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PHONETIC ICONICTY – LOST IN UNIVERSALITY

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Abstract: *A simple googling of the expression phonetic iconicity gives more than 500,000 results. The number of results for sound symbolism is even higher – 5,240,000. Apparently, the idea that we know what is hidden behind the naming process is attractive and provoking at the same time. It results in numerous research studies with one basic aim – to prove the universal nature of phonetic iconicity. The goal of the paper is to summarize and compare 36 experiments in the field of phonetic iconicity.*

Key words: *phonetic iconicity, language universal, experiment.*

1. Introduction

Phonetic iconicity is one of the most intriguing areas of phonetic symbolism. It iconizes non-acoustic phenomena of extra-linguistic reality, e.g., motion, size, duration. Certain vowels, consonants, suprasegmental features are chosen to represent properties of an object. A special type of synesthesia is chromaesthesia in which certain phonemes are associated with colours (cf. Ramachandrana & Hubbard 2001). Another frequently discussed type of synesthesia is magnitude or size symbolism / phonetic iconicity. It is based on the small – large opposition. It is believed that fronted high vowels are used to express smallness and back low vowels its opposite. Similarly, smallness is associated with fronted consonants and/or high tone.

Apparently, an unequivocal demonstration of the universal nature of phonetic iconicity would cause a turn in linguistics – it would sweep away Saussure's arbitrariness and finish up the speculations on the origin of human language. A desire to bring such a revolution resulted in experiments, studies and research of diverse background. An ambition of this paper is to compare 36 studies into phonetic iconicity. The comparison is based on various criteria – history (section 2), type of synesthesia (section 3) and research methods (section 4). The observations are summarized in section 5.

2. Historical overview

Phonetic iconicity was already mentioned by Plato. For the present-day linguistics it was re-discovered by Jespersen (1922). No doubt, phonetic iconicity strongly supported his view of the origin of language. He distinguishes between the origin of language and origin

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of words (ibid) and believed that the bow-wow and ding-dong theories were right because they identified various sources of vocabulary. As such he neglected the arbitrary character of language.[i]

Jespersen had many followers whose main aim was to prove that iconicity really existed. The most famous experiments of this era were carried out by Sapir (1922) and Bentley and Varon (1930).

In the following years the universal character of iconicity was called into question. Linguists tried to prove its universal character by comparison of languages. The basic idea was – as it is also stated in the Plank and Filimonova's Universal Archive – that certain sounds correspond with certain aspects of extra-linguistic reality, e.g. Universal 1001 *Front vowels predominantly correspond to diminutive and associated categories.* Various research methods were used ranging from experiment to desk research, various aspects of phonetic iconicity were included (psycholinguistic, sociolinguistic) and various languages were compared, e.g. Wertheimer (1958), Osgood (1960), Aztet and Gerard (1965).

In 1970s the universal character of the phonetic iconicity was doubted and its cultural character was discussed. Gebels (1969) was one of the first who stated that phonetic iconicity is not universal but language specific. He came from South Wales, Australia and not from the USA as the majority of his preceedors in this field. Furthermore, discussion concerned degrees of iconicity. Koriat (1975) stated that the "degree to which a certain sound possesses symbolic connotations with regard to a particular dimension of meaning is available to the individual awareness" (1975:548).

Culture is a very broad notion. Numerous issues are covered by this term – history, language, political system, geography, literature, eating habits …. No doubt, nations differ in their cultures and correlations between cultural differences and phonetic iconicity should be identified. An attempt was done by Ultan (1978) who came with the idea of the aerial character of phonetic iconicity. One more fact can be noticed in recent studies. While in the previous decades linguists left the question of the origin of the iconicity unanswered because they were satisfied with explanation that identified its basis with acoustic or kinesthetic factors or a combination of both; in the 1990s the question emerged again. Diffloth (1994), states that phonetic iconicity is language specific and comes up with an articulatory explanation - two different languages may easily use the same phonetic variable (vowel height) to convey the same range of sensations (size) and come up with exactly opposite solutions, both being equally iconic. Furthermore, Lapolla (1994), Ohala (1994) and Fitch (1997) explain phonetic iconicity on the basis of biology and frequency code or formant dispersion.

