Linguistics

Universal Model of Colour Categorization and Georgian Basic Colour Terms

Ether Soselis

G. Tsereteli Institute of Oriental Studies, Tbilisi

(Presented by Academy Member Th.V.Gamkrelidze)

ABSTRACT. The main goal of the paper is to define the type of Georgian colour term system, which depends on the number of basic colour terms in the language, according to Berlin & Kay’s universal theory of colour categorization. So, first of all, the basic colour terms in Georgian had to be established, where there are a lot of words denoting different hues of colour. The criterion of basicness makes it possible to choose basic terms from this diversity.

It has been found that among Georgian color terms the following ones possibly meet the four main points of the criterion of basicness: tetrî – WHITE, suvi – BLACK, čîtelî – RED, qvîtelî – YELLOW, mcvane – GREEN, lurži – BLUE, ruçi – GREY. The fourth or last point of basicness says that basic colour terms have to be salient. The best way to check this point is the so-called list test, which was carried out with 38 participants on Georgian data.

The results of the list test have shown that the first six terms are salient enough and so they are surely basic, but as for the term ruçi – ‘grey’, it is not salient, and therefore it has been excluded as not being basic. However, it appears that qvarisperi – ‘brown’ meets the same point of the main criterion of basicness, and despite its morphological structure, which is not simple, I have come to the conclusion that qvarisperi – ‘brown’ has to be regarded as being basic. Basicness of qvarisperi is supported by the universal model of colour categorization, which implies that the seventh basic colour term in the colour term system is the one denoting category BROWN. © 2008 Bull. Georg. Natl. Acad. Sci.

Key words: colour term system, colour categorization, basic colour term.

Since 1969, when Berlin and Kay’s theory about color term systems was published, linguists have more actively paid their attention to colour term systems in different languages. According to Berlin and Kay’s theory (Berlin & Kay 1969), the type of colour term system is defined according to the number of basic colour terms in the language. Why are basic colour terms so important? – They are the main structural units in the organization of a colour term system, reflecting how the color space is categorized in the corresponding language.

Berlin and Kay’s theory is based on the basic colour terms and the authors establish the criterion consisting of four main and four additional points to identify basic color terms (see also Mervis, Roth 1981; Kay, McDaniel 1978). The main points are: 1) basic colour terms are monolexemic, whose meaning, in Berlin and Kay’s view, cannot be derived from the meanings of the parts; 2) basic colour terms are not subordinate to other colour terms, according to the cited authors, their significant is not contained in the significant of any other colour term.; 3) basic colour terms have unrestricted referents; 4) basic colour terms are psychologically salient. The additional points are: 1) the distributional power of a basic term is the same as that of the already established basic colour terms; 2) the basicness of a term is questionable if it is the name of a thing, or hints at a thing whose colour is encoded by it; 3) loan words probably are not basic; 4) morphological complexity is probably characteristic of nonbasic terms.

Berlin and Kay’s theory is called Universal Model of Colour Categorization and the main idea is that basic color categories are regarded as universal ones. Their universality means the universality of their foci which represent the best sample of the corresponding basic colour term.

After the vast language data had been analyzed, the authors established 11 universal basic colour categories, i.e. 11 universal foci were pointed out through the colour space, and they are the places in the spectrum, where the best samples of English basic colour categories of BLACK, WHITE, RED, YELLOW, GREEN, BLUE, BROWN, ORANGE, PURPLE, PINK, and GREY are found. The foci were defined as primary designates of universal semantic categories. In order to tell apart colour category and corresponding term, the categories are written in capital letters, e.g. WHITE is a category, while white is a term.

Besides the universality of basic color terms, Berlin and Kay established the universal regularity of colour categorization that always was felt intuitively. After various linguistic data had been studied, the authors established the following universals:

1. In every language there are basic colour terms for BLACK and WHITE.
2. If there are three basic colour terms in a certain language, then there is a basic colour term for RED there.
3. If there are four basic colour terms in a certain language, then there is a basic colour term for either YELLOW or GREEN there.
4. If there are five basic colour terms in a certain language, then there are basic colour terms for both YELLOW and GREEN there.
5. If there are six basic colour terms in a certain language, then there is a basic colour term for BLUE there.
6. If there are seven basic colour terms in a certain language, then there is a basic colour term for BROWN there.
7. If there are eight or more basic colour terms in a certain language, then there are basic colour terms for PURPLE, PINK, ORANGE, GREY, or for some other combinations of them there.

