THE SEMANTIC OF COLOURS IN ROMANIAN: A CASE STUDY / LA SÉMANTIQUE DES TERMES DE COULEUR EN ROUMAIN: ÉTUDE DE CAS / SEMANTICA NUMELOR DE CULORI ÎN ROMÂNĂ: STUDIU DE CAZ[1]

***Abstract**: The present study, which is based on data collected for the Max Planck Institute in the context of a research program called Evolution of Semantic Systems (EoSS), aims at discussing the issue of colour names in the Romanian language. After illustrating a few of the theories around the issue of colour perception and describing how the data collection took place, some observations have been made based on the collected data. As a result of the investigation, 34 terms have been identified in the Romanian language, used as answers to name the 84 Munsell chips by 20 speakers. Following Berlin & Kay`s implicational hierarchy, it has been observed that for the Romanian language the basic terms naming colours are: white, black, red, green, yellow and blue; also, the article discusses the phenomenon of derivation through which the majority of colour names have been formed in Romanian. The case of GRUE for Romanian, and the case of* cărămiziu (*tile colour) are also discussed. In addition, there have been noted differences between male and female colour naming.*

***Key words**: EoSS, basic colours, fuzzy sets, universal categories.*

***Résumé**: Cette étude, qui se base sur des données collectées pour L'Institut Max Planck, dans un projet de recherche appelé Evolution des Systèmes Sémantiques (EoSS), a pour but la nomination des couleurs dans la langue roumaine. Après avoir présenté quelques théories sur la perception des couleurs et après avoir décrit le processus de collecte de données, quelques observations ont pu être faites. Comme résultat de l'investigation, 34 termes ont été identifiés dans la langue roumaine, utilisés par les 20 locuteurs pour décrire les 84 jetons Munsell. En suivant la hiérarchie de Berlin et Kay, nous avons observé que pour le roumain, les termes de base sont les suivants: blanc, noir, rouge, vert et jaune. L'article discute également le processus de dérivation par lequel se sont formés la majorité des termes roumains, en se concentrant sur le cas de GRUE et de* cărămiziu*. En plus, des différences entre les stratégies de nomination utilisées par les hommes et par les femmes ont été enregistrées pour le cas des couleurs.*

***Mots-clés**: EoSS, couleurs de base, catégories diffuses, catégories universelles.*

In what concerns the issue of colour terms and colour naming, several approaches have been discussed. On the one hand, there are the universalist and relativist theories, which stand at opposite poles. According to universalists, the names of colours are in fact universal categories, a cognitive, non-linguistic product; however, relativists state that the names of colours are semantic categories, which are different for each language. Due to evidence which supports and equally contradicts the two theories (Regier, 2007: 1), the introduction of a new perspective was necessary. This perspective claims that language influences our perception, especially in the right visual field and very little, if not at all, in the left visual field, theory which has been verified in the field of colour research by Gilbert, Kay and Ivy (Regier, 2007:1).

[1] Aida Duma, Babes-Bolyai University of Cluj-Napoca, aidaduma@yahoo.com.

Nevertheless, the research made by Berlin & Kay (1969) shows that languages have a universal system of basic colours and that this system develops through a process of lexicalization, in a universal order. In addition, McDaniels (1972) states that these universal terms are inherited into the human perception of colours. According to him, human perception of colours is the result of a series of neuropsychological processes. Thus, he explains why one language or another divides the visual spectrum in a certain way. Relying on a biological understanding of the semantic of fundamental colours, the universalist perspective can show the natural relations existing between the categories encoded in the terminological differences of colours, such as is the case of English, but of other languages also, which have a relatively simpler terminology when it comes to naming colours. In what concerns establishing the basic-colour terms, they have been defined according to the following criteria:

a. They are mono-lexemic terms (*greenish).
b. Their meaning is not included in any other term (*tile-coloured and *vermilion, both being a hue of red).
c. Their applicability does not correspond to a class of objects (*blond).
d. They describe those colours which are most used in the language, and due to their usage they are clearly differentiated among each other (*purple, *lilac) (Kay & McDaniel, 1978: 612).

