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PART II

Motivation in the Lexicon

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Conceptual motivation in adjectival semantics

Cognitive reference points revisited

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Reference-point reasoning is a pervasive cognitive phenomenon intrinsic to many domains of human activity. However, very little is known about linguistic aspects of this phenomenon. This paper elaborates the reference-point model by applying it to lexical semantics and, more specifically, to the semantics of dimensional adjectives. It is argued that a panoply of reference points may be used to anchor conceptual specifications of adjectives, prototypes being only a special case of the reference-point mechanism. For example, dimensional adjectives may be interpreted vis-à-vis an average value of the property (norm), endpoints of the scale and dimensions of the human body (EGO). Each of these reference points motivates crucial semantic and functional properties of dimensional adjectives.

Keywords: antonymic pairs, asymmetry, degree modification, dimensional adjectives, ego, markedness, norm, prototype theory, scale structure

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1. Introduction

Prototype theory, which was initiated by Rosch (1973), has been pervasive in the semantic research of the last thirty years. The advent of prototype theory was fostered by the studies of focal colors (e.g. Rosch 1971, 1972). Since then, color terms have often been cited as prime examples of prototypical categories. Importantly, prototype theory is able to explain how perceptual properties of focal colors *motivate* functional properties of color terms. For example, focal colors – being most perceptually salient – proved to be most "codable" across languages (Rosch 1971). In addition, names of focal colors were shown to be more easily remembered by adults (Rosch 1972; Rosch & Olivier 1972) and first learnt by children (Mervis, Catlin & Rosch 1975; Rosch 1971).

However, as indicated among others by Cuyckens (1984) and Wierzbicka (1996), in spite of being helpful analytical tools, prototypes cannot be indiscriminately applied throughout. The adjectival category, for instance, is too heterogeneous to allow the

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application of prototypes to the semantic analysis of *all* adjectives. Whereas adjectives of color and shape easily lend themselves to analysis in terms of prototypes (e.g. Tribushinina 2006), it is difficult to come up with prototypes of the properties denoted, for instance, by scalar adjectives such as *short*, *blunt*, or *wet*.

The purpose of this paper is to show that while prototypes constitute a specific type of cognitive reference point (henceforth CRP), i.e. mentally prominent items that other entities are seen in relation to (Rosch 1975), there are other types as well.

This study will focus on dimensional adjectives denoting vertical size (e.g. *tall*, *short*). These adjectives were chosen because, as suggested by several studies (Kamp & Partee 1995; Taylor 2003; Tribushinina 2006), they are to a lesser degree oriented to prototypes than, for instance, color terms. Notice, however, that most dimensional adjectives are vague terms. So it is fair to assume that their conceptual specifications have to be anchored *somehow*. Put another way, if prototypes are only marginally relevant to the semantic make-up of vague scalar adjectives, what *other* reference points are used to anchor the conceptual specifications of these words? And, importantly, how do these reference points *motivate* their semantics and use?

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In this paper, motivation is understood as a non-arbitrary relation between the conceptual structure of a word (including CRPs) and the functional properties of that word (e.g. default and contextual interpretations, markedness, ability to combine with other words). In this specific case, the content of a lexical item is a source of a motivational process; functional properties of a word constitute a target of motivation; and a reference point is a language-independent factor, i.e. a driving force of a motivational process whose scope reaches far beyond language and also operates in other cognitive domains (cf. Radden & Panther 2004, Panther & Radden this volume).

The paper is structured as follows. Section 2 introduces the reference-point model and gives an overview of its applications in a number of disciplines, including cognitive psychology and linguistics. Section 3 presents a semantic analysis of dimensional adjectives in terms of several CRP types. Conclusions are presented in Section 4.

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2. Cognitive reference points

2.1 Roschean cognitive reference points

The notion of CRP was introduced by Rosch (1975). As a starting point she used Wertheimer's (1938) claim that among perceptual stimuli there are ideal types that serve as anchoring points in perception. Building on earlier research on prototypicality effects, Rosch (1975) pursued the question whether focal colors and prototypical members of other categories can "be actual examples of ideal types which serve as reference points within our cognitive categories and classification systems" (Rosch 1975: 532).

CRPs are defined by Rosch as stimuli that other items are seen in relation to. Therefore the main criterion of a reference-point status used in Rosch (1975) was an

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asymmetry between a CRP and a non-CRP item. Two tasks – a linguistic and a spatial one – provided very similar results in three different domains – color, numbers and line orientation. In all cases, non-prototypical instantiations were judged closer to the prototype than the prototype to a non-prototypical instantiation. From the obtained results Rosch concluded that prototypes "can serve as reference points in relation to which other category members are judged" (Rosch 1975: 545). Crucially, this formulation implies that prototypes are by no means the only CRPs involved in various cognitive activities.

2.2 Elaborations of the Roschean model

The notion of CRP introduced by Rosch (1975) was eagerly taken up by scholars in many fields of research, including cognitive and social psychology, behavioral economics, marketing and management research. In the space of this paper, we cannot go into the details of these studies and will consider only a few examples. The purpose of this section is to show that the reference-point reasoning discovered by Rosch through the study of prototypes has a much wider scope than prototypes as such. In other words, a prototype is but one realization of a very pervasive cognitive strategy to use CRPs.

Perhaps the most straightforward applications of the Roschean CRP model are studies of similarity judgments in cognitive psychology (Tversky 1977; Tversky & Gati 1978). These studies replicated Rosch (1975) in that they found that people usually have one preferred direction of comparison, viz. they usually compare a less prominent (salient, familiar, concrete) item to a more prominent item (CRP). For instance, a sentence like *North Korea is similar to China* is usually preferred to *China is similar to North Korea*, because China is a more salient item.

Studies in social psychology have shown that the self is an important CRP shaping our social judgments (e.g. Holyoak & Gordon 1983; McFarland & Miller 1990). For instance, people usually judge others as more similar to themselves than themselves to others (notice again the CRP/non-CRP asymmetry).

A CRP also constitutes one of the basic notions in Prospect Theory (Kahneman & Tversky 1977). On this view, a reference point divides the space of outcomes into the regions of gains and losses. Thus, people do not see outcomes as neutral, but characterize them in terms of success or failure. Prospect Theory has been applied to the analysis of numerous aspects of human economic and organizational behavior, such as negotiation, intertemporal consumption, gambling and betting.

Marketing researchers also make ample use of the Roschean reference-point model. To give just one example, consumers usually compare the actual prices with a CRP price they have stored in their mind (Chen & Bei 2005; Thomas & Menon 2007).

In brief, CRP reasoning has proved to be a ubiquitous cognitive phenomenon. Various cognitive domains have been shown to be structured by a restricted set of salient reference points. An important aspect of reference-point reasoning observed across various kinds of human activity is the asymmetry between CRP and non-CRP items.

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Given the ubiquity of CRPS, it is reasonable to expect that language also involves a lot of reference-point reasoning. This expectation is based on one of the major tenets of cognitive linguistics that language is not a separate module, but an integral part of cognition, whose organizing principles stem from the general properties of the human mind. The following section presents an overview of linguistic applications of the reference-point model.

2.3 Cognitive reference points in linguistic research

2.3.1 *Reference-point constructions in cognitive grammar*

Perhaps the most influential reference-point model in linguistics was developed by Langacker (1991, 1993) within the framework of Cognitive Grammar. Initially, Langacker (1991) introduced the notion of reference points in the analysis of possessive constructions. On this view, what all possessives have in common is that a salient reference-point entity is evoked for the purpose of establishing mental contact with a less salient target. For instance, in *Kate's car*, Kate is a more prominent participant that functions as a reference point for the dominion of her possessions, including the car. A dominion is defined as a set of possible targets that can be accessed through a particular reference point.

In a later publication, Langacker (1993) extends the reference-point model from the analysis of possessives to a wider range of grammatical phenomena, which he calls *reference-point constructions*. These include topic and topic-like constructions, pronoun-antecedent relationships and metonymy. This analysis was adopted and further elaborated in a number of studies (e.g. Brône & Feyaerts 2004; Cienki 1995; Cornillie 2005; Janssen 2003; Smith 2006; Van Hoek 1997; Willemse 2006).

A question that arises in this connection is how reference-point constructions studied in Cognitive Grammar relate to the CRPS identified by Rosch (1975). Are we dealing with the same cognitive phenomenon or with different phenomena referred to by the same term – *reference points*? I would like to suggest that the Roschean and the Langackerian reference points are essentially the same cognitive phenomenon. Firstly, Langacker (1993: 35f) himself places his reference-point constructions in the same group of phenomena as figure-ground alignment, comparison (involving a point of reference and a target), metaphor (involving source and target domains), and prototypes (the Roschean CRPS).

Secondly, it is noteworthy that Rosch defined CRPS as cognitively salient items that other entities are seen in relation to. This is exactly the way dominions are defined in Cognitive Grammar: "The dominion consists of the conceptual structures that are construed *in relation to* [emphasis mine] the reference point" (Van Hoek 1997: 55).

Thirdly, a crucial feature of the reference-point relationship on both the Roschean and the Langackerian account is the asymmetry between CRPS and non-CRPS. People judge a non-focal red as more similar to the focal red than vice versa. They also consider non-salient locations to be closer to salient landmarks than the other way around.

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The reason is that focal colors and important locations constitute better reference points than non-prototypical colors and less prominent locations. Similarly, language users find it more appropriate to say *Kate's car* than *the car's Kate*, because human beings are better reference points than non-human and/or inanimate objects.

Although Langacker (1991, 1993) applies the reference-point model only to the analysis of grammatical phenomena and metonymy, he strongly emphasizes that reference-point reasoning is a very fundamental image-schematic ability and "we ought not to be surprised to find it manifested at multiple levels of conceptual and grammatical organization, even within a single expression" (Langacker 1993: 25). This means that we should be able to find aspects of reference-point reasoning not only in grammar, but also in other linguistic domains. In the following section, I turn to the use of the reference-point model in lexical semantics and show that semanticists (unlike psychologists and grammarians) have adopted a very narrow understanding of CRPs that is largely equated with the notion of prototypes.

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2.3.2 *Reference points in lexical semantics*

The only CRP type that has been studied quite intensively in lexical semantics is the prototype. The prototype-based approach to word meaning has expanded enormously over the last thirty years (e.g. Coleman & Kay 1981; Dirven & Taylor 1988; Geeraerts 1997; Kelly, Bock & Keil 1986; Kuczaj 1982; Šarić 2006; Vogel 2004).

Despite the fact that Rosch (1975) strongly suggested that prototypes are but one special case of a ubiquitous strategy to use reference points, only this case has attracted much attention in lexical semantics. With the exception of several studies of CRP numerals (Dehaene & Mehler 1992; Pollman & Jansen 1996; Sigurd 1988) and reference points in spatial prepositions (Van der Zee 2007; Van der Zee et al. 2007), realizations of reference-point reasoning beyond the prototypes remained largely uncovered in semantic research.

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I would like to argue that this state of affairs is problematic, since there is a lot more to reference-point phenomena in word meanings than just prototypicality effects. I fully agree with Wierzbicka (1996: 167) that, if a prototype is "treated as a magical key to open all doors without effort, the chances are that it will cause more harm than good". Prototypes proved useful for the semantic description of some lexical groups (e.g. color terms), but they cannot be applied throughout, since "a number of lexical items do not – or only partly – lend themselves to a prototypical description" (Cuyckens 1984: 174).

In the rest of this paper, I will elaborate this idea by focussing on the semantics of dimensional adjectives denoting vertical size. As explained in Section 1, dimensional adjectives are to a much lesser degree oriented to prototypes than color terms. However, they are vague terms and therefore must be anchored *somehow*. The following section provides some examples of conceptual entities that might function as CRPs in the semantics of dimensional adjectives and motivate their functional peculiarities.

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3. Cognitive reference points in dimensional adjectives

3.1 Norm

3.1.1 *Previous studies*

Perhaps one of the central assumptions when one comes to think about relative adjectives, such as *tall* and *large*, is that they are interpreted vis-à-vis a *norm* in the middle of the scale (e.g. Bierwisch 1989; Croft & Cruse 2004; Lyons 1977). The norm is usually defined as an average value of the property established for a contextually relevant comparison class. For example, if a particular dog exceeds the average dimensions of its class, a supra term such as *large* will be used. In contrast, sub terms such as *small* are employed for smaller-than-average dogs. (I have borrowed the terms *supra* and *sub* from Croft and Cruse 2004.)

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A norm is a good example of a reference-point phenomenon in the semantics of relative adjectives, in the sense that average dimensions of a comparison class often provide mental access to specific properties denoted by means of dimensional adjectives. Through repeated exposure to numerous instantiations of an object category we store a visual image of a normal representative of that category. A sentence like *His dog is very big* can activate this knowledge of an average dog, which will give the listener mental access to the target values above the norm. The visual image of a usual-sized dog is more entrenched than various individual instantiations of the dog class. Crucially, this is another manifestation of a CRP *vs.* non-CRP asymmetry.

Barner and Snedeker (2007) provide experimental evidence suggesting that even four-year-old children use an average value as a reference point for dimensional adjectives. When presented with a series of novel objects (*pimwits*) varying in size, children agreed to call the top third of the array *tall* and the bottom third *short*. And, more importantly, when the average was altered by adding either bigger or smaller objects to the series, the subjects' responses changed as well. These results demonstrate that four-year-olds *do* use class-bound reference points in the middle of the scale for interpreting dimensional adjectives.

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This notwithstanding, I would like to suggest that the norm is not the only CRP type involved in the interpretation of relative adjectives and that it cannot be applied throughout. Below, I will present arguments against the overall applicability of the average value.

3.1.2 *Norm-free constructions*

To begin with, there are a number of constructions in which dimensional adjectives are interpreted irrespective of the norm. For instance, both subs and supras are norm-free in comparatives and superlatives; see examples (1) and (2) from the British National Corpus (BNC).

(1) Some of the palm trees look **taller** than the elm trees in our wood. (BNC)

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(2) If your display will be in the centre of a table, your **shortest** flowers should be placed around the sides of the container, and the tallest in the middle. (BNC)

The comparative *taller* in (1) does not say anything about the actual location of the tree height on the scale vis-à-vis the norm. The only fact that matters in this case is that the height of the palm trees exceeds the height of the elms. Similarly, the use of the superlative form in (2) does not imply that the flowers dubbed *shortest* were shorter than average; rather they are short compared to other flowers in the array. The reference points relevant in cases such as (1) and (2) are incidental landmarks (elm trees, other flowers), rather than an average value.

In addition to comparatives and superlatives, supra terms are not contingent on the norm in constructions with measure phrases (example 3), questions with *how* (example 4), equatives (example 5), and correlative degree constructions (examples 6 and 7).

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(3) He was small in stature, only **five feet two inches tall.** (BNC)
(4) The steely-grey eyes ran over Paula again. **How tall** are you? Five nine and a half. (BNC)
(5) The wheels were almost **as tall as he** was. (BNC)
(6) Brownie Owl was **tall enough**, by standing on tip toe, to look over and down into the hollow trunk of the decayed tree. (BNC)
(7) You're getting far **too tall** for that pony. (BNC)

In the above examples, *tall* does not mean that the vertical size of the entities exceeds some expected average. Rather, other CRPs are used to anchor conceptual specifications of *tall* here. In (3) and (4), *tall* is interpreted with respect to a *zero point* on the scale of height, which serves as a starting point for taking measurement. In these contexts, the focus is on the vertical extent measured from a zero point (e.g. ground level) rather than on the degree of deviation from the norm (see further Section 3.2).

The reference point relevant in (5) is an incidental landmark, i.e. a degree of the property in another entity, cf. (1) and (2).

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The CRPs operating in contexts such as (6) and (7) may be termed *incidental minimum* and *incidental maximum*, respectively. Just as in the preceding examples, the average height of a comparison class is not relevant in these contexts. What *is* relevant is that Brownie Owl's height in (6) reached some minimum value that enabled her to look down into the trunk. In a similar vein, the subject's height in (7) exceeds the maximum value that would allow her to ride a pony.

In summary, there are many entrenched correlations between construction types and CRP types. For example, constructions with measure phrases and questions with *how* trigger the zero point as their primary CRP. The primary reference point for comparatives, superlatives and equatives is an incidental landmark. Correlative degree constructions are usually interpreted vis-à-vis contextually determined maximum or minimum values. Notice that none of these constructions triggers a norm as a reference point for the processing of relative adjectives.

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3.1.3 *Norm-free uses of the positive form*

The observation that the constructions considered above are interpreted irrespective of the norm is not new. Researchers have noticed on numerous occasions that norm-orientedness is structurally determined (e.g. Bierwisch 1989; Cruse 1986; Lyons 1977). However, what has not been hitherto explicated is that these norm-free constructions have their own salient CRPs. As shown in the preceding section, it is not the case that adjectives used in constructions with measure phrases or questions with *how* do not have any reference points, as suggested, for instance, by Pander Maat (2006). Rather, norm-free constructions trigger other CRP types, such as a zero point, an incidental landmark, maximum and minimum values.

Furthermore, even when used in their bare form (i.e. outside the specific constructions considered above), relative adjectives may be interpreted vis-à-vis reference points, other than the norm. By way of illustration, consider (8):

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(8) For example, a person witnesses the following events in a swimming pool: A **tall** adolescent boy walks purposefully up behind a **small** coloured child and pushes him strongly into the pool. (BNC)

Although the norm-related reading is not completely excluded in the above example, it is more plausible that the adolescent is called *tall* by virtue of being taller than the colored child (incidental landmark), rather than due to exceeding the average height of his age group. Likewise, the child is called *small* not because he is smaller than children of his age, but because he is smaller than the incidental landmark – the adolescent. Thus, the reference point relevant in this case – which is by no means exceptional – is probably an incidental landmark, rather than an average value. This is evidence that not only comparatives and superlatives, but also relative adjectives in the positive can be interpreted with respect to an incidental standard of comparison instead of the norm. Consider also the following examples from Suzuki (1970):

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(9) Giraffes have long necks.
(10) ?Men have short/long necks.
(11) Some people have short/long necks.

Suzuki makes a good observation that the average value for a comparison class specified by the subject is unlikely to be relevant to the interpretation of *long* in (9). He claims that the "measure" (CRP) that is relevant in such cases is the human body, or rather proportions of the human body. This makes generic judgments about humans exemplified by (10) infelicitous. Dimensional judgments about human body-parts are only acceptable if an individual person or a group of people are described vis-à-vis the norm for humans, as in (11). This issue will be further elaborated in Section 3.3.

In brief, dimensional adjectives in the positive form may evoke reference points other than the norm (average value for a comparison class specified by the subject). There are two important implications of this finding. Firstly, it undermines the well-established view that "the positive of dimensional adjectives without a complement is

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always [emphasis mine] norm-related" (Bierwisch 1989: 95). Secondly, it shows that a whole range of various reference points is involved in adjectival semantics, prototypes and norms being only special cases of the CRP phenomenon. In the remainder of this article, I will focus on two CRP types that have already been introduced in this section – a zero point and the human body.

3.2 Zero point

3.2.1 *Introductory remarks*

As indicated above, a zero point on a gradual scale can also function as a CRP providing mental access to the conceptual specifications of dimensional adjectives. As illustrated by examples (3)–(4), a zero provides a starting point for measurement when adjectives are used in constructions with measure phrases and questions with *how*. This section will show that even bare adjectives may be oriented to the zero point. What is more, this orientation may motivate functional properties of dimensional adjectives. Two implications of the zero point for the linguistic behavior of relative adjectives will be discussed in this section: asymmetry qua markedness and asymmetry qua degree modification.

3.2.2 *Motivation of the markedness asymmetry*

It is well-known that only one member of an antonymous pair can be used to refer to the whole scale (e.g. height) rather than profile a specific subscale (e.g. tallness or shortness). This type of use is called *unmarked*, or *nominal*, and is opposed to *marked*, or *contrastive*, uses. It is always the supra term that is unmarked in constructions with measure phrases, questions with *how*, equatives and correlative degree constructions with *enough* (see examples (3)–(6) above). In all these cases, *tall* does not mean that the dimensions of its referents exceed some expected average; *tall* in the unmarked sense merely names the scale on which the measurement is taken (height rather than length, depth, etc.).

Sub terms used in these constructions are always marked. Witness (12)–(15):

(12) She is **five feet short**, and has long dark hair with blonde highlights. (http://member.wayn.com/KailasMummie)

(13) Jackie is short. He's so short you can see his feet on his driver's license. **How short** is he? That boy is short as hell. (http://www.darkhorizons.com/news10)

(14) But then Stuart meets a little girl who is fully human but every bit **as short as Stuart**, and his heart is lost to her. (BNC)

(15) I thought with this hat this dress was **short enough**. (BNC)

The sentences in (12)–(15) not only say something about the vertical extent of the referents from the zero point, they also imply that the subjects were indeed short vis-à-vis some expected (average) value.

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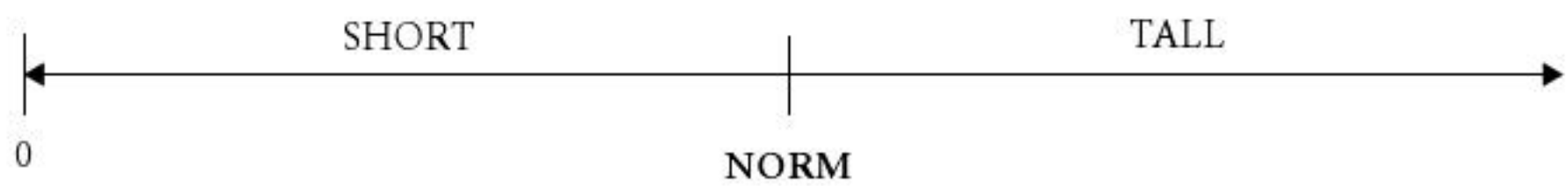

Figure 1. Subscales of tallness and shortness

The question that arises in this respect is why only supras are unmarked in the constructions listed above, whereas their sub counterparts are always used contrastively. I would like to argue that this asymmetry is motivated by the reference-point status of the zero. Notice that supra terms denote subscales extending from the norm in the middle of the scale towards the maximum endpoint (or infinity), as shown in Figure 1. In contrast, sub terms denote subscales extending from the norm in the direction of the zero.

Now observe that the general scale of height starts at the zero point and goes in the direction of the maximum endpoint. Thus, the direction of the general scale coincides with the direction of the *tall* subscale and is counter to the direction of the *short* subscale. It follows that *short* and other sub terms cannot be used in the unmarked sense (i.e. refer to the whole scale) because the direction of their subscale is counter-directional to the whole scale.

3.2.3 *Motivation of the boundedness asymmetry*

In this section, we turn to another type of asymmetry between the members of the antonymous pair – asymmetry in their abilities to combine with degree modifiers. I will argue that this type of asymmetry is also motivated by the reference-point status of the zero.

It is widely assumed that relative adjectives, such as *tall*, *good* and *fast*, are unbounded terms, *viz.* they trigger open scales that have no endpoints. A major argument used in favor of this view is that relative adjectives are incompatible with maximizing adverbs, such as *completely* and *absolutely* (*#completely tall, #absolutely low*). Indeed, this observation holds for English (Kennedy & McNally 2005; Paradis 1997), Dutch (Klein 1997), Swedish (Paradis & Willners 2006) and probably a number of other languages (e.g. Catalan, Spanish). However, there are a lot of languages that *do* allow modification of relative adjectives by maximizers. For instance, according to my informants, relative adjectives in Hungarian, Greek and French can be combined with maximizing adverbs (e.g. Hung. *teljesen hosszú* 'completely long'; Grk. *τελείως χαμηλός* 'completely low'; Fr. *tout petit* 'entirely small'). In a similar fashion, Cantonese relative adjectives are felicitous in combination with a maximizing particle meaning that the highest possible degree of the property has been reached (Wong 2007). Further, relative adjectives in Slavic languages are perfectly acceptable with maximizing adverbs meaning 'completely, entirely'.

