

Framing Motion in Hebrew and English

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Abstract:

This paper considers whether and how motion events are expressed in Hebrew with the same or different frame structures and Frame Semantics concepts as in English and recorded in the FrameNet database (<http://www.icsi.berkeley.edu/~framenet>). Analyzing a sample text from the Hebrew translation of *The Hound of the Baskervilles*, it presents a description of the expression of motion in Hebrew and compares it with that of English. Building upon Talmy's motion event typology concerning the expression of the path of movement of a *figure* with respect to a *ground*, the work lays a foundation for determining crosslinguistic differences in semantic realizations with respect to motion for Hebrew and English, and extends the investigation of validating FrameNet's implicit claims to a Semitic language.

1. Introduction

The FrameNet Project (<http://framenet.icsi.berkeley.edu/~framenet>) is the most highly developed instantiation of the theoretical constructs of **Frame Semantics** (Fillmore 1977, 1982, 1985), the basic apparatus of which is the **semantic frame**, **frame elements**, and **frame-to-frame relations**. While FrameNet is being developed to determine and document with corpus evidence the valence descriptions for the lexicon of contemporary English, the assumption is that the frames in the FrameNet hierarchy represent conceptual structure, not just a structured organization of the lexicon of English. That working hypothesis has inspired the development of FrameNet projects for languages other than English (Subirats and Petruck, 2003, Ohara et al., 2004), which necessarily also includes

fine-grained, crosslinguistic semantic analysis of different areas of the lexicon (Ohara et al. 2006, Ellsworth et al. 2006). In that spirit, the present work considers whether and how motion events are expressed in Hebrew with the same or different frame structures and Frame Semantics concepts as in English and recorded in the FrameNet database. Based on a sample text from the Hebrew translation of Arthur Conan Doyle's *The Hound of the Baskervilles*, it presents a preliminary description of the expression of motion in Hebrew and compares it with that of English, through the lens of Talmy's (2000) typology of motion events. Thus, it also lays a foundation for determining crosslinguistic differences in semantic realizations with respect to motion for Hebrew and English, and extends the investigation of validating FrameNet's implicit claims (about conceptual structure) to a Semitic language.

This paper is structured as follows. Section 2 gives a very brief overview of FrameNet and describes Talmy's motion event typology, thereby providing the theoretical background of the present work. Section 3 shows the detailed Frame Semantics analysis of the Hebrew sentence, along with that of the original English text, also summarizing the findings. Section 4 concludes by indicating future directions for continued work in the study of framing motion in Hebrew and English.

2. Fillmore's FrameNet and Talmy's Motion Event Typology

FrameNet (<http://framenet.icsi.berkeley.edu/~framenet>) is a research project in computational lexicography based on the principles of Frame Semantics (Fillmore 1977, 1982, 1985) that is building a lexical resource for contemporary English and is providing a body of semantically and syntactically annotated sentences from which reliable information can be reported on the valences or combinatorial possibilities of each item

analyzed. A **semantic frame** is a schematic characterization of a situation involving various participants, props, and other conceptual roles, each of which is a **frame element** (FE); the frame, *evoked* by some linguistic material, provides the background structure against which words are understood. FrameNet analyzes **lexical units** (LUs), i.e. pairings of a lemma and a frame, and annotates corpus examples with FEs, summaries of which constitute the valence description for each LU. For instance, the `Motion` frame characterizes a situation in which a `THEME` starts out at a `SOURCE`, covers some `PATH`, and ends up at a `GOAL`.¹ A simple (fabricated) example of a LU (in bold face) defined in terms of the `Motion` frame is given in (1), where the linguistic realization of each FE is indicated (as a subscript) on the relevant constituent (in square brackets).²

(1) [The ball _{Theme}] **went** [from the far end of the yard _{Source}]
[through the grass _{Path}] and [into the street _{Goal}].

