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Five Formulations of the Conceptual Structure of Motion and Their Cross-Linguistic Applicability: With Special Reference to Chinese*

Chengzhi Chu
University of California, Davis

This paper reviews five primary proposals for motion characterization made within the paradigm of cognitive linguistics and examines their applicability for analyzing motion representation in Mandarin Chinese. The five proposals are Fillmorean Source-Path-Goal formulation, Talmy's Figure-Move-Path-Ground characterization, Langacker's temporal perspective on the mover's sequential change of location, Jackendoff's view of motion as a mapping of a general function-argument conceptual organization, and Wierzbicka *et al.*'s semantic-prime style explication. With special reference to Chinese, it is observed that these five proposals differ with regard to level of descriptive adequacy, consistency and straightforwardness in analysis, and cross-linguistic applicability. In contrast, Talmy's framework provides a more fully-specified treatment of motion.

Key words: motion, conceptual structure, linguistic representation, Chinese

1. Introduction

Motion is one of the most basic experiences in human life and a fundamental domain in human cognition. In human languages, the ways of talking about motion play an important role in imaginative representation and are mapped onto expressions representing other, more abstract situations. Because of the fundamental role motion plays in human cognition and its corresponding language organization, motion conceptualization and linguistic representation have drawn considerable attention in cognitive science and cognitive linguistics.

In its prototypical sense, motion is understood as a change of location of an object with respect to other object(s) successively from one point to another along a spatial extent over a period of time. For a more formal account of the image schema of motion, it is necessary to ascertain the structuring of the conceptual content of motion. To be specific, we need to identify what kinds of recurring aspects and patterns of motion are perceived through human cognition, and how those aspects and patterns are schematically construed and represented in language.

Traditionally, the motion schema has been characterized as a Source-Path-Goal configuration (Fillmore 1968, Lakoff 1987, Johnson 1987, Lakoff and Johnson 1999, and Radden 1988, among others). Talmy rejects this characterization, replacing it with

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his Figure-Move-Path-Ground formula. Talmy's many cognitive semantics publications offer probably the most fully specified treatment of motion (1975, 1983, 1985, 2000, I: chapters 1, 3, and 5). A number of other proposals have also been presented, e.g. Jackendoff (1983, 1990), who argues for a function-argument organization in his conceptual semantic framework, Wierzbicka (1996), who argues for Natural Semantic Metalanguage, and, of course, Langacker (1987, 1991), who provides a specified characterization within the frame of his Cognitive Grammar. This paper reviews these five proposals, and examines their plausibility, especially their applicability for analyzing motion in Chinese.

2. Fillmorean Source-Path-Goal formulation

The Source-Path-Goal formulation of motion is most closely associated with Fillmore's studies of the Deep Cases or Semantic Roles of noun phrases in a sentence (more accurately, of arguments to predicates) in the framework of his Case Grammar in the late 1960s (Fillmore 1968). At that time, Fillmore's goal was to provide a deep-structure valence description of verbs in terms of the semantic roles of their associated arguments (Fillmore 1982). The semantic roles of the arguments associated with a verb form the case frame for that verb. Source, Path, and Goal are three cases that Fillmore identified for verbs expressing movement.

Since the 1970s, Fillmore, recognizing that the "theory of semantic roles fell short of providing the detail needed for semantic description", has argued that, to understand the meaning of a verb (and other lexical item), one must first have knowledge of the conceptual structure of the experiences which the verb presupposes (Fillmore 1982: 115). He refers to the conceptual structure presupposed by a word as the semantic frame for that word. Along the line of understanding semantic relations in conceptual structure, Fillmore developed a theory of Frame Semantics (Fillmore 1982, 1985, and Fillmore et al. 2006).

In Frame Semantics, a particular word evokes a frame providing a specific coherent schematization of the experience or knowledge required for an understanding of the word. The word itself profiles (i.e. highlights or foregrounds) some element or aspect of that frame. This profiled component is called a frame element (FE) of the particular frame.[1] A frame usually motivates the existence of a set of lexical items, with each item profiling a different part (i.e. FE) of the frame (Fillmore et al. 2006, Fillmore, Wooters and Baker 2001, and Cristobal 2001).

[1] In Frame Semantics, a word which represents an element of a frame is not necessarily an NP. This is different from the Deep Cases in Case Grammar. See examples (2)-(4) and (12)-(14).

In the current Frame Semantics framework, motion is treated as a fairly abstract and general frame. The motion frame specifies that "some entity (Theme) starts out in one place (Source) and ends up in some other place (Goal), having covered some space between the two (Path)."[2] Thus, the three semantic roles in Case Grammar, Source, Path and Goal, together with the Theme which profiles the entity that moves, are now four basic frame elements of motion. Following the description used in the FrameNet project by Fillmore's research group, the four basic frame elements of motion are shown in the Mandarin examples below, with the frame elements in brackets:[3]

Theme: Theme is the entity that changes location.

(1) 聽到 爆炸聲， ［人們］ 迅速 跑開 了。
Ting-dao baozhasheng, [renmen] xunsu pao-kai le.
listen.to explosion.sound people quickly run.away LE[4]
'As soon as they heard the explosion, the people hurriedly ran away.'

Source: Source is the location the Theme occupies initially before its change of location.

(2) 警察 衝 ［出 門］， 向 人群 跑去。
Jingcha chong [-chu men], xiang renqun pao-qu.
police rush out door toward crowd run.go.
'The policeman rushed away from the door, and ran toward the crowd.'

Path: Path refers to (a part of) the ground the Theme travels over or to a landmark the Theme travels by.

(3) （他）下 了 山嶺， 走 ［過 一 個 村落］，
(Ta) xia le shanling, zou [-guo yi ge cunluo]
he go.down LE mountainside go past one CL village

[2] See the frame information of "Motion" on http://framenet.icsi.berkeley.edu (last accessed on December 10, 2006).

[3] FrameNet is a research project based at the University of California at Berkeley, with Charles Fillmore being the principal investigator. The goal of the project is to produce "frame-semantic descriptions" of thousands of "English lexical items" and back up "these descriptions with semantically annotated attestations from contemporary English corpora" (Baker, Fillmore, and Lowe 1998:1). The frame-semantic description of a lexical item "identifies the frames which underlie a given meaning and specifies the ways in which FEs, and constellations of FEs, are realized in structures headed by the word." (See "Welcome to FrameNet" on http://framenet.icsi.berkeley.edu.) For details of the FrameNet project, please see the official website at: http://framenet.icsi.berkeley.edu (last accessed on December 10, 2006).

[4] The following abbreviation conventions are adopted in this article: CL for classifier, DE for the Mandarin attributive particle 的 *de*, DUR for durative aspect 正 (*zheng*)/正在 (*zhengzai*)/在 (*zai*), LE for perfective aspect 了 (*le*), and ZHE for continuative aspect marker 著(*zhe*).

便　到　了　農場。
bian dao le nongchang.
then reach LE farm
'He went down the hill, passed a village, then came to the farm.'

Goal**:** Goal is the location the Theme ends up in.