According to Berlin & Kay`s implicational hierarchy, it has been observed that, for the case of the Romanian language, the basic colour terms are the following: *alb* (white), *negru* (black), *roșu* (red), *verde* (green), *galben* (yellow) and *albastru* (blue). The rest are either borrowings or derived words. Due to the studies by Berlin and Kay in 78 languages, and it has been concluded that there is a temporal order in which languages encode these universal categories:

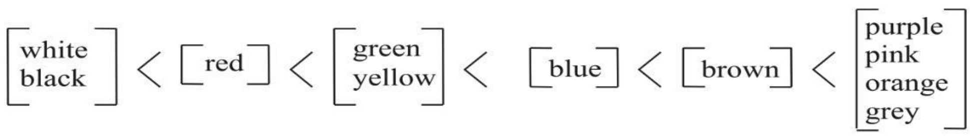


Fig. 1. Berlin and Kay's (1969) implicational hierarchy.

At a first stage the systems are constituted by two categories: black and white. At this stage one distinguishes the darker hues and black and the lighter hues and white. At the second stage, the warmer hues get their own base colour, red, this being also the focus point. At this level, black and white have a different meaning than the one from stage I, due to the fact that the darker hues and the lighter ones are an extension of the red colour. Research which is based on his theory has reached the conclusion that the denomination made by the Dugum Dani language, who names *mola* `warm-white` and *mili* `cold-black`, is more accurate. The category *mola* includes not only white, but also all warm colours: red, orange, yellow, pink and pink-purple. *Mili* includes black and cold colours: blue and green (Kay & McDaniel, 1978: 612).

Recent research admits the existence of **three universal colour categories** (Kay & McDaniel 1978, Kay & al. 1991, Kay & Maffi 1999): the categories of primary colours, the categories of composite (disjunctive) colours and the categories of derived (intersective) colours. The theory of **colour opponency** accepts 6 (six) as **primary colours** (Hering, 1964 [1920]; Jameson and Hurvich, 1968; Hurvich, 1982): black, white, green, red, yellow and blue. These colours, in their turn, make opposite pairs (from the chromatic point of view): red and green, yellow and blue and the only achromatic pair: black and white. Black and white are not in an opposition such as the one in which the chromatic colours are, because, for example, it is possible to see a combination of white and black, which is grey. Here, it is not relevant that yellow in combination with blue gives green, but the fact that in this combination it is not possible to distinguish a hue of yellow, respectively one of blue.

The second category is that of **composite colours**, which derive from primary colours. Nowadays, by far the most spread combination is that of blue-or-green or `grue`. The following combinations are also known: black/green/blue, white/red/yellow, black/blue, red/yellow, yellow/green/blue and yellow/green.

The third category refers to the colours which are obtained from primary colours. By mixing two primary colours we get a colour of the category of **derived (intersective) colours**. Such examples are pink (the combination between white and red), grey (the combination between white and black), etc.

The theory of colour perception is also based on neuropsychological principles. According to the ophthalmologist Hugo Manus (1880), the structure of the human eye is the same at all nations. In addition, he states that the differences in light (latitude) do not influence in a significant way our perception of colours. It is already known that the perception of colours starts from the retina. Due to length differences, at the level of the nervous visual system, different perceptions take place. There are three types of cones and each differentiates itself through wavelength.

> While a colour is differently coded at the level of the retina, according to the answer received from the three types of cones, this code is transformed beyond the retina into a neuronal state of responses, distributed according to the wavelength. The relative powers of these states directly determine the perceived hue (Kay & McDaniel 1978: 617).

