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WORD ASSOCIATIONS IN ROMANI: SOME PROTOTYPES IN CROSS-CULTURAL PERSPECTIVES

The goal of this research is to elaborate a procedure for obtaining Romani word association norms. In order to make cross-cultural comparisons, the results of a pilot Romani word association experiment were added to the database of word associations for 7 languages and cultures. The study focuses on the possibility of revealing prototype-variant relations for the concepts of *black* and *white* which are cultural symbols in many cultures. It adopts the theory of Tversky (1977) about asymmetric relations of similarity in order to reveal unconscious prototype-variant, origin-derivative, unmarked-marked deep structures in the mind. These relations have been established in consciousness during the acquisition of given languages and cultures. Perceptual, memory and association experimental data are presented which consist of asymmetric distances between members of phonological and semantic oppositions. The explanatory power of the theory of asymmetry has been demonstrated in cases where, applying other independent tools, we can establish prototypes and unmarked members of such correlated pairs. Word association norms for 8 languages were used to reveal prototype-variant relations between *black* and *white*. It was found that *white* is prototype and *black* is variant in American, Byelorussian, German, Romani and Russian cultures, while in Bulgarian and Kirghiz cultures prototype is *black* and variant is *white*. It was found also that *night* is prototype and *day* variant in the Bulgarian culture but in the Romani culture the relation is reversed although both cultures had coexisted for hundreds of years.

Introduction

Since the first attempt of Galton (1880) to study word associations in controlled and experimental conditions, this procedure has been standardized and used many times during the last century in order to obtain word associations for different languages. Kent and Rosanoff (1910) published the first word association

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norms for English. The 100 words they used as stimuli were set up as standards for obtaining word association norms in many other languages and cultures. Galton (1880) used free associations as an experimental method for the investigation of thinking. Later, this method was applied widely in the psychoanalytical paradigm (Jung, 1918). More recently, word association data were interpreted as products of cognitive structures in semantic memory (Friendly, 1979; Gerganov, 1987). Nowadays the word associations elicited by people who speak different languages and represent different cultures are an important source of data in studying:

- semantic relations between stimulus words and word associations they activate;
- cultural stereotypes and attitudes;
- prototypes;
- archetypes, etc.

This paper is a preliminary report on word associations given by Romani people living in Bulgaria who participated in a pilot word association experiment. The main goal of this experiment is to elaborate the procedure for a major experiment aiming to obtain word association norms for the Romani language. We focus our efforts to make cross-cultural comparisons of word associations in the theoretical framework of asymmetric semantic similarity developed by Amos Tversky (1977), which is a powerful tool for revealing prototypes of mass consciousness. Such an analysis has been done elsewhere by one of the authors (Gerganov, 2003). Here we will enrich this analysis with Romani word association data.

Word association experiment

Method

Stimulus Materials

35 words from the Romani language were used as stimuli. Ten of them were taken from the list of 100 stimulus words used by Kent and Rosanoff (1910). The words given the participants as stimuli are as follows: *phabaj* (apple), *lačo* (good) *barvalipe* (richness), *rom* (man, a husband), *lolo* (red), *čhavo* (boy), *drom* (road), *šutlo* (sour), *rjat* (night), *loko* (light,), *patreto* (picture), *vast* (hand), •*uvli* (a woman), *levo* (lion), *gad•o* (non-Roma) *cvjatos* (color) *mangav* (asking, begging) *ulica* (street), *čhaj* (a girl), *maro* (bread), *radio* (radio), *dives* (a day), *pakiv* (religion, respect), *love* (money), *murš* (a man), *kalo* (black), *plodos* (fruits), *xav* (eat), *kangeri* (church), *day* (mother) *bilačipe* (badness) *šukar,* (nice, beautiful), *pani* (water), *parno* (white), *Del* (God).

Participants

73 Roma participated in the pilot experiment, 39 male and 34 female. They were between 19 and 35 years old. All of them were included in a one-year train-

ing course for Teacher Assistants at Veliko Tarnovo University during the academic year 2003/2004. They came from different regions of Bulgaria and spoke different Romani dialects.

Procedure

The participants were given the instruction to write down in their own Romani dialects the first word which came into their mind when they heard a given stimulus word. The experimenter read the list of 35 stimuli word by word and the participants had 5 seconds to write the first word that came to mind. After 5 seconds, the next stimulus word was given to them. The experiment was carried out in a classroom setting in the University and the participants were instructed not to talk nor to react in any other way.