(4) 小車　駛　［進　小　鎮］，引起　了　人們　的　注意。
Xiao-che shi [-jin xiao zhen], yinqi le renmen de zhuyi.
car drive into small town cause LE people DE attention.
'The car drove into the small town, and attracted the attention of the local people.'

In FrameNet, a general frame and a set of more specific frames form a domain. In a domain, the general frame captures the basic conceptual structure (roughly, frame elements) that the specific frames of the domain have in common and map the basic conceptual structure onto each specific frame. On the other hand, the specific frames inherit the conceptual structure of the general domain and, at the same time, demonstrate certain specific semantic-profilings besides the conceptual inheritance from the general frame.

Motion is identified as a general frame in FrameNet. It constitutes a motion domain with about twelve more specific frames, such as Arriving, Cause-to-motion, Cotheme, Departing, Emptying, Filling, Motion-Noise, Path-shape, Placing, Removing, Self-motion, and Transportation. Compared with the general motion frame, each of the twelve specific frames overtly profiles one aspect of a motion event, but they also share in common the basic semantic structure of the general motion frame. For example, in (5)

(5) 新娘子　進　了　洞房。
Xinniangzi jin le dongfang.
bride enter LE nuptial.chamber
'The bride has entered the nuptial chamber.'

The verb 進 (*jin* 'enter') semantically implies the existence of the Goal (i.e. 洞房 (*dongfang* 'the nuptial chamber') in this sentence) of the motion. Therefore, it evokes an Arriving frame of the motion domain. Simultaneously, this verb triggers the activation of the conceptual structure of the general motion frame (i.e. the Theme-

Source-Path-Goal configuration) as well. In this sense, the Arriving frame is seen as inheriting the basic motion frame and adds Goal-profiling to the semantic structure.[5]

In the current version of Fillmorean FrameNet (as presented on the official website on December 10, 2006), in addition to Theme, Source, Path, and Goal, the four basic frame elements of motion shown above, sixteen more frame elements are also identified in the specific frames of the motion domain. They are Area, Direction, Distance, Carrier, Containing-event, Degree, Depictive, Duration, Frequency, Manner, Path-shape, Place, Purpose, Result, Speed, and Time.[6]

With minor variations, scholars embracing the basic Source-Path-Goal formulation of motion include Hawkins (1985), Lakoff (1987), Johnson (1987), Lakoff and Johnson (1999), Radden (1988), and Gruber (1976), among others.

A closer examination of Fillmorean Frame Semantics reveals that several aspects of the characterization of the Source-Path-Goal formulation require further consideration. First, due to its methodology of identifying the frame elements which underlie a given word (mostly verbs), the frame-semantic description of the word does not explore the conceptual contents packed in the word itself. Fillmore basically carries on the spirit, developed in Case Grammar, of finding semantic roles in the deep structure for a certain word. The given word is merely the starting point and focus of study. The task and goal of description are limited to finding the frame elements around this word and the ways these elements are expressed in sentences containing this word. But what kind of frame element the word *per se* profiles is a question left untouched.

This limitation of frame-semantic analysis has two noticeable consequences. The first is that the conceptual structure of experience or knowledge for a given word as described in FrameNet is only a partial picture. For example, for each specific frame of the motion domain, the fact of motion is undoubtedly a necessary and core frame element. Without this element, a frame cannot be called a motion frame. However, because motion is usually indicated with verbs—the frame-evoking words—it is not identified as a separate frame element in FrameNet. In a similar spirit, although Manner, Carrier and other FEs are recognized as separate frame elements for some motion frames, the frame-semantic description ignores their existence if they are incorporated in the meaning of verbs. For example, the following sentence:

(6) Kim ran up the hill.

[5] To focus our attention on the general formulation of the conceptual structuring of motion, I will not go into detail concerning these specific frames listed in FrameNet.

[6] For specifics of these sixteen frame elements, see the relevant pages at http://framenet.icsi.berkeley.edu/. Within the limited space of this paper, I will not illustrate them in detail.

illustrates the Self-motion frame in FrameNet. Obviously the frame-evoking verb *ran* overtly lexicalizes both the fact of motion and the manner (and/or speed, as compared with *walked* and *crawled*) of the motion. But according to the FrameNet treatment, only the Theme (foregrounded by the word *Kim*) and the Path (foregrounded by the phrase *up the hill*) are recognized as the profiled FEs in (6).

This problem with the complex Fillmorean Source, Path and Goal becomes even more obvious in languages which have polysynthetic verbs, such as Cora and Atsugewi. Cora is a Uto-Aztecan language spoken in Mexico. In Cora, "paths can be part of the semantic representations of both verb stems and locative prefixes, no single one of which can be simply glossed 'path' or 'source' or 'goal'" (Casad 1993:634). A similar situation is also reported in Atsugewi, an Indian language spoken in Northern California (Talmy 2000, II:199-206). That is to say, in both Cora and Atsugewi, the path, source, and/or goal elements of motion can be conflated into the verb root. In this case, if we do not analyze the conceptual contents represented in the verb root, we have no way to access the motion frame, especially the core elements of Source, Path and Goal evoked by the verb. Consequently, no descriptive adequacy will be achieved.

The second consequence of the limitation of frame-semantic analysis is the complexity it involves in describing motion events. As can be seen, the establishment of a frame in FrameNet is based on the frame-evoking words of the English language. For example, since English has "noise verbs" used to characterize motion (such as *roar* in *The car roared out of the garage.*), an independent Motion-Noise frame is established in FrameNet. Similar are the frames for Arriving, Departing, Path-shape, etc. Establishing frame categories in this way makes it difficult to provide adequate descriptions of the possible frames of a domain. Obviously, there are many more varieties of lexicalization patterns of verbs evoking motion than the twelve types associated with the twelve kinds of specific frames of motion listed in FrameNet. However, we cannot establish a specific frame for each particular type of motion verb. For instance, FrameNet establishes Arriving and Departing frames, but it does not have frame categories like Passing, Following, or Circling, for which we can give examples from Chinese as in (7)-(9):

(7) 那 條 小 河 流 ［過 我 家 的 莊稼地］。
Na tiao xiao he liu [-guo wo jia de zhuangjia di].
that CL small river flow through I family DE cropland
'That creek passes through our farm.'

(8) 我們 ［循 著 小徑］ 走 到 山 頂。
Women [xun zhe xiaojing] zou dao shan ding.
we along ZHE trail walk to mountain top
'We followed the trail to the top of the hill.'

(9) 那 顆 衛星 ［繞 著 地球］飛行。
Na ke weixing [rao zhe diqiu] feixing.
that CL satellite move.around ZHE earth fly
'The satellite circles the earth.'

