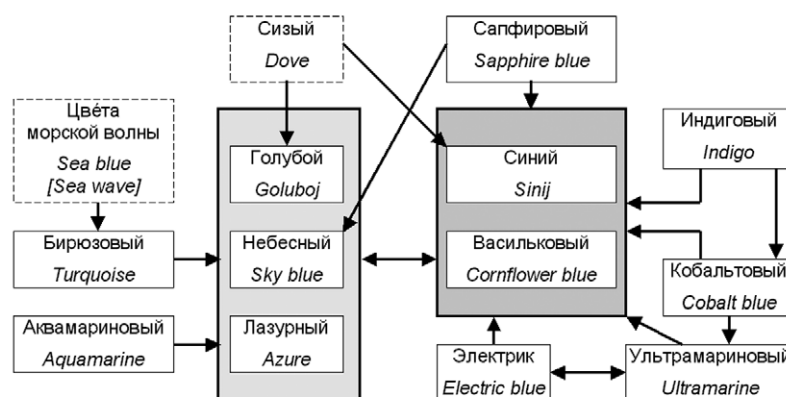


Figure 1: Structure of Russian blue color terms derived from a free-sorting task. The structure indicates separate clusters for *sinij* and *goluboj*.

SOURCE: R. M. Frumkina (1984, p. 59).

In the present analysis only the *sinij* block is considered (see Figure 1).

Quantitative analysis of the structure of the *sinij* block enabled Frumkina to estimate two distinct blue clusters crystallized around *goluboj* and *sinij*. Frumkina emphasizes that the two clusters have a symmetrical relationship, thereby confirming her original intuitively based hypothesis of *goluboj* basicness along with that of *sinij*. By comparison, the terms beyond the two cluster cores obviate their asymmetrical relationship, with one set comparable to the English aquamarine abutting to *goluboj* and the other, resembling indigo or cobalt blue, to *sinij*.

Another experiment by Frumkina was directed at exploring the relationship between the most frequent Russian color terms and their denotata. The set of words used was comprised of 11 basic color terms, presumably basic *goluboj*, and eight other terms frequently used, such as *sirenevyj* (mauve) or *tsveta morskoy volny* (sea-wave colored), altogether totaling 20 color terms. Referents for the color terms were mapped out using the Munsell color array with 330 chips as given in the commonly used Mercator projection of the outer skin of the Munsell color solid (Frumkina, 1984). Each participant was required to point out the best example (i.e., focal color) for each color term. The results were estimated in terms of

the denotative uncertainty (the distribution of the focal color for the term across the group of participants, $N = 100$), the term's focus (the most frequently chosen sample), and codability index (number of informants choosing the focus). Figure 2, my adoption of Figure 1 from Frumkina and Mikhejev (1983), indicates that the goluboj focus is mapped onto 2.5 PB/7, whereas the sinij focus is mapped onto a darker blue sample, 5.0 PB/4. (For comparison, for a British sample, the focal blue takes on an intermediate estimate 2.5 PB/5; Sturges & Whitfield, 1995). The distributions for focal goluboj and sinij are mapped as distinct, nonoverlapping entities, with the area occupied by goluboj broader than that by sinij (i.e., goluboj has greater denotative uncertainty). Also, the codability index for goluboj is lower than that for sinij, 11 versus 22. This may not necessarily pose a problem when psycholinguistic experiments involve the use of a central example of a color, because, as Morgan and Moss (1988-1989) note, the important criterion would be that the color sample should be readily recognizable to a native speaker as an example of that color and no other.

In one further experiment of Frumkina and associates, two separate blue series—sinij and goluboj—were employed, each comprising a set of 12 Munsell chips from their respective category regions. For each series, participants ordered them from best to worst example of the term (Frumkina, 1984; Frumkina & Mikhejev, 1983). The authors found that lightness was the contrasting feature separating goluboj and sinij. However, the best example of each did not have extreme lightness: for goluboj, 10B/6 (although 11 of 30 participants chose a slightly lighter sample, 10B/7, as the best goluboj) and for sinij, 2.5PB/4 (i.e., the difference between the terms' foci yielded only one step in hue and two steps in lightness). The boundary between the two ranges was nevertheless distinct: All blue samples of value 6 to 7 were referred to as goluboj, whereas those of value 3 to 5 were referred to as sinij.