Results and discussion

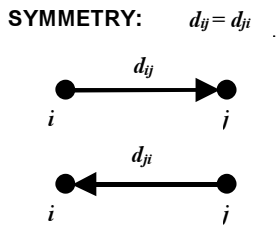
Frequency word counts of free associations

A frequency word count of free associations for each stimulus word was prepared. As the time for writing an association to a given stimulus word was limited to 5 seconds, there were many blanks. In this condition, only the most active associations to a given stimulus appeared. For the purposes of our analysis we give here only the frequency word count of free associations for 6 stimulus words: *parno* (white), *kalo* (black), *dives* (day), *i rjat* (night), *lačo* (good), *bilačho* (bad). The number after the stimulus word corresponds to the number of participants who had written any association in the five second interval and the number after a given word association means how many participants associated it with the stimulus word. When several different associations had the same frequency they were listed in alphabetical order and the frequency is given after the last one. The English translations of word associations are given in brackets only for stimulus words and for word associations with a frequency greater than 2 (see Appendix).

Geometry of consciousness. Semantic distances between stimulus words and word associations

Frequencies of words that appear as associations to a stimulus reflect different activity connecting them in consciousness. For example, the stimulus word *dives* (day) activated 21 times (36%) the word association *i rjat* (night) but only 3.5% the word association *čhonut* (moon). These percentages could be regarded as measures of distance in semantic memory between stimulus words and the word associations they elicited. The higher the percentage, the less the corresponding distance, and vice versa. So the semantic distance between *dives* (day) and *čhonut* (moon) (3.5%) is much greater than the semantic distance between *dives* (*day*) and *i rjat* (night) (36%). This interpretation is very close to the concept of psychological space. As is well known, there are a huge number of experimental studies

Figure 1. Geometric interpretation of the axiom of symmetry



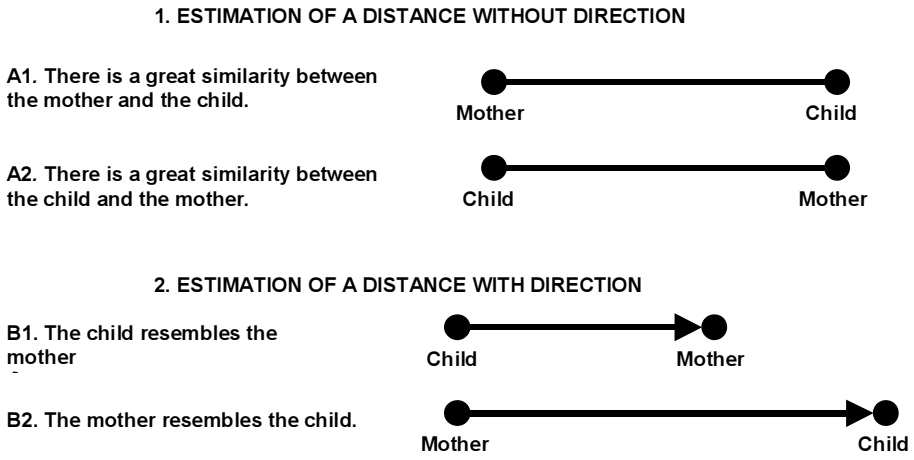
of psychological space structure and, more specifically, the structures of semantic space, conceptual space, perceptual space, etc. To reveal the structure of psychological space, the theory and algorithms of multidimensional scaling are applied (Cox & Cox, 2000; Kruskal & Wish, 1978; Shepard, 1974; Torgerson, 1958, and others). This theory is widely applied for studying cognitive and semantic structures, perceptual structures and categorization in different areas of psychology, linguistics and cultural anthropology (Shepard, Romney & Nerlove, 1972; Green & Rao, 1972; D'Andrade, 1995). The application of multidimensional scaling in analyzing similarity data is possible only if the data satisfy the distance axioms *minimality, symmetry* and *triangle inequality*. However, there are many psychological data in which some distance axioms, like the axiom of symmetry, are violated. These data are important sources of information about the relationship between corresponding concepts in the mind. As mentioned above, the asymmetry of semantic distance between a stimulus word and the word associate it activates is interpreted as a reflection of the prototype-variant relationship in consciousness (Tversky, 1977; Rosh, 1975). Such asymmetry is observed regularly in so-called mirror associations in free association experiments. We will discuss below some prototypes on the basis of word associations in different cultures, in consideration of some aspects of Tversky's theory explaining quite convincingly prototype-variant relations in consciousness (Tversky, 1977).

