Motion as a modulator of spatiotemporal relations in prepositional expressions of distance

Abstract

There has been a long lasting debate on the entanglement of space and time in cognition. One way to find some credible information about that relationship is to gather data on the distribution of spatial and temporal representations from linguistic corpora. A context that appears to be well suited to this purpose is the domain of prepositional expressions of distance, since they happen to take both spatial and temporal complements. Using standard reference language corpora for English and Polish, this study demonstrates an overall proportion between spatial and temporal prepositional phrases denoting spatial distance in absolute terms. The data reveal that the preposition away is used more frequently with temporal units to specify distance in space than to express temporal relations, which indicates that in the context of ways separating spatial locations both English and Polish speakers tend to express distance in temporal terms. This paper explores a hypothesis that the outstanding temporality of away-PPs results from the semantic component of motion, which acts as an underlying modulator that shifts conceptualizations of distance from spatial to temporal terms.

Keywords: space, time, motion, distance, propositional phrases, empirical linguistics

1. Introduction

The descriptive grammar of English has been undergoing substantial changes over the recent years, which have seen the publication of two voluminous reference grammars of present-day English: Longman Grammar of Spoken and Written English (Biber et al., 1999) and Cambridge Grammar of the English Language (Huddleston & Pullum, 2002). Huddleston and Pullum (2002, Ch. 7) employ a definition of prepositions that is considerably broader than those used in the traditional descriptive grammars (e.g. Quirk, et al., 1985). Following recent developments in linguistics, they see prepositions as heads of preposition phrases, which are comparable in their structure to phrases headed by verbs, nouns, adjectives, and adverbs. For example, while the traditional grammars treat before in (1) as a preposition, in (2) as a subordinating conjunction, and in (3) as an adverb, Huddleston and Pullum see this triple assignment as an unnecessary complication.

(1) We left before the last act. [NP COMPLEMENT]
(2) That was before he died. [CLAUSE COMPLEMENT]
(3) I had seen that face before. [NO COMPLEMENT]

They argue that it is much simpler to treat before as a preposition in all three examples. To support their argument they point out that before has the same meaning in all these sentences, and can take the same modifiers, e.g. shortly, an hour, a short while, in frontal position in all the above examples. The difference between the three instances is thus
solely a matter of the complement and nowhere else in the grammar is a part-of-speech distinction based purely on a difference of this kind.

With this innovative approach, all words traditionally classified as prepositions are still classified as prepositions but now the category includes a number of other lexical items formerly classified as subordinating conjunctions and adverbs. For the latter category redrawing of the boundaries includes words like aboard, across, along, away, beyond, off, over, through, etc., which can occur either with an NP complement or without a complement. Huddleston and Pullum (2002) add that these lexical items have been regarded as adverbs mainly because they are obviously not nouns, verbs, adjectives or conjunctions, and there is nowhere else to put them except in the adverb category.

2. **Semantics of prepositions**

The semantics of prepositions has been undergoing considerable changes in linguistic studies, as well. Classical approaches to meaning of prepositions derived from formal conceptions of semantics, which were predominant in studies conducted in the 1970s (e.g. Bennett, 1975), were subsequently contested by cognitive linguistic studies conducted in 1980s and 1990s (e.g. Brugman 1981/1988; Herskovits, 1986; Lakoff, 1987; Vandeloise, 1991). Essentially, those later proposals assume that prepositions are polysemous items that have a primary sense from which non-primary ones extrude in the form of radial network of meanings. From this outlook, the preposition can be viewed as a structure with a centre and a periphery, which goes in line with a cognitive assumption that categories are organized with respect to a prototype (see Lewandowska-Tomaszczyk, 2007 for a review of polysemy, prototypes, and radial categories).

Lakoff (1987, pp. 416–461) discusses more than twenty distinct meanings of over in an extensive case study. He argues that differences observed between various uses of that preposition should be regarded as distinct senses, i.e. distinct representations that language users keep in their mental lexicons. However, Sandra and Rice (1995) pointed out that a fundamental shortcoming of prepositional networks, as they termed Lakoff’s methodology, was that they were designed without the use of any explicit criteria and discovery procedures. Thus, any prepositional network proposed in this manner predominantly reflects a particular analyst’s own preferences, which casts a serious doubt on the systematic functioning of prepositional networks in the mental lexicon of language users, and makes that framework weak from a methodological point of view.