Data from the latter experiment were processed by Frumkina (1984) using Coombs' algorithm of multidimensional scaling. This enabled the researcher to represent the denotations of each term geometrically, by depicting color samples as points and subjects as areas superimposed on a point configuration. Figure 3, adopted Figure 22 from Frumkina (1984, p. 137), presents a two-dimensional projection for the goluboj series. In Figure 3, points represent locations of 12 color chips, and shaded areas designate groups of participants. One can see that the dimension differentiating the samples is lightness: Number 1, the lightest sample, occupies the leftmost

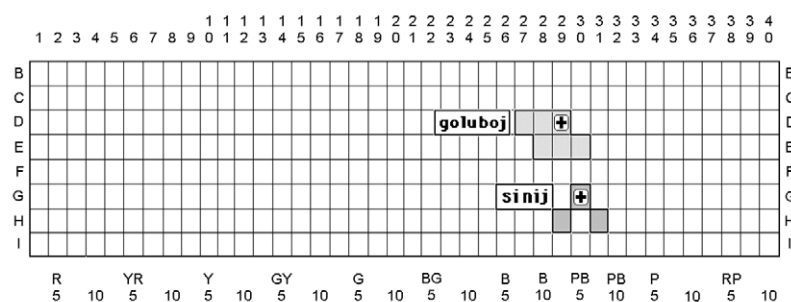


Figure 2: Mapping of foci of *goluboj* and *sinij* on the Munsell color array (across 100 participants). Crosses designate dominant best examples for each term.

SOURCE: R. M. Frumkina (1984, pp. 122-123).

position of the lightness dimension, whereas Numbers 11 and 12, which have the least lightness within this set, are located rightmost, with the remaining samples tested situated between the two poles. The figure also shows that in their preferences for the best *goluboj*, the participants are divided: for most participants ($N = 19$) the centroid contour indicated by shaded region, I, is projected approximately at value 6, whereas fewer participants ($N = 11$; shaded region II) chose best examples at a higher value equaling 7.

Based on these results, Frumkina concludes that Russian has 12 basic color terms. She refers to *goluboj* as the only Russian basic color term whose distinction rests primarily on lightness. She also speculates that seeking a basis for color-term differentiation from a scientific outlook might appear implausible from a naïve view because the latter might rely on subjective dimensions principally different from hue, lightness, or their combination (Frumkina, 1978, 1979).

Ethnographic studies: MacLaury and associates. As part of a large scale research effort known as the World Color Survey, a psycholinguistic study of Russian color terms has been carried out by MacLaury and associates, with a particular interest to referents of the Russian blues (see Taylor, Mondry & MacLaury, 1997, and Appendix IV in MacLaury, 1997). In this study, the Mercator-projection Munsell array with 330 chips was employed and a

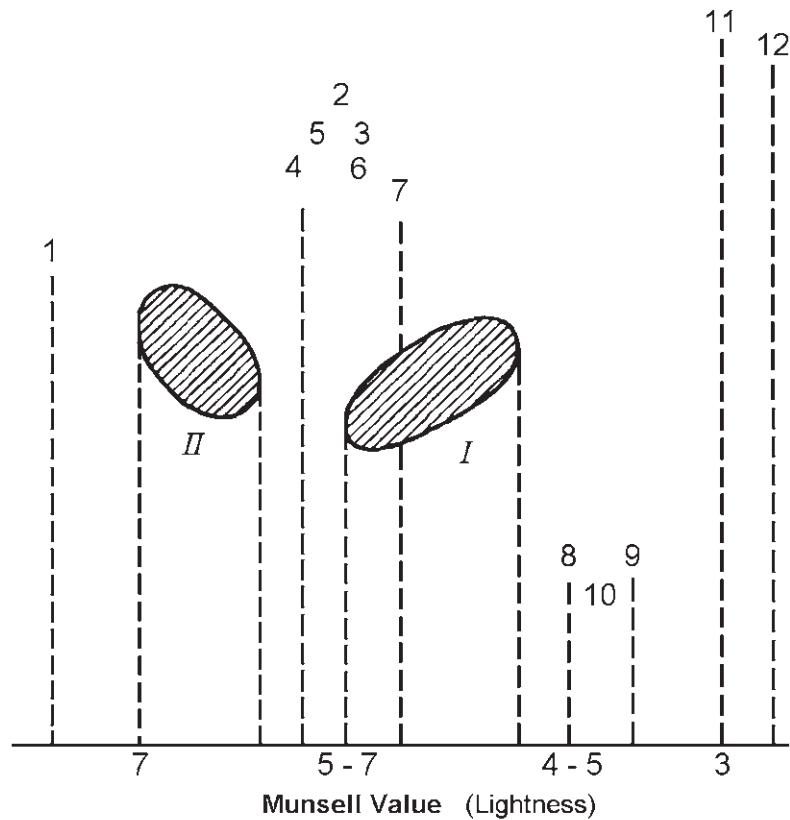


Figure 3: Ordering of samples from the *goluboj* subset.

SOURCE: R. M. Frumkina (1984, p. 137).

three-part method of color-term mapping was used (for details see MacLaury, 1997). The point to be emphasized is that, along with the appraisal of samples for focal colors, the method allows participants to map ranges for each term.

