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THE CONSTRUCTIONAL APPROACH TO “HAND” AND “LEG” IN
ENGLISH

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Abstract

The human body is one of the few domains of everyday life perceived and coded by all languages of the world. According to the embodiment hypothesis, the universal physical experience is one of the bases for the way cognition and language are structured. The latter is reflected, among other things, in the fact that body part terms are universally polysemic and involved in various idioms. Such linguistic properties of lexemes denoting parts of the body are both the consequence and the proof of the metaphorical and metonymical nature of language. In this paper, I shall analyse the polysemy and idioms of *hand* and *leg* in English on the examples from the Corpus of Contemporary American English and compare them to the ways the same body part terms are coded in some unrelated languages. My presupposition, which I aim to prove, is that metaphor, metonymy and body-part polysemy and idiomaticity are linguistically universal.

Keywords: Body part terms; Embodiment; Metaphor; Metonymy; Motivation; Polysemy; Idioms

Introduction

Body is one of the basic domains which are universally perceived, by the members of every linguistic community in the world, and pre-linguistically – before acquiring language. As a result, the domain of the body is coded in every language. According to Kövecses, “[t]he aspects that are especially utilised in metaphorical comprehension involve various parts of the body, including the head, face, legs, hands, back, heart, bones, shoulders, and so on.” (2002: 16) The author also mentions some examples (“the *heart* of the problem,” “to *shoulder* a responsibility,” “the *head* of the department”) as well as the fact that over 2,000 out of 12,000 English idioms examined in a study are related to the domain of the body (2002:16, emphasis original). Kövecses then comes to the conclusion that, from the point of view of cognitive linguistics, “the ‘embodiment’ of meaning” might be the most important notion for constructing metaphors (2002:16). Rohrer, on the other hand, defines “the embodiment hypothesis” as “...the claim that human physical, cognitive, and social embodiment ground our conceptual and linguistic systems.” (2007:27) Since Lakoff and Johnson state that “[o]ur ordinary conceptual system, in terms of which we both think and act, is fundamentally metaphorical in nature,” (1980:3) while Brdar claims that metonymies are universal despite their cross-linguistic variety (2009:261), we can come to the conclusion that the domain of the human body is the central one in the way we perceive the world and code it in language. The linguistic evidence given by the authors themselves proves the notion. Although they claim that physical experience is not the only type of experience, they point out that “... we typically conceptualize the nonphysical *in terms of* the physical – that is, we conceptualize the less clearly delineated in terms of the more clearly delineated.” (1980:59, emphasis original) Taking their claim into consideration, we can come to the conclusion that ‘heart,’ ‘shoulder’ and ‘head’ are more salient than ‘core,’ ‘taking a responsibility’ and ‘leader,’ because they are more concrete than the latter. Since language (like our conceptualisation of the world) is metaphorical, as stated by Lakoff and Johnson, the motivation for the expressions such as “the heart of the problem,” “to shoulder a responsibility” or “the head of the department” is obvious. Despite the differences in languages of the world, body part lexemes feature prominently not only in Indo-European languages, but also in languages such as Thaayorre (Australia), Indonesian, Malay and Basque (Gaby 2008:27, Siahaan 2008:45, Goddard 2008:87-88, Ibarretxe-Antuñano 2008:103).

The aim of this paper is to analyse the polysemy and idioms of the English nouns *hand* and *leg*, as well as of their counterparts in some other, less known languages, in order to prove the universality of metaphor and metonymy as some of the basic ways language functions, as well as to prove the resulting universal polysemy and idiomaticity of body part terms. The facts that, according to Kövecses, every sixth idiom in English has to do with body part terms, and that idioms are used (in every language) on a daily basis, may lead to the conclusion that body part idioms feature prominently in the everyday of native English speakers. Consequently, research on such expressions could be valuable to give further insight into the structure and functioning of the English language. As mentioned above, the meanings of the terms for *hand* and *leg* (and/or, when necessary, those for the closely related *arm* and *foot*) in various languages from all over the world will be dealt with. The intention for the latter is to compare those languages to English with respect to body part idioms and polysemy, as well as to confirm the hypothesis about the domain of the human body as a linguistic universal. The methods I shall use in my paper are corpus analysis for English, and scholarly articles for other languages. Corpora are the only source of the data about the use of language, and such data shows the frequency of various meanings, which goes hand in hand with their cognitive salience. As a result, corpus analysis is the only method suitable for research of *hand* and *leg* in English. Since other languages are analysed in this paper primarily in order to compare them to English, the articles on their coding of body parts are the most useful method in their case.

When structure is concerned, this paper starts with the chapter on the embodiment hypothesis, the key theory for understanding the role of the body in language. The results of the corpus research on *hand* and *leg* in English, as well as the following conclusions about their idioms and polysemy, are dealt with in separate subchapters of the chapter *The Polysemy and Idioms of 'hand' and 'leg' in English*. The next chapter illustrates the idioms and polysemy of *hand* and *leg* in other languages, followed by a chapter on methodology, which precedes the conclusion.

The Embodiment Hypothesis

The domain of the human body is central to the way our experience is structured. According to Rohrer, “[f]rom cognitive neuroscience we know that the physical brain does not process visual information in a disembodied, nonimagistic way, but instead maintains the perceptual topology of images presented to it, and then re-represents increasingly abstract spatial and imagistic details of that topology.” (2007:26) The author then mentions Langacker’s metaphor of glasses, referring to the way we perceive the world (2007:26-27), and concludes that “[i]n Cognitive Linguistics, we examine how our ‘glasses’—that is, our physical, cognitive, and social embodiment—ground our linguistic conceptualizations.” (2007: 27) Rohrer states that “[i]n its broadest definition, the *embodiment* hypothesis is the claim that *human physical, cognitive, and social embodiment ground our conceptual and linguistic systems.*” (2007:27, emphasis original)

Lakoff comes up with the definitions of two kinds of embodiment: conceptual embodiment is “[t]he idea that the properties of certain categories are a consequence of the nature of human biological capacities and of the experience of functioning in a physical and social environment...,” while functional embodiment is “[t]he idea that certain concepts are not merely *understood intellectually*; rather, they are *used* automatically, unconsciously and without noticeable effort as part of normal functioning...” (1987:12-13, emphasis original) As implied by the passage above, the linguistic coding of the domain of the body has to do with conceptual embodiment. Lakoff proves that language is structured according to the extra-linguistic experience.

