Piia Taremaa

Fictive and Actual Motion in Estonian: Encoding Space[1]

Abstract

Fictive motion is a phenomenon whereby linguistic elements describing motion are used to depict static situations. As a result, static and dynamic situations may be expressed alike. However, it has been argued that the encoding of fictive motion differs from that of actual motion in several aspects; the most significant difference is said to be related to the encoding of space which in fictive motion sentences is more restricted than in actual motion sentences (Matsumoto 1996a, 1996b; Matlock 2004a; Ruppenhofer 2006). The current corpus-based study has compared Estonian fictive and actual motion sentences containing the verbs *viima* 'take, lead', *minema* 'go', *suunduma* 'head', *tõusma* 'rise', *pöörama* 'turn', *ületama* 'cross', *kulgema* 'run, move forward', and *looklema* 'wind', and focusing on how these sentences encode space. The results of the study showed that the presence of a locative expression is rather verb-specific, although slightly dependent on the type of construction (i.e., fictive or actual motion construction). If locative expression occurred the main influencer of the choice of spatial relation was the type of the verb: Path verbs incorporating the meaning of direction (i.e., *viima* 'take, lead', *minema* 'go', *suunduma* 'head', *tõusma* 'rise', *pöörama* 'turn') tended to be used together with elements referring to the direction or goal, whereas manner of motion verbs (i.e., *kulgema* 'run, move forward', *looklema* 'wind') and the verb referring to the trajectory of the motion (i.e., *ületama* 'cross') mostly occurred together with elements expressing the location or trajectory. Given this, the consistent windowing hypothesis is proposed.

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1. Introduction

Fictive motion, "discovered" by Talmy (originally *virtual motion*, Talmy 1983), is known as a linguistic phenomenon covering instances dynamically depicting such situations that are believed to be static and using language characteristic of the description of motion. Fictive motion includes many different subtypes (see Talmy 2000a: 99–139); the most commonly discussed type of fictive motion is expressed by a motion verb usually accompanied by a dynamic phrase referring to spatial relations (e.g., *The road goes from Tartu to Tallinn*). Typically, these expressions describe the location or shape of some elongated trajector (e.g., road, fence, wire, etc.).

Researchers have recently shown an increasing interest in fictive motion, which has gained various studies from different perspectives (see, for example: Langacker 1987: 170–173, 2005, 2008: 528–530; Matsumoto 1996a, 1996b; Talmy 2000a 99–175; Matlock 2004a, 2004b, 2006; Matlock & Richardson 2004; Matlock, Ramscar & Boroditsky 2005; Richardson & Matlock 2007; Huumo 2005, 2009; Ruppenhofer 2006; Stosic & Sarda 2009). It is very common across languages to depict static situations dynamically and it has been pointed out that fictive motion engages mental simulation of actual motion to some degree, so that something characteristic of processing actual motion appears also with regard to fictive motion (Langacker 1987: 170–173, 2008: 82–83, 528–529; Matsumoto 1996a: 363–364, 1996b: 185–188; Talmy 2000a: 104–105). Furthermore, psycholinguistic experiments with English conducted by Matlock and Richardson have demonstrated that fictive motion does evoke a mental representation of actual motion (Matlock 2004b, 2006; Matlock & Richardson 2004; Richardson & Matlock 2007).

Therefore, as static and dynamic situations may be expressed alike, the question arises whether there are lexical differences between the two. Indeed, among other differences, it has been suggested that in encoding space, fictive motion sentences are subject to some limitations that do not concern actual motion. Based on English and Japanese, Matsumoto (1996b: 194) has proposed the path condition according to which "some property of the path of motion must be expressed" in a fictive motion sentence: The path may be encoded with some locative expression (as *along the shore* in (1a)) or "as a part of a verb meaning" (as *ascend* in (1b)) (Matsumoto 1996a: 361). In other words, this condition allows the path to be encoded by a verb root alone and not accompanied with some other locative

expression, as in (1b). Fictive motion sentences that do not meet this condition are therefore considered to unlikely occur (see (1c)) whereas actual motion sentences are not restricted in this way, as illustrated in (1d).

(1) a. *The road began to run **along the shore**.*[2]
b. *The road began to **ascend**.*
c. **The road began to run.*
d. *John began to run.*

Furthermore, Matlock (2004a: 226–227) and Ruppenhofer (2006) have claimed that in English the landmark must be overtly indicated in fictive motion sentences whereas in actual motion sentences it must not. This claim is substantiated as without the landmark "the conceptualiser is unable to infer information about the configuration, position, or shape of the TR [trajector] because there is nothing to relate it to" (Matlock 2004a: 227). Accordingly, in fictive motion sentences the relationship between the trajector and landmark must be explicit by having a locative expression in a sentence.

However, relatively little research has been conducted in the field of fictive motion comparing fictive and actual motion sentences, and the findings are often based on little or restricted data, or on introspection. In particular, the differences between fictive and actual motion sentences in expressing spatial information have received little attention in terms of empirical studies. In this paper, fictive and actual motion sentences in Estonian are compared focusing on the encoding of spatial relations and using corpus analysis. The aim of the paper is to determine the similarities and dissimilarities between fictive and actual motion sentences in expressing spatial information and to describe the underlying factors that have an impact on encoding space.

The current study examines Estonian fictive motion sentences containing motion verbs and subjects designating (physical) traversable paths (e.g., road, railway, etc.). Fictive motion is understood in this study to cover only instances when a location (or shape, condition, etc.) of an elongated traversable object is under consideration and when this object is described as moving, illustrated by sentence (2a).[3] Actual motion is

[2] Examples from Matsumoto (1996b: 195).
[3] Matlock divides fictive motion into two types: Type 1 covers fictive motion sentences incorporating traversable paths whereas Type 2 covers instances with no association of motion. Thus, the type of fictive motion to be dealt with is Type 1 fictive motion in

understood as a translocation of a physical entity, illustrated by sentence (2b).

(2) a. *The road goes from Tartu to Tallinn.*
b. *The bus*/*boy goes from Tartu to Tallinn.*

Fictive motion is abbreviated as FM and actual motion as AM. Also, the study covers FM instances which involve only hypothetical motion or moving focus of attention (3a) and FM sentences that in fact express actual motion (3b).[4]

(3) a. *The highway passes through a tunnel there.*[5]
b. *The highway I was driving on passed through a tunnel then.*

The results of this study indicate that although the type of construction (i.e., FM and AM) does have an impact on the encoding of space, it is shown that in Estonian it depends mostly on a specific verb whether the landmark is obligatory or not. With some verbs it is possible to have sentences without a landmark, while with others a landmark is obligatory, and it applies both to FM and AM. However, there is a stronger tendency to have such AM sentences where the landmark is not overtly marked than FM sentences.

In addition, when the landmark is overtly marked in Estonian, the choice between the source, trajectory/location, and goal is proved to be influenced mainly by the semantics of the motion verb, or more broadly, the type of the motion verb. On the basis of the results obtained and developing Talmy's (2000a: 257–309) approach to the windowing of attention (particularly to the path windowing), the consistent windowing hypothesis is proposed – if the verb windows the final portion of the path (i.e., directional verbs) then also such locative expressions that window the final portion of the path (i.e., expressions of the goal and direction) are preferred; if the verb windows the medial portion of the path (i.e., manner

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Matlock's classification (Matlock 2004a: 230–232), which may be argued to be a subcategory of the coextension-paths category in Talmy's categorisation (Talmy 2000a: 138–139).

[4] For detailed analysis of these two types of FM see Matsumoto (1996a: 360–361, 1996b: 204–205).

[5] Examples from Matsumoto (1996b: 204).

of motion and trajectory verbs)[6] then expressions that window the medial portion of the path are preferred (i.e., expressions of the trajectory and location). The windowing of attention is relevant to the current study because the patterns found support the fact that not only the attention is selective, but the language also reflects this selectiveness in an effective way. That is, the windowing of attention approach can explain why such patterns occur. In addition, the choice between spatial relations was found to depend not only on the consistent windowing, but to some extent also on the *goal-over-source* principle as well as on the type of construction (i.e., FM and AM).