Let us take Russian relative adjectives as an example. As shown by Apresjan (1974), Červenkova (1974) and Vorotnikov (2000), Russian sub terms can be combined with

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the maximizing adverbs *sovsem* 'completely', *soveršenno* 'perfectly' and *absoljutno* 'absolutely' (e.g. *sovsem korotkij* 'completely short', *absoljutno nizkij* 'absolutely low', *soveršenno glupyj* 'perfectly stupid'). See also examples (16)–(18) from the Russian National Corpus (RNC).

(16) *Da i topor na čerdake vysoko ne zaneseš',*
PCL and axe on attic high NEG raise
potomu čto kryša ***sovsem*** *nizkaja.*
because roof completely low (RNC)
'Moreover, you cannot raise your axe high enough in the attic, because the roof is extremely low.'

(17) *Da i, nakonec, sam-to on razve takaja*
PCL and finally self.PCL he PCL such
važnaja ptica –dela ego ***soveršenno ploxi.*** (RNC)
important bird affairs his perfectly bad
'And, after all, he is not a big shot himself. His own life can't be worse.'

(18) *A lišat' ljudej informacii v sovremennyx*
PCL deprive people information in modern
uslovijax– delo ***absoljutno glupoe.***
conditions affair absolutely stupid (RNC)
'But depriving people of information nowadays is absolutely stupid.'

In contrast to subs, supra terms are by default incompatible with maximizers in Russian (e.g. #*sovsem vysokij* 'completely high'; #*soveršenno xorošij* 'perfectly good'; #*absoljutno umnyj* 'absolutely clever'). For this reason, Apresjan (1974) and Červenkova (1974) call supra terms *unbounded* and subs *bounded* adjectives, in the sense that subscales triggered by supras have no endpoint, whereas subscales of sub terms have a maximum endpoint at which the degree of the property reaches its highest value. The same type of asymmetry is observed in other Slavic languages (e.g. Bulgarian, Czech, Polish). Also in Greek, subs are compatible with maximizers, whereas supras are infelicitous with maximality adverbs (e.g. *τελείως κοντός* 'completely short' vs. #*τελείως μακρύς* 'completely long'; *τελείως χαμηλός* 'completely low' vs. #*τελείως ψηλός* 'completely high'; *τελείως φτωχός* 'completely poor' vs. #*τελείως πλούσιος* 'completely rich').

I would like to suggest that the boundedness asymmetry in the domain of relative adjectives in general and dimensional adjectives in particular is conceptually motivated by the reference-point status of the zero. The fact that there is a salient reference plane in the proximity of the lower boundary and no salient reference plane in the vicinity of the upper boundary renders the maximum value associated with sub terms more prominent than the maximum value of supras. In the case of dimensional adjectives denoting vertical size, the zero plane (ground, floor) is not only conceptually, but also perceptually salient. Therefore, in languages where dimensional adjectives can take maximizing degree adverbs, only subs, but not supras, tend to be felicitous with

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maximizers. Even in languages such as Hungarian, where both sub and supra terms may be combined with maximizers (e.g. *teljesen hosszú* 'completely long', *teljesen rövid* 'completely short'), maximizing expressions with subs are much more frequent than maximizing expressions with supras (Anikó Lipták, p.c.).

To summarize, at least two kinds of asymmetry between adjectives constituting an antonymous pair – asymmetry qua markedness and asymmetry qua degree modification – seem to be motivated by the CRP status of the zero point.

3.3 EGO

Another reference point that deserves attention in the context of this paper is the human body, its dimensions and proportions. Following Clark (1973), this CRP type will be referred to as EGO. The semantic analysis presented in Section 3.1.3 has already shown that dimensional adjectives are sometimes interpreted vis-à-vis EGO; this is why a sentence such as *Giraffes are tall* is felicitous, whereas *People are tall* is odd. This section will demonstrate that EGO can also motivate the distribution of dimensional adjectives with head-nouns.

Several studies have shown that adjectives meaning 'high' are usually applied to entities that are taller than EGO. Goy (2002) has demonstrated this for Italian *alto* 'high', Vogel (2004) for Swedish *hög* 'high/tall' and Tribushinina (2008) for Russian *vysokij* 'high/tall' (see also Rakhilina 2000).

Using both elicited and non-elicited data, Tribushinina (2008) has also shown that EGO motivates the distribution of the Russian near-synonymous adjectives *nevysokij* 'not.high' vs. *nizkij* 'low/short'. *Nevysokij* 'not.high' is usually employed when the vertical size of an entity is lower than expected for its comparison class (norm), but as tall as, or taller than, EGO. In contrast, *nizkij* 'low/short' tends to be used for objects whose vertical size is both below the norm for their comparison class and smaller than EGO (cf. Rakhilina 2000). Crucially, this finding bolsters the claim made in this paper that the norm is not the only CRP type relevant to dimensional adjectives. More than one reference point may be simultaneously involved in the interpretation of relative adjectives.

In a similar vein, Dirven and Taylor (1988) and Taylor (2003) argue that *tall* has human verticality as its reference point. Therefore, it is most frequently used with reference to human beings or entities having crucial properties of human-like verticality, such as prominence of the vertical dimension, dynamic conceptualization of vertical extent and standing out from the background. This makes vegetation and buildings good candidates for modification by *tall*. This claim was supported by the elicited data reported in Dirven and Taylor (1988) and the corpus studies analysing the use of *tall* in the Birmingham University Corpus (Dirven & Taylor 1988) and the LOB corpus (Taylor 2003).

The findings from Dirven and Taylor (1988) and Taylor (2003) are confirmed by the distribution of *tall* in the BNC. The frequencies of various referent categories of *tall* in the BNC are listed in Table 1. (Both positive and non-positive forms were taken into

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Table 1. Referent categories of *tall* in the BNC

Referent categories	Examples	Tokens	%
Human beings	man, girl, woman	3,096	62.66
Vegetation	bush, grass, plant, tree	569	11.52
Constructions	bell-tower, building, house	477	9.65
Containers	bottle, box, glass	103	2.08
Animals	bull, dog, horse, rhinoceros	97	1.96
Furniture and appliances	bookcase, chair, stool	90	1.82
Openings	door, portal, window	83	1.68
Vehicles	car, caravan, ship	63	1.28
Eminences	cliff, hill, mountain	55	1.11
Supports	base, leg, stem	47	0.95
Enclosures	fence, gate, hedge	43	0.87
Clothing	hat, helmet, collar	38	0.77
Monuments	obelisk, sculpture, statue	26	0.53
Interior	apartment, gallery, room	22	0.45
Body parts	head, limb, thigh	10	0.2
Other	book, candle, cane	122	2.47

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account.) The figures in the table show, in line with Dirven and Taylor (1988) and Taylor (2003), that the most frequent referent category of *tall* in the BNC are human beings. Other prominent referents are vegetation and constructions, i.e. objects that, like humans, stand out as gestalts from the background, have support on the ground and grow upwards either by a natural process (vegetation) or through human activity (buildings).

In sum, the reference-point status of EGO has several important implications for the semantics of dimensional adjectives denoting vertical size. Like the zero-point, EGO has been shown to motivate adjective-noun combinability and distribution of near-synonymous adjectives.

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4. Conclusion

Reference-point reasoning is a ubiquitous cognitive phenomenon intrinsic to perception, categorization, spatial orientation, and social, organizational and marketing behavior of human beings, among other things. Nonetheless, we still know too little about *linguistic* aspects of the reference-point phenomenon. Even less is known about CRPS in lexical semantics.

Using a tiny piece of lexical landscape as a case study, this paper has demonstrated that there is a lot more to the reference-point aspects of word meaning than prototypes.

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For one, adjectives of vertical size were shown to be anchored by such CRPs as a norm (average value), incidental landmarks, minimum and maximum values, a zero point and EGO.

What is more, these reference points proved to have important implications for the semantics and distribution of dimensional adjectives. For example, the cognitive salience of the zero point motivates two kinds of asymmetries between the adjectives constituting an antonymous pair. First, sub terms cannot be used in the unmarked sense because they trigger subscales running *towards* the zero point, rather than *from* it. Second, across languages, subs, but not supras, tend to be compatible with maximizing adverbs, which is probably due to the prominence of the zero plane.

Further, the scalar reference points discussed in this paper may motivate patterns of adjective-noun combinability. For instance, adjectives meaning 'high/tall' are commonly applied to entities that are as tall as, or taller than, EGO.

In a nutshell, the reference-point account allows us to ground semantic analysis in more general principles of human cognition and to pinpoint patterns of conceptual motivation of a word's functional properties. It will be a matter for future research to discover other types of reference points relevant to word meaning.

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Metonymy, metaphor and the "weekend frame of mind"

Towards motivating the micro-variation in the use of one type of metonymy

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A series of corpus-based case studies on the availability of metonymically used proper names in the language of media, where the name of a capital is used to refer indirectly to the government, shows that this particular type of metonymy is available in Hungarian and Croatian but underused in comparison with English and German. The picture is all the more puzzling because the distribution of metonymies is very uneven in Hungarian and Croatian – some texts exhibiting hardly any such metonymies while they abound in some other texts. When examined along the temporal dimension, the data reveal a cyclic variation in the availability of these metonymies, with productivity regularly peaking at the weekend. These contrasts appear to be ultimately motivated by the workings of a cultural model whose essential ingredient is a correlation obtaining between two very general conceptual metaphors: TIME IS SPACE and SOCIAL AND MENTAL WORLD IS PHYSICAL WORLD.

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Keywords: cross-linguistic comparison, cultural model, referential metonymy, variation

1. Introduction

Proper names have always been of great interest to almost anyone concerned with language. A whole range of philosophical and linguistic issues have been raised and various proposals and/or claims put forward. In the more linguistically-minded contributions dealing with one or the other aspect of proper names (such as Lehrer 1999; Anderson 2003, 2004; Barcelona 2003, 2004; Kleiber 2004) we find that discussions of the grammatical structure and behavior of proper names are intervowen with thoughts on their reference. In this paper we are concerned with metonymic uses of

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one type of proper names, i.e. with the use of names of capitals in the CAPITAL FOR GOVERNMENT metonymy. This type of metonymy counts as a stock example of referential metonymy (cf. Lakoff & Johnson 1980 and Radden & Kövecses 1999 for this type of metonymy, and Panther and Thornburg 1999: 335–336 for their pragmatic typology of metonymies).

Recent cross-linguistic studies on metonymy have indicated that the availability of various types of referential metonymies is limited in various languages, although they seem to be subject to less severe constraints than predicational ones. A series of corpus-based case studies on the availability of metonymically used proper names in the language of media where the name of a capital is used to refer indirectly to the government, such as in (1), shows that this particular type of metonymy is available in Hungarian and Croatian, but underused in comparison with English and German, where it is ubiquitous (cf. Brdar-Szabó & Brdar 2003; Milić & Vidaković 2007).

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(1) a. *Beijing* was outraged, and it looked like *Washington* had done it on purpose.
b. Russian President Vladimir Putin's top foreign policy adviser yesterday expressed optimism that *Moscow* and *Washington* could resolve their differences over a post-war settlement in Iraq by early next month.
c. *Berlin* has long argued that it is unfair to eliminate safeguards such as poison pills if countries can retain multiple voting rights.
d. They were less keen to talk about the US-inspired caveat that any increased threats by *Pyongyang* would "require consideration of further steps" – code for military action or, more likely, sanctions, both of which *Seoul* opposes.

A search for the motivation of these cross-linguistic differences is far from easy, as a number of factors seem to be at work here, some of which are interrelated in more or less complex ways (cf. Radden & Panther 2004 for an overview of what constitues motivation in linguistics and in particular in cognitive linguistics). The task is all the more complicated by the fact that we apparently do not have to do with a "flat" sort of cross-linguistic variation, i.e. with a simple case of differences obtaining across the board and producing average distributions in the sense that any segment of a set of empirical data (i.e. any section of a corpus of media discourse) would exhibit the same statistical likelihood for the presence or absence of the phenomenon in question. Instead, there seem to obtain differences in the availability of the metonymy under study between certain subsections of our corpora.

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Our goal in this paper is, first, to try to identify some dimensions along which variation in the use of the CAPITAL FOR GOVERNMENT metonymy occurs in Croatian and Hungarian, in particular concentrating on micro-variation in time, and secondly, to suggest a possible motivation for the observed patterns of variation. We will argue that a conceptual metaphor is the central element in a cultural model which provides cognitive motivation for the temporal micro-variation in the use of the CAPITAL FOR

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GOVERNMENT metonymy. Further, we will demonstrate that the workings of this metaphor can be observed on two levels, on the one hand, as a fairly direct form of motivation, and, on the other hand, also as mediated through an interplay of the structural properties of the medium of newspapers and the structural givens of the whole linguistic system involved.

The structure of the paper is as follows. In Section 2 we start from overall differences in the use of the CAPITAL FOR GOVERNMENT metonymy in English, German, Croatian and Hungarian, and then look at the internal variation in the Croatian and Hungarian subcorpora, focusing on a cyclic type of micro-variation over time. In Section 3.1 we discuss the conceptual metaphor PROXIMITY/DISTANCE IN TIME AND MENTAL WORLD IS THE PROXIMITY/DISTANCE IN THE SOCIOPHYSICAL WORLD as an essential ingredient of the cultural model providing the more or less direct cognitive motivation for the micro-variation. In Section 3.2 we link this micro-variation with some structural aspects of media discourse, on the one hand, and with some structural properties of Croatian and Hungarian, on the other. Finally, in Section 4 we present our conclusions.

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2. Cross-linguistic and intra-linguistic variation in the use of the CAPITAL FOR GOVERNMENT metonymies

Several previous studies have documented cross-linguistic differences in the use of the CAPITAL FOR GOVERNMENT metonymy in the language of media (cf. Brdar-Szabó 2002; Brdar-Szabó & Brdar 2003; Tomka 2003). Brdar (2007a) compares the use of this type of metonymy in international hot news in selected English, German, Croatian and Hungarian daily newspapers (cf. Table 1). The texts in the four subcorpora were news articles (but not leaders or commentaries) from foreign/international sections of daily newspapers with national circulation. In order to make the four subcorpora roughly comparable in terms of reference, we decided to sample articles on seven randomly chosen weekdays between September 2001 and November 2006, which we believe should ensure that there is a high degree of overlap concerning the events reported.

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The data are presented in the table in both the absolute form (in terms of types and tokens), as well as in a normalized form (giving the frequency of tokens normalized to the standard basis per 1,000 words). This procedure makes it possible to offset any relative differences in the number of articles and their relative length across papers and languages.

The difference in these numbers between English and German is not so conspicuous, but it is nevertheless not unimportant. On the other hand, both Croatian and Hungarian, while close to each other in terms of the frequency of metonymies in question and the number of tokens, are well below what could be considered the average value. Some of the constraints – and thus some of the unevenness in the distribution – have been shown to be pragmatic and grammatical in nature (cf. Brdar-Szabó &

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Table 1. The use of the CAPITAL FOR GOVERNMENT metonymy in international news in English, German, Croatian and Hungarian dailies (in seven issues on random days between September 2001 and November 2006)

Language	*Papers*	*Subcorpus size (number of words)*	*CAPITAL FOR GOVERNMENT metonymy*		
			Tokens		*Types*
			In absolute numbers	*Number of tokens per 1,000 words*	
English	1. Financial Times 2. Guardian	57,606	163	2.82	26
German	1. Frankfurter Allgemeine Zeitung 2. Süddeutsche Zeitung	62,560	166	2.65	24
Croatian	1. Vjesnik 2. Večernji list	38,380	71	1.85	16
Hungarian	1. Népszabadság 2. Magyar Nemzet	47,278	84	1.77	18
	Total	205,824	484	2.35	

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Brdar 2003; Brdar 2007a,b), but there is a considerable residue of such cross-linguistic and intra-linguistic contrasts that has gone undiscussed and unexplained so far, and which seems to suggest that we might be dealing with a phenomenon calling for a (cognitive) sociolinguistic approach (cf. Janicki 2006, as well D. Geeraerts interviewed by Marín-Arrese 2007).

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The picture is all the more puzzling because the distribution of metonymies in question is very uneven in Hungarian and Croatian. There are hardly any such metonymies in some texts, while they abound in some other texts. Such extreme deviations are, on the other hand, absent in our English and German data. It appears that there is some sort of cyclic oscillation or temporal variation in the productivity of this type of metonymies in newspaper texts on some days.

In order to check whether there is any regularity in this variation, we decided to take a closer look at the distribution of this type of metonymies in the international news sections of one Croatian and one Hungarian newspaper, and study how the productivity varies from day to day within 10 randomly selected weeks between May 2007 and July 2008. The size of the two corpora was 188,962 words for Croatian, and 193,829 words for Hungarian.

We provide some of the representative examples for Croatian in (3), and in (4) for Hungarian:

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(3) a. *Teme poput Kosova, gdje se stavovi*
topics like Kosovo where REFL positions
Moskve *i* ***Bruxellesa*** *razilaze,...*
Moscow-GEN and Bruxelles-GEN depart
'Topics like Kosovo, where the positions of Moscow and Bruxelles depart'
(*Vjesnik*, May 19, 2008)

b. *Cilj je obustaviti borbe između*
goal is stop fights between
snaga pod kontrolom ***Khartouma,***
forces under control Khartoum
etničkih milicija i pobunjenika u Darfuru.
ethnic militia and rebels in Darfur
'The goal is to stop the fights between the forces controlled by Khartoum, ethnic militia and the rebels in Darfur' (*Vjesnik*, March 9, 2007)

(4) a. ***Berlin*** *ezen túlmenően diplomáciai*
Berlin this-on surpassing diplomatic
nehézségekkel is szemben találja magát.
difficulties-with too in-front-of finds itself
'In addition to this, Berlin also faces diplomatic difficulties'
(*Magyar Nemzet*, July 24, 2008)

b. ***Peking*** *tiltakozott a tervezett utazás ellen*
Beijing protested DEF planned travel against
'Beijing protested the planned travel' (*Magyar Nemzet*, April 17, 2008)

Noting the rhythm of relative peaks and downs, we assumed that we are dealing with weekly cycles in productivity, with relative peaks centering around Fridays, and most downs in the middle of the week, i.e. on Tuesdays or Wednesdays. Our findings for Croatian are presented in Table 2 and Figure 1, and in Table 3 and Figure 2 for Hungarian.

The first figure in each cell is the absolute number of metonymic uses of names of capitals to refer to governments (tokens). The second figure is the number of words in the international hot news section in a particular issue of the newspaper in question. The figure in the third row in each cell is the number of metonymic tokens in a normalized form (normalized to the standard basis per 1,000 words) to offset the differences in the number of words between individual issues.

As is quite clear from the tables and figures above, our starting assumption concerning the cyclic variation is apparently confirmed. A discussion of the significance of these findings as well as a possible motivation follow in Parts 3.1 and 3.2 below.

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Table 2. The use of CAPITAL FOR GOVERNMENT metonymies in the Croatian corpus, broken down by weeks and days

Week \ Day	Mon	Tue	Wed	Thu	Fri	Sat
2007	8	11	3	2	5	9
02/05–10	2,587	3,894	3,653	2,610	3,740	2,620
	3.092	2.824	0.821	0.383	1.336	3.435
2007	5	9	14	5	1	4
02/12–17	2,599	3,136	3,255	2,507	2,242	2,467
	1.923	3.484	4.301	1.302	0.446	1.621
2007	8	5	6	4	7	6
03/05–10	4,129	3,365	3,507	2,218	2,380	3,367
	1.559	1.485	1.710	1.803	2.941	1.782
2007	8	7	12	5	7	7
03/12–17	3,200	2,318	3,999	1,136	1,272	2,307
	2.500	3.019	3.000	4.401	5.503	3.034
2007	4	6	3	0	3	2
04/16–21	2,022	3,578	2,677	888	2,494	2,384
	1.978	1.676	1.120		1.202	0.838
2007	3	2	1	0	12	2
05/07–12	3,633	3,230	2,381	3,232	3,109	2,176
	0.825	0.619	0.419		3.859	0.919
2007	8	9	0	7	5	3
05/14–19	3,463	3,779	1,319	3,739	2,430	2,635
	2.310	2.910		1.872	2.057	1.138
2008	6	6	10	15	8	16
02/25–03/01	3,466	2,837	2,747	7,091	2,505	5,924
	1.731	2.114	3.640	2.115	3.193	2.700
2008	3	6	5	11	6	37
03/03–08	2,720	2,276	1,833	6,098	2,938	8,271
	1.102	2.636	2.727	1.803	2.042	4.473
2008	7	5	1	4	6	1
07/21–26	3,047	3,009	2,848	1,929	3,028	2,316
	2.297	1.661	0.351	2.073	1.981	0.431
Number of metonymies	**59**	**59**	**40**	**53**	**62**	**87**
Number of words	**30,886**	**33.064**	**29,219**	**31,448**	**29,878**	**34,467**
Number of metonymies per 1,000 words	**1.910**	**1.784**	**1.368**	**1.685**	**2.075**	**2.524**

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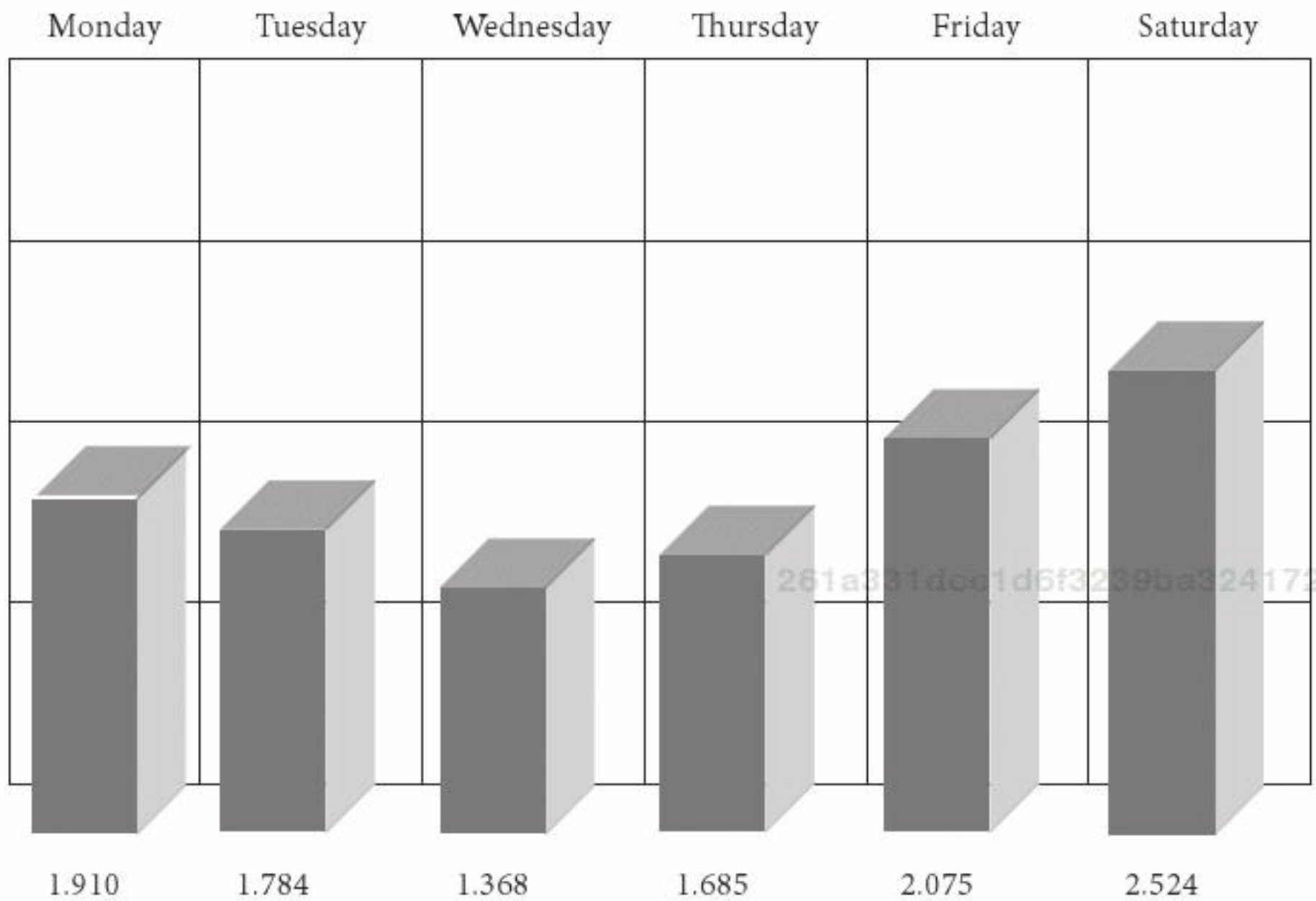

