

Fluidic Motion Verbs in Mandarin Chinese: A Frame-Semantic Approach

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1. Introduction

What and how conceptual elements surface in different languages has remained a focus of linguistic inquiry. According to Talmy (2000), the relationship between conceptual elements and surface elements is usually not one-to-one. More than one conceptual element can be expressed by a single surface element, or a single conceptual element by more than one surface element; moreover, different types of conceptual elements can be represented by the same type of surface element, or the same type of conceptual element by different types of surface elements (p. 21). For instance, the conceptual element Message in a communication event can be realized in a direct quote, a complement clause, or a direct object, as shown in the examples below, respectively (Shi, 2008, p. 186):

- (1) a. John said, “I’m sorry.”
- b. John mentioned that he was sorry.
- c. John expressed his apology.

With so many possibilities in converting meaning into form within a language and across languages, it can be challenging for language teachers, learners, and translators alike. In this paper, I primarily investigate conceptual-to-surface relationships in fluidic motion events in Mandarin. Using the theory of Frame Semantics (Fillmore, 1982), I examine how frame elements and information about frame elements related to fluidic motion are encoded in Mandarin. Syntactic constraints on the frame elements as well as the relations among the frame elements are also examined when relevant. I show what syntactic positions each frame element tends to fill and whether or not the appearance or absence of a given frame element requires or prohibits the surfacing of another. Secondly, I focus on how Path, one of the core frame elements, is encoded in Mandarin to determine its typology of motion expressions. In the discussion section, I compare how some of the frame elements may surface in Mandarin and English and offer my observations for translation and second language learning.

The results of the study show that fluidic motion events can be expressed mostly in two distinct linguistic patterns, which correspond to two widely used lexico-syntactic representation of conceptual elements in both speech and writing in Mandarin: the V₁-V₂ form and the verb-

object compound (Packard, 2000; Li & Thompson, 1989). The cross-linguistic comparison finds that even though Mandarin and English may share the same conceptual structure of fluidic motion events, there are also striking differences in the syntactic realization of conceptual elements. English appears less restricted in the representation of the roles of Fluid and Path. Furthermore, although both of the languages demonstrate a similar lexicalization pattern, i.e., encoding path of motion in the subordinate element of the main verb (Talmy, 2000), they differ in the capacity of lexical items conflating conceptual elements. For example, sound and motion may be conflated in the main verb in English but Mandarin relies on a separate adverbial phrase to express the sound. Therefore, language learners and translators may need to unpack the English verb when describing a fluidic motion event in Mandarin.

2. Background

2.1 Mandarin Chinese

Mandarin belongs to one of the seven major groups of the Chinese language family. It was not until the 1950s that both the governments of China and Taiwan proclaimed it “a national language embodying the pronunciation of the Beijing dialect, the grammar of northern Mandarin, and the vocabulary of modern vernacular literature” (Li & Thompson, 1989, p. 1). Since then, Mandarin has been known as *Putonghua* (the ‘common language’) in China and *Guoyu* (the ‘national language’) in Taiwan. The two regional varieties of Mandarin are quite similar except for some vocabulary words (Li & Thompson, 1989). In the present study, I intend to use illustrative examples that are understood by speakers of both *Putonghua* and *Guoyu* even if some of the examples may seem a little odd to some readers.

Speakers of Mandarin and Cantonese often think they speak the same “language” even though the two varieties are mutually unintelligible (Wardhaugh, 2010). Sometimes scholars simply refer to Mandarin as Chinese because it has been recognized as the standard language of China and Taiwan for decades. However, there are substantial grammatical differences between Mandarin and Cantonese even though they also share many similarities, such as serial verb constructions (Aikhenvald & Dixon, 2006). Hence, it should be borne in mind that the syntactic structures and lexical items discussed here are based on Mandarin and they do not necessarily apply to Cantonese.

