

Jacek WOŹNY
(Uniwersytet Wrocławski)

FORCE DYNAMICS OF INTENSIVE AND INTRANSITIVE COMPLEMENTATION OF THE VERB ‘TO GO’

Summary

The concepts of motion and force are both extensively discussed in cognitive linguistics literature. But they are discussed separately. The first usually in the context of ‘motion situations’ (for example: Talmy 2000, Slobin 2003, Zlatev 2007, 2010, 2012), the other as part of the Force Dynamics framework, which was developed by Talmy (1976, 1988, 2000) and adopted by, for example, Sweetser (1982, 1991), Johnson (1987), Boye (2001), Vandenberghe (2002) and Da Silva (2003). The aim of this paper is twofold: first, to argue that the concepts of force and motion should not be isolated but considered as two inseparable parts of force-motion events (cf. Woźny 2013). The second goal is to prove that the modified Force Dynamics (force-motion) framework can be used to discern finer distinctions in verb complementation patterns. To this end, a random sample of 50 sentences containing the verb ‘went’ is analyzed with respect to the linguistically coded parameters of force and motion, demonstrating the differences between the categories of intensive and intransitive complementation with respect to the linguistically coded parameters of force and motion.

Keywords: verb complementation, Force Dynamics, motion situations.

1. Introduction

Zlatev et al. (2010) observe that:

The phenomenon of *motion* is prevalent in experience: the rising and falling of our chests in breathing, the tapping of our feet against the floor, the flying of birds, the ripples of water in the brook. *Panta rei.* (389)

But our experience of breathing or tapping our feet against the floor also involves a certain amount of effort, a force, that must be exerted for our chest or our feet to move. A force must be applied by the birds’ wings against the air for them to be able to fly. And a force must be exerted maybe by a stone thrown into the brook, or by the wind, for the ripples to appear on the surface of the water. Similarly, our

experience of force usually involves motion, for example when we kick a ball, press the accelerator (the brake) in a car, lift a cup of tea from the saucer or knock down our opponent in a boxing ring with a well measured left hook. The inseparability of force and motion is also the essence of Newtonian Mechanics. The first of Newton's laws describes motion in the absence of forces and the second defines force as vector proportional to acceleration, which of course is a parameter of motion:

$$\vec{F} = 0 \Leftrightarrow \vec{v} = \text{const.} \quad (\text{i})$$

$$\vec{F} = m\vec{a} \quad (\text{ii})$$

We can paraphrase the above formulas as: ‘force usually involves motion’ and, since the equations and logical operators used in laws (i)-(ii) are symmetrical, we can add: ‘motion usually involves force’, which reflects our everyday experience. Yes, the Calculus based Newtonian physics reflects our everyday experience because ‘mathematics as we know it has been created and used by human beings: mathematicians, physicists, computer scientists, and economists – all members of the species *Homo Sapiens*’ (Lakoff and Nunez 2000: 1). The same can be expressed more dramatically by the following paraphrase:

I am a physicist. Hath not a physicist eyes? Hath not a physicist hands, organs, dimensions, senses, affections, passions? Fed with the same food, hurt with the same weapons, subject to the same diseases, healed by the same means, warmed and cooled by the same winter and summer, as a non-physicist is? If you prick us, do we not bleed? if you tickle us, do we not laugh? if you poison us, do we not die?

(Based on William Shakespeare’s *Merchant of Venice*, Act 3, Scene I)¹

Physicists do not have access to actual physical reality (if such exists). Just like cognitive linguistics, physics (and certainly the XVII c. Newtonian physics) describes the phenomenological perspective of experienced reality. At this stage it should be stated clearly that we are aware of the difference between naive physics², coded in language, and the science of physics and we are not suggesting replacing one with the other but rather that both, in their separate ways, reflect the same embodied experience of force and motion (cf. Kuźniak and Woźny, 2014). Mark Johnson seems to be aware of this inseparability of force and motion: ‘Our experience of force usually involves the movement of some object (mass) through space in some direction’ (1987: 43) yet, as we will see in the following section, his descriptions of force gestalts do not reflect this insight.

¹ (<http://shakespeare.mit.edu/merchant/merchant.3.1.html>, accessed 01.05.2014).

² Richly accounted for in numerous empirical studies (sometimes referred to as *Disaster Studies*) e.g., Champagne et al. (1980), Larkin et al. (1980), McCloskey (1983), Halloun et al. (1985), Hammer (1995), diSessa (1988, 1993, 1996).