FrameNet also records information about **frame-to-frame relations** in the hierarchy of frames, the most important of which are *inheritance* and *subframes*. Inheritance is a relationship between a more specific frame (*child*) and a more general frame (*parent*). For example, `Motion_directional` inherits from `Motion`, the former elaborating the latter by specifying a direction of motion (cf. *fall.v* and *go.v*). Subframes is a relationship used to characterize the different (typically, ordered) parts of a complex event in terms of the sequences of states of affairs and transitions between them, each of which can itself be described as a frame. To illustrate, the complex `Traversing` frame has two subframes, `Departing` and `Arriving`.³

The description of motion events has proven to be a fruitful area for crosslinguistic research. Interested in characterizing lexicalization patterns across languages, Talmy (1985, 1991, 2000) provided a typology of motion events, specifically concerning the expression of the path of movement of a *figure* with respect to a *ground*.⁴ A basic distinction is drawn between **verb-framed** languages, where path is expressed by the main verb in a clause (e.g. Hebrew, *nixnas* – ‘enter’ and *yaca* – ‘exit’), and **satellite-framed** languages, where path is expressed by an element of the clause that is associated with the verb (*go in*, *go out*). Talmy’s *framing* concerns the correlation between typological characteristics of a language and the way the grammar encodes semantic information with respect to clause structure. Focusing on clause structure for encoding semantic information is congruent with FrameNet’s practice of recording FEs as triples of information about semantic role, grammatical function, and phrase type of constituents in maximal projection of a LU.

The frame structures and frame-to-frame relations that are needed to characterize motion in Hebrew may not parallel that which is provided for English. The comparison of the expression of motion in Hebrew and English will reveal whether the languages conceptualize the events in the same or different Frame Semantics terms. The cross-linguistic comparison considers different levels of semantic structure, which together contribute to an understanding of the ways that languages encode semantic information, be that the larger frame structure(s) evoked to describe an event or the language specific details of clause structure.

3. Frame Semantics Analysis

This section gives the analysis of the sentence in (2a) in Frame Semantics terms, focusing primarily on the semantic frame, frame elements, and frame-to-frame relations. It provides a preliminary Frame Semantics description of the expression of motion in Hebrew by considering the frames evoked in the Hebrew translation, and comparing that with those evoked in the original English edition of the work.⁵ The Hebrew example sentence is given in (2); the analysis considers each of the three motion-related predicates (appearing in bold) in turn, where the original English is given below the translation of the Hebrew sentence (the “b” examples in (3)-(5)).

(2) hu **ca'ad** bexafza le'orex hašvil
he stepped with-haste to-length (of) the-path

xalaf al panenu
passed (ephemerally) before us (lit. ‘on faces-our’)

ve'ala bamidron šehištarea me'axorenu
and-ascended on-the-slope that-extended from-behind-us

He stepped hastily along the path, passed swiftly before us,
and ascended the slope that extended behind us.

The first clause of the sentence is shown in (3a), where the verb *ca'ad* – ‘step’ (3rd person, masculine, singular) evokes the `Self_motion` frame, defined as a situation in which a `SELF_MOVER`, a living being, moves under its own power in a directed fashion, along a `PATH` without a separate vehicle. The pronoun *hu* – ‘he’ instantiates the `SELF_MOVER` and the PP *le'orex hašvil* is the linguistic realization of `PATH`; in addition, another PP, *bəxafza* (with-haste) – ‘hastily’ instantiates `MANNER`.⁶

(3a) [hu SELF_MOVER] **ca'ad** [bexafza MANNER] [le'orex hašvil PATH]
 he stepped with-haste to-length (of) the-path
 He **stepped** hastily along the path...

(3b) Then he **came** swiftly along the path...

It is noteworthy that the Hebrew translation does not use the Arriving verb *ba* – ‘come’ (as in the original English) or the Self_motion verb *halax* – ‘walk’, both semantically less complex than *ca'ad* – ‘step’.

The next clause, with the verb *xalaf* – ‘passed (ephemerally)’ (3rd person, masculine, singular), evoking the Traversing frame, is given in (4a). The Traversing frame covers situations in which a THEME changes location on a horizontal plane with respect to a salient PATH location, the latter realized with the prepositional phrase *'al panenu*, the literal meaning of which suggests the proximity conveyed by *close* in the original English.

(4a) **xalaf** ['al panenu PATH]
 passed (ephemerally) before us (lit. ‘on faces-our’)
passed swiftly before us...

(4b) **passed** close to where we lay...