The axiom of symmetry and its verification in psychological experiments

The distance between two points in a metric space has to satisfy the axioms mentioned above. However, only the axiom of symmetry is relevant to our further analysis. According to this axiom, the distance d_{ij} from point *i* to point *j* is equal to the distance d_{ji} from point *j* to point *i* (Fig. 1).

From the psychological point of view the axiom of symmetry will be satisfied if the percentage of answers "An object *A* is like an object *B*", obtained in a psychological experiment, is equal to the percentage of answers "An object *B* is like an object *A*", obtained in another independent experiment. In order to satisfy this axiom for the semantic distance between concepts **black** and **white,** the percentage 32.8 of the word *kalo* (black), given as association to the stimulus word

Figure 2. Psychological interpretation of similarity judgments in statements without direction of semantic distance (Ŕ1 and A2) and similarity judgments in directional statements (B1 and B2)



parno (white) in our experiment, has to be equal to the percentage of the word *parno* (white), given as association to the stimulus word *kalo* (black). However, the obtained percentage 53.5% of the associations *parno* (white) to the stimulus word *kalo* (black) is greater than the first one. This means that the semantic distance from *parno* (white) to *kalo* (black) (32.8%) is longer than the distance from *kalo* (black) to *parno* (white) (53.5%). The difference of 20.7% is statistically significant ($t = 2.1$; $p < 0.05$). The symmetry axiom does not hold in this case. According to this interpretation, percentages of occurrences of mirror associations, obtained in a word association experiment, can be used as experimental evidence for satisfaction or violation of the symmetry axiom.

Similarity judgments are another estimation of psychological distance. However, they do not give information about their direction. When we ask people to say "Yes" or "No" if they agree that "there is a great similarity between the mother and the child" (Statement A1) the percentage of answers "Yes" will not be statistically different from the percentage of answers "Yes" to the question if they agree that "there is a great similarity between the child and the mother" (Statement A2) (Fig. 2.1). The above statements can be transformed into directional ones. Tversky writes:

> "Similarity judgments can be regarded as extensions of similarity statements, that is, statements in the form "a is like b". Such a statement is directional; it has a subject, a, and a referent, b, and it is not equivalent in general to the converse similarity statement "b is like a". In fact, the choice of subject and referent depends, at least in part, on the relative salience of the objects. We

> tend to select the more salient stimulus, or the prototype, as referent, and the less salient stimulus, or the variant, as subject. We say "the portrait resembles the person" rather than "the person resembles the portrait." We say "the son resembles the father" rather than "the father resembles the son." We say "an ellipse is like a circle", not "a circle is like an ellipse", and we say "North Korea is like Red China" rather than "Red China is like North Korea"… Apparently, the direction of asymmetry is determined by the relative salience of the stimuli; the variant is more similar to the prototype than vice versa." (Tversky, 1977, p. 328)

The two types of statements are illustrated on Fig. 2.

There are several important types of opposition where one can find salient-variant relations:

- unmarked-marked oppositions in phonology like voiceless-voiced consonants (*/p/-/b/; /k/-/g/*);
- unmarked-marked oppositions in lexical semantics like pairs of antonymic adjectives (*good-bad; strong-weak*)
- class-instance relations in semantic networks (*animal-lion*), etc.

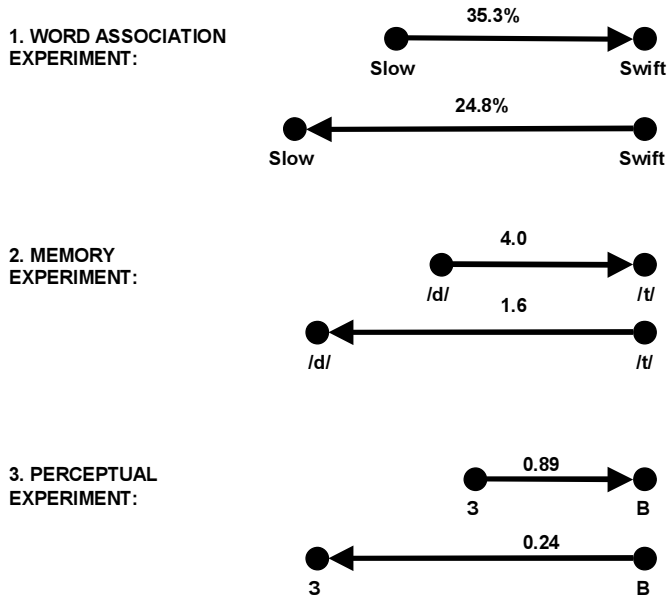
All these examples represent areas where we can expect violations of the symmetry axiom.