The study consists of two parts: a pre-study and a main study. In general, there are two ways to search FM sentences from a corpus: using nouns referring to static entities that are typically described as moving or using motion verbs that can express FM. In both cases there is a possibility that data is restricted to some extent unless all possible nouns or verbs encountering FM constructions are considered. In this study, it was decided to start from the first option: The pre-study (Corpus study 1; see Section 2) was conducted in order to establish different motion verbs encountered in FM constructions in Estonian. On the basis of the results obtained, the main corpus-based analysis (Corpus study 2; see Section 3) was carried out focusing on the differences and similarities between Estonian FM and AM sentences in encoding space. Corpus study 2, in turn, was divided into three sub-studies to investigate (i) the influence of the construction (i.e., FM or AM) on the presence of a landmark expression (Corpus study 2a; see Section 3.3); (ii) the influence of the construction on the preferable spatial relation in terms of whether there are differences between FM and AM in the choice of the source, trajectory/location, or goal expression (Corpus study 2b; see Section 3.4); and (iii) the influence of the type of the verb on the preferable spatial relation (Corpus study 2c; see Section 3.5).

2. Corpus study 1: Motion verbs in FM sentences

2.1 Methods and materials

The aim of Corpus study 1 was to find different motion verbs that are used to express FM in Estonian. For this, typical nouns indicating traversable paths (i.e., trajectors) were chosen: *tee* ‘path, road’, *rada* ‘path, pathway’,

[6] The reason to include manner of motion verbs to verbs that window the medial portion of the path is detailed in Section 3.5.3.

teerada ‘path, track’, *maantee* ‘road, highway’, *raudtee* ‘railway’, *tänav* ‘street’, *jäljed* ‘track, trail’. For each of these nouns, up to 1000 sentences were searched from the Balanced Corpus of Estonian (Subcorpus of Fiction),[7] which contains 5 million words.[8] In total, 2025 sentences were found, of which 1840 sentences were discarded as non-FM sentences or draft. Among the discarded sentences were also metaphoric FM sentences (i.e., sentences not referring to some concrete spatial path), such as *Our paths took us in different directions after high school* and the sentences containing verbs that express a change of state rather than motion or that are not understood as typical motion verbs (e.g., *algama* ‘start’, *kaduma* ‘disappear’, *kokku saama* ‘meet’), illustrated by the sentence *The pathway ended at the oval place*. Given this, 185 FM sentences such as (4) remained for analysis.

(4) *Aida* *tagant* *läks*[9] *kõrge-s* *rohu-s* *teerada*
barn.GEN from behind go.3SG.PST high-INE grass-INE pathway
tema *maja-ni.*
his/her house-TERM
‘A pathway went from behind the barn in high grass to his/her house.’ (BCE)

2.2 Results

As Table 1 shows, 31 different motion verbs occurred in 185 FM sentences; the most frequent verbs were *viima* ‘take, lead’ (70 instances), *minema* ‘go’ (24 instances), and *kulgema* ‘run, move forward’[10] (15 instances).

[7] Balanced Corpus of Estonian: http://www.cl.ut.ee/korpused/grammatikakorpus/.
[8] The subcorpus of fiction was preferred to non-fiction corpora because describing the location or movement of some physical entity in newspapers and scientific texts was found to be quite limited according to the exploratory corpus search. Although the use of AM and FM sentences in different genres (e.g., newspapers) would definitely be interesting to investigate, these other genres lie outside the boundaries of the current study.
[9] The verb *minema* ‘go’ has suppletive form *läks* ‘go.3SG.PST’.
[10] Note that the meaning definition of the verb *kulgema* (‘run, move forward’) is not very accurate. The verb *kulgema* designates effortless, peaceful and continuous motion covering relatively long distances whereas the trajectory of the motion is unspecified or rather straight.

Table 1. Motion verbs expressing FM

Motion verbs	FM sentences per verb
viima ‘take, lead’	70
minema ‘go’	24
kulgema ‘run, move forward’	15
tulema ‘come’	11
looklema ‘wind’	9
pöörama ‘turn’	5
suunduma ‘head’	5
keerama ‘turn’	4
keerlema ‘whirl, swirl’	4
tõusma ‘rise’	4
laskuma ‘descend’	3
pöörduma ‘change, turn’	3
suubuma ‘debouch, disembogue’	3
tooma ‘bring’	3
jõudma ‘reach, arrive’	2
käänduma ‘turn, wind’	2
kerkima ‘rise, grow’	2
läbima ‘pass, go through’	2
ületama ‘cross’	2
jooksma ‘run’	1
juhatama ‘direct, lead’	1
juhtima ‘direct, lead’	1
käänlema ‘wind, twist’	1
käima ‘walk’	1
kallama ‘pour’	1
laotuma ‘spread, expand’	1
põikama ‘dodge, swerve’	1
ronima ‘climb’	1
siuglema ‘snake’	1
väänlema ‘wriggle, twist’	1
vingerdama ‘squirm, wriggle’	1
Total	**185**

2.3 Discussion

The list of verbs in Table 1 shows a great variety of motion verbs, including path verbs (e.g., *suunduma* ‘head’, *ületama* ‘cross’) and manner of motion verbs (e.g., *looklema* ‘wind’, *käima* ‘walk’), causative verbs (e.g., *viima* ‘take, lead’), verbs of self-motion (e.g., *käima* ‘walk’, *siuglema* ‘snake’), grammatically transitive verbs (e.g., *ületama* ‘cross’, *viima* ‘take, lead’), and intransitive verbs (e.g., *minema* ‘go’, *käima* ‘walk’), etc. (For a

detailed classification of verbs found, see Section 3.2). However, no motion verb profiling source-originated motion (e.g., *väljuma* 'exit') occurred despite the fact that such verbs are perfectly acceptable for expressing FM in Estonian, which points to the limitations of the corpus and data examined. Certainly, the range of verbs that are used to express FM is much broader than that provided here. Additionally, in the current study it remains an open issue as to which motion verbs are not used to express FM as it would require a much broader and presumably different kind of study to establish the verbs which can and which cannot enter FM constructions.

3. Corpus study 2: Encoding space in FM and AM sentences

3.1 Aim and hypothesis

The aim of the Corpus study 2 was to examine FM and AM sentences in how they encode space in order to establish whether there are any principal lexical differences between the two types of constructions in Estonian. It appeared it was necessary to conduct three sub-studies to clarify the extent of the influence of the types of constructions (i.e., FM and AM), as well as the influence of the types of verbs in the encoding of space. Following the previous work mentioned above, the starting hypothesis of the current Corpus study 2 was that the encoding of space in FM sentences should have some limitations compared to AM sentences.

3.2 Methods and materials

For the purpose of studying FM and AM sentences containing different types of motion verbs, firstly it was essential to classify verbs gathered in Corpus study 1. It has been common to distinguish between path verbs and manner of motion verbs. According to Talmy (2000b: 25–26), a motion event has four internal components: Figure, Ground, Path, and Motion. Figure is the moving or movable entity and Ground is the reference entity (Talmy 2000a: 312, 2000b: 25). Path is defined as "The path followed or site occupied by the Figure object with respect to the Ground object" (Talmy 2000b: 25). Manner, as well as Cause, is an external component of a motion event (i.e., co-event). Both Path and Manner (as well as Cause and Figure) may be conflated in a motion verb, therefore resulting in path verbs (e.g., *enter*, *proceed*, *cross*) and manner of motion verbs (e.g., *roll*,

run). Similarly, Levin (1993: 264) distinguishes verbs that inherently reflect direction (most commonly understood as path verbs), as verbs whose meaning "includes a specification of the direction of motion" (e.g., *go*, *enter*, *cross*?),[11] and manner verbs as verbs that do not specify "an inherent direction as part of [their] meaning" (e.g., *roll*, *run*). However, in some studies (mostly examining Japanese), path verbs in turn have been divided into two types: Direction(al) Path verbs (e.g., *go*) and Ground Path verbs (e.g., *cross*). Direction Path verbs express motion in some direction whereas Ground Path verbs comprise information about the Ground (see, for example: Muehleisen & Imai 1997; Uchiyama & Ishizaki 2001).