In Taylor et al. (1997), diagrams for four informants are presented. With regards to focal colors for the two blue terms, it is noteworthy that the samples determined for individual participants in this study are very similar to the dominant focal colors found across participants by Frumkina (1984): for *goluboj*, D28 (10 B/6) or E28 (10 B/5) versus D29 (2.5 PB/6) and for *sinij*, F29 (2.5 PB/4) versus G30 (5.0 PB/3), respectively. However, the method used

by MacLaury and associates revealed an overlap between color-term ranges for *sinij* and *goluboj*. Moreover, for some informants the *sinij* range included the focus for *goluboj*, and for others the focus for *sinij* corresponded to the naming range of *goluboj*, results at odds with distinct mappings of foci for *sinij* and *goluboj*. The authors conclude that the two Russian terms for blue bear a relation, intermediate to coextension and polarized inclusion, with *sinij* dominant and basic and *goluboj* recessive and nonbasic. MacLaury (1997) disputes that if *goluboj* were basic, its core meaning would stand apart from that of *sinij*, and that appears to not always be the case.

The uncertain relationship between the two blue terms is considered in the framework of vantage theory elaborated by MacLaury (1997). According to MacLaury, a person constructs categories commensurable with his or her reference point and zooming hierarchy. In this view, a broader *sinij* category functioning as a near synonym for the whole blue region may be considered as following emphasis on similarity at the expense of perceived differences and, hence, a dominant vantage. Conversely, emphasis on difference curtails the extent of the range of the dominant category, thereby delimiting at its lighter margin *goluboj* category with the recessive vantage. As MacLaury (2002) emphasizes, the origin of this pattern is entirely cognitive; it begets expansion of the recessive range because of cultural importance. In accord with this view are indeed numerous differential collocations, connotations, and figurative expressions related to *goluboj*, which for Russian speakers appear to possess intensive culture-specific loadings.

Research from the Surrey group. The status of the Russian *sinij* and *goluboj* in recent years was exhaustively explored by a group of linguists and psycholinguists from the University of Surrey, United Kingdom. The studies were directed at elucidating whether both Russian blues meet criteria for basic status formulated by Berlin and Kay (1969) and map distinctly onto a color array.

A rationale for linguistic studies of the Surrey group was that the psychological salience of a color term (the fourth criterion of basicness according to Berlin and Kay, 1969) would be evidenced by high frequency of usage and thereby serves as a basis for estimating lexical quantitative parameters of the two terms for blue. In the study of Corbett and Morgan (1988), the frequency of color terms in texts was investigated. It was found that both *sinij* and

goluboj are high frequency color terms ranking 5 and 6, respectively, albeit goluboj appeared to be a more literary word.

In a list study (Morgan & Corbett, 1989), color terms were elicited from 31 native speakers during a 5-min period. Results were presented in terms of ranking values, as well as of the number of the term's occurrences at the beginning of elicited lists. The authors found that (for the full period) goluboj appeared to be ranked third, followed by sinij as fourth. A follow-up study (Davies & Corbett, 1997a) with more representative participant sample has confirmed high rankings of both blue terms, with sinij ranked third and the disputed goluboj with the rank 4.5 (sharing its place with basic *želtyj*, yellow).

One more linguistic test was directed at evaluating the derivational morphology of the two blue terms. This test relates to Berlin and Kay's subsidiary, fifth criterion for basicness referred to as *distributional potential*. The resulting evidence showed sinij as second ranked on the number of its derivatives, whereas goluboj is of rank six, also being in the top group of Russian color terms.

The researchers of the Surrey group concluded that both Russian terms for blue meet the linguistic criteria for a basic color term, in frequencies of occurrence and derivational elaborations. (For a discussion of linguistic and behavioral measures of color term basicness, see Corbett & Davies, 1995.)

Along with linguistic studies, a considerable number of psycholinguistic investigations were carried out by the Surrey group. Among these were naming experiments in which 219 colored samples of the Color-aid Corporation's range (based on the Ostwald color solid) were employed. In these experiments, behavioral measures predicated from Berlin and Kay's notion of psychological salience were estimated—reaction times, the frequency of occurrence, and consistency of use of color terms (Moss, Davies, Corbett, & Laws, 1990). Both sinij and goluboj figured among the highest on all behavioral measures: response times (1531 milliseconds versus 1509 milliseconds), frequency of the term occurrence (8.3% versus 8.0%), and consistency of use (78.8% versus 69.7%), respectively (see their Table 1, p. 319). The authors note that there was a high degree of agreement among participants and few split voices as to with which term, sinij or goluboj, a color sample should be labeled. An additional statistical analysis of the estimates obtained enabled a bestowing of basic status to both blue terms (see also Corbett & Davies, 1995).

Another series of the psycholinguistic experiments was directed at mapping Russian terms onto subsets of the Color-aid space covering the blue area. Morgan and Moss (1988-1989) employed 27 samples to estimate the terms' best exemplars and ranges. They found that samples labeled goluboj were typically lighter and greener than those labeled sinij, with an overlapping in naming in only one case of 43. Their best example for goluboj had an estimate closest to Munsell 2.5 PB/6 and, for sinij, 2.5 PB/4—samples similar to those found by Frumkina (1984) and Taylor et al. (1997).