There is also a great deal of disagreement over what constitutes a ‘word’ in Mandarin, or ‘word’ in general (Packard, 2000). This dispute has caused some discrepancies in terminology and how a given form is explained in literature. According to Li & Thompson’s (1989), “a word should be a unit in the spoken language characterized by syntactic and semantic independence and integrity” (p. 13). By this definition, modern Mandarin has a very large number of multisyllabic words while maintaining some of the monosyllabic words from classical Chinese. Thus, a given V₁-V₂ form may be a single word (bound root + bound root), a compound word (word + word), or a complex word (word + bound root, or vice versa) (Packard, 2000). Sometimes it can be tricky to assign a word type because a component morpheme derives from classical Chinese and has weakened its ‘wordhood’ in modern spoken Mandarin (Li & Thompson, 1989). Therefore, rather than word structure, I propose analyzing the V₁-V₂ form syntactically as serial verb constructions (SVC) in this paper. This point is important because the majority of the fluidic motion verbs in my data surface in the V₁-V₂ construction.

2.1.1 Serial verb constructions

As with other Sino-Tibetan languages, Mandarin is a serial-verb language. SVCs come in a variety of forms, but scholars generally agree that SVC “is a sequence of verbs which act together as a single predicate, without any overt marker of coordination, subordination, or syntactic dependency of any other sort” (Aikhenvald & Dixon, 2006, p. 1). SVCs are similar to monoverbal clauses in several ways. First, the component verbs of an SVC fill only one core functional slot in a clause to describe what is conceptualized as a single event. Second, an SVC has only one tense or aspectual marker. And third, an SVC has the prosodic properties of a monoverbal clause, i.e., no intonation break or pause can occur between the serial verbs (Aikhenvald & Dixon, 2006).

As for the individual verbs (V₁, V₂, V₃, etc.) in an SVC, Aikhenvald and Dixon (2006) suggest that they may or may not form independent grammatical words, yet Sebba (1987) claims that each of the verbs must be able to function independently as a verb. However, due to language change through time, each verb in an SVC may or may not be able to function as a well-formed predicate on its own in modern Mandarin. Sebba’s claim would exclude many of the V₁-V₂ forms in my data from SVCs even though the relations between V₁ and V₂ are essentially the same despite their ‘wordhood’ status. That is, the second verb “represents a

further development, a consequence, result, goal, or culmination of the action named by the first verb” (Aikhenvald & Dixon, 2006, p. 10). Therefore, I adopt Aikhenvald and Dixon’s view that V_1 and V_2 in SVCs do not have to be independent grammatical words.

In addition to monosyllabic verbs, the disyllabic V_1 - V_2 form also frequently occurs in Fluidic Motion events in Mandarin. There are two basic types of semantic relations between V_1 and V_2 (Li & Thompson, 1989): I refer to them as the ‘parallel V_1 - V_2 ’ and the ‘resultative V_1 - V_2 ’. In the first type, V_1 and V_2 may be semantically distinct and both constitute the meaning of the gestalt verbal form, with V_2 modifying V_1 .¹ In this relation, “the modified verb retains its general characteristics but takes on the attributes of the modifying verb” (Packard, 2000, 94). For example, the V_2 *wu* ‘dance’ in *fei-wu* ‘fly-dance; flutter’ modifies the V_1 *fei* ‘fly’ to describe a bird or other winged creature flying unsteadily. Sometimes V_1 and V_2 are synonyms or near synonyms (Packard, 2000; Li & Thompson, 1989). In *yuedu* ‘read-read; read’, the V_1 *yue* ‘read’ is a bound morpheme while the V_2 *du* ‘read’ can stand alone as a word. The difference between *yuedu* ‘read’ and *du* ‘read’ is that the former is more formal and literary. It is observed in my data that many of the Manner expressions are realized in the parallel V_1 - V_2 construction.

In the second type (the resultative V_1 - V_2), V_2 denotes the result of the head V_1 (Li & Thompson, 1989; Packard, 2000). Based on the nature of V_2 , this type may be divided into three subtypes, among which the ‘directional resultatives’ is the most relevant to this study. In this subtype, V_1 is any verb of motion and V_2 is a verb of directional motion (Packard, 2000). For example, in *zou-jin* ‘walk-enter’, the V_2 *jin* ‘enter’ indicates the result (i.e., the direction and endpoint) of the V_1 motion *zou* ‘walk’. Since V_2 occurs in the position of a complement² to the head V_1 , I refer to V_2 as ‘verb complement’, or more specifically, ‘directional complement’.