In Estonian as in English, verbs like *cross* do not depend on the nature of a specific ground, i.e, verbs like *cross* can be used with presumably most entities that need to be crossed differently from Japanese in which there are different verbs to express crossing different types of grounds. Nevertheless, there is a good reason to differentiate between two types of path verbs because verbs like *cross*, which specify the trajectory[12] of the motion (i.e., the medial portion of the path in Talmy's terms (Talmy 2000a: 265–271) or the medium of the motion in Slobin's terms (Slobin 1996: 202)) differ semantically from other path verbs and may determine different syntactic structure in Estonian. For instance, the verbs *ületama* 'cross' and *läbima* 'pass, go through' are grammatically transitive verbs that require an overt object indicating a landmark in a sentence; the verb *mööduma* 'pass by', on the other hand, is an intransitive verb that requires an adverbial (i.e., landmark) to be in elative case.[13]

For that reason, in the current study path verbs are divided into DIRECTIONAL VERBS referring to motion verbs that encode goal-oriented (as well as source-originated) movement, and into TRAJECTORY VERBS referring to verbs that describe motion along a trajectory without specifying the goal or the source. Therefore, following Talmy's (2000a: 265–267) approach to the path windowing and applying this approach to verb roots, it may be argued that directional verbs (such as *leave*, *go*, *head*, *rise*, etc.) window

[11] Note that Levin provides *cross* with a question mark, indicating the possibility to exclude the verb from the verbs that inherently reflect direction (Levin 1993: 264).

[12] The term trajectory is not to be confused with Langacker's term trajector, which is "the figure within a relational profile" (Langacker 1987a: 217). Trajectory is used here instead of the term path for reasons of clarity to designate the portion of the path between the source and goal.

[13] Elative case is a locative case which conveys the meaning of moving out of something (e.g., *majast* 'from the house', as in (5a)).

the initial or final portion of the path, whereas trajectory verbs (such as *cross*, *pass*, etc.) window the medial portion of the path. Based on the verbs found in Corpus study 1, directional verbs in turn may be divided into subtypes on the basis of whether they express general self-motion (e.g., *minema* 'go') or caused motion (e.g., *viima* 'take, lead'); horizontal (e.g., *head*) or vertical motion (e.g. *tõusma* 'rise'); or the change in the direction of motion (e.g., *pöörama* 'turn') (see Table 2).

Beside path verbs, manner of motion verbs are also dealt with in this study. The term MANNER OF MOTION VERBS is considered here to refer to motion verbs that encode the way motion may be executed in a broad sense, classified into manner of motion verbs expressing non-linear motion (e.g., *looklema* 'wind') and manner of motion verbs expressing motion with no salient information about the shape of the trajectory (e.g., *kulgema* 'run, move forward') (see Table 2).

Thus, one possible classification of verbs found in Corpus study 1 (provided in Table 2) takes into account how path and manner are lexicalised. The classification is based on the literal meaning of the motion verbs. The most frequent verb of each subtype (indicated by bold type) was chosen for further examination (i.e., directional verbs *viima* 'take, lead', *minema* 'go', *suunduma* 'head', *tõusma* 'rise', and *pöörama* 'turn'; trajectory verb *ületama* 'cross'; manner of motion verbs *kulgema* 'run, move forward' and *looklema* 'wind').

Table 2. Classification of motion verbs found in Corpus study 1 and their rate of occurrence

General types of motion verbs		Subtypes of motion verbs	Motion verbs and their rate of occurrence
Path verbs	Directional verbs	General path verbs referring to goal-oriented self-motion (grammatically intransitive verbs)	***minema*** 'go' (24), *tulema* 'come' (11)
		General path verbs referring to goal-oriented causative motion (grammatically transitive verbs)	***viima*** 'take, lead' (70), *tooma* 'bring' (3)
		Path verbs expressing horizontal goal-oriented motion (grammatically intransitive verbs)	***suunduma*** 'head' (5), *suubuma* 'debouch, disembogue' (3), *jõudma* 'reach, arrive' (2)
		Path verbs expressing vertical goal-oriented motion (grammatically intransitive verbs)	***tõusma*** 'rise' (4), *kerkima* 'rise, grow' (2), *laskuma* 'descend' (3)
		Path verbs expressing the change in the direction of motion (grammatically intransitive verbs)	***pöörama*** 'turn' (5), *keerama* 'turn' (4), *pöörduma* 'change, turn' (3), *käänduma* 'turn, wind' (2)
	Trajectory verbs		***ületama*** 'cross' (2), *läbima* 'pass, go through' (2)
Manner of motion verbs		Manner of motion verbs encoding the motion along a non-linear trajectory (grammatically intransitive verbs)	***looklema*** 'wind' (9), *keerlema* 'whirl, swirl' (4), *käänlema* 'wind, twist' (1), *vingerdama* 'squirm, wriggle' (1), *väänlema* 'wriggle, twist' (1), *siuglema* 'snake' (1)
		Manner of motion verbs encoding the motion along a trajectory, which has an unspecified shape (grammatically intransitive verbs)	***kulgema*** 'run, move forward' (15), *jooksma* 'run' (1), *käima* 'walk' (1), *ronima* 'climb' (1)

With each of the verbs selected, up to 1000 sentences were drawn from the Balanced Corpus of Estonian (Subcorpus of Fiction). FM sentences were

extracted from this overall selection, giving a result of 137 sentences (see Table 3). The sentences collected in Corpus study 1 were added to those, so that taken together, there were 238 FM sentences to examine; as the corpus used was the same, in some cases the sentences overlapped (see Table 4). AM sentences were extracted with each of the verbs from the first 300 sentences, giving a result of 563 sentences (see Table 5). One can notice that the proportions of AM and particularly FM sentences are quite low. Mainly, the discarded sentences were various sentences with non-literal uses of the verbs (i.e., all other uses besides expressing the location of some real traversable path or translocation of some physical entity) and draft sentences. In some cases the samples yielded were comparatively small, demonstrating the limitations of the corpus. Despite the small samples, these verbs were not excluded from the analysis, as they had a sufficient amount of either FM or AM sentences to draw at least preliminary conclusions; however, the results therefore need to be interpreted with caution.

Table 3. FM sentences found using verb-based search (up to 1000 sentences considered)

Motion verbs	Corpus sentences found	FM sentences	
viima ‘take, lead’	1000	13	(1.3%)
minema ‘go’	1000	1	(0.1%)
suunduma ‘head’	279	20	(7.2%)
tõusma ‘rise’	1000	4	(0.4%)
pöörama ‘turn’	1000	5	(0.5%)
ületama ‘cross’	417	2	(0.5%)
kulgema ‘run, move forward’	302	52	(17.2%)
looklema ‘wind’	77	40	(51.9%)
Total	**5075**	**137**	(2.7%)

Table 4. FM sentences examined in total

Motion verbs	Sentences with verb-based search	Overlapped sentences	Sentences with path-based search	Total
viima 'take, lead'	11	2	68	**81**
minema 'go'	1	–	25	**26**
suunduma 'head'	15	5	–	**20**
tõusma 'rise'	4	–	4	**8**
pöörama 'turn'	2	3	2	**7**
ületama 'cross'	–	2	–	**2**
kulgema 'run, move forward'	38	14	1	**53**
looklema 'wind'	32	8	1	**41**
Total	**103**	**34**	**101**	**238**

Table 5. AM sentences found using verb-based search (up to 300 sentences considered)

Motion verbs	Corpus sentences found	AM sentences	
viima 'take, lead'	300	**35**	(11.7%)
minema 'go'	300	**127**	(42.3%)
suunduma 'head'	279	**212**	(76.0%)
tõusma 'rise'	300	**55**	(18.3%)
pöörama 'turn'	300	**33**	(11.0%)
ületama 'cross'	300	**66**	(22.0%)
kulgema 'run, move forward'	300	**23**	(7.7%)
looklema 'wind'	77	**12**	(15.6%)
Total	**2156**	**563**	(26.1%)

In order to identify constructional similarities and dissimilarities between FM and AM sentences, linguistic elements encoding space were searched for in both FM and AM sentences. The distinction was made between the encoding of the source, trajectory/location, and goal of the motion (which corresponds to the initial, medial, and final portion of the path to be windowed in Talmy's terms (2000a: 265–267)). Accordingly, in the case of FM these are the fictive source, fictive trajectory/location, and fictive goal. In Estonian these may be expressed with case-marked noun phrases (see (5a), (6c), (7a)), adpositional phrases (see (5b), (6a, d), (7b, c)), or adverbs (i.e., satellites) (see (6b), (7d)). Certainly, a range of other cases, adpositions and adverbs may be used besides the ones provided here. The SOURCE was understood as the starting point of the motion (as *majast* 'from

the house' in (5a)) or the point from the direction of which the motion proceeds (as *maja poolt* 'from the direction of the house' in (5b)).

(5) a. *Ta* *tul-i* ***maja-st.***
s/he come-3SG.PST house-ELA
'S/he came from the house.'

b. *Ta* *tul-i* ***maja*** ***poolt.***
s/he come-3SG.PST house.GEN from the direction of
'S/he came from the direction of the house.'