More than a half of 36 experiments on phonetic iconicity were carried out in the USA, comparing English with some others languages, mainly Ameroindian[ii]. This fact is in accordance with the development in the history of linguistics. American linguists had a unique opportunity to study languages unknown in Europe and compare them with languages already studied in depth. At the same time, various immigrant waves brought new, exotic languages that were contrasted with English.

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3. Type of synesthesia and research

Generally, five types of phonetic iconicity are distinguished: onomatopoeia, kinesthesia, synaesthesia, chromaesthesia and phonaesthesia. However, this division is common to our European culture. In the Japanese language, for example, where the position of phonetic iconicity is much more important, a special terminology was developed. The corresponding terms are *phonomime* (onomatopoea), *phenomime* (synaesthesia) and *psychomime* (phonaesthesia) (Hamano 1998). Experiments and studies chosen for this paper focus on size/magnitude symbolism. Out of 36 studies 18 deal with size symbolism.[iii] Six studies concern various types of synesthesia Two studies deal with proximal and distal forms (Woodworth 1991; Tanze 1971); one study deals with grapheme-colour synestheasia (Ramachandran & Hubbard, 2001); one with visual-verbal (Osgood, 1960); one with shapes (Mauerer et. al. 2006). The study by Oszmianska (2001) compares English phonostemes and Japanese mimetics. Specific place could be assigned to Westcott (1971) who discusses iconicity in general,Wertheimer (1958) who tests fittingness and nonfittingness of meaning and sound, Gebels (1969) dealing with words of sensory nature and French (1972) analyzing the influence of the semantic factor on experiments in phonetic symbolism.

Another criterion specifying the nature of experiments is the field of research. Thus, phonetic iconicity can, inter alia, be studied from the point of view of linguistics. Besides Fitch (biological approach; 1997); Maurer et. al. (psychological approach; 2006); Ramachandran & Hubbard (neurological approach, 2001) and partially Ohala (biological approach, 1994) all of the presented studies are linguistic.

4. Research method

In general, the research method chosen was influenced by the research type. Research of biological, neurological and psychological type is usually carried out by an experiment or observation. Generally, two types of research were identified:

1. Desk research based on listing of words from various languages and comparing them. A typical example is Jespersen (1922, 1933).
2. Experiment both monolingual and cross-linguistic, making use of various methods. In general, the categorization applied in this section follows the specification of research methods into phonetic iconicity by Brown and Nutall (1959). Obviously, in many cases the research method was modified – Aztet (1965), for example, notes that "the procedure is similar to the English-foreign pair's procedure described by Brown and Nuttall (1955)". These modifications were caused by the research aims.

Basically, experiments into phonetic iconicity apply either forced-choice or free choice strategy. In the forced choice strategy the subject matches words/sounds provided with some meanings, senses. The free choice means that nonsense words vary in their sound and the subjects provide the first meaning that comes to mind. Another factor is the nature of stimulus words. This criterion divides the methods into two groups – a) based on

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nonsense words (vowel between two variable consonants) and b) based on existing words. Special attention is paid to the presentation of the stimulus words. In their research into Navajo, Aztet and Gerard (1965) had to rely on oral presentation because Navajo does not exist in written form. The procedure variations include audio-visual method, or exclusively visual or exclusively auditory technique.

On the whole, five methods can be distinguished. Methods 1 – 3 were described by Brown and Nuttal (1955).