Cognitive models that are embodied are not made up merely of items in an artificial language. In experientialist semantics, meaning is understood via real experiences in a very real world with very real bodies. In objectivist accounts, such experiences are simply absent. It is as though human beings did not exist, and their language and its (not *their*) meanings existed without any beings at all. What research on categorization shows clearly is that human categories are very much tied to human experiences and that any attempt to account for them free of such experience is doomed to failure. (1987:206, emphasis original)

This passage makes it clear that language is shaped by experience, in addition to (conceptual) embodiment. Stanojević puts an emphasis upon the relation between these two factors, as well as upon the multi-layer structure of the latter, which he defines as “the set of all restrictions and tendencies which connect perception and conceptualization” (2013:15,

translation mine). He also states that "...it occurs on various levels – from the level of single neurons to the cultural level..." (ibid.) According to the author, "...our body influences the way in which people perceive the external world and therefore also the structure of the human knowledge of the world. Not only does embodiment restrict the range of the input, but it also, along with experience, takes part in the shaping of the conceptual structure." (2013:16, translation mine)

The latter point is especially important, because the conceptual structure is reflected in the language structure, which is proven by the examples of body part idioms such as "the *heart* of the problem," "to *shoulder* a responsibility," or "the *head* of the department." Since these are the examples of the body part term polysemy, one can come to the conclusion that the latter is caused by embodiment. Since the aim of this paper is to analyse the polysemy of the concepts of hand and leg, embodiment turns out to be one of the most prominent notions in this research.

The notion of motivation is just as important. Lakoff states that "the center, or prototype, of the category is predictable. And while the noncentral members are not predictable from the central member, they are 'motivated' by it, in the sense that they bear family resemblances to it." (qtd. in Lewandowska-Tomaszczyk 2007:148) Family resemblance, in turn,

...involves a polythetic, or similarity classification, where members of a class share some of the characteristics, none of which, however, is sufficient for class membership. Such cases contrast with what is called in science monothetic classes, characterized by sets of discrete, singly necessary and jointly sufficient criteria. Polythetic classification may be schematically represented as a pattern, where, for instance, three categories A, B, and C display different but overlapping sets of properties: A: p, q, r; B: r, s, t; C: t, u, v. (Lewandowska-Tomaszczyk 2007:146)

The passage makes it clear that motivation, as well as the principle of family resemblances which causes it, is one of the fundamental ways in which language functions. Lewandowska-Tomaszczyk describes the structure of polysemes adopted from Brugman and Lakoff:

[p]olysemic words consist of a number of radially related categories even though each of the polysemic senses can itself display a complex prototype structure. The central radial category member provides a cognitive model that motivates the noncentral senses. The extended senses clustered around the central category are related by a variety of possible links such as image schema transformations, metaphor, metonymy, or by partial vis-à-vis holistic profiling of distinct segments of the whole sense. (2007:148)

Apart from giving a description of polysemic lexemes, this passage also makes it obvious that metaphor and metonymy motivate polysemy. Since the latter is found in all languages, the passage confirms the notion of Lakoff and Johnson, as well as that of Brdar, that metaphor and metonymy, respectively, are some of the ways of linguistic functioning. All the notions described in this section – embodiment, experience, family resemblances, motivation, the radially-structured polysemy, metaphor and metonymy – feature prominently in the semantic analysis of my corpus research.

The Polysemy and Idioms of *hand* and *leg* in English

Corpus Results for *hand*

The search and analysis of the first 250 meanings of the noun *hand* in COCA (*The Corpus of Contemporary American English*) has given the following results: most results have the meaning ‘*body part*,’ (162 or 64.8%) as in the sentence (1):

(1) *She moved her hand across the table and Hastings looked down at it.*

The second most frequent meaning was ‘*body part used as a noun modifier*,’ (26 or 10.4%) as in

(2) *In the chilled bowl using a hand mixer with the chilled beaters,...*

while the third one was ‘*body part*’ used as a subject (and being a PARTFOR WHOLE metonymy) (18 or 7.2 %), as in

(3) *...his freehand hefted that lump in his coat pocket.*

I have decided to apply both syntactic and semantic criteria for determining and distinguishing the meanings, especially the three most frequent ones, because of the practical reasons; there were few results for other meanings (less than ten), many of them occurring only once, which can be explained with the fact that a small number of examples have been analysed. While the examples (1) and (3) are semantically more or less the same, both of them referring to the same extra-linguistic phenomenon (that is, the hand as a body part), they differ in terms of their syntactic (and, to a certain extent, semantic) properties, as I am going to explain in the following sub-chapter. The distinction of the meaning (2), on the other hand, is motivated by both the syntactic and semantic reasons. The noun *hand* in its primary meaning, when functioning as a noun modifier, is used to denote many different meanings: being held in a hand (“*a hand mixer*”), being done with hands (“*a hand car wash*”), being applied on hands

(“*hand dryers*”), and so on. The speakers of English are aware of the conceptual links between the hand as a body part and the different kinds of extra-linguistic phenomena which involve the former in different ways. Another important reason for such constructions is language economy.

