EMBODIMENT OF NAMES OF PLANTS IN GERMAN LANGUAGE

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Abstract

This paper deals with a concept of great significance in cognitive linguistics – embodiment. It is based on the notion that the mind is not abstract and independent from the body, but that it has a physical nature. It grows out of biological predispositions, as well as out of the physical and social experience of a person, this experience is reflected in his/her language. Specific examples of embodiment in commonly used word expressions follow the theoretical part of the work. The emphasis is put on its application in the field of special vocabulary, with a focus on the names of plants. The impact of embodiment is documented in selected German names of plants, pictures are included for reference.

Keywords: *cognitive linguistics, embodiment, plants naming, German language*

1. INTRODUCTION

The problem of the relationship between body and mind has been posed since antiquity. Many authors from ancient times up to the present day have dealt with this topic, but there is no consensus. The well-known metaphor of a mind-computer still resonates today. According to this theory the mind mechanically manipulates abstract symbols in the same way as a computer does with algorithms. We must ask, is this really so?

As early as the last century people questioned whether this approach remains valid. A significant number of studies have been compiled showing the impact of the physical anchoring of the mind (for more detailed information see Lakoff 1990 or Rebrová 2012). The results obtained from the research are a matrix for the now rapidly evolving *paradigm of embodied cognition*, which emphasizes the participation of the body in reasoning and language use and thus links perception, motor skills, sensorimotor intelligence and language functions. Its motive is to "examine cognition as a combination of all three aspects of mind, body and environment" (Rebrová 2012, p. 127). The following work, dedicated to the naming of plants, is based on the assumption of embodied cognition, which also naturally expresses embodiment – an important concept of cognitive linguistics.

2. EMBODIMENT

The term embodiment comes from the English language and means that the body is in the mind, and the mind is in the body. Occasionally, the term may also be encountered as materialization. In this paper the original understanding for the English term is applied. As the word itself suggests, the body plays the main role. By means of five senses, and their organs, it provides - for example - spatial perception which can be seen as a universal overview from which the basal experience is based. We create ideas on the basis of gained experience (evidenced by the well-known idea of John Locke: "There is nothing in the intellect which was not first in the senses"). Other ideas are also based on the body because they are based on primary projections. Those perceived ideas can then be expressed in words. The core principle of embodiment originates in the fact that the world is perceived by mapping body-related knowledge to objects in the outer world.

All thinking (not only specific but also abstract) is enabled by the body; "Reason grows out of the nature of the organism and all that contributes to its individual and collective experience: its genetic inheritance, the nature of the environment it lives in, the way it functions in that environment, the nature of its social functioning, and the like" (Lakoff 1990, Preface, p. XV). The content of thinking is then structured and categorized. Meaning is attributed to our conceptional structure due to its interdependence with its

source – the preconceptual body structure. Preconceptual experience results from the existence of the body in the environment and is repeated and direct. Two structures are distinguished:

A. "Basic-level structure: Basic-level categories are defined by the convergence of our gestalt perception, our capacity for bodily movement, and our ability to form rich mental images.

B. Kinesthetic image-schematic structure: Image schemas are relatively simple structures that constantly recur in our everyday bodily experience: CONTAINERS, PATHS, LINKS, FORCES, BALANCE, and in various orientations and relations: UP-DOWN, FRONT-BACK, PART-WHOLE, CENTER-PERIPHERY, etc." (Lakoff 1990, p. 267).

Even abstract concepts can be structured through these structures. They gain the meaning indirectly, either through the projections on lower or higher categories of basic-level categories, or through metaphorical projections. We cannot handle something we have no idea about, but we are constantly looking for analogies (for more details see e.g. the description of Meno's paradox in Schulze 2009).

Human *imaginative mechanisms* are indispensable in the process of thinking, as they bridge the concepts reflecting directly structured experience with the world around us and secondary categorized and structured terms. They provide us with the means to understand many domains without having own preconceptual structures of them, and therefore are a fundamental principle of categorization.