1. The English-Foreign-Pairs method. The experimentator gives subjects pairs of contrasting English words (cf. dark-light, fat-thin). On the other side of the paper, pairs of foreign language equivalents are written. Words within a pair are randomly arranged. While subjects know that a given English word matches one or the other of the two foreign words standing opposite, they cannot tell from the arrangement which of the two it is. Subjects hear the words pronounced (the foreign words by native speakers) in the order in which they appear on the sheet. – (cf. Brown, Black and Horowitz (1955).
2. The Foreign-Foreign method – Stimulus words and two response words are given to subjects. Their task is to choose the equivalent of the stimulus word.
3. The Same-Different procedure – as an example, Brown et al. describes research carried out by Brackbill and Little (1957) who listed 50 words constituting a random sample of concepts of high frequency in usage. This was not a list restricted to contrasting pairs but included such terms as when, first, this, etc. The English forms were translated into Chinese, Japanese, and Hebrew. Subjects were presented with two words at a time (the two being from different languages) and were asked to judge whether they were the same or different in meaning. The experimenter told subjects that half of the pairs were the same. In making up their pairs the authors arrived at the incorrect matching by random assignment of the words remaining after the correct pairs had been matched, and so words that were different were not necessarily antonymic or even contrasting. The four languages were combined in all possible sets of two to yield six different collections of paired words. With this procedure subjects were able to guess with better than chance success for English-Hebrew (53%), Chinese –Japanese (54,8%) and Hebrew-Japanese (52,3%), but with success at or even significantly below chance levels with English-Japanese (50,3%), English-Chinese (49,9%), and Chinese-Hebrew (48,1%).
4. Informants match nonsense words (or words from unknown languages) with a scale. This method, developed by Greenberg and Jenkins (1966) is frequently used. It could also be called the vowel sounds-scales method. Two groups of subjects rate audiotaped vowel sounds on scales. Another example is Fischer-Jørgensen research (1978) in which vowel categories are matched with the members of a selected set of adjective pairs.
5. Nonsense words and arbitrary referents are given; e.g. nonsense words and English referents (e.g. Lapolla 1994).

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5. Some observations

5.1. Universal or not?

The motivation for studying various experiments into phonetic iconicity was a simple question: *Is phonetic iconicity universal or not?* Since there is no unequivocal answer to this question it is more convenient to ask: *Has the hypothesis been supported or denied?* Altogether there were 35 studies (Bentley and Varon, 1933 focused rather on research methods than the existence of the phonetic iconicity) and only 2 of them denied the universal nature of phonetic iconicity (Aztet et. al, 1965; Bracbill&Little, 1956). The rest of the studies give a positive answer but usually with some *but* addendum. Thus, Roper et al. (1956) and many others say that it is culture dependent; Koriat (1975) argues that it exists in some words only; and Wescott (1971) calls into the question the degree of iconicity. Special position can be assigned to Diffloth (1994) and Gebels (1969) who prove that phonetic iconicity exists but it is language specific; and Ultan (1978) who points out the aerial character of the phenomenon. The aerial nature of phonetic iconicity is the subject of recent research by Gregová (2009) and Panócová (2010).

5.2. Brackbill and Little (1957)

The experiment of Brackbill and Little was very interesting from the point of view of both methods and results into phonetic iconicity. They built their experiment on criticism of the experiment carried out by Brown, Black and Horowitz (1955). The results of this experiment supported the hypotheses of universal character of phonetic iconicity. 86 English-speaking subjects were asked to guess the English meanings of 21 pairs of antonyms presented in three foreign languages – Hindi, Czech and Chinese. (English-foreign method). A summary of what was criticized by Brackbill and Little and what they did in their own experiment is given in a chart on the next page. The universal character of phonetic iconicity was not proved by Brackbill and Little. On the contrary, five crucial factors influencing the result were stated (1957:316):

1. Length—words containing the same number of letters and/or syllables tended to be marked "same" and those of differing lengths "different."
2. Vowels—words containing exclusively or predominantly vowels of the same group *(a-o-u* or *i-e)* tended to be marked "same" whereas when the vowels in the two words were from different groups, they were judged "different."
3. Consonants—words containing exclusively the same consonant types (sibilants, explosives, etc.) were marked "same." Differing consonant types in the two words elicited the "different" response.
4. Hyphenation or spacing—where perceptible spacing occurred in both words they tended to be marked "same."
5. Connotation—if the two words or parts thereof suggested a single English concept, the two words tended to be marked “same”.