Under the label of TRAJECTORY/LOCATION, the trajectory of the motion in the sense described above (as *mööda teed* 'along the road' in (6a) and *metsast läbi* 'through the forest' in (6b)) as well as the general location of the mover were classified (as *metsas* 'in the forest' in (6c) and *maja taga* 'behind the house' in (6d)).[14]

(6) a. *Ta* *tul-i* ***mööda*** ***tee-d.***
s/he come-3SG.PST along road-PART
'S/he came along the road.'

b. *Ta* *kõndi-s* ***metsa-st*** ***läbi.***
s/he walk-3SG.PST forest-ELA through
'S/he walked through the forest.'

c. *Ta* *kõndi-s* ***metsa-s.***
s/he walk-3SG.PST forest-INE
'S/he walked in the forest.'

d. *Ta* *kõndi-s* ***maja*** ***taga.***
s/he walk-3SG.PST house.GEN behind
'S/he was walking behind the house.'

The GOAL was interpreted as the endpoint of the motion (as *metsa* 'to the forest' in (7a) and *metsa sisse* 'into the forest' in (7b)), and also as the destination of the motion not known to be achieved, i.e., the landmark

[14] The same approach was taken by Stefanowitsch and Rohde (2004). Here the main reason to cover both the trajectory as well as the general location under one term is borne out of the current corpus studies themselves, as verbs most often accompanied by expressions designating trajectory were also often accompanied by expressions designating general location.

towards which the motion is directed (i.e., direction) (as *metsa poole* ‘toward the forest’ in (7c) and *edasi* ‘forward’ in (7d)).

(7) a. *Ta läks **metsa**.*
s/he go.3SG.PST forest.ILL
‘S/he went to the forest.’

b. *Ta läks **metsa** **sisse**.*
s/he go.3SG.PST forest.GEN into
‘S/he went into the forest.’

c. *Ta läks **metsa** **poole**.*
s/he go.3SG.PST forest.GEN toward
‘S/he went toward the forest.’

d. *Ta läks **edasi**.*
s/he go.3SG.PST forward
‘S/he went forward.’

Locative expressions were counted in all sentences without considering whether they stood alone or were combined with each other; consequently, the number of locative expressions is higher than the number of sentences. Some linguistic examples are provided in a simplified way for reasons of clarity, and the others are corpus-sentences marked with (BCE).

3.3 Corpus study 2a: Presence of locative expressions

3.3.1 Aim and hypothesis

Following Matlock (2004a: 226–227) and Ruppenhofer (2006), it was predicted that sentences without a locative expression (i.e., landmark) are unlikely to occur or very rare in the case of FM but possible in the case of AM. According to Matsumoto (1996b: 194), it would be acceptable not to mention the landmark “when the verb does convey information about the path”, i.e., when the motion verb itself expresses a path one way or another. All the sentences were divided into two groups on the basis of the existence of an element other than the verb that expresses the source, trajectory/location or goal: sentences including locative expression (abbreviated here as loc-sentences) and sentences not including locative expression (0-loc-sentences).

3.3.2 Results

From Table 6 it may be seen that the range of sentences without locative expressions was higher in the case of AM (15.1%) and lower in the case of FM (6.7%). The Chi-square test revealed a significant difference in proportions with a small effect size: $\chi^2(1, N = 801) = 10.06$, $p < 0.001$, Cramér's $V = 0.12$.[15] FM sentences without overtly marked locative expression were proven to be rare, but not impossible, although the results indicate that that kind of AM sentences are more likely to occur.

Table 6. FM and AM sentences including (loc) and not including (0-loc) locative expressions

	0-loc		Loc		Total	
FM	6.7%	(16)	93.3%	(222)	100.0%	(238)
AM	15.1%	(85)	84.9%	(478)	100.0%	(563)

Yet, the possibility not to present a locative expression in a sentence seems to be rather verb-specific, as only *ületama* 'cross', with its obligatory object indicating the trajectory blocks this possibility in both FM and AM sentences, and *suunduma* 'head' appears to allow the exclusion only in the case of AM. Other verbs do not show such restrictions; the verbs *viima* 'take, lead', *minema* 'go', *tõusma* 'rise', and *pöörama* 'turn' may all be used in such sentences where no other locative expression occurs. What varies is whether nothing else needs to be expressed, as it is in the case of *tõusma* 'rise', or whether something expressing purpose, manner etc. needs to be present in a sentence, as it is for instance with *viima* 'take, lead' (the detailed analysis is provided below in Section 3.3.3).

3.3.3 Discussion

The results of Corpus study 2a do not support the prediction that FM sentences need to have an overtly marked landmark in a sentence in Estonian, although the results indicate a stronger tendency in FM than in AM for an overtly marked landmark. It may be argued that the reason a landmark is not mentioned in a sentence is rather verb-dependent. The association between the construction and presence of a locative expression might be explained in part by the fact that the AM sentences examined

[15] Based on Cohen (1988: 224–225), the effect sizes were interpreted as 0.1 to represent a small, 0.3 a moderate, and 0.5 a large effect size.

describe mostly agentive motion. Involving an agent in a motion event in turn motivates the need to express the purpose of the motion (see (8)); as a consequence, spatial relations are left in the background. As in FM sentences the entity that is described as moving is not a living being, it seems to be impossible to encode the purpose of moving in these sentences. In Estonian, such infinitive constructions expressing purpose do involve a spatial meaning and are often analysed as expressions that encode the goal (e.g., Pajusalu, Kahusk, Orav et al. 2013). Yet, it may be argued that expressing purpose is more salient than expressing some locative meaning, i.e., the goal.[16]

(8) *Agatha läks **kingi** **Vilma-le** **näita-ma*** ... (AM)
Agatha go.3SG.PST shoe.PL.PART Vilma-ALL show-INF
'Agatha went to show Vilma the shoes.' (BCE)

On the other hand, using FM constructions to locate or describe traversable paths *per se* leads to the higher need to express locative meanings, meanwhile AM exhibits a much wider variability in what to depict. It may be stated that if an FM sentence is used to describe the location of some traversable path entity (i.e., trajector), then a landmark needs to be explicitly expressed, as proposed by Matlock. However, if the FM sentence describes the condition or shape of the path, or the way hypothetical (or actual) motion is executed then the space may be left unspecified. In addition, the higher rate of such AM sentences over FM sentences where space is not specified may be due to the presence of the agentive component. As explained above, most AM sentences examined express agentive motion and the agent is much more autonomous than an inanimate mover or path, that is, the range of what can be described is much wider when an animate mover is involved.

Of course, in many cases the spatial information is given by the linguistic context or by world knowledge (see also Stefanowitsch & Rohde 2004: 263). In addition, there are some verb-specific differences associated with the reason not to present the locative expression, as mentioned in Section 3.3.2. The directional verbs *minema* 'go', *tõusma* 'rise', and

[16] As an anonymous referee has pointed out, such infinitive constructions combining the meaning of the purpose and goal might be considered as an intervening instance between overtly indicating and not indicating spatial information (i.e., between Loc and 0-loc). In addition, it is open to dispute what is more salient in these infinitive constructions and how it varies depending on different contextual factors.

pöörama ‘turn’, and manner of motion verbs *looklema* ‘wind’ and *kulgema* ‘run, move forward’ allow sentences without locative expressions both in the case of FM and AM, as illustrated with the verb *tõusma* ‘rise’ in (9a), whereas in both cases with the verb *ületama* ‘cross’ this is impossible, as it is a transitive verb requiring a grammatical object that refers to the landmark, as shown in (9b). Contrary to Matsumoto’s path condition, the manner of motion verb *kulgema* ‘run, move forward’ may occur without locative expression. Generally, there has to be some other element (most frequently a manner expression) to be present in both FM and AM sentences in case the space is not encoded, as in (10a–c). In the FM sentence (10a), the manner is described as the way actual motion along the path is executed (i.e., *nöörsirgelt* ‘straight’), which in turn represents the shape of the path. However, it is possible to express manner in a way that does not have such a strict connection to the path, as illustrated in (10b).[17]

(9) a. *Tee / lennuk tõusi-s.* (FM/AM)
road / plane rise-3SG.PST
‘The road / plane rose.’

b. *Tee / ta ületa-s* ***põllu***. (FM/AM)
road / (s)he cross-3SG.PST field.GEN
‘The road / (s)he crossed the field.’

