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Fictive Motion in English: An Elicitation Experiment

Abstract: After Talmy's (1983) seminal work, fictive motion sentences have received much attention in cognitive- and psychological-oriented linguistic studies. The reason for such interest lies in the rather paradoxical semantic phenomenon that fictive motion sentences exhibit: in them, verbs of motion are used to describe a static scene. Proponents of embodied theories of language comprehension see in this kind of expression a paradigmatic example of how linguistic meaning is determined by embodied cognitive mechanisms. However, these explanations tend to overlook important aspects of the linguistic realization of fictive motion dand reduce the phenomenon to a single cognitive motivation. Here, we replicate Blomberg's (2014) picture elicitation experiment of fictive motion expressions in French, Thai, and Swedish for English in order to confirm to what extent these languages confirm the results of his investigation, namely, the *bias towards dynamism* of human cognition as one of the main motivational factors behind the use of fictive motion expressions (Talmy's enactive perception hypothesis). Despite the fact that we were unable to replicate Blomberg's main finding, our results still provide evidence in favor of the hypothesis of enactive perception and shows that the experiment design is suitable for further cross-linguistic investigation on fictive motion.

Keywords: cross-linguistic investigation; dynamism; embodiment; enactive perception

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1 Introduction

Natural languages traditionally use motion verbs to describe spatial movement and change. However, the metaphorical use of motion verbs in descriptions of static configurations, as in *The pipeline is going through a hole in the mountain* is also quite common in many languages, including English (Talmy 1983, 1986, 2000), Spanish (Rojo and Valenzuela 2003, 2009), French (Cappelli 2013), Thai (Takahashi 2001), Hindi (Mishra and Singh 2010), Finnish (Huumo 2005), Serbian (Stosic and Sarda 2009), and Japanese (Matsumoto 1996). After Talmy's (1983) seminal work, this kind of metaphorical expression has been discussed intensively in cognitive linguistics under different denominations that most of the time reflect different theoretical stances and cover different ranges of expression, among them *fictive motion* (Talmy 1996, 2000), *abstract motion* (Langacker 1986; Matlock 2010), *subjective motion* (Langacker 1990; Matsumoto 1996a) and *non-actual motion* (Blomberg 2014; Blomberg and Zlatev 2013). Because it became the established term in the literature, here we will follow Talmy and refer to this particular type of motion metaphor as *fictive motion-sentences* (henceforth, FM-sentences)

Psycholinguistic behavioral studies (Matlock 2004; Matlock and Richardson 2004: Richardson and Matlock 2007; Tomaczk and Ewert 2015; Hong and Huang 2016) on the processing of FM-expressions provide evidence in favor of the hypothesis that the comprehension of these expressions activates visual mental imagery associated with their meaning. Proponents of theories of embodied language comprehension describe the deployment of mental imagery during FM-comprehension as a process of *mental simulation* carried out by the sensory-motor system in the brain. This process of mental simulation is taken by embodiment theorists, as Bergen et al. put it (2007: 735), as the "engine of meaning": the sensory motor system "characterizes the semantic content of concepts in terms of the way that we function with our bodies in the world" (Gallese and Lakoff 2007: 456).

Brain imaging studies provide additional evidence in favor of the mental simulation hypothesis. Using fMRI (functional magnetic resonance imaging) technique, Wallentin et al. (2005) found out that the activation of the left posterior middle temporal gyrus during the processing of NAM-sentences was not significantly different when participants processed sentences expressing actual motion. Another fMRI study by Saygin et al. (2010) yielded similar results. Participants were presented with three kinds of verbal stimuli: FM-

sentences, literal motion language, and descriptions of static situations. The results showed that, in spite of the fact the activation of the posterior lateral temporal cortex during the processing of FM was smaller in comparison with the processing of literal motion language, it was significantly greater than during the processing of static sentences. The results of both studies suggest that brain areas in charge of visual motion activate during FM processing. In a third study, Cacciari et al. (2011) used TMS (transcranial magnetic stimulation technique) to determine if the reading of literal, nonliteral, and fictive motion language triggers motor system activity. Their results showed that the activation of the motor system was higher for the sentences expressing literal motion, followed by FM-sentences, and metaphorical sentences.