In order to define the type of the Georgian colour term system basic colour terms had to be established in it. There are a lot of colour terms in Georgian, denoting different hues of colour. Corresponding Georgian data was gathered from the Georgian Explanatory Dictionary in 8 volumes (Kartuli enis gammartebTi leksiikon, 8 tomeuli 1950-64). The criterion of basicness allows to choose basic ones from this diversity.

As was mentioned above, the criterion of basicness contains four main points. According to the first point (basic colour terms are monolexemic), a great part of colour terms have been excluded from the mentioned diversity as being nonbasic. They are composed nouns with so-called equal parts:

\[ \text{šav-tetri} \rightarrow \text{mixed black and white}\]
\[ \text{teč-citeli} \rightarrow \text{reddish-whitish}\]
\[ \text{qvitel-mevane} \rightarrow \text{green and yellow – greenish-yellowish}\]
\[ \text{šav-citeli} \rightarrow \text{dark with reddish hue}\]
\[ \text{citel-citeli} \rightarrow \text{1. reddish; 2. very red}\]

The other type of composites, in which components are colour terms, but one of them is derived by mo- – o-circumfix having the meaning close to that of English terms with -ish ending, have been excluded as well; sometimes even the both components are of that kind:
\[ \text{molujaršavi} \rightarrow \text{black having a blue hue}\]
\[ \text{mocitalo-qviteli} \rightarrow \text{yellow having a red hue}\]
\[ \text{movardspro-moqvitalo} \rightarrow \text{pinkish and yellowish}\]
\[ \text{motero-monoacrispro} \rightarrow \text{light grey}\]
\[ \text{tečro-moqvitalo} \rightarrow \text{yellowish-white}\]
\[ \text{lufrž-mosavo} \rightarrow \text{blackish-blue, very dark blue} \]

and so on.

According to the same first point of the criterion some terms, being composites as well, but having the word peri (‘colour’) as the second component, while the first one is a genitive case form of a noun, denoting either a plant, or a fruit, or a flower, an animal, some mineral, etc., have been excluded. Terms like these are widely presented in the Georgian Explanatory Dictionary:
\[ \text{agurisperi} \rightarrow \text{colour that reminds a brick – yellowish red} \]
\[ \text{alisperi} \rightarrow \text{colour of flame – bright light red} \]
\[ \text{gišrisperi} \rightarrow \text{as black as gagate – very black} \]
\[ \text{tagvisperi} \rightarrow \text{colour that reminds a mouse – dark grey} \]
\[ \text{kvamlisperi} \rightarrow \text{colour of smoke, light grey} \]
\[ \text{mglisperi} \rightarrow \text{colour of a wolf, grey} \]
\[ \text{okrosperi} \rightarrow \text{‘colour of gold’} \]
\[ \text{zolosperi} \rightarrow \text{‘colour that reminds a raspberry, reddish-pink’} \]
\[ \text{cabisperi} \rightarrow \text{‘colour that reminds a chestnut, chestnut-brown’} \]
\[ \text{vardisperi} \rightarrow \text{‘light red’} \]
\[ \text{xvilikisperi} \rightarrow \text{‘colour that reminds a lizard, greenish-grey’} \]
\[ \text{jigrisperi} \rightarrow \text{‘colour that reminds liver, black and red, dark red’} \]

etc.

As for the next point of the criterion (basic colour terms are not subordinate to other ones), all colour terms with derived stems have been excluded as being nonbasic. This kind of colour terms is very common. It contains: terms with suffixes -ovan, -ian, denoting ‘have-

According to the same second point of the criterion some terms having underived stems like boro (‘claret-coloured, dark red’) have been excluded as well. boro is defined by the term for RED (citele – ‘red’), but not vice versa, citele is never defined by term boro. Here are some other terms like it:

katkata – ‘very white, as white as snow’; katkata is defined by the term for WHITE (tetri – ‘white’), but not vice versa, tetri is never defined by the term katkata.

gure – ‘very black’; gure is defined by the term for BLACK (awi – ‘black’), but not vice versa, awi is never defined by the term gure.

xako – ‘brownish green’. xako is defined by that term for GREEN (mevane – ‘green’), but not vice versa, mevane is never defined by the term xako.

According to the third point of the criterion (basic colour terms have unrestrictive referents), some terms like the following ones have been excluded as being nonbasic:

tako – ‘black, dark colour of clothes’
kera – ‘light yellow, colour of honey, colour of straw – for hair’
lusumun – ‘used with yame (‘night’) – very dark night’

croya – ‘brownish multicoloured – for eyes’
etc.

As for the fourth point of the criterion (basic colour terms are psychologically salient), some informants were inquired, and based on the results and on our own linguistic intuition, some terms like the following ones have been excluded as being nonbasic:

ıga – ‘dark grey’

mires – ‘(old) colour of chestnut’

başyrd – ‘poetic: azure – blue’

zi – ‘1. reddish black; 2. black and white, grey, dark grey’
etc.