These mechanisms are mainly *conceptual metonymy and metaphor* which can be verbally manifested as metaphors and metonymies. Metonymy is when within one domain one element points to another element in close proximity, a part represents a whole, or vice versa (reading Hesse). Metaphor does not move along one domain, but each one has a source and a target domain (for example liquid and emotion) and a link between them (emotions are liquid in a container). The perception of similarity between aspects of both domains enables metaphor to structure parts of one domain by aspects of the second (Pörings and Schmitz 2003).

3. EMBODIMENT AND LANGUAGE

"Language is made meaningful because it is directly tied to meaningful thought and depends upon the nature of thought" (Lakoff 1990, p. 291). It is based on concepts motivated by human experience; therefore it also uses general cognitive apparatus and the same structure of categories. Therefore, language is not separated from the body and sensorimotor processes (Takáč 2012). "On the contrary, understanding of language, especially specific words and sentences, is embodied and linked with perception and action" (Rebrová 2012, p. 142). Examination of activity of the motor cortex, while reading and listening to verbs for different movements performed by different parts of the body (e.g. leg - kick), shows that when processing verbs of motion a very rapid activation appears (in milliseconds) of the somatotopically organized motor cortex (various sites are active for different body parts), suggesting that motor resonance is a part of the process of understanding (for details of the results and other studies, see Rebrová 2012).

There are many examples of commonly used terms that are structured in a metaphorical projection of the human body. Consider connections: *foot of the mountain/Fuß des Berges*. Based on the perception of one's body and spatial orientation, we know that the foot is the lowest part of the body. When structure of the body is projected to the mountain then the lowest part is also called the foot of the mountain. Although the Slovak version *úpätie hory* does not exactly retain the original projection of words, in order uses it is retained; such as with the use of at *the foot of the page* of a document (*päta stránky* nejakého dokumentu), where the foot (heel) is also the lowest part. In the term of centrality the foot is then a central member of the category and foot of the mountain and foot of the page are non-central members associated with the foot using metaphor. Dealing with feet, even a *leg of the table* is nothing more than a metaphorical reflection of the lower part of the body, the table itself (as an inanimate object) has no limbs. In direct opposition, is the head, which has always been regarded as a place where important things are happening and where essential decisions are made. This metaphor also structures more abstract concepts, for example companies. The boss, who is the highest authority, is the transfer

of structure of the body to the domain of a company and is also called *the head of the company*. An equally well-known term is *the head of the family*.

Verbal expressions for emotions have a complex conceptual structure; however, emotions are clearly anchored in the physical experience. Phrases like *"I hit the boiling point"* are based on metaphor where emotions are fluid in the container, and in the case of anger (target domain) we talk about increased temperature (source domain) of liquid in the container where the body is the container. When talking about anger also metonymic statements occur: *"She started to tremble with anger, turned red with anger"* or *"He is a hot head"* where these terms are motivated by our physiology. Increase of a body temperature and internal pressure (causing redness) as well as tremors and problems with accurate perception can be regarded as physiological signs of anger (the category of anger, Lakoff 1990).

However, it is important to note that conceptual systems are not determined by experience, experience is only their motivation. It means that the same experience can provide an equally good motivation for different conceptual systems. From our own existence (in our own body) we can tell which side is a *front* side, in its metaphorical application in relation to other objects. In European languages we understand the front side as the one which we face. This is completely different in the Hausa language. In language of the Hausa the word front refers to the reversed side. Their solution may sound strange to us, but it is just as consistent with experience as ours and both options are equally acceptable (see e.g. Lakoff 1990). This also applies to colours. We all have the same biological conditions for their perception, but their categorization in us is to some extent influenced by a cultural custom. As a result, for example, The Dani ethnic group uses only two terms for colours, while we use many more. It also happens that the systems differ by the presence and absence of some important concepts.