The activation of brain areas used for visual perception and action during FM language comprehension during the comprehension of FM-language is a compelling argument in favor of the thesis that language is understood through a process of mental simulation grounded in our bodily experience of motion. This makes FM-expressions one of the best examples of how linguistic meaning can be explained in terms of embodied cognitive mechanisms:

> However, various analyses have used [non-actual motion sentences] as paradigmatic reflections of a semantics that is grounded in embodied cognition [...]. It has been argued that such sentences share a close experiential link to actual motion, and that an implicit, "subjective", "fictive" or "mentally simulated" experience of motion is an indispensable part of their meaning. (Matlock and Bergmann 2014: 552)

> It should then be noticed that subjectivity (fictive motion) is based on embodiment as well. Here a cognitive process (or processes) provides the bodily motivation for the creation of fictive elements. (Kövecses 2015: 38)

Important though they are to understanding how speakers process FM-language, psycholinguistic behavioral explanations of the semantics of FM-sentences which draw on theories of embodied cognition are not completely satisfactory: They overlook how the expression of FM differs from language to language and try to reduce the phenomenon of FM to a single cognitive explanation (Blomberg and Zlatev 2013).

In the present paper, we aim to test how well the different motivations FM-language discussed predict the number of FM-expressions used by native speakers of English in a picture elicitation experiment, replicating the study of Bloomberg (2014) with speakers of Swedish, French, and Thai. In what follows, we will discuss briefly the different cognitive motivations for the use of FM-sentences advanced by cognitive linguists and then we will move to

the discussion of the experiment, the results obtained, and the different linguistic conventions on which the English language relies for expressing FM.

2 Three cognitive motivations for FM-sentences

Blomberg's (2014) study distinguishes between three distinct cognitive motivations, and operationalizes them in the design of an elicitation tool intended for the cross-linguistic study of fictive motion. The first two motivational factors have to do with a difference in experiential engagement: According to Langacker (1900), the very cognitive act of conceptualizing an entity is inherently dynamic, and this dynamicity is retained in fictive motion sentences (*mental scanning*). In contrast, Talmy (2000) proposes that fictive motion sentences exhibit how human cognition is biased in favor of change: we are predisposed to conceptualize as moving even immobile entities (*enactive perception*). The last motivational factor is the *affordance of motion* (Gibson 1979): the difference between objects manufactured to afford human translocation (as roads and stairs) or not (as wires and fences)

3 Method

In order to replicate Blomberg's (2014) study as closely as possible, we used the same experimental design and stimuli. The pictorial stimuli comprised 38 pictures (24 target pictures, 12 control pictures, and 2 pictures for practice). The target pictures, which represented linear objects, were pair-wise designed according to two parameters: the depicted situation was presented from a first-person perspective (1pp) or from a third-person perspective (3pp), and the linear object in question was either an entity that afford human motion or not (see table 1). Thus, the experimental design was: 1) cognitive bias toward dynamism vs. mental scanning, and 2) affordance of motion vs. non-affordance. In consequence, the pictorial stimulus was divided into four experimental conditions: 1) Afford motion/ 1pp; 2) Afford motion/3pp; 3) Non-afford motion/ 1pp; 4) Non-afford motion/ 3pp.

All the participants were native speakers of English, recruited at Dalian University of Technology (n = 12, mean age 35). The elicitation sessions were conducted at the university. During the sessions, the participants were presented with the 38 pictures and asked to describe them in one sentence. The investigator gave the instructions in the native tongue of the participant and controlled the elicitation task. The stimuli were presented on a laptop with a 15.4'' widescreen monitor. Prior to the task session, the participants were instructed to describe each picture in one sentence. The instruction was intended to make the participant "fit the more relevant information into a complete sentence" (Bloomberg 2014: 179). The sessions began with the description of two warm-up pictures (cf. Bloomberg 2014: 179). After the task was completed, participants were asked the following three questions: 1) How did you experience your participation? 2) Was anything unclear to you? 3) Can you figure out the purpose of the study? As in Bloomberg's (2014) study, many participants believed that the study was about the influence of the perspective in the description, and none of them mentioned the true purpose of the study. The participants' descriptions were recorded only for audio. Then, the recordings were transcribed, segmented into clauses, and analyzed according to the framework of Holistic Spatial Semantics (Zlatev 2003; Blomberg 2014). In total, participants produced 288 descriptions for target pictures and 144 descriptions for control ones.

As we already pointed out, the range of motion metaphors covered under the term "fictive motion" varies from author to author. Here, we will follow Blomberg's (2014: 179–180) definition, considering FM-sentences as those sentences in which the substitution of an expression denoting the static entity by one that denotes a movable entity would yield a sentence expressing literal motion. For example,

a. The *pipeline* leaves… leaves us, leaves away. (see appendix A; Leave 1.33).

b. The *bird* leaves… leaves us, leaves away.

