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SHORT REPORT

Non-actual motion: phenomenological analysis and linguistic evidence

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Abstract Sentences with motion verbs describing static situations have been seen as evidence that language and cognition are geared toward dynamism and change (Talmy in Toward a cognitive semantics, MIT Press, Cambridge, 2000; Langacker in Concept, image, and symbol: the cognitive basis of grammar, Mouton de Gruyter, Berlin and New York, 1990). Different concepts have been used in the literature, e.g., *fictive motion*, *subjective motion* and *abstract motion* to denote this. Based on phenomenological analysis, we reinterpret such concepts as reflecting different motivations for the use of such constructions (Blomberg and Zlatev in Phenom Cogn Sci 13(3):395–418, 2014). To highlight the multifaceted character of the phenomenon, we propose the concept *non-actual motion* (NAM), which we argue is more compatible with the situated cognition approach than explanations such as "mental simulation" (e.g., Matlock in Studies in linguistic motivation, Mouton de Gruyter, Berlin, 2004). We investigate the expression of NAM by means of a picture-based elicitation task with speakers of Swedish, French and Thai. Pictures represented figures that either afford human motion or not *(±afford)*; crossed with this, the figure extended either across the picture from a *third-person perspective* (3 pp) or from a *first-person perspective* (1 pp). All picture types elicited NAM-sentences with the combination [+afford, 1 pp] producing most NAM-sentences in all three languages. NAM-descriptions also conformed to language-specific patterns for the expression of actual motion. We conclude that NAM shows interaction between pre-linguistic motivations and language-specific conventions.

Keywords Fictive motion · Non-actual motion · Mental simulation · Phenomenology · Linguistic conventions

Introduction

Semantic theories as well as psychological research have targeted sentences where motion verbs are used to describe static spatial situations, e.g., (1a–b).

1. a. The mountain range *goes* all the way from Mexico to Canada.
   b. The highway *runs* through the city.

Such sentences have been argued to show that both language and cognition privilege motion over stasis, as they reflect motion that is not actual but rather "mentally simulated" (Matlock 2004, 2010; Richardson and Matlock 2007). Correspondingly, the phenomenon is known as *fictive motion* (Talmy 2000), *subjective motion* (Langacker 1990; Matsumoto 1996) or *abstract motion* (Matlock 2010). Following previous phenomenological analysis (Blomberg and Zlatev 2014), we propose the alternative concept of *non-actual motion* which we argue is more adequate theoretically and empirically, as well as more compatible with situated cognition. First we summarize the theoretical argument and then present the results from a cross-linguistic elicitation-based study with speakers of

This short paper is based on work described in much more detail in the first author's doctoral dissertation (Blomberg 2014), as well as on a previous joint paper focusing on the phenomenology of non-actual motion (Blomberg and Zlatev 2014). An extended version of the present text written entirely by the first author is to appear in Cognitive Linguistics (Blomberg, in press).

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Swedish, French and Thai (Blomberg 2014, in press) before concluding with prospects for further research.

Non-actual motion: phenomenological evidence

Why do speakers across all studied languages use motion verbs to describe certain static configurations? A popular explanation has been that this reflects the *mental simulation* of motion (Matlock 2004). That is, in producing and comprehending such sentences, speakers use (some of) the same cognitive mechanisms as when they perceive physical motion—but in an "offline" manner. This perspective, emanating from embodied cognition, in part overlaps with situated cognition by highlighting the role of sensory-motor capacities. But there is also a tension: Situated cognition focuses on perception and presence, while mental simulation implies at least a degree of distancing: You need not "simulate" what is present, but rather what is absent.