(10) a. *Kui tee kulge-s pikka aega* ***nöörsirgelt,***
when road run-3SG.PST long.PART time.PART straight
siis ol-i nei-l igav. (FM)
then be-3SG.PST they-ADE boring
‘When the road ran straight then they felt bored.’ (BCE)

b. *Tee kulge-s* ***kiiresti***. (FM)
road run-3SG.PST swiftly
‘The road ran swiftly.’

[17] Matsumoto (1996b: 201–202) argues that in English and Japanese adverbial phrases like *slowly* cannot be used in FM sentences. He finds that there are some cases where such phrases are possible, but only if they describe the shape or the location of the path. Yet, in Estonian this is not the case, as in Estonian phrases like that may be also used to describe the hypothetical or actual motion along the described path.

c. *Poiss kulge-s* ***uimase-s äraoleku-s*** *...* (AM)
boy run-3SG.PST dizzy-INE absence-INE
'The boy sauntered dizzily.' (BCE)

The reported fact that FM sentences need to have a landmark present, whereas AM sentences do not, may be argued to be supported only by the verb *suunduma* 'head', in which case there is a possibility not to express space in AM sentences. However, in this case something else must be described instead of space, such as purpose in (11c) (compare with (11a)), whereas in FM sentences it appears to be unacceptable (see (11b)). This in turn is most probably caused by the fact that purpose may be associated only with agentive motion.

(11) a. **Tee / ta suundu-s.* (FM/AM)
path / (s)he head-3SG.PST
'*The path / (s)he headed.'

b. **Tee suundu-s* ***jõge ületa-ma.*** (FM)
path head-3SG.PST river.PART cross-INF
'*The path headed to cross the river.'

c. *Ta suundu-s oma* ***naabri-t vaata-ma.*** (AM)
(s)he head-3SG.PST his/her neighbour-PART look-INF
'(S)he went to see his/her neighbour.' (BCE)

It is interesting to note that the frequently occurring verb *viima* 'take, lead' is causative and ordinarily used as a transitive verb, so that it always requires a grammatical object representing a patient in AM sentences, as *kirju* 'letters' in (12a). However, in most FM sentences *viima* appeared with no overt object (see (12b)). In many instances there exists an implicit actual mover traversing the path depicted, but in many cases it would be difficult to establish whether such an implicit mover exists due to the lack of contextual information. Despite the fact that in most of the FM sentences examined the verb *viima* is intransitive, there are also a small number of sentences where *viima* occurs as a transitive verb and the grammatical object is presented as if it were a patient (i.e., fictive patient) although it actually refers to the actual mover (i.e., to the agent), as *kaks last* 'two children' in (12c).

(12) a. *Aidann ... vii-s* ***kirju*** ... (AM)
Aidann ... take-3SG.PST letter.PART.PL
'Aidann carried the letters.' (BCE)

b. *Tee vii-s mööda peedipõllu-st.* (FM)
path take-3SG.PST past beet.field-ELA
'The path led past a beet field.' (BCE)

c. *Teerada ... vii-b* ***kaks las-t*** *vääramatult kokku.* (FM)
pathway ... take-3SG.PRS two child-PART inescapably together
'The pathway brings two children together inescapably.' (BCE)

3.4 Corpus study 2b: Encoding spatial relations from the viewpoint of the type of construction

3.4.1 Aim and hypothesis

The results obtained in Corpus study 2a suggest that there is a stronger tendency to have sentences without locative expression in the case of AM than in the case of FM, although the effect size was comparatively small (Cramér's V = 0.12). In other words, the type of construction does influence the presence of the landmark expression to some degree. Nevertheless, it was suggested that semantic and syntactic properties of a particular verb determine whether space must be encoded or not. That is, the verb seems to be more important than the construction in choosing whether to indicate spatial information overtly or not.

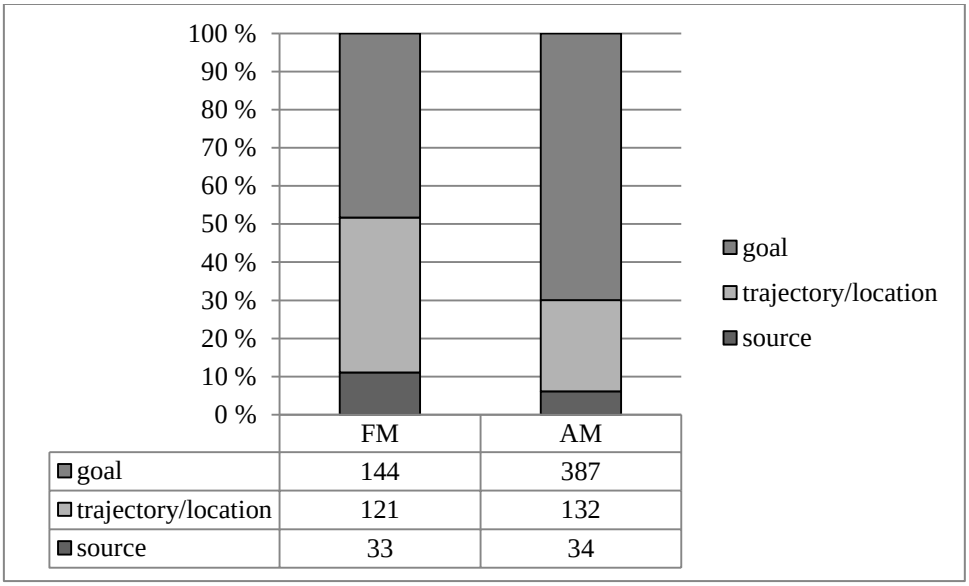
Given this, when spatial relations are encoded the question arises whether there are any differences between FM and AM sentences in encoding them and, if there are differences, whether these differences are caused by the type of construction or by the verb. Therefore, the first step is to clarify the existence of the association between the construction and the expressed spatial relation. To put it differently, the aim of this study is to investigate whether expressing the source, trajectory/location and goal is independent of the construction type (i.e., FM or AM construction) or not. From the *goal-over-source* principle first reported by Ikegami (1987) and elaborated by Verspoor, Dirven and Radden (1998: 87–89), it may be expected that the goal is most commonly expressed. According to the principle, "the goal is usually more important than the source and the source and goal are usually more important than the path" (Verspoor, Dirven & Radden 1998: 89). This tendency is explained as the goal being

the most interesting (Verspoor, Dirven & Radden 1998: 87–89) or informative element referring to space in the sentence (Ungerer & Schmidt 1996: 225–226). The principle is argued to apply especially to agentive motion (Verspoor, Dirven & Radden 1998: 87–89), so that the principle should hold particularly to the AM sentences as the vast majority of those describe agentive motion. The question is whether the goal is the most salient part of the path in FM sentences as well. As a starting point, it is assumed that the goal is the dominant spatial relation to be expressed both in AM and FM sentences in Estonian, and that due to the agentive component AM sentences have the goal encoded more frequently than FM sentences. Here, the locative sentences describing the source, trajectory/location, and goal were counted and not the locative expressions themselves.

3.4.2 Results

The proportions of locative elements in FM and AM sentences are provided in Figure 1. The goal was described in 48% of FM sentences and in 70% of AM sentences. In contrast, the trajectory/location was encoded in 41% of FM sentences and in 24% of AM sentences; the source was comparatively rare in both cases. The difference in proportions was significant with a small effect size, $\chi^2(2, N = 851) = 38.8$, $p < 0.001$, Cramér's $V = 0.21$.

Figure 1. Frequencies of locative expressions in FM and AM sentences



	FM	AM
goal	144	387
trajectory/location	121	132
source	33	34

3.4.3 Discussion

The results yielded suggest that there is a significant association between the construction type and the locative element expressing the source, trajectory/location, or goal of the motion. The effect size appeared to be relatively small (Cramér's V = 0.21), but the effect of the construction type on the encoding of space is larger than in Corpus study 2a (Cramér's V = 0.12). Despite this, the goal is the most frequent spatial relation both in AM and FM sentences, although it should be noted that the trajectory/location and goal are quite equal in proportions in the case of FM. As expected from the *goal-over-source* principle, AM sentences mostly describing agentive motion tend to express the goal more often than FM sentences (as illustrated in (13a)). FM sentences, on the contrary, prefer to have the trajectory/location explicit more frequently than AM sentences (as in (13b)). This tendency illustrates the static base of FM; the encoding of a stationary scene often causes attention to be focused on the path itself and to its location even if the path is described as moving. The latter is seen well in (13b), where the location as well as the condition of the pathway is described.