2. The concept of motion in linguistic Force Dynamics

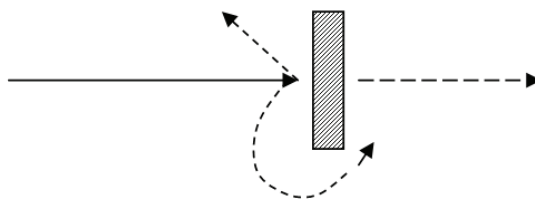
The key concept of linguistic Force Dynamics is what Johnson (1987) calls *gestalts of force* and Talmy (2000) describes as *force dynamic schemas*. Both Johnson and Talmy often use the noun *force* to refer to entities typically occurring in the description of motion events, like the moving object (also referred to in the literature of the subject as *figure* or *trajector*), motion, velocity and trajectory (Woźny 2013). The above parameters of motion are present in their descriptions but only indirectly, covertly, as the following examples will demonstrate. I would like to begin with considering several descriptions of force gestalts from Johnson's *Body in The Mind* (1987).

'1. *Compulsion*. [...] in such cases of compulsion, the force comes from somewhere, has a given magnitude, moves along a path and has a direction. We can represent this image-schematic gestalt with the visual image below. Here the dark arrow represents an actual force vector and the broken arrow denotes a potential force vector or trajectory' (45)



The force 'moves along a path' – this is in fact a description of a moving object on which the force acts. Johnson describes an object moving along a straight line trajectory and uses the word *force* metonymically. The force cannot 'move' by itself, but an object on which a force acts does move. 'The broken arrow denotes a potential force vector or trajectory' – here is another proof that Johnson describes forces in the context of motion, the arrow can denote either force or trajectory.

'2. *Blockage*. [...] the relevant gestalt can be represented as a force vector encountering the barrier and then taking any number of possible directions' (45)



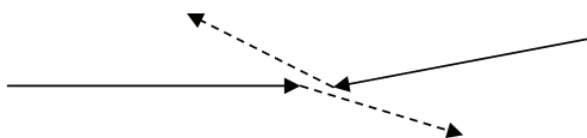
A force vector 'encountering a barrier' is another metonymy where the noun *force* is used to denote the moving object. It is the moving object that encounters the barrier which then exerts a force on it, causing it to change its trajectory. The phrase 'and then taking any number of possible directions' also refers to the motion of the object, not force, because after the brief encounter with the barrier the force does not act, it is exerted only during the brief moment of contact. It is therefore the object or, more precisely, its velocity which can be 'taking any number of possible directions'. We can see then that Johnson uses *force* metonymically to denote either the moving object or its velocity.

'3. *Counterforce*. A third cluster of gestalts focuses on the head-on meetings of forces. Football linemen are most familiar with this force gestalt. Here, two equally strong, nasty and determined force centers collide face-to-face.' (46)



'head-on meetings of forces' is yet another metonymy- the objects on which the forces act meet and collide and 'the two equally strong, nasty and determined' football players are an example of that.

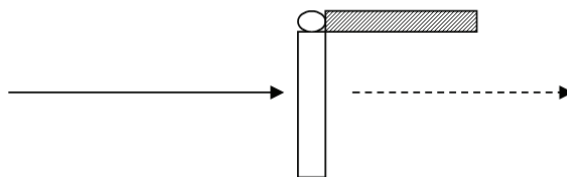
'4. *Diversion*. A variation on the previous gestalt is one in which a force vector is diverted as the result of the casual interaction of two or more vectors. The appropriate schema shows two colliding forces with a resultant change in force vectors' (46)



The above description of the *diversion* schema contains three metonymical expressions in which the phrases *force* or *force vector* are used metonymically for the moving object:

- a. 'the force vector is diverted' (the moving object is diverted)
- b. 'interaction of two or more (force) vectors' (interaction of moving objects)
- c. 'two colliding forces' (two colliding objects)

5. *Removal of restraint*. [...] The relevant schema is one that suggests an open way or path, which makes possible an exertion of force. [...] the diagram is meant to suggest that, either because some actual barrier is removed by another [force, J.W.] or because the potential barrier is not actually present, the force F_1 can be exerted (i.e., there is nothing blocking it)' (46)



But of course applying a force (for example pushing an object) is possible whether the barrier is present or not, therefore by 'exertion of force' Johnson means motion. It is motion that is made possible by removing the barrier. The phrase 'there is nothing blocking it' is also metonymical because it is not the force which is blocked but the object. In fact, the force is usually exerted against the barrier when it is present. We can imagine, for example, someone pushing against a blocked door. When the door is opened, the force (pushing) stops and motion begins. Again, we can see that Johnson uses the word 'force' to describe the moving object and its motion. Similar metonymies, where the word *force* is used to denote other elements of the

force-motion event, can be found in Talmy (2000), who describes the prototype of a force dynamic schema³:

- two forces opposing each other 180 degrees head on- not coming at each other at some other angle so as to yield a resultant off in a new direction
- a force acting along a straight line – not along a curved line (2000 : 466)

But forces do not ‘come at each other’ – the moving objects, on which the forces act, do. Similarly, a force cannot ‘act along a curved or straight line’ but it can act on an object whose trajectory is a curved or straight line. The only overt parameter referring to motion in Talmy’s account of force is *action/rest* (2000: 414). By ‘action’ Talmy means ‘motion’ but he avoids using this term almost as if it were a dirty word. To sum up, the concept of motion is practically absent in Johnson’s or Talmy’s account of force. In the next section we will find the answer to the symmetrical question of how the concept of force is used in the taxonomies of motion events by Talmy (1985, 2000) and Zlatev et al. (2010, 2012).