In addition to conceptual embodiment we also need to consider *functional embodiment*. Which is characterized as: "The idea that certain concepts are not merely *understood intellectually*; rather, they are *used* automatically, unconsciously, and without noticeable effort as part of normal functioning. Concepts used in this way have a different and more important psychological status than those that are only thought about consciously" (Lakoff 1990, p. 12-13). They are mostly encoded directly into the *grammar of the language*, either through grammatical morpheme, or structures. Users of language must quickly and automatically decide for one of them, for speakers of European languages it is e.g. preposition, for Hopi speakers it is verb prefix that distinguishes types of movement.

By using metaphorical projections of names of body parts on objects spatial location can also be expressed. This happens systematically in the Mexican Mixtec language. This language has no system of prepositions and grammar cases so relationships between parts of the body enable understanding of the spatial position. In Mixtec the sentence "I am sitting *on a tree branch*." would match the phrase "Sitting *arm-tree*." and equivalent to the connection *on the roof of the house* would be *back-house*. Flat roof is compared to a back of an animal, as both are located horizontally and above the ground. Similarly, more abstract relations in the sentence are expressed metaphorically: "*I taught* my *son to work*." It shows the connection between *face-son* and interaction by learning (for more examples and details see Lakoff 1990).

Physical experience and spatial perception are ultimately reflected also in the application and understanding of deictic expressions. If we want to locate something, the position is based on the position of our body. Words like ‘here’ and ‘now’ are determined by direct proximity to us or physical deliverability, ‘there’ is not within our reach as well as ‘then’. The distance from us decides the use of demonstrative pronouns this and that (for details regarding deictics, see Pörings and Schmitz 2003).

4. CLASSIFICATION AND NAMING OF PLANTS

Plants are one of the oldest areas of lexis. Plants have been a part of our lives from time immemorial, they are all around us and therefore it is natural that we try to organize them, name them and remember them. Filipino Hanunoo use individual terms for more than 1,800 plant names, and they use more than 150 words to describe just the elementary parts of plants (Lévi-Strauss 1996). In addition to distinguishing the huge number of varieties of plant and animal life, the sign of such social groups with

economies based on subsistence is that they know the customs and way of life of each species. They care about the relationships between them, even if they are not directly useful. "Knowledge of animal and plant species is not result of their usefulness: their usefulness or matter of interest is postulated because they are already known" (Lévi-Strauss 1996, p. 23). It is clear that such a large number of plants cannot be remembered as a list. How does their classification work? It relies mainly on physical similarities and differences (Lakoff 1990; Lévi-Strauss 1996; Anderson 2011).

We structure the area of plants like everything else. The above-mentioned basic-level categories have highly developed internal structure, but are also the easiest to process. Various research demonstrates that things at this level are named spontaneously, their names are shorter, children learn them first, they are well remembered and are often used. The basic level is in the middle of the taxonomic hierarchy and categorization upwards and downwards derives from it. Most of our knowledge is also arranged at this level (especially about a whole, its parts and their functions). Objects are seen here as gestalt and are characterized by mental image and by general motor activities based on our interactions with them (see Lakoff 1990 for details).

At the basic level in folk biology the perception of overall shape is the basis and folk classification is then the base for scientific classification of nature. Carl Linnaeus, in fact, was guided by *externa facie* - external appearance. He defined genus in accordance with our perceptual system to give the basic characteristics of the plant and to be instantly recognizable and memorable. Key to this was the shape of the fruit. Species provided differentiating characteristics. Therefore, the conformity of the basic level in folk biology within the level of scientific genus is not random. This is confirmed by the research of Brent Berlin and his colleagues who compared folk and scientific classification of plants and animals in the Mexican language Tzeltal. They concluded that the respondents did not have names for plant life (plant), form (tree) nor the basic specifications (deciduous tree), thus higher levels of folk classification. The basic level of genus (oak) was, on the contrary, fundamental psychologically. The generic names of the plants were given to plants with known species (sessile oak) and which they had a name for (Lakoff 1990).