It is possible to take as measures of psychological distance between stimuli for two directions the scale values obtained, for instance, by the method of successive categories for judging the directional degree of resemblance in scaling experiments, the percentages of mirror associations in word association experiments and the percentages of confused words, letters, speech sounds etc., in memory and perceptual experiments. In these experiments, we always obtain measures of a given psychological distance in both directions. In this way we are able to test hypotheses about asymmetry. If the distances in both directions for a given pair of stimuli are different, we can determine the prototype member by applying the rule inferred from Tversky's theory. According to this rule, the distance from the prototype to the variant is greater than the distance from the variant to the prototype. In the pair *black – white* the prototype, salient member, is *white* and the variant, less salient member, is *black*, because the distance from *white* to *black* is greater (*white* activates *black* only in 32.8% of the cases) than the distance from *black* to *white* (*black* activates *white* very often – 53.5% of the cases).

One of the authors of this paper had given examples for experimental testing of the symmetry axiom for psychological distances on the basis of data from word association, memory and perceptual experiments (Gerganov, 2003). These examples are given on Fig. 3.

Percentages of mirror associations for Bulgarian adjectives *áúđç* (swift) and *áŕâĺí* (slow), given as stimulus words in the Bulgarian word association experiment, demonstrate that the psychosemantic distance from *áúđç* (*swift*) to *áŕâĺí*

Figure 3. Testing the symmetry axiom on the basis of data obtained in word association, memory and perceptual experiments



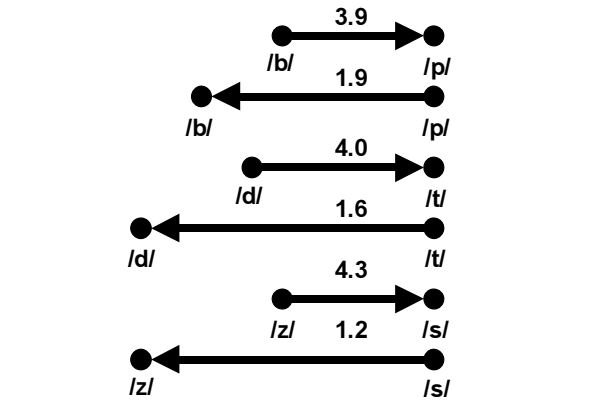
(*slow*) (24.8%) is significantly longer than the psychosemantic distance from *áŕâĺí* (*slow*) to *áúđç* (*swift*) (35.3%) ($t = 5.2$; $p < 0.001$) (see Fig. 3.1). Remember that the large percentage means a smaller distance and the small percentage means a greater distance.

In a memory experiment for investigating the coding of phonemes in short-term memory a confusability matrix has been obtained consisting of the percentage of confusions of one phoneme with another (Gerganov, 1987). If the symmetry axiom is held for the distance between all pairs of phonemes in short-term memory, the percentage of mistakes in both directions for each pair of phonemes should not differ significantly. However, there are a lot of violations of this axiom. An example, for asymmetric memory, distances between the voiced consonant */d/* and its voiceless correlate */t/* is given on Fig. 3.2. As is seen, the distance from */d/* to */t/* is less than the distance from */t/* to */d/* (the phoneme /*d*/ is confused with the consonant /*t*/ in 4.0% of cases while /*t*/ is confused with /*d*/ in 1.6% of cases). The difference between the two percentages is statistically significant ($t = 4.4$; $p < 0.001$).