3. The concept of force in the taxonomy of motion events

Zlatev et al. (2010, 2012) and Talmy (1985, 2000) practically discard the concept of force in their description of motion, reducing it to one crude binary parameter indicating either presence or absence of force. Table 1 presents what Zlatev et al. (2010: 397) refer to as ‘experientially based classification of motion situations’. As we can see, there is only one binary parameter referring to force: +/- CAUSED applied only to transitive type complementation as in ‘A throws F into LM’ other types of complementation, for example intensive or intransitive (as in ‘F goes into LM’), are classified as -CAUSED which means that the parameter of force does not apply.

Table 1. Illustration of the expression of 8 motion situation types in English; F = Figure, LM = Landmark, A = Agent, View-C = Viewpoint centred, Geo-C = Geocentric, Obj-C = Object centred Frame of Reference

| | -CAUSED | +CAUSED |
|----------------------------|--|--|
| +TRANSLOCATIVE +BOUNDED | F goes to LM | A throws F into LM |
| +TRANSLOCATIVE -BOUNDED | F goes away (View-C) F goes up (Geo-C) F rolls forward (Obj-C) | A takes F away (View-C) A pushes F upward (Geo-C) A pushes F forward (Obj-C) |
| -TRANSLOCATIVE +BOUNDED | F breaks (up/down) | A breaks F (up/down) |
| -TRANSLOCATIVE -BOUNDED | F waves | A waves F |

³ Cf. Woźny (2010).

Similar inexplicable circumspection with respect to the concept of force characterises the description of motion events by Leonard Talmy (1985, 2000), for whom the relevant conceptual components of motion are *figure*, *ground*, *path* and *manner/cause*. Talmy (2000: 413–418) described as many as 8 basic force-dynamic patterns (‘steady-state’ and ‘shifting’) yet none of them was applied by him in the description of motion. As we have argued so far in Sections 1-3, the taxonomies of force and motion should never be separated. The next section contains a practical application of this postulate: a force-motion taxonomy for a corpus of 50 metaphoric expressions containing the verb *went*.

4. Force-motion analysis of metaphors of motion

In this section we will describe the force and motion schemas in metaphors of motion. A starting point of such investigation must be collecting a corpus of motion metaphors. We started our enquiry with the *Conceptual Metaphor Home Page*⁴, prepared by George Lakoff and his students at the University of Berkeley. The following sentences were listed as examples of CHANGE IS MOTION (LOCATION) metaphor:

- 1 He went from innocent to worldly.
- 2 She was nearly insane.
- 3 He slipped into a depression.
- 4 His hair went gray.
- 5 He went from laughing to crying.
- 6 She was nearly crying.
- 7 He went back to/returned to polishing the silver.
- 8 Over the years, she has gone from pigtails to perfume.
- 9 He went from all smiles to all frowns.

Six of the nine examples contain a form of the verb *to go* (examples 1, 4, 5, 7, 8 and 9), five of which contain the past form *went*. This prompted us to continue our search in the *British National Corpus*, where we found, rather to our surprise, that the verb *went* is used metaphorically in as many as 41% of corpus texts containing this lemma. Therefore, collecting a random sample of 50 metaphorical expressions with MOTION as the source domain proved to be an easy task since almost every second text analysed contained a metaphorical use of the word *went*. The 50 metaphorical expressions collected in this way are listed in the Appendix. We will now proceed to describe the schemas of force and motion for our corpus sample of metaphorical expressions with reference to the following motion characteristics: starting and finishing points (elements of trajectory), time, velocity and forces. We will start with the following sentence:

⁴ <http://cogsci.berkeley.edu/lakoff/sources/>, 29.10.2012.

1. France's state-owned Banque Nationale de Paris briefly considered buying parts of Bank of New England, which went bust earlier this year. (ABK)⁵

As we can see, the motion encoded in (1) has a starting point and a finishing point. The object (the bank) moves from point A (financially viable) to point B (bankrupt or 'bust'). The time it takes to move from A to B can be specified:

- 1a. The bank went bust in 3 days.

The velocity of motion can also be given:

- 1b. The bank went bust quite fast

The motion ends at point B and cannot be continued, which is entailed by the ungradable adjectival complement 'bust':

- 1c. *The bank went even more bust.⁶

The motion can be initiated by force:

- 1d. These annual deficits quickly depleted the city's scant reserves and pushed it towards insolvency.⁷

Let's recapitulate the above motion characteristics:

Schema 1 (*went bust*): An object moves from point A to B at specified speed in specified time. The motion ends abruptly at point B and cannot be continued. The motion is initiated by force. The above physical characteristics of motion, presented graphically in Fig. 1, are consistent with sending a billiard ball into a pocket.