Figure 1. The use of CAPITAL FOR GOVERNMENT metonymies in the Croatian corpus, broken down by days

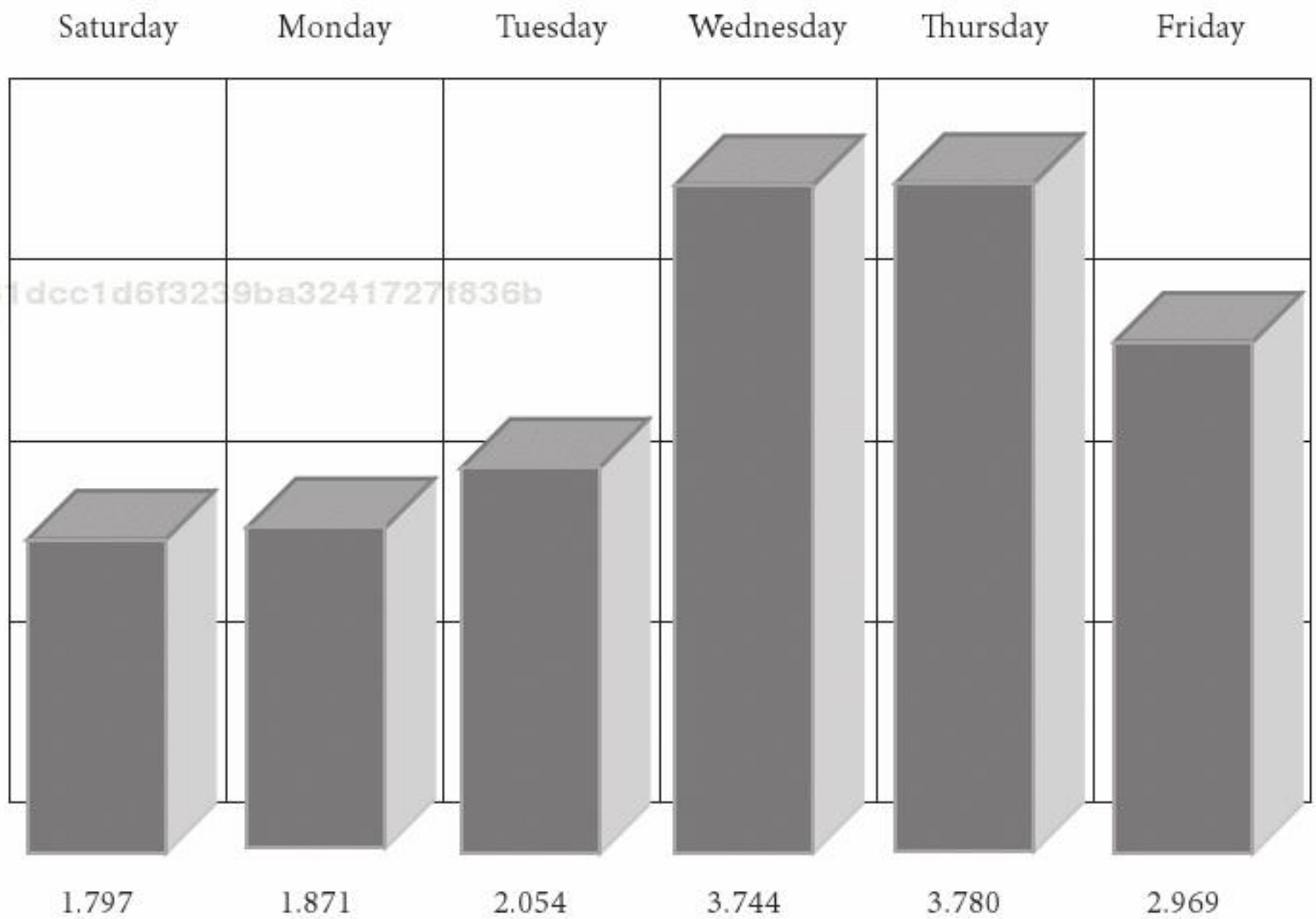

Figure 2. The use of CAPITAL FOR GOVERNENT metonymies in the Hungarian corpus, broken down by days

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Table 3. The use of CAPITAL FOR GOVERNMENT metonymies in the Hungarian corpus, broken down by weeks and days

Week \ Day	Mon	Tue	Wed	Thu	Fri	Sat
2007	10	3	4	8	16	19
02/05–10	4,319	3,585	1,973	3,478	4,904	2,887
	2.315	0.836	2.027	2.300	3.262	6.581
2007	10	13	12	18	5	12
02/12–17	4,538	3,820	3,010	1,983	1,719	4,226
	2.203	3.403	3.986	9.077	2.908	2.839
2007	3	9	2	9	15	10
03/19–24	3,350	3,286	2,922	2,281	3,262	3,654
	0.895	2.738	0.684	2.052	4.598	2.736
2007	9	2	8	8	16	6
03/26–31	4,073	3,077	2,988	2,861	2,710	3,154
	2.209	0.649	2.677	2.796	5.904	1.902
2007	2	2	2	13	12	13
04/16–21	3,633	4,217	2,787	3,097	4,014	4,540
	0.550	0.474	0.717	4.197	2.989	2.863
2007	8	9	9	12	4	4
05/14–19	3,630	4,063	3,061	3,092	3,533	3,219
	2.203	2.215	2.940	3.880	1.132	1.242
2007	7	6	1	12	7	19
06/05–10	3,980	3,617	2,988	3,398	3,272	3,790
	1.758	1.658	0.334	3.531	2.139	5.013
2008	3	8	2	13	21	–
03/10–16	2,683	3,253	2,871	2,209	2,655	
	1.118	2.459	0.696	5.885	7.909	
2008	1	6	8	4	18	5
04/14–19	2,460	3,387	3,167	2,634	3,229	2,328
	0.406	1.543	2.526	1.515	5.574	2.147
2008	11	9	11	19	10	1
07/21–26	2,935	2,492	3,588	3,209	4,563	3,230
	3.747	3.617	3.065	5.920	2.191	0.309
Number of metonymies	**64**	**67**	**59**	**108**	**128**	**89**
Number of words	**35,601**	**35,791**	**28,714**	**28,842**	**33,861**	**31,020**
Number of metonymies per 1,000 words	**1.797**	**1.871**	**2.054**	**3.744**	**3.780**	**2.869**

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3. Motivation for the micro-variation of the CAPITAL FOR GOVERNMENT metonymies in Croatian and Hungarian

To the best of our knowledge, the only other published cognitive linguistic study discussing a similar case of micro-variation in time is Boers (1999), an ingeniously devised corpus-based study of seasonal variation in the frequency of the use of HEALTH metaphors in the editorials of *The Economist* over a ten-year period. The fact that frequencies clearly peak from December to March, the time period in which people are more concerned with health because they have more problems with their health then, nicely shows how literally embodied our everyday metaphors are. However, in our case, the micro-variation in time that we observed cannot be motivated in such a direct and effective manner.

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3.1 Conceptual motivation: the role of the cultural model and the metaphor PROXIMITY/DISTANCE IN TIME AND MENTAL WORLD IS THE PROXIMITY/DISTANCE IN THE SOCIOPHYSICAL WORLD

We would like to submit that some contrasts in the availability of the CAPITAL FOR GOVERNMENT metonymies can be ultimately motivated by the workings of a cultural model whose essential ingredient is a very general conceptual metaphor: PROXIMITY/DISTANCE IN TIME AND MENTAL WORLD IS THE PROXIMITY/DISTANCE IN THE SOCIOPHYSICAL WORLD. What we witness here is a correlation of two metaphoric processes. We start from the following conceptual metaphors:

1. TIME IS SPACE (and more specifically, PROXIMITY/DISTANCE IN TIME IS PROXIMITY/DISTANCE IN SPACE), and
2. SOCIAL AND MENTAL WORLD IS PHYSICAL WORLD (and more specifically, PROXIMITY/DISTANCE IN THE SOCIAL AND MENTAL WORLD IS PROXIMITY/DISTANCE IN SPACE (IN THE PHYSICAL WORLD)).

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The entailment of the two metaphors being used in combination is:

> PROXIMITY/DISTANCE IN THE SOCIOPHYSICAL AND MENTAL WORLD IS PROXIMITY/DISTANCE IN TIME.

What we mean in this paper by the expression "the weekend frame of mind" boils down to two related phenomena. On the one hand, we suppose that journalists are by the end of the week prone to assume a more holistic perspective, giving them more distance in their view of the week's events, particularly if they are writing about some events introduced earlier in the week. On the other hand, pragmatic factors such as perspective and the degree of the empathy and respect or their detachment that journalists feel (and, of course, their readership if they adopt the perspective suggested in the paper) towards the political authority in question seem to play an important role.

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We surmise that the viability of CAPITAL FOR GOVERNMENT metonymies is diminished in Hungarian and Croatian news due to journalists' subconscious deference towards authorities and traditional reluctance to breach the "safe distance" in real time reporting. However, just before, or at the beginning of weekends, this distance is increased as journalists relax and anticipate their time off duty (as the newspapers in question do not have Sunday editions), projecting themselves mentally into an off-real-time state with more distance from events and entities involved than they otherwise have in covering them in almost real time.

Some tentative conclusions may be drawn about the intercultural differences concerning the work-week structure imposed by the cultural models current in the Croatian and Hungarian general and/or journalist community, respectively. Note that the availability of the metonymies in question steadily rises in Hungarian from Monday to Friday. In contrast, in Croatian we have a rising tendency starting midweek, on Wednesday and continuing until Saturday, which is followed by a gradual drop ending on Tuesday, where a new cycle starts. Thus, while the weekend is relatively sharply distinguished from the rest of the week in our Hungarian corpus, though the "weekend frame of mind" apparently also includes Thursday but not Monday, the Croatian corpus seems to justify our claim that here we have to do with a cultural model of an extended weekend, in which Monday, perhaps even Tuesday, is included.

Note that the same distance metaphor motivates some other unexpected constraints on the use of the metonymy type in question. If the CAPITAL FOR GOVERNMENT metonymy is in principle available, although its overall distribution in texts may be lower in some languages, as we have just shown, we might expect, at least in principle, that any capital should be a viable metonymic source. This is of course just theory, as governments, capitals and countries in question must be salient enough for the speakers of a given linguistic community. It is plain enough why Belmopan hardly stands any chance of being used metonymically in a Croatian or Hungarian news article for the government of Belize, or Bridgetown for the Barbados government, or Funafati being used to metonymically refer to the Tuvaluan government.

The picture that we get from the newspaper component (9 million words when the data in the Table 4 were retrieved in 2004) of the Croatian National Corpus largely conforms to the above expectation of uneven distribution.

Washington, Moscow and Baghdad clearly lead the list. But it appears that cultural saliency alone does not tell the whole story. The governments in Berlin, Paris, and London are all perceived in Croatia as important political players in Europe, but the number of metonymically used instances of Berlin lags behind Paris and London. Why should their distribution be as it is?

There are apparently many factors at play here, but in this contribution, we concentrate on just one among the whole set of prominent factors. It is our claim that the propensity for metonymies in question may again be constrained by the same culturally mediated conceptual metaphor discussed above. First of all, names of capitals are used metonymically only in certain types of articles, most of the time in news on

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Table 4. Frequency and metonymic uses of capital names in the newspaper subcorpus of the Croatian National Corpus (retrieved in 2004)

Capital	Total number of tokens	Metonymic uses	
		tokens	% of the total number of tokens
Berlin	257	5	1.94
Paris	764	20	2.61
Sarajevo	1,247	36	2.88
London	515	24	4.66
Beograd	982	90	9.16
Moskva	338	57	16.8
Washington	561	146	26.02
Bagdad	85	32	37.64

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international affairs, i.e. in articles dealing with relationships between countries, then in business news, but relatively infrequently in news on domestic affairs. This last observation in fact squares with the observation that in some communities journalists are not so ready to use the name of the capital of their own country metonymically, while they often refer to other countries' governments in this way. What we presume to be playing an important role here, as pointed out above, are pragmatic factors such as perspective and the degree of empathy or detachment that the journalist feels towards the authority in question. What, on the other hand, underlies this way of marking the perspective and expression of empathy, i.e. what makes them possible, is in our opinion a variant of the distance metaphor: EMOTIONAL DISTANCE IS DISTANCE IN PHYSICAL SPACE.

The cultural viability of the CAPITAL FOR GOVERNMENT metonymy depends on the place of the political institutions in question on a metaphorical scale of closeness with respect to the deictic centre or ego. This deictic centre or the collective ego is the cultural and linguistic community, specifically journalists as the producers and readers as the addressees of news articles, taken together. Both friends and foes come very close to the ego.

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Friends are close because the ego relies on them, foes are close because as antagonists they come close when they are engaged in combat. This explains why Washington and Baghdad occupy such prominent positions in Table 4. The status of Moscow is, however, more ambiguous. It is certainly not perceived as a friend, although it is not a foe. We might be tempted to reformulate the conceptual system of friends and foes by adding the concepts of global power brokers (held in high esteem), and global or local villains (held in low esteem). Global power brokers should of course also be handled with care and from a safe distance.

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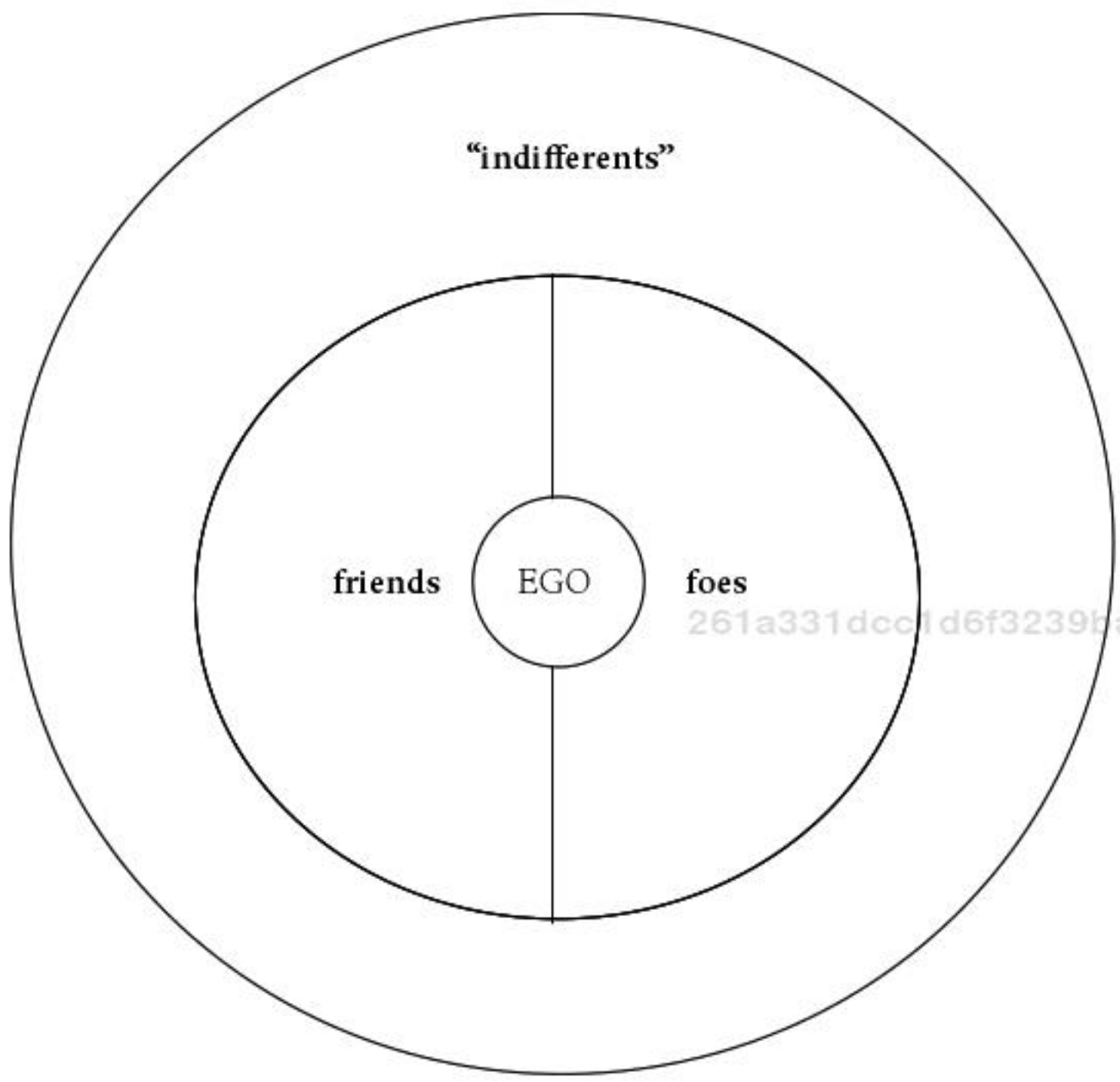

Figure 3. Metaphorical scale of (conceptual and emotional) closeness to the deictic centre or ego

This now might explain the status of Moscow, but we should still be puzzled about Berlin lagging behind Paris and London, because Germany is more readily perceived in Croatia as a friend than the UK or France. This seems to be borne out by the results of a recent opinion poll carried out by the GfK Centre for Market Research. According to this poll, Germany, Austria and Italy are the countries towards which Croatian citizens have the most positive attitude. Looking at the big powers, France fares best with its position in the middle, followed by Great Britain, and the USA, in that order, Russia lagging far behind. As for neighboring countries, Bosnia and Herzegovina comes in the middle, while in the case of Slovenia and Serbia and Montenegro negative attitudes outweigh positive ones, particularly so in the case of Serbia and Montenegro.

We hypothesize that friends on the scale come closer to the ego or the deictic centre than mere power brokers that are otherwise neutral. If we convert the revised scale implicit in Figure 1 into a flat linear representation, more in line with the idea of a graphic such as Figure 5 emerges.

If Figure 5 is correct, then the highest frequency of metonymic uses would be expected in the middle of the metaphoric scale of closeness, while it drops as we approach the extreme ends of the scale. We might then also predict that the community's own capital, as it is on the extreme end of the scale (in the deictic centre), should also be underused as metonymic source.

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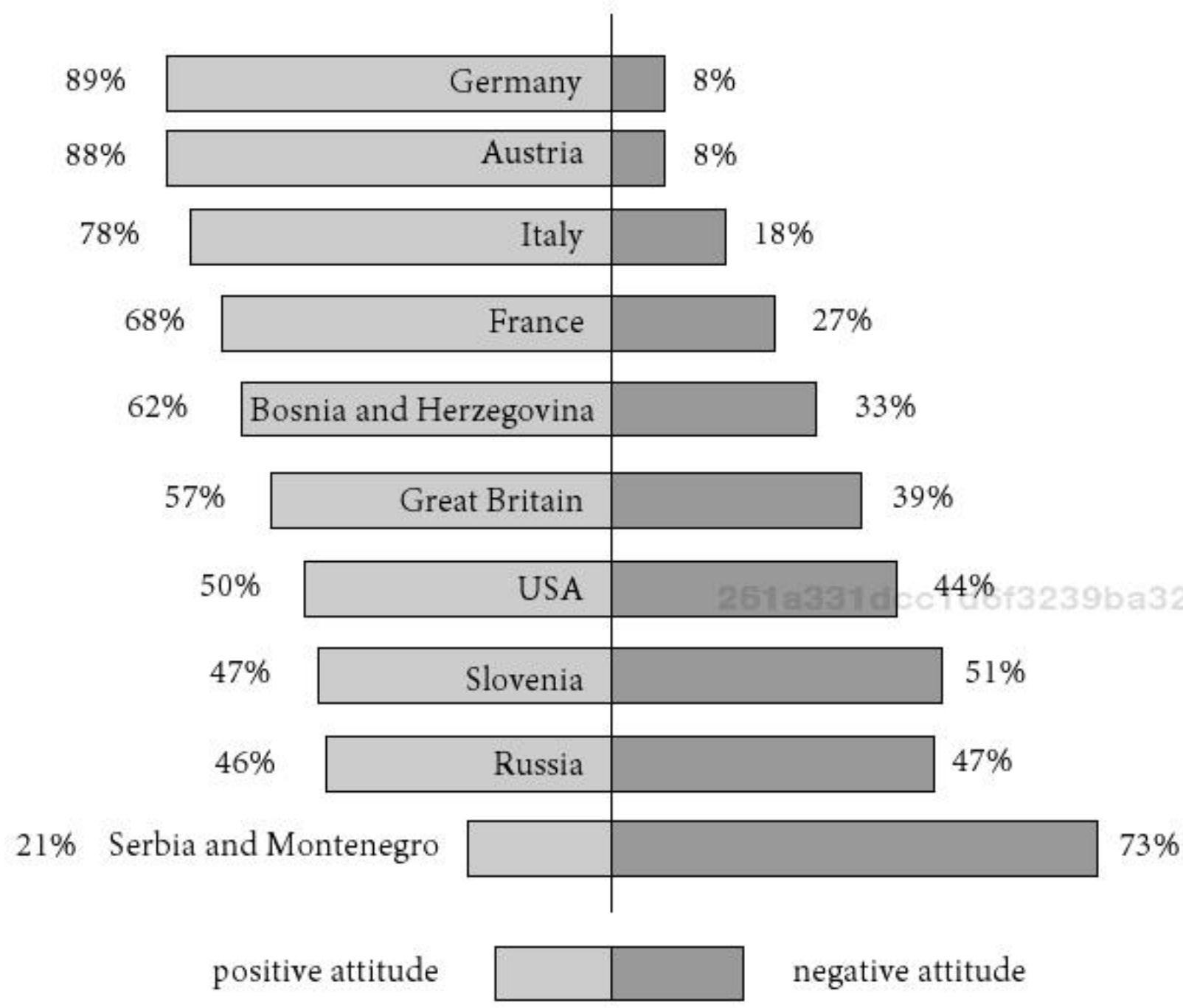

Figure 4. Metaphorical scale of (conceptual and emotional) closeness to the deictic center or ego

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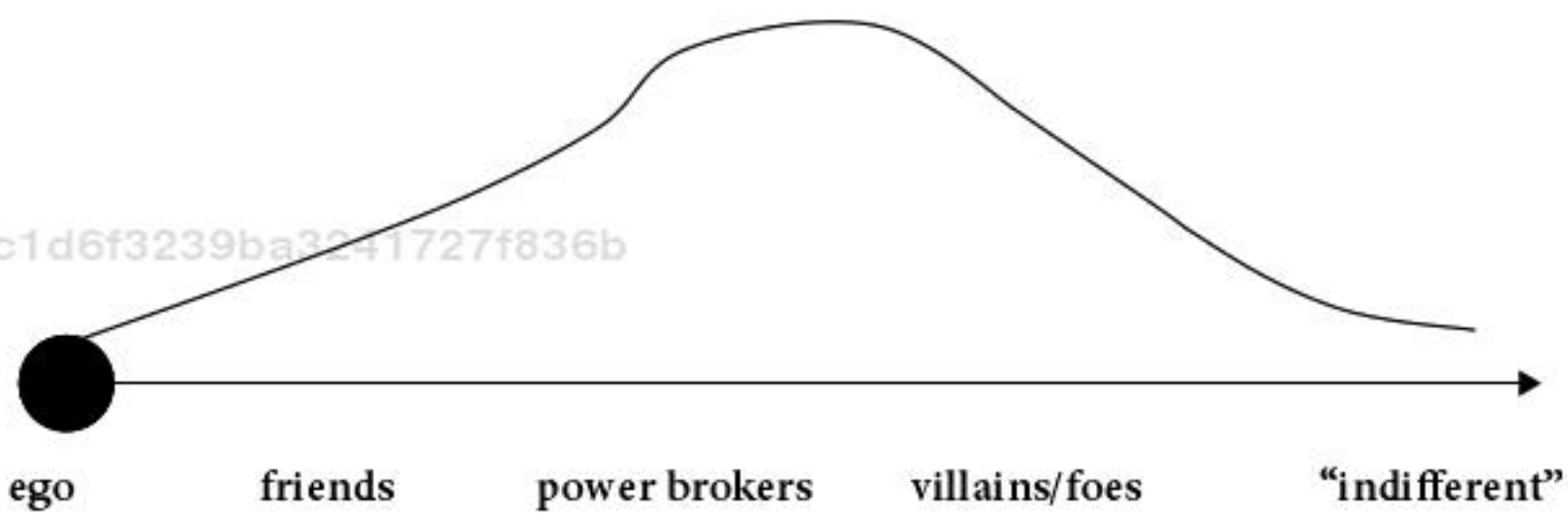

Figure 5. The distribution of metonymic references along the revised metaphorical scale of closeness

3.2 Structural and discourse-pragmatic motivation

A number of structural and discourse-pragmatic facts about the metonymies in question seem to corroborate the hypothesis formulated at the end of the preceding section. We first turn to the problem of metonymic topic-maintenance, and then to the relationship of metonymic chains and news text length.