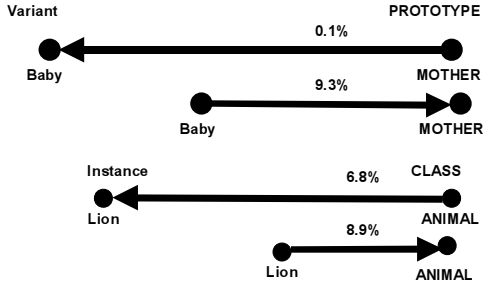
Analogical data were obtained in a perceptual experiment in which children had to touch and to recognize embossed letters without seeing them. A perceptual confusability matrix has been obtained (Jordanova, Gerganov & Pencheva, 1990). In this experiment, the Cyrillic letter Ç was confused with the Cyrillic letter Â in 0.89% of cases while the Cyrillic letter Â was confused with the Cyrillic letter Ç in

Figure 4. Some examples of asymmetric distances for known relations

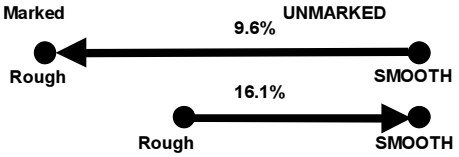
1. Examples from **phonology** (the numbers correspond to percentages of confusions between consonants in shortterm memory)



2. Examples from **logic** (the numbers correspond to the percentages of mirror associations in Bulgarian association norms)



3. Examples from **lexical semantics** (the numbers correspond to the percentages of mirror associations in Bulgarian association norms)



0.24% of cases. Although these percentages are small they are very reliable, because they are calculated on the basis of a thousand presentations of each letter. Perceptual distance from the letter Â to the letter Ç(0.24 %) is significantly greater than the perceptual distance from the letter Ç to the letter Â (0.89%) ($t = 2.4$; $p < 0.05$) (see Fig. 3.3).

The violation of the symmetry axiom has meaningful interpretations in the theoretical framework of markedness in phonology and lexical semantics.

It was found that in the available empirical data (Bulgarian norms of word associations, Gerganov et al., 1984) the psychosemantic distances from the unmarked members of correlated pairs of antonymic adjectives to the corresponding marked members are greater than vice versa. For instance, psychosemantic distances for the semantically unmarked-marked pairs *áúđç* (swift) – *áŕâĺí* (slow), *âčńî ę* (high) – *íčńúę* (short), *ăîë˙ě* (large) – *ěŕëúę* (small) are greater than the psychosemantic distances for the corresponding semantically marked-unmarked pairs *áŕâĺí* (slow) – *áúđç* (swift), *íčńúę* (short) – *âčńî ę* (high), *ěŕëúę* (small) – *ăîë˙ě* (large).

There are analogical results for phonological voiced-voiceless consonant pairs. Memory and perceptual distances from the unmarked members (voiceless consonants) of these pairs to the corresponding marked members (voiced consonants) are greater than vice versa. For example the distances /*p*/-/*b*/, /*s*/-/*z*/, /*t*/-/*d*/ are greater than the corresponding distances /*b*/-/*p*/, /*z*/-/*s*/, /*d*/-/*t*/.

Obviously, asymmetric distances reveal interesting psychological relations between words, concepts, phonemes, letters, etc. Tversky's theory explains very well the intrinsic psychological mechanisms which generate these asymmetric distances.

Explanatory and predictive power of the theory about asymmetric relations

It is well known that a good theory has explanatory and predictive power (Torgerson, 1958). The greater number of known facts and empirical data the theory explains the greater its explanatory power. A given theory becomes a productive tool for producing new knowledge when it is possible to infer from it hypotheses which can be accepted as a result of experimental testing. We have seen above that, according to Tversky's theory about asymmetry, it is easy to define which member of a correlated pair occupies the position of prototype, the unmarked member in the mind, and which one is the variant, the marked member. We need only to obtain empirical estimations of distances in two directions. However, in order to rely on the theory, we need to test it in cases where the relations in question are evident or are established by different independent procedures. We give such evidences below (Fig 4.). The examples are from phonology, logic and semantics.

Let us consider the examples on Fig. 4.1 about phonological voiced-voiceless correlated oppositions. It has been established in phonology that the voiced

consonant is marked and the unvoiced consonant is unmarked with respect to the voiced-voiceless distinctive feature (Trubetzkoy, 1939/1958). The percentages of memory confusions show that the distance in shortterm memory from the voiceless consonant */p/* to the voiced */b/* (1.9%) is greater than vice versa (3.9%) ($t = 3.6$; $p < 0.001$). The other relations on Fig. 4.1 demonstrate the same asymmetries. The distance (1.6%) from */t/* to */d/* is greater than the distance (4.0%) from */d/ to /t/* ($t = 4.4$; $p < 0.001$). The distance from */s/* to */z/* is greater than vice versa ($t = 5.5$; $p < 0.01$). Types of bi-directional asymmetries in all voiced-voiceless correlation oppositions of Bulgarian consonants correspond to phonologically unmarked-marked relations with the exception of one or two pairs (Gerganov, 1987).