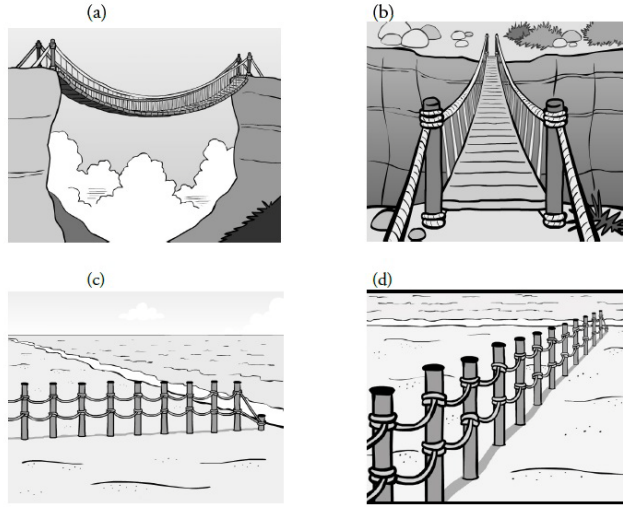

Figure 1: Stimuli according to the two parameters of Affordance and Perspective:
(a) Afford / 3pp (b) Afford / 1pp (c) Non-afford / 3pp (d) Non-afford / 1pp.
(Taken from Bloomberg 2014: 175)

4 Hypotheses

Applying the three cognitive motivations for the use of FM-expressions (*mental scanning*, *enactive perception*, *affordance of motion*) to the parameters of motion affordance and perspective operationalized in the stimuli design, Blomberg's study draws the following hypotheses (2014: 208): 1) All target pictures elicited more FM-expressions than the control ones, with no significant differences between the experimental conditions (mental scanning); 2) The condition Afford motion + 1pp elicited significantly more FM-expressions (enactive perception); 3) The parameter of affordance elicited significantly more FM-expressions, irrespective of perspective; 4) The condition Afford motion + 1pp elicited significantly more FM-expressions and the participants tended to use manner verbs in their FM-descriptions. In his study, Blomberg found out that the condition Afford motion/1pp accounted for the highest number of FM expressions elicited across the three languages under study. This outcome supports the hypothesis that when it comes to the description of static scenes using FM-language, the bias of human cognition

toward dynamism (enactive perception) is probably the main motivational factor, as Talmy hypothesized.

5 Results

Excepting one picture, all the target pictures elicited FM-expressions. From a total of 433 descriptions, 54% contained at least one FM-sentence. 97% (224) of FM-expressions were elicited for the target pictures. The control pictures only elicited 7 FM-sentences (3%). A paired two-sample t-test showed that the difference between target and control pictures was significant (t = 9.612, df =11, p <.001)

The same as in Blomberg's (2014) study, the condition Afford + 1pp elicited more FM-descriptions than the other conditions (see table 1.) In his study, Blomberg used a mixed regression analysis to demonstrate that the difference between Afford + 1pp and the other condition was statistically significant. We, however, we were unable to replicate this result.

Table 1: Number and proportions of FM-expressions for control and target stimuli

Condition	No. and proportions
Afford + 1pp	27.8% (63)
Afford + 3pp	25.9% (59)
Non-Afford + 1pp	21. 1% (48)
Non-Afford + 3pp	25.1% (57)

From a linguistic perspective, the expression of FM in English was grammatically similar to that of literal motion. Only 4 verbs account for 84% of the total number of FM-expressions. Following Levin (1993), they can be separated into four different types (see Table 4): 1) path verbs; 2) accompany verbs; 3) aspectual verbs, and 4) manner verbs (see Table 2). However, as noticed by Rojo and Valenzuela (2003: 141), the use run in FM-sentences seems to be highly conventional, and therefore, bleached with respect to information about manner of motion.

The fact that just 4 verbs cover four-fifths of all the FM-sentences produced by the participants can be attributed to the fact that, together with directional prepositions, these verbs can be used to express a great number of different motion events that in other languages tend to be expressed by different verbs. However, it would be mistaken to consider these verb +

preposition combinations as independent lexical items on their own, as English dictionaries usually suggest under the category of "phrasal verbs." As Huddleston and Pullum (2002: 274) point out, the combinations of verb + preposition in sentences describing motion events such as *He flew to the capital* and *I ran forward to the desk* do not form syntactic constituents.