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3.2.1 *Metonymic topic-maintenance*

As we have shown elsewhere (Brdar-Szabó & Brdar 2003; Brdar 2007a,b), although Croatian and Hungarian, as pro-drop languages, can in general tolerate quite long stretches without any explicit topic-maintenance work, unlike English or German, which obligatorily require at least pronominals to fill the subject slot, metonymically used names of capitals that function as subjects may ultimately require explicit anaphorical reference, but even before that there may be need for some agreement features (number, person, gender) to appear on verbal elements.

An attempt to use anaphoric pronouns in pro-drop languages like Croatian or Hungarian in order to maintain such metonymic topics – the most marked or unnatural solution of the four we mention above – would yield odd results. For example, regardless of whether we choose a pronoun according to the gender of the capital, i.e. neuter *ono* 'it' for *Sarajevo*, or masculine *on* 'he' for *Berlin*, or *London*, or *Washington*, etc. or whether we choose the feminine pronoun *ona* 'she' compatible with the target, i.e. the feminine noun *vlada*, 'government', there seems to be a break in the topic continuity, because the switch from a double-barrelled topic seems to be too abrupt. Even with more straightforward referents, it is usually assumed that a pronoun in subject position is quite likely to introduce a new topic, or effect a backshift to one of the topics mentioned before the last one. With metonymic double-barrelled nouns, such a shift becomes intolerable. The same happens sooner or later in the case of elegant variation between capital and country names, as the nouns can be of different gender, too.

Hungarian, of course, has a rudimentary gender system, but nevertheless such a switch to an overt 3rd person personal pronoun would be unusual, if not felt to be impossible, and is not once attested in our corpus. The third person singular personal pronoun seems to be used exclusively for animate antecedents, while the 3rd person demonstrative pronoun is mostly used for inanimate objects (*azt* 'this-ACC'). This virtually leaves us with a zero pronoun option for inanimate subjects.

This means that even if Croatian and Hungarian can initially get around the problem of the selection of anaphoric pronouns by simply avoiding these pronouns, the problem of the selection of the appropriate agreement features cannot be that easily solved. Of course, a possible strategy is to avoid metonymy altogether, which accounts for a relatively frequent situation: newspaper articles in Croatian and Hungarian that exhibit no metonymically used names of capitals whatsoever.

Another unnatural solution to the pressure of maintaining topic continuity, attested both in Croatian and Hungarian texts in our corpus, is to stick to a whole series of metonymic uses of the same capital name within a single text. Such metonymic chains are admittedly a very awkward solution in stylistic terms, but nevertheless not infrequent. This state of affairs accounts for another aspect of unevenness in the distribution of the metonymies in question, as mentioned in our introduction, which is at first blush unrelated to the weekend frame of mind variation. We would like to claim that the two are, however, closely related. A fairly long metonymic chain is only possible in a longer newspaper text. As predicted by our PROXIMITY/DISTANCE metaphor,

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distance from the events in the mental world and temporal distance, characteristic of weekends, result in longer texts, often in commentaries and editorials, and this is bound to produce an environment favorable to longer metonymic chains.

3.2.2 *Metonymic chains and the length of news texts*

As predicted by our proximity/distance metaphor, the distance from the events in the mental world and the temporal distance, characteristic of weekends, result in longer texts, often in commentaries and editorials. As can be seen in Tables 2 and 3, the number of words for both languages in our corpus happens to be the lowest mid-week, i.e. on Wednesday, and it is the highest on Saturday in Croatian. Longer texts are a more favorable environment for metonymic chains for the reasons discussed in 3.2.1. above.

Note also the significance of the fact that the number of types, as shown in Table 1, is considerably higher for English and German than for Croatian and Hungarian. In other words, a smaller number of names of capitals is used more frequently in both Croatian and Hungarian, possibly chained in one and the same text, as shown by the following two examples.

It so happens that 4 out of the total 8 metonymies of this type attested on Friday, February 29, in the Croatian corpus are instances of the metonymic use of *Moskva* `Moscow`, accompanied by two mentions of *Prague*, all in a single article.

Similarly, in the Hungarian corpus we find in a single article on Friday, April 18, 5 chained instances of *Moszkva*, accompanied by 4 instances of *Tripoli*. This is, however, not the longest chain in that issue, we also find 7 instances of *Peking* 'Beijing' in a single article. The two texts thus account for 16 out of the total of 18 metonymies of the type under discussion in this single issue of *Magyar Nemzet*. The two articles contain 408 and 413 words, respectively, which is roughly one fourth of the total number of words in this issue with 14 "hot news" texts on international relations. Theoretically, we might have expected to find 14 texts of around 230 words each, and roughly 1.28 metonymies per text. Considering the length of the two texts with the highest metonymy density, if the distributionn of metonymies were even, i.e. not exhibiting any variation, they might have been expected to contain only something like 2.4 metonymies each. Instead, they are metonymic oases, exhibiting a metonymy productivity 3.6 times higher than expected.

This does not, of course, mean that all long texts will contain such metonymic chains. We just claim that, if the text is longer, metonymic chains are more likely to occur than in shorter texts, since metonymic chains are one possible answer to the structural-communicative pressure of topic-maintenance.

4. Conclusions

On the basis of the observations above we are in the position to draw a number of conclusions, some of which are more directly related to the metonymy type under examination, while some have far-reaching theoretical and methodological consequences.

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First of all, we have shown that the distribution of the CAPITAL FOR GOVERNMENT metonymy is far from being completely irregular and unpredictable. Specifically, what seems to be unexpected ups and downs in its incidence can at least in part be motivated by the workings of a very basic conceptual metaphor producing cyclic variation, peaking on certain days in a week. The conceptual metaphor that is the central element in the cultural model providing cognitive motivation for the temporal micro-variation in the use of the CAPITAL FOR GOVERNMENT metonymy works at two levels. On the one hand, it is present as a fairly direct form of motivation in the cognitive sociolinguistic sense. On the other hand, it is mediated through an interplay of the structural properties of the medium of daily newspapers and the structural givens of the whole linguistic system involved.

Secondly, it appears that constraints on the cross-linguistic availability of certain types of referential metonymies are the result of an intricate interplay of conceptual, structural and discourse-pragmatic factors. It is certainly interesting in light of some recent claims that metonymy is more fundamental/basic than metaphor that in our case the availability of the CAPITAL FOR GOVERNMENT metonymy seems to be dependent on a conceptual metaphor.

Having demonstrated this sort of interaction between conceptual structures/processes and linguistic systems we have not in any way called in question the foundations of cognitive linguistics. On the contrary, if cognitive linguistics does not want to doom itself to the status of a partial model, it should in its search for external motivation take a clue from structural and functional linguistics as a welcome corrective and also consider the role of the existing linguistic system. Bearing in mind that linguistic structures in question that are said to motivate the availability of metonymy may themselves be results of layers of complex interaction between cognitive and structural factors (the ultimate primacy of cognitive factors not ruled out), cognitive linguistics thus becomes a more realistic framework capable of accommodating more authentic data and variation, even if the net result is a more complicated description.

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Intrinsic or extrinsic motivation?

The implications of metaphor- and metonymy-based polysemy for transparency in the lexicon

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This paper is concerned with motivation and transparency in the lexicon. After a theoretical discussion of motivation, the author presents an empirical study that focuses on the motivation of formally simple and complex polysemous Italian words. It is shown that the motivatability of polysemous words does not depend on formal complexity alone, but also on the cognitive relation (metaphor vs. metonymy) that connects the meanings of a polysemous word.

Keywords: directionality of motivation, iconicity, interdependence of form and meaning, lexical motivation, lexical unit, motivatability, motivational partner, speaker judgment

1. Introduction

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This article is a contribution to modern research on lexical motivation within the Cognitive Linguistics paradigm (Koch 2001; Radden & Panther 2004; Koch & Marzo 2007; Lehmann 2007; Marzo 2008). Its main goal is to define the contribution of polysemy to motivation and transparency in the lexicon. Though polysemy is nowadays generally assumed to be an important aspect of lexical motivation (Radden & Panther 2004) and its theoretical status among different types of motivation has been redefined from a cognitive perspective (Koch 2001), its impact on transparency in the lexicon has not yet been described adequately. Almost every word is polysemous and thus could, in principle, be motivated by polysemy (cf. Marzo 2008). For a researcher it is thus very difficult to judge whether a lexical unit is more likely to be motivated intrinsically via polysemy or extrinsically via other motivational devices such as word-formation. Consequently, linguists who study lexical motivation by introspection tend to assume an extreme position in their treatment of polysemy. For practical reasons, they either overestimate (Koch & Marzo 2007) or underestimate (Sanchez 2008: 57) its importance.

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Some approaches even deny that polysemy is relevant for transparency in the lexicon (Waugh 1992, 1994; Waugh & Newfield 1995; critique in Marzo 2008). However, there are reasons to believe that, while polysemy definitely is a motivational factor in the lexicon and almost every lexical unit can be motivated intrinsically, it is not necessarily the most important motivational device.

In a pilot study reported in an earlier paper (Marzo 2008), I have shown for a small set of German stimuli that native speakers do not automatically consider polysemous words to be motivated. The findings of this study show that the motivation of polysemous words depends on the cognitive relation by which the meanings of a polysemous word are connected. More specifically, there seems to be a significant difference between metaphorical (similarity-based) and metonymic (contiguity-based) relations. The present paper provides a more systematic test of this assumption for Italian. Section 2 outlines the theoretical background of the study, provides definitions of lexical motivation, polysemy and transparency and describes the implications that polysemy has for transparency in the lexicon. In Section 3 I develop in more detail the hypothesis that the motivation of polysemous words depends on the cognitive relation connecting a word's meanings, and I add a second hypothesis concerning differences between formally complex and formally simple lexical units. Then I discuss the results of an empirical study that tested both of these hypotheses. In Section 4 I draw some general conclusions and give an outlook on further research.

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2. Theoretical background

2.1 Lexical motivation

I understand lexical motivation in the sense of Koch (2001: 1156): A lexical unit is motivated if and only if there are both a perceived formal and a perceived cognitive relation to another lexical unit (see also Koch & Marzo 2007: 263–264). Italian *libreria* 'bookstore', for instance, is motivated with respect to *libro* 'book': *libreria* is morphologically derived from *libro*, and their meanings are related as well. In this case they belong to the same conceptual frame, that is, there exists a contiguity relation between them. Other cognitive relations that can assume the same role are metaphorical similarity, conceptual contrast, taxonomic relations, and others (cf. Koch 2001; Koch & Marzo 2007). Note that according to the definition used here motivational relations are not necessarily directed. This means that the members of a motivational pair can, in principle, motivate each other. This is, for instance, the case with contiguity-based motivation, which, at least in principle, is reversible. However, some motivational relations are more restricted with respect to their directionality, such as metaphorical similarity, which is usually considered to be unidirectional (cf. e.g. Radden & Kövecses 1999: 22). As to the formal aspect of lexical motivation, most word formation researchers would consider it to be directional (cf. Iacobini 2000), but from a strictly synchronic

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perspective this directionality might lose its importance as soon as the derivates are lexicalized (cf. Umbreit 2010).

What is important for a cognitive characterization of lexical motivation is that words are not simply motivated as a whole, but rather via lexical units in the sense of Cruse (1986: 49, 86), that is, via pairs of one form/one meaning (Koch 2001; Radden & Panther 2004; Koch & Marzo 2007; see also Umbreit this volume). Given the notion of lexical unit, it follows that polysemy can be understood as being motivated both formally and semantically. The difference between polysemous words, such as Italian *macchina* 'automobile' and *macchina* 'machine', and morphologically distinct lexical units, such as *libro* 'book' and *libreria* 'bookstore', is that in the latter case the two lexical units are formally *similar* whereas in the former case they are formally *identical*. The impact of polysemy on transparency in the lexicon will be discussed in more detail in Sections 2.2 and 2.3.

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Another important aspect of Koch's definition of lexical motivation is the notion of *perceived* formal and cognitive relations. This concept necessarily leads to the distinction drawn by Rettig (e.g. 1981: 75–76) between *motivatedness* (Motiviertheit) and *motivatability* (Motivierbarkeit). Rettig argues that lexemes are not motivated *per se*, but can be motivated by native speakers upon active reflection. This is what happened when I established the relation between *libreria* and *libro*: I motivated *libreria* by perceiving a motivational relation to *libro*. Strictly speaking, metalinguistic reflection merely shows that *libreria* is *motivatable*. In order to solve the problem of *motivatedness* it is not sufficient to rely on metalinguistic reflections, but psycho- and neurolinguistic experiments are also necessary.[1]

The issue of metalinguistic reflection confronts us with another problem: the linguist's way of motivating lexical units may not be representative of the speech community. First, it might be influenced by etymological knowledge. Given that lexical motivation is a synchronic phenomenon, etymological considerations may distort the results. Second, among different possibilities, researchers may not pick the motivational relation that is the most salient for naïve native speakers (cf. Marzo & Rube 2006: 154). Especially in view of the fact that almost every word is polysemous, this might pose a serious problem. Thus, one and the same formally complex lexical unit can always be motivated in at least two ways: *intrinsically* via polysemy, i.e. with respect to a formally identical lexical unit, and *extrinsically* via other motivational devices such as word-formation, i.e. with respect to a formally more or less similar lexical unit. Italian *segatore* 'circular saw', for example, could be motivated by *segare* 'to saw' or by *segatore* 'person whose profession it is to saw'. They are related both formally and semantically to *segatore* 'circular saw'. The researcher's decision on salient motivational partners may not coincide with native speakers' intuitions. As this paper addresses the question under which circumstances lexical units are motivated intrinsically and under which

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1. Marzo and Rube (2006: 154–156) have shown that in the investigation of lexical motivation psycholinguistic experiments are problematic in various respects.

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circumstances they are motivated extrinsically, it is absolutely necessary to rely on speaker judgements, and as little as possible on the introspection of linguists.

2.2 Polysemy and lexical motivation

The claim that polysemy can be motivated both formally and cognitively (see Section 2.1) needs to be explained in more detail.[2] Koch's definition of lexical motivation is closely connected to Peirce's notion of *diagram*. Peirce (CP 2.277, 1960[1903]) calls diagrams those signs that are characterized by a structural analogy between signified and signifier. This definition became the starting point for an important tradition of research on iconicity mainly in grammar (see e.g. Haiman 1980, 1985). Although the importance of this definition for iconicity in the *lexicon* was recognized in 1965 by Roman Jakobson (cf. 1971 [1965]: 354), its impact on the lexicon received serious attention only much later (e.g. Waugh 1992, 1994; Hiraga 1994; Waugh & Newfield 1995; Ungerer 1999). In general, iconicity in the lexicon is exemplified by cases such as German *Apfelsaft* 'apple juice' (more examples in Ungerer 1999) and English *singer* 'person who sings' (cf. Dressler 1985), whose formal structures resemble, in a way, the structures of their content. The forms *Apfelsaft* (*Apfel* + *Saft*) and *singer* (*sing* + *er*) are binary the same way as the concepts APPLE JUICE and SINGER are (JUICE + MADE OF APPLES and PERSON + WHO SINGS; for a more detailed and critical discussion of compounds, cf. Blank 2001; Marzo 2009). As the phenomenon of polysemy is incompatible with the

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2. As the question to what extent polysemy contributes to lexical motivation and iconicity largely depends on the definition of polysemy, I should state what exactly I mean by polysemy. First of all, polysemy has to be distinguished from other types of ambiguity. Blank (2003) as well as Croft and Cruse (2004) discern polysemy from *homonymy* on the one hand and *contextual variation* (Blank 2003) or *sub-sense units* such as *facets* and *microsenses* (Croft & Cruse 2004) on the other hand. Both Blank (2003: 273–278) and Croft and Cruse (2004: 111) use the criterion of semantic relatedness to tell polysemy from homonymy: If one relation of a set of cognitive-semantic relations holds between two different senses, they are meanings of one and the same polysemous word (examples in Blank 2003: 274–276 and Marzo 2008). In this paper I essentially follow Blank's set of semantic-cognitive relations (contiguity, metaphorical similarity, co-taxonomic similarity, taxonomic subordination or superordination, conceptual contrast, cf. Blank 1997 and Koch 2001) because it comprises more relations than Croft and Cruse`s set, who limit their discussion to metaphor and metonymy (Croft & Cruse 2004: 111). However, the presence or absence of a semantic relation is not sufficient to define the "lower limit" of polysemy, as semantic relations also hold between contextual variants or sub-sense units. Blank's criterion (2003: 274–276) to distinguish between polysemy and contextual variation is the referential class. If the referential class of two word senses is the same, they cannot be considered independent meanings. Contextual variants thus correspond to Croft and Cruse's microsenses (2004: 126–127), which also point to the same referential class as other microsenses, though they are, in a given context, incompatible with all other possible microsenses of the same sense. To conclude, in this chapter I understand polysemy in the same way as Blank (2003) and Croft and Cruse (2004): a word is polysemous if its meanings are related semantically and point to different referential classes.

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principle of compositionality of meaning, it has been claimed to be anti-iconic (Waugh 1992, 1994; Waugh & Newfield 1995), though Jakobson (1971 [1965]: 352) quotes polysemous examples such as English *star* (cf. *stars* in the sky vs. film *stars*) as being diagrammatically iconic. In Marzo (2008) I argue that approaches that deny the contribution of polysemy to iconicity in the lexicon interpret Peirce's definition of icons in an inappropriate way, because Peirce's icons are not necessarily and exclusively of the structural and hence compositional kind. As Hiraga (1994: 8) points out, a form does not only reflect the structure of its own content but also the content of other forms. In fact, the binary English form *sing* + *er* reflects not only the binary structure of the concept PERSON + WHO SINGS but also the content of the form *sing*, to which it is related by rules of word-formation. Thus, formally complex signs are not only iconic from a structural, but also from a relational perspective. It is this relational perspective that Jakobson adopts when he claims that polysemous words such as English *star* are diagrammatically iconic. The view that similarity of forms is a precondition for motivational relations corresponds to Koch's conception of lexical motivation, which treats the formal identity of two lexical units as an extreme case of formal similarity (see Jakobson 1971 [1965]: 355 and Marzo 2008 for a more detailed discussion of this issue).

Moreover, there is one Peircean type of icon, namely metaphor, that is relational by definition and that is accepted as such – but not taken into account – by the fiercest supporters of compositional and hence structural iconicity, because metaphors are "Those which represent [...] by representing a parallelism in something else [...]" (Peirce CP 2.277, 1960 [1903]). In order to be understood, a metaphor needs a perceptible relation of similarity to a "Third" that allows highlighting certain characteristics of the signified. This is what happens in English and other languages when *star* is used to refer to a famous or exceptionally talented performer in the world of entertainment. The word stresses certain characteristics of famous actors and singers: they stand out in the world of entertainment as stars do in the sky and illuminate, in a way, the world of entertainment like stars light up the night. Thus, *star* is iconic in the Peircean sense in two respects: it has to be regarded as a diagram and a metaphor at the same time because there is a formal and a semantic relation between two lexical units and, consequently, the form expresses its own content with the help of "something else", that is, another – formally identical – lexical unit. Linguistic metaphors are always diagrammatic as they require a relation to another lexical unit in order to signify whatever they mean. Diagrams, by contrast, are not necessarily metaphors. Nevertheless, most of them are relational and not only structural because, on the content level, they can be related to another lexical unit by one of Koch's seven cognitive relations (Koch 2001; for a detailed discussion of the considerable overlap between Peircean metaphors and diagrams see Marzo 2008).

2.3 Transparency in the lexicon

The assumption that polysemy is a motivational device and contributes to iconicity in the lexicon necessarily leads to the question of the position of polysemy on scales of

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diagrammatic transparency, such as Dressler's scale (1985: 330–331). As should be clear from what has been said in the previous sections, a lexical unit is transparent to another lexical unit if there is a motivational (diagrammatic) relation to that unit. As has often been stated, transparency is not a matter of all or none, but rather a matter of degree (e.g. Fill 1980a, 1980b: 43–75; Sanchez 2008: 47). Since, according to Dressler's (1985: 330–331) scale of morphotactic transparency, the degree of transparency increases proportionally to the degree of formal correspondence between two elements, we might assume that cases of formal identity, that is, polysemy, exhibit the highest degree of transparency. This assumption is relativized by Dressler himself in the same article, in which he establishes another scale, the scale of diagrammatic transparency, which is based on the assumption that more formal correspondence means less transparency (Dressler 1985: 328). In this paper Dressler's scales cannot be discussed in detail (for a more detailed discussion of this apparent contradiction see Marzo 2008). For the time being the reader should just note one of these scales is based on examples for differences in transparency within one type of word-formation, namely suffixation (*decision* is less transparent with respect to *decide* than *existence* is with respect to *exist*) whereas the other is based on examples for differences in transparency across word-formation types (*song* is less transparent with respect to *sing* than *singer*).