These groups of meanings are:

(a) *a hand* as a body part – (1), (2) and (3)

(b) the meanings having to do with control, possession, or strength: ‘*body part as a metonymy for strength or skill,*’ ‘*control and/or possession,*’ in the phrases ‘*at hand,*’ ‘*out of hand,*’ ‘*second hand,*’ (in the meaning ‘*used*’) ‘*to come to hand,*’ ‘*to force one’s hand,*’ ‘*to gain the upper hand,*’ ‘*to have on hand,*’ and ‘*to raise a hand against sb;*’

(c) the meanings related to work and/or the manipulation of somebody or something: ‘*body part as a metonymy for creativity,*’ ‘*body part as a metonymy for work or worker,*’ ‘*by hand,*’ ‘*from hand to mouth,*’ ‘*in one’s own hand,*’ (referring to handwriting) ‘*to have a hand in something,*’ and ‘*to try one’s hand;*’

(d) the meanings having to do with closeness and/or help and cooperation: ‘*from hand to hand,*’ ‘*passed hand to hand,*’ ‘*one’s right hand,*’ ‘*to go hand in hand,*’ ‘*to lend a hand,*’ ‘*to take a hand.*’

The idiom ‘*on the one/other hand*’ cannot be included into any of these groups. Some other examples, however, can belong to more than one group, since the borders among them are not clear-cut: ‘*to have on hand,*’ for instance, also has the semantic hue of proximity to the owner, while ‘*one’s right hand*’ also implies control.

Motivation for Polysemy and Idioms with *hand*

As seen from the analysis, the meaning ‘*body part*’ has by far the most results, while many other meanings are also some instances of the former, used in different contexts and each of them emphasising another aspect of the schema covered by *hand*. I have decided to count its examples used as a noun modifier or a subject as separate meanings, apart from the number of those results compared to other meanings, because of their morphological, syntactic and semantic properties; *hand* in the “basic” body part meaning is usually a noun phrase or a part of a prepositional phrase, functions as an object or an adverbial, and serves

the semantic case of the PATIENT, not that of the AGENT filled by *hand* as the ‘*body part as a subject*.’ Not only are the three most frequent meanings the different instances of the ‘*body part*’ meaning, but there are also metonymies where *hand* as a body part stands for strength or skill, creativity and work.

Other examples put an emphasis upon some other aspects of the concept. First of all, the hand is used for holding things (which one possesses), which are then under the person’s control. That very basic and early realised fact from the human extra-linguistic experience is the motivation for the group of meanings related to control, possession, or strength. It is obvious in the examples such as ‘*out of hand*,’ ‘*to come to hand*,’ ‘*to force one’s hand*’ and ‘*to gain the upper hand*.’ When something is out of one’s hand, one is then no longer able to hold the item and do what he or she wants with it. On the contrary, when something comes to one’s hand, it becomes available to him or her. When you force one’s hand, you force him or her to do something because you are holding (i.e. controlling) their hand (i.e. what is possessed and controlled by it in either the denotative or connotative sense). When one gains the upper hand, one gets into the dominant position, which is motivated by the physical experience and the orientational metaphors coding it with spatial expressions UP and DOWN. The metonymy of *hand* standing for control and/or possession is the basic motivation for all these examples, while the conceptual metaphors UP IS DOMINANT and DOWN IS SUBORDINATED, IN IS CONTAINED, OUT IS NOT CONTAINED (the latter two are the elaborations of the CONTAINER conceptual metaphor) motivate, respectively, the examples (11), (9) and (7).

Secondly, the hand is used for working, which often implies manipulating and changing the surroundings with one’s work as well. That aspect of human experience motivates the examples having to do with work and/or the manipulation of somebody or something, like

(17) ‘*from hand to mouth*,’

(19) ‘*to have a hand in something*’ and

(20) ‘*to try one’s hand*.’

The example (17) is motivated by *hand* as a metonymy for work, which is also, like *mouth* in this case, a metonymy for food and eating. The motivation for (19) is the fact that we use our hands to manipulate and influence processes and their results. Here *hand*

metonymically refers to manipulation. In (20) the lexeme *hand* represents both work and manipulation. The example is based on the fact that we use our hands to try to do new, unknown actions. The metonymy of *hand* referring to work and/or manipulation is the motivation for the examples (17), (19) and (20). Example (19) is also motivated by the CONTAINER metaphor, since the action is here perceived as taking part within the object with its range and borders.

The notion of using one's hand(s) to help others, as well as to pass objects to them (actually to their hands) and of being connected by holding each other's hands is the basis for the expressions

(21) '*from hand to hand,*'

(22) '*passed hand to hand,*'

(24) '*to go hand in hand,*'

(25) '*to lend a hand*' and

(26) '*to take a hand.*'

The examples '*one's right hand*' and '*to have on hand*' are motivated by the fact that an object held in a hand is close to its owner. The concept of closeness can be more concrete (as in '*to have on hand*'), or more abstract (as in examples '*in one's own hand*' and '*one's right hand*'). In the examples (21) and (22) *hand* is a metonymy for a human, as well as a PART FOR WHOLE conceptual metaphor, because we use our hands to pass something to each other, either in a concrete or in an abstract sense. The hand is regarded as the most salient part of the scene of passing things from one to another person, and is metonymically coded as a result. Example (24) is motivated by the holding hands standing for close contact and the smooth, harmonised movement of the persons holding each other's hands. Here the bases for the idiom are the domains of physical space and movement. Examples (25) and (26), however, are motivated by the metonymy of a hand standing for a person and his or her act of helping, which can be more concrete (involving the use of hands) or more abstract (not involving hands). Like (21) and (22), (25) and (26) are also the examples of a PART FOR WHOLE conceptual metaphor.