In other words, research, having here as a reference the work of De Valois and of his colleagues (1966), shows that while colours are coded differently at the level of the retina according to the wavelength, the code of each colour is transformed in opposed neuronal responses of red and green or yellow and bluyond the retina. Green and blue can be perceived simultaneously, also red and yellow; however, green and red, blue and yellow cannot. The relative values of these states directly determine the perceived colour. The structure of colour perception is universal, the physical properties of the light having no direct influence upon it. Colours are determined according to the neuronal responses. Form the point of view of the neuropsychological perspective, there are 4 (four) basic colours: green/blue, red/yellow. Consequently, the question concerns the other colours, named by the language as base-colours or as intermediate hues. Due to these hues, called `intermediate`, the notion of `fuzzy categories` has been introduced. A fuzzy category A is defined through a characteristic function f A, which attributes to each individual x, from the considered domain, a number f A (x) between 0 and 1. The way in which we talk about colours helps us understand that this classification is an aspect which is a matter of degree. The members of the fuzzy category each corresponds to a basic colour and they are chosen from all the possible colours. The degree at which each colour becomes a member of a particular category is showed by a value between 0 and 1. However, there are colours which can belong to more than one category: `yellow-greenish`, `red-purplish`, etc. (Kay &McDaniel 1978:622).

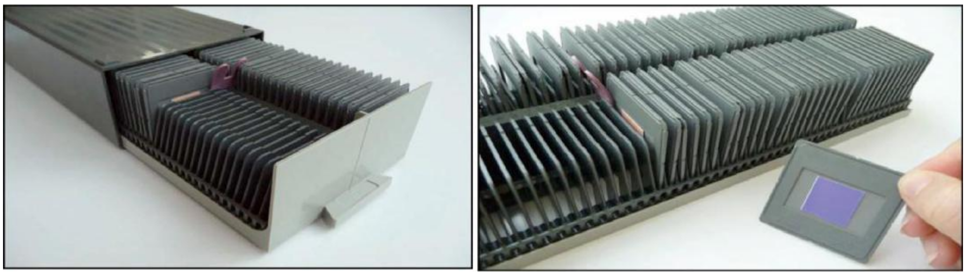
> In standard set theory, an individual is in the union of two sets if it is in either set; in fuzzy set theory, an individual is in the union of two sets to the greatest degree that it is in either set (not to the degree that it is in both, whatever that might mean) (Kay & McDaniel 1978:629).

As we have seen, there are multiple perspectives and directions of investigation in the matter of colour perception; however, in order to establish the current lexicon of colours for a certain language, it is necessary to gather data for that respective language and interpret it.

In the context of a research project entitled the Evolution of Semantic Systems (EoSS) initiated by the Max Planck Institute in the domain of colour perception, a data collection took place at the Faculty of Letters of Cluj-Napoca. The target language was Romanian; 20 (twenty) participants undertook the tests, 10 males and 10 females, aged between 18 and 25. Four of them were bilinguals, Romanian-German, Romanian-Hungarian, 1 person with daltonism. The investigation took place between Mars and May 2012, and the data were collected and transcribed by dr. Cristiana Papahagi and dr. Melania Duma.

First of all, each participant received a unique identification code (for example the Romanian participant with number 1 (one) will be coded: Ro01). The participants had to fulfill three tasks: 1. Colour Naming task; 2. Focal Colour task; 3. Colour Blindness test. In the case of the Colour Naming task, each participant was asked to name the colour that he/she sees on the chip. The Munsell Colour Chips (fig. 2) were used as material for this task, arrayed in fixed and random orders. Each of these stimuli is individually presented and put on a numbered plate. Out of the 84 coloured chips, 4 (four) are achromatic, and the other 80 vary in colour, brightness and hue.

FIG. 2



There are 20 colours, equally separated one from the other, through 4 (four) degrees of brightness. At this level, it is important that the chips are presented in the order in which they are numbered, without omissions. Each participant had to describe, in the shortest way possible, the colour which he/she sees on the chip. The same name could be used more than once to describe different chips. The participants had to be encouraged to give answers, in the simplest way possible (i.e. not to define and/or explain the colour, but to name it).

The second task (fig. 3), called the Focal Colour task, consisted in choosing the best examples for the basic colour terms of the Romanian language. This time, the 84 Munsell Chips were arrayed according to colour and brightness, on two dimensions. The 4 (four) achromatic colours are on the left side, each colour being uniquely identified through a letter (A-D) and a number (1-20). Each participant was asked to choose the best example for each colour: `please choose the best example of red, green, blue etc`.