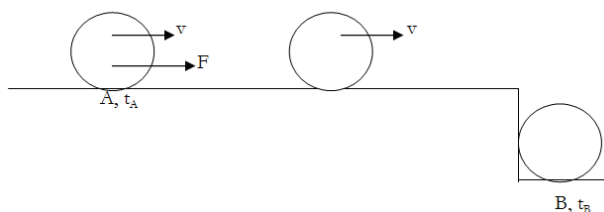


Figure 1. Physical characteristics of Schema 1. (*went bust*)

Let us move on to the next example from our corpus:

2. Well, Fritz went red, which, Erika thought, made rather a nice change from her own blushing, and looked at his shoes. (A7A)

As above, the trajectory of the motion is limited by the starting (colour 1) and finishing points (colour 2, red):

- 2a. He went red in 10 seconds.

The speed can be specified:

- 2b. He went red very quickly.

Unlike above, the motion can be continued:

⁵ The three-letter code allows to identify the source text in the British National Corpus.

⁶ The asterisk marks an ungrammatical sentence.

⁷ http://cacs.org/article/view/id/35/_region/ca, accessed Apr. 11th 2014.

2c. He went even more red.

The motion can be initiated by force:

2d. As pungent smoke was blown into her face, Diana's eyes went red and watery. (CEM)

Let us summarize 2a–2d into:

Schema 2 (*went red*): An object moves from point A to B at specified speed in specified time. The motion ends at point B but can be continued. The motion can be initiated by force. The above characteristics of motion are presented graphically in Fig. 2, are consistent with sending a billiard ball into a larger, slightly depressed area.

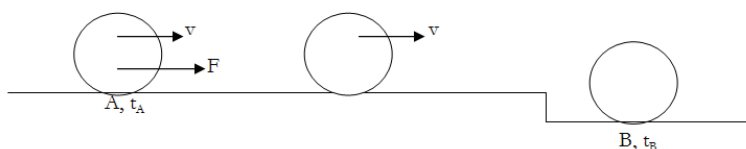


Figure 2. Physical characteristics of Schema 2 (*went red*)

Let us continue to the third example from our corpus:

3. 'But if only we could have a cottage somewhere!' she went on wistfully. (BMU)

The motion can but does not have to be limited in time and space:

3a. She went on talking for 10 minutes.

3b. He went on and on talking.

The speed of the motion can be specified:

3c. She paused, in confusion, and Ruth went on, quickly: 'I think they all have associations, and that's why we love them'⁸.

The motion can be sustained by force:

3d. Fidel went on talking for 3 hours but then finally got tired and stopped.

We are ready now to describe the next force-motion schema:

Schema 3 (*went on*): The motion may be limited both spatially and temporarily but can also be unlimited. The speed may be specified. The motion may be sustained by force.

As we can see, Schema 3 is much more vague than the previous two, yet clearly distinct from them by the possibly unbounded trajectory and time of motion. The physical characteristics of schema 3 are shown in Fig. 3.

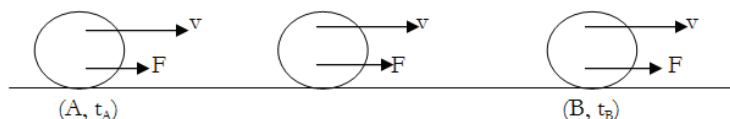


Figure 3. The physical characteristics of Schema 3. (*went on*)

⁸ Myrtle Reed, *Lavender and Old Lace* (Chapter 6, p. 4), <http://www.publicbookshelf.com/romance/lavender-lace/garden-4>, accessed Apr. 13th 2014.

We can now proceed to our final corpus example:

4. I was 19 when I left home and went to university. (AHC)

The motion is limited in space between point A (not being a university student) and point B (becoming a university student). However, the time of motion cannot be established:

4a. *I went to university in 30 minutes

Predictably, if the time of motion cannot be specified, the parameter of velocity does not apply either:

4b. *?He quickly went to university⁹.

The motion cannot be immediately continued, point B appears to be a rigidly defined destination point, like the pocket which trapped the ball in Schema 1:

4c. *He went to university and then to another university.¹⁰

The motion can be initiated (caused) by force:

4d. Pressed by his parents, he went to university.

Let us summarize our observations based on sentences 4a–4d:

Schema 4 (*went to university*). The motion from A to B, which can be initiated by force. The motion stops at point B and cannot be continued. Neither time nor velocity of the motion can be specified.

Schema 4 is similar to the billiard-ball Schema 1 with respect to the starting and finishing of the motion; however, the ball in Schema 4 ‘disappears’ between starting and finishing points because none of its basic physical attributes like time or velocity can be established, which is symbolized by the dotted line circle in Figure 4.