While the Hebrew verb evokes the same frame as the English text (Traversing), the translation incorporates more semantic information than the original. In particular, *xalaf* includes a notion of transience or ephemerality, as indicated by the expression *bnei xalof* (children (of) transition) – ‘mortals’. The use of *xalaf* is notable also because of the existence of the semantically more neutral *'avar* – ‘pass’.⁷

Finally, the verb *'ala* – ‘ascended’ (3rd person, masculine, singular), given in (5a), evokes the `Motion_directional` frame, defined as a situation in which a THEME moves along a PATH in a certain DIRECTION which may be determined by gravity or other natural, physical forces.

(5a) ve'**ala** [bamidron šehištarea me'axorenu_{PATH}]
 and-ascended on-the-slope that-extended from-behind-us
 and **ascended** the slope that extended behind us

(5b) **went** on up the long slope behind us

Note that the Hebrew translation describes a completed action using the past tense of the verb (*'ala*), while the original English characterizes the motion event with an aspect marker (*went on*), suggesting duration; additionally the Hebrew depicts the slope as *extended* (behind the narrator/character), but the English describes it as *long*.

To summarize, the different ways that the languages frame the motion events in the Hebrew translation (a) and the original English (b) of the example sentence from Conan Doyle’s *The Hound of the Baskervilles* are given in (6a) and (6b), where motion words appear in bold and the name of the evoked frame follows as subscript.

(6a) hu [**ca'ad**_{Self_motion}] bexafza le'orex hašvil
 he stepped with-haste to-the-length (of) the-path

[**xalaf**_{Traversing}] al panenu
 passed (swiftly) before us (on “faces-our”)

ve[**'ala**_{Motion_directional}] bamidron šehištarea me'axorenu
 and-ascended on-the-slope that-extended from-behind-us

He stepped hastily along the path, passed swiftly before us,
 and ascended the slope that extended behind us.

(6b) Then he [**came**_{Arriving}] swiftly along the path, [**passed**_{Traversing}]
 close to where we lay, and [**went**_{Motion}] on up the long slope behind us.

Whereas the motion predicates in the original English text evoke the Arriving (*come.v*), Traversing (*pass.v*), and Motion (*go.v*) frames, respectively, those in the Hebrew evoke the Self_motion (*ca'ad* – ‘step’), Traversing (*xalaf* – ‘pass’), and Motion_directional (*'ala* – ‘ascend’) frames, respectively. The Hebrew translation only has one motion verb that evokes the same frame as the English text: *xalaf* – ‘pass (swiftly)’ and *pass* both evoke the Traversing frame. Whereas the original English uses an Arriving verb (*came*) that anchors the motion event with the narrator’s report of the event, the Hebrew translation uses a Self_motion verb (*ca'ad* – ‘step’); and when the English text uses a Motion verb (*went*), the Hebrew uses a Motion_directional verb (*'ala* – ‘ascend’). The differences found here can be described in terms of FrameNet’s frame-to-frame relations, the relevant frames and relations depicted in Figure 1 (with E indicating frames evoked by the English LUs and H for the Hebrew, and where a dashed line identifies *inheritance* and a solid line identifies the *subframe* relationship).

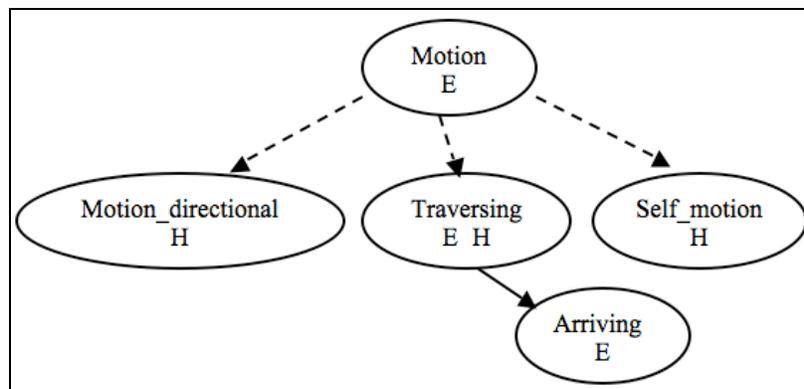


Figure 1: Frames Evoked by Hebrew and English Baskerville Sentences

Ultimately, both Arriving (*came*) and Self_motion (*ca'ad* – ‘step’) inherit from Motion, although as a subframe of Traversing, Arriving’s inheritance of

Motion is not direct; Motion_directional ('ala – 'ascend') also inherits from Motion (*went*). English Arriving was translated with a child of the parent of the complex Traversing frame, i.e. Self_motion, and English Motion was translated with a subtype, Motion_directional. In addition, note that the Hebrew only evokes frames that are children of Motion. Moreover, Hebrew only provides the characteristic verb-framed means of expressing path of motion, with path expressed in the main verb (e.g. 'ala – 'ascend'), also in contrast to English, which (sometimes) offers both means of expressing path of motion (e.g. *enter/go in, exit/go out, return/go back, ascend/go up*).