As there is no reason to assume that transparency should rely on a certain principle when studied within one type of word-formation and on its exact opposite when studied across different types of word-formation, Koch and Marzo (2007: 272) have established a scale of transparency by merging both of Dressler's scales into one, which accounts for transparency differences both *within* single formal motivational devices and *across* different motivational devices. Though Koch and Marzo's scale constitutes a substantial progress in comparison to Dressler's scale, there still is a shortcoming: the scale is explicitly formal, although transparency is recognized to be both a formal and a semantic phenomenon. Dressler's scales are exclusively formal, too, though they are explicitly labeled as formal and semantic. The empirical study presented in this paper will show that scales of this kind are not sufficient to describe transparency accurately, as the degree of transparency of lexical units depends not only on their formal transparency, but also on the semantic-cognitive relation which connects them to a potential motivational partner.

3. Empirical study on lexical motivation

3.1 Goals of the questionnaire and hypotheses

The main goal of the study reported here was to define the role of polysemy in lexical motivation and its contribution to transparency in the lexicon. More precisely, two questions were addressed in this study.

First, what is the status of polysemy among the range of formal motivational devices when it is subjected to speaker judgements? According to Koch's approach, native

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speakers could, at least in principle, motivate almost every lexical unit via polysemy because almost every word has more than one sense. Approaches that rely on the principle of compositionality, by contrast, would predict that polysemy is of secondary importance for lexical motivation and transparency (Fill 1980, but also Sanchez 2008 as well as most researchers of word-formation, e.g. Booij 2007 and Plag 2003). From a compositional perspective, subjects automatically decompose formally complex lexical units when trying to motivate them.[3] The importance of polysemy as a motivational device might therefore be limited to formally simple lexical units that cannot be formally decomposed. Both views are integrated in hypothesis (i), which is tested in the empirical study.

i. Intrinsic motivation is, in principle, possible for almost every lexical unit. Still, formally complex lexical units are more likely to be motivated extrinsically than intrinsically. Therefore, intrinsic motivation is most likely to be limited to formally simple lexical units.

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The second question in this study addresses the issue whether the motivatability of a lexical unit depends on the type of conceptual relation it entertains with other lexical units. In Marzo (2008) I have shown that motivating formally simple lexical units is easier for native speakers if the relation of these units to their intrinsic motivational partners is one of metaphorical similarity rather than conceptual contiguity. As lexical motivation is always simultaneously a formal and a semantic phenomenon, there is no reason to assume that extrinsic motivation is not subject to the same semantic mechanism as intrinsic motivation. From what has been said so far we can postulate hypothesis (ii):

ii. A lexical unit that is related to its potential intrinsic motivational partner by metaphorical similarity is, in general, motivated more easily than a lexical unit that is related to its potential intrinsic motivational partner by conceptual contiguity.

3.2 Stimulus material

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In the study reported here hypotheses (i) and (ii) were tested by introducing an equal number of formally complex and formally simple polysemous stimuli and by dividing both of these stimulus groups into two subgroups, one consisting of lexical units that are related to their potential intrinsic motivational partner by contiguity, the other containing lexical units related to their potential motivational partner by metaphorical similarity (cf. Table 1, groups A/1 to B/2). In addition, there was a control group of potentially opaque stimuli (cf. Table 1, group C). This was necessary in order to check the subjects' reliability

3. It is important to distinguish between different compositional approaches. Some approaches say that polysemy is actually a constraint on transparency in the lexicon because it is a problem for the compositionality of word meanings (cf. Waugh 1992, 1994: Waugh & Newfield 1995). Other compositional approaches acknowledge that motivation applies at the level of lexical units (cf. e.g. Fill 1980) and, therefore, polysemy does not in principle impede motivatability, but might just be of lesser importance for motivatability than other motivational devices.

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in reacting to the potentially motivated stimuli. If they had tried to motivate the opaque stimuli, too, this would have meant that they had not understood the task (cf. Section 3.3). As Table 1 shows, a total of 40 stimuli was chosen. This is not sufficient for statistically representative results, yet the group is large enough for an initial test of the hypotheses.

The lexical units for the present study were taken from the Tübingen polysemy database, a synchronic dictionary containing the most salient meanings of 400 Italian and 400 French words.[4] For the present study, the second most salient meanings of the

Table 1. Survey of stimulus groups (40 stimuli)

	Group A: 16 formally simple lexical units		**Group B: 16 formally complex lexical units**		**Group C: 8 lexical units**
	1: 8 stimuli related to a potential intrinsic motivational partner by metaph. similarity	**2:** 8 stimuli related to a potential intrinsic motivational partner by contiguity	**1:** 8 stimuli related to a potential intrinsic motivational partner by metaph. similarity	**2:** 8 stimuli related to a potential intrinsic motivational partner by contiguity	8 potentially opaque lexical units
Examples	It. *cuore* 'center of something'	It. *terra* 'earth as material of the soil'	It. *provenire* 'to derive etymologically'	It. *linguaggio* 'language'	It. *giugno* 'June'
Potential intrinsic motivational partners	It. *cuore* 'heart'	It. *terra* 'planet Earth'	It. *provenire* 'to come from (in space)'	It. *linguaggio* 'capacity of speech'	none
Potential extrinsic motivational partners	theoretically each word of the word family	theoretically each word of the word family	theoretically each word of the word family, but especially It. *venire*	theoretically each word of the word family, but especially It. *lingua*	none

4. Researchers interested in the data can be given access to the Tübingen polysemy database on demand. Please contact Daniela Marzo, Verena Rube or Birgit Umbreit for additional information. The polysemy data were collected with the aid of a *sentence generation and definition task* (cf. Marzo, Rube & Umbreit 2007). What subjects do in this task is explain the meanings that first come to their minds. In this way, it is possible to gain insight into meanings that are most easily accessed. If we assume Langacker's position and define the salience of meanings via their "ease of activation" (cf. Langacker 1993: 45, 159), we can say that the meanings in this database are the most salient ones. Thus, there is no proliferation of senses as is often the case in traditional dictionaries.

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stimulus forms were selected. This choice was meant to increase their potential motivatability as, in general, less salient or less frequent stimuli allow easy access to the most salient and most frequent meanings, but not vice versa (cf. Perfetti & Lindsey 1974; Durkin & Manning 1989). Accordingly, in the case of polysemy, the intrinsic motivational partner of a lexical unit is expected to be its most salient meaning (cf. Table 1). As the definition of lexical motivation underlying this study describes motivation as not necessarily directed, we have to take a closer look at what extrinsic motivational partners we can expect for the groups A and B. Hypothesis (i) predicts that there may be extrinsic motivational partners for group A, but they should not be too important. In principle, these motivational partners could be any member of the word family of the stimulus. For group B, the potential extrinsic motivational partners can, of course, also be any member of the respective word family but, according to hypothesis (i) and the assumption that derived words are often (but not necessarily always) motivated by their derivational base, the most probable extrinsic motivational partners for group B can be determined (cf. Table 1).

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3.3 Method

The technique used to elicit motivational partners is based on the "Tübingen method" to investigate lexical motivation.[5] This method consists of two steps corresponding to two questionnaires. In questionnaire 1 subjects are asked to name a motivational partner for a given stimulus. The same stimuli and their major motivational partners established in step 1 make up the basis for questionnaire 2, in which subjects are supposed to explain the semantic relation between the stimuli and their motivational partners. In the present study only step 1 was carried out in order to test hypotheses (i) and (ii).

In step 1 the informants are confronted with the following Italian question: "Perché, secondo voi, la parola può essere utilizzata nel senso spiegato?" ('Why, in your opinion, can the word be used in the given sense?'). It is important to note that the stimuli are presented as lexical units and therefore not only consist of word forms, but also contain a meaning definition and a disambiguating example sentence, as in example (1).

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(1) Stimulus form: *eroe* 'hero'
Stimulus meaning: *persona che compie atti di valore e coraggio* 'person carrying out acts of merit and courage'
Example: *Garibaldi è stato l'eroe del Risorgimento italiano.* 'Garibaldi was the hero of the Italian Risorgimento'

5. This method has been developed by Daniela Marzo, Verena Rube and Birgit Umbreit within the Tübingen Collaborative Research Center's (SFB 441) project on lexical motivation in French, Italian and German headed by Prof. Dr. Peter Koch. The research project aimed to investigate the major motivational partners for a set of stimuli and the proportions of cognitive/semantic relations by which the stimuli are connected to their motivational partners.

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After reading the stimulus the informants were asked to pick one of the following options:

1. The word is connected to another word of the same word family.
2. The given sense is connected to another sense of the same word.
3. There is no connection to another word or another sense.

Depending on the response they chose, they were asked to specify the word or the meaning they were thinking of.

The test was conducted over the internet. In order to check whether there was any influence of the subjects' socio-cultural background on their answers, they were asked to provide relevant information about themselves at the end of the questionnaire. As metalinguistic judgements on 40 stimuli may take longer than an hour if the participants take the task seriously, the 40 stimuli were distributed over two questionnaires in order to increase the probability that the subjects complete the whole questionnaire. About 60 people took part in the study, but only the answers of 25 informants per questionnaire were analyzed for the final results. The other informants' answers had to be excluded either because they failed to complete the questionnaire or because their answers were obvious nonsense answers, such as meaningless strings of letters.

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3.4 Results

3.4.1 *Motivated versus opaque in general*

The first result of the study is that the majority of the presumably motivated stimuli (87, 5% of group A and 93, 75% of group B) were indeed motivated by the majority of subjects and that the presumably opaque stimuli (75%) were also considered opaque by the majority of the subjects. This means not only that the choice of the stimuli for the groups A and B and the group C was successful but also that the participants understood their task very well. Taking a closer look at the different groups and subgroups, in most cases we can even find reasons why not all stimuli behaved the expected way.

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3.4.1.1 *Groups A and B*

Within groups A and B those stimuli that were motivated in one way or another by more than half of the participants are considered motivated. The motivated stimuli do not necessarily have a unitary motivational partner, but were assigned different motivational partners by the participants. Out of the 16 stimuli in group A, two stimuli (12.5%) were not motivated at all. These stimuli are It. *giorno* 'time of sunlight, the opposite of night,' and It. *ceppo* 'tree stump'. Similarly, one stimulus (It. *irritare* 'to inflame (e.g. skin)') in group B was not motivated, while 93.75% were motivated. According to the Tübingen polysemy database, there were two possible intrinsic motivational partners for It. *giorno*: *giorno* 'point in time that fixes a date' and *giorno* 'period of 24 hours'. As both of the potential motivational partners are related to the stimulus by contiguity,

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the fact that it was considered opaque by the majority of the subjects (72%) is not surprising but is compatible with what hypothesis (ii) predicts.

The opacity of It. *ceppo* 'tree stump' can be explained in a similar way, though it is part of group A/1. Its potential motivational partner was *ceppo* 'stock, lineage, line' to which it was assumed to be related by metaphorical similarity. However, upon closer inspection, it becomes clear that the relation between the two meanings is not metaphorical similarity and that, therefore, unfortunately, this stimulus was erroneously assigned to group A/1. There is only an indirect relation between the two meanings, if at all. First, there might be some similarity between *ceppo* 'stock, lineage, line' and *ceppo* 'trunk', insofar as the line of a family leads to many family members as the trunk of a tree leads to many branches. Second, there is a contiguity relation between *ceppo* 'trunk' and *ceppo* 'tree stump'. However, there is no direct relation between *ceppo* 'stock, lineage, line' and *ceppo* 'tree stump'. The fact that there is an indirect relation and that one of the relations involved is a contiguity relation are plausible reasons for the opacity of the stimulus.

The opacity of It. *irritare* 'to inflame (e.g. skin)' has to be explained in a different manner. An intrinsic motivational partner for this stimulus that was part of group B/2 could have been *irritare* 'to make someone nervous or angry'. There certainly is a relation of metaphorical similarity between these two lexical units, but there might be a problem with the metaphor's direction. 'To make someone nervous or angry' is understood in terms of 'to inflame (e.g. skin)', but not vice versa. Anger resembles an inner inflammation, but an inflammation is not similar to anger. Thus, introducing *irritare* 'to inflame (e.g. skin)' among the stimuli was of no use at all. *Irritare* 'to make someone nervous or angry' would certainly have caused fewer problems for motivatability. However, as this lexical unit does not appear in the Tübingen polysemy data-base, it could not be chosen as a stimulus.

3.4.1.2 *Group C*

Among the hypothetically opaque stimuli of group C, 75% were actually judged to be opaque by the informants. Still, this means that most informants considered two potentially opaque stimuli to be motivated. These are It. *basilica* 'basilica (church type)' and It. *tempo* 'weather'. It. *basilica* 'basilica (church type)' has no major motivational partner, but was motivated by 56% of the subjects. The competing lexical units are It. *base* 'basis'[6], It. *basileo* 'prince in Ancient Greece', It. *basilica* 'church granted special privileges by the Pope', *basilica* 'early Christian building', *basilica* 'public hall, court building in ancient Rome' and *basilica* 'palace of Byzantine kings'. Interestingly, none of these intrinsic motivational partners can be found in the Tübingen polysemy data-base and none of the extrinsic motivational partners is frequent enough to figure in Juilland and Traversa's (1970) frequency dictionary.

6. Note that It. *base* 'basis' is not the etymological basis of It. *basilica*. From a synchronic and motivational perspective such cases of folk etymology are perfect instances of motivation as long as the informants perceive a formal as well as a semantic relation between the two.

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The picture is even more complex for It. *tempo* 'weather'. The major motivational partner for this stimulus was *tempo* 'time'. Of course, there is a potential motivational relation between the two lexical units, namely, a contiguity relation. The stimulus was nevertheless chosen for group C, because in a French pilot study Fr. *temps* that has the same central meanings as It. *tempo* had been considered opaque by the majority of the informants. In addition, *tempo* 'weather' is slightly more salient than *tempo* 'time'. The salience index that can be deduced from the Tübingen polysemy database for *tempo* 'weather' is 15, whereas *tempo* 'time' receives a salience index of 13. Theoretically this should exclude a facilitating salience effect. Moreover, as the relation between the two lexical units is a contiguity relation (hypothesis (ii)), it seemed very unlikely that *tempo* 'weather' would be considered motivated. This might show that different types of contiguity seem to entail different degrees of motivatability (cf. Section 4). In Marzo (2009) I explore this issue in more detail.

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3.4.2 *Motivated stimuli in detail*

For those stimuli of groups A and B that were considered motivated by the majority of the participants, both hypothesis (i) and (ii) were found to hold with some restrictions. Sections 3.4.2.1 and 3.4.2.2 will describe in more detail to what extent the hypotheses are confirmed.

3.4.2.1 *Hypothesis (i): Intrinsic versus extrinsic motivation*

Table 2 shows that 100% of those formally simple lexical units that were judged motivated by the participants were motivated intrinsically. This is indeed what hypothesis (i) predicts. Of course, this does not mean that nobody named extrinsic motivational partners for the stimuli in group A. For It. *padre* 'father in the sense of founder', for instance, the motivational partner *paterno* 'paternal, from the father's side' was given. However, such answers are very rare.

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The results for group B do not exactly correspond to what hypothesis (i) predicts because there is a higher number of stimuli that are motivated intrinsically (53%) than extrinsically (40%). Still, this does not completely contradict hypothesis (i) because it is based on the assumption that almost every lexical unit can be motivated intrinsically as a consequence of lexical polysemy. The interesting question is why the informants related more than half of the stimuli of group B to another formally identical unit and not to a formally less complex one. The frequency and salience of the potential extrinsic motivational partners cannot be a reason for the formally complex units being motivated intrinsically rather than extrinsically. Of course, there are some cases in which the potential extrinsic partners are less frequent or less salient than the stimulus, such as It. *studio* 'study, workroom at home' (with a form frequency of 199 in Juilland & Traversa 1973 and a salience index of 9) compared to the stimulus It. *studiare* 'to study' (form frequency of 63, no salience index available), but this does not hold for all cases. A look at how the stimuli behaved with respect to hypothesis (ii) might furnish another explanation (cf. Section 3.4.2.2).

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Table 2. Results: formally simple versus formally complex lexical units

	Group A (formally simple lexical units)	Group B (formally complex lexical units)
motivated intrinsically by the majority of the subjects	100%	53.3%
motivated extrinsically by the majority of the subjects	0%	40%
same score for extrinsic and for intrinsic motivation	0%	6.7%

3.4.2.2 *Hypothesis (ii): Contiguity versus metaphorical similarity*

Table 3 shows the percentage of motivated stimuli among those stimuli of the subgroups A/1, A/2, B/1 and B/2 that were judged to be motivated by the majority of the participants.

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As hypothesis (ii) predicts, the majority of the stimuli of the subgroups A/1 (100%) and B/1 (86%) were motivated intrinsically by the majority of the subjects. Still in line with hypothesis (ii), the majority of the stimuli of subgroup B/2 (57%) were motivated extrinsically. At first sight, subgroup A/2 seems to contradict hypothesis (ii), as 100% of the stimuli that were considered motivated were motivated intrinsically by the majority of the subjects. However, subgroup A/2 does not contradict hypothesis (ii), because in the data there are still differences between the groups A/1 and A/2, that is, between metaphorical similarity and contiguity: First, the percentage of the informants that motivated the stimuli of group A/1 intrinsically tends to be slightly higher for the individual stimuli than the percentage of informants that motivated the stimuli of group A/2. It. *cuore* 'heart (spatial centre)' was motivated by 92% of the informants and all of these informants motivated it intrinsically with respect to *cuore* 'heart (organ)'. Such high scores are quite common for group A/1 and not very frequent for group A/2. Second, the stimuli in group A/1 tend to have a major intrinsic motivational

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Table 3. Results: Contiguity vs. metaphorical similarity (without problematic stimuli such as It. *ceppo*)

	A/1 (formally simple + metaphorical similarity)	A/2 (formally simple + contiguity)	B/1 (formally complex + metaphorical similarity)	B/2 (formally complex + contiguity)
motivated intrinsically	100%	100%	86%	29%
motivated extrinsically	0%	0%	14%	57%
same score for extrinsic and for intrinsic motivation	0%	0%	0%	14%

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partner (cf. It. *cuore*), whereas those in group A/2 more often display a large variety of different intrinsic motivational partners. This is the case for It. *luce* 'opening, hole', which was motivated by 84% of the participants, all of whom motivated it intrinsically, but named different motivational partners such as *luce* 'redeemer, liberator, great hope (referring to a person)' (17%), *luce* 'physical phenomenon' (34%), *luce* 'illumination, light source' (17%) and *luce* 'light, brightness' (32%). A detailed presentation of all the data is given in Marzo 2009.

Subgroups B/1 and B/2 in Table 3 give a more detailed account of the motivatability of complex lexical units than the percentages displayed in Table 2. Coming back to the question of why the informants related more than half of the stimuli of group B to another formally identical unit and not to a formally less complex unit, we can now make the following observations: Table 3 shows what hypothesis (ii) predicts. Intrinsic motivatability by metaphor seems to be so natural that even formally complex lexical units are motivated intrinsically rather than extrinsically (86% vs. 14% of the participants), as hypothesis (i) would have predicted. In addition, hypothesis (ii) predicts that intrinsic motivation is less obvious if the relation between the stimulus and the intrinsic motivational partner is a relation of contiguity. And indeed, only 29% of the participants considered the stimuli of group B/2 to be motivated intrinsically, whereas 57% of the participants motivated the stimuli of group B/2 extrinsically. Thus, both hypothesis (i) and (ii) can be said to be supported by the data of group B. What is more, the hypotheses can even interact. In the metaphor condition (B/1), hypothesis (ii) is stronger than hypothesis (i). In the contiguity condition (B/2), hypothesis (ii) predicts intrinsic motivation to occur less frequently. This constraint on intrinsic motivation, in turn, enables extrinsic motivation to occur, or, to put it differently, allows hypothesis (i) to be stronger than hypothesis (ii). In sum, extrinsic and intrinsic motivation both depend on the semantic conditions of the stimulus unit.

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4. Conclusions and outlook on further research

The results in Section 3.4 partially confirm hypothesis (i) and hypothesis (ii). The first important conclusion that can be drawn from these data is that the two hypotheses have to be seen as interacting principles: A lexical unit is more likely to be motivated intrinsically if it is related to its intrinsic motivational partner by metaphorical similarity than if it is related to it by contiguity. If the stimulus and the potential motivational partner are related by contiguity, formally complex lexical units tend to be motivated extrinsically, whereas formally simple lexical units can still be motivated intrinsically, but are generally considered motivated by fewer subjects than the corresponding metaphorical stimuli. This general principle is not to

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be intended as an absolute rule, but as a systematic tendency that has to be supported by more data.

Further research should take a closer look at differences within the groups of metaphor-based and contiguity-based motivation. The relatively small number of stimuli on which this study is based does not allow for general conclusions, but especially within the contiguity group there seem to be differences in the motivatability of different types of contiguity. For example, part-whole relations of the type It. *giorno* 'time of sunlight, the opposite of night' and *giorno* 'period of 24 hours' (cf. the parallel German example *Tag* in Marzo 2008) seem to be more problematic for motivatability than other contiguity relations such as It. *tempo* 'weather' and *tempo* 'time'. A principled difference between this contiguity relation and others would also be in line with the fact that part-whole relations are often treated in the literature as different from other contiguity relations (cf. discussions of synechdoche, partonomy and meronymy in e.g. Lakoff & Johnson 1980 and Gibbs 1994).

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The second important conclusion that can be drawn from the present study is that formal and semantic aspects of lexical motivation are indeed two inseparable dimensions of the same phenomenon. Of course, the noun It. *grandezza* 'importance, influence, power (of a person)' is formally transparent to the adjective It. *grande* to the same extent as the noun It. *linguaggio* 'language' is transparent to It. *lingua*, but as we have seen this does not mean that their motivational partners are automatically the derivational bases It. *grande* and It. *lingua*, respectively. As we have shown, the semantic relation of a lexical unit to its potential intrinsic motivational partners modulates transparency. For It. *grandezza* 'importance, influence, power (of a person)' this means that its major motivational partner is *grandezza* 'bigness (volume)', because these two lexical units are related metaphorically. Consequently, transparency scales that concentrate on either the formal or the semantic side of motivation are, at least from a cognitive point of view, irrelevant for the research on lexical motivation. Further research should be aware of this and attempt to integrate both formal and semantic aspects in transparency scales.

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The third (preliminary) conclusion is that salience and frequency are not automatically relevant for lexical motivation. There are cases that confirm the general assumption that less salient and less frequent lexical units allow access to more frequent and more salient lexical units, but not vice versa. Still, as It. *tempo* shows, this is not an absolute rule. Further research should take a closer look at salience and frequency and try to define the conditions under which they do not facilitate motivatability. Marzo (2009) compares the present study with a parallel French study and provides an in-depth discussion of, and suggests some solutions to, the questions left open in the present paper.

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Motivational networks

An empirically supported cognitive phenomenon

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The notion *motivational network* is proposed to describe the existence of various possibilities of motivation for a given form. As shown in questionnaire studies, this phenomenon is quite common for non-linguist native speakers. But the notion of motivational network is also justified from a cognitive perspective: in the mental lexicon, words in a word family are structured as multidirectional networks, resulting in the co-activation of all family members. Thus, the coexistence of various equally salient motivational partners should not be regarded as exceptional but rather as the default case in lexical motivation.

Keywords: lexical motivation, lexical processing, mental lexicon, multidirectionality, polysemy, salience, speaker judgement, word family, word-formation

1. Introduction

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Most linguists working on motivation tend to regard motivation as a simple, unidirectional process. In the present article it is claimed that cognitive principles operating in the mental lexicon justify a network approach of lexical motivation.