Another consequence of this fact about English grammar is that some participants produced FM-sentences in which two or more prepositional phases were adjoined to the same motion verb to express complex paths in order to describe the position of the reference entity in the picture. In their study of FM, Rojo and Valenzuela (2014: 127) also found out that English participants used this strategy for describing static scenes.

a. There are many more electrical poles continuing away *from* the wood pile t*owards* the right side of the picture (see appendix D, Continue, 1.17)

b. In this picture there are stepping stones leading *across* a river or a lake, *from* left *to* right. (see appendix B, Lead, 9.6)

c. Running *in* the center *from* the right *to* the left there is a fence made of… like timber. (see appendix C, Run, 9.20)

Table 2: The most common motion verbs

Verb	Type	Tokens	Percentages (of total FM-expression tokens)
lead	Accompany verb	70	29.9 %
go	Path verb	70	29.9 %
come	Path verb	27	11.5 %
run	Manner verb	30	12.8 %

6 Conclusion

In general terms, our findings were consistent with those of Blomberg's (2014) study. Although we were unable to replicate Blomberg's regression result (probably because the number of participants was too small), the experimental condition Afford motion + 1pp still produced more FM-expression that the others. Moreover, the fact that more than half of the descriptions produced by the participants contained an FM-expression, together with the fact that the difference between the number of expressions elicited for target and control pictures was statistically significant, indicates

that the experimental design is suitable for the cross-linguistic investigation of FM. It would be of interest for the typological study of this intriguing form of metaphorical language to investigate whether the Talmian hypothesis of enactive perception also holds for other languages as different as Swedish, French, Thai, or English

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Appendix

FM-expressions produced by participants during the elicitation task.

The material is organized according to the verb subclasses distinguished by Levin (1993). For each verb, the number of clauses that exemplify a FM-expression are given in brackets. The numbers in parenthesis indicate the participant and the number of the picture that elicited the expression. For example: (2.8) = participant 2, picture 8.

A. Path verbs

COME [27] out of <10> (1.1) There are cactuses coming out of the ground. (3.19) A large paved road, well, it seems paved because of the rock that there are on it, hedges surrounding the houses, chimneys coming out of the top of the houses and grass on the sides. (5.11) This is a pipe coming out of a perhaps a storm water drain, it is coming out from the left going through, well, looks like a muddy area[1]. (5.27) This is a picture of a metal pipe; it seems to be metal coming out of a large perhaps storm water drain or other circular entrance. (1.18) This is a picture of a road coming out of a tunnel. (1.18) The tunnel that the road is coming out of is on the inside. (1.27) The orientation of the picture is that the pipe is coming out of the opening and headed towards us[2]. (6.14) This picture is coming out of the tunnel on a highway. (6.18) Here is a picture of a pathway coming out of a small tunnel in a mountain. (7.16) Some of the flowers look like small sapling trees with flowers coming out of the branches. **through <5>** (1.5) This is a picture of a pipeline, coming through a hole in a hill or a mountain. (1.27) This is a picture of a pipe or a pipeline coming through a hole in a wall or a division of some sort. (11.5) Nothing else much to mention aside from the man-made pipes coming through. (11.11) We can see maybe a bridge with a hand railing and more a man-made pipes coming through. (11.14) Well in the inside of the tunnel looking to the mouth out we have a road coming through. **out <3>** (2.14) The road coming out the tunnel goes up to the edge of the cliff in a mountain landscape[3]. (4.5) A pipe coming out a tunnel leading into part of a mountain[4]. (5.33) This is a picture of a metal pipe coming out the hole. **out from <2>** (5.11) This is a pipe coming out of a perhaps a storm water drain, it is coming out from the left going through, well, looks like a muddy area[1]. (7.36) The tunnel mouth is coming out from a gray, stone wall, perhaps a mountain side.

out of… into <1> (11.18) A kind of dirt road coming out of a tunnel mountain pass into a kind of lot of moss-like growing over it. **out over <1>** (12.11) I see a pipeline cutting through a bridge and coming out over a river that seems to be polluted. **out to <1>** (11.30) Have a nice two storey house with a dirt road coming out to the front porch. **across <1>** (11.6) Here we see maybe possible a river, maybe possibly a man-built dam or pathway of some sort, just rocks coming across. **down to <1>** (11.29) A little rope fence here coming down to the edge of the beach on the shore. **from <1>** (9.12) Here there is a bridge, again, is coming from…[5] **from…towards <1>** (5.9) We have a, I am assuming, sea side picture here, coming from the foreground towards the scene in the background. **into <1>** (11.24) Here we have a road coming into a tunnel mouth.