A subsequently proposed framework of principled polysemy (Tyler & Evans, 2001) attempted to solve the problem by introducing a methodology for determining distinct prepositional senses based on two criteria:

First . . . for a sense to count as distinct, it must involve a meaning that is not purely spatial in nature and/or in which the spatial configuration between the trajector and landmark is changed vis-a-vis the other senses associated with a particular preposition. Second, there must be instances of the sense that are context-independent, instances in which the distinct sense could not be inferred from another sense and the context in which it occurs. (Tyler & Evans, 2001, pp. 731–732).
Form this perspective, the following sentences (4) and (5) constitute distinct senses, but the sentence (6) does not. In (4) a non-spatial meaning associated with *over* appears to be that of *covering* (cf. Lakoff, 1987, p. 425), which is not consistent with the spatial configuration between the trajector and landmark designated by *over* in the *above* sense exemplified in (5). This illustrates the first criterion for whether an instance counts as a distinct sense.

(4) Joan nailed a board *over* the hole in the ceiling. [*covering* sense]
(5) The hummingbird hovered *over* the flower. [*above* sense]
(6) The tablecloth is *over* the table.

Despite the fact that the sentence (6) marks contact between the trajector and landmark, it still can be associated with the *above* sense in (4), because a tablecloth is typically situated higher than the top of the table from the usual vantage point. Moreover, it can be associated with the *covering* sense in (5), which can be inferred from the common knowledge that tablecloths are typically larger than tables. Therefore, it is not a distinct sense, which illustrates the second criterion.

More recently, however, Evans (2010) admitted that modeling the intricacy of the spatial and functional relations conveyed by prepositions is more complex than initially assumed by the principled polysemy approach. He presented a proposal of refining the framework from the perspective of the theory of *Lexical Concepts and Cognitive Models*. Evans (2010) suggests that the particular semantics denoted by a preposition is related to specific *psychosomatic states*. For example, we say *in trouble* because experiencing trouble is like being “enclosed” [*ENCLOSURE*] (cf. Turewicz, 2005), and we say *at risk* because experiencing risk is like being “located” [*CO-LOCATION*] near an external threat.

3. **Spatial and temporal meaning of prepositions**

It has been traditionally accepted (e.g. Bennett, 1975; Lyons, 1977) that prepositions serve to express both spatial and temporal relations. However, some cognitive linguists, most notably Langacker (1992, 2012) and Talmy (2000a, Ch. 1) see prepositions as linguistic particles that profile *atemporal relations*. It relates to an observation that, unlike verbs, prepositions do not express relations evolving over time. Instead, they represent conceptualized relations holding between two entities, independent of sequentially evolving interdependencies.

There has also been a long-lasting debate, started probably in developmental psychology (Clark, 1973), whether temporal meanings of prepositions are derived from cognitively prior representations of space that stem from perceptual-motor experiences. Observations that conceptions of time are not expressed on their own terms but appear to be consistently structured in spatial terms were discussed by Lakoff & Johnson (1980) among fundamental arguments for the theory of conceptual metaphors.

To answer this question, Haspelmath (1997) conducted an impressive study of spatial-temporal correlations in temporal adverbials based on data collected from fifty-three world’s languages. He stated the goal of his research as “to assemble cross-linguistic evidence for the
hypothesis that temporal notions are conceptualized in terms of spatial notions.” (Haspelmath, 1997, p. 4). He tried to determine whether temporal terms historically originate from spatial ones by identifying cross-linguistic patterns that indicate a conceptual dependency of temporal on spatial representations. Haspelmath (1997, p. 140) concludes that while it is not possible to prove such a dependency on the basis of linguistic evidence alone, it is highly probable that time is universally secondary to space, irrespective of metaphorical conceptualizations.