In follow-up studies (Davies & Corbett, 1997b; Laws, Davies, & Andrews, 1995) greater numbers of Color-aid chips were used that evenly sampled the blue area of a color space; participants were asked to name each tile using a single word. Figure 2 in Laws et al. (1995) and Figure 1c in Davies and Corbett (1997b) show distributions of goluboj-term and sinij-term mappings onto the blue area. Both plots provide evidence that sinij predominates at low lightness levels and goluboj is used for lighter colors. The mappings of the two blues are distinct, albeit a minor overlapping between goluboj and sinij was found in ancillary regions. The authors conclude that the two Russian blue terms denote a pattern of nonoverlapping distribution in the color space rather than goluboj being included in the domain of sinij, as Berlin and Kay (1969) originally thought.

Finally, a number of cross-cultural psychophysical studies of the Surrey group purported to examine putative perceptual effects of color-term basicness. Russian and English (British) native speakers were enrolled. The rationale of those studies was that for regions of the color space demarking sinij-goluboj distinctions, a categorization effect boundary should show up in the performance of Russian speakers.

A variant of Stroop task, in which for the British sample two terms for blue, sky and navy, were used as counterparts for goluboj and sinij, failed to show any differences between the two groups of participants tested in speed of processing color information (Davies et al., 1991). Also, for Russian speakers, tasks on estimation of perceptual differences between colors provided little evidence for an expected stretching of distances in area covering sinij or goluboj in a reconstructed color space (Davies & Corbett, 1997b, 1998; Laws et al., 1995). It should be noted that in the solution for the Russian sample based on a free-sorting task, the blue cluster revealed splitting into a sinij (dark blue) region and a goluboj (light blue) region, with separation pronounced along a saturation

dimension; but the two regions merge into each other rather than forming separate clusters (Davies & Corbett, 1997b, Figure 3). An additional ANOVA analysis confirmed a highly significant category boundary effect within the blue area in the Russian group. The findings from the cross-cultural studies indicate that the color grouping by Russian observers reveals a small-scale language modulation because of the availability of the additional blue color category and term.

To conclude, the evidence collected by the Surrey group provides evidence that the two blue terms demonstrate comparable psychological salience, distinct mapping, and category boundary effect, whereby supplying strong support for considering *goluboj* a 12th basic color term in Russian.

Research from a Moscow psychologists group. In a psycholinguistic study of Russian psychologists (Korzh, Penova, & Safuanova, 1991), denotative meanings of Russian color terms are explored among native participants. The Natural Color System (NCS) was used, with 1,526 samples varying in the blackness, chromaticness, and hue. The task sought coordinates for focal colors, wherefore 30 participants were required to identify a best example of each named color category. A list of color terms was generated in a preliminary eliciting task and dictionary analysis. The list comprised 260 terms, including monolexemes, as well as terms with modifiers, such as *jarko-* (bright), *svetlo-* (light), *bledno-* (pale), and *temno-* (dark). For the most frequent 24 color terms, focal colors were defined as the means of coordinates of best examples; standard deviations were taken as denotative certainty; and confidence intervals of the mean as semantic boundaries of the terms.

Figure 4, my adoption of Figure 3, Korzh et al. (1991), presents focal colors and semantic boundaries for basic chromatic color terms and *goluboj* mapped on the hue circle of the NCS solid. (Chromatic colors are colors not identified with an achromatic black-gray-white continuum). An inspection of a plot shows that mappings of *goluboj* and *sinij* cover distinct areas; their boundaries are abutting and larger for the former. With regards to denotative certainty, the authors report *goluboj* and *sinij* to rank five and six, respectively.

On the blackness-versus-chromaticness plane (see Figure 5), the focal *sinij* is mapped under the plane for the elementary blue (the full chromatic color), thereby indicating that, in comparison with the English blue, it has a tint of blackness. Furthermore, the