The article is organized as follows: Section 2 describes the notion of (lexical) motivation on which the subsequent considerations are based. Section 3 introduces the term *motivational network* and defines it in view of similar notions. Section 4 provides more examples of motivational networks in German and Italian based on speaker judgements. Section 5 shows that motivational networks are not exceptional but much rather the rule as an organising principle governing the mental lexicon: it is the multidirectional integration of words into word families that is central for their cognitive processing, which in turn can lead to several equally salient motivations.

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2. What is (lexical) motivation?

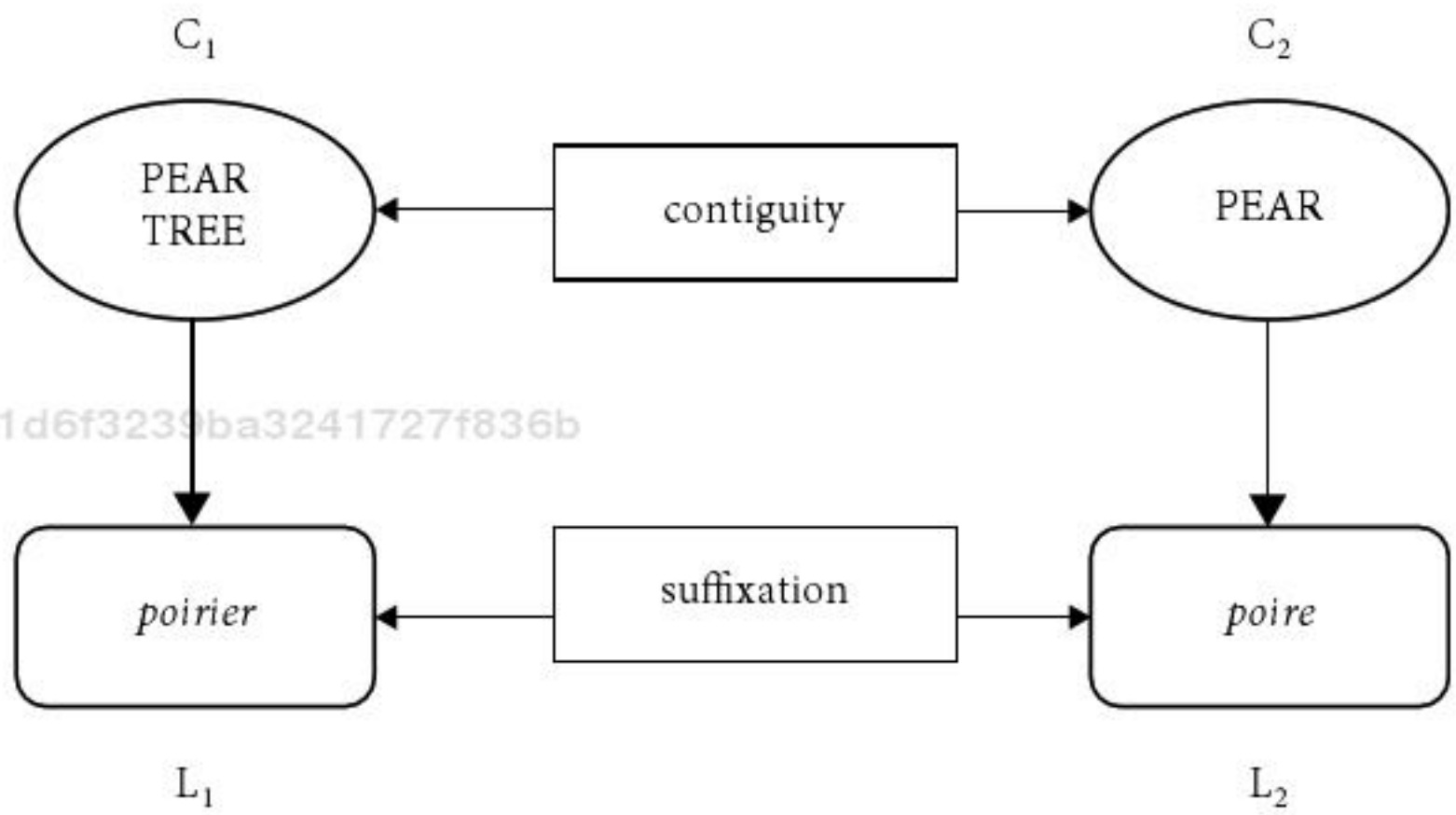
According to de Saussure (1985: 181), who is probably the best known theoretician on the subject of lexical motivation, Fr. *poirier* is considered a motivated word because it can be synchronically decomposed into two or more elements that contribute to its sense: *poire* 'pear', the most salient part of a pear tree, and *-ier*, the suffix suggesting 'tree'.

In the present article, lexical motivation is understood as a synchronic relation holding between lexical units. Purely grammatical elements like *-ier* will not be considered here. A lexical unit is understood in the sense of Cruse (1986: 77) as "the union of a lexical form and a single sense", as opposed to a lexeme, which is understood as a "family of lexical units" (p. 76). The following example from French thus represents the relation between two lexical units: the motivated unit *poirier* and its motivational base *poire*:[1]

(1) Fr. *poirier* 'pear tree' ← *poire* 'pear'

Unlike de Saussure, who confines himself to exemplifying the formal aspects of motivation, motivation is here conceived as a twofold relation: a relation between the forms and a relation between the contents of two lexical units. These relations are illustrated in the motivational square shown in Figure 1:

In the square, the two lexical units *poirier* and *poire* are represented with their concept and their form. The upper horizontal axis indicates the conceptual relation: in



C stands for 'concept', L for 'lexical item', i.e. the form of a lexical unit.[2] C_1 is expressed by L_1 (and C_2 analogously by L_2), which is represented by the pointed arrow. The double-pointed arrows indicate the motivational relations between either the concepts or the forms.

Figure 1. Motivational square (Koch 2001: 1156)

1. The single-headed arrow pointing left stands for 'is motivated by'.

2. Koch's (2001: 1156) term *lexical item* comprises lexemes, words or idioms. However, the figure perfectly applies to lexical units too.

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this case, it is a contiguity relation, as *poirier* and *poire* are part of the same frame. On the lower horizontal level, the formal relation is given, viz. suffixation by *-ier* to the form *poire*, giving rise to the form *poirier*.[3]

This terminology is particularly useful, as it can easily handle polysemy, to which, as we will see below, the notion of lexical motivation also applies (see also e.g. Ullmann 1957: 89, 1962: 91f.; Radden & Panther 2004: 20f.; Marzo 2008 and this volume). This paper adopts Cruse's view that each sense of a polysemous lexeme in combination with the shared form represents a lexical unit. Cruse's notion of a lexeme as a "family of lexical units" already indicates that the lexical units belonging to one lexeme are not only formally, but also conceptually, related. As in the case of *poirier*, Ital. *lingua* in the sense of 'language' is motivated.

(2) Ital. *lingua* 'language' ← *lingua* 'tongue'

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The concepts 'tongue' and 'language' are closely connected by contiguity due to the fact that the tongue is the principal articulatory organ. It is, of course, for this reason that many languages use the form of the concept 'tongue' in expressing the concept 'language' (see Radden 2004). This paper assumes that the meanings of polysemous lexemes such as *lingua* represent distinct lexical units sharing identical forms that can be described in the same way as the motivated relations underlying morphological processes. The only difference to morphologically derived units is that polysemy involves not two forms, but only one form. Polysemy is thus not represented as a motivational square but as a motivational triangle, as shown in Figure 2.

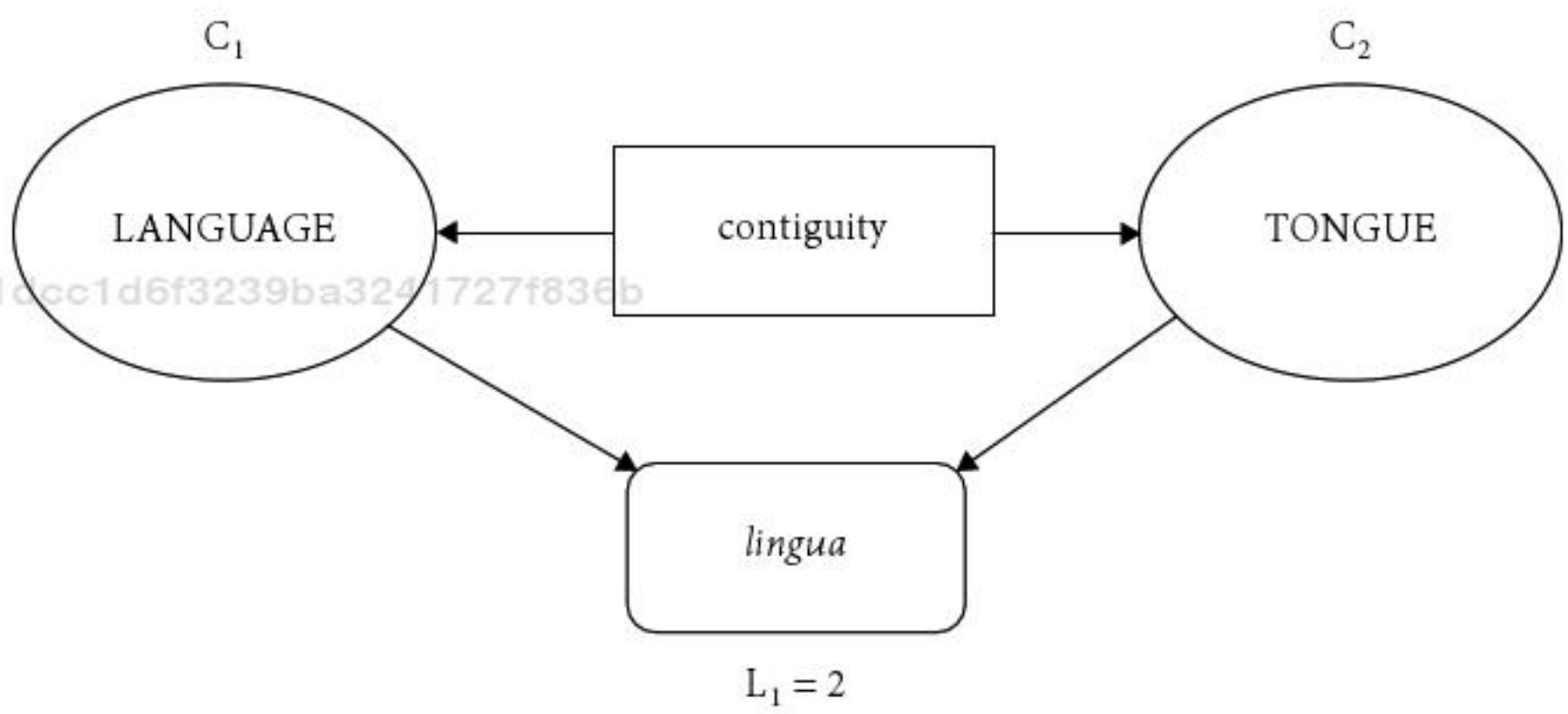

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Figure 2. Motivational triangle (Koch & Marzo 2007: 265)

3. A similar conception of lexical motivation can be found in Rettig (1981). For Radden and Panther (2004) and Lehmann (2007), the combination of morphological and conceptual motivation is one of a variety of possible types of linguistic motivation. Sanchez' understanding of lexical motivation (2008 and this volume) is primarily conceived of as a relation between word forms.

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In Figure 2, both concepts are linked to the same form, viz. *lingua*, and are conceptually connected by contiguity.[4]

Now, in the traditional, especially the structuralist, view of lexical motivation, it is always the (morphologically and/or semantically) more complex partner of a motivational pair that is assumed to be motivated, and there is always one motivational "base partner" that motivates the more complex unit (see de Saussure 1926; Ullmann 1957, 1962; Iacobini 2000). Accordingly, as in the examples presented above, Fr. *poirier* is taken to be motivated solely by the less complex word *poire*, which itself is not motivated, i.e. opaque.

For Ital. *lingua* 'language', we cannot apply the traditional idea of greater complexity (see also Umbreit 2010: 305–307), but as we consider the tongue as a premise for the production of language, the latter sense of *lingua* is probably the motivating base, which in its turn is opaque.

However, as the next sections will show, it is not always easy to find unequivocal motivational partners, and motivational partners are not necessarily less complex than the given item.

3. Motivational networks

In examples (1) and (2), the motivational base for the lexical units in question is evident. In the case of Eng. *fisher*, however, the motivational base could be either the noun *fish* or the verb *fish*. Such cases of motivational ambiguity are often considered "undesirable" and are dealt with by using different linguistic criteria (e.g. Corbin 1976). However, the question which of the possible solutions is "better" cannot easily be answered as the motivational analysis of a linguistic unit may vary from person to person. Often, subjects do not agree as to which of the possible motivational partners is the most salient one.

Furthermore, motivational partners do not have to be less complex than the given item. For example, one could motivate the verb *fish* by relating it to the formally more complex unit *fisher* because fishing is what fishers normally do. Besides, as we have seen above, the notion of complexity has already proved to be problematic in the case of motivation by another meaning of the same form, as in example (2).

The following sections will provide evidence for these phenomena from a cognitive point of view. First, however, it is necessary to introduce the terminology used in this study and delimit it from related notions.

The preceding discussion has shown that there is not necessarily only one motivational base of a given unit and that the possible motivational partners are not always

4. A systematic cross-classification of all possible formal and conceptual relations leads to a two-dimensional grid that provides the basis for a uniform description of lexical motivation (see Koch 2001: 1160 and Koch & Marzo 2007: 268).

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less complex. Therefore, I suggest subsuming all links to potential motivational partners under the term *motivational network*. A motivational network applies to the total of synchronic motivational partners of a lexical unit, whether they are more, less or equally complex or involve more meanings of the same form. According to this understanding of motivation, motivational ambiguities are fully legitimate and do not have to be resolved. Indeed, as we will see, the existence of more than one potential motivational partner is the norm rather than the exception.

This phenomenon is related to what is traditionally called "double motivation" (Kienpointner 1985: 3). This term is, however, restricted to structural ambiguities, as in the following two examples:

(3) Eng. *reorganization* ← *organization*
← *reorganize*
(Plag 2003: 40)

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(4) Germ. *Bergwanderschuhe* ← 'Schuhe zum Bergwandern (boots for mountain hiking)'
← 'Wanderschuhe für den Berg (hiking boots for the moutain)'
(Wellmann 1991: 14)

In example (3), the motivational base could be either the noun *organization* or the verb *reorganize*. The ambiguity can be attributed to the fact that *reorganization* manifests both the prefix *re-* and the suffix *-ation* and that we don't know which of the affixes comes first. As far as example (4) is concerned, the term *double motivation* is extended to tripartite compounds with a verbal element as the second constituent. The ambiguity in this example is due to fuzzy internal boundaries ("unscharfe Binnengrenzen" according to Wellmann 1991: 13), which allow for a segmentation of the complex noun either after its first or after its second element.

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In these cases, the potentially motivating units are part of a motivational network, too. Yet, the network in my understanding is not restricted to structurally conditioned ambiguities but comprises all formally and conceptually related units a native speaker could think of when motivating a lexical unit. Therefore, the motivational network includes, but is not limited to, ambiguities that are due to structural characteristics.

Double motivation is sometimes related to *multiple motivation* (Wellmann 1991: 13). This term is often used in a broader sense than would be suitable for our purposes. Lehmann (2007: 131), for instance, defines multiple motivation as the combination of different kinds of motivation according to his own typology: yawning as a sign of boredom is both an icon (of genuine yawning) and a symptom (of tiredness) in the Peircean sense. Radden and Panther (2004: 33) contrast *multiple motivation* with *competing* or *conflicting motivations*. While they use the former term when "several factors [...] jointly motivate a linguistic unit", the latter term applies to cases in which different possible motivational factors are in conflict with each other. In the motivational network approach adopted in this paper, the notion *multiple motivation* is understood in

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a different sense: it refers to the different potential motivational partners ordinary speakers associate with a given lexical unit. These motivational partners simply coexist but may vary in their salience for individual speakers.

The next section presents the results of an empirical study on lexical motivation which provides evidence for the claim that multiple motivational links to complex as well as to simple words are the norm rather than the exception.

4. Evidence from speaker judgements

4.1 Why speaker judgements?

A research project at Tübingen University systematically studied synchronic lexical motivation in French, Italian and German on the basis of speaker judgements. Although a speaker-based approach to motivation has already been advocated by several linguists (e.g. Augst 1975; Rettig 1981), it might still seem questionable to some readers. I will therefore briefly outline the reasons for conducting a study using native non-linguists as subjects.

A first reason for the use of non-linguists is that all native language users possess a certain linguistic consciousness, which Augst (1975: 176f.) calls "synchronic etymological competence". This means that speakers are able to establish synchronic relations between words both morphologically and conceptually as well as to give reasons for these relations based on their implicit or even explicit knowledge of word-families and their structure. Their ideas about motivated or opaque words in their language directly reflect their average linguistic knowledge.[5] These capacities can even be more fruitful for investigating motivation than the introspection used by professional linguists, who might consider more words as motivated than non-linguists or who might motivate them differently from non-linguists due to their linguistic expertise.

A second reason for using non-linguists is that, as we have already seen, a given lexical unit may have more than one motivational partner. If the linguist had to establish potential motivational links himself, he might not be sure which one is the most salient one. If he asked a certain number of people, however, he might obtain several different answers, but in general most people would name one motivational base significantly more frequently than the others. Thus, a certain group consensus makes it possible to determine fairly objectively the most salient unit out of all potential motivational links (see also Marzo & Rube 2006: 154).[6]

The following subsection provides examples of motivational networks from two different questionnaire studies.

5. See also Langacker (1987: 376), who acknowledges that "speakers do have relevant intuitions".

6. This procedure has also the advantage of counterbalancing the varying linguistic and reflective abilities of the informants.

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4.2 Multiple motivational links

Within the research project on motivation mentioned above, questionnaires were presented to native informants of German, Italian and French. For the majority of stimuli that were examined more than one motivational link was found. Two examples will demonstrate this.

The first questionnaire study for German ("Moti alpha") was carried out with sixty native German speakers who were asked to analyze fifteen stimuli consisting of lexical units. The question they had to answer was "Woher kommt das angegebene Wort?" ["Where does the given word come from?"], choosing one of the following four answers and then giving and defining the unit they were thinking of:

1. von einem anderen Wort derselben Wortfamilie
2. von zwei anderen Wörtern
3. von einer anderen Bedeutung desselben Worts
4. von keinem anderen Wort oder keiner anderen Bedeutung
    1. from another word in the same word family
    2. from two other words
    3. from another meaning of the same word
    4. from no other word or meaning

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Answer (1) refers to all kinds of formally and conceptually related words; answer (2) refers to compounds; answer (3) accounts for polysemy; and answer (4) for stimuli considered opaque. Note that in general all kinds of motivation, whether simpler or more complex than the stimulus, were accepted, provided that a formal and a conceptual relation in accordance with the definition of motivation outlined in Section 2 could be found. Table 1 presents the results obtained for the German stimulus word *unterfordern*, a complex verb meaning 'to not challenge somebody enough'.

For this verb, several different kinds of answers were given. The majority of the informants, 54.24%, decomposed the word into two elements, *unter* and *fordern*, i.e. they opted for answer type (2). Another 23.73% chose answer type (1) and gave the related form *fordern*. Further, various motivational partners with a minor percentage contributed to answer type (1), i.e. *Unterforderung, fördern, überfordern* or (2), namely *unten* + *Forderung*. No one found a relation to another meaning of the stimulus (answer type (3)), and for 15.25%, the stimulus was opaque (answer type (4)). Following our conviction that speakers are competent in motivating words, we accept all of these motivations, as in each case both a formal and a conceptual relationship can be established. However, in spite of the numerous motivational links, one possible motivation, the decomposition into *unter* and *fordern* with more than 50%, was given significantly more frequently than the others and can consequently be said to be the most salient motivation for *unterfordern*.

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Table 1. Multiple motivations for Germ. *unterfordern* 'to not challenge sb. enough'

Answer type	Motivational partners	Percentage of answers
(1)	*fordern* 'to challenge'	23.73%
(1)	*Unterforderung* 'act of not challenging enough'	1.69%
(1)	*fördern* 'to support, to help'	1.69%
(1)	*überfordern* 'to challenge sb. too much'	1.69%
(2)	*unter + fordern* 'under' + 'to challenge'	**54.24%**
(2)	*unten + Forderung* 'below' + 'challenge'	1.69%
(4)	opaque	15.25%

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In a later study on Italian ("Moti gamma"), thirty-four native Italian participants were asked to judge twenty-five stimuli. The method used for eliciting motivations varied slightly from the first study. As the question "Where does the given word come from?" could also be understood in a diachronic sense it was changed into "Perché, secondo voi, la parola può essere utilizzata nel senso spiegato?" ['Why, in your opinion, can the given word be used in the given meaning?']. The possibilities of answering the questions were the same as in experiment Alpha, but this time formulated to correspond to the modified question. Besides, "Moti gamma" contained the additional answer type (4), which allowed for an identification of loan words:

1. La parola è connessa ad un'altra parola della stessa famiglia di parole.
2. La parola è composta da altre parole.
3. Il significato è connesso ad un altro significato della stessa parola.
4. La parola è connessa ad una parola di un'altra lingua.
5. Non c'è nessun legame con nessun'altra parola e nessun altro significato.
    1. The word is related to another word in the same word family.
    2. The word is composed of other words.
    3. The meaning is related to another meaning of the same word.
    4. The word is related to a word from another language.
    5. There isn't any relation to another word or to another meaning.

Let us now consider the stimulus in Table 2, the Italian adjective *buono*, presented to the informants in the sense 'tasty, delicious':

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Table 2. Multiple motivations for Ital. *buono* 'tasty, delicious'

Answer type	Motivational partners	Percentage of answers
(1)	*bontà* 'benevolence'	5.41%
(1)	*bontà* 'something being good'	2.70%
(3)	*buono* 'generally positive'	32.43%
(3)	*buono* 'comfortable'	10.81%
(3)	*buono* 'magnanimous'	8.12%
(3)	*buono* 'well-behaved'	5.41%
(4)	lat. *bonus* 'generally positive'	2.70%
(5)	opaque	29.73%
	unclear	2.70%

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For Ital. *buono* in the sense of 'tasty, delicious' a variety of motivational links was found too, the most frequent one being to another meaning of the same word, viz. *buono* 'generally positive' with 32.43%. Less frequently given meanings of *buono* were 'comfortable', 'magnanimous', and 'well-behaved'. In addition, a related word, *bontà*, was given in two different meanings. One speaker chose answer type (4) thinking of the Latin etymon (which cannot be considered in a synchronic study), one answer was not understandable and therefore categorized as unclear, and 29.73% of the speakers considered the stimulus opaque. Although opacity is the second most frequent answer type, the slightly prevailing motivational partner is *buono* 'generally positive'. What is striking here is that *buono* is part of a whole motivational network although it is not morphologically complex. Thus, the occurrence of a variety of motivational links is not restricted to morphologically complex words. Admittedly, though, the meaning in which *buono* was presented to the informants, viz. 'tasty, delicious', is a rather specific meaning which is probably derived from the more general meaning 'generally positive' and could perhaps be considered semantically complex. *Buono* in the meanings 'comfortable', 'magnanimous', and 'well-behaved', however, has to be considered equally complex as 'tasty, delicious' because they too are probably derived from *buono* 'generally positive' and are more specific than the latter sense. Moreover, for Ital. *buono* as well as for Germ. *unterfordern*, morphologically more complex words were given, too, namely the suffixed *bontà* in two different meanings for *buono* and the equally suffixed *Unterforderung* for the German verb. This shows once again that motivated words are not necessarily more complex than their motivating partners, but that lexical motivation

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seems to run in all possible directions: from a morphologically or semantically more complex word to a morphologically or semantically less complex word, from a less complex word to a more complex word, or between equally complex words. Still, Tables 1 and 2 show that the supposed base unit reaches the highest consensus as a motivational partner. Thus, there seems to be a general preference for less complex motivating units. In any case, contrary to the traditional approach to motivation (see Section 2), it seems more appropriate to conceive lexical motivation as bidirectional or rather multidirectional than as unidirectional.[7] Further evidence for this claim from a cognitive point of view will be presented in Section 5.