In the next examples, it is evident that *mother* is the prototype and *baby* a variant. According to the percentages of mirror associations, psychosemantic distance (0.1%) from **mother,** as a stimulus, to *baby,* as an association, is greater than the distance (9.3%) from **baby,** as a stimulus, to *mother,* as an association ($t = 8.5$; $p < 0.001$). It is also evident that *animal* is a class and *lion* is an instance of it. Asymmetry in the percentages of mirror associations supports this logical relation. The distance (6.8%) from **animal,** as a stimulus, to *lion,* as an association, is greater than the distance (8.9%) from **lion** to *animal* ($t = 1.8$; $p < 0.05$).

Percentages of mirror associations in the case of antonymic oppositions also support the theory of asymmetrical relations in psychological distance. As is known, asking a question about the corresponding feature an object possesses can reveal the marked member of a given pair. Let us look at the example on Figure 4.3. The question “How rough is the table?” presupposes roughness of the table while the question “How smooth is the table?” is neutral and asks only about the feature smoothness. Applying this rule from lexical semantics we find that the adjective *rough* is marked and *smooth* is unmarked. Psychosemantic distance (9.6%) from **smooth,** as a stimulus, to *rough,* as an association, is greater than vice versa (16.1%) ($t = 4.4$; $p < 0.001$). This means that the adjective *smooth* is unmarked and *rough* is marked, as corresponds to the finding in lexical semantics.

Finally, we will consider the example in Fig.3.3 about letter recognition by touching. As discussed above on the basis of bi-directional percentages of confusions between Cyrillic letters Â and Çwe found that the letter Â is the prototypical member of this pair and Çis the variant. According to the perceptual law of closed figure in Gestalt psychology Â, as closed figure, occupies the position of origin while Ç, as open figure, is variant (Mednick, Pollio & Loftus, 1973). Asymmetric bi-directional distances between Cyrillic letters established on the basis of confusability data in a tactual recognition experiment (see above) confirm also the perceptual law of symmetric figures (like letters in symmetric – asymmetric pairs Ć – Ę, Ň – Ă and others).

All these examples demonstrate the great explanatory power of Tversky's theory and raise confidence in its predictive features. We can rely on this theory in cases where we have no other way to establish prototype – variant relations between some concepts in consciousness. Let us look at the example of Bulgarian conversive verbs *âç Íĕ ŕ ĕ* (take) – *ärŕârŕ ĕ* (give). We do not know if there are tools to determine the prototype member of this pair. However, on the basis of asymmetric percentages of mirror associations of these verbs, we found that the distance (30.1%) from the verb *ärŕârŕ ĕ* (give), as stimulus, to the verb *âç Íĕ ŕ ĕ* (take), as association, is greater than the distance (37.5%) from the verb *âç Íĕ ŕ ĕ* (take), as a stimulus, to the verb *ärŕârŕ ĕ* (give) as association ($t = 3.5$; $p < 0.001$). This means that in Bulgarian consciousness the prototypical, salient member is *ärŕârŕ ĕ* (give).

From white to black or from black to white. Cross-cultural comparison of some prototypes

As stated earlier (Gerganov, 2003), *black* and *white*, *day* and *night*, *badness* and *goodness* are cultural symbols which dominate in the myths, rituals and folklore of many peoples. It is quite natural to suppose that one of the members of these oppositions will play a more central role than the other in the consciousness of representatives of a given culture. This means that they will be in positions of prototypes. The task to reveal which members of oppositions are prototypes in a given culture by using some objective procedure is very promising from a cultural anthropological point of view. The previous sections focused on the explanatory power of Tversky's theory that the prototype-variant relations between concepts in deep structures lead to asymmetrical semantic distances between them in surface structures. There is good reason to use this theory and its operational procedures as a tool for revealing such prototypes which cannot be discovered by other techniques. This tool could be applied successfully to the data of word association norms.

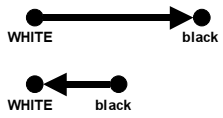
We have association data for 8 language and culture societies (see Table 1). Unfortunately, these sources consist of associations only for the stimulus words *black* and *white*. All the mentioned languages and cultures would be included in the prototype analysis for these concepts. In addition, we will analyze prototype relations for the pair *day – night* in Bulgarian and Romani languages.