However, Tenbrink (2007) points out that there is no language demonstrating, either synchronically or diachronically, an exact identity between spatial and temporal terms. From that perspective, data presented by Haspelmath (1997) can be interpreted as demonstrating numerous similarities between temporal and spatial expressions. As put by Tenbrink (2007, p. 14): “A closer look at Haspelmath’s data and line of argumentation shows that, overwhelmingly, he simply points to existing similarities between spatial and temporal linguistic expressions.” She adds that his argumentation for the conceptual priority of space is not linguistic, but rather based on intuition.

Szwedek (2009) analyzed a subset of prepositions including *in*, *over* and *across* in terms of their metaphoricity and polysememicity. Although it has been customary to approach prepositions as inherently polysemous elements, his analysis demonstrates that separate senses of a preposition are, at least in a good number of cases, context dependent. For example, for the sentences “The line stretches *over* the yard” and “The plane flew *over* the village” the *static* or *dynamic* aspect of meaning of the preposition is not derived from the inherent meaning of *over*, but depends on the context. As put by Szwedek, “rather than talking about distinct senses of prepositions, we can only say that prepositions are open to static/dynamic, and possibly other interpretations, in the sense that they appear in such contexts” (Szwedek, 2009, p. 174). Demonstrating that both *over* and *in* seem to be neutral with respect to the dynamic/static opposition, Szwedek (2009) is skeptical about the metaphorical status of prepositions, and instead views distinctive prepositional relations as associated with a higher-order conceptual distinction between concrete (physical) and abstract entities, which he discusses with reference to the theory of *objectification* (see Szwedek, 2007, 2011).

Bączkowska (2011) illustrates the dimensions of time and space in prepositional meanings using *spatial-temporal cones*, i.e. geometrical representations of spacetime developed by Hermann Minkowski. She concludes that the prepositional meaning resides both in the lexeme and in the way it is conceptualized. The latter is strongly affected by the speaker’s language community, as well as the particular semantic-pragmatic communicative situation.

For the Polish language, Tabakowska (2003) presented an analysis of space and time in different uses of the Polish preposition *za* and the corresponding perfectivizing verbal prefix *za*- . By pointing out that perfectivizing prefixes developed historically from adnominal elements, which later developed into prepositions, she argues that such prefixes still carry abstract elements of meaning stemming from their original function, which plays a vital role in shaping and modifying construals related to space and time. For example, the semantic relatedness of that preposition-prefix pair predicts the choice of *za*- with verbs of location and motion while precluding its occurrence with others.
Taken together, it seems that temporal relations expressed by prepositions are associated most vividly with the corresponding spatial representations when people are confronted with some specific tasks, especially linguistic ones, that involve motion mediated temporal reasoning. It is noteworthy that studies examining the experiential link between spatial and temporal language with reference to disambiguation of temporal statements employ motion as the element that interfaces space with time (see Ramscar, Matlock & Boroditsky, 2010 for a review). Following that observation, the research discussed in this paper investigates a hypothesis that motion acts as a key element that modulates spatial and temporal expressions of distance, which can be observed in prepositional phrases.

4. **Space and time in PPs expressing spatial distance**

According to widespread linguistic intuitions, it seems obvious that the relationship between time and space in distance expressions is determined by the asymmetry of space and time reflected in linguistic metaphors (Lakoff & Johnson, 1980). However, as emphasized by Sinclair (1991, p. 4) “human intuition about language is highly specific, and not at all a good guide to what actually happens when people actually use the language”. A credible way to find more actual information about that relationship is to gather some tangible data on the distribution of spatial and temporal representations of distance from linguistic corpora. One linguistic context that appears to be well suited to this purpose is the domain of prepositional expressions of distance, since they happen to take both spatial and temporal complements. On these grounds, this study approaches the problem of relations between space and time in prepositional expressions of distance from the perspective of cognitive corpus-based linguistics, which relies on explanatory notions adopted by the cognitive linguistics framework, but approaches them in such a way that their relevance to a given linguistic phenomenon can be empirically validated in large corpora (Heylen, Tummers & Geeraerts, 2008; see Lewandowska-Tomaszczyk & Dziwirek, 2009 for examples of studies). Essentially, it demonstrates how people actually use language in natural contexts, rather than discusses what is theoretically possible in language.