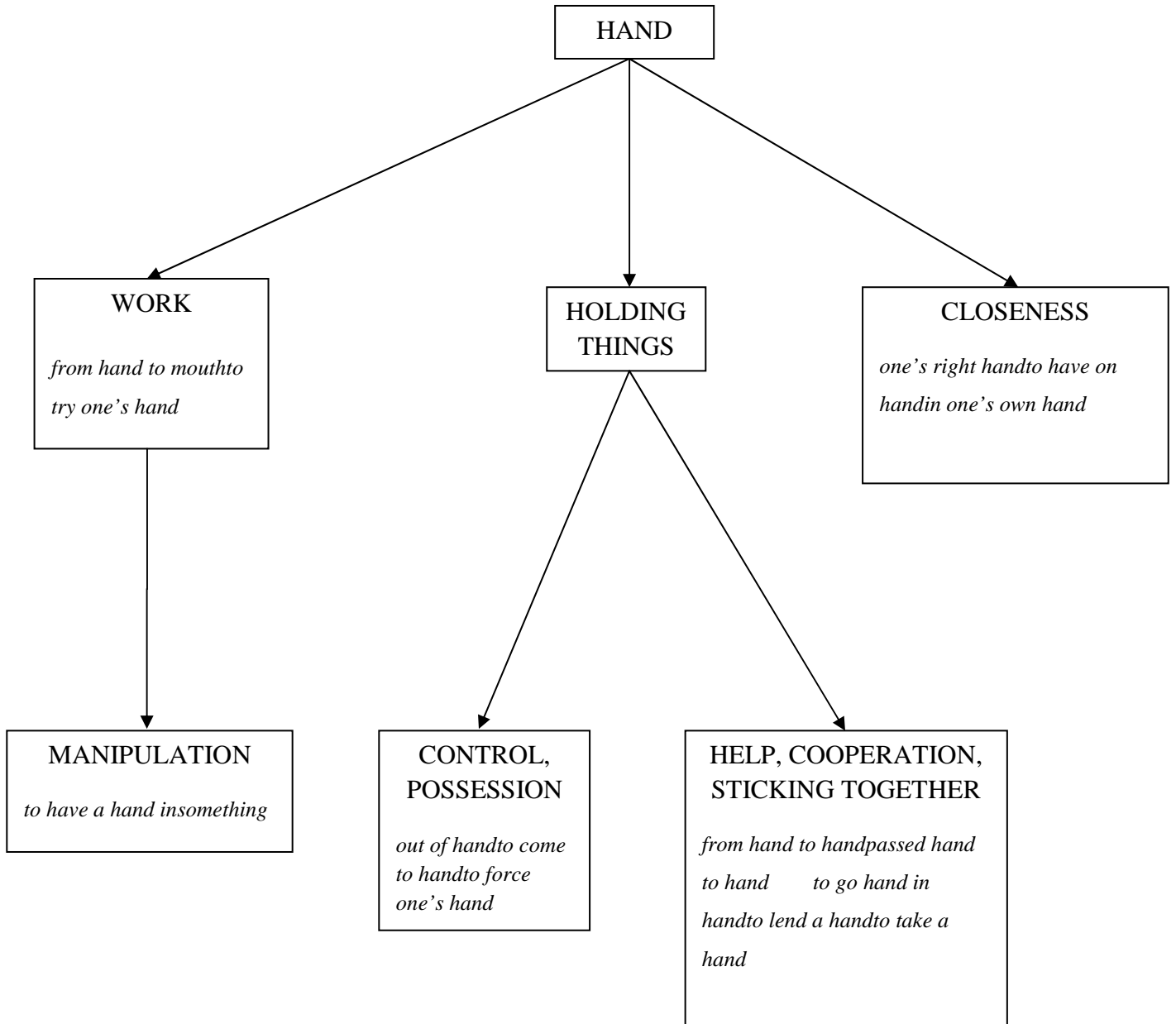
The possible alternation caused by the fact that there are two hands motivates the expression ‘*on the one/other hand.*’ In this case, a hand metonymically refers to one of the two situations.

Taking these meanings into consideration, the basic instances of the schema *hand* are the domains of WORK, HOLDING THINGS and CLOSENESS. The additional domains of MANIPULATION (subordinated to WORK), CONTROL, POSSESSION and HELP, COOPERATION, STICKING TOGETHER (both subordinated to HOLDING THINGS) can also be elaborated from their respective superordinate ones. Such a structure corresponds to the radial model of categorisation described by Lewandowska-Tomaszczyk:

Polyssemic words consist of a number of radially related categories even though each of the polyssemic senses can itself display a complex prototype structure. The central radial category member provides a cognitive model that motivates the noncentral senses. The extended senses clustered around the central category are related by a variety of possible links such as image schema transformations, metaphor, metonymy, or by partial vis-à-vis holistic profiling of distinct segments of the whole sense. (Lewandowska-Tomaszczyk, 2007:148)

While the meaning ‘*body part*’ is the central member of the radial category *hand*, the expressions containing the lexeme *hand*, such as ‘*to try one’s hand,*’ ‘*to gain the upper hand,*’ ‘*by hand*’ and ‘*on the one/other hand,*’ all instantiate the schema *hand* in different ways, putting a stress on some of the various aspects in whose terms the latter is conceptualised. There is also a high degree of overlaps between metaphor and metonymy as the basic sources of motivation for idiomatic expressions.