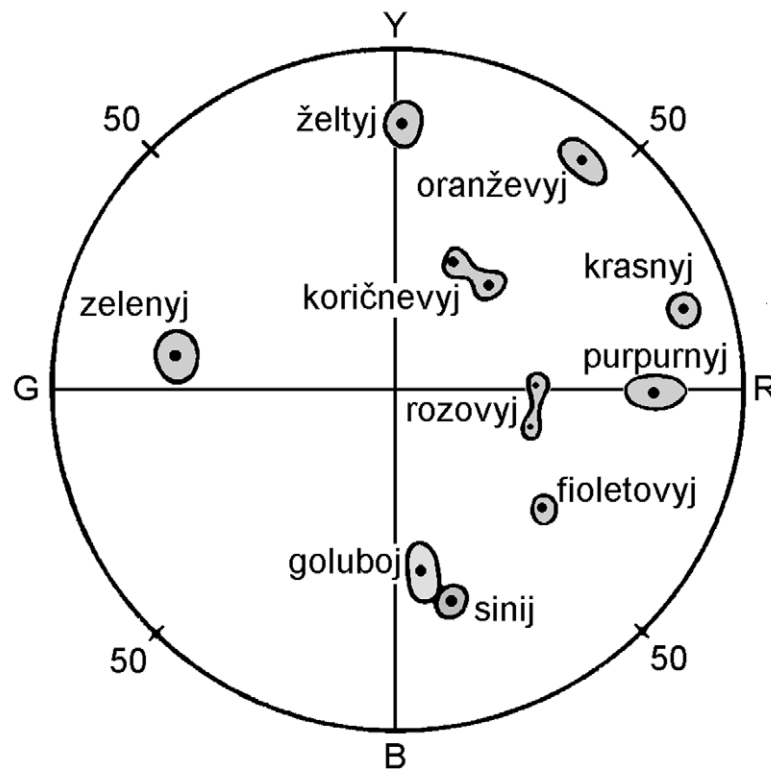


Figure 4: Mapping of Russian color terms on the chromatic plane of the Natural Color System.

SOURCE: N. N. Korzh, I. V. Penova, and O. V. Safuanova (1991, p. 75).

focal *goluboj* is mapped within the area of *sinij* modifiers, whereas *goluboj* modifiers are mapped beyond the *sinij* region and nearest to white.

Following up, Korzh and Safuanova (1994) estimate denotative certainty of the most frequent Russian color terms supplied with achromatic modifiers, such as *belyj* (white), *seryj* (gray), *serovato-* (grayish), or *černyj* (black). From the set used, highest denotative certainty was found for: *golubovato-belyj* (light bluish white), *golubovato-seryj* (light bluish gray), *serovato-goluboj* (grayish light blue), and *serovato-sinij* (grayish dark blue)—all naming tints of blue. This finding is in accord with conclusions of the lexical-semantic analysis and indicates growing differentiation of the Russian blues with regards to their denotata.

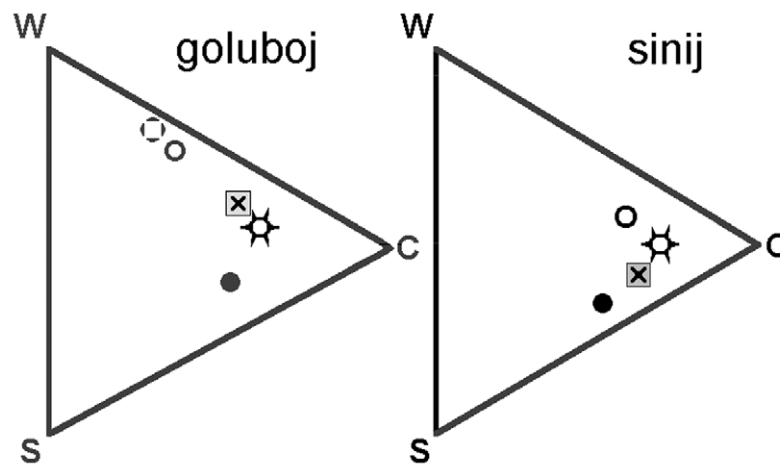


Figure 5: Mapping of *goluboj* (left) and *sinij* (right) on the blackness-versus-chromaticness plane of the Natural Color System. The main term is designated by a cross. The terms with modifiers: *temno-* (dark) is designated by a solid circle, *jarko-* (bright) is designated by a sun, *svetlo-* (light) is designated by an open circle, and *bledno-* (pale) is designated by a dashed circle.

SOURCE: N. N. Korzh, I. V. Penova, and O. V. Safuanova (1991, p. 78).

The authors assume basicness of *goluboj* and do not address the issue of two blues. Their mappings of foci suggest categorical distinction of the two blues and are in accord with findings of Frumkina and the Surrey group. The results obtained by Korzh and associates further suggest that overlap of the categories occurs when achromatic modifiers are applied; it seems to rest not only on lightness as such but also on desaturation (both whiteness and grayness).

DISCREPANCIES IN PSYCHOLINGUISTIC STUDIES: METHODOLOGICAL ASPECTS AND BEYOND

Within the psycholinguistic approach, one stumbling block for the status of *goluboj* is its relation to *sinij*, that is, whether denotata of the two are distinct or show *goluboj* and *sinij* as coextensive. As the review of psycholinguistic studies shows, the answer to this question depends crucially on the method employed, even when

identical tools (i.e., the Munsell color array) are used. For example, tasks designed to identify solely focal colors result in circumscribed denotata of the two blue terms imply basic status for *goluboj* (Frumkina, 1984), whereas estimation of term ranges, in addition to the focal colors, shows *goluboj* coextension with polarized inclusion (Taylor et al., 1997). Another aspect is whether it is legitimate to relate data averaged for a group of participants to those obtained for individual respondents (for a discussion of these aspects see Frumkina, 1997).

It is worth noting one further methodological aspect concerning the tool used for determining term denotata. Although Munsell colors provide a very useful set of samples frequently used in color research, the Munsell array introduces some limitations: (a) Munsell wavelength spectra are not typical of naturally occurring colors, being glossier than in nature; (b) the Munsell set used is a Mercator projection of the outer skin of the Munsell solid, that is, although Munsell colors cover the most significant and central regions of the color space, they do not cover all color space (Buchsbaum & Bloch, 2002). Reason (b) alone is sufficient to question the utility of the typically used Munsell array in investigations of Russian blues because it would not be a good tool for investigating lexical categories whose differentiation invokes regions of unsaturated denotata represented by internal areas of the Munsell solid.