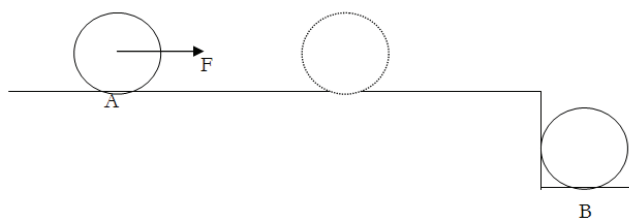


Figure 4. The physical attributes of Schema 4 (*went to university*).

The ‘disappearance’ of the moving object between the endpoints can be compared to quantum tunneling (also quantum leap or quantum change of state) of elementary particles in physics. Schema 4 can be therefore said to differ from the previous three in terms of the continuity of the trajectory¹¹.

⁹ The question mark refers to the possibility of using the adverb of velocity with reference to the time it takes someone to decide to go to university and not to the velocity of motion once it has started.

¹⁰ The ungrammaticality of (4c) comes from the absence of indefinite article before ‘university’. Compare: ‘He went to a university and then to another’. The absence of the article prompts the sense of becoming a student at any university and not a specific one.

¹¹ Zlatev et al. (2010) treats a degree of continuity as a requirement for the phenomenological definition of motion: ‘*continuous*’ is here meant to exclude from the definition of motion such events as

After analyzing each of the remaining 46 examples of our random sample of 50 metaphorical expressions in a similar fashion, we found that each of them represents one of the four force-motion schemas described above and visualised in Figs. 1–4. The number of the schema for each of the corpus sample texts and type of complementation pattern (intransitive or intensive) is indicated in square brackets in the Appendix. Table 1 summarizes the distinguishing features of the four force-motion schemas. Table 2 contains graphical representation, examples and the frequency of occurrence in our sample of 50 metaphorical expressions for each schema. Fig. 5 shows the distribution of intransitive and intensive complementation within the four force motion schemas. Intensive complementation appears only in schemas 1 and 2 while the remaining two force-motion schemas coincide only with intransitive complementation.

Table 1. The distinguishing features of the force-motion schemas

| Force-motion schema | | Trajectory | | Final dynamic state |
|---------------------|--|-----------------------|---|--|
| | | bounded/ unbounded | continuous/ quantum | |
| 1 | Schema 1 (<i>went bust</i>): An object moves from point A to B at specified speed in specified time. The motion ends abruptly at point B and cannot be continued. The motion is initiated by force. | bounded | continuous | completely blocked (held in one place by forces, the motion cannot continue) |
| 2 | Schema 2 (<i>went red</i>): An object moves from point A to B at specified speed in specified time. The motion ends at point B but can be continued. The motion is initiated by force. | bounded | continuous | partially blocked (trapped by forces within an area) |
| 3 | Schema 3 (<i>went on</i>): The motion may be limited both spatially and temporarily but can also be unlimited. The speed may be specified. The motion may be sustained by force. | unbounded | continuous | free, not blocked |
| 4 | Schema 4 (<i>went to university</i>). The motion from A to B, which can be initiated by force. The motion stops at point B and cannot be continued. Neither time nor velocity of the motion can be specified | bounded | Quantum (the object disappears between A and B, its location in time and other motion parameters cannot be specified) | completely blocked |

disappearing at one place, and reappearing at another, as in a Star Trek case of *teleportation*' (394). Conversely, we think that discontinuity of perceived motion, observing only the fragments of the motion path (for example: having a nap on a train, which is a kind of 'teleportation'), is a common experience.

Table 2. The frequency of occurrence of the four force-motion schemas

| force motion schema | examples | freq. [%] |
|---------------------|---|---------------------------------------|
| | 'Went bust' 'Went down with chickenpox' | 14 incl.: 4-intens. 10-intr. |
| | 'Went red' 'Went silent' | 12 incl.: 6-intens. 6-intr. |
| | 'She went on wistfully' 'Time went by' | 44 only intr. |
| | 'Went to university' 'Went on a killing spree' | 30 only intr. |

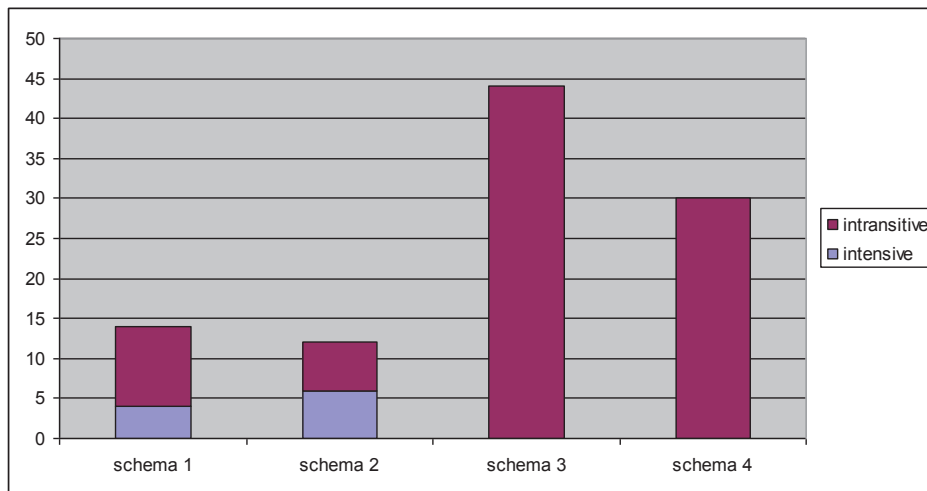


Figure 5. The distribution of intransitive and intensive complementation within the four force motion schemas