There is a set of directional complements in Mandarin, as listed in Table 1 below (Chu, 2004; Packard, 2000; Sebba, 1987; Talmy, 2000; Li & Thompson, 1989):

¹ The direction of the modifying relationship between V_1 and V_2 can go either way. See Packard (2000) for details and discussion on the headedness of V_1 - V_2 form.

² A verb complement is “syntactically a dependent to the head verb and appears after the head verb. It is usually realized as an adjective or a verb” in Mandarin (Chu, 2004, pp. 125-126). For example, 睜大 *zheng-da* ‘open-big; open (eyes) widely’; 看到 *kan-dao* ‘see-arrive; saw’.

Table 1. Directional complements in Mandarin

Directional complement	English translation	Direction
上 <i>shang</i>	‘ascend’	up
下 <i>xia</i>	‘descend’	down
进 <i>jin</i>	‘enter’	in
出 <i>chu</i>	‘exit’	out
到 <i>dao</i>	‘arrive’	all the way (to)
过 <i>guo</i>	‘cross/pass’	across/past
起 <i>qi</i>	‘rise’	up off
回 <i>hui</i>	‘return’	back
开 <i>kai</i>	‘move away’	apart
散 <i>san</i>	‘scatter’	dispersed
来 <i>lai</i>	‘come’	hither
去 <i>qu</i>	‘go’	thither

According to Talmy (2000), these directional complements “variously may, cannot, or must be further followed” (p. 109) by *lai* ‘come’ or *qu* ‘go’ at the end or near the end of the sentence to indicate motion towards or away from the speaker (Sebba, 1987), as in (2).

- (2) 请 走下 楼 来。
- Qing zou-**xia** lou **lai**
- please walk-**descend** stair **come**
- ‘Please walk down the stairs.’

Because of the directional complements *xia* ‘descend’ and *lai* ‘come’, we can infer that the speaker is downstairs and the listener is upstairs in (2). *Lai* ‘come’ and *qu* ‘go’ are referred to as ‘Path Deixis’ and glossed as ‘hither’ and ‘thither’ by Talmy (2000, p. 161). In this study, I refer to them as Deictic Paths and gloss them as ‘come’ and ‘go’, respectively, to maintain their

original verbal quality. Since direction is a component of Path, directional complements frequently participate in the representation of Path in Mandarin.

2.2 Typology of Motion verbs

With regard to Motion events, Talmy (2000) proposes six semantic elements: Motion, Path, Figure, Ground, Manner, and Cause. He further hypothesizes that there are two main typological categories of languages in the world according to how the Path of Motion events is encoded in the surface structure of the language. In the satellite-framed languages (S-languages), e.g., English and most Indo-European languages (except for Romance), Motion and Manner or Cause are conflated in the verb while Path is displayed as a satellite to the verb. The satellite is a dependent to the verb root (head verb) and “can be either a bound affix or a free word” (p. 102), such as English verb particles (3a), Latin verb prefixes (3b), and Chinese verb complements (3c).

(3) a. The bird flew **in**.

b. Latin (Talmy, 2000, p. 104)

Avis **in**volavit.

bird **in**-fly.PERF.3SG

‘The bird flew in.’

c. Mandarin Chinese

鸟 飞进来 了。

Niao fei-**jin**-lai le

bird fly-**enter**-come PERF

‘The bird flew in.’

In verb-framed languages (V-languages), e.g., Spanish and Japanese, the Path is encoded in the verb root. For example, in the English sentence *The bottle floated out*, the satellite *out* expresses the Path. By contrast, in its Spanish counterpart, *La botella salió flotando* ‘The bottle exited floating’, the verb *salir* ‘to exit’ conveys the Path (Talmy, 1991, p. 487).