However, it should be noted that American students following the research of Eleanor Rosch and her colleagues preferred, at a basic level in biology - unlike other domains - the level of life forms (tree) to genus (Anderson 2011). While this does not weaken the position of the genus, it suggests that social experience affects the functional basic-level categorization. For example, people living in cities categorize plants on a lower specific basic level, while experts (due to their education) push the boundaries towards more specific levels.

Although Linné's nomenclature is certainly not perfect, it is the best available system for precisely referring to plants, regardless of their names in individual languages. Usually, in different languages the same plant has different names, because its various features can be taken into account. If any of its features are particularly noticeable, names of the plant in different languages may be equally motivated.

Concerning that something motivated is easier to learn and remember than anything unmotivated, the motivation plays central role in the lexicon and grammar. "In natural language, motivation seems to be more the norm than the exception" (Lakoff 1990, p. 346), which is also demonstrated in the Slovak language, where according Dolník (1990) more than two-thirds of words are motivated. It means that most of them are not arbitrary or unmotivated, even predictable, but are placed somewhere in between. We understand motivation as a direct causal relationship between form and meaning of linguistic units and indirect relationship conditioned by relationship of unit to paradigmatically corresponding to words in the language (Dolník 1990).

"Botanical names are motivated by external features (colour, shape of the plant, its flowers) and internal (real or apparent), properties that highlight the potential uses of plants in human life, by the place of occurrence, time of intense growth, flowering and so on" (Čižmárová 2008, p. 28). Nomination plays an important role in their formation and is based on its linguistic form assigned to a content and the result is a linguistic unit. We distinguish between direct and indirect nomination, which is related to the semantic motivation. The basis of semantic motivation (motivation of meaning) is conditionality of secondary meaning to basis meaning. "New names, semantically motivated with use of already existing

forms of the words, originate from indirect motivation. These words are used to name new facts, which are connected with original facts by similarity relationship or some other connection." (Čižmárová 2008, p. 23). Metaphor and metonymy are applied.

Mária Čižmárová recognized, in her research of botanical nomenclature, setting of factual units of words which were the source of the name. She then put them into the following nomination models:

1. "names of plants, trees and shrubs → names of other plants,
2. names of animals or their bodily organs → names of medicinal plants,
3. names of things of the material world → names of medicinal plants,
4. names of food products and catering → names of medicinal plants,
5. flavour characteristics of plants → plant names,
6. colouring of plants → plant names,
7. names of the months and seasons → plant names,
8. medicinal and magical properties of plants → plant names,
9. form of growth → plant names,
10. names of people → plant names" (Čižmárová 2008, p. 93-95).

They were motivated by "similarity with other plants, animals or things of the material world, colouring of plants or their parts, flavour of plants, touch sensations, period of intense growth, flowering of plants or fruit ripening, place of occurrence, manner of growth or vegetation, healing effects, sound and fragrance of plants" (Čižmárová 2008, p. 95).

5. EMBODIMENT AND NAMES OF PLANTS

The presence of embodiment of plant naming will be demonstrated using examples from the German language. The following plants were selected on the basis of their similarity to different parts of the human or animal body, which is metaphorically reflected and embodied in their names.

Plant names are provided in *German*, *Latin*, *Slovak* and their common *English* form (see Marhold & Hindák 1998; Karasek & Merbold 2006; Institut für Wirtschaftsökologie n.d.):

Blutwurz. *Potentilla erecta,* nátržník vzpriamený, Common Tormentil. The component Blut (blood) in the title refers to a special feature of the rhizomes of the plant, which when cut open evokes blood (Picture 1, on the right). In addition, it also serves to soothe bleeding when used medicinally.