We have argued (Blomberg and Zlatev 2014; Blomberg 2014) that the mental simulation explanation of the phenomenon is problematic for at least the following reasons. First, it does not explain what is being simulated: the movement of the figure itself (e.g., the mountain range, the highway), an imaginary traveler or the attention of a distanced observer? Second, it relies too much on "mental representations," disregarding the primacy of perception (Meleau-Ponty 1962). Third, it is too universalistic, reducing socially shared linguistic conventions (which differ across languages) to purported individual cognitive mechanisms. Fourth, it conflates conscious processes of imagination with subconscious mechanisms (Gallagher and Zahavi 2008). Finally, it blurs the distinction between sentences expressing "fictive" (2a) and actual motion (2b), which according to proponents also requires simulation in order to be understood.

2. a. The road goes into the tunnel
   b. The man goes into the tunnel.

Due to the shortcomings with explanations in terms of mental simulation, we have argued for an alternative account based on a novel concept: *non-actual motion* (NAM). Our claim is that sentences such as (1) and (2a) are motivated not by simulations but by dynamic properties of consciousness intimately connected with motion (Blomberg and Zlatev 2014). These properties make the phenomenon multifaceted in both language and experience. On the basis of phenomenological analysis and reinterpretation of previous accounts, at least three experiential motivations can be distinguished: *enactive perception*, *visual scanning* and *imagination of motion*.

Enactive perception implies that perception is intimately connected to bodily action (e.g., Merleau-Ponty 1962; Varela et al. 1991). Situations (real or pictorially represented) with paths, roads, bridges, etc., naturally afford contextually appropriate actions (Gibson 1979), which in this case is motion along the respective figure. It is important to distinguish this "invitation to act" from mental representation or simulation. The second motivation is largely based on the notion of *visual scanning* (Langacker 1987). As we experience the motion of an external entity, it is directly connected with the continuous shift in our attention, involving the movement of our bodies, the tilting of our heads, the saccadic movements of the eyes and so forth. Dynamicity does not only belong to the moving entity, but also belong to the act of perceiving. Langacker proposes that such a dynamic process occurs when presented with a spatially extended object, such as a road or a pipe. Just as with a moving object, we follow the spatial extension with our gaze. A third type of motivation goes beyond perception and involves the explicit imagination of motion. Such processes could motivate the use of semantically richer motion verbs in NAM-sentences, such as the verb *crawl* in (3). Here, the figure is represented "as if" it were moving, and the sentence can therefore be analyzed as truly metaphorical in nature. Unlike in the previous two cases, it is not motion affordances or shifts of attention that are expressed, but an imaginative construal of the situation. This case is most reminiscent of the "simulation" explanations criticized above, but the difference is that we emphasize that it is not a sub-personal process but conscious imagination and regard this as only a partial explanation.

3. The highway crawls through the desert.

Finally, factors such as these only motivate the use of such expressions, while language-specific conventions and pragmatic factors such as economy determine what kind of NAM-sentences are linguistically correct and contextually appropriate (Coseriu 1985; Blomberg 2014). In sum, NAM is a multifaceted phenomenon in both language and experience, and meticulous empirical testing is required in order to tease the different contributing factors apart. The study described below is a step in this direction.

Method

We developed a picture-based elicitation tool, following a two-by-two design with two binary parameters. The first parameter, *Afford motion*, concerned pictures with figures that afford motion (e.g., roads and paths) and those that do not (e.g., rows of chairs and fences). On the basis of the enactive perception motivation, it could be expected

that the first set of pictures would evoke more NAM-sentences than the latter. The second parameter, *Perspective*, involved a difference between self-motion and visual scanning. This was operationalized by visually representing the same spatial situations with perspectival alternations. Either the figure was represented from a first-person perspective (1 pp) or a third-person perspective (3 pp). The 1 pp stimuli were designed to provide a sense of "being there" and thereby possibly enhancing the degree of involvement (or rather, minimizing the indispensable distance in every pictorial representation). In contrast, the 3 pp pictures provided a distanced view from a more "anonymous" perspective. Taking the parameters of Perspective and Affordance together gave us a two-by-two design:

1. Entities that support human motion versus those that do not (e.g., bridges vs. fences).
2. A first-person perspective inviting the observer to move along the figure versus a third-person perspective enhancing the opportunity to scan the figure.