Indeed, support for this notion is provided by studies of the Surrey group and the group of Korzh and colleagues, in which color samples varying in saturation were used. The findings of both groups concur in that the category boundary between *sinij* and *goluboj* is more accurately demarcated in a three-dimensional stimulus space, implying the need to assess saturation and its interaction with lightness when studying Russian blues.

Also, there still remain other sources of discrepancy between the reviewed studies (including some with significance beyond specifically mapping Russian color terms). Some factors are related to viewing conditions (not listed here); others are of cognitive origin, for example:

1. Color term usage may differ across generations (Zaręba, 1954; Pelevina, 1962).
2. Color term nomenclature may vary contingent on the social class, rural versus urban origin, educational level, and vocation of informants (Webster et al., 2002).

3. The era, when data were collected, should be taken into consideration (e.g., 1950s versus 1990s): Increasing technological control of color and its greater functional load, in everyday linguistic communication, lead to greater psychological salience of certain color categories or terms (Alvarado & Jameson, 2002). This factor might be especially significant in case of an emerging, or nascent, basic color category (Kay & Maffi, 2000).

These methodological aspects suggest that resolving goluboj's status should follow from the collection of more extensive data, using appropriate color tools, and, crucially, employing a standard and sensitive method for determining color term denotata. This solution pertains, however, not merely to methodology, but is related to epistemological problems. The theoretical problem that the sinij-goluboj controversy represents is the proper formulation of a definition for basicness and basic color terms. As was demonstrated, goluboj cannot be separated from nonbasic color terms on grounds of psycholinguistic indices, such as denotative uncertainty or codability (Frumkina & Mikhejev, 1983). Neither of its basic status and, hence, categorical distinction is warranted on grounds of the range overlap with sinij (Taylor et al., 1997). These difficulties call for an elaboration of linguistic operational criteria for separating basic color terms from nonbasic, the task that goes far beyond the problem of the Russian blues. An alternative approach suggests to seek the definitive aspects of basic and nonbasic color terms not in the plane of color denotata but in the cultural-historical plane (Frumkina, 1984, 1999; Vasilevich, 1987).

NONLINGUISTIC GROUNDS FOR REFINEMENT OF THE BLUE CATEGORY

The extension of the set of basic color categories by inclusion of goluboj appears plausible on general, nonlinguistic grounds and not only in view of the specific Russian findings. Support for the potential addition of a category in the blue region can be seen through analyses of the relational properties among commonly used color space categories (Jameson, in press; Jameson & D'Andrade, 1997). The interpoint-distance model (IDM) suggests that the emergence of goluboj follows from a natural partitioning of the considerable gap of unnamed colors between basic blue and white—one of its longest unpartitioned stretches of perceptual

color space. Consistent with IDM theory, the intersection of two primary color categories need not warrant basicness of a derived category, however, because the conjoining of some primary categories also gives rise to nonbasic terms, as pointed out in Paramei (1999). The point is that there may be other ways to conceptualize category basicness. The IDM's proposal that relational category structure contributes to the lexical partitioning of color space seems a reasonable explanation for the emergence of *goluboj* and, more generally, provides an alternative rationale for how different cultures might arrive at similar color categorization systems (Jameson, in press).

The foregoing survey of theories and approaches raises the question of what is the best way of determining the basicness of a term. We consider it reasonable to proceed to test a term's basicness—in this particular case, the basicness of *goluboj*—psychometrically, provided that stimulus referents used include the most representative hues in the blue region of perceptual color space. Moreover, sensible criteria would need to be used to define basicness. We suggest that bestowing a term with basic status requires compelling evidence on the category boundary effect on a variety of psychometric measures (e.g., frequency of the term usage, reaction times, response consistency across participants, etc.).

As the present discussion indicates, on psychometrical grounds *goluboj* basicness is currently uncertain. However, additional explanation(s) of development of color categorization may be invoked. In what follows, we leave aside environmental explanatory schemes traced to the necessity of communication about perceptual regularities of terrestrial color experience (Shepard, 1992). Instead, our primary interest is in the cultural-historical plane.

CULTURAL SPECIFICITY IN COLOR CATEGORIZATION

Several authors have argued that the process of color categorization gains its primary impetus from sociocultural mechanisms (Dedrick, 1998; Eco, 1985; Gage, 1997; Hardin, 1993; Kay & Maffi, 2000; Saunders & Van Brakel, 1997). Particularly important in the abundant literature on this issue is that color categories undergo categorical dynamics. This dynamic aspect can occur, for example,

by changing the vantage to emphasize differences among shades in a certain area of the color space, which results in shrinkage of an initial basic color category and its complementing by an emerging category (MacLaury, 1997).