Finally, it was found that among Georgian color terms the following ones meet the four main points of the criterion of basicness:

teti – ‘colour of snow, milk (oppos. awi – ‘black’);

awi – ‘the darkest colour, colour of coal, gagate (oppos. tetri – ‘white’);’

citele – ‘colour of blood, garnet’;

gvitele – ‘one of the main seven colours, between orange and yellow in the spectrum; golden or amber-coloured’;

mevane – ‘colour of fresh grass, a leaf and so on; it takes the fourth place in the ordered seven simple
colours of the spectrum (red, orange, yellow, green, sky-blue, blue, violet);’

lurj – ‘one of the main colours of the spectrum, – dark sky-blue’;

ruxi – ‘black mixed with white, dark grey’.

At first sight the first six terms from the abovementioned ones seem certainly to be basic, and therefore they need not to be checked by an additional criterion. Basicness only of the seventh term (ruxi) seems to be a lexical exception because, according to Berlin and Kay’s universal theory, categorization of GREY takes place only after the categorization of BROWN has been performed. However, the term denoting BROWN is nonbasic in Georgian as its morphological structure is not simple; besides, it contains the stem denoting a thing whose colour is encoded by the whole word. This term is gavisperi, word-by-word translation of which is ‘colour of coffee’;

qai – is- per- i

coffee-GEN-colour-NOM

Thus, it is needed to check basicness of ruxi from the point of view of the main criterion, i.e. we have to check how salient the given term is. The best way for doing this is to carry out a list test, but before describing it I would like to mention that the term ruxi meets all four points of the additional criterion.

So it seems necessary to carry out a list test (Frunkina 1984; Hardin, Muffi (eds) 1997) in order to define clearly the basicness of the term ruxi. Besides, the results of the list test will give more evidence on the basicness of the other six terms.

What is a list test like? The participants of the test have to write a list of all colour terms (words denoting colour), and they are given from 3 to 5 minutes for the task. As a rule, salient terms are placed among the first ten ones in the list. The participants of our test were all Georgian, there were 38 participants of different age, sex and profession (usually, people whose professional knowledge is somehow connected with colour do not participate in this kind of tests, although two painters, a man and a woman, were included. In my opinion, their attitude to the question seems interesting and they could not affect greatly the results of the test). Before the test was begun the participants were reminded what colour term meant. Then they were given examples of some terms, basic and nonbasic ones. After that they were engaged in conversation (about their profession, job...) as I wanted them to forget the terms that had been given as examples.

The goal of the test was to find out whether the term was equally salient for informants, to define the place of a term in the list, and then make conclusions about the basicness of corresponding terms.

So, there were 38 participants and totally 894 terms were listed (repeated terms are included). If repeated
terms are excluded, the number will be 112. The average number of terms per informant is 23-24 (exactly – 23.53). It is interesting to note that the maximum number of terms in a list is 37, and minimum number is 11. Moreover, those are the data of the painters: 37 – of the woman, 11 – of the man. And it is even more interesting that the man added terms for BLACK and WHITE at the very last moment, after much thinking with following words: Let it be so, however, I think that they are not colour terms. Here are the painters’ comments: BLACK and WHITE are achromatic hues and only chromatic ones are considered as real colours. The results of the test are presented in the tables below. Table 1 contains only 15 terms (it is a part of the whole table, which contains 43 different terms, but these 15 are quite enough to discuss the results).

Table 1

<table>
<thead>
<tr>
<th>No</th>
<th>Colour terms Table 1</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>citeli – ‘red’</td>
<td>38</td>
</tr>
<tr>
<td>2</td>
<td>mvane – ‘green’</td>
<td>38</td>
</tr>
<tr>
<td>3</td>
<td>lurji – ‘blue’</td>
<td>38</td>
</tr>
<tr>
<td>4</td>
<td>gavisperi – ‘brown’</td>
<td>38</td>
</tr>
<tr>
<td>5</td>
<td>gvitieli – ‘yellow’</td>
<td>37</td>
</tr>
<tr>
<td>6</td>
<td>tetri – ‘white’</td>
<td>37</td>
</tr>
<tr>
<td>7</td>
<td>savi – ‘black’</td>
<td>36</td>
</tr>
<tr>
<td>8</td>
<td>cisperi – ‘light blue, sky-blue’</td>
<td>36</td>
</tr>
<tr>
<td>9</td>
<td>nacrisperi – ‘grey’</td>
<td>36</td>
</tr>
<tr>
<td>10</td>
<td>vardisperi – ‘pink’</td>
<td>31</td>
</tr>
<tr>
<td>11</td>
<td>narirjisperi – ‘orange’</td>
<td>31</td>
</tr>
<tr>
<td>12</td>
<td>stapisloperi – ‘colour of carrot’</td>
<td>24</td>
</tr>
<tr>
<td>13</td>
<td>isaninnisperi – ‘lilac-coloured, mauve’</td>
<td>21</td>
</tr>
<tr>
<td>14</td>
<td>okrosperi – ‘golden’</td>
<td>21</td>
</tr>
<tr>
<td>15</td>
<td>verxelisperi – ‘silver’</td>
<td>19</td>
</tr>
</tbody>
</table>