3. Summary and conclusion

In Section 1 we have argued that force and motion are inseparable in our experience (which is also reflected by Newtonian laws) and therefore we should not create separate taxonomies of force and motion events (Johnson 1987, Talmy 1985, 2000, Zlatev 2010, 2012), which were discussed in Sections 2 and 3 respectively. Section 4 presents a practical application of the joint force-motion taxonomy postulated in Sections 1–3, i.e. the analysis of 50 metaphorical expressions containing the verb *went* with respect to linguistically coded parameters of force and motion. We found that the source domains of all metaphorical expressions can be characterized by just four force-motion schemas. The schemas differ from one another in terms of the trajectory and the final state of the moving object with respect to forces. The trajectory can be characterized by two binary parameters: boundedness (bounded/unbounded) and continuity (continuous/quantum). The parameter of final dynamic state can have one of three possible values: completely blocked, partially blocked and free (Table 1). The corpus frequency distribution of the four force-motion schemas is shown in Fig. 5. As we can see, schema 3 (unbounded, continuous free) is decidedly the most frequent one (44%). Schema 4 with 30% takes the close second position, which may be surprising because it is a ‘quantum’ schema, representing discontinuous motion in which the moving object appears only at the starting and finishing point of the motion (cf. Footnote 9) and neither time nor velocity of the motion can be established. Schema 1 (14%) and Schema 2 (12%) (bounded, continuous and at least partially blocked) are significantly less frequent than Schemas 3 and 4 and also the only ones for which intensive complementation coincides with intransitive complementation. We can therefore conclude that the intensive complementation of ‘becoming’ for the verb *went* is characterized by the force-motion features of either Schema 1 or Schema 2, i.e. the trajectory is bounded and continuous (not quantum) and at the end of motion the object is at least partially blocked by forces. We can also conclude from Fig. 5 that the most typical (44+30=74%) force-motion characteristics of the intransitive sense of *went* are those of either Schema 3 (unbounded, continuous, free) or Schema 4 (bounded, quantum, blocked). We can therefore conclude that the force-motion framework allows for precise characterization of all types of complementation and not only the most obvious one in the context of Force Dynamics, i.e. transitive complementation (cf. Section 3).

Talmy (2000, 462–67) suggests that further research is needed into the parameters of Force Dynamics. What we tried to demonstrate above is that the characteristics of motion, such as the geometric features of the trajectory, should be explicitly included into the force-dynamic framework as inseparable from the parameter of force. We believe that further development of the force-motion taxonomy may bring us closer to creating the language-independent way of ‘segmenting the experience’ Benjamin Lee Whorf spoke about in the following quotation:

To compare ways in which different languages differently “segment” the same situation of experience, it is desirable to analyze or “segment” the experience first in a way independent of any language or linguistic stock, a way which will be same for all observers. (1956: 162)¹²

Appendix

The list of 50 random metaphorical expressions containing the verb *went*. The number of the force-motion schema and the type of complementation for each corpus sample are given in square brackets.

1. I was 19 when I left home and went to university. (AHC) [4], [intr]
2. France’s state-owned Banque Nationale de Paris briefly considered buying parts of Bank of New England, which went bust earlier this year. (ABK) [1], [intens]
3. The interview was set, the browsing went on, and sometime after six everybody left. (ADL) [3], [intr]
4. As time went by, she exaggerated her acquaintance with the Fang and other peoples of West Africa. (AHG) [3], [intr]
5. ‘But if only we could have a cottage somewhere!’ she went on wistfully. (BMU) [3], [intr]
6. That was the colour you went when you were buried at the bottom of the ocean. (C86) [2], [intens]
7. Prussia-Germany went through a chaotic period of social and economic transformation (BN2) [3], [intr]
8. I went on and on at her: draw me, draw me, draw me, Mummy! (C8E) [3], [intr]
9. In 1989 then guitarist Kris Dollimore went down with chickenpox on the day of a big show with UB40 at Aston Villa football ground. (CAD) [1], [intr] (use as an example that [1] is not just Cs=non-gradable adj)
10. This went on for five whole days. (CAV) [3], [intr]
11. Snip, snip, snip they went and soon the bird had a beak and a neck. (CAX) [3], [intr]
12. If he went on courting her in absentia it was because he had no choice. (CBN) [3], [intr]
13. Messrs Hoult and Cowan also went through the report with Mr Barnes. (CBY) [3], [intr]
14. He went on to predict that many drivers would be ‘seduced’ by ‘the purity of Pininfarina’s elegant lines.’ (CFT) [3], [intr]
15. Even when Shaun and Bez went as far as editing Penthouse for the day, papers tutted and sighed but still printed pictures of the pair grinning like village idiots. (CGC) [1], [intr]

¹² Quoted in Zlatev et al. (2010: 389).