For all the other stimuli of the two studies, which cannot be presented within the limits of the present article, with the exception of only two cases, more than one motivational link was found. Thus, we can say that, contrary to what is widely believed, motivational networks seem to be the norm rather than the exception (see also Augst 2002: 682).

Furthermore, the results of the speaker judgements presented here support the view that multiple motivational links are not only due to inherent structural ambiguities which result in "double motivation", but also arise from individual intuitions about given lexical units, independently from their specific structure. Nevertheless, both of these factors that lead to a motivational network can be attributed to an organizational principle governing the lieu where motivation takes place: the mental lexicon. This will be shown in the next section.

5. The cognitive structure of word families

5.1 Word families and their status in the mental lexicon

That multiplicity should not be regarded as an unwelcome side-effect of lexical motivation can be corroborated by cognitive evidence. In my view, it is the notion of word family that is central to the justification of motivational networks.

On the basis of Schreuder and Baayen (1997: 121), a synchronic word family can be defined as a network of both conceptually and morphologically related words that are "derived from a given stem by means of either compounding [...] or derivation [...]."[8] Note that this definition of word families includes compounds, but not

7. This is also in line with many cognitive approaches, e.g. Langacker (1987: 379) and Twardzisz (1997: 60). For a more detailed account of bidirectionality in lexical motivation see Umbreit (2010).

8. Schreuder and Baayen (1997) do not conceive of word families as networks nor do they emphasize the idea of both a morphological and a conceptual connection between the family members. The latter point, however, is especially important for synchronic approaches to lexical motivation (see Section 2).

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inflectional relations. Members of the word family *fish* are, therefore, e.g. the verb *to fish*, formed by conversion, *fishy*, *fisher* and *fishery* formed by derivation, compounds such as *fish-farm* and *fish-knife* as well as the compounds *fisherman* and *pearl fishery*, whose immediate bases are not *fish*, but *fisher* and *fishery*, respectively. The stem word *fish* is still transparent even in secondary derivatives and compounds.

Now, why are word families so important for multiple lexical motivation? First, according to the definition of lexical motivation given above (see Section 2), both a morphological and a conceptual relation are required linking the motivational partners. Thus, the latter normally belong to the same word family. Moreover, it is a well-known fact that the mental lexicon has to be well-organized in order to enable and facilitate cognitive capabilities such as the processing, storage and retrieval of the enormous data quantities it deals with (see e.g. Aitchison 1993: 5; Bybee 1995: 452). One of these facilitatory principles that are at work in the mental lexicon is the organization of lexical entries according to word families.[9]

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Traditionally, as Figure 3 demonstrates, word families are hierarchically conceived in that a base word or stem is the family's centre, where all the different branches of derivations and/or compounds converge.

The status of derivatives and compounds, i.e. complex words, in the mental lexicon has been controversially debated for a long time: The so-called "full listing models" (e.g. Butterworth 1983) have argued for a complete storage of complex words whereas the "partial listing models" (e.g. Taft & Forster 1975) have suggested morphological decomposition, i.e. a lexical organization based on morphemes. Recent

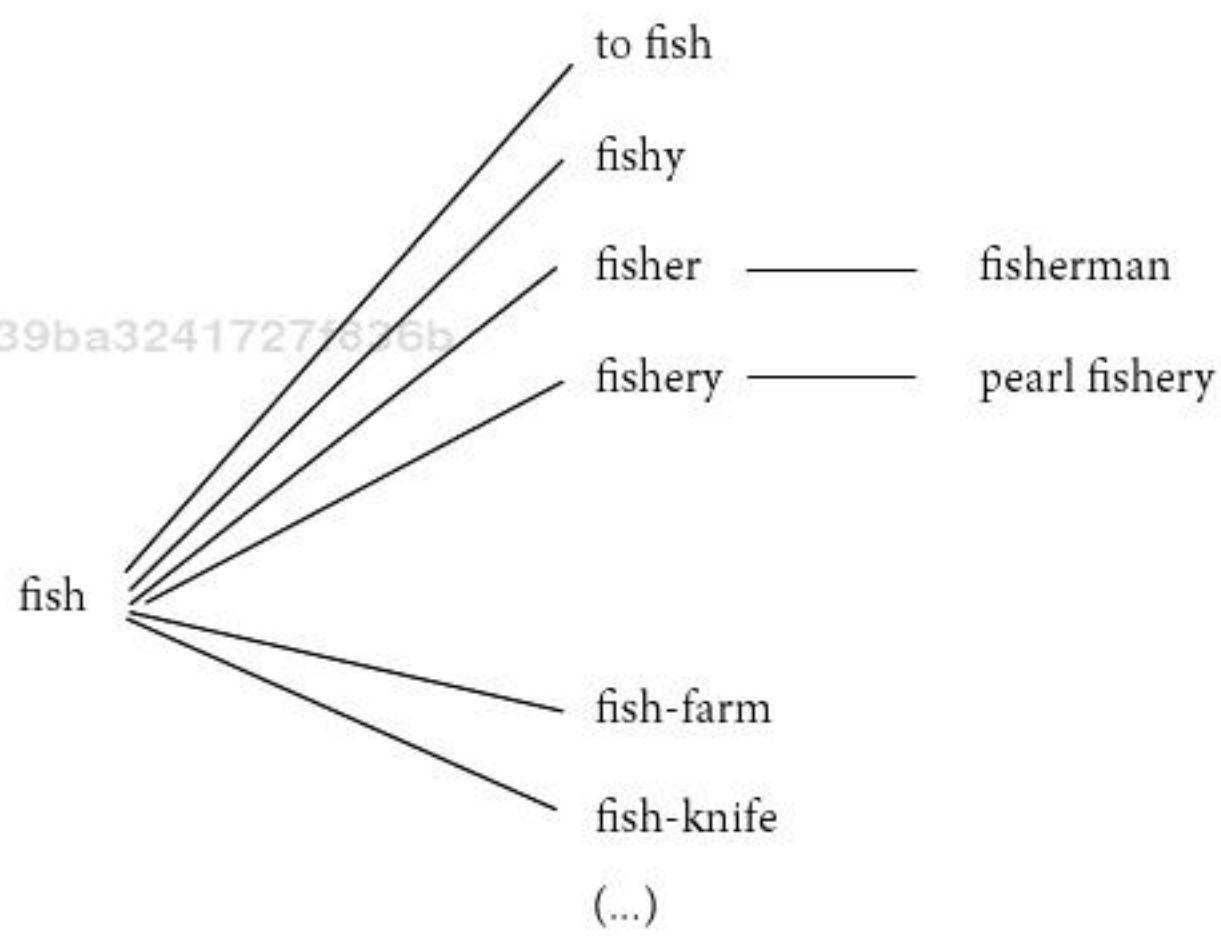

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Figure 3. The word family of Eng. *fish* according to traditional conceptions

9. Other structuring principles are e.g. the organization into semantic, encyclopaedic or word fields (Kielhöfer 1994: 213f.). They rely on conceptual, extra-linguistic or taxonomic relations, which, unlike a word family as defined above, do not require a formal connection.

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approaches mostly propose a compromise between the two positions, e.g. the "parallel processing" (Aitchison 1993: 131) of whole words and of their respective morphemes in derivation.[10] According to these models, both the full words and their constituents have to have a lexical entry and these entries comprise phonological and semantic information. Obviously, decomposed lexical entries belonging to one word family are connected to each other via the shared stem. But even if words are not necessarily decomposed into their constituents when speakers hear or articulate them, "their morphological structure emerges from the connections they make with other words in the lexicon. Parallel sets of phonological and semantic connections, if they are repeated across multiple sets of words, constitute morphological relations [...]." (Bybee 1995: 428f.).[11]

Now, if interconnections between lexical entries sharing a particular base morpheme are assumed,[12] this also explains why speakers are able to recognize the constituents of words and relate them to other family members. In other words, it becomes clear why speakers dispose of the "synchronic etymological competence" claimed by Augst (see Section 4.1 above): "[...] accessing one of the words of the family 'activates' the other members' representations in the internal lexicon, at least for regular related forms." (Segui & Zubizarreta 1985: 766). While this ability often works on the subconscious level, speakers make explicit use of it when asked to motivate words.

Moreover, the idea of interconnections has direct implications for the directionality of word-family organization in the mental lexicon. If we follow the nowadays widely accepted "network models" (see e.g. McQueen & Cutler 1998: 409ff.) originally proposed by Bybee (e.g. 1995: 428f., 1998: 422f.), it is clear that strict hierarchies cannot hold anymore. Coming back to the word family of Eng. *fish*, a member such as *fishy* is not only related to the supposed base word *fish*, but via the morphological and conceptual connections also to the other family members, e.g. *to fish*, *fish-farm* and so on. Consequently, the model presented in Figure 3 has to be changed into a network-like structure, as shown in Figure 4.

The example *fish* in Figure 4 shows that every member of a word family holds connections to every other member belonging to the same family.[13] As the double-headed

10. Laudanna and Burani (1985) suggest parallel whole-word and parsing access mechanisms for inflection, too, whereas other researchers argue that regular inflected forms are generally decomposed (see McQueen & Cutler 1998: 418ff.).

11. See McQueen and Cutler (1998: 413f.) for an overview of studies which deal especially with compounds and show that their representations, too, are linked to the representations of their constituents within a network.

12. Interconnections can also be found between complex words formed by the same affixes (see Clark 1993: 5; Bybee 1998: 423).

13. Of course, Figure 4 represents a rather simplified model, as e.g. polysemy, viz. the relation between connected senses of one word form, is omitted. Moreover, the compounds *fish-farm* and *fisherman* also hold connections to the word families of *farm* and *man*, respectively, which could not be included here either.

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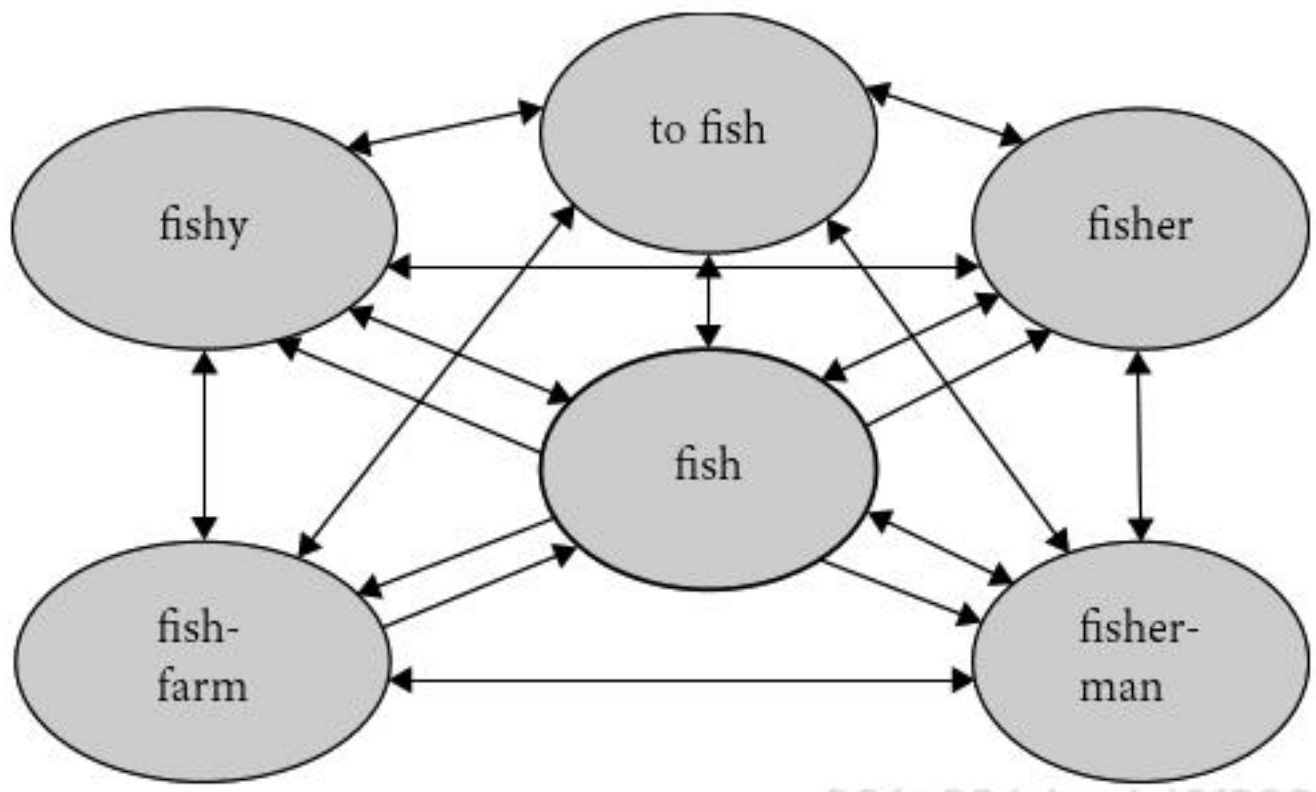

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Figure 4. The word family of Eng. *fish* according to network models

arrows in Figure 4 indicate, these connections are not conceived as unidirectional any more, for it would not make sense to consider *fishy* as related to *fish* but not vice versa, i.e. *fish* as not related to *fishy*.[14] This is in line with the results of the questionnaire studies discussed in the preceding Section. Consequently, we can speak of bidirectional and even multidirectional relations here. In addition, interconnections do not necessarily involve the base word. It is absolutely legitimate to relate *fisher* directly e.g. to the verb *fish*, the adjective *fishy*, and the compound *fish-farm*. However, it seems advisable to keep to the notion of base word or stem because, morphologically and conceptually, one family member can typically be conceived as basic. Moreover, as Tables 1 and 2 have shown, it is often exactly the supposed base word that is the preferred motivational partner in speaker judgements.

5.2 Evidence for the influence of word families on lexical processing

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Various psycholinguistic experiments and findings support the claim of multidirectional relations between word family members. Firstly, cross-modal lexical decision tasks by Marslen-Wilson et al. (1994) resulted in significant effects for different prime-target constellations of simple and derived words that were morphologically and conceptually related, i.e. words that belonged to the same word family. Suffixed and prefixed words prime their stems and vice versa; prefixed words prime suffixed words and vice versa; and prefixed words prime each other, but suffixed words do not. While the obtained priming effects speak in favor of strong underlying connections between primes and targets, the last result is attributed by the authors, who suggest a decompositional model, to a so-called "inhibitory link" between suffixes attaching to the same stem (Marslen-Wilson et al. 1994: 18f.).

14. See also McQueen and Cutler (1998: 409): "The word nodes of all the morphological relatives of a given stem have bi-directional facilitatory connections to the stem node."

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Secondly, word-family size has been revealed as an important factor for the processing of simple words: "A monomorphemic noun with a large family size elicits higher subjective frequency ratings and shorter response latencies in visual lexical decision than a monomorphemic noun with a small family size" (Schreuder & Baayen 1997: 118). Thus, the number of derivatives and compounds belonging to a stem influenced both subjects' recognition of a simple form as a well-formed word of Dutch and the frequency rate they assigned to simple items.

These results show once more the centrality of word-family organization in the mental lexicon. Independently of the morphological structure of the target presented in lexical decision tasks with or without priming, it is always a whole word family that is subconsciously activated. Moreover, the size of the respective word family influences the judgements on the frequency of its members.

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Second language acquisition is another indirect indicator of the cognitive importance of word families: The language learner is able to infer unknown vocabulary with the help of word-family knowledge (Denninghaus 1976; Lübke 1984). Here, too, inferences can be made in several directions. For example, if a learner of French sees or hears for the first time the noun *le jeune* 'young person', he can easily guess its meaning with either the help of the base word, the adjective *jeune* 'young', or by the more complex noun *jeunesse* 'youth' – provided that he already knows one of these word family members. Many linguists working in the field of L2 acquisition (e.g. Kielhöfer 1994; Hausmann 2002; Stein 2002) have proposed making more use of the notion of word families in the classroom in order to increase the understanding of lexical items and to reduce the memorization effort of new vocabulary (Stein 2002: 133).

5.3 Synthesis

All the above-mentioned findings concerning the cognitive structure of word families can be directly transferred to the notion of lexical motivation: If complex, simple and equally complex words that are part of the same word family nearly always activate each other on a subconscious level as found in the experiments by Marslen-Wilson et al. (1994), there is no reason to doubt that these multidirectional connections also hold on a conscious level, for instance when it comes to speaker judgements on lexical motivation. The experiments run by Schreuder and Baayen (1997) have demonstrated that, when processing a simple word, we co-activate the whole word family due to the interconnections between the family members. Thus, we are obviously able to make use of this activation in conscious judgements, too, which would explain why informants often differ in the motivational partners they provide on the one hand and why these partners are not necessarily motivational bases on the other. The latter claim is also supported by the above-mentioned multidirectional strategies that can be used in second language acquisition. However, the exact nature of the relation between

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subconscious and conscious cognitive processes still has to be clarified by further work on this subject.[15]

These reflections also hold for the traditional cases of double motivation resulting from structural ambiguities (see Section 3). In contrast to the speakers' individual differences about which related unit is the most salient motivational partner, example (3), Eng. *reorganization*, is ambiguous due to its inherent properties. So, two or more motivating units, e.g. Eng. *organization* and *reorganize*, are equally closely related to the given item within the respective word family network and consequently seem to be equally evident in conscious meta-linguistic judgements. As far as fuzzy internal boundaries (example (4), Germ. *Bergwanderschuhe*) are concerned, one could suggest that these types of complex words are highly infrequent and hence are not parsed as whole-word representations in the mental lexicon, but in a decompositional way (see Frauenfelder & Schreuder 1991). This suggestion is supported by the findings of Coolen et al. (1991), who studied the semantic processing of novel noun-noun compounds in Dutch. The semantic ambiguity occurring to different degrees in novel compounds is comparable to the structural semantic ambiguity found in example (4) although the latter has not necessarily been newly created. Coolen et al. (1991: 341) found that lexicalized compounds are recognized faster than novel ones in lexical decision tasks and explain this fact by a combined access model: lexicalized compounds are accessed as whole-word representations, whereas novel ones are accessed via their constituents. Moreover, the authors conclude that "the multiple ambiguity inherent in novel compounds" (Coolen et al. 1991: 341) is normally resolved fast and efficiently "by considering a small stock of frequent semantic relations to relate the nouns in the compounds" (Coolen et al. 1991: 350).[16] Thus, the meaning of structurally ambiguous compounds is not stored and has to be newly established each time the speaker is confronted with the word by combining the meanings of the constituents. Left without context, he opts for the one which comes first to his mind, i.e. for the one that is most salient for him, but which is not necessarily identical to the most salient ones for other speakers. The result is a whole set of possible semantic interpretations which constitute once again a motivational network.

Even with the caveat in mind that this last explanation, too, needs to be corroborated by further studies, it should be obvious now that motivational networks are a perfectly unproblematic phenomenon, as they are justified by the cognitive structure of lexical units organized in morphologically and conceptually related word families.

15. Additionally, factors which could not be included in the present article, as frequency effects, affix productivity and semantic transparency, act on the speed and strength of activation and should be considered in further studies on the subject.

16. According to Coolen et al. (1991), the varying appropriateness of the semantic relations results in different degrees of interpretability of the novel compounds.

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6. Conclusion

The present article has dealt with phenomena that have so far been treated as exceptional: lexical units that can be synchronically motivated by two or more other lexical units and that have traditionally been called *double motivation*. For these cases, a more appropriate term, *motivational network*, has been introduced, which has the advantage of not implying the existence of only one motivational base and of not requiring a less complex motivating unit. Such examples frequently occur in questionnaire studies conducted with native non-linguist speakers. What is more, they even seem to be the norm, as only a very small number of cases receive a uniform motivational partner. Contrary to the strictly unidirectional approaches of lexical motivation, which consider multiplicity of motivational links as problematic, it has been shown that motivational networks are justified from a cognitive point of view. A review of research results concerning word-family organization in the mental lexicon provides evidence for the fact that when processing a given lexical unit, the whole word family is co-activated, as the latter seems to be organized as a multidirectional morphological-conceptual network between all related units. It can be supposed that speakers make this subconscious activation explicit when they are exposed to motivation tasks like the ones presented in this paper. The fact that the motivational links that were found varied among subjects is then explainable by different individual saliencies of the word family members or of the possible conceptual relations holding between them. Similar strategies can be used in second language acquisition either to make unknown vocabulary accessible or to facilitate its memorization.

Thus, it can be concluded that the existence of motivational networks is not an abnormal and not even an exceptional phenomenon but directly reflects the organizational principles of the mental lexicon.

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The "meaning-full" vocabulary of English and German

An empirical study on lexical motivatability

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It is widely believed that only a small part of the English vocabulary is analyzable into constituents that are both formally and semantically related to the meaning of the complex word. De Saussure (1916) already described English as a *langue lexicologique*, a phenomenon that Leisi (1955) attributes to the large proportion of Romance words that have become part of the originally Germanic English language. Leisi concludes that, in contrast to German, many words of contemporary English are not integrated into any word family.
This paper presents the results of a research project in which the motivatability of the 2,500 most frequent English and German words is investigated. The approach adopted here distinguishes the four categories of 'fully motivatable', 'partially motivatable', 'unmotivatable but transparent' and 'fully unmotivatable' words. The two most important findings of the study are: (i) the German vocabulary is in fact more motivatable than the English vocabulary – if only marginally so, and (ii) the non-native origin of a word has no negative effect on its motivatability.

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Key words: full motivatability etymology, partial motivatability, transparency

1. Delimiting the notion of motivation in the lexicon

Motivation is not the same as predictability (Langacker this volume). Lakoff (1987: 438; 448) offers the following definition of linguistic motivation: "The relationship between A and B is *motivated* just in case there is an independently existing link, L, such that A-L-B 'fit together'. L *makes sense* of the relationship between A and B." It is very often the case that the meaning of the whole is not predictable – but motivated by the meanings of the parts – which is why a cognitive theory of motivation is required (Lakoff 1987: 148). Langacker (2008: 88) maintains that "while virtually everything is

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motivated, very little is subject to absolute **predictability**". It is questionable whether there are any words at all whose meaning can be predicted from the meaning of their components; however, their components can enter a sensible paraphrase of a word's meaning. In this study such words will be described as *fully motivated*. Here we do not follow Lakoff (1987: 147), who assumes that cases that are fully motivated are always predictable. We assume that, for example, the meaning of the compound *bedroom* is not predictable but fully motivated because its meaning can be paraphrased as 'a room containing one or more beds', even though its elements may permit other possible, but non-lexicalized interpretations, such as 'a room in the shape of a bed' or 'the room contained within a bed'. Furthermore – in analogy with German *Schlafzimmer* – **sleeping room* would be equally motivated to designate the concept.