Within the blue category, Russian indeed emphasizes the differences along lightness and saturation, though other attributes, such as transparency versus turbidity, density, or object texture (*faktura*), seem to play a role in differentiation of *sinij* and *goluboj* (Frumkina, 1979). The idea is that differentiation is encouraged and reinforced by the culture to which native speakers belong, such that speakers encounter special conditions that make certain color differences, which may otherwise be nonsignificant, crucial and behaviorally important (Frumkina, 1999). Frumkina (1999) argues that *goluboj* should be considered culturally basic for Russian because Russians cannot designate blue eye color and the common color of sky without this term.

Frumkina's (1999) contention is echoed by Wierzbicka (1990), who intuiting from her native Polish, notes that *goluboj* is directly likened to the sky, whereas *sinij* is not like the sky, although it can make people think of a dark sky. She considers that description of color is related to locally salient referents; the meanings of color terms reflect culturally specific conceptualizations that function as cognitive anchors in intelligible communication with others.

Goluboj should indeed be considered a cultural artifact (in Wierzbicka's, 1990, wording), whose status and meaning are used to illustrate a principle of considerable importance, which allows one to make sense of something seemingly paradoxical, or problematic, in the color vocabulary of many languages. Specifically, *sinij* is basic in the sense that, when one is referring to abstract color, the term can also be used to denote *goluboj* colors. Yet the situation is very different when it comes to the descriptive or attributive, rather than referential, use of *sinij* (Lyons, 1997). The distinction is crucial in semantics: For a color term, the reference is related to denotata represented via color samples covering certain areas in a color space, whereas the description implies the term's meaning—its collocations, affective connotations, figural usage—and is rooted in shared representation of semiotics within a certain culture (Frumkina, 1999; Jameson, in press).

It is because of differences in meanings of the two Russian blues that a naming situation changes dramatically, when one is referring not to the color itself but to objects or substances that are blue

in color, either by identifying or describing them. The lexical-semantic analysis above shows that, in linguistically specific contexts, *sinij* cannot be substituted for *goluboj* and the two blue terms are not interchangeable.

This introduces a notion of both *sinij* and *goluboj* being context restricted, the fact that works against Berlin and Kay's (1969) third criterion of basic status (a basic color term must not be context restricted). Lyons (1997) conjectures, however, that Berlin and Kay's third criterion is valid and reliable, provided it relates to the referential, rather than the descriptive, use of color vocabulary. He notes that context restrictedness is characteristic of higher-level, or stylistically specialized, color terms in any language of rich color vocabulary and further argues that, in any linguistically significant sense of basic, being context restricted should not be thought of as making a term less basic than one that is not.

Russian agrees with other languages about the area of blue and yet differs about its number of culturally stipulated basic color terms and about where the boundary lies among adjacent colors. The category and terminological refinement of blues is rooted in the semiotics of Russian and is the subject to sociocultural pragmatic communication (for a general discussion see Jameson, *in press*, p. 17). The point is that *goluboj*, as singled out from blue by the semantic differentiation of lightness and saturation attributes, is conceived as a signifier—of content beyond the range of chromatic discrimination, which includes culturally specific aesthetic and affective meaning.

A RUSSIAN RHAPSODY IN BLUE: SOCIAL PRACTICES AND ICONOGRAPHIC PRECEPTS

It is highly probable that sociocultural meanings of the two blues are rooted in the Christianization of Russia (circa 988), which overtook Orthodox church liturgical doctrine from Byzantium. It is conceivable that, with it, social, economic, and aesthetic values, which were traced back to practices and social codes of the East, were brought. Notably, both Russian terms for blue emerged in the 11th century, and their "blue" meanings were established during the following two centuries.

One practical factor contributing to the differentiation of *sinij*, as designating dark or deep blue, may be related to the social code

of fabrics and clothing in biblical peoples: their blue fabrics were dyed with indigo, which was expensive and applied only to the finest clothing (Pastoureau, 2001). In an analogous way, in Old-Russian sources we find numerous references to dark blue *sinij* clothing that was expensive and used for the feast days. Later, the meaning of *sinij*, as the codification for festivity, expanded to designate gorgeous clothing of not only dark blue but also any other color. *Goluboj* was also used for designating color of fabrics, but, by contrast, for those of very light blue, with an affinity to gray, and seemingly with no socially symbolic code (see Baxilina, 1975).

The other and more influential cause of semiotic differentiation between *sinij* and *goluboj* and, hence, sensitization to their differences may be rooted in the spiritual symbolism of the Russian Orthodox Church. Blue is one of the most frequent and semiotically loaded colors found in Orthodox icons and mural paintings. In Russia, the doctrine of icon and fresco painting was imprinted by works of Theophanes the Greek (around the turn of the 13th and 14th centuries). He stemmed from Byzantium and brought forward to Russia the Byzantine Orthodox color schema (Vzdornov, 1983). With regards to blue, iconographic regimentations, which have hardly changed since then, prescribe painting attires of the Virgin Mary in deep blue (*sinij*), the color meant to convey suffering and grief. By contrast, *goluboj* signifies firmament or provides a background color against which sacred figures are depicted, and *bledno goluboj* (pale light blue) stands as a representation of God's epiphany.