The investigation is carried out using standard reference language corpora for English and Polish. For the former the study employs the British National Corpus (henceforth, the BNC), which is a 100 million word collection of samples of written and spoken contemporary British English from a wide range of texts (see [www.natcorp.ox.ac.uk](http://www.natcorp.ox.ac.uk) for more information). For Polish this study is based on the Narodowy Korpus Języka Polskiego (the Polish National Corpus, henceforth, the NCP), which is a 240 million word collection of samples of both spoken and written contemporary Polish roughly mirroring the BNC in its structure (see [www.nkjp.pl](http://www.nkjp.pl) for more information).

This study examines distance in the sense of geographical separation of one point from another in physical space. The research is additionally restricted to expressions specifying absolute distance, i.e. one denoted in spatial or temporal units, e.g. “fifteen miles from London” or “fifteen minutes from London”. Although such denotations are a basic way of specifying spatial extents, expressions of distance are not limited to information conveyed explicitly (see Carlson, 2010 for a review). Therefore, it must be emphasized that the aim of this study is not to examine the entirety of ways used to express distance in language, but to
observe an overall proportion between spatial and temporal prepositional phrases denoting spatial distance in absolute terms.

A selection of prepositions analyzed in this paper is limited to fifteen lexemes commonly used to express spatial relations: across, ahead, along, apart, away, behind, between, beyond, from, off, over, through, to, towards, and within, which also happen to express temporal relations (Bennett, 1975; Huddleston & Pullum, 2002). Although different worldwide languages also employ temporal prepositions, such as after and before, to express spatial relations (Hasepmlath, 1997), they are not included in this research because in present-day English they are associated more directly with expressing relations in time, rather than space.

The search for representations of distance in spatial and temporal terms was executed by looking for frequencies of prepositional phrases including the following lexical pattern:

**QUANTIFIER + SPATIAL OR TEMPORAL UNIT + SPATIAL PREPOSITION**

In the above pattern, the quantifier is either a cardinal number or a determinative used with countable nouns, e.g. a, an, few, many, several, some, etc. Cardinal numbers are easily identifiable in the BNC thanks to part-of-speech annotation, which marks all cardinal numbers, spelled both in words and digits, with the <CRD> tag included in the C5 tagset (Garside, et al., 1997). The use of quantifiers raises the precision of corpus queries by essentially eliminating irrelevant matches sharing the pattern by coincidence.

Units of space measurement selected for analysis include both metric and imperial units typically used in the U.K., also in their American variants of spelling, i.e. kilometre (kilometer), metre (meter), mile, and yard. Units of time measurement include those that are typically used to express spatial distance in terms of duration, i.e. minutes, hours, and days. For the preposition within a slightly modified pattern, with the preposition put first was used. A listing of queries used in this research is included in Appendix, which provides for immediate replicability of the study (see also Waliński, 2012a, 2012b for listings of concordances retrieved from the corpora).

5. **Spatial and temporal representations of distance in the BNC**

Corpus queries based on the above pattern returned 5,221 matching concordance lines for the spatial units from the BNC. The resulting set was carefully reviewed to exclude matches sharing the defined sequence of lexical items by coincidence. It confirmed that practically all identified examples included representations of spatial distance. Parallel corpus queries implemented for the temporal units retrieved 5,847 concordance lines from the BNC. However, a review of the resulting set revealed that most of them express distance in time rather than space. In the outcome, only 482 concordance lines were recognized as valid representations of spatial distance in temporal terms.

As shown in Table 1, almost all of the selected prepositions can be observed in the BNC in expressions denoting distance in absolute spatial and temporal terms, however, they are not equally widespread in respective contexts.
Table 1. Representations of distance in spatial and temporal terms found in the BNC for selected prepositions