In examining the frame system of FrameNet, we can see that it is inappropriate to place the frames evoked by verbs like *pass*, *follow* and *circle* under any existing frame labels for motion.[7]

More importantly, to establish frame categories based on lexicalization patterns of a specific language (such as English in the current version of FrameNet) also causes difficulty in cross-linguistic applications. For instance, Chinese has neither "noise verbs" nor path-shape verbs expressing motion (as in English sentences *The train* ***rumbled*** *through the tunnel.* and *The old man* ***zigzagged*** *towards the gate.*).[8] However, Chinese does have ways to express the semantic contents of the corresponding English sentences, as exemplified in (10) and (11):

(10) 火車 轟鳴 著 穿過 了 隧道。
Huoche hongming -zhe chuan-guo le suidao.
train rumble ZHE pass.through LE tunnel
'The train rumbled through the tunnel.'

(11) 老人 歪歪扭扭 地 走 向 大門。
Laoren waiwai-niuniu -de zou xiang damen.
old.man crooked -ly walk toward gate
'The old man zigzagged towards the gate.'

[7] Recall that the twelve specific frames of motion recognized in FrameNet are Arriving, Cause-to-move, Cotheme, Departing, Emptying, Filling, Motion-Noise, Path-shape, Placing, Removing, Self-motion, and Transportation.

[8] In written Chinese expressions like 狂風呼嘯過大漠 (*Kuang feng huxiao guo damo* 'The heavy squall howled across the grand desert.'), 呼嘯 (*huxiao*) is a "noise verb" and its usage looks similar to its English translational equivalent *howl*. Nevertheless, 呼嘯 (*huxiao*) cannot be labeled as a Motion-Noise verb since it does not render the fact of motion. In the Chinese sentence, it is mainly the verb 過 (*guo* 'pass') that expresses the motion element of the conceptualized event. 過 (*guo*) in the sentence is a main verb, but not a particle (or directional complement) to 呼嘯 (*huxiao*). In natural speech it is 過 (guo), not 呼嘯 (huxiao), that carries the sentence stress, and a pause can appear between 呼嘯 (huxiao) and 過 (guo). 過 (guo) in this sense can also be used independently as in 狂風過大漠 (*Kuang feng guo damo* 'The heavy squall passed across the vast desert.').

The following problem therefore arises for the frame-semantic analysis: Does Chinese have a Motion-Noise frame and a Path-shape frame? If we follow the frame-semantic analysis procedure, the answer must be negative since the verbal phrase 穿過 (*chuan-guo* 'pass-through') in (10) does not evoke the noise of motion, nor does the verb 走 (*zou* 'walk') in (11) evoke Path-shape. However, this simple negative response is far from satisfactory. Even if we think that the conceptual content of the two Chinese sentences is not exactly the same as that of their English translational equivalents, the connections and correspondences between the sentences of the two languages are obvious, and we need a way to explain these correspondences. In this regard, Frame Semantics lacks simple and clear devices for cross-linguistic analysis.

In short, due to its methodology of identifying frames and frame elements according to a given word (or phrase) and its lack of analysis of the conceptual content of the frame-evoking word itself, frame-semantic analysis presents problems for achieving descriptive adequacy, simplicity, and cross-linguistic applicability for characterizing motion.

A further aspect of the inappropriateness of the Source-Path-Goal formulation of motion is the coarse granularity of its three frame elements: Source, Path, and Goal. Consider these three examples from FrameNet:

(12) The policeman moved [away from the door].
(13) The truck roared [through the tunnel].
(14) The bus approached [the corner].

In FrameNet, the phrase *away from the door* in (12) is regarded as expressing the Source of the motion, *through the tunnel* in (13) expresses the Path of the motion, and *the corner* in (14) expresses the Goal of the motion. Notice that the three phrases in these three sentences demonstrate three different types of linguistic and conceptual complexity. *The corner* in (14) is an NP representing a simple conceptualization of location in space. *Through the tunnel* in (13) is a PP which activates at the concept level not only a physical place, but also a dynamic spatial relationship between an implied object and that place. In (12), the phrase *away from the door* is even more complicated. It consists of a particle *away* and a PP *from the door*. Conceptually this expression profiles a dynamic spatial relationship between an implied object and a place and also foregrounds the direction of motion.

Clearly, the Fillmorean frame elements Source, Path and Goal encapsulate several different types of conceptual content under one term. They are conceptual complexes but not basic "elements" of motion. There are two problems with such conceptual complexes. First, their conceptual contents are not consistent with each other in

different sentences. A Source (or Path or Goal) may only be a place; it may be a place and its spatial relation to a moving object; or it may also contain a directional element, as in (12)-(14). Second, the Fillmorean frame elements Source, Path and Goal are difficult to use for the analysis of cross-linguistic data of motion. In Chinese, the spatio-directional specifics and a referent location or place of motion may be separately expressed, as the italicized parts in (15) show:

(15) 大伙兒 *從 院子裡 跑 出來*。
Dahuor *cong yuanzi-li* pao *chulai*.
crowd *from yard.inside* run *out.hither*
'The crowd ran *out of the yard*.'

In (15), the spatio-directional specifics of the motion are separately expressed by the preposition 從 (*cong* 'from') and the verbal-particle 出來 (*chulai* '(come) out'). For the English translational equivalent in (15), we may follow the Fillmorean system in treating the phrase *out of the yard* as expressing Source. Nevertheless, it is problematic to regard the separate Chinese expressions 從院子裡 (*cong yuanzi-li* 'from the inside of the yard') and 出來 (*chulai* '(come) out') in the sentence as jointly representing a single Source role.

3. Talmy's Figure-Move-Path-Ground characterization

The Figure-Move-Path-Ground formula is a different formal account of motion developed by Talmy within his cognitive semantics framework (1975, 1983, 1985, 2000, I: chapters 2, 3, and 5, 2000, II: chapter 1). In Talmy's system, Figure, Move, Path, and Ground are identified as four internal components of a motion event. The Figure and Ground are a conceptual pair: "The Figure is a moving or conceptually movable object whose path or site is at issue. The Ground is a reference frame, or a reference object stationary within a reference frame, with respect to which the Figure's path or site is characterized" (2000, II:26).[9] The component Move "refers to the presence *per se* of motion or locatedness in the event," i.e. the fact of motion or locatedness. The Path "is the path followed or site occupied by the Figure object with respect to the Ground object" (2000, II:25).[10] Besides the four internal components of

[9] Talmy's notions of Figure and Ground originated from Gestalt psychology, which recognizes the figure/ground segregation of objects in a situation in terms of their prominence in human perception (cf. Boring 1950).

[10] Notice that Talmy treats "locatedness", i.e. maintenance of a stationary location, as a type of "motion event". The motivation for this treatment is that, according to Talmy, a located state fits into the same "Figure-Move-Path-Ground" conceptual schema of motion. I depart from Talmy's investigation procedure in restricting my study to motion. Specifically, I consider located state to

motion, a motion event can be associated with some external co-event components, most frequently the Manner or Cause of the motion. To illustrate Talmy's notions of these motion elements, let us look at (16) and (17) below:

(16) a. The pencil rolled off the table.
b. The pencil blew off the table. (Talmy 2000, II:26)

(17) a. 樹葉 飄到 了 地上。
Shuye piao-dao le di-shang.
leaf float.to LE land.on
'The leaves floated onto the land.'
b. 樹葉 吹到 了 地上。
Shuye chui-dao le di-shang.
leaf blow.to LE land.on
'The leaves were blown onto the land.'