Fig. 1: The radial category *hand*



Corpus Results for *leg*

The analysis of the first 250 search results of the noun *leg* in COCA has shown certain similarities to that of the noun *hand*. The meaning ‘*body part*’ is again by far the most frequent one – 157 results or 62.8%, as in

(1) *Repeat with your left leg extended,*

while the second one is also ‘*body part used as a noun modifier*’ (54 or 21.6%)

(2) *...Your leg kick has got to be up and down.*

However, the third most common meaning is ‘*a part or phase of a path, journey etc.*’ (19 or 7.6%)

(3) *...we reboarded the train for the final leg of our journey.*

As in the case of *hand*, I have again decided to take into consideration both syntactic and semantic properties of the body part meaning because of the frequency of results. All the other meanings are very infrequent, as in the case of *hand*, each of them again being represented by less than ten results. In addition, the total number of different meanings was much smaller than with *hand* (only 12 compared to 27). These were: (4) ‘*leg of trousers, jeans etc.*’ (5) ‘*the animal leg used as food,*’ (6) ‘*body part in robotics,*’ a metonymy (7) “[t]he strongest leg in the state, ...” used in the sports register, (8) ‘*leg of a table, chair etc.*’ (9) ‘*a supporting part,*’ in a name (10) *Black Leg*, and in the idioms (11) ‘*to cost an arm and a leg*’ and (12) ‘*to pull one’s leg*’ There are three different meaning groups:

(a) *leg as a body part*– (1), (2) and (7)

(b) *the similar form and/or function*– (4), (5), (6) and (8)

(c) *support*– (9), (11) and (12)

The meanings (3) and (10) do not belong to any group.

Motivation for Polysemy and Idioms with *leg*

As with the noun *hand*, the meaning ‘*body part*’ is the most frequent, i.e. the most salient meaning of the noun *leg*, regardless of its syntactic behaviour. The meanings ‘*leg of trousers, jeans etc.*’ ‘*the animal leg used as food,*’ ‘*body part in robotics*’ and ‘*leg of a table, chair etc.*’ are also closely related to the meaning ‘*body part,*’ since they are motivated by the similarity of either the form or the function, or both, of the leg as a body part. ‘*leg of trousers, jeans etc.*’ is the metonymic extension of ‘*body part,*’ since *aleg* as a clothing part is made to fit on *a leg* as a bodypart. The examples ‘*the animal leg used as food*’ and ‘*body part in robotics,*’ however, are not the instances of ‘*body part,*’ but separate meanings because of their much narrower contexts. The even greater distance of ‘*leg of a table, chair etc.*’ from ‘*body part*’ is clear. The example “[*t*]he strongest leg in the state,…” has occurred only in the sentence “*Lockport # Kicker 6-foot, 175, senior: The strongest leg in the state, Setta averaged 49 yards per punt...*”, from which it is obvious that it is a PART FOR WHOLEmetonymy motivated by the fact that the referent is a sportsman. The meaning ‘*a supporting part*’ is based on the supporting function of the leg, as are the idioms ‘*to pull one’s leg*’ and, to a lesser extent, ‘*to cost an arm and a leg.*’ Example ‘*to pull one’s leg*’ is possibly motivated by the act of tripping someone up, while ‘*to cost an arm and a leg*’ primarily highlights the huge value of both body parts for the man. If the radial model of categorisation were applied to the lexeme *leg*, the meaning ‘*body part*’ would be the central member of the respective radial category, as in the case of *hand*. The schema of *leg* would consist of the domains ELONGATED SHAPE (instantiated by the meanings ‘*leg of trousers, jeans etc.*’ ‘*the animal leg used as food,*’ ‘*body part in robotics*’ and ‘*leg of a table, chair etc.*’), MOVEMENT FUNCTION (‘*leg of trousers, jeans etc.,*’ ‘*body part in robotics*’ and “[*t*]he strongest leg in the state,…” ‘*to pull one’s leg,*’ ‘*to cost an arm and a leg,*’), SUPPORTING FUNCTION (‘*a supporting part,*’ ‘*body part in robotics*’ and ‘*leg of a table, chair etc.,*’ ‘*to pull one’s leg,*’ ‘*to cost an arm and a leg*’), HIGH IMPORTANCE (‘*to cost an arm and a leg,*’ although that domain could be superordinated to the domains MOVEMENT FUNCTION and SUPPORTING FUNCTION. The domain of GRADUALITY, subordinated to MOVEMENT FUNCTION, is the motivation for the meaning ‘*a part or phase of a path, journey etc.*’

The embodiment hypothesis is the explanation for the way the concepts of *hand* and *leg* are coded in English. The motivation for the polysemy and idioms of both terms is also the same: the similarities in form and/or function between the source and target domains. So are the same cognitive and linguistic mechanisms of metaphor and metonymy, also stated in the introduction as one of the way language functions, with which those similarities are cognitively perceived and linguistically mapped. However, taking all these facts about the coding of both terms into consideration, one can realise the difference between the polysemy of *hand* and *leg* in English.

First of all, although the basic motivation is the same in both cases (the similar form and/or function), the subordinated domains instantiated from them are different, from which it is obvious that hand and leg physically and functionally differ to a high degree. Secondly, the much smaller number of both connotative meanings and idioms with *leg* makes it clear that the concept of leg is much less salient than the one of hand, since the polysemy of the latter is much more elaborate. The logical conclusion is that hands as body parts are culturally much more significant to the speakers of English than legs. The reason is probably the fact that the former are used for doing all kinds of actions, from the basic ones such as eating and drinking to the complex ones such as painting or playing a musical instrument, while the latter are used for a fundamental, but only one action: movement. However, the conceptual and linguistic structure of both *hand* and *leg* in English proves Rohrer's notion of embodiment (and Lakoff's notion of conceptual embodiment); the various aspects of the physical experience concerning those body parts are coded in the language and reflected in its structures.