<table>
<thead>
<tr>
<th>Preposition</th>
<th>Distance denoted in spatial terms</th>
<th>Other spatial relations</th>
<th>Distance denoted in temporal terms</th>
<th>Other temporal relations</th>
</tr>
</thead>
<tbody>
<tr>
<td>across</td>
<td>144</td>
<td>0</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>ahead</td>
<td>40</td>
<td>0</td>
<td>1</td>
<td>27</td>
</tr>
<tr>
<td>along</td>
<td>85</td>
<td>0</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>apart</td>
<td>106</td>
<td>0</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>away</td>
<td>1655</td>
<td>0</td>
<td>92</td>
<td>35</td>
</tr>
<tr>
<td>behind</td>
<td>79</td>
<td>2</td>
<td>1</td>
<td>56</td>
</tr>
<tr>
<td>between</td>
<td>53</td>
<td>0</td>
<td>0</td>
<td>69</td>
</tr>
<tr>
<td>beyond</td>
<td>47</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>from</td>
<td>1763</td>
<td>0</td>
<td>164</td>
<td>612</td>
</tr>
<tr>
<td>off</td>
<td>137</td>
<td>1</td>
<td>3</td>
<td>270</td>
</tr>
<tr>
<td>over</td>
<td>39</td>
<td>0</td>
<td>2</td>
<td>88</td>
</tr>
<tr>
<td>through</td>
<td>48</td>
<td>0</td>
<td>5</td>
<td>43</td>
</tr>
<tr>
<td>to</td>
<td>741</td>
<td>3</td>
<td>147</td>
<td>2510</td>
</tr>
<tr>
<td>towards</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>within</td>
<td>266</td>
<td>0</td>
<td>61</td>
<td>1613</td>
</tr>
<tr>
<td>Total</td>
<td>5215</td>
<td>6</td>
<td>482</td>
<td>5365</td>
</tr>
</tbody>
</table>

Table 1 shows that 5,215 concordance lines retrieved from the BNC for the spatial units were recognized as valid representations of spatial distance, but only 482 concordance lines retrieved from the corpus for the temporal units were recognized as valid representations of spatial distance. Although it is impossible to discuss the living organism of language in absolute numbers, the proportion of spatial vs. temporal representations of distance found in the BNC is a significant indicator that generally English speakers tend to express distance in spatial terms. The overall result can be used to support claims that spatial relations are relatively rarely expressed in terms of duration, which is congruent with observations on the nature of spatiotemporal relations in conceptual metaphors presented over 30 years ago by Lakoff and Johnson (1980).

However, taking a closer look at Table 1 reveals that one lexical item, namely *away*, stands out from the rest of analyzed prepositions in a particular manner. It is used more frequently with temporal units to specify distance in space (92 times) than to express temporal relations (35 times). No other preposition from the selection analyzed in the research manifests this kind of predisposition. The number of examples retrieved from the BNC is substantial enough to indicate that the difference does not arise from a coincidental occurrence in the corpus.

6. Representations of distance with away in the NCP

To attest validity of the above observation for another language a similar search was executed for Polish using the NCP. Although Polish does not have an equivalent directly correspondent to away in the form of a single lexical item, it conveys the meaning of
disconnection in space with a combination of set phrases expressing separation from/to a destination point. Thus, for Polish spatial and temporal representations of distance for the parallel semantic context were identified with a combination of phrases: *drogi do* (Lit. “of way to”), *drogi z[e]/od[e]*) (Lit. “of way from”), and *drogi stąd* (Lit. “of way from here”), using the following lexical pattern:

**Quantifier + Spatial or Temporal Unit + Spatial Preposition**

Units of time measurement selected for Polish include *minuta, godzina, dzień* [minute, hour, day] and units of space measurement *kilometr, metr, mila* [kilometer, meter, mile], which generally parallels the units used for English. Although Polish speakers do not normally express spatial extents with imperial units, *mila morska* [nautical mile] is used for denoting sea distance.

Corpus queries based on the above pattern retrieved 137 concordance lines from the NCP, which were reviewed to exclude coincidental matches. Six examples were found to share the defined sequence of lexical items by coincidence.