In (16), *the pencil* is the Figure that moves. *The table* is the Ground, which remains stationary. *The pencil*'s motion is located against the ground of *the table*'s motionlessness. *Off* indicates the Path of *the pencil*'s motion. The fact of motion is expressed by the verbs *rolled* in (16a) and *blew* in (16b), with *rolled* also describing the Manner of motion in (16a) while *blew* indicates the Cause of the motion in (16b). Similarly, in the Chinese examples in (17), 樹葉 (*shuye* 'leaves') functions as the Figure and 地上 (*di-shang* 'land-surface') as the Ground. The verbs 飄 (*piao* 'float') in (17a) and 吹 (*chui* 'blow') in (17b) specify the Move. Additionally, 飄 (*piao* 'float') also describes the Manner, while 吹 (*chui* 'blow') specifies the Cause. The complement particle 到 (*dao* 'to') indicates the Path.

If we compare the Fillmorean Source-Path-Goal characterization of motion with Talmy's formula, we see that Talmy's Figure is roughly equivalent to Fillmore's Theme. Both refer to the object that moves. However, Talmy's analytical approach shows some distinct advantages. First, it provides a more comprehensive cognitive view of motion. In the previous section, it was noted that the frame-semantic analysis of motion within the Source-Path-Goal framework ignored significant parts of the semantic content of the verb. Thus, the frame semantics model can offer only a partial picture of the conceptual structure of motion. By contrast, in Talmy's system, all the conceptual content of a motion event is characterized, whether it is represented in the

share with motion only the rough "skeleton" of the conceptual structure. Motion differs from location in significant respects, especially the directional and deictic properties of Path, the reference objects involved, and the mapping effect on abstract domains. Since inclusion of location is likely to involve different issues, it seems advisable to avoid complicating the analysis and therefore location is excluded (cf. Chu, to appear).

verb or whether it occurs in other parts of the clause. The analysis can, therefore, include intra-verb components such as Move, which would not be recognized as separate conceptual elements in the Fillmorean framework.

Secondly, Talmy re-analyzes the semantic contents of Fillmore's Source, Path and Goal, splitting each of the three elements into two: the Ground and the Path. The Ground "functions as the reference object for a figural element." The Path, in Talmy's sense, specifies the "particulars of direction" of the motion (2000, I:185). Talmy argues that the "function as reference object" is a crucial spatial factor that Fillmore's Source, Path and Goal have in common. Thus it should be set up in its own right as a separate notion, the Ground. In a similar spirit, the various directional specifics should also be "abstracted out into an independent category," the Path (2000, I:339-341).[11]

The basic relations between Fillmorean Source-Path-Goal formulation of the conceptual structure of motion and Talmy's Figure-Move-Path-Ground system can be represented as in Figure 1 below:

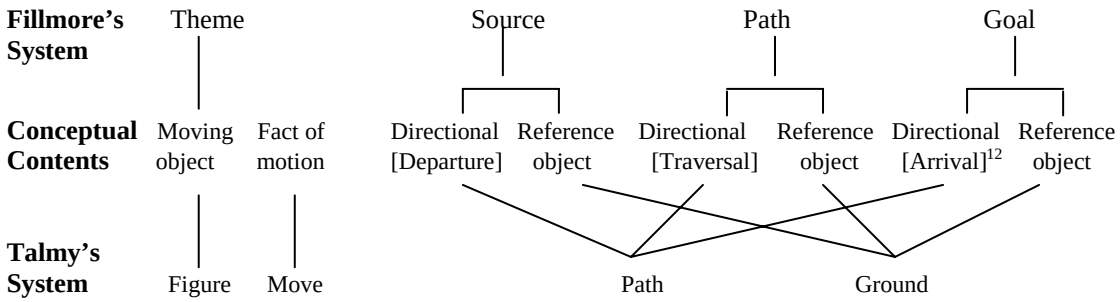

Figure 1. Comparison between Fillmore's and Talmy's systems of the conceptual structure of motion

Figure 2 further illustrates how these two systems apply to the same motion sentence:

[11] In fact, besides directional properties, Talmy also includes the spatial configuration of Figure and Ground and deictic properties that motion involves in his most recent version of Path (2000, I:340-341). See Chu (to appear) for more discussions on Tamly's notion of Path.

[12] [Departure], [Traversal], and [Arrival] in this figure mark three basic types of directional relations of motion. A reference object together with a departure property (i.e. functioning as the departure point of the motion) is equivalent to Fillmore's notion Source. A reference object plus a traversal property corresponds to Fillmore's Path. A reference object with an arrival property is Fillmore's Goal. In Talmy's system, these three directional types are a part of a small set of directional relations that may be involved in motion. This is different from Fillmore's system, which only recognizes these three types of directional relations as associated with Source, Path, and Goal.

Fillmore's System	我 Wo Theme	從 cong	舊金山 Jiujinshan Source	經 jing Path	東京 Dongjing	飛 fei	到 dao	上海。 Shanghai.[13] Goal
Talmy's System	我 Wo Figure	從 cong Path [Departure]	舊金山 Jiujinshan Ground	經 jing Path [Traversal]	東京 Dongjing Ground	飛 fei Move (and Manner)	到 dao Path [Arrival]	上海。 Shanghai. Ground

Figure 2. Application of Fillmore's and Talmy's motion systems

With its comprehensive cognitive view of motion and its abstracting out the commonality of "reference object" and "directional relation" that is involved in traditional notions of Source, Path and Goal, Talmy's analysis of the conceptual structure of motion provides insights not available to Fillmorean frame-semantic analysis. For instance, within the frame-semantic approach, the PP *toward the corner* in (18) and NP *the corner* in (19) are both analyzed as rendering the Goal. But the former phrase is obviously more complex than the latter, both on the linguistic surface and in the conceptual contents involved. In Talmy's system, the expression *the corner* in both (18) and (19) is designated as Ground and the preposition *toward* in (18) renders the Path. In (19), the Path is recognized as being conflated with the Move component in the verb *approached*.

(18) The bus drove toward the corner.
(19) The bus approached the corner. (= (14))

Cross-linguistically, Talmy's system also overcomes the difficulty that Fillmorean formulation of motion faces when the same or similar conceptual content is realized in a way different from English. For instance, we have shown above that the FrameNet formulation lacks devices for analyzing Path-shape frame rendered in Chinese as exemplified in (11), and repeated here in (20):

(20) 老人 歪歪扭扭 地 走 向 大門。
Laoren *waiwai-niuniu* *-de* *zou* xiang damen.
old-man crooked -ly walk toward gate
'The old man zigzagged towards the gate.'