Let us consider first which member of the opposition *black – white* occupies the position of prototype in the consciousness of 8 different societies. The cultures in which *white* is the prototype member of the *black – white* opposition are given on Fig. 5. As can be seen from the table, the distance from *white* to *black* is greater than the distance from *black* to *white* for 6 cultures – American, Byelorussia, French, German, Romani, and Russian. Although the differences between corresponding distances are statistically significant only for American, French and Romani, the direction of asymmetry in Byelorussia, German and Rus-

Table 1. Some parameters of word association norms for 8 languages and cultures

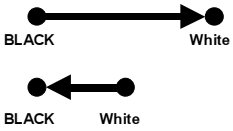
Language	Word associations norms	Number stimulus words	Number of participants in the experiment	Year of publication
Belorussian	Association dictionary of Belorussian language (Citova, 1981)	100	1000	1979
Bulgarian	Bulgarian norms of word associations (Gerganov et al., 1984)	200	1000	1978-1982
English	The 1952 Minnesota word association norms (Jenkins, 1970)	100	1008	1952
French	International Kent-Rosanoff Word Association Norms (Rosenzweig, 1970)	100	288	1955-1956
German	The complete German language norms for responses to 100 words from the Kent-Rosanoff word association test (Russell, 1970)	100	331	1957-1958
Kirghiz	Kirghiz-Russian association dictionary (Titova, 1975)	100	1000	1972
Romani	Association data in this paper	35	73	2004
Russian	Kirghiz-Russian association dictionary (Titova, 1975)	100	500	1972

Figure 5. Cultures with **WHITE** as a prototype (in the mass consciousness of these cultures **WHITE** is prototypic, salient, while **black** is variant, derived, less salient)



Culture	From **WHITE** to **black**	From **black** to **WHITE**	Level of significance of the differences
American	61.2 %	74.5 %	**t = 6.4; p < 0.001**
Byelorussia	5.8 %	6.8 %	t = 0.9; p > 0.05
French	32.6 %	40.2 %	**t = 1.9; p < 0.05**
German	39.0 %	44.4 %	t = 1.4; p > 0.05
Romani	33.0%	54.5%	**t = 2.1; p < 0.05**
Russian	11.6 %	14.4 %	t = 1.3; p > 0.05

Figure 6. Cultures with **BLACK** as prototype (in the mass consciousness of these cultures **BLACK** is prototypic, salient, while **white** is the variant, derived, less salient)



Culture	From ***BLACK*** to ***white***	From ***white*** to ***BLACK***	Level of significance of the differences
Bulgarian	20.4 %	15.9 %	$t = 2.6; p < 0.01$
Kirghizian	20.2 %	16.4 %	$t = 2.2; p < 0.05$

sian is to *white* as the prototype. This means that *white*, when active in the consciousness of these peoples, does not activate *black*. When *black* is in the consciousness of these peoples the contrast *white* arises very easily. (In other words, the representatives of these cultures are more optimistic).

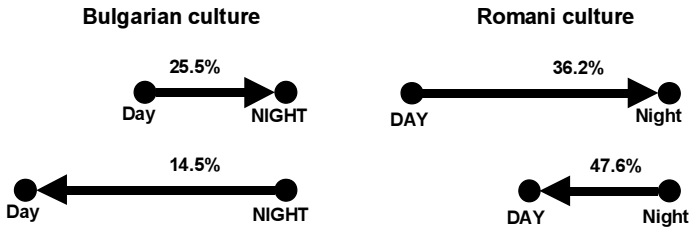
Black is the prototype and *white* is the variant in the mass consciousness of Bulgarians and Kirghizes (see Figure 6). In these cultures the psychosemantic distance from *black* to *white* is greater than the distance from *white* to *black*. The differences are statistically significant. It is more difficult for these peoples to change their consciousness from *black* to *white* than vice versa. Here the *black* is important, salient, anchor for the general attitude towards the world picture. As we will see below, this finding corresponds to other prototype-variant relations which are in the same symbolic field with the opposition *day-night* in Bulgarian.

Bulgarian and Romani prototypes in the semantic opposition day-night

There are mirror associations for *day* and *night* in the Bulgarian and Romani word association data. So we are able to compare the two cultures with respect to these concepts, which are members of the same symbolic field as are *black* and *white*. The percentages of mirror associations for both languages are given on Figure7. The distance (14.5%) from *night* to *day* in Bulgarian is significantly greater than the distance (25.5%) from *day* to *night* ($t = 6.2$; $p < 0.001$). This means that ***night*** is the prototype, salient member and *day* is a variant, less salient in the semantic opposition *day-night*.