GO [70] through <23> (1.5) The pipeline is going through a hole in the mountain and out of view in the picture[6]. (2.33) There is this oil pipeline going through… out into the entrance of the tunnel[7]. (5.11) This is a pipe coming out of a perhaps a storm water drain, it is coming out from the left going through, well, looks like a muddy area[1]. (6.5) This could be a water pipe or an oil pipe going through a little cave in a mountain.(6.24) A mountain highway with a tunnel going through it. (6.32) A rock bridge that is going through a river or lake. (7.17) I see a line of support poles and power lines going through what I presume is a rural area. (7.18) The path itself that leads to the tunnel doesn't looks like it's on a cliff, it looks almost to be in the middle of a valley, very, very narrow valley. Looks like maybe in the middle of two mountain sides going through a rock wall. (7.24) There is a road going through the tunnel. (7.27) It's a big metal pipeline going through a tunnel. (7.29) The posts going horizontally through the middle. (7.32) A lot of gray rocks going through what looks to be an active river. (7.33) A very industrial looking gray pipeline going through a tunnel directly in the middle. (7.36) I see a big black dark tunnel mouth. There is a path going through it. (8.5) This is a picture of a pipeline going through a tunnel. (8.18) This is a picture of a tunnel from the perspective of probably forty-five degrees away angle from the tunnel, with a dirt road going through it. (9.11) Another pipeline, this one again is leading left to right, and is going through a… is going through a tunnel into like a man-made storm channel[8]. (10.5) There is a tunnel, the pipeline going through. (10.24) This is… looks like a scene in the roadway… again going through a tunnel. (10.24) There is some… the white lines… and… going through a tunnel. (10.36) This one is going through a tunnel again. (10.36) A path going through a tunnel. (12.6) Next is a path of rock going horizontally

through the picture and… by overgrown shrubs. **through into <1>** (7.24) I see a mountain face or rock face with a tunnel going through into the middle**. through under <1>** (11.27) A man-made pipeline system going through a tunnel of some sort, maybe under a bridge or something of the like. **through from <1>** (5.33) Stepping stones that seems to go through a lake or river from a…[9] **into <17>** (2.18) A small narrow road going into a small tunnel. (2. 24) A road along the cliff going into a tunnel. (2.27) An oil pipeline going straight into a tunnel. (2.36) There is this road going into the tunnel. (3.5) It's basically a long pipe going into a tunnel. (3.27) This is a picture of a pipe going into a tunnel. (3.36) You can't really see the path continuing on, you just cannot see it going into the dark[10]. (5.5) Pipe seems to be going into a small hole. (5.24) A road going into a mountain from left to right. (7.5) A pipeline going into a tunnel. (7.11) A winding metal pipeline going into a tunnel. (8.11) A pipeline that is going into a tunnel. (8.24) This is a tunnel, from the point of view of about forty-five degrees from the entrance, with a double-lined road going into the tunnel. (8.24) The road is unseeable when it goes into the tunnel. (9.8) The path that goes into the distance. (10.8) A long pathway going into the distance. (10.27) This picture looks like something going into a tunnel. **across <5>** (3.32) This one is… looks like rocks going across the river. (7.29) I see many brown wooden posts tied together with two sets of rope going across a beach. (7.35) There is a big pile of logs on the foreground underneath the power line, which goes diagonally across the screen. (8.6) This is a picture of a series of connected stones, about the size of two foot in diameter, connecting to each other, going across the river… horizontally. (9.5) The pipeline is going from… across the picture[11]. **across…from… to <1>** (9.17) Then you have telegraph poles going… stretching across the picture from left to right again[12]. **from… to <3>** (2.26) So in this picture there is a suspension bridge going from one edge of the cliff to the other edge of the cliff. (3.26) This is a picture of a bridge, going from one side to the other. (5.30) A beach with a small rope fence going from left to right. **from…towards <1>** (5.33) The stones go from the front of photo towards the back. **out of <2>** (1.5) The pipeline is going through a hole in the mountain and out of view in the picture[6]. (7.33) You are viewing the tunnel from inside of it, with the pipe going out directly in front of you. **out into <2>** (2.8) The road going out into the forest. (2.33) There is this oil pipeline going through… out into the entrance of the tunnel[7]. **out from <1>** (9.14) The road goes straight out from the center. **to <2>** (2.5) There is a middle of pipe running across land and going to a cave[13]. (6.2) A long road going to a shed or a bathroom, WC or a small house. (11.2) We see one straight upside walk, leading, going to, leading to straight up into the house[14].

to over <1> (11.12) Here is a bridge go to over canyon. **around <1>** (3.14) An empty road going around this mountain. **towards <1>** (10.29) There is a fence made out of gray poles and some kind of… and going down towards the water edge. **underneath <1>** (10.11) This looks like… possible it could be a water pipe going through… underneath a bridge. **underneath into <1>** (7.27) The pipeline going directly underneath you into the tunnel. **up<1>** (8.17) It's almost like a pyramid, going up with the top cut-off of the logs. **up to <1>** (2.14) The road coming out the tunnel goes up to the edge of the cliff[3]. **null <2>** (12.17) Then next picture is a set of logs piled up and overshadowed by an electrical…the word… electrical pole, by electrical lines, and they are going diagonally in trees in the horizon, with one cloud above them. (10.9) A gray fence, like links… walking… going… edge of the water[15].