To apply Talmy's system, both the Chinese expression and its English translational equivalent in (20) can be clearly accounted for in a straightforward way,

[13] The English translation for this example is:

我	從	舊金山	經	東京	飛	到	上海。
Wo	cong	Jiujinshan	jing	Dongjing	fei	dao	Shanghai.
I	from	San Francisco	via	Tokyo	fly	to	Shanghai

'I flew to Shanghai from San Francisco via Tokyo.'

as shown in (20') and (20"):

(20') 老人 歪歪扭扭 地 走 向 大門。
Laoren *waiwai-niuniu* *-de* *zou* xiang damen.
Figure Manner Move Path Ground
(and Manner)

(20") The old man *zigzagged* towards the gate.
Figure Move + Manner Path Ground

In the same spirit, expressions like (7)-(9), given earlier which represent Passing, Following, and Circling motions that are not handled in FrameNet, can also be clearly analyzed with Talmy's system. (21') and (21") illustrate an analysis of (9), repeated here as (21):

(21) 那 顆 衛星 繞 著 地球 飛行。
Na ke weixing rao zhe diqiu feixing.
that CL satellite move.around ZHE earth fly
'The satellite circles the earth.'

(21') 那 顆 衛星 繞 著 地球 飛行。
Na ke weixing rao zhe diqiu feixing.
Figure Path Ground Move + Manner

(21") The satellite circles around the earth.
Figure Move + Path Path Ground

As can be observed in (21') and (21"), Talmy's approach not only characterizes all the conceptual contents of both the Chinese and English expressions for the motion event, but also reveals the differences in conceptualization and representation: In the Chinese expression (21'), the Manner element is highlighted and conflated with Move (the fact of motion), while in (21"), the corresponding English expression, the Manner of the motion is gapped, and the Path element conflates with Move and is also redundantly rendered with a syntactic satellite (i.e. the particle/preposition *around*).[14]

[14] It may be helpful to point out here that Path and Manner are still conceptual complexes which can be further analyzed into certain basic elements. Chu (to appear) identifies five basic components of Path (i.e. Vector, Conformation, Direction, Dimension, and Perspective) and demonstrates the morpho-syntactic devices used for Path representation in Chinese and other languages. Within the confines of this paper, I will not go into more detail in this regard.

4. Other accounts: Langacker, Jackendoff, and Wierzbicka

In additional to Fillmorean FrameNet system and Talmy's Figure-Move-Path-Ground formulation, the past decades also saw three other interesting approaches to motion conceptualization: Langacker's Cognitive Grammar, Jackendoff's Conceptual Semantics, and Wierzbicka's Natural Semantic Metalanguage (NSM). Unlike the FrameNet system and Talmy's formulation, all Langacker, Jackendoff and Wierzbicka's theories lack details for a full treatment of all the complexities of motion conceptualization and linguistic representation. Thus in this section I will only present a brief discussion of these three approaches.

Langacker's Cognitive Grammar may represent the most comprehensive statement of a cognitive linguistics approach to language studies. Nevertheless, we do not see sufficient and necessary details in his theory for a clear and straightforward account of motion. In Langacker (1987, 1991), he characterizes motion in terms of a sequenced transformation of component states situated in time. Specifically, motion is defined as a mover *m*'s successive occupation of location *l1* at the time moment *t1*, occupying location *l2* at the moment *t2*, location *l3* at moment *t3*, and location *ln* at moment *tn*. The mover *m*'s occupation of different locations at different moments forms a continuous series. Correspondingly, a speaker conceptualizes a motion event through the cognitive operation of sequential scanning. Thus, in Langacker's framework, the temporal relationship involved in motion is crucial to the characterization of motion. This is an important feature of Langacker's treatment of motion.[15] Besides this, a second noticeable aspect of Langacker's framework is that it does not adopt traditional motion-specific notions such as Source, Path, Goal or Direction to describe spatial-directional properties of motion. Instead, it relies on the general concepts of mover (trajector), time (moment and sequence), and location, together with the conceptualizer (cf. Langacker 1987:145, 166-168).

Since motion is a change of location in time, the temporal property that a motion event demonstrates is no doubt a unique perspective for observing motion structuring. In this regard, Langacker is correct. Unfortunately, however, Langacker does not explain in detail how the temporal properties of motion are reflected in natural language, or how to analyze motion expressions of natural language from his temporal relationship perspective. Moreover, given that motion happens in time, spatial-directional characteristics—but not the temporal property—are in the last analysis the

[15] Prior to Langacker (1987), Miller and Johnson-Laird (1976: 406) also highlight the time indices of motion in their related analysis. They decompose motion into "a sequence of AT relations:
AT (x, y_0), AT (x, y_1), …, AT (x, y_i), …, AT(x, y_n),
where the successive relata y_i constitute the path, and associated with each location y_i is a time index $t+i$."

defining nature of motion. The reason is that not only motion but also all other types of events evolve within a temporal dimension. In contrast, certain spatial-directional properties are uniquely demonstrated in motion events. Furthermore, from a conceptualizer's perspective based on daily life experience, motion is perceived as a movement through space rather than movement through time. Langacker's proposal highlights a significant dimension for the construal of motion, but it is not adequate for a full analysis of motion conceptualization.

Now we turn to Jackendoff. Jackendoff's treatment of motion is distinct in his viewing motion structure as an instantiation of a more general and abstract conceptual structure and his function-argument formulation of the structure. In Jackendoff's (1983, 1990) conceptual semantics framework, the general conceptual structure contains a set of abstract categories such as Thing, Event, State, Action, Place, and Path. These categories are basic conceptual "parts of speech".[16] To elaborate these conceptual parts of speech, Jackendoff develops a function-argument organization. The basic conceptual functions include GO, STAY, FROM, TO, VIA, LET, CAUSE, and some others. (22) below is an example illustrating Jackendoff's function-argument structures:

(22) [Event GO ([THING], [Path { FROM ({ THING / PLACE }) / TO ({ THING / PLACE }) }))]

(22) says that an Event-function GO takes two arguments, a Thing and a Path. The Path can be realized as a TO function or a FROM function (or both).[17] Both the TO function and the FROM function take one argument, which can be a Thing or a Place.

To apply this function-argument account to natural language, the "motion" sentence *The train went from NY to LA.* can be analyzed as (23) (Jackendoff 1996:108), and its Chinese translational equivalent 火車從紐約開往洛杉磯 (*Huoche cong Niuyue kai-wang Luoshanji*) accounted in (24):

(23) [Event GO ([Thing TRAIN], [Path FROM ([NY]) / TO ([LA])])]

[16] Jackendoff's conceptual semantics is committed to the existence of Chomskyan autonomous grammar. He regards the categories and function-argument organization of the abstract conceptual structure as innate and universal (cf. 1990, 1996).

[17] Of course, the Path can also be realized as other functions such as TOWARD and AWAY-FROM (cf. Jackendoff 1990:43). (22) is only a heuristic example. It does not reflect all the possible function-argument configurations of the GO event.

(24) $\left[\text{Event GO } [\text{開 kai}]\left([\text{Thing 火車 huozhe}], \begin{bmatrix}\text{從 cong ([紐約 Niuyue])}\\ \text{Path 往 wang([洛杉 Luoshanji])}\end{bmatrix}\right)\right]$

It is important to notice here that the Jackendoff-style formulation in (22) is not for motion structure only. Jackendoff holds the view of cross-field parallelism. That is, the Path category, the GO function, and other constituents of the conceptual structure are regarded as ontological categories. They are field neutral in conception. Besides Motion, they can also be mapped in parallel onto other different semantic fields, such as Possession and Ascription of Properties, as shown in (25) and (26) respectively (Jackendoff 1990:25):

(25) The inheritance went to Philip.
(26) The light went/changed from green to red.