(13) a. *Raha* *käe-s,* *läks* *Madis* ***poodi*** ... (AM)
money hand-INE go.3SG.PST Madis shop.ILL
'With money in his hands, he went to the shop.' (BCE)

b. *Rada* *läks* ***läbi*** ***metsatuka, juur-te-st***
pathway go.3SG.PST through copse.GEN root-PL-ELA
konarliku-ks *talla-tud.* (FM)
rough-TRANS tread-PTCP
'A pathway trodden bumpy at the roots went through the copse.' (BCE)

3.5 Corpus study 2c: Encoding space from the viewpoint of the type of the motion verb

3.5.1 Aim and hypothesis

The results of the corpus studies previously conducted (see Section 3.3 and 3.4) indicate that FM sentences similarly to AM sentences can sometimes be used without an overtly marked landmark depending on a particular motion verb. Nevertheless, there is a stronger tendency in FM than in AM for an overtly marked landmark. It was also found that when space is

encoded the choice between the source, trajectory/location, and goal is influenced by the construction type (i.e., FM or AM). Subsequently, a prediction can be made that whether the source, trajectory/location or goal of the motion is expressed (in case space is encoded) depends not only on the construction type, but on the semantics of the motion verb as well. In other words, whether initial, medial or final windowing applies is influenced by the semantics of the verb. For purposes of comparison across FM and AM sentences from the viewpoint of motion verbs, verbs were analysed separately, as well as members of a particular verb type (i.e., directional, trajectory, and manner of motion verbs).

3.5.2 Results

The frequencies of different locative expressions connected to verbs are shown in Table 7 (FM) and Table 8 (AM). Directional verbs (i.e., *viima* 'take, lead', *minema* 'go', *suunduma* 'head', *tõusma* 'rise', *pöörama* 'turn') occurred more frequently with linguistic elements describing the goal, whereas trajectory verb (i.e., *ületama*) and manner of motion verbs (i.e., *kulgema* 'run, move forward', *looklema* 'wind') occurred more often with the elements describing the trajectory/location.

Table 7. Frequencies of the types of spatial relations in FM sentences (Note: The highest proportions are bolded)

FM	source		trajectory/location		goal		Total
viima 'take, lead'	10%	(11)	24%	(27)	**66%**	**(75)**	(113)
minema 'go'	12%	(4)	**44%**	**(15)**	**44%**	**(15)**	(34)
suunduma 'head'	12%	(3)	–		**88%**	**(22)**	(25)
tõusma 'rise'	17%	(1)	17%	(1)	**66%**	**(4)**	(6)
pöörama 'turn'	36%	(4)	–		**64%**	**(7)**	(11)
ületama 'cross'	–		**100%**	**(4)**	–		(4)
looklema 'wind'	13%	(8)	**69%**	**(43)**	18%	(11)	(62)
kulgema 'run, move forward'	5%	(2)	**72%**	**(31)**	23%	(10)	(43)
Total	11%	(33)	41%	(121)	**48%**	**(144)**	(298)

Table 8. Frequencies of the types of spatial relations in AM sentences (Note: The highest proportions are bolded)

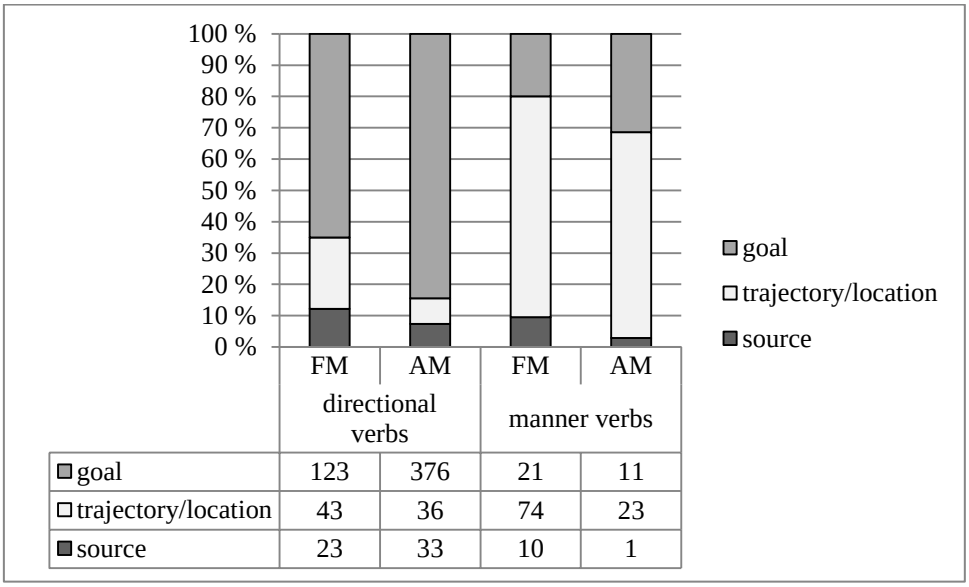
AM	Source		trajectory/location		goal		Total
viima 'take, lead'	–		6%	(2)	**94%**	**(30)**	(32)
minema 'go'	3%	(3)	7%	(7)	**90%**	**(86)**	(96)
suunduma 'head'	4%	(9)	7%	(16)	**89%**	**(211)**	(236)
tõusma 'rise'	23%	(14)	10%	(6)	**42%**	**(26)**	(46)
pöörama 'turn'	16%	(7)	11%	(5)	**73%**	**(32)**	(44)
ületama 'cross'	–		**100%**	**(73)**	–		(73)
looklema 'wind'	–		**58%**	**(15)**	42%	(11)	(26)
kulgema 'run, move forward'	12%	(1)	**88%**	**(7)**	–		(8)
Total	6%	(34)	23%	(131)	**71%**	**(396)**	(561)

In addition, one could notice that there is a considerable variation in the frequency of the verbs in FM and AM constructions. In FM sentences the most frequent verbs were *viima* 'take, lead', *looklema* 'wind', and *kulgema* 'run, move forward', whereas in AM sentences they were *suunduma* 'head', *minema* 'go', and *ületama* 'cross'. This clear difference between FM and AM sentences in favouring different verbs, however, stays beyond the scope of the current research and is not discussed here.

Leaving aside the trajectory verb *ületama*, which always demands the landmark to be encoded in the sentence as a grammatical object in Estonian to express the trajectory (and probably makes it impossible to express the source or goal, at least in Estonian), the association between the verb type and the preferable spatial relation is illustrated in Figure 2. A significant number of FM and AM sentences (65% and 84%, respectively) describe the goal if the verb is directional (i.e., *viima* 'take, lead', *minema* 'go', *suunduma* 'head', *tõusma* 'rise', *pöörama* 'turn'), whereas in the case of manner of motion verbs (i.e., *kulgema* 'run, move forward', *looklema* 'wind'), the trajectory/location is expressed in a large number of FM and AM sentences (70% and 66%, respectively). This interaction between the preferable spatial relation and the type of the verb was supported by the Chi-square test; the difference in proportions was significant in the case of

FM, $\chi^2(2, N = 294) = 67.1$, $p < 0.001$, Cramér's V = 0.48; and in the case of AM, $\chi^2(2, N = 480) = 99.9$, $p < 0.001$, Cramér's V = 0.46. In both cases the effect size was quite large. However, it should be noted that FM versus AM seem to be a significant factor in the choice of spatial relations likewise.

Figure 2. Frequencies of locative expressions in FM and AM sentences with different types of verbs



	FM	AM	FM	AM
	directional verbs		manner verbs	
goal	123	376	21	11
trajectory/location	43	36	74	23
source	23	33	10	1

3.5.3 Discussion

The results indicate that the semantics of the motion verb determine the preferable spatial relation both in FM and AM sentences in Estonian, although the construction type has its impact as well. Directional motion verbs tend to be used with language units expressing the goal, whereas manner of motion verbs occur rather with the trajectory/location, and the trajectory verb always with the trajectory/location expression. To put it differently, a scene described by a sentence has final windowing of the path more often if the motion verb itself windows the final portion of the path (see (14a) and (14b)). Trajectory verbs as *ületama* 'cross' include the notion of the trajectory in their meaning and therefore window the medial portion of the path; verbs like this also demand the landmark to be present in a sentence and in many cases the general location is expressed as well (see (15a) and (15b)). Moreover, it may be appropriate to suggest that, similarly to trajectory verbs, manner of motion verbs window the medial portion of the path. That is, in the case of manner of motion verbs the way motion is executed is in the focus of attention, which in turn may cause

attention to be paid to the location of the mover. The source and goal may then be implicit, or perhaps entirely absent as they possibly play no role in conceptualising the scene (see (16a) and (16b)).