16. 'Dinna imagine it's the local baby talk,' Reid went on. (CHG) [3], [intr]
17. Throughout the press the cry went up of 'extremist take-overs' and 'packed meetings'. (CHU) [4], [intr]
18. At his back he could hear the ring of footsteps, an occasional raised voice, calm, confident and unhurried, as the unseen professionals went about their work behind the grille. (CJF) [3], [intr]
19. Charles Starkweather, the rebel without a cause who, in 1957, went on a casual killing spree with his fourteen-year-old girlfriend in tow, ended up on screen as Kit Carruthers in *Badlands*. (ECU) [4], [intr]
20. Once she went wrong. (EDN) [4], [intr]
21. His father died, two years later she remarried and went to live in France. (EDN) [4], [intr]
22. Thus a great deal of psychometric expertise went into constructing questionnaires and interview schedules that would yield clear-cut dimensions along which parents could be ranged. (EEK) [1], [intr]
23. The workshop then went on to examine whether the government had a credible community economic development policy and whether the various initiatives which it had set up represented such a strategy. (EFD) [3], [intr]
24. They often went on excursions, always talking away nineteen to the dozen. (EFJ) [4], [intr]
25. After leaving school at sixteen, she went on a government course, painting and decorating, but after it finished she was unemployed. (EG0) [4], [intr]
26. Before Flavia could find her bearings, she went on, 'Only what involves them is sacred?'. (F9R) [3], [intr]
27. Looking back, I fancy that when I went skiing I always hoped that the snow was covering some kindly grass, certainly not something as hard and painful as the arres of Pierre-Saint-Martin. (FA2) [4], [intr]
28. What they found liberating was Surrealism's sanctioning of an art based on personal reality; and in their quest to express this interior landscape these women went directly to source: to their own bodies. (FBF) [4], [intr]
29. The Factor named a price, Antinou countered and so it went on for quite a while. (FR3) [3] [intr]
30. Er another brother in the in twenty six, he he took another course of action, he he cleared off and er he went to he went to live in Australia. (FYJ) [4], [intr]
31. A lot of what went on was based on gossip, most of it spread by members themselves. (G0P) [3], [intr]
32. Perhaps Betty had asked some people in and they were enduring one of those breaks in conversation, but the silence went on. (G0X) [3], [intr]
33. But everybody went silent and serious. (G3P) [2], [intens]
34. Those at the north end of Normangate Field remained essentially agricultural in character throughout the second century, after which they apparently went out of use. (H7Y) [2], [intr]

35. He had not brought his writing tray or materials but mentally he went through each of the deaths he had investigated, trying to fix a pattern, with little success. (H98) [3], [intr]
36. 'As for enjoyment,' he went on tauntingly, his breath mingling with hers as he bent his head again, 'tell me you're not enjoying this, Maria.' (H9L) [3], [intr]
37. Oh, a at nineteen forty eight they split up the electric supply and the three was nationalized and erm it, it just went out of the control of the local councils. (HDL) [2], [intr]
38. the term 'minister' as a somewhat vague diplomatic title went back to at least the mid-sixteenth century. (HY5) [4], [intr]
39. Mr Harris, who's now in a hospice, hit financial problems when his building firm went bankrupt. (K25) [1], [intens]
40. Well that's what I mean, if I went to live in Gambia. (KCF) [4], [intr]
41. For the discomfort, the upset that you went through with having to listen to her. (KCN) [4], [intr]
42. Other great cities went in the same direction, without any questions being asked in central government, or by the opposition, about the electoral system. (AHN) [3], [intr]
43. The things she had heard Jack say after a favourite that he had carefully arranged to get well stuffed, as he put it, promptly went and won. (BP7) [1] [intr]
44. And the players I'd been working with previously went along with me, from using my modified equipment to using my custom-built equipment. (C9J) [2], [intr]
45. My recollection of what happened then is hazy, except that at some stage I went into spasm, with the two of us locked tight in a tangle of arms and legs. (CAH) [1] [intr]
46. I went through one series against Pakistan playing in four Tests without getting a wicket. (CBG) [3], [intr]
47. This went to the very heart of an ideal that, although lacking cohesion, was encapsulated in Labour's programme and no other. (CCR) [4], [intr]
48. The interview took place on a Friday afternoon in the Royal Palace and was as bad as any I can remember: the king was bad, I was bad, the room was gloomy, nothing went right. (CDS) [4], [intr]
49. Highly-paid photographers went hungry as the NME used kitsch '50s post-cards. (CHA) [3], [intr]
50. Well, Fritz went red, which, Erika thought, made rather a nice change from her own blushing, and looked at his shoes. (A7A) [2], [intens]