Motion is only one semantic field parallel to Possession, Ascription of Properties and other semantic fields. The structure of each semantic field is a parallel instantiation of the more abstract conceptual structure (1983: chapter 10, 1996:116). This view, as Jackendoff himself emphasizes on several occasions (such as in Jackendoff 1996), differs from that of many other cognitive linguists, for whom the structures of Possession and Ascription of Properties as exemplified in (25) and (26) are derived from the structure of Motion by metaphorical mappings (cf. Lakoff and Johnson 1999).

It is a controversial issue whether conceptual structure is, in fact, as Jackendoff assumes, abstract and field-neutral, generalizing across diverse semantic fields, or whether physical motion conceptual structure is metaphorically extended to other domains as Lakoff and Johnson (1980) claim. It is not clear how Jackendoff's formulation would work for certain phenomena in Mandarin, for example. In Mandarin Chinese, Possession and Ascription of Properties, as exemplified in (25) and (26) in English, are not straightforwardly realized as a mapping in the sense of Jackendoff's GO function. The Mandarin expressions corresponding to (25) are sentences like (25') or (25"):

(25') 遺產 歸 （了）菲利普。
Yichan gui (le) Feilipu.
inheritance belong.to LE Philip
'The inheritance belongs to Philip.'

(25") 遺產 給 了 菲利普。
Yichan gei le Feilipu.
inheritance give LE Philip
'The inheritance went to Philip.'

The verb 歸 (*gui*) in (25') originally referred to a situation in which '[a woman] gets married (goes/returns to the man/her husband to whom she belongs)' in ancient Chinese. Later, it developed the meaning 'return'. This 'return' meaning may have some relation to Jackendoff's GO function. But the relation is not as straightforward as in English. Other conceptual and cultural factors are involved. With regard to (25"), as can be observed, Jackendoff's GO function is completely irrelevant.

The sentences corresponding to (26) are like (26') or (26"), with the latter being more colloquial and more acceptable:

(26') ?燈 從 紅 的 變 到 綠 的。
?Deng cong hong -de bian dao lu -de.
light from red DE change to green DE
'The light changed from red to green.'
(26") 紅燈 變 綠燈 了。
Hong-deng bian lu-deng le.
red.light change green.light LE
'The red light changed to green.'

Sentences (26') and (26") show that, in Chinese, the light's change of color has to be expressed with the verb 變 (*bian*), which simply means 'change'. It cannot be rendered with a verb with a meaning similar to English *go*. That is to say, even though (26') and (26") express the corresponding Ascription of Properties as that of (26), they cannot be viewed as instantiations of the Jackendoff-style GO function.

In short, Jackendoff's view of the general GO function and its cross-field parallel mapping in Motion and other semantic fields faces the challenge of cross-linguistic application. Until this challenge is met, it seems more prudent not to treat motion (at least in Chinese) as a conceptual mapping of an assumed abstract GO function. Keeping this in mind, we are now at a point where we can discuss the plausibility and applicability of Jackendoff's function-argument account of motion expressions.

It seems that the general GO function Jackendoff assumes (and its cross-field parallel mapping) is the most distinctive aspect of Jackendoff's characterization of motion. If the existence of this general function is left aside, then his function-argument structure account of motion is essentially very similar to Talmy's Figure-

Move-Path-Ground formula. This is clear from Jackendoff's formulation of the sentence *The train went from NY to LA.* in (23) or the corresponding account of its Chinese translational equivalent 火車從紐約開往洛杉磯 (*Huoche cong Niuyue kai-wang Luoshanji*) in (24). Jackendoff's GO event corresponds to Talmy's Move (or the fact of motion), Jackendoff's Thing is labeled as Figure in Talmy's system, and Jackendoff's Path is essentially the same as Talmy's Path. The only difference between the two systems is that Jackendoff highlights the subcategories of Path (such as FROM and TO) and takes Talmy's Ground elements as arguments of those subcategorical functions. Such a difference is hardly substantial. It is obviously forced on the analysis by Jackendoff's notation—his representation of the conceptual relations of an event in hierarchical function-argument structures.[18] In contrast, Talmy's formula bears a more straightforward relationship to motion expressions in natural language.

Wierzbicka has also proposed a set of semantic primitives. She posits the existence of Natural Semantic Metalanguage (NSM) consisting of a set of the simplest possible expressions from ordinary natural language, which can be used to paraphrase meanings conveyed in the language. According to Wierzbicka (1996), the proposed NSM has several significant properties: First, elements constituting the NSM are a set of indefinable semantic primitives. It is not possible to find other expressions simpler and clearer to explicate their meaning any further. Second, NSM is adequate in description. That is to say, the elements of NSM form "a complete lexicon for semantic analysis", and thus can "faithfully portray the full meaning of the expression being analyzed" (Goddard 1998: 56-58). Third, NSM is a shared core (or universal) of all natural languages. In every language, there is a counterpart expression for each of the semantic primitives of NSM, and thus one language-specific version of NSM (such as English, Japanese, or Chinese NSM) can be precisely translated into any other. And finally, explications made with NSM are reductive and very intelligible—to avoid circularity and obscurity and to achieve clarity and simplicity, no technical

[18] Jackendoff has revised his formulation of Motion several times over the years. The formula discussed in this section is presented in his influential 1983 work. In Jackendoff (1992), he decomposes the function TO as in (27):

(27) [Path TO ([X])] is decomposed as

1d DIR

[Space BDBY + ([Thing X])]

(27) is a representation of the construal structure of a one-dimensional piece of space that terminates at X. "1d DIR" in this formula represents '1-dimensional directed (space)', and BDBY means 'bounded by'. Jackendoff's intention in making this revision was to posit a conceptual similarity between motion and inchoativeness, which is a one-dimensional directed situation that terminates at X, and thus to provide further support for his basic claim regarding the existence of a general abstract conceptual structure (cf. Jackendoff 1996:107-108). As noted above, this assumption faces difficulties in the analysis of cross-linguistic data. So I will consider no further Jackendoff's decomposition of motion constituents.

terms or logical symbols are allowed and only the simplest possible terms from ordinary natural language are used.