The table contains almost all the terms from the lists (only the terms occurring in less than five lists are not included). The terms in table 1 are ordered according to their frequency in the lists. The following conclusions are made according to the data of table 1:

(i) The value of frequency reduces evenly from 38 to 36 in the first part of the table (i.e. for the first nine terms): the frequency of the first four terms (citeli – ‘red’, mvane – ‘green’, lurji – ‘blue’, gavisperi – ‘brown’) is 38; two terms (gvitieli – ‘yellow’, tetri – ‘white’) occur 37 times; and the frequency of the next three terms (savi – ‘black’, cisperi – ‘sky-blue’, nacrisperi – ‘grey’) is 36.

(ii) After the first nine terms there is a skip in the value of frequency: from 36 to 31: for the two terms (vardisperi – ‘pink’, narirjisperi – ‘orange’) it is 31, and then there is one more skip again – from 31 to 24: stapisloperi – ‘colour of carrot’ occurs 24 times.

According to the skips in the frequency values, terms in the table are divided into four groups: group I presumably consists of basic colour terms, group II – that of nonbasic colour terms, being somehow close to basic ones, groups III-IV – those of evidently nonbasic colour terms.

We are mostly interested in group I, that of basic colour terms, which beside the abovementioned six basic terms contains the following ones: gavisperi – ‘brown’, cisperi – ‘sky-blue’, nacrisperi – ‘grey’. We would like to mention that Uavisperi – ‘brown’ is the very nonbasic term among those three, that occurs in the lists of all 38 informants; cisperi – ‘sky-blue’ and nacrisperi – ‘grey’ are the last terms in the group.

We can define basicness of colour terms more accurately according to the second characteristic of the test – the average place number in the list, which is reflected in table 2. And again, only a part (consisting of the first 15 terms) of the table is presented here:

Table 2

<table>
<thead>
<tr>
<th>No</th>
<th>Colour terms</th>
<th>Average place number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>citeli – ‘red’</td>
<td>3.32</td>
</tr>
<tr>
<td>2</td>
<td>gvitieli – ‘yellow’</td>
<td>3.89</td>
</tr>
<tr>
<td>3</td>
<td>savi – ‘black’</td>
<td>4.22</td>
</tr>
<tr>
<td>4</td>
<td>tetri – ‘white’</td>
<td>4.84</td>
</tr>
<tr>
<td>5</td>
<td>mvane – ‘green’</td>
<td>5.03</td>
</tr>
<tr>
<td>6</td>
<td>lurji – ‘blue’</td>
<td>5.05</td>
</tr>
<tr>
<td>7</td>
<td>cisperi – ‘sky-blue’</td>
<td>5.05</td>
</tr>
<tr>
<td>8</td>
<td>gavisperi – ‘brown’</td>
<td>9.58</td>
</tr>
<tr>
<td>9</td>
<td>vardisperi – ‘pink’</td>
<td>10.87</td>
</tr>
<tr>
<td>10</td>
<td>narirjisperi – ‘orange’</td>
<td>11.42</td>
</tr>
<tr>
<td>11</td>
<td>isaninnisperi – ‘lilac’</td>
<td>11.87</td>
</tr>
<tr>
<td>12</td>
<td>nacrisperi – ‘grey’</td>
<td>12.39</td>
</tr>
<tr>
<td>13</td>
<td>iiiisperi – ‘violet coloured’</td>
<td>12.73</td>
</tr>
<tr>
<td>14</td>
<td>mecamuli – ‘dark red, purple’</td>
<td>12.80</td>
</tr>
<tr>
<td>15</td>
<td>raxi – ‘grey’</td>
<td>13.28</td>
</tr>
</tbody>
</table>