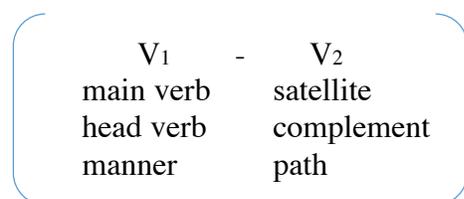
Since S-languages and V-languages demonstrate different patterns in how they encode the Path, we can expect they have different types of Motion verbs in their lexicon (Slobin, 1996). S-languages tend to have a higher variety of Manner verbs compared to V-languages (Cadierno,

2008). This difference can pose difficulties in cross-linguistic translation. For example, Slobin (2004) finds that translators often omit Manner information when translating into a V-language and tend to add Manner verbs when translating into an S-language. Furthermore, Slobin (1996a) proposes the hypothesis of *thinking for speaking* and suggests that the language(s) we speak affect what kinds of event details to which we pay attention when talking about them. His research has shown that speakers of S-languages exhibit higher attention to “the dynamics of movement along paths” whereas their V-language counterparts display higher attention to “scene setting and static descriptions” (Cadierno, 2008, p. 248). Crucially, Slobin (1996a) claims that our native languages affect the ways in which we think while we are speaking, and shifting the *thinking-for-speaking* patterns can be particularly challenging for adult second language learners.

2.2.1 Typological shift of Mandarin Chinese

According to Talmy (2000), Chinese has undergone a typological shift from a V-framed language to an S-framed language. Classical Chinese had a full set of Path verbs as main verbs in Motion expressions (see Table 1). Through the development of serial verb constructions, these Path verbs have gradually lost their main verb position to Manner verbs and turned into Path satellites to the main verb, as illustrated below.

Figure 1. conceptual-to-surface relation between V₁ and V₂



Since Path satellites (V₂), or directional complements, are frequently used after the main verb to express the direction of Motion in colloquial speech, Talmy (2000) classifies modern Mandarin as a strongly S-framed language. However, his typological categorization of Mandarin has been widely disputed (Guo & Chen, 2009). Chu (2004) argues that Mandarin exhibits a ‘parallel system of conflation’ (Talmy, 2000, p. 66) because it frequently uses both S- and V-framed lexicalization patterns in the representation of the same type of Motion event, as demonstrated in (4a) and (4b) respectively (pp. 130-131).

(4) a. 小花蛇 爬出了 洞口。
 Xiao-hua-she pa-**chu**-le dong-kou
 Little-colorful-snake climb-**exit**-PERF hole-mouth
 ‘The small brightly colored snake climbed out of the hole.’

b. 小花蛇 出了 洞口。
 Xiao-hua-she **chu**-le dong-kou
 Little-colorful-snake **exit**-PERF hole-mouth
 ‘The small brightly colored snake came out of the hole.’

Chu (2004) adds that the two patterns “exhibit differences in Chinese with regard to their construal, their communicative functions, and their applicability for expressing different types of motion” (p. 138). Still another language type—the equipollently-framed language—is proposed for Mandarin by Slobin (2004) and other scholars (Guo & Chen, 2009). In contrast to Talmy’s view that V₂ (Path) is subordinate to V₁ (Manner), they argue that “path and manner are expressed by two linguistic forms that have roughly equal morphosyntactic status” (Guo & Chen, 2009, p. 195). In this study, I also investigate the typological categorization of Motion verbs in Mandarin but narrow the domain to Fluidic Motion only. My study finds that Mandarin demonstrates an S-framed lexicalization pattern but suggests a frame-by-frame approach to analysis of Motion expressions rather than wholesale classification of languages.

2.3 Frame Semantics

In the current study, I apply the theory of Frame Semantics (Fillmore, 1982), an approach to the study of lexical meaning, to detailed analysis of Fluidic Motion events in Mandarin. The term ‘frame’ refers to “a system of categories structured in accordance with some motivating context” (p. 119), which includes background knowledge and cultural practices, etc. The central idea of Frame Semantics is that “a frame structures the word-meaning, and that the word evokes the frame” (p. 117). Word meanings must be described in relation to all the essential knowledge derived from interaction in a given speech community. In Fillmore’s (1982) example, such words as ‘buy’, ‘sell’, and ‘pay’ evoke the COMMERCIAL EVENT frame that includes the

conceptual roles of the Buyer, the Seller, the Goods, and the Money. In order to fully understand the meaning of a word, we need to have an appropriate knowledge of the various conceptual roles—frame elements (FEs)—and the relations between the roles that underlie the meaning of that word.