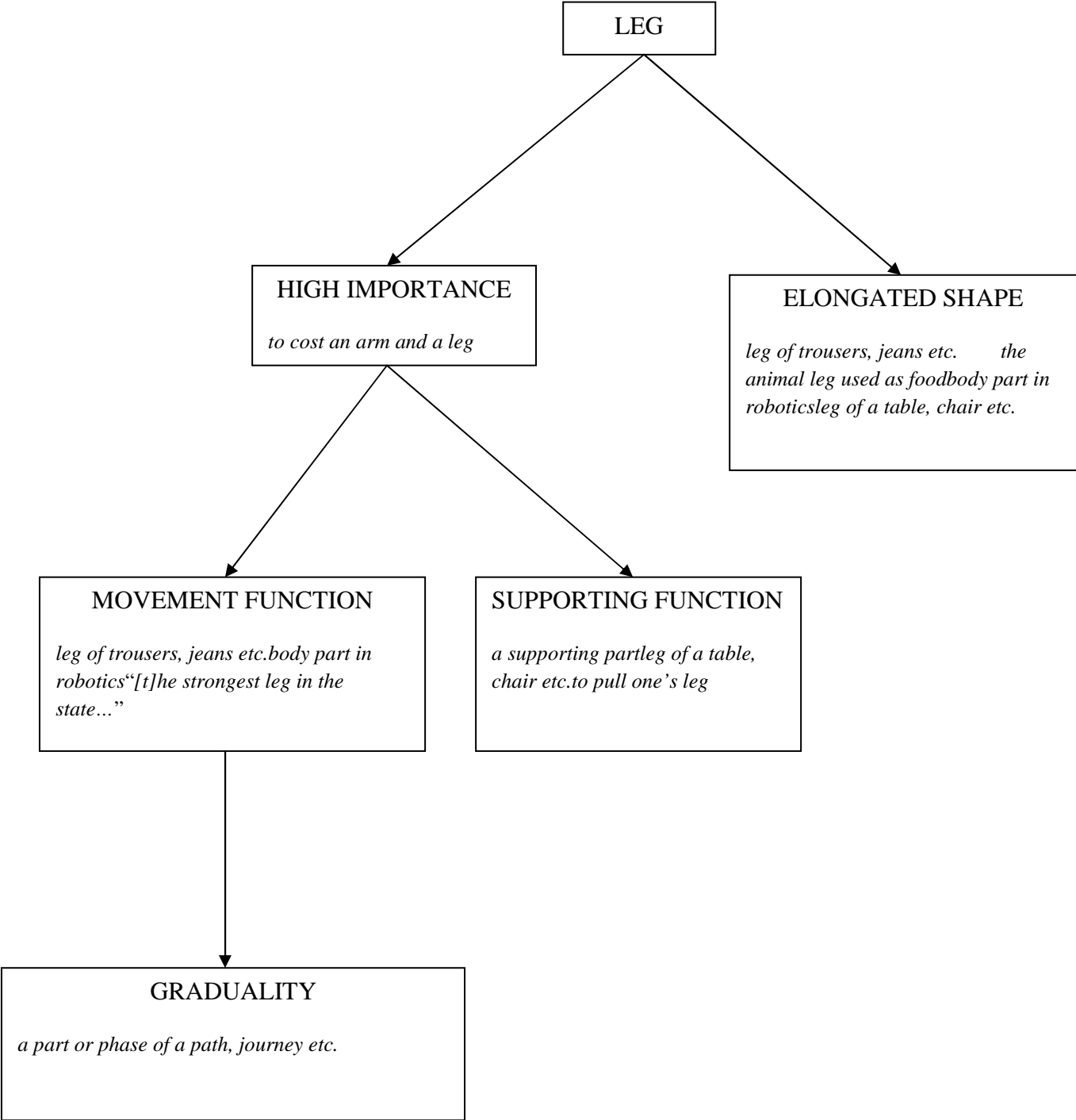
In order to find out whether such perception of *hand* and *leg* is characteristic only of English and other Indo-European languages or not, and in order to discover what is universal in the linguistic coding of the body, I have decided to analyse the polysemy and idioms of *hand* and *leg* in several mutually unrelated languages.

Hand and leg in Other Languages: a Comparison

The languages I am going to analyse to find out the different ways of linguistically coding *hand* and *leg* are Matsigenka, Zapotec and Kam, spoken in South America, Central America, and Asia, respectively. I have chosen them because they are genetically unrelated to

each other, had no contact to any of the other two, and show some linguistically interesting structures having to do with the terms for hand and leg, and, in some cases, for arm and foot. Another reason for choosing them are some striking similarities in the way English and these languages code body parts.

Fig. 2: The radial category *leg*



As a domain common to all linguistic communities, the body is coded in every language of the world, although in different ways. Matses, a Panoan language spoken in Peru and Brazil, features prefixes derived from body part terms (Fleck2006:59). For example, *mëdante* ‘hand, (tobaccopulverizing) mortar’ is the basis for the prefix *më-*, from which the words for forearm, wrist, projecting carpal bones, elbow, finger/toe, knuckles, fingernail and branch are derived – *mëpu*, *mëtete*, *mësh*, *mëntsimpis*, *dëshbi*, *mëbuduësh*, *mëntsisandkuidi*, respectively (Fleck2006:65). The prefix *pë-* is derived from *podo* ‘arm, front leg, wing, feather, branch, leaf, frond’ and forms the lexemes *pëtëskën* ‘upper arm,’ *pëbun* ‘lateral muscles (connect back to shoulder),’ *pëspan* ‘wing-like pectoral fins of a stingray,’ *pëntses* ‘secondary wing feathers’ and *pëbuduësh* ‘wingtip (of bird).’ (Fleck2006:65) *Wipu* ‘shin,’ *wispo* ‘shin bone,’ *wishuku* ‘calf’ and *wibën* ‘buttress root’ are all derived from *wi-* ‘lower leg,’ although there is no lexeme for the latter meaning (Fleck2006:66). The prefix *ta-*, derived from *taë* ‘foot,’ in turn derives the lexemes *tatete* ‘ankle,’ *täshhe* ‘projecting tarsal bones,’ *dëshbi* ‘finger, toe,’ *tantsis* ‘toenail,’ *tapun* ‘root,’ *takchish* ‘stilt root’ and *taşhodo* ‘buttress root.’ (Fleck2006:66) Another interesting linguistic trait of Matses is the fact that some verbs, such as those meaning ‘to learn’ or ‘to teach,’ can be preceded by a body part prefix denoting what kinds of actions it codes (those having to do with the respective body parts): *më-kiad-o-bi* ‘hand-learn-past-1s’ means ‘I learned to weave, write, do math problems, fire shotgun, fletch arrows, or other manual tasks,’ while *ta-kiad-o-bi* ‘foot-learn-past-1s’ means ‘I learned to play soccer, to wear shoes, etc.’ (Fleck2006:78) Despite the differences between English and Matses, there are some similarities in the way the lexemes for hand and leg are coded in them. The body part prefixes in the latter have the form and function similar to body part terms used in English as noun modifiers (“*a hand mixer*”, “*a hand car wash*”, or “*hand dryers*”), affecting both the syntax and semantics of the nouns they precede. It especially features in the examples where *hand* and *leg* modify the verbs denoting the actions done with them. Body part terms for hand and leg, as well as for arm and foot, are also polysemic in both languages. Although the connotative meanings differ in English and Matses, reflecting culturally and environmentally determined differences in salience, the motivational mechanisms for polysemy are similar: the metaphors and metaphorical extensions based on the similar form and/or function. Language economy also plays an important role in both languages, as seen in the examples.