(14) a. ... ***edasi*** *läks* *lai* *teerada.* (FM)
... forward go.3SG.PST broad pathway
'A broad pathway went forward.'

b. *Raha* *käe-s,* *läks* *Madis* ***poodi*** ... (AM)
money hand-INE go.3SG.PST Madis shop.ILL
'With money in his hands, he went to the shop.' (BCE)

(15) a. *Poriligane* *rada* ... *ületa-b* ***kõrge***
muddy.bedraggled pathway ... cross-3SG.PRS high.GEN
kivivundamendi-ga ***lauda*** ***nurga*** ***juures*** ***virtsaoja*** ... (FM)
rock.basement-COM barn.GEN corner.GEN at rivulet.GEN
'A muddy pathway crosses the rivulet at the corner of the barn with a rock basement.' (BCE)

b. ***Korla*** ***linna*** ***taga*** *ületa-si-me* *kuiva* *Tarimi* *jõe* ... (AM)
Korla town.GEN behind cross-PST-1PL dry.GEN Tarim.GEN river.GEN
'Behind the town Korla we crossed the dry River Tarim.' (BCE)

(16) a. *Tee* *kulge-s* ***küngas-te*** ***vahel*** ... (FM)
path run-3SG.PST hillock-GEN.PL between
'The path ran in between hillocks.' (BCE)

b. *Lootsik* ... *kulge-s* ***sois-te*** ***kallas-te*** ***vahel*** ... (AM)
skiff ... run-3SG.PST swampy-GEN.PL lakeside-GEN.PL between
'The skiff swam between swampy lakesides.' (BCE)

Based on these findings, the CONSISTENT WINDOWING HYPOTHESIS may be suggested: The path is windowed in a way that is coherent with verb semantics. That is, there is a correlation between which portion of the path is windowed by the verb and which portion of the path is most preferably windowed by the locative expressions in the sentence: Directional verbs with final windowing tend to be used together with locative expressions windowing the final portion of the path, whereas trajectory and manner of motion verbs with medial windowing tend to be used together with locative expressions windowing the medial portion of the path. These underlying patterns reflect how both attention and language are selective in

foregrounding the most salient features of the scene: The most important portions from an event gain extra attention in terms of having double (linguistic) windows over the scene.

Certainly, the trajectory/location may be expressed in the case of directional verbs and the source and goal may be expressed in the case of manner of motion verbs. Yet, the tendency seems to be to the consistent windowing. Indeed, one could argue that there exists an interaction between the type of the construction, the *goal-over-source* principle, and the consistent windowing tendency, and all in turn are influenced by the semantics of a particular motion verb. As an illustration, there are semantically explicable differences with respect to the extent the consistent windowing correlation applies to a particular verb (see Table 7 and 8 for detailed data). If the verb meaning itself contains a strong sense of directionality, then the rate of expressions expressing the goal is remarkably high; the verb *suunduma* 'head' is a case in point, as the vast majority of locative expressions depict the goal. In Estonian, *suunduma* incorporates the notion of *suund* 'direction', and as a result, locative expressions referring to the goal with other motion verbs (such as *läks metsa* 'went to the forest' in (17a)) acquire more directional meaning with *suunduma*, so that *metsa* would be interpreted rather as *metsa poole* 'toward the forest' (see (17b)). Motion verbs incorporating the sense of general directionality (i.e., *viima* 'take, lead', *minema* 'go') result in the same proportion only if they occur in AM sentences. In FM sentences the rate is considerably lower than in AM sentences; instead, there is a higher rate of trajectory/location expressions in FM sentences than in AM sentences. Differing from these directional verbs is *tõusma* 'rise' – although the goal is prevalent (however, it must not be forgotten that the number of FM sentences with this verb was low, see Table 4), AM sentences often indicate the source as well. The latter may be associated with the vertical motion *tõusma*; due to the vertical motion it seems to become more important to describe where the motion begins, as the goal (i.e., direction) of the motion is often implicitly apparent, as in (17c).

(17) a. *Tee / ta läks* ***metsa***. (FM/AM)
path / (s)he go.3SG.PST forest.ILL
'The path / (s)he went to the forest.'

b. *Tee / ta suundu-s* ***metsa***. (FM/AM)
path / (s)he head-3SG.PST forest.ILL
'The path / (s)he headed toward the forest.'

c. ***Saunakorstna-st*** *tõus-i-s* *suitsu.* (AM)
sauna.chimney-ELA rise-PST-3SG smoke.PART
'The smoke rose from the sauna chimney' (BCE)

4. General discussion

Static and dynamic situations may be encoded likewise. Nevertheless, it is generally accepted that FM sentences differ from AM sentences in some aspects. One of the most significant differences between encoding FM and AM is claimed to be connected to the encoding of space: In AM sentences it is said to be possible not to mark the locative expression (i.e., landmark) overtly, whereas in FM sentences it may be restricted at least when considering English and Japanese (Matlock 2004a: 226–227; Ruppenhofer 2006; Matsumoto 1996a: 361, 1996b: 194–195).

The results of this study in Estonian indicate that there are significant differences between FM and AM sentences in the presence of a locative expression, but the effect size was found to be quite small. Contrary to Matlock and Ruppenhofer, FM sentences without overtly marked landmarks were found to be possible in Estonian. In fact, it could be stated that expressing space is verb-specific rather than FM- or AM-dependent. The semantics of the verb and its typical linguistic behaviour as well as the general meaning and purpose of the sentence determines whether space is encoded, which seems to apply both to FM and AM sentences. The difference is that FM sentences are by nature used for more restricted purposes than AM sentences due to which describing space in FM sentences is more frequent than in AM sentences. In both cases, it may be more important to express some other aspects than describing the location or the change of location, which in turn causes spatial information to be left to the background, as it is nonessential or because it is given contextually or by world knowledge (see also Stefanowitsch & Rohde 2004: 263).

In addition, if some locative expression is present then the type of construction (i.e., FM or AM) was proven to have a small but significant effect on the preferable spatial relation to be expressed, as in AM sentences the rate of the goal was higher than in FM sentences, whereas in FM sentences the rate of the trajectory/location was higher than in AM sentences. The former may be explained by the *goal-over-source* principle as developed by Verspoor, Dirven and Radden (1998: 87–89). The *goal-over-source* principle argues that the goal is more salient than the source, which in turn is more salient than the path (i.e., the trajectory in the terms

adopted here). Verspoor et al. suggested that the principle applies particularly to agentive motion, which is supported by the current study considering the verbs *viima* 'take, lead' and *minema* 'go'. The latter tendency may be caused by the stative component of FM – conceptualising the stationary scene still dynamically comprises the need to focus attention on the location of the traversable entity or to its physical properties.

Nevertheless, the results indicate that although the way space is encoded depends to some degree on FM or AM, it mainly depends on the semantics of motion verbs: Directional verbs (i.e., *viima* 'take, lead', *minema* 'go', *suunduma* 'head', *tõusma* 'rise', *pöörama* 'turn') tend to encourage the use of elements describing the goal (i.e., goal and direction), whereas trajectory and manner of motion verbs (i.e., *ületama* 'cross', *kulgema* 'run, move forward', *looklema* 'wind') more often cause expression of the trajectory and location. As no motion verb encoding source-originate motion was analysed (caused by the fact that no such verb occurred in Corpus study 1; see Section 2 and 3.2), it is an open issue whether such verbs would most preferably occur with locative expressions describing the source. Developing Talmy's (2000a: 257–309) approach to the windowing of attention, one could argue that directional verbs profile final windowing, whereas trajectory and manner of motion verbs profile medial windowing. Including manner of motion verbs in the medial windowing verbs is motivated by the fact that if manner of motion verbs are used attention is focused on the manner of motion. Focusing attention on the manner of motion may then cause more focus on the location of the actual or fictive mover. Hence, on the basis of the results in Estonian, the consistent windowing hypothesis is proposed: If the verb profiles final windowing (like directional verbs), then locative expressions profiling final windowing are preferred; if the verb profiles medial windowing (like trajectory and manner of motion verbs), then locative expressions profiling medial windowing are preferred. This tendency holds both to FM and AM, although it is also influenced by the *goal-over-source* principle, the type of construction, and the semantics of a particular motion verb. It may be stated that when considering Estonian, the consistent windowing has the largest impact on whether the source, trajectory/location, or goal is expressed. The *goal-over-source* principle may be argued to apply only to directional verbs, but even so the trajectory/location turned out to be somewhat more salient than the source. If the verb depicts the trajectory or manner, it may not be important to express the goal, as attention would focus rather on the trajectory or location itself, or on the manner of motion

in FM or AM. These findings corroborate the ideas of Stefanowitsch and Rohde (2004), who obtained similar results with manner of motion verbs and suggested that in the case of verbs like *cruise* and *stroll* one does not need to have the goal present (neither explicitly nor implicitly), as the motion event is successfully conceptualised without it. However, more research is needed to show the impact of the consistent windowing, the type of construction, the *goal-over-source* principle, and the semantics of a particular motion verb on the encoding of space in FM and AM sentences.