CROSS [6] over <3> (11.17) Here we see some cut timber and logs piled up next to telephone poles crossing over. (11.26) Here we are looking straight across a wooden bridge crossing over. (12.26) A rope bridge crossing over a canyon with rocks and bushes on other side. **to <1>** (12.2) The next picture is a wooden fence crossing diagonally to the upper part of the frame with a tree in front of the shoot and a number of hills in the distance. **from… to <1>** (7.26) I see a big wood bridge, crossing from one… cliff side to the other. **null <1>** (5.12) This picture shows a ravine that is being crossed by a rope bridge

ENTER [2] through <1> (6.27) A water or… yeah, water or oil pipe that is entering through a tunnel. **null <1>** (9.5) The pipeline is entering a tunnel.

FOLLOW [2] (11.33) A tunnel or rock mouth of some sort following a man-made, a man-made pipe system of some sort. (11.33) We can see a valve right in front of us and it follows and extends out through the mouth of the tunnel[16].

PASS [2]

through <1> (11.14) Well in the inside of the tunnel looking to the mouth out we have a road coming through, can see the… some mountain peaks, high elevation tunnel passing through. **through under <1>** (11.24) Here we have a road coming into a tunnel mouth, passing through under a mountain.

EXIT [1] null <1> (1.33) On either side, where the pipeline exits the tunnel, are several stones along the ground.

LEAVE [1] (1.33) The pipeline leaves… leaves us, leaves away[17].

REACH [1] to <1> (1.26) It is suspending a cliff or a… of some sort and reaching to the other side of the cliff.

B. Accompany verbs

LEAD [70] up to <12> (1.2) In this picture there is a small building, like a shed with a road leading up to it. (2.2) There is a long driveway leading up to… looks like a red shed out on a middle of a field. (2.30) In this picture there is a cottage, looks like in the forest, and there is a road leading up to it. (3.30) There is narrow path leading up to the house. (4.2) A small hut with a path leading up to it. (7.2) I see a red house with a brown door, it looks like a tiny shed with a big path leading up to it. (7.20) A wooden fence, cross wood fence leading up to it in the meadow. (7.30) There is a big path leading up to the front of the house. (8.21) A path leading up to the door away. (8.30) A yellow path leading up to the entrance. (12.2) A house with a path leading up to it. (12.21) A red shack with a path leading up to it. **up into <2>** (11.2) We see one straight upside walk, leading, going to, leading to straight up into the house[14]. (11.21) A red shack or house of some sort. There is a… road leading up to it. **out of <11>** (1.10) There are several coniferous types of trees, most of which are quite tall, leading out of the picture. (1.14) This is a picture of a road leading out of the tunnel. (1.33) This is a picture of a pipe or a pipeline leading out of the mouth of a tunnel of some sort. (2.14) This one is a road leading out of the tunnel. (3.33) This one seems to be a pipe leading out of a tunnel. (4.18) A muddy path leading out of the tunnel. (4.24) A road leading out of a tunnel. (4.33) A long pipe leading out of the tunnel. (5.18) This photo shows a path leading out of a tunnel. (9.8) This picture is leading out of a veranda. (9.14) This picture is leading out of a tunnel. **out <1>** (9.14) Leading out you got markers, road markers, safety. **out into <1>** (7.8) The road leads out into the distance, into the mountains[18]. **out from <1>** (9.14) So the picture is boarded by… the cave, or the tunnel leading out from. **into <10>** (1.24) This is a picture of a road leading into a tunnel. (1.36) In this photo we see a road leading into a tunnel. (3.11) It's another pipe leading into a tunnel. (3.18) This one is a… I wouldn't say a road, more like a path leading into a very small tunnel. (3.24) This one is a road leading into a tunnel. (3.36) A path leading into a tunnel. (4.5) A pipe coming out a tunnel leading into part of a mountain[4]. (4.27) A long metal pipe leading into a tunnel. (7.9) The post seems to be the remnants of the bridge, or some sort of construction, but they