To achieve these goals of clarity and simplicity of explication, NSM primitives are very limited in number. There are only several dozen under about twenty categories in the inventory proposed in Wierzbicka (1996: chapter 3). Below are some of those categories and primitives:

Substantives: I, YOU, SOMEONE, PEOPLE, SOMETHING
Actions, Events, and Movements: DO, HAPPEN, MOVE
Existence: BE (THERE IS/ARE)
Determiners: THIS, THE SAME, OTHER
Quantifiers: ONE, TWO, SOME, ALL, MANY/MUCH
Time: WHEN, AFTER, BEFORE, A LONG TIME, A SHORT TIME, NOW
Space: WHERE (IN A PLACE), FAR, NEAR, UNDER, ABOVE, SIDE,
INSIDE, HERE
Interclausal linkers: BECAUSE, IF
Clause Operators: NOT, MAYBE

Now consider the three examples below to see how NSM is used to explicate motion expressions (see Goddard 1998:202-203):

(28) X is moving away from A =
X is moving
if it moves in the same way for some time it will be far from A

(29) X is moving towards A =
X is moving
if it moves in the same way for some time it will be near A

(30) X moved from A to B =
X moved for some time
before this X was somewhere (place-A)
after this X was somewhere else (place-B)

From the explications in (28)-(30), we observe the following about NSM-style descriptions of motion: First, NSM paraphrases are made in simple natural English expressions (which consist of terms for semantic primitives in Wierzbicka's inventory). The grammar of the explications is also natural English grammar. Thus, those paraphrases are intelligible to ordinary English users. This conforms to the stipulated NSM principle for explication and can be viewed as an obvious advantage

of this approach over other semantic/conceptual analysis frameworks. However, this advantage is frangible. It is greatly discounted by the second feature—the basic strategy of NSM explication. As clearly shown in (28)-(30), the basic method of an NSM explication of a natural language sentence is to express the event that the sentence refers to in a different way in the NSM language. This method of explication has two serious problems. The first is that the explication changes the meaning or, to put it in another way, distorts the original conceptualization of the sentence. As it is widely recognized among cognitive linguists, expressing a thing in a different way is essentially motivated by conceptualizing the thing in a different way (see, e.g. Langacker 1987). The thing at issue can be the same thing in reality, but it is not the same in conception if it is rendered differently in language. Thus the NSM explications are not conceptually or semantically equivalent to their corresponding sentences. For example, in (29), the natural English sentence *X is moving towards A* demonstrates a clear profiling of the direction of the mover's motion with the word *toward*. However, this kind of direction-profiling cannot be found in the NSM explication *X is moving, if it moves in the same way for some time it will be near A.* Thus, the explication sentence cannot evoke the same motion conception as that of the original sentence. The same problem arises in (28) and (30). Obviously, this is not the ideal result that the NSM approach should expect.

Related to the first problem, the second problem with the NSM explication is that one natural language sentence can be paraphrased in NSM language in different ways. For instance, in (28), the sentence of motion *X is moving away from A* can be paraphrased as *X is moving, if it moves in the same way for some time it will be far from A* (Goddard 1998:203). However, it seems equally acceptable if the sentence is explicated in NSM as *X is moving, after moving for some time it will not be at [the place] A.* As a semantic analysis system, if a single unambiguous sentence can be analyzed as having several different semantic representations, we have sufficient reason to doubt the plausibility of the system.

The above problems with the NSM methodology can also be observed in Chinese. For example, to follow Goddard's (1998) way as exemplified in (29), the motion sentence 他往村裏走 *Ta wang cun-li zou* 'He is walking toward the village.' in Chinese may be explicated as in (31):

(31) 他 往 村 裏 走。 =
Ta wang cun -li zou =
he toward village inside walk
'He is walking toward the village.'

他 在 走；
Ta zai zou,
he DUR walk
'He is walking;'
如果 他 像 這樣 走 一段 時間，
Ruguo ta xiang zheyang zou yiduan shijian,
if he like this walk a.period time
他 離 村子 就 近 了。
Ta li cunzi jiu jin le.
he from village then near LE
'If he walks in the same way for some time, he will be near the village.'

In (31), the original Chinese highlights the direction of the motion with the preposition 往 (*wang* 'toward'), but, obviously, this highlighting is omitted from the NSM explication. Hence, we cannot say that the NSM explication made here "faithfully portrays the full meaning of the expression being analyzed" (Goddard 1998:56-57).

In fact, the NSM approach faces additional challenges in analyzing motion in Chinese. For instance, in the NSM inventory, MOVE is identified as the semantic prime for expressing movement (Wierzbicka 1996), viz. the motion event in our term. However, it is hardly possible to identify a counterpart in Chinese for this alleged semantic prime which is—according to the NSM standard—not only a simple and clear term in ordinary Chinese natural language but also precisely translatable into other languages (Chu 2007).

5. Closing remarks

In this paper, I have reviewed five different approaches to the analysis of motion in language and conception, namely Fillmorean Source-Path-Goal formulation, Talmy's Figure-Move-Path-Ground characterization, Langacker's temporal perspective on mover's sequential change of location, Jackendoff's view of motion as a mapping of a general function-argument conceptual organization, and Wierzbicka et al.'s semantic-prime style explication. All five approaches share a common view of language as an instrument for encoding the human mind and experience.[19] In their analyses, motion expressions are taken as a reflection of the way in which humans construe conceptualized experience. Thus, semantics, as the result of the human

[19] Jackendoff does not regard himself as a cognitive linguist. However, he admits that he shares the fundamental understanding with cognitive linguists that language is a result of human conceptualization (Jackendoff 1996).

cognition of daily experience, is at the center of language analysis. Semantics in all the five frameworks is treated as generative, rather than merely an interpretive satellite of certain formal properties, or syntax of linguistic expressions.

Notwithstanding their shared stands, these five approaches differ with regard to level of descriptive adequacy, consistency and straightforwardness in analysis, and cross-linguistic applicability. Generally speaking, because of its methodology of identifying frames and frame elements according to a triggering word (or phrase) and also its failure to analyze the conceptual content of the word itself, Fillmorean frame-semantic analysis falls well short of descriptive adequacy and analytical consistency. It cannot provide a full picture of the conceptual frame at issue. Its frame elements—Source, Path, and Goal force different types of conceptual content under one term, inevitably causing inconsistency in description. As a result, the Source-Path-Goal formulation faces serious difficulties in cross-linguistic applications.

Langacker's view of motion highlights a unique angle for observation, that of temporality. However, motion is first experienced as an event taking place in space. Thus, Langacker's temporal perspective on motion lacks a straightforward connection between conceptualization and language. Additionally, Langacker does not show how the temporal perspective can be applied to fully portray motion expressions.

Jackendoff's proposal of a general conceptual structure governing motion is distinctive. Yet, the assumed general GO function is implausible when applied to the analysis of certain phenomena in Chinese. This therefore renders dubious the existence of the general organizational scheme proposed and its various mappings. Besides, Jackendoff's framework is insufficiently detailed to handle all the complexities of motion expressions of a language.

The NSM framework by Wierzbicka et al. represents an attractive effort. Its major challenge comes from its somewhat distorted explication and its inability to identify satisfactory cross-linguistic counterparts for semantic primes.

In contrast, Talmy's framework provides a more fully-specified treatment of motion. He tries to account for all conceptual elements of a motion event. Moreover, Talmy observes that a conceptual element of motion may either be overtly realized as a language form or be unspecified. If overtly represented, the element can either be realized as a separate language form or be conflated with other element(s) in one form; this form can be either the main verb or another part of the expression. Therefore, Talmy's system not only provides a way to describe more fully and precisely the nature of motion conceptualizations, but also to maintain consistency in cross-linguistic application.