The picture in the Romani culture is again different. Here the prototype member of the same opposition is ***day*** and the variant is *night*. In Romani association data the semantic distance (36.2%) from *day* to *night* is greater than the distance (47.6%) from *night* to *day*. The difference here is not statistically significant ($t = 1.27$; $p > 0.05$) but one could expect that if the Romani sample size were larger the difference would be highly significant.

Figure 7. Percentages for mirror associations to the concepts day –night in Bulgarian and Romani cultures



Conclusion

Word association data are an important source for information about prototype-variant relations between words, concepts, symbols, etc. We have shown in the present study how to reveal the prototype of the semantic oppositions *black-white* in 8 different cultures.

Unfortunately, the there are no mirror associations of *day* and *night* in the association norms for the 6 languages and it is impossible to make comparisons with respect to this semantic opposition. However, it could be expected that the prototype-variant relation in the opposition *day-night* would be in coordination with the *black-white* pair for these cultures as well.

The results of the present analysis reveal some very interesting cross-cultural differences in the prototype-variant relations of importance for cultural symbols. Future research will show if it is possible to make differences between cultures with *black-night* and cultures with *white-day* prototypes in the mass consciousness. What is interesting in the present analysis is that Romani and Bulgarian cultures are different with respect of these prototype-variant relations although they have coexisted hundreds of years.

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Appendix

Frequency count of associations to 6 stimulus words from the Kent-Rozanoff word list

Parno **(white) 58** – *kalo* (black) **19**; *lolo* (red) **7**; *lačo* (good) **4**; *fustani* (skirt), *čhavo* (boy) **3**; *gad•o* (non-Roma), *manuš* (man, human), *xurdo* (a little child), *rom* (Roma man) **2**; *baro*, *beng*, *cvjato*, *dives*, *galbeno*, *kazyi*, *lil*, *mato*, *maro*, *parno*, *mi phen*, *šehja*, *sosteja*, *šukar*, *to ilo* **1**

Kalo **(black) 43** – *parno* (white) **23**; *phabaj* (apple), *čhavo* (boy), *lolo* (red) **3**; *drom* (road, way), *pelo* (testis), *lačo* (good), manuš (man, human), beti (ugly) **2**; *boja*, *daravno*, *d•ukel*, *gad•o*, *gudlo*, *lumja*, *rom*, *negari*, *pharo*, *peperi*, *ni mangava les* **1**

Dives **(day) 58** – *rjat* (night) **21**; *lačo* (good) **9**; *tato* (hot), *kham* (sun) **4**; *šukar* (beautiful), *javin* (morning), *baro* (big) **3**; *but* (many), *čhonut* (moon) **2**; *brišimalo*, *del*, *dinjas*, *i detharin*, *khangeri*, *xav maro*, *kalo* **1**;

I rjat **(night) 63** – *dives* (day) **30**; *učharel* (cover, veil), *lači* (good) **4**; *čerhen* (star), *kalo* (black), *loki* (good) **3**; *baro* (big), *i lumja* (the world), *detharin* (morning), *avili* (she came) **2**; *savatoni*, *javin*, *šukar*, *suno*, *tymno*, *zevizila*, *diskoteka*, *baxtali* **1**

Lačo **(good) 63** – *bilačo* (bad) **20**; *čhavo* (boy) **9**; *manuš* (man), *šukar* (beautiful) **7**; *dives* (day), *rom* (man, Roma, Gipsy), *but* (many, a lot of) **3**; *drom* (way, road), *kher* (home), *rjat* (night) **2**; *barvalo*, *čhaj*, *maro*, *rovlo*, *xurdo* **1**

Bilačho **(bad) 57** – *lačo* (good) **20**; *baxtalo* (lucky) **4**; *kajno* (bad) **3**; *čoripe* (poverty, poor), *beng* (devil,clever, sly), *bibaxtalipe* (unlucky), *dilipe* (craziness, madness), *manuš* (man, human), *mulo* (dead man) **2**; *alo mange but*, *naj kysmeto*, *čačipe*, *daj*, *dukhal*, *e dasengoro*, *gad•o*, *grozno*, *isi*, *kher*, *me*, *•uvli*, *xoxaipe*, *xolja*, *sastipe*, *panglipe*, *o thagar*, *myka* **1**