The pictorial material was produced in collaboration with an artist to depict linear, extended objects placed in an ecologically probable context. The stimuli comprised 38 pictures (24 target pictures, 12 controls and 2 practice pictures). Both target and control pictures represented static situations without agents. The target pictures fitted the criterion of depicting linear, spatially extended objects, including roads, pipes and fences related to a reference entity. Examples of the stimuli are shown in Fig. 1.

We asked speakers of Swedish (16, 8 females, mean age 28.4, $sd = 9.5$), Thai (14, 10 females, mean age 29.9, $sd = 7.9$) and French (13, 11 females, mean age 25.0, $sd = 5.3$) to describe the pictures in one sentence. The choice of the languages was motivated by the fact that these have been described as prototypical candidates of a tripartite typological division in the expression of motion events (Slobin 2004). The following three different and partially competing hypotheses were formulated:

- *Visual scanning* All target stimuli (unlike the control stimuli) invite scanning to some degree. Target pictures were therefore expected to elicit NAM-descriptions more often than the control pictures across all conditions.
- *Enactive perception* Given a strong motivating role of enactive perception, most NAM-sentences should be elicited under the condition [+afford, 1 pp], since these pictures give the illusion of the observer being positioned on a path, inviting self-motion.
- *Imagination* The same prediction as for enactive perception, but expecting rich verbs like *crawl* and *gallop*, over more schematic verbs like *go* and *run*.

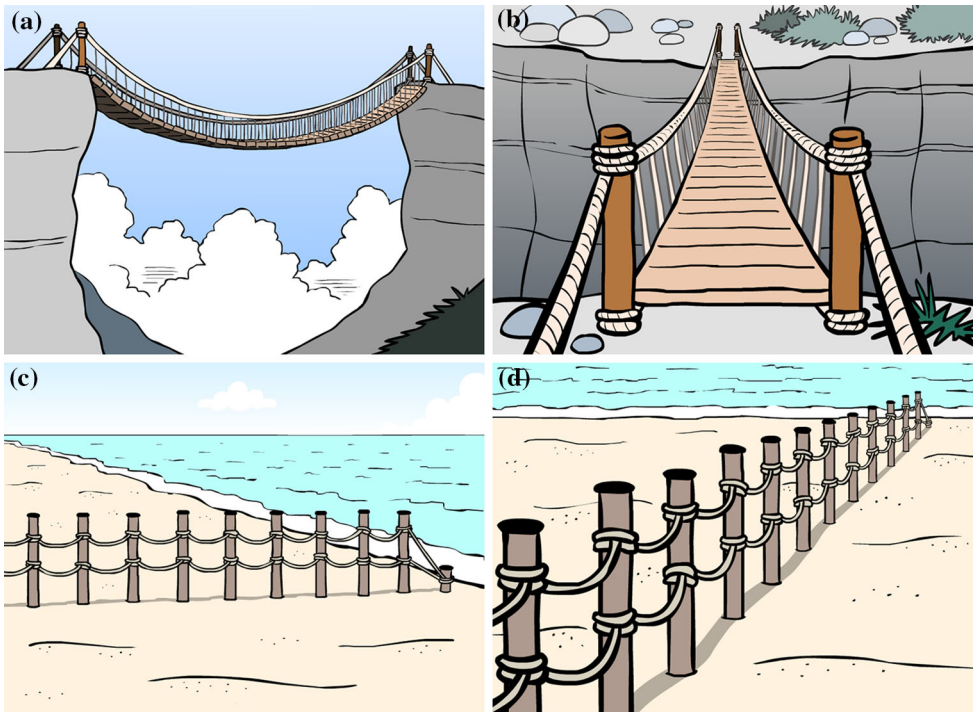

Fig. 1 Stimuli according to the two parameters of Affordance and Perspective: **a** [+afford, 3 pp], **b** [+afford, 1 pp], **c** [−afford, 3 pp], **d** [−afford, 1 pp]

All descriptions of target and control stimuli (i.e., 36 in total) were coded as either including a NAM-sentence or not. The criterion for a NAM-sentence is that if the expression denoting the spatially extended object were substituted with one that denotes a self-moving entity, the sentence would express actual motion; for example, if *highway* in (3) were substituted with *snake*.