The Russian symbolic differentiation of the two blues can thus be sought in Byzantine iconographic color codes. In turn, these can be traced back to the early Christian era: Because of a break through in technology of transformation of copper silicates, light blue became widespread in stained glass and mosaics to symbolize the color of divine light. As the signifier of divine presence and intervention, celestial blue became the filter, through which Christian liturgical virtues were secretly passed and by which a communal ecclesial identity was silently expressed (Brusatin, 1991).

In the 20th century, a vestige of this sky blue signification can be found, for example, in notes of Eisenshtein (1964), a renown Russian film director. Elaborating color leitmotifs for the film *Ivan the Terrible*, he refers repeatedly to *goluboj* as the *majestic color*, symbolizing firmament, reaching the paradise, or associated with vault frescoes.

THE TWO BLUES: ARE THEY EXCEPTIONAL FOR RUSSIAN?

Category segmentation of the blue area, similar to that in Russian, is also observed in East Slavonic languages—Ukrainian and Belarusian (Hippisley, 2001; MacLaury, 2001; Moskovič, 1968). *The two languages have been developed under strong influences of Russian and Polish. Interestingly, dark blue is named similarly in Ukrainian and Belarusian to the Russian term—synij and syni, respectively; however, light blue is termed blakytynyj (in Ukrainian) and blakitny (in Belarusian), that is, with a Polish borrowing błękitny (blue) (Javorska, 2000).* As Hippisley (2001) notes, this indicates that the Russian light blue category is salient enough to influence the concept of blue in the neighboring languages, though borrowed separately from the term that denotes it.

Intensive language contacts under constraints of socially dominant relations may also strongly influence genetically unrelated languages, as demonstrated by Moskovič (1968). Converging evidence comes from a recent study of Estonian language, which under the influence of Russian, has developed, in addition to its basic *sinine* (blue), the *hele-sinine* (light blue), a term said to clear a hurdle for basic status (Sutrop, 2000).

Across modern languages, the blue area reveals a richness of term diversity (Vasilevich, 1987). Two basic terms for blue are found in Chinese—*lan* and *diann*, with the latter representing also colors ranging between blue and purple (Lin, Luo, MacDonald, & Tarrant, 2001). Many languages appear to differentiate between light and dark blue. Possible examples of two BCTs for blue include some Indian languages and urban Thai (Saunders & Van Brakel, 1997). In some, salient, though secondary, terms emerge. For example, Japanese has *misu*, a secondary term for light blue, and Japanese basic *aoi* (blue) takes the forms of *aoi sora* (sky blue) or *aoi umi* (sea blue; Zollinger, 1988). A comparable, though not identical, semantic segmentation exists in Italian and Spanish. There is evidence that *celeste* (light blue) may be acquiring basic status in Guatemalan Spanish, Peruvian Spanish, and Catalan. Nepali *akashi* (sky light blue) is the most commonly elicited secondary term for blue (Davies & Corbett, 1998). In Turkish, blue has also split into two categories: Along with basic *mavi*, another term *laciveri* (dark blue) is apparent, though its status is equivocal (Özgen & Davies, 1998).

In sum, these observations indicate that the blue area of perceptual space is highly prone to further semantic refinement. There is an intriguing possibility that we may be witnessing the formation of a 12th basic color term across many languages. Modern English, under pressures similar to Russian, might have developed two basic blue terms, given that Old English once had two terms designating shades of blue—*hauuiblauum* (blue gray) and *blæwen* (dark blue; Kerttula, 2002).

CONCLUSION

In modern Russian, blue categories designate an area of the color space with categorical refinement in process, especially in the last 20 years because of globalizing forces. Goluboj appears to undergo further establishment as a basic color term which manifests, as noted above, extensive usage in poetry and the emergence of new metaphors. It is, therefore, possible that the denotative relation of coextension between *sinij* and *goluboj* is in transition or, among many Russians, has already transformed to complementation; though these independent categories overlap at their edges (MacLaury, 2002).

As a litmus test, the issue of the two blues emphasizes perceptual-cognitive universals as a basis for the space separating color categories and a term's linguistic salience, as grounded in a stable system of social references. The Russian blues also underscore the distinction between the color-term denotata (color in the world) and its meaning (color semantics). The distinction has hardly been spelled out and draws attention to the problem of definition of a basic color term. It also prompts the question of whether context restrictedness of a salient color term is the legitimate argument for contending its basic status.

The problem of the Russian blues can be accounted for by views that advocate social and cultural constraints of color category evolution. Such constraints imply that color names map onto color appearances in a culturally modal pattern (Frumkina, 1999; Jameson, in press) and, in certain languages, could emerge as culturally basic. The considerations may be integrated into existing color naming theories as these evolve and are updated.

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