FIG. 3

For the third task, called the Colour Blindness test (fig. 3), the participants had to identify the number from each plate, out of a total of 9 (nine). Six out of the 9 (nine) plates test for the the red-green colour deficiencies, 1 (one) plate tests the type and degree of red-green defect. Another plate tests for the blue-yellow colour deficiency. In the case of each plate, the participant was asked what colour they saw.

FIG. 4

Based on the collected data, certain observations have been made possible, concerning the use of colour names in the Romanian language. The investigation registered the use of 34 terms, green (*verde*) being the most encountered term, used 427 times. There are also terms with only one occurrence, such as: *cafeniu* (fawn), *azuriu* (azure), *somon* (salmon), etc.

1. Some situations have been recorded in which through a process of borrowing *portocaliu* (orange) has been replaced with *oranj*. By comparing the Munsell chips for which certain speakers have used *oranj* with those for which they have used *portocaliu*, it has been observed that there are no differences in terms of hue between the corresponding chips. Therefore, the use may be explained by the existence of both terms in the Romanian language, *oranj* being a more recent borrowing from the French or the English languages.

2. All the words formed through derivation have followed the same pattern: the base word, which in all cases is the realia word + suffix *–iu*. Thus, we have the following examples: *portocaliu* (orange), *cafeniu* (fawn), *purpuriu* (purple, vermilion), etc. A study about suffixes in the Romanian language classifies the suffix *–iu* as an adjectival suffix, which has the semantic role of establishing a relation between the base word and the derived world, especially a relation of resemblance in terms of colour. Also, it has the semantic role of establishing a relation of belonging: *mijlociu=de mijloc* (middle=which belongs to the middle) (Pascu, 1916: 221).
3. There are certain cases in which the terms used by the speakers to describe, therefore to name, a certain colour, have not been found in the dictionary explained as colour, which leads us to conclude that there is a natural relationship between the colour and the word which names the colour; however, in certain cases that relationship has not yet been recorded. Such an example would be the word *somon* (salmon) which was used as variant to describe a Munsell chip (10RP 6/12). Although the dictionary does not explain the word *somon* also as a colour, we understand that the speaker referred to the colour which resembles that of the salmon meat.
4. Some of the words used to describe colours have a different pronunciation than the standard one. Such an example would be the word *corai* (coral), which was pronounced by the speakers *coral.* Another example would be *țiclam,* which has the correct form *ciclamen* (cyclamen-colored).
5. Female speakears tend to give more elaborated answers when it comes to explaining the colour they see: ―a little bit darker‖, ―in between, neither dark, nor light‖, ―nude‖, ―I don`t know, pink‖, etc. On the other hand, male speakers give simple answers, the colour hues differ only by adding the adjectives ―light‖ or ―dark‖. Various studies have shown the differences between men and women in terms of speech and language usage. Starting with Richard Cambridge`s observation from 1754 for *The World* magazine, later on in 1756 an anonymous contribution to the same magazine underlines the fact that women use adverbial forms in an exaggerated way. The more recent observations of Jespersen from 1922 illustrate the differences in terms of vocabulary between men and women, his research surpassing the borders of the English language (Coates, 2004:10-12).
6. In the case of *maro* (brown), *roz* (pink), *mov* (purple), *portocaliu* (orange) and *gri* (grey), although very frequent and part of Berlin and Key`s implicational hierarchy, they are either borrowings, or derived words, such as is the case of *portocaliu,* therefore they cannot fall into the category of basic terms, according to the criteria already mentioned at the beginning of the article.
7. The case of *turcoaz* (turquoise) is an interesting one, because it is a colour which falls into the category of fuzzy sets. The speakers have used this term to indicate a colour which could have been either green or blue, therefore belonging to the fuzzy set GRUE. In 37 of the cases the speakers have used *turcoaz* instead of ―green‖ or ―blue‖. If we compare the Munsell chips for which the speakers have used *turcoaz* we can note that the term has a wide range of applicability from the point of view of the questioned speakers. Thus, starting with light hues which seem to mix the two colours, blue and green, to the darker ones, also mixing hues of blue and green, many of the speakers have used *turcoaz* to name the corresponding colour. By comparing the following chips: 10G 6/10, 10G 8/6, 10BG 8/4, 10BG 8/4, 10BG 6/8, 10BG 4/6, 10BG 2/6, 10B 6/10, 10B 4/10, 10B 8/6, 10B 2/6, 5BG 6/10, 5BG 4/8, 5BG 2/6, 5B 6/10, for which at least one speaker used *turcoaz,* we can