The following chart summarizes what was criticized by Brackbill and Little and what they did in their own experiment.

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	Brown, Black, Horowitz – what was used by them and criticized by Brackbill and Little	**Brackbill, Little – what was criticized and suggested**	**What Brackbill and Little did**
presentation method (visual vs. auditory)	both visual and auditory stimuli used	if the hypothesis concerns a correspondence between meaning and sound exclusively auditory cues should be used.	3 methods of presentations used – visual, auditory and visual-auditory 2 methods used – English-Foreign and Foreign-Foreign
meanings	as the hypothesis is concerned with meanings that have some intercultural commonality, it does not apply to associational meanings.	to test the associative meanings, foreign-foreign method should be applied	
translations	did not check the correctness.	use back translation	3 translators per one language were used + 1 back translator
the population of concepts	The sampling was based on the Thorndike-Lorge word list with two considerations in mind: 1. the words should name sense experiences; 2. the members of a pair should both fall in the frequency range of 100 or over per million.	-the frequency is lower -three of the word pairs are not antonyms - the sense character is debatable	-words of concepts of high frequency of occurrence – they used a list of the most frequently used concepts in English, Spanish, French and German + principal parts of speech
universal sound-meaning relations	exist in all languages. English, Czech and Hindi are members of the same language group.	-they used a small sample of languages -the sample languages should be noncognate	-used four major noncognate languages: Hebrew, Japanese, Chinese and English
results	Subjects were able to guess the English meanings of Chinese words significantly above chance. Subjects were able to guess the English equivalents of Japanese words in a similarly successful fashion.		were not were not

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5.3. Explanation for sound symbolism

Not all researchers tried to explain the existence of phonetic iconicity. Of those who approved its existence (33) only 13 tried to explain the phenomenon. Two pioneers of research into phonetic iconicity, Jepsersen and Sapir, suggested acoustic, kinesthetic or articulatory explanation or combination of them. According to the articulatory explanation (and also kinesthetic, as it refers to muscle sense), iconicity is caused by the way of articulation. Thus, for example, small lip aperture is associated with something small. On the other hand, the acoustic explanation focuses on the perception of the sound, e.g. high pitch of the vowel. The articulatory/acoustic explanation is supported also by Diffloth (1994) and Shinohara & Kawahara (2010). French (1972) searched for explanation in semantics and states that the results of studies into phonetic iconicity can be explained by the shared semantic properties of the response words tending to cluster. Koriat (1975) argues that symbolic connotations are stored in the lexicon; certain sounds symbolize certain semantic categories and it is innate. The innate nature of phonetic iconicity is stated also by Ohala (1994) who represents the idea of the frequency code which is innate, too. He understands the frequency code as the association of high acoustic frequency with smallness and low acoustic frequency with largeness. Berlin (1994) and Lapolla (1994) represent the same explanation which is not far from Sapir's explanation. Fitch (1997) based his explanation on frequency code and proposes a new acoustic variable – formant dispersion. Formant dispersion is "the averaged difference between successive formant frequencies, and was found to be closely tied to both vocal tract length and body size. ". Maurer et al. (2006) base their explanation on biology, too and their search for explanation in the connections between primary and sensory cortical areas. Although Ranachandran and Hubbard (2001) do not deal with cortical areas, their neurological explanation supports the idea of the sensory nature of synesthesia. All in all, the idea of sensory nature of sound symbolism appeared in the ideas of Sapir (1929) when he stressed that the subjects could somewhat *feel* sound symbolism in sound contrast.

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