lead into the nothingness, they lead into the sea[19]. (7.18) I see a very, very green path of bushes and trees and grass, leading into what looks like a very old, gray tunnel. (8.9) The fence posts are connected by a series of two ropes, leading into what looks like an ocean. (12.27) A wall in a round circle with some sort of spillage underneath it that leads into a river. **away from <6>** (1.8) It's a road leading straight away from the viewer**.** (1.35) There are more electrical poles leading away from us. (4.8) A path leading away from the veranda of a house. (4.21) A small red hut with a blue roof in the path leading away from the hut. (4.30) The house has a veranda, many rooms and its placed in a nice green area with trees, bushes, and a path leading away from it. (5. 30) There is a path leading away from the house, from left to right. (7.21) There is no path leading away from the house. **to <6>** (3.2) There is a very squiggly road leading to a house. (7.9) The path itself that leads to the tunnel doesn't looks like it's on a cliff. (7.21) I see a red shed with a brown door, with a path leading directly to the door. (10.20) There is another fence leading to a tree. (10.21) The pathway leading to the cabin. (10.30) There is a pathway leading to the house.(9.11) Another pipeline, this one again is leading left to right, and is going through a… is going through a tunnel into like a man-made storm channel[8]. **to…from…to <1>** (9.21) There is path leading to it from the bottom left to right. **off into <3>** (7.2) The fence takes out most of the image, and leads off into the distance, into the mountains. (9.2) There is a small shack and a big path leading to a shack. **from… towards…<2>** (1.29) This is a picture of a fence or a partition on a beach leading from the sand towards the shore, towards the tide line[20]. (3.9) Fence is leading from one side towards the water. **onto<2>** (3.8) It's a veranda of a house leading onto the road. (12.30) A porch that leads directly onto a path surrounded by rocks. **across… from… to <1>** (9.6) In this picture there are stepping stones leading across a river or a lake, from left to right. **down to <1>** (1.9) The fence is moving away from us and it's leading down to the water[19]. **from <1>** (1.30) This is a picture of a house, the left hand side with a road leading from it. **from… to <1>** (1.21) There is a path made of dirt leading from the shed, out of view, to the left side of the picture. **in <1>** (1.35) The telephone poles leading in the distance have nothing else between them. **through… away from <1>** (1.11) This is a picture of a pipeline, which leads through a bridge or a rock wall away from us. **towards <1>** (3.21) This is a picture of a path leading towards a red house. **towards… from… to <1>** (9.9) A chain fence leading into the… towards the sea from left to right. **null <1>** (11.36) We are looking directly into the dark mouth of a tunnel, the dirt road leading inside of it.

C. Manner verbs

RUN [30] across <6> (2.5) There is a middle of pipe running across land and going to a cave[13]. (2.9) A fence made of poles running across… out into the water[21]. (4.6) A line of large stones running across the middle of the river. (4.11) A pipe running across the bed of a drained river and through a tunnel[22]. (7.11) There is another brick supporting wall that is running across the side of the pipeline. (12.13) A set of mountains that run entirely across the frame of the image. **across to <2>** (2.20) A wooden fence running across to the right. (9.24) There is a road running from bottom left… into the… it disappears… it runs across the picture to the right[23]. **from…to <4>** (5.36) Some telephone or electric lines running from the foreground in the left to the background in the right. (9.20) Running in the center from the right to the left there is a fence made of… like timber. (9.20) All the grass is yellow and in… vegetation, and top right there is kind of like an… running from right to left. (9.22) A row of buildings, running from right to felt. **from <1>** (2.15) There is a huge row of blue benches run out… run from the beach[24]. **from…into <1>** (9.24) There is a road running from bottom left… into the… it disappears… it runs across the picture to the right[23]. **from…to…into <1>** (9.23) You can see half the island. From top third running from the left to almost the center deep into the sea. **through <4>** (1.14) The road is double lined, with a white dotted line running through the middle. (2.11) It's another picture with an oil pipe line, but it's not in landscape, it's looks like in an urban landscape, it's in a… like this… ditch, running through the city. (3.32) A line of stones running through the river. (4.11) A pipe running across the bed of a drained river and through a tunnel[22]. **along <2>** (4.17) An electric wire that is running along a road of wire posts. (4.32) A road of rocks running along the center of the river. **into <2>** (2.6) This picture has… looks like a dike or a river… with some stones running into the middle of it. (12.8) Two Dalmatian-like trees running into the distance. **between<1>** (2.12) Here is another mountain landscape, so this has two mountains on either side and a bridge, running between the two of them. **on <1>** (9.24) It's a slightly curved road, slightly windy and it's on a… the side facing me, there is a… kind of cliff with a couple of boulders. So almost looks like it's running on a ridge. **out <1>** (2.15) There is a huge row of blue benches run out… run from the beach[24]. **out into <1>** (2.9) A fence made of poles running across… out into the water[21]. **to <1>** (2.17) There is a lot of power cables running to…. some towers. **up along <1>** (12.14) A road that

runs up along the side of the cliff. **up into<1>** (2.29) A fence made of poles running up into the water.