Picture 1. Blutwurz and longitudinal cut of its rhizomes

Gemeiner Löwenzahn. *Taraxacum officinale*, púpava lekárska, Common Dandelion. A well-known medicinal plant, which has over 500 folk names in the German language. The name Löwenzahn originated from metaphorical transfer, it is the similarity of part of the plant (the leaves) to a part of the body (Zahn – tooth) of an animal (Löwe – lion), lion's tooth (Picture 2 on the right).

Picture 2. Gemeiner Löwenzahn and a lion's tooth

Gemeiner Wasserdarm. *Stellaria aquatica,* mäkkuľa vodná, Giant Chickweed. When the stem is cracked, it is possible to see vascular bundles inside (Picture 3 on the right) which are similar to the intestines (Darm) of the human body, which are the basis for this designation.

Picture 3. Gemeiner Wasserdarm and a cross section

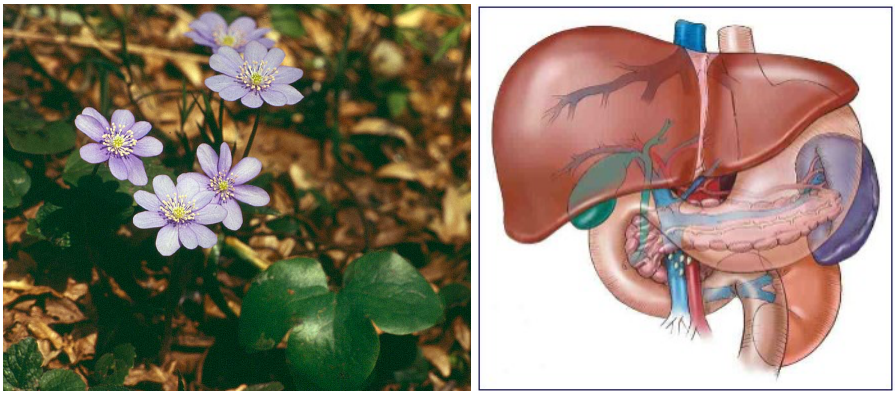
Gewöhnlicher Natternkopf. *Echium vulgare,* hadinec obyčajný, Viper's Bugloss. The Slovak language has a similar name for this plant, whose motivation is the appearance of a flower with salient stamens in a forked style in the shape of a snake's tongue (Natter means adder, colloquially a snake). Especially after the disappearance of the crown petals fruit with style (Picture 4, on the right) seen from the side evokes the head (Kopf) of a snake.

Picture 4. Gewöhnlicher Natternkopf and its fruit on the bottom right

Kleines Löwenmaul. *Linaria vulgaris*, pyštek obyčajný, Common Toadflax. This medicinal plant has been named as a metaphorical projection of lion's mouth (Maul). The motivation was unusually wide open flowers (Picture 5). Sometimes the name is used in a diminutive form, which is also typical for the Slovak language, where a facial part of an animal was the motivation for the name.

Picture 5. Kleines Löwenmaul and lion´s mouth

Leberblümchen. *Hepatica nobilis,* pečeňovník trojlaločný, Common Hepatica. The origin of the name of this plant in Germany, where it is a protected species, is motivated by the liver (Leber). Its leaves resemble the shape of this organ, pictured in picture 6 in reddish-brown colour. The Slovak language shares the same motivation.



Picture 6. Leberblümchen and a liver

Ohr-Weide. *Salix aurita,* vŕba ušatá, Eared Willow. This bush (Picture 7) gets its name because its egg-shaped leaves, which have two small leaves in the shape of ears (Ohr).

Picture 7. Ohr-Weide

Rotes Waldvögelein. *Cephalanthera rubra,* prilbovka červená, Red Helleborine. It is a species of forest orchids with flowers that resemble a bird's beak (Picture 8 on the right). That is where it got its name Vög(e)lein (bird).