observe that in the case of fuzzy sets, as there is no clear-cut differentiation between its members, there is a wide range of elements which fall into the respective category. In some of the cases, other words such as: *albastru turcoaz, turcoaz mai închis/mai deschis* (more dark/light turquoise) are used in order to explain and name the colour.

8. For the case of *cărămiziu* (the colour of tiles/bricks), four situations of use have been recorded and it is interesting that by comparing the four chips we observed that the variety of hue between the four chips is very high. Thus, *cărămiziu* is used for the following chips: 10R 4/12, 5R 2/8, 5R 6/12, 10R 2/6. However, if we analyze the chips for which the speakers have used *cărămiziu,* we would note that there is a high difference in terms of hue between the chips. If we start from the name *cărămiziu* and compare it with the chips which were named by speakers as being *cărămiziu*, we observe that this association does not always follow the logic of the name (*cărămiziu* comes from the Romanian *cărămidă* (brick, tile) + suff. *–iu*, and refers to objects which share the same colour with a brick), thus the connection between the name and the colour is not based on the natural relationship existing between the object *cărămidă* and the colour.

In conclusion, it can be stated that the present study, together with the collected data, open the way for further research. Our future research intends to map the current lexical field of colour terms, which should differ from the traditional one, and thus identify, on the one hand, the new terms and the area of their use, and, on the other, the obsolete ones. Beyond the theoretical interest of this study, its applicability can be of interest also from a practical point of view, if we consider the domains of fashion and publicity

Bibliography

Coates, Jennifer, 2006, *Women, Men and Language: a sociolinguistic account of gender differences in language*, Edinburgh, Pearson Education Limited.

Dicţionarul Explicativ al Limbii Române, available at www.dexonline.ro

Kay, Paul, McDaniel, Chad K., 1978, „The Linguistic Significance of the Meanings of Basic Colour Terms‖, *Language*, Vol. 53, No. III, Sept., pp. 610- 646, http://www1.icsi.berkeley.edu/~kay/K&McD.LG.pdf, accessed 19 May 2014.

Kay, Paul, Maffi, Luisa, 2013, „Number of Basic Colour Categories‖, *The World Atlas of Language Structures Online*, http://wals.info/chapter/133, accessed 17 March 2014.

Magnus, Hugo, 1878, *Histoire de l'évolution du sens des couleurs,* Paris. C. Reinwald

Pascu, Giorge, 1916, *Sufixele românești*, Bucharest: Socec & Comp.

Regier, Terry, Kay, Paul, 2006, „Language, thought and colour: Whorf was half-right‖, *Trends in Cognitive Sciences*, Vol. XXX, No. X, Cell Press, p. 1-8.

Regier, Terry, „Color naming and the effect of language on perception‖, available at http://www.imaging.org/ist/publications/reporter/articles/Rep23_2_CIC15_REGIER.pdf

Roberson, Debi, Davies, Ian, Davidoff, Jules, 2000, ―Color Categories are not universal: Replications and new evidence from a stone-age. www.researchgate.net/.../Debi_Roberson/...Color_categories_are_not_un..., accessed 19 May2014.

Whorf, Benjamin Lee, 1956, *Language, Thought, and Reality: Selected Writings of Benjamin Lee Whorf*, Massachusetts, MIT Press.