Another Native American language is Zapotec, an Otomanguean language spoken in Mexico (MacLaury 1989:119). According to MacLaury,

Zapotec speakers use the human form as the model of all form. This is suggested in three ways. First, only human body-part terms are used to name parts of things. Animal body-part terms are never so used, even salient ones, such as *šk^wǎ*- 'wing' or *žbā n*- 'tail'. Second, animal parts always are named as though animals were humans on all fours; in figure 2, front feet are called *yā*- 'hand' and back feet *yee*- 'foot', even though the animal is hoofed. Third, body-part terms always are applied to things while maintaining the vertical configuration that is canonically human; the highest part of an object is its head, its back and its belly are vertical, its lower front is always a foot and never a hand. Such occurs even on objects that lack inherent orientation, for example, the sphere and cube of figures 3 and 4... A few other parts are even more restricted: handles are sometimes called *yā*- 'hand', tree branches *žtk^w*- 'arm', bottle necks *yayn*- 'neck', and knots of a tree trunk *škīp*- 'navel'. These rare usages resemble the conventional metaphors by which English extends body-part terms to things; metaphor combines with the invariant core of seven parts that are arrayed as they would occur in the human body. But in Zapotec, unlike English, the core arrangement of parts in fixed location predominates. (1989:121; 124-126)

This passage makes it clear that the source domain of the human body plays the central role in Zapotec and is copied onto the target domains of the plants, animals and things. There are similarities in the linguistic coding of body parts with both English (*hand* for *handle*, a *neck* of a bottle) and Matsigenka (using human body part terms for plants and animals). Although rarely, the Zapotec word for hand can be used to denote dative (MacLaury 1989:141). That has to do with the domains of holding (i.e. possessing) things and of closeness which I have discussed in the case of English. The author concludes that

[u]nlike Zapotec, English does not transpose a fixed framework of core parts from the human body to all other form and, thus, does not provide that particular basis for systematically linking body-part terms to location. Instead, English extends body-part terms to parts of objects as piecemeal metaphor. For example, although a house has a 'back' and 'sides', it has a 'door', 'foundation', 'front', 'interior', and 'roof' instead of a 'mouth', 'foot', 'face', 'stomach', and 'head'. Further, the partonyms do not match names of adjacent locations; for example, 'front'/'in front of', 'back'/'behind', 'side'/'beside', 'bottom'/'under', 'top'/'over'. Zapotec has no non-anatomical equivalents for 'edge', 'corner', 'base', or any other inanimate partonym, except 'bottom' and context-specific *skič*'foot of quern' (<*gič*, 'quern, Sp. *metate*'). (MacLaury 1989:149)

Kam is a Kadai language spoken in China (Gerner 2005:307). The language belongs to the isolative type, where lexemes are combined by juxtaposition. This mechanism enables the forming of new meanings concerning body parts, where the first element is a predicate, and the second one a possessee (i.e. a body part). The feature is known as the zoom-on-possessee

construction (Gerner 2005: 307). For example, *kua*³²³*m'a*¹¹, literally 'hard hand,' means 'to have one's hand stiffened (from frost).' *K^ho*³⁵*m'a*¹¹ 'smooth, sleek hand' and *nap*¹³*m'a*¹¹ 'rough hand' mean 'to have sleek hands' or 'to have rough hands,' respectively. *Tan*¹¹*m'a*¹¹ 'to tremble hand' means 'to have one's hands trembling,' *loŋ*³³*m'a*¹¹ 'to loose hand' – 'to loosen one's grip,' and *m^jot*³¹*m'a*¹¹ 'to slip hand' – 'to have one's hand missing something.' *Lei*⁵³*pa*⁵⁵, literally 'lame leg,' means 'lame in one's leg,' *saj*¹¹*tin*⁵⁵ 'straight foot' – 'to straddle,' *jo*¹³*tin*⁵³ 'to extend foot' – 'to extend one's foot,' and *lem*³³*tin*⁵⁵ 'to get stuck in foot' – 'to get stuck in with one's foot.' (Gerner 2005:342)