Picture 8. Rotes Waldvögelein and bird beak

Tränendes Herz. *Dicentra spectabilis,* srdcovka nádherná, Bleeding Heart. The name of this plant, as in Slovak, is related to its shape (Picture 9). Pink crown petals together form the shape of the heart (Herz), from which white teardrop-shaped petals hang down (Träne).

Picture 9. Tränendes Herz

Weißes Fingerkraut. *Potentilla alba,* nátržník biely, White Cinquefoil. Its name lies in metaphorical projection of fingers (Finger) resulting from the rosette arrangement and shape of the leaves (Picture 10).

Picture 10. Weißes Fingerkraut

The result of this analysis, including a limited sample of plant names, is that our own physical experience and interaction with the environment play a significant role in their naming. It was not possible to include all of the examples in the previously mentioned nominational models, with the exception of names motivated by body parts of animals (model no. 2: *names of animals or their bodily organs → names of medicinal plants*). Indeed, in the case of model no. 8: *medicinal and magical properties of plants → plant names* parts of the body did not act as the basis of similarity, but the naming convention was based on the healing effects of plants on those parts. We therefore propose the creation of a new nomination model: *the names of body parts → names of plants*.

6. CONCLUSION

Thinking is in no case an abstract operation utilizing symbols, symbols that would be *in process* regardless of the thinking of the individual. It takes place within a specific context, the body, and is also dependent on physical limitations. Biological realities and experience in the broad sense define it, while physical and social experience affect it. They do not specialize in just one area, but on the basis of the imaginative principle we transfer them into other areas. Language is no exception. Much of what originally comes from our sensory experience is quite naturally embodied in different linguistic expressions. We discover that our language is rooted in (our) bodily form. The same applies to the naming of plants. People named unknown forest plants according to those they already knew - plants used in agriculture. Our sample is of a similar process: from the known (organs and parts of our bodies, or even animal bodies) to the less known (according to some external similarity of a named plant).

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PICTURES

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Picture 1 on the right: http://www.chemieunterricht.de/dc2/naturst/blutwurz.htm [18.8.2022]

Picture 2 on the left: http://lebensmittel-warenkunde.de/lebensmittel/gemuese/gemueseprodukte/loewenzahnblaetter.html [18.8.2022]

Picture 2 on the right: http://johannaschall.blogspot.sk/2012/04/gewohnlicher-lowenzahn.html [18.8.2022]

Picture 3 on the left: http://www.naturspaziergang.de/Pflanzen/Stellaria_aquatica.htm [18.8.2022]

Picture 3 on the right: http://www.flickr.com/photos/12639178@N07/6125559203/ [18.8.2022]

Picture 4 on the left: http://www.luontoportti.com/suomi/de/kukkakasvit/gewohnlicher-natternkopf [18.8.2022]

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Picture 5 on the left: http://loewenmaeulchen.net/linaria/ [18.8.2022]

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Picture 6 on the left: http://www.landesumweltamt.nrw.de/natur/portraits/pflanzen/leberbluemchen.htm x [18.8.2022]

Picture 6 on the right: http://www.2012rok.sk/wp/priciny-chorob/6789-jarna-ocista-pre-zdravie-mladost-krasu-dajte-sancu-svojej-peceni [18.8.2022]

Picture 7: http://upload.wikimedia.org/wikipedia/commons/7/75/Salix_aurita.jpeg [18.8.2022]

Picture 8 on the left: http://alpenflora.de.tl/Pflanzengalerien/pic-1000289.htm [18.8.2022]

Picture 8 on the right: http://de.123rf.com/photo_8203160_southern-ground-hornbill-vogel-mit-neugierigen-blick-und-grosse-gelbe-schnabel.html [18.8.2022]

Picture 9: http://www.fotocommunity.de/pc/pc/display/17997005 [18.8.2022]

Picture 10: http://www.ruhr-uni-bochum.de/boga/html/Potentilla_alba_Foto.html x [18.8.2022]