This raises another important question, namely: when can a word be classified as motivated and not merely as transparent? This is a fairly subjective decision, which may be approached differently by different analysts. Yet the human factor cannot be avoided: motivation is necessarily motivation for someone (Gauger 1970: 105), i.e. for a human beholder. In the research project described below, the guiding principle was Augst's (1998: IX-X) "synchronic etymological competence", which is defined as the "normal" language users' ability to analyse complex words until they arrive at core words which cannot be analysed any further. This means that a motivational analysis cannot rely on a person's knowledge of linguistics or foreign languages. We attempted to simulate the decisions of laypeople using our own native German and advanced English introspection with regard to plausible paraphrases of complex words that involve the meaning of formally similar or identical constituents. To give an example, a plausible paraphrase of the meaning of *football* might be: "a football is called *football* because it is a ball that players usually kick with their foot". The example *football* will presumably be analysed identically by most people, but other examples are less clear. For instance, can *responsibility* be motivated by *respond* (because someone who is responsible has to respond for his/her actions)? While motivation should be based on an objectively recognisable relation between words, the question remains how to determine it.

In order to do justice to the fact that language users, including linguists, can only provide tentative subjective motivational relations, the study presented here underlines their potential character by adopting Rettig's (1981: 75–76) term *motivatability* instead of *motivation*. Words such as *responsibility* show that it is necessary to recognize an intermediate category between full motivatability of items such as *football* and the complete arbitrariness of words such as *leaf*. Following and adapting Gauger's (1971: 137) terminology, this intermediate category between 'fully motivatable' and 'unmotivatable' words is referred to as *partial motivatability*. Such a threefold distinction is frequently found in the literature under varying names (cf. Fleischer & Barz 1995: 18). In this intermediate category, we find words such as *income*, which can obviously be connected to the constituents *in* and *come* on both formal, i.e. morphological, and semantic, i.e. meaning-related, grounds. Still, though these constituents do contribute to

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the complex word's meaning, the lack of the monetary aspect as the defining semantic feature prevents a classification of this particular word as fully motivatable.

This motivational scale has to be further refined by a certain number of subcategories based on the obstacles that can be encountered when analyzing actual language material. For instance, transparent words such as *understand* < *under, stand* form a subcategory of unmotivatable words that will be referred to as *unmotivatable but transparent*.

Far more important are the subcategories encountered within the partially motivated group. Thus, the segmentation of a word into constituents may reveal a formal obstacle, either in their phonological shape, as in *preference* < *prefer* + *-ence*, or in their graphic shape, as in *guidance* < *guide* + *-ance*, or in both their phonological and graphic shape, e.g. in *angry* < *anger* + *-y*. (If only the spoken or written form of a word is affected, it is still regarded as fully motivatable provided that all other variables indicate full status.)

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The relation between a word and its possible constituent(s) is sometimes slightly obscured by semantics. Thus, constituents may only be metaphorically related to the complex word, e.g. in the analysis of *discover* into *dis-* and *cover*. Alternatively, a central semantic constituent may not be expressed at all, such as 'money' in *income*, or the paraphrase based on the constituents may not be satisfactory for some other, idiosyncratic reason.

Other items are only motivatable with a remainder: thus *human* is reminiscent of *man* from a synchronic point of view, but this analysis leaves us with an unidentifiable beginning. Similarly, an adjectival suffix *-al* can be distinguished in *royal*, but the remainder cannot be synchronically related to an existing free base of the same language.

Another question that needs to be resolved is how to treat words that are related to a word of another part of speech with which they are formally identical. For example, the verb *to list* can be paraphrased by making use of the corresponding noun in 'to make a list of something'. If one were to claim that words which are related by zero-derivation are actually instances of the same lexeme (as is done in Leisi & Mair 1999: 86–87), this could not be counted as a motivating relationship. However, in the study described here (just like implicitly in Clark & Clark 1979), part of speech was considered a criterion for postulating separate lexemes, so that motivation by zero-derived items was accepted unless this would have resulted in awkward paraphrases such as 'a bottle is a device for bottling'. Consequently, the noun *bottle* is not motivatable by the verb, but the opposite would be the case.

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A similar type of problem is encountered when determining the status of items which can be related to a shorter, formally related synonym or abbreviation, e.g. *amongst* < *among*. In such cases, the formal and the slight stylistic difference are regarded as sufficient to postulate different lexemes, so that these complex items are regarded as partially motivatable.

Last but not least, a word may be among the most frequent vocabulary items, whereas its constituents are stylistically marked and belong to a less central vocabulary

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range. For example, the noun *computer* can theoretically be motivated by the verb *to compute* and the suffix *-er*, but it is not very likely that a person unaware of the noun would know the verb. Nonetheless, such cases were counted as partially motivatable for the sake of systematic clarity in Sanchez (2008a).

While decisions regarding formal similarities and dissimilarities are fairly easy to make on the grounds of the number of shared phonemes and letters, all decisions involving a semantic component will always be subjective to a certain degree. However, it makes no sense to test motivation without considering the semantic component as well; for this reason, the database for the study present here was revised several times and is made available to other researchers on request.

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2. Researching the motivatability of the English and German vocabulary

In his posthumous book *Cours de linguistique générale* (1916/1974: 133–134), de Saussure notes that

> There is no language in which nothing is motivated, and our definition makes it impossible to conceive of a language in which everything is motivated. Between the two extremes – a minimum of organization and a minimum of arbitrariness – we find all possible varieties. Diverse languages always include elements of both types – radically arbitrary and relatively motivated – but in proportions that vary greatly, and this is an important characteristic that may help in classifying them. In a certain sense – one which must not be pushed too far but which brings out a particular form that the opposition may take – we might say that languages in which there is least motivation are more *lexicological*, and those in which it is greatest are more *grammatical*. [...] We would see, for example, that motivation plays a much larger role in German than in English.

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In a similar vein, Ernst Leisi (1955: 63) claims that English and French are considerably "dissociated" languages, while German and Italian are considerably "consociated". By this he understands the degree to which the vocabulary of a language is integrated into etymological (phonetically and semantically related) families (Leisi 1955: 58). Thus, the German words *mündlich* 'oral' and *Mund* 'mouth' are related with respect to both form and meaning, whereas the English equivalents *oral* and *mouth* are semantically, but not formally, related. Therefore, German *mündlich* is said to be consociated while English *oral* is said to be dissociated or "antisocial". If word-family integration is taken as the basis for consociation, it can consequently be defined as consisting of two components, namely a synthetic and/or an analytical component, the second of which corresponds to the afore-mentioned notion of motivatability.

The goal of the present study is to empirically validate de Saussure's and Leisi's claims about the motivational differences between English and German. We should

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expect to find more unmotivatable words in English than in German in samples of comparable size and makeup.

The present study is based on the 2,500 most frequent lemmas of English and German as attested in the British National Corpus and the DWDS Core Corpus, i.e. both simplex and complex words, including compounds and affixations. It was assumed that the most frequent lemmas represent the relevant vocabulary for both native speakers and learners of the two languages (cf. Sanchez 2008b). Unfortunately, the corpora are not fully comparable; for instance, the texts in the DWDS Core Corpus cover the whole of the twentieth century and the version used contained no spoken language, whereas the vast majority of texts in the BNC were produced between 1975 and 1993 and also include 10 million spoken words (Aston & Burnard 1998). However, both corpora were designed to be representative of their particular language, with the DWDS Core Corpus emulating the BNC with respect to the proportion of different text types (http://www.dwds.de/ueber, visited October 2009), so that they are similar enough to be used in a contrastive lexical study.

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For all words, the motivatability was encoded in an Excel spreadsheet following the criteria outlined above. To simplify matters, only a binary analysis was carried out on the highest level, so that the adjective *educational* was analysed into *education* and *-al* only, with no further subdivision of the derivative *education* on a lower level. As a rule, each motivatable word was assigned two constituents in one column and a code combining the different types of obstacles, if there were any, in another column. This approach has the advantage of allowing the combination of different kinds of obstacles, e.g. when *your* is classified as partially motivatable by *you*, with an unresolved remainder and different pronunciations. This is of great importance because the majority of words involve several such problems. In addition, this model makes it possible to include or exclude certain variables in the calculation of the results so that a large range of alternatives can be obtained.

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Non-linguists cannot be expected to know rare affixes or the etymology of words. For this reason, only affixes from English learners' dictionaries or affixes that could be easily derived from the data were admitted as motivating constituents, and analyses did not have to coincide with the diachronic facts. The analyses followed the principle of always aiming to find the maximal amount of motivatability in both languages.

Several variables such as frequency (in terms of rank) and etymological origin were also encoded. The mixed etymological character of the English vocabulary is notorious (cf. Scheler 1977: 9; Görlach 1986). According to Leisi (1955: 58–60), the massive influx of Latinisms (under which he subsumes French words) into the English language has reinforced the dissociation of its vocabulary. For instance, in the example given above, *mouth* is of Germanic and *oral* of Romance origin. The Germanic and Romance provenance of the words was encoded on the basis of digital reference works such as the *Shorter Oxford English Dictionary* (2002) for English and the *Duden Deutsches Universalwörterbuch* (2005) for German. Words with mixed roots such as *around* and *gentleman* were classified as Germanic-and-Romance, and very few items entered

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the three categories "unknown", "eponymic" or "exotic words". As the etymology of many German compounds and derivatives is not recorded in reference works (not even in etymological dictionaries such as Paul 2002 or Kluge 2002), an original-language approach was adopted, which considers the origins of the words' constituents.

On the basis of these observations, the following two hypotheses concerning the motivatability of the English and German vocabulary were tested:

1. German vocabulary is more motivatable than English vocabulary.
2. Words of Germanic origin are more motivatable than words of Romance origin.

3. Results

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Table 1 illustrates that only 13.48% of the English and 17.68% of the German words are fully decomposable into motivating constituents (e.g. *chairman* < *chair*, *man*). However, an additional proportion of 46.12% of the English and 48.84% of the German words under consideration are partially motivatable (e.g. *religious* < *religion*, *-ous*) so that some kind of motivating relation can be recognized in as many as 59.60% of the English and 66.52% of the German words. Thus, the proportion of motivatable words comes fairly close to two thirds, i.e. 66.66%, in both languages. Even though Hypothesis 1 is thus confirmed, one must nonetheless be cautious about considering English and German as diametrically opposed language types on the basis of a difference of merely 6.92%.

Another fact that should be kept in mind is that we are dealing with the highest-frequency vocabulary slices here. Figure 1 shows that the graphs for fully (MO) and partially motivatable (MP) words in English rise with decreasing rank or frequency. Initially, the curve of partially motivatable words is clearly the steeper of the two, but then both graphs rise almost parallel to each other. The most frequent items are predominantly unmotivatable, but then the proportion of unmotivatable (UN) words experiences a relatively sharp drop in the first 500 items and keeps sinking, while the proportion of unmotivatable but transparent (UT) words remains fairly constant once it has reached a certain level. The 1,130 most frequent lemmas are thus predominantly unmotivatable, but the consideration of words from rank 1 to 1,131 and below leads to the result that the English vocabulary is predominantly motivatable.

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Table 1. Motivatability of the 2,500 most frequent English and German lemmas (in percentages)

			English	German
Fully motivatable (MO)	*football*	< *foot*, *ball*	13.48	17.68
Partially motivatable (PM)	*income*	< *in*, *come*	46.12	48.84
Unmotivatable but transparent (UT)	*understand*	< *under*, *stand*	4.40	5.32
Unmotivatable (UN)	*leaf*	–	36.00	28.16

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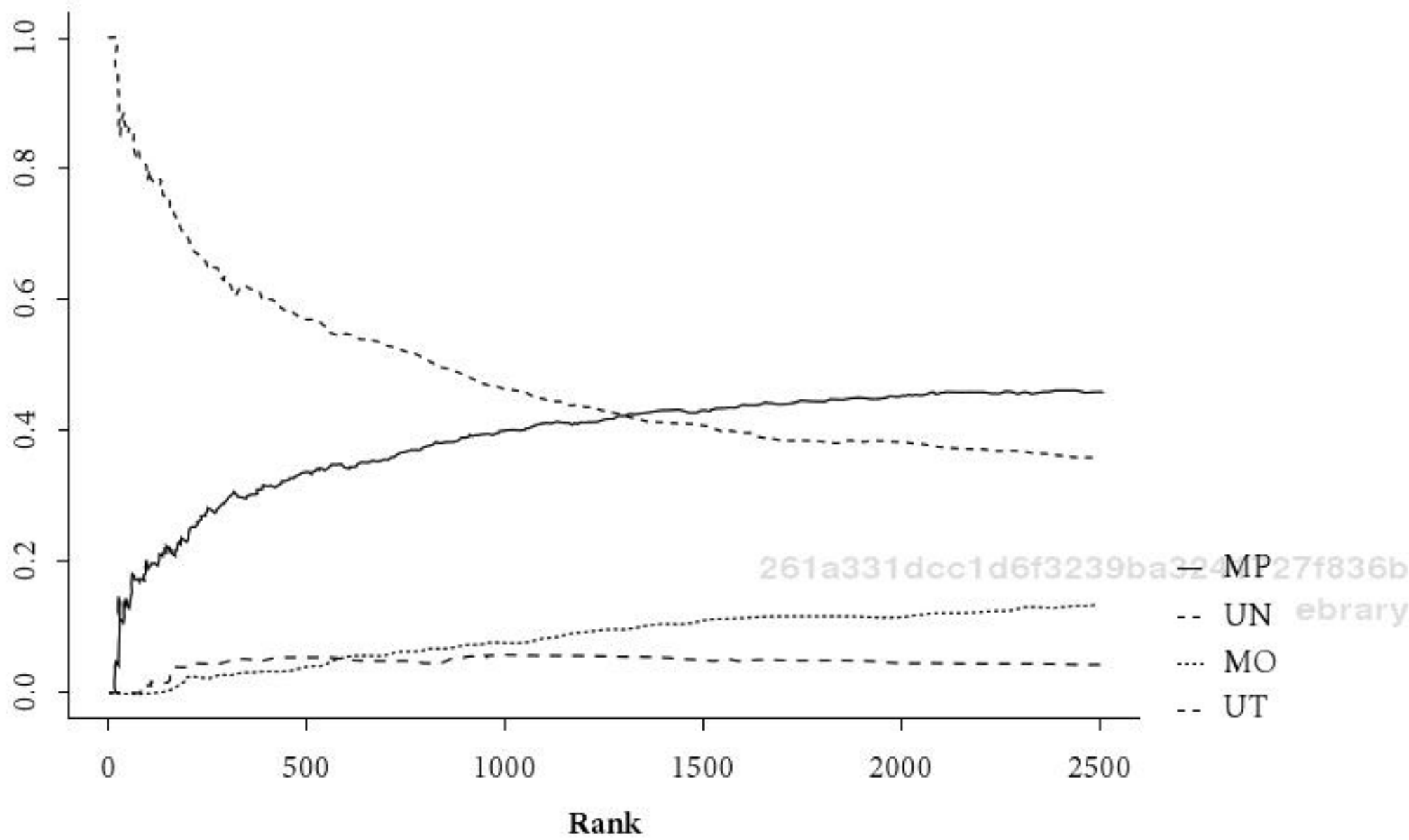

Figure 1. Motivatability and rank (frequency) of the English items

This result can be linked with the vertical structure of prototypes: basic level terms, e.g. *chair* as opposed to *kitchen chair*, are generally very frequent, short and structurally simple, i.e. they tend to be monomorphemic rather than polymorphemic, whereas subordinate terms are less frequent, complex and often compounds in which the basic level term is modified (Taylor 1995: 49). Superordinate terms, such as *furniture*, are rare or simply do not even exist in a particular language (Taylor 1995: 49).

The same phenomenon can be observed in German, so that the contrastive results are not affected by this general tendency of the motivatability to rise with decreasing rank. For this reason, the average motivatability of all words in the two languages should actually be even higher than the results outlined above, because the expected higher motivatability of the vast number of lower-frequency words will counterbalance and even outweigh the comparatively low results for the small sample of the 2,500 most frequent items.

Still, the majority of the motivatable items in the sample under consideration is only partially motivatable. Therefore, it makes sense to consider the kinds of obstacles that recur most frequently in the sample.

The percentages listed in Table 2 are based on the total number of items, i.e. 2,500 for each language, because the variables may be combined within particular words. Thus, *lawyer* < *law*, *-er* contains both a formal obstacle (because the combination of the constituents does not result in the full graphic shape) and a semantic obstacle (because the paraphrase 'a person who uses the law' is still a bit vague) and thus counts

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Table 2. Subcategories of partial motivatability (in percentages)

			English	German
Formal differences	*distribution*	< *distribute, -ion*	15.92	16.60
Motivatable by zero-derivation	*list* (v)	< *list* (n)	15.80	5.08
Incomplete analysability	*mountain*	< *mount*	14.12	12.96
Semantic differences	*income*	< *in, come*	13.64	23.56
(Stylistically) Marked constituents	*computer*	< *compute, -er*	2.12	4.12
Motivatable by abbreviation or shorter synonym	*amongst*	< *among*	0.52	0.84

towards both categories in Table 2. The figures suggest that stylistically marked constituents and motivation by abbreviation or shorter synonyms play only a marginal role in both languages. The same can be said of zero-derivation in German but not in English, where it represents the second most important type of obstacle to motivation with 15.80%. That the figures for this variable are more than three times as high in English as in German (where it only reaches 5.08%) may be taken as indicative of different vocabulary structures, German having a far more refined inflectional system than English (Leisi & Mair 1999: 140–145), which has an important effect on the organization of the lexicon and the assignment of part of speech (cf. Vogel 1996: 269, who speaks of *merkmallose Wortartübergänge* (featureless part-of-speech transitions) between English verbs and nouns). Apart from this idiosyncrasy, the most important factors resulting in partial motivatability are shared by both languages. Nonetheless, while formal differences, incomplete analyzability and semantic differences are fairly evenly distributed in English with 15.92%, 14.12% and 13.64%, respectively, semantic obstacles definitely take the lead in the German sample with a proportion of 23.56%. One possible explanation for this lies in the special character of German prefixations. Even though prefixations only constitute about one-seventh of the German items analyzed, roughly every third word classified as partially motivatable with a semantic obstacle contains a prefix, and conversely, about every second prefixed word contains some kind of semantic obstacle.

Apart from these immediately evident differences, others are more subtle and only become apparent if one takes a look at the subcategories. For instance, within the formal obstacles to motivatability, combined spelling and pronunciation differences (cf. *angry* < *anger* + *-y*) constitute the largest subcategory in both English (72.86%) and German (56.39%). While this is followed by isolated spelling differences (11.56%; cf. *guidance* < *guide* + *-ance*) and isolated pronunciation differences (9.55%; cf. *preference* < *prefer* + *-ence*) in English, vowel mutation (20.96%; cf. *jährlich* < *Jahr*, *-lich*) and vowel gradation (19.76%; cf. *springen* < *Sprung*) are responsible for practically all of the remainder of the formal differences in German. Within the category of incomplete analysability, another, less marked, tendency can be observed: 43.48% of the English

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(in contrast to 34.09% of the German) words are motivatable by affixes only, e.g. *royal* < *-al*. These items often have a Romance origin and no discernible base. By contrast, transparent remainders can be found in almost 12% more German than English incompletely analysable words (52.13% and 40.58%), e.g. in *research*, which is definitely related to *search* but not clearly to *re-* 'again' or 'back'.

Table 3 allows the comparison of the results obtained in Sanchez (2008a) with those of Fill (1980). Fill's figures for what he calls the *Wortdurchsichtigkeit* ('word transparency') of the English and German vocabulary vary greatly, depending on the material (novels, fiction) and the parts of speech focused on in the respective analyses: thus, his results fluctuate between 15% and 68% for English and between 41% and 83% for German. In all cases, though, German clearly ranks before English.

If a dictionary average is calculated as the figure that may come closest to the design of the research project presented here, the ensuing motivational rate of 73% for Fill's German items (= average of 83% + 62%) comes very close to the 66.52% (= 17.68% fully motivatable + 48.84% partially motivatable words; cf. Table 1) found in Sanchez (2008a). By contrast, Fill's 49% result for English (= average of 68% + 30%) lies very clearly below the roughly 60% outcome of the study presented here (= 13.48% fully motivatable + 46.12% partially motivatable words). This is surprising, as one would expect the motivatability of high-frequency vocabulary to be lower than that of random dictionary entries. A possible explanation lies in the definition of what is accepted as a motivated word. For instance, Fill's approach does not accept motivatability by an affix only, and *-ly*-adverbs are considered arbitrary as well. This demonstrates how important it is that researchers make clear what they understand by motivation so as to make their studies potentially comparable with other studies. However, even if this is taken into account, English and German behave more similarly in the present study than in previous research on motivatability.

With respect to the association between motivatability and etymology, the English and German items show reverse tendencies. Thus, only 49.47% of the English words culled from the BNC are of Germanic origin as opposed to 68.25% of the German words found in the DWDS, whereas 63.32% of the English words are of Romance origin as opposed to only 48.90% of the German words (see Table 4).

Table 3. Word transparency (*Wortdurchsichtigkeit*) in Fill (1980) (in percentages)

	English	German
Novels (n, adj, adv)	24	46
Non-fiction (n, adj, adv)	44	62
Dictionary (n, adj, adv)	68	83
Novels (v)	15	41
Non-fiction (v)	21	58
Dictionary (v)	30	62

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Table 4. Contrastive etymological origin of motivatable words (in percentages)

	English	German
Germanic origin	49.47	68.25
Romance origin	63.32	48.90

A look at the category-internal distinctions reinforces this tendency for the Romance words to be more motivatable in English and for the Germanic words to be more motivatable in German: both full (9.98%) and partial motivatability (53.34%) of Romance items are higher in the BNC words than the respective values for the Germanic items (9.60% and 39.87%), and both types of motivatability are higher in the Germanic (18.60% and 49.65%) than in the Romance items (4.67% and 44.23%) from the German sample. Thus, Hypothesis 2 can be neither confirmed nor rejected in its general form. Depending on the language under consideration, it is either true or false: true for German, but false for English. The conclusion that can be drawn here is that the Romance words in German have retained a more alien character than in English. Considering all this evidence, a tentative explanation at least for Leisi's hypothesis can be seen in his native German background: as Romance words are less motivatable in German than the Germanic words, he may have subconsciously applied the German situation to the English vocabulary.

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4. Conclusion

English and German reach fairly similar results on the highest levels of analysis of lexical motivatability, but each language has its own distinctive profile with respect to the kind of obstacles encountered in lexical decomposition.

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Hypothesis 1, which stated that the German vocabulary is more motivatable than the English vocabulary, has been confirmed: high-frequency German words are indeed more motivatable than their corresponding English words, but only by a small margin (66.52% as against 59.60%). It may, therefore, be concluded that the high-frequency vocabularies of the two languages are in fact more similar with respect to motivatability than previously thought. Moreover, the fact that the high-frequency vocabulary is predominantly motivatable underlines the cognitive linguistic tenet that motivation is the norm and arbitrariness the last resort (cf. e.g. Lakoff 1987: 346).

Hypothesis 2, which stated that Germanic words are more motivatable than Romance words, has only been confirmed for one of the two languages: in German, words of Germanic origin are indeed more motivatable than words of Romance origin (68.25% vs. 48.90%). In English, by contrast, the opposite is the case (49.47% vs. 63.32%). This shows that the non-native origin of a word has no negative effect on its motivatability, at least not for high-frequency words of English

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In conclusion, it can be said that not only the German but also the English high-frequency vocabulary is far more "meaning-full" than would have been expected previously, and that the Romance origin of an English word does not affect its motivatability. The correlation of motivatability and frequency ranking suggests that this also applies to lower-frequency words and thus to the vocabulary of English and German in general.

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