References

- Boye, Kasper. 2001. The Force-Dynamic core meaning of Danish modal verbs. *Acta Linguistica Hafniensia*, 33.
- Brandt, Per Aage. 1992. *La charpente modale du sens: Pour une simio-linguistique morphogenitique et dynamique*. Amsterdam: Benjamins.
- Champagne, A.B., Klopfer, L.E., & Anderson, J.H. 1980. 'Factors influencing the learning of classical mechanics'. *American Journal of Physics*.
- Da Silva, Augusto Soares da. 2003. Image schemas and category coherence: the Case of the Portuguese Verb deixar. In H. Cuyckens, R. Dirven and J. Taylor (eds.), *Cognitive Approaches to Lexical Semantics*.
- diSessa, A.A. 1988. 'Knowledge in pieces'. G. Forman and P. Pufall (Eds.). *Constructivism in the Computer Age*. Hillsdale, NJ: Lawrence Erlbaum.
- diSessa, A.A. 1993. 'Toward an epistemology of physics'. *Cognition and Instruction*, 10 (2-3).
- diSessa, A.A. 1996. 'What do 'just plain folk' know about physics?'. D.R. Olson & N. Torrance (Eds.), *The Handbook of Education and Human Development: New Models of Learning, Teaching, and Schooling*. Oxford: Blackwell.
- Halloun, I.A., Hestenes, D. 1985. 'The initial knowledge state of college physics students'. *American Journal of Physics*, 53.
- Hammer, D. 1995. 'Student inquiry in a physics class discussion'. *Cognition and Instruction*, 13.
- Jackendoff, Ray. 1990. *Semantic structures*. Cambridge, Mass.: MIT Press.
- Johnson, Mark. 1987. *The Body in the Mind: The Bodily Basis of Meaning, Imagination and Reason*. Chicago: Chicago University Press.
- Kuźniak, M. & J. Woźny. 2014. 'Force dynamics and physics'. *Cognitive Linguistics 2013 conference proceedings*. Warsaw University. [to appear]
- Larkin, J., McDermott, J., Simon, D., & Simon, H.A. 1980. 'Expert and novice performance in solving physics problems'. *Science*.
- McCloskey, M. 1983. 'Naive theories of motion'. In D. Gentner & A. Stevens (Eds.), *Mental Models*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Slobin, D.I. 2003. Language and thought online: Cognitive consequences of linguistic relativity. D. Gentner & S. Goldin-Meadow (eds.). *Language in Mind*. Cambridge: MIT Press.
- Sweetser, Eve. 1982. 'A proposal for uniting deontic and epistemic modals'. In *Proceedings of the Eighth Annual Meeting of the Berkeley Linguistics Society*. Berkeley, Calif.: Berkeley Linguistics Society.
- Sweetser, E. 1991. *From Etymology to Pragmatics: Metaphorical and Cultural Aspects of Semantic Structure*. Cambridge: Cambridge University Press.
- Talmy, Leonard. 1976. 'Semantic causative types. The grammar of causative constructions'. In M. Shibatani (ed.) *Syntax and Semantics*, vol. 6. New York: Academic Press.

- Talmy, L. 1985. Lexicalisation patterns: semantic structure in lexical forms. In T. Shopen (ed.), *Language Typology and Syntactic Description, Vol. 3*. Cambridge: Cambridge University Press.
- Talmy, Leonard. 1988. 'Force Dynamics in Language and Cognition'. *Cognitive Science* 12.
- Talmy, Leonard. 2000. *Toward a Cognitive Semantics*. Cambridge, MA: MIT Press.
- Vandenberghe, Wim. 2002. Instigative Setting-Constructions: Force Dynamic Research on 'New' Types of Agency. *Leuvense Bijdragen*.
- Whorf, B.L. 1956. *Language, Thought and Reality: Selected Writings of Benjamin Lee Whorf*. Cambridge: MIT Press.
- Woźny, J. 2013. 'Force-motion schemas in metaphors of motion'. *Studia Linguistica Universitatis Jagellonicae Cracoviensis* 130.
- Zlatev, J. 2007. 'Spatial semantics'. In H. Cuyckens and D. Geeraerts (Eds.), *The Oxford handbook of cognitive linguistics*. Oxford: Oxford University Press.
- Zlatev, J., J. Blomberg & U. Magnusson. 2012. In Foolen, A., U. Lüdtke, P. Timothy, P. Racine & J. Zlatev (eds.), *Moving Ourselves, Moving Others: Motion and emotion in intersubjectivity, consciousness and language viii*.
- Zlatev, J., J. Blomberg & C. David. 2010. Translocation, language and the categorization of experience. In V. Evans & P. Chilton (Eds.) *Language, space and cognition*. London: Equinox.