As seen here, the study of parallel texts in different languages suggests that languages may frame things differently (also see Ellsworth et al. 2006).⁸ The evoked frames and the set of frame-to-frame relations among them are important for determining the level of linguistic description at which Hebrew can be characterized in the same terms as English has been characterized in FrameNet. While there is no expectation for a one-to-one correspondence between English LUs and LUs for other languages, if FrameNet frames characterize conceptual structure, then there is an expectation for there to a set of relationships between them and those needed for the lexicon of Hebrew. Figure 1 shows the relationships as well as the conceptual overlap for representing both the crosslinguistic and the language specific facts.

4. Future Directions

The fine-grained Frame Semantics analysis reported in the current work constitutes (part of) an initial investigation of the framing of motion in Hebrew compared to that of English as documented by FrameNet. Having outlined the methodological principles and

illustrated the analytic criteria, the present paper also provides a blueprint for further work. Recognizing the potential limitations of studying the encoding of semantic information in a dated literary text, future research will be conducted on a contemporary Hebrew newspaper corpus,⁹ also to pursue the stated broader goals of documenting crosslinguistic semantic realizations and expanding the inquiry about the conceptual nature of FrameNet's semantic frames.

Notes

1. Frame names appear in `Courier` typeface and FE names appear in small caps.
2. Ruppenhofer et al. (2006) describes the theoretical basis of FrameNet along with annotation policies and practices, including a detailed discussion of the different FE statuses, as well as semantic types, and frame-to-frame relations.
3. While not relevant to the present discussion, `Departing` bears the *precedes* relationship to `Arriving`.
4. FrameNet uses `PATH` for the part of a journey between its starting point (`SOURCE`) and its ending point (`GOAL`), and Talmy uses *path* for the entire extent of the journey.
5. From Chapter 14 of the original text, which was published August 1901–April 1902 in *The Strand Magazine*, London. The complete text can be found at <http://etext.lib.virginia.edu/toc/modeng/public/DoyHoun.html>.
6. `MANNER` is not a *core* FE of the `Self_motion` frame. See Ruppenhofer et al. (2006, pp. 26-29) for a discussion about *core*, *peripheral*, and *extrathematic* FEs.
7. Evaluating and motivating translation choice is beyond the scope of this work.
8. The Baskerville data is instructive about possible different frame realizations across languages, translation idiosyncrasies and translator preferences notwithstanding.

9. <http://mila.cs.technion.ac.il/english/resources/corpora/2000sentences/index.html>

References

Ellsworth, M., Ohara, K., Subirats, K. and Schmidt, T. (2006) Frame-semantic analysis of motion scenarios in English, German, Spanish, and Japanese. Paper presented at The Fourth International Conference on Construction Grammar, Tokyo.

Fillmore, C. J. (1977) Scenes-and-frames semantics. In A. Zampolli [Ed.], *Linguistic Structures Processing*, 55-88. Amsterdam: North Holland Publishing.

Fillmore, C. J. (1982) Frame Semantics. In *Linguistics in the Morning Calm*, Seoul: Hanshin Publishing Co., 111-137.

Fillmore, C. J. (1985) Frames and the Semantics of Understanding. *Quaderni di Semantica* 6.2, 222-254.

Ohara, K., Fujii, S., Ohori, T., Suzuki, R., Saito, H., Ishizaki, S. (2006) Frame-based contrastive lexical semantics in Japanese FrameNet: The case of *risk* and *kakeru*. Paper Presented at The Fourth International Conference on Construction Grammar, Tokyo.

Ruppenhofer, J., Ellsworth, M., Petruck, M. R. L., Johnson, C. R., and Scheffczyk, J. (2006) *FrameNet II: Extended Theory and Practice*, Web Publication (<http://framenet.icsi.berkeley.edu/book/book.html>).

Talmy, L. (2000) *Toward Cognitive Semantics*. Cambridge: MIT Press.