References

Baker, Collin F., Charles J. Fillmore, and John B. Lowe. 1998. The Berkeley FrameNet project. *Proceedings of the COLING-ACL*, 86-90. Montreal, Canada. November 5, 2007. http://framenet.icsi.berkeley.edu/papers/acl98.pdf

Boring, Edwin G. 1950. *A History of Experimental Psychology*. 2nd edition. New York: Appleton Century Crofts.

Casad, Eugene H. 1993. 'Locations', 'path' and the Cora verb. *Conceptualizations and Mental Processing in Language*, ed. by Richard Geiger, and Brygida Rudzka-Ostyn, 591-645. Berlin: Mouton de Gruyter.

Chu, Chengzhi. 2006. Movability effect and the assignment of figure and ground of motion in Chinese. *Proceedings of the Eighteenth North American Conference on Chinese Linguistics (NACCL-18)*, ed. by Janet Xing, 121-133. Los Angeles, CA: GSIL Publications, University of Southern California.

Chu, Chengzhi. 2007. Why does Chinese not have 'move' in its core lexicon? Paper presented at the Fifth Conference of the International Association of Chinese Linguistics, Columbia University, New York.

Chu, Chengzhi. To appear. *Motion in Chinese: Event Conceptualization and Linguistic Representation.* Beijing: Peking University Press.

Cristobal, Maria. 2001. Arriving events in English and Spanish: A contrastive analysis in terms of Frame Semantics. ICSI Technical Report tr-01-009. Berkeley, CA: International Computer Science Institute (ICSI). November 5, 2007. http://www.icsi.berkeley.edu/cgi-bin/pubs/publication.pl?ID=001196

Fillmore, Charles. 1968. The case for case. *Universals in Linguistic Theory*, ed. by E. Bach, and R. Harms, 1-88. Holt: Rinehart and Winston.

Fillmore, Charles. 1982. Frame semantics. *Linguistics in the Morning Calm*, ed. by the Linguistic Society of Korea, 111-137. Seoul: Hanshin Publishing Co.

Fillmore, Charles. 1985. Frames and the semantics of understanding. *Quaderni di Semantica* 62:222-253.

Fillmore, Charles et al. 2006. *FrameNet*. Website of Berkeley FrameNet project. December 10, 2006. http://framenet.icsi.berkeley.edu

Fillmore, Charles, Charles Wooters, and Collin F. Baker. 2001. Building a large lexical databank which provides deep semantics. *Proceedings of the Pacific Asian Conference on Language, Information and Computation*, 3-25. Hong Kong: City University of Hong Kong. November 5, 2007. http://dspace.wul.waseda.ac.jp/dspace/bitstream/2065/12202/1/PACLIC15-3-26.pdf

Goddard, Cliff. 1998. *Semantic Analysis: A Practical Introduction*. Oxford: Oxford University Press.

Gruber, Jeffery S. 1976. *Lexical Structures in Syntax and Semantics*. Amsterdam: North-Holland Publishing Company.

Hawkins, Bruce Wayne. 1985. *The Semantics of English Prepositions*. Doctoral dissertation, University of California at San Diego, San Diego.

Jackendoff, Ray. 1983. *Semantics and Cognition*. Cambridge, MA: MIT Press.

Jackendoff, Ray. 1990. *Semantic Structures*. Cambridge, MA: MIT Press.

Jackendoff, Ray. 1992. Parts and boundaries. *Lexical and Conceptual Semantics*, ed. by Beth Levin, and Steven Pinker, 9-45. Cambridge, MA: Blackwell.

Jackendoff, Ray. 1996. Conceptual semantics and cognitive linguistics. *Cognitive Linguistics* 7:93-129.

Johnson, Mark. 1987. *The Body in the Mind: The Bodily Basis of Meaning, Imagination, and Reason.* Chicago: University of Chicago Press.

Lakoff, George. 1987. *Women, Fire, and Dangerous Things*. Chicago: University of Chicago Press.

Lakoff, George, and Mark Johnson. 1980. *Metaphors We Live by*. Chicago: University of Chicago Press.

Lakoff, George, and Mark Johnson. 1999. *Philosophy in the Flesh*. New York: Basic Books.

Langacker, Ronald. 1987. *Foundations of Cognitive Grammar, vol. I*. Stanford, CA: Stanford University Press.

Langacker, Ronald. 1991. *Foundations of Cognitive Grammar, vol. II*. Stanford, CA: Stanford University Press.

Miller, George A., and Philip N. Johnson-Laird. 1976. *Language and Perception*. Cambridge, MA: Harvard University Press.

Radden, Günter. 1988. The concept of motion. *Understanding the Lexicon: Meaning, Senses and World Knowledge in Lexical Semantics*, ed. by W. Hüllen, and R. Schulze, 380-94. Tübingen: Max Niemeyer Verlag.

Talmy, Leonard. 1975. Semantics and syntax of motion. *Syntax and Semantics 4*, ed. by J. P. Kimball, 181-238. New York: Academic Press.

Talmy, Leonard. 1983. How language structures space. *Spatial Orientation: Theory, Research, and Application*, ed. by H. L. Pick, Jr., and L. P. Acredolo, 225-282. New York: Plenum Press.

Talmy, Leonard. 1985. Lexicalization patterns: Semantic structure in lexical forms. *Language Typology and Syntactic Description (3): Grammatical Categories and the Lexicon*, ed. by T. Shopen, 36-149. Cambridge: Cambridge University Press.

Talmy, Leonard. 2000. *Toward a Cognitive Semantics, vol. I and II*. Cambridge, MA: The MIT Press.

Wierzbicka, Anna. 1996. *Semantics: Primes and Universals*. Oxford: Oxford University Press.

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Department of East Asian Languages and Cultures
University of California, Davis
Davis, USA
Chengzhi Chu: czchu@ucdavis.edu

位移事件概念結構的五種分析模式及其對中文的適用性

儲誠志
加州大學戴維斯分校

對於位移事件的概念結構，在認知語言學領域裏提出的分析模式主要有五種。這五種模式分別是 Fillmore 等的「原點-路徑-目標」模式，Talmy 的「移動物-位移-路徑-參照物」模式，Langacker 著眼於位移事件的時間屬性來描寫移動物空間位置的序列改變的時間序列模式，Jackendoff 把位移事件的結構看作是由觀念領域裏一個更為抽象的「函項-參數」結構通過映射而生成的衍生分析模式，以及 Wierzbicka 及其追隨者用一套有限的「語義元素」來描寫位移事件的自然的語義元語言模式。本文對這五種模式分別進行討論，考察比較這五種模式對位移事件相關語言表達的描寫分析是否充分、一致、和簡明，並主要通過中文來檢驗不同模式在跨語言分析中的適用性。文章顯示，Talmy 的「移動物-位移-路徑-參照物」模式優於「原點-路徑-目標」等其他四種模式。

關鍵詞：位移事件、概念結構、語言表達、中文