The average place number is calculated in the following way: \( n \) denotes the place number of a certain term in a certain list. As the maximum number of terms in a list is 37, \( n = 1, 2, 3, \ldots, 37 \); \( k_n \) stands for the frequency value of a corresponding term at the \( n^{th} \) place in the list; \( m \) denotes the average place number, and \( m = \frac{\sum k_n}{38} \). For example, if a certain term occurs once at the first place in the lists, 3 times – at the second place, and 5 times – at the third place, then
\[
\begin{align*}
  m &= \frac{(1 \times 1) + (2 \times 3) + (3 \times 5)}{38} = 22.9 = 2.4. \\
  \text{There are two groups of colour terms in table 2. The first group consists of the first six terms (citeli – ‘red’, gvitieli – ‘yellow’, savi – ‘black’, tetri – ‘white’, mvane – ‘green’, lurji – ‘blue’), where m grows evenly from 3.32 to 5.05.}
\end{align*}
\]

After the first six terms there is a skip between the values of \( m \), and then \( m \) grows more or less evenly. All
the other terms are included in the second group. The first two terms in the second group (čisperi – 'sky-blue', qavisperi – 'brown') are specific: their average place numbers are 8.22 and 9.58 respectively, and the difference between the values is 1.36, while in the other part of the table it is less than 1.

What about ruxi – 'grey' according to the two tables? In table I ruxi – 'grey' takes the 32nd place, it occurs in the lists of 7 informants, and its average place number is 13.28 in table 2. Thus, we can finally conclude that ruxi – 'grey' is not a basic colour term.

The basicness of certain colour terms is attested and some interesting information is given in table 3, which actually reflects how unanimous informants were in placing certain terms in the first part of the list. The first column of the table shows the place number of a term in the list, in the second column there are terms occurring at the corresponding places, and the third column shows percentage value, more exactly, the percentage of informants including a certain term in their lists at the corresponding place:

According to the data of table 3, basicness of terms čieli – 'red', qivieli – 'yellow', savi – 'black', teti – 'white', mevane – 'green', lurji – 'blue' was confirmed again. Informants are almost unanimous in putting the very terms in the I-II places. It seems interesting that narinjisperi – 'orange' appears in the VI or VII place, čisperi – 'sky-blue' does in the V place, and qavisperi – 'brown' appears in the VI or VII places. Comparably more unanimous were informants in putting qavisperi – 'brown' on the VII place (21.04%). Then, according to the percentage values, the following terms come: čisperi – 'sky-blue' on the V place (15.98%), and narinjisperi – 'orange' on the VII place (13.35%). Thus, according to the table 3, qavisperi – 'brown' is closer to the basic colour terms than any other one is.

And finally, according to the results of the list test, it was shown that basic colour terms are: teti – WHITE, savi – BLACK, čieli – RED, qivieli – YELLOW, mevane – GREEN, lurji – BLUE; term ruxi – 'grey' does not meet point 4 of the main criterion of basicness and so it is excluded as not being basic. However, it appears that qavisperi – 'brown' meets the same point of the main criterion of basicness, and we have to make clear whether the term is basic or not.

At a single glance, the main obstacle for the basicness of qavisperi is its morphological structure, the term is not monolexemic, and besides, the term contains the name of a thing, whose colour is encoded by the whole word. So the term seems to be nonbasic. But if we look at basic colour terms in English (according to Berlin and Kay, they are: black, white, red, yellow, green, blue, brown, grey, purple, pink, orange), and pay attention to the last two terms, we can see that they are the names of things, whose colours are encoded, but as they are monolexemic and they meet the remaining three points of the main criterion of basicness, it was not needed to apply the additional criterion. However, the monolexemic structure of English terms is due to the general morphological structure of English, where even nonbasic terms are monolexemic, as e.g. term silver is. The corresponding term in Georgian is verekisperi, literal translation of which is 'colour of silver' and the term has the same structure as qavisperi does. So the complex morphological structure of the last Georgian term is only due to the general morphological structure of Georgian, and it must be regarded as basic colour term just like English terms pink and orange. The basicness of qavisperi is supported by the universal model of colour categorization, which implies that the seventh basic colour term in the colour term system is the term denoting the category BROWN.

Thus, the lexical exception found in the Georgian colour term system prompted me to check basicness of the terms more carefully, and the conclusion of my research is that the Georgian colour term system is that of the VI stage having following basic colour terms: teti – WHITE, savi – BLACK, čieli – RED, qivieli – YELLOW, mevane – GREEN, lurji – BLUE, qavisperi – BROWN.
3. P.Kay, Ch. McDaniel (1978), The linguistic significance of the meaning of basic color terms. – Language, 54/3.
7. C.L. Hardin, L. Maffi (editors) (1997), Color categories in thought and language; Cambridge University Press.

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