<table>
<thead>
<tr>
<th>away in Polish</th>
<th>Distance denoted in spatial terms</th>
<th>Coincidental hits</th>
<th>Distance denoted in temporal terms</th>
<th>Coincidental hits</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>drogi do</em></td>
<td>7</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td><em>drogi z[e]/od[e]</em>)</td>
<td>10</td>
<td>2</td>
<td>91</td>
<td>2</td>
</tr>
<tr>
<td><em>drogi stąd</em></td>
<td>0</td>
<td>0</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17</strong></td>
<td><strong>4</strong></td>
<td><strong>114</strong></td>
<td><strong>2</strong></td>
</tr>
</tbody>
</table>

Table 2. Representations of distance in spatial and temporal terms identified in the NCP for set phrases parallel semantically to “away”

As shown in Table 2, the gap between 17 spatial vs. 114 temporal representations of distance found in the NCP indicates that in the context of ways from/to a destination, which partly covers the meaning of away, Polish speakers have a tendency to express spatial distance in temporal terms, too.

### 7. Motion as a modulator of distance expressions

The above-reported results suggest that in the context of ways separating spatial locations both English and Polish speakers have a tendency to express distance in temporal terms. A question that arises from this observation is what acts as a catalyst for conceptualizations of separation between points in physical space in terms of duration. One possible answer can be inferred from the etymology of *away*. As noted in OED, away in its origin it was a phrase, ON *prep., and weʒ, way, i.e. on (his, one’s) way, ‘on’ of motion (as in ‘move on’), and thus also ‘from this (or that) place’ to a distance. Already in Old English reduced to a-weʒ. Ways are inherently characterized by the semantic component of motion, since they are meant to be traveled. *Way* in the sense of the Path used for motion of objects in

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As noted in Oxford English and PWN-Oxford dictionaries, although predominantly associated with removal in space due to motion, *away* is also used to speak of actions, positions, directions, and of states or conditions resulting from removal, deprivation, elimination, parting, loss or extinction. It can be used to express use of time, e.g. “They danced the night away” or “He slept the day away”, as well as to emphasize temporal continuity of action, e.g. “He’s been painting away all morning”. These other uses, however, exceed the scope of this study.
space is a basic component of the SOURCE-PATH-GOAL image schema of motion (Lakoff, 1987). It is also an internal core component of motion events, which according to Talmy (2000b, p. 25) involve “the presence per se of motion or locatedness in the event”. Hence, at least from Talmy’s (2000b) outlook, the notion of motion event refers to translocation and the continuation of a stationary location alike, despite the fact the in the latter an object does not shift its location in space from one point to another.

Therefore, a plausible explanation for the outstanding temporality of away-PPs expressing separation in space is that the semantic component of motion acts as an underlying modulator that shifts conceptualizations of distance from spatial to temporal terms. Such a presumption is by no means unusual. Earlier cognitive behavioral studies have found that spatiotemporal reasoning is affected by conceptualizations of real, imagined, and fictive motion in physical and non-physical domains (see Ramscar et al., 2010 for a review).

8. Conclusions

One observation that emerges from this research is that the relationship between space and time in cognition is not universally asymmetric. Instead, it appears that their mutual entanglement in cognition hinges, at least to some extent, on the underlying semantic context in which a particular conceptualization takes place. As demonstrated in this study, the semantic element of motion seems to act as a modulator that shifts conceptualizations of distance from spatial to temporal terms. Since the temporal dimension is the primary cognitive domain of instantiation for events (Langacker, 2008, Ch. 11; 2012), it appears that in the context of motion events temporal conceptualizations of distance take precedence over spatial ones (see Waliński, 2014).

In more general terms, the results suggest that in motion-framed scenarios, space and time can be viewed as elements of a unified conceptual frame, which dictates their reciprocal relations in a complementary fashion. Kövecses (2005, p. 53) discusses a TIME-MOTION schema, within which elements can stand for each other in the form of metonymies. He notes that in English one can say, for example, “I slept for fifty miles while she drove” (DISTANCE FOR TIME-DURATION), as well as “San Francisco is half an hour from Berkeley” (TIME-DURATION FOR DISTANCE). The metonymical relationship between space and time has also been noticed by Engberg-Pedersen (1999), who points out that we can use names of places, which are primarily spatial words, to denote punctual moments in time in terms of spatial locations, e.g. “I haven’t had a drink since London”.