EXTEND [12] into <5> (8.27) This is a picture of a pipeline extending into the tunnel. (8.27) The pipeline extending into the tunnel. (8.29) A fence with different poles attached by series of two ropes extending into the ocean. (8.8) A picture from the point of view of the front porch of a house, with a long, dirt road extending… the horizon into the distance. (8.32) The rocks are extending into… parallel to the river, in the middle of the river. **null <2>** (8.20) The fence is extending pass behind… the point of view. (8.33) The pipeline is extending pass the tunnel… **across… to <1>** (7.9) A long line of posts tied together in symmetry with ropes, two sets of ropes. They extend across, diagonally across the page to the sea, on a sandy beach. **away from <1>** (4.20) A wooden fence extending away from a tree in some brown grasslands. **out from <1>** (7.8) A road dominating the middle of the picture, extending out from a porch at the decking around the house. **out through<1>** (11.33) We can see a valve right in front of us and it follows and extends out through the mouth of the tunnel[16]. **up to <1>** (8.20) Is a picture of a stacked fence, extending up to a tree on the… far on the picture.

STRETCH [7] from <2> (9.18) This footpath stretches from left. (9.29) The sea is in… stretching from… across diagonally from…[25] **across <1>**(9.17) Then you have telegraph poles going… stretching across the picture from left to right again[12]**. across from <1>** (9.29) The sea is in… stretching from… across diagonally from…[25] **across… from… to <1>** (9.28) It looks like a flower… stretching across the picture from right to left, the bottom left. **from… across to <1>** (9.20) Running in the center from the right to the left there is a fence made of… like timber. And then stretches from the right in the center across almost to the left. **on into <1>** (3.27) You can see the pipe stretching on into the tunnel. **out <1>** (3.35) There is a line of electric poles stretching all the way out. **to <1>** (9.30) Stretching diagonally down to the right is, is a broad path.

HEAD [2] (7.32) The river is either sided, it's very blue. It seems to be heading in a… direction, away from the viewer. (1.27) The orientation of the picture is that the pipe is coming out of the opening and headed towards us[2].

THROW [1] across (2.3) There is a long wooden fence throwing across the countryside.

WALK [1] (10.9) A gray fence, like links… walking… going… edge of the water[15]. (11.2) We see one straight upside walk, leading, going to, leading to straight up into the house[14]

WIND [1] through (7.11) The pipe itself it's winding through what looks like muddy or polluted water.

D. Aspectual verbs

CONTINUE [2] away from… towards <1> (1.17) There are many more electrical poles continuing away from the wood pile towards the right side of the picture. **on <1>** (3.36) *You can't really see the path continuing on, you just cannot see it going into the dark*[10]**.**

BEGIN [1] (1.36) Just before the tunnel begins there are bushes up against the surface

START [1] <at on> (6.20) A wooden fence has been constructed, that starts at on the right and ends at the tree[26]**.**

END [1] <at> (6.20) A wooden fence has been constructed, that starts at on the right and ends at the tree[26].

E. General motion verbs

MOVE [2] <away from> (1.9) *The fence is moving away from us and it's leading down to the water*[19]. (1.32) The stones are moving away from the viewer.

Notes:

1. Counted as three clauses.
2. Counted as two clauses.
3. Counted as two clauses.
4. Counted as two clauses.
5. Clause left unfinished by the participant.
6. Counted as one clause.
7. Counted as one clause.
8. Counted as two clauses.

9. Clause left unfinished by the participant.
10. Counted as two clauses.
11. The participant hesitates when choosing between two prepositions.
12. Counted as one clause.
13. Counted as two clauses.
14. Counted as one clause.
15. Counted as one clause.
16. Counted as one clause.
17. Counted as three clauses.
18. Two prepositional phrases linked to the verbal head of the clause.
19. Counted as two clauses.
20. Two prepositional phrases linked to the verbal head of the clause.
19. Counted as two clauses.
21. Counted as one clause.
22. Two prepositional phrases linked to the verbal head of the clause.
23. Counted as two clauses. The participant hesitates when choosing between two prepositions and repeats the verbal head of the clause.
24. Counted as two clauses.
25. The participant hesitates when choosing between two prepositions.
26. Counted as two clauses. The participant hesitates when choosing between two prepositions.

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Bionotes

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