5. Conclusion

This paper investigated how space is encoded in FM and AM sentences in Estonian. The aim of the current study was to determine the effect of the type of construction and the type of motion verb on the encoding of space. The following conclusions can be drawn from the current study. Firstly, similarly to AM, FM was found to permit sentences without an overtly marked landmark although in the case of AM there was a stronger tendency for that; however, whether space may not be encoded is rather verb-dependant. Secondly, to some extent the preferable locative expression (i.e., source, trajectory/location, or goal) is influenced by the construction type and the *goal-over-source* principle. Thirdly, the encoding of space is mainly determined by the type of the verb and therefore the consistent windowing hypothesis is proposed: Motion verbs that profile the final portion of the path (i.e., directional verbs) tend to be used with final windowing locative expressions (i.e., goal), whereas motion verbs that profile the medial portion of the path (i.e., trajectory and manner of motion verbs), tend to be used with medial windowing locative expressions (i.e., trajectory/location).

References

Cohen, Jacob (1988) *Statistical Power Analysis for the Behavioral Sciences*. Mahwah, New Jersey/London: Lawrence Erlbaum Associates.

Huumo, Tuomas (2005) How fictive dynamicity motivates aspect marking: The riddle of the Finnish quasi-resultative construction. *Cognitive Linguistics* 16 (1): 113–144.

—— (2009) Fictive dynamicity, nominal aspect, and the Finnish copulative construction. *Cognitive Linguistics* 20 (1): 43–70.

Ikegami, Yoshihiko (1987) 'Source' vs. 'goal': A case of linguistic dissymmetry. In René Dirven & Günter Radden (eds.), *Concepts of Case*, pp. 122–146. Tübingen: Narr.

Langacker, Ronald W. (1987) *Foundations of Cognitive Grammar. Vol. I: Theoretical Prerequisites*. Stanford, California: Stanford University Press.

—— (2005) Dynamicity, fictivity, and scanning: The imaginative basis of logic and linguistic meaning. In Diane Pecher & Rolf A. Zwaan (eds.), *Grounding Cognition: The Role of Perception and Action in Memory, Language and Thinking*, pp. 164–197. Cambridge: Cambridge University Press.

—— (2008) *Cognitive Grammar: A Basic Introduction*. New York: Oxford University Press.

Levin, Beth (1993) *English Verb Classes and Alternations: A Preliminary Investigation*. Chicago/London: The University of Chicago Press.

Matlock, Teenie (2004a) The conceptual motivation of fictive motion. In Günter Radden & Klaus Panther (eds.), pp. 221–248. New York/Berlin: Mouton de Gruyter.

—— (2004b) Fictive motion as cognitive simulation. *Memory & Cognition* 32: 1389–1400.

—— (2006) Depicting fictive motion in drawings. In June Luchjenbroers (ed.), *Cognitive Linguistics Investigations: Across Languages, Fields and Philosophical Boundaries*, pp. 67–86. Amsterdam/Philadelphia: John Benjamins.

Matlock, Teenie & Richardson, Daniel C. (2004) Do eye movements go with fictive motion? *Proceedings of the 26th Annual Conference of the Cognitive Science Society*, pp. 909–914. Mahwah, New Jersey: Lawrence Erlbaum Associates.

Matlock, Teenie; Ramscar, Michael & Boroditsky, Lera (2005) On the experiential link between spatial and temporal language. *Cognitive Science* 29: 655–664.

Matsumoto, Yo (1996a) How abstract is subjective motion? A comparison of access path expressions and coverage path expressions. In Adele Goldberg (ed.), *Conceptual Structure, Discourse and Language*, pp. 359–373. Stanford: CSLI Publications.

—— (1996b) Subjective motion and English and Japanese verbs. *Cognitive Linguistics* 7 (2): 138–226.

Muehleisen, Victoria & Imai, Mutsumi (1997) Transitivity and the incorporation of ground information in Japanese path verbs**.** In Keedong Lee, Eve Sweester & Marjolijn Verspoor (eds.), *Lexical and Syntactical Constructions and the Construction of Meaning*, pp. 329–346. Amsterdam: John Benjamins.

Pajusalu, Renate; Kahusk, Neeme; Orav, Heili; Veismann, Ann; Vider, Kadri & Õim, Haldur (2013) The encoding of motion event in Estonian. In Mila Vulchanova & Emile van der Zee (eds.), *Motion Encoding in Language and Space*, pp. 1–30. Oxford: Oxford University Press.

Radden, G. & Panther, K. (eds.) (2004) *Studies in Linguistic Motivation*, Cognitive Linguistics Research 28. New York/Berlin: Mouton de Gruyter.

Richardson, Daniel C. & Matlock, Teenie (2007) The integration of figurative language and static depictions: An eye movement study of fictive motion. *Cognition* 102: 129–138.

Ruppenhofer, Josef (2006) Fictive motion: Construction or construal? *Proceedings of the 32nd Annual Meeting of the Berkeley Linguistics Society*.

Slobin, Dan I. (2006) What makes manner of motion salient? Explorations in linguistic typology, discourse, and cognition. In Maya Hickmann & Stéphane Robert (eds.), *Space in Languages: Linguistic Systems and Cognitive Categories*, pp. 59–81. Amsterdam/Philadelphia: John Benjamins.

Stefanowitsch, Anatol & Rohde, Ada (2004) The goal bias in the encoding of motion events. In Günter Radden & Klaus Panther (eds.), pp. 249–267. New York/Berlin: Mouton de Gruyter.

Stosic, Dejan & Sarda, Laure (2009) The many ways to be located in French and Serbian: The role of fictive motion in the expression of static location. In Marija B. Vukanović & Lovorka G. Grmuša (eds.), *Space and Time in Language and Literature*, pp. 39–60. Cambridge: Cambridge Scholars Publishing.

Talmy, Leonard (1983) How language structures space. In Herbert L. Pick & Linda P. Acredolo (eds.), *Spatial Orientation: Theory, Research, and Application*, pp. 225–282. New York/London: Plenum Press.

—— (2000a) *Toward a Cognitive Semantics. Vol. I: Concept Structuring Systems*. Cambridge: The MIT Press.

—— (2000b) *Toward a Cognitive Semantics. Vol. II: Typology and Process in Concept Structuring*. Cambridge: The MIT Press.

Uchiyama, Kiyoko & Ishizaki, Shun (2001) A study of translation rules for the Japanese compound motion verbs. In *Proceedings of the AFNLP PACLING 2001*.

Ungerer, Friedrich & Schmid, Hans-Jörg (1996) *An introduction to cognitive linguistics*. London: Longman.

Verspoor, Marjolijn; Dirven, René & Radden, Günter (1998) Putting concepts together: Syntax. In René Dirven & Marjolijn Verspoor (eds.), *Cognitive Exploration of Language and Linguistics*, pp. 79–105. Amsterdam/Philadelphia: Benjamins.

Appendix: List of abbreviations

AM	actual motion
FM	fictive motion
1–3	person
ADE	adessive
ALL	allative
COM	comitative
ELA	elative
GEN	genitive
ILL	illative
INE	inessive
INF	infinitive
PART	partitive

PL plural
PRS present
PST past
PTCP participle
SG singular
TERM terminative
TRANS translative

BCE Balanced Corpus of Estonian

Contact information:

Piia Taremaa
Institute of Estonian and General Linguistics
University of Tartu
Jakobi 2
51014 Tartu
Estonia
e-mail: piia(dot)taremaa(at)ut(dot)ee