In the light of this research, it appears that in the semantic context of motion events the scope of universal experiences extends to a single conceptual frame of SPACE-TIME-MOTION, within which the conceptualizations of space and time can stand metonymically for one another. The complementarity of space and time in distance representations is likely to be related to the unity of time, space, and motion observed by Aristotle, who pointed out in Physics (350BC/1995) that all motion takes place in space and time: space is the potentiality, and time is the measure of motion. Observations of travel time as a popular metric of spatial distance have been made for years in studies on geographical cognition (e.g. MacEachren, 1980), especially in the context of urban environments, where reaching destinations depends not as much on the spatial separation as on the traffic intensity at different times of the day.
Temporal conceptualizations of distance are highly versatile for they facilitate expressing distance according to the speaker’s subjective profiling needs, irrespective of separation in metric terms. For example, the sentences “The station is only ten minutes away” and “The main camp must be nearly two days march away” may both represent the distance of about 10 kilometers, if the former refers to traveling by car, while the latter to marching in a particularly difficult terrain. Moreover, this type of distance conceptualizations provides means for expressing distance unknown precisely in metric terms, e.g. “The village centre is about seven minutes walk away”. Because spatial cognition is largely relativistic and approximate, rather than Euclidean and quantitative (Talmy, 2000a, Ch. 1 & 3), it comes naturally to language users to specify the distance to Mars in months of space traveling or the distance to Mt. Everest peak in days of climbing, without even noticing the conceptual shift from spatial to temporal domain of representation.

Appendix

1. Explanations for query listings
A single asterisk (*) replaces any number of characters, e.g. [yard*] substitutes for “yard, yards, yardstick, etc.”
A pipe ( | ) stands for logical AND, which enables executing multiple queries with a single line, e.g. [way to|from] substitutes for “way to” and “way from”. The PELCRA concordancer offers an underlying Polish morphological dictionary, which allows for queries incorporating all Polish inflectional forms with a double asterisk (**) used as a wildcard.

2. Corpus queries used to examine representations of distance in spatial and temporal terms in the BNC.

For spatial units:

[<CRD>|a|an|few|many|several|some kilom*|metre*|meter*|mile*|yard* across]
[<CRD>|a|an|few|many|several|some kilom*|metre*|meter*|mile*|yard* ahead]
[<CRD>|a|an|few|many|several|some kilom*|metre*|meter*|mile*|yard* along]
[<CRD>|a|an|few|many|several|some kilom*|metre*|meter*|mile*|yard* apart]
[<CRD>|a|an|few|many|several|some kilom*|metre*|meter*|mile*|yard* away]
[<CRD>|a|an|few|many|several|some kilom*|metre*|meter*|mile*|yard* behind]
[<CRD>|a|an|few|many|several|some kilom*|metre*|meter*|mile*|yard* between]
[<CRD>|a|an|few|many|several|some kilom*|metre*|meter*|mile*|yard* beyond]
[<CRD>|a|an|few|many|several|some kilom*|metre*|meter*|mile*|yard* from]
[<CRD>|a|an|few|many|several|some kilom*|metre*|meter*|mile*|yard* off]
[<CRD>|a|an|few|many|several|some kilom*|metre*|meter*|mile*|yard* over]
[<CRD>|a|an|few|many|several|some kilom*|metre*|meter*|mile*|yard* through]
[<CRD>|a|an|few|many|several|some kilom*|metre*|meter*|mile*|yard* to]
[<CRD>|a|an|few|many|several|some kilom*|metre*|meter*|mile*|yard* towards]
[within <CRD>|a|an|few|many|several|some kilom*|metre*|meter*|mile*|yard*]

For temporal units:

[CRD>|a|an|few|many|several|some minute*|hour*|day|days across]
[CRD>|a|an|few|many|several|some minute*|hour*|day|days ahead]
[CRD>|a|an|few|many|several|some minute*|hour*|day|days along]
[CRD>|a|an|few|many|several|some minute*|hour*|day|days apart]
[CRD>|a|an|few|many|several|some minute*|hour*|day|days away]
[CRD>|a|an|few|many|several|some minute*|hour*|day|days behind]
[CRD>|a|an|few|many|several|some minute*|hour*|day|days between]
[CRD>|a|an|few|many|several|some minute*|hour*|day|days beyond]
[CRD>|a|an|few|many|several|some minute*|hour*|day|days from]