Results

We found that for all three languages, all target pictures elicited NAM-descriptions. The difference in the amount of NAM-descriptions between target and control stimuli was significant ($t = 15.0, df = 42, p < .001$), thus confirming the first hypothesis. The four experimental conditions elicited NAM-descriptions to different degrees. Regression analysis with fixed and random effects for two-way interaction between the total amount of NAM-descriptions over the four experimental conditions showed that [+afford, 1 pp] elicited significantly more NAM-descriptions across all participants ($\chi^2 = 11.8$, $df = 1$; $p < .0001$). The differences between languages were not significant in this regard ($\chi^2 = 13.2$, $df = 8$; $p = .10$). Since all NAM-descriptions typically involved verbs semantically sparse on motion information, the second hypothesis, enactive perception, was supported.

Further, we performed qualitative linguistic analysis of the NAM-descriptions. As expected, we found that NAM-sentences consistently relied on the language-specific conventions for expressing *actual* motion. In Swedish, this was carried out predominantly with two generic or bleached motion verbs sparse on motion information: *gå* ("go") and *leda* ("lead"), cf. (4). French speakers used a wider range of motion verbs, which were similar to either the Swedish pattern, or path verbs such as *sortir* ("exit"), as shown in (5a–b). Just as for actual motion, the Thai speakers used serial verb constructions (Slobin 2004), but tended to omit the manner verb in the series, using only a path verb together with a deictic verb (5a).

In sum, the qualitative analysis showed that apart from using the same language-specific resources, the speakers of the three languages consistently chose to demote information that would have suggested actual motion (or imagination of motion). They did so by using bleached motion verbs (Swedish and French), path verbs primarily expressing change of location (French) and by serial verb constructions without a manner verb (Thai). This additionally supported our proposal that "mental simulation" is not the generic mental process behind such sentences and that imagination of motion is a possible, if rather limited factor. This is consistent with the general skepticism toward excessive representationalism in situated cognition.

Conclusion and further research

Based on our findings, we may conclude that NAM-sentences are a prolific conventionalized strategy for speaking about spatial configurations in all three languages. They appear to be motivated by pre-linguistic mental processes such as enactive perception and visual scanning. But as both actual motion and non-actual motion is expressed somewhat differently across languages, there must be an interaction between language and experience, and linguistic semantics should not be reduced to pre-linguistic conceptualization and meaning.

Future research will be needed to answer the following questions:

- Does our finding of most NAM-descriptions in the condition [+afford, 1 pp] hold for other languages, despite typological differences? To address this, we are currently looking beyond spoken language to the expression of spatial extensionality in a signed language: Swedish Sign Language (Ekström 2015).
- How are nonlinear spatial extensions, such as curved shapes, expressed? We expect this to lead to a semantically more diverse set of motion verbs (e.g.,

4. En väg gå-r/ led-er till hus-et.
   DET.INDF road go-PRS/ lead-PRS to house-DET.DEF
   'a road goes/leads to the house'

5. a. Une barricade qui va jusqu'à l' horizon
      DET.INDF.F barricade COMP.REL go.3SG.PRS until DET.DEF.M horizon
      'A fence that goes to the horizon.'

   b. Les canalization-s qui rentre dans un mur.
      DET.DEF.PL pipe-PL COMP.REL enter.3SG.PRS in DET.INDF.M wall
      'The pipes that enter in a wall.'

6. Thangdoen khâw pai nai umong.
   path enter go inside cave
   'A path enters goes inside a cave.'

zigzag), which would shed further light on the nature of the phenomenon.

- Can the concept non-actual motion be extended to other nonliteral uses of motion verbs, such as that in *the prices are rising*, thereby enhancing our understanding of the phenomenon of metaphor?

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