There are also several combinations of two body parts possessives which are combined with a reduplicated predicate in order to form new meanings (Gerner 2005:343). One of them is *tin*⁵⁵*m'a*¹¹ 'foot and hand,' which is the basis for, among others, *lai*⁵⁵*tin*⁵⁵*lai*⁵⁵*m'a*¹¹ 'good foot good hand' – 'skillful' or 'healthy limbs,' *pan*⁵³*tin*⁵⁵*pan*⁵³*m'a*¹¹ 'throw foot throw hand – 'indifferent,' (*k*)*an*⁵³*tin*⁵⁵ (*k*)*an*⁵³*m'a*¹¹ 'slow foot slow hand' – 'slow in action,' *e*³²³*tin*⁵⁵*e*³²³*m'a*¹¹ 'stupid/clumsy foot stupid/clumsy hand' – 'with clumsy limbs,' and *k^{hw}aj*¹³*tin*⁵⁵*k^{hw}aj*¹³*m'a*¹¹ 'wide foot wide hand' – 'extravagant(attitude of rich person).' (Gerner 2005: 346)

There are certain similarities between English and Kam as well. The schema of *hand* in both languages also includes the domain of HOLDING, POSSESSING THINGS (also found in Zapotec) and that of WORK AND SKILL. The domain of MOVEMENT is also prominent in the schema of *leg*. The conceptual metaphors HEALTH IS GOOD, SKILL IS GOOD, CLUMSINESS IS STUPID and WIDE IS RICH/ABUNDANT are also present in Indo-European languages.

Although the domain of the body is present in all languages of the world, those mentioned in this section (including English) differ significantly regarding the way body parts are coded in them. That fact corresponds to the statement of Deignan and Potter that "...while universal bodily experience may motivate many figurative expressions, the process is sometimes complex, and will not necessarily result in equivalent expressions in different languages, for cultural and linguistic reasons." (2004:1231) However, the terms for hand, leg, arm and foot in all the mentioned languages have some things in common: the body part polysemy motivated with the form and/or function by means of metaphor and metonymy, as well as their extensions. This proves both the Rohrer's notion of embodiment and the claim of Lakoff and Johnson, as well as that of Brdar, that the nature of language is metaphorical and metonymical. Their notion that we use the concrete (the physical) to perceive the abstract

(the non-physical) is also confirmed by the (in most cases rich) polysemy of body part terms in all the analysed languages. These body part terms also form various grammatical structures in both their denotative and connotative meanings.

A Comparison of Different Data Sources

While the authors, whose articles I have analysed in the previous chapter, have used field work as their main method (Gerner 2005:307; MacLaury 1989:119), I have used the corpus analysis. The corpus I have used is COCA (*The Corpus of Contemporary American English*), and I have included the random sample of the first 250 meanings. I am aware of the restrictions of corpus research. The random sample can, but does not have to reflect the real state of the semantic structure of *hand* and *leg*. In addition, 250 results per lexeme may be too small to give precise information about the frequency (i.e. salience) of different meanings. However, corpus analysis is invaluable for any linguistic research, since it is practically the only way to acquire data about the use of language. Language use determines the meanings of any lexeme, so cognitive linguistics is a usage-based model (Langacker 2010:117). On the other hand, field work is the best (and the only) way of doing research on little-known languages, which is the case of the articles I have researched. Although all languages are polysemic, polysemy is not in the focus of those articles, while it is central to my research.

When motivation is concerned, I have come to the conclusion that the meanings of *hand* in English are motivated by the domains of WORK, HOLDING THINGS and CLOSENESS, as well as by the domains of MANIPULATION, CONTROL, POSSESSION and HELP, COOPERATION, STICKING TOGETHER which are further instantiated from them. MOVEMENT FUNCTION, SUPPORTING FUNCTION, as well as the subordinated domains of HIGH IMPORTANCE and GRADUALITY, motivate the meanings of *leg*. The articles I have analysed do not deal with motivation, but their data has shown that the polysemy of *hand* and *leg* in languages genetically, culturally and typologically unrelated to English is motivated by some of the same domains. That could lead to a conclusion that, along with the domain of the body, the human experience of the latter is, to a certain extent, a linguistic (as well as an extra-linguistic) universal. The fact corresponds to the embodiment hypothesis as defined by Rohrer, that language structures are shaped by physical, cognitive, and social factors.

Conclusion

As shown by the embodiment hypothesis and the data from various languages of the world which confirm it, the body is one of the linguistically universal domains. Its parts are perceived and named in all languages, despite their large genetic, areal and typological diversity. In addition, the lexemes which denote body parts are also metaphorically and metonymically extended in every language to refer to other concepts. This fact shows that polysemy and idiomaticity of body part concepts are linguistically universal, which goes hand in hand with Rohrer's definition of embodiment as the unity of physical, cognitive and social factors which influence the structure of language. The universal motivation for body part term polysemy is the similar form and/or function. This confirms Lakoff and Johnson's notion about metaphor as one of the basic ways any language functions and is structured, and Brdar's views on metonymy. Along with the denotative meaning, *hand* can also have the meanings 'control, possession, or strength,' 'work and/or the manipulation,' 'closeness and/or help and cooperation,' 'manual work,' 'handle,' 'tree branch,' 'grip,' 'skill' and many others in different languages. *Leg*, however, can mean 'leg of trousers,' 'the animal leg used as food,' 'body part in robotics,' 'leg of a table, chair etc.', 'a supporting part,' 'a part or phase of a path, journey etc.', 'wing, feather, branch, leaf, fin, frond,' 'tree root,' 'lower part' in addition to its basic meaning, among other things. All these possible meanings in languages across the world lead to the conclusion that all linguistic communities cognitively regard the human body as the starting point for perceiving many other extra-linguistic phenomena with any similarities to the former. The source domain of the body is then mapped onto the target domain of the given extra-linguistic phenomenon, which is coded in language as the new, connotative meaning of the respective body part term. Polysemy, idiomaticity and the related language economy are found in all languages, as are many source domains for the former two. The human body, however, is one of the central, most salient, most deeply rooted and most productive source domains in any language of the world. That confirms the universality and importance of human physicality, as well as the notion realised by ancient Greeks, that man is the measure of all things.

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