According to Frame Semantics, the FEs that uniquely define a frame are referred to as core FEs. In reviewing the features of FEs, Shi (2008) notes that core FEs are not necessarily overtly displayed in surface structures; that an overt expression of a core FE may be restricted by the head word; and that the same FE can have more than one syntactic realization, or two FEs are conflated in a single syntactic form. For example, the nominal *Pedro's death* in *He avenged Pedro's death* represents the Injured_party and the Injury, both of which are core FEs in the REVENGE frame (p. 186). This notion of conflation can also be found in the encoding of an FE in the lexical meaning of a word. For example, the verb *email* in *She emailed him the picture* conflates Transmission and the Means in its meaning. With regard to FLUIDIC MOTION frame, it is widely observed that Mandarin and English often conflate Motion and other conceptual components, such as Manner or Cause, but Mandarin appears more restricted in this regard.

3. Methodology

Working under the assumption that frames are conceptually universal, I adopt FrameNet's³ definition and conceptual structure of the FLUIDIC MOTION frame as well as the descriptions of the FEs, with minor modification for clarity. Based on Frame Semantics, the FrameNet project is a computational lexicography project that identifies semantic frames, analyzes meanings of words, and studies the syntactic representations of frame participants (Fillmore et al., 2003). FrameNet is also available in Mandarin but researchers have not included the Fluidic Motion frame in the database.

The lexical items that evoke a given frame may be nouns, verbs, phrases, or idioms. However, this study is only concerned with verb roots. In order to account for different word structures across languages, Talmy (2000) suggests focusing on verb roots when comparing lexicalization patterns. Verb roots in Mandarin are generally monosyllabic morphemes that can

³ FrameNet database: <https://framenet.icsi.berkeley.edu/>

also stand alone as words. The data in this study consist of 17 verb roots (see Appendix 2) and 100 declarative sentences in Mandarin. I first used three online Chinese-English dictionaries, LINE⁴, ZDIC⁵, and Yellow Bridge⁶, to identify the verb roots that are used colloquially to express Fluidic Motion events. Based on these verb roots, I then selected the sentences from the aforementioned dictionaries and two Chinese corpus databases: BCC⁷ and Peking University's Center for Chinese Linguistics⁸. Each example discussed in the following section is presented in simplified Chinese characters, Roman alphabet⁹, morpheme-by-morpheme gloss, and translation into idiomatic English. Two native speakers of Mandarin and English (one each) were consulted about the colloquialism and grammaticality of the example sentences.

Additionally, I manually counted the numbers of occurrence for the FEs of interest and sorted them by grammatical categories to show the patterns of their syntactic realization. There are a few idiosyncratic examples, which were not included in the count, nor in the analysis. This is because one of the research questions for this study is to find out the pervasive lexicalization pattern(s) to determine the typological categorization of Mandarin. And lastly, there may be a small margin of error in the quantitative data; nonetheless, they still serve the purpose for exhibiting the general patterns.

4. Data presentation and analysis

According to FrameNet, in the FLUIDIC MOTION frame a Fluid moves from a Source to a Goal along a Path or within an Area. Hence, Fluid, Source, Goal, Path, and Area are the core FEs. Manner, however, is a non-core FE because in English (and Mandarin) it is encoded in most of the verbs, which are not considered FEs. Manner information can be expressed by an additional syntactic element, e.g., adverbial, but the pattern is less pervasive. I discuss how these

⁴ LINE online dictionary: <http://ce.linedict.com/>

⁵ ZDIC online dictionary: <http://www.zdic.net/>

⁶ Yellow Bridge online dictionary: <http://www.yellowbridge.com/>

⁷ BCC Chinese corpus data: <http://bcc.blcu.edu.cn/>

⁸ Center for Chinese Linguistics corpus data: <http://ccl.pku.edu.cn/corpus.asp>

⁹ The transcription system I use is *pinyin* 'spell-sound', the Romanization system widely used in Mandarin textbooks, scholarly writings, and the media in the West (Li & Thompson, 1989). It does not necessarily correspond to the International Phonetic Alphabet (IPA).

FEs of the FLUIDIC MOTION frame are conceptualized, how they are displayed in surface structures, and what (if any) constrain them in their syntactic realization in Mandarin.

4.1 Fluid

The Fluid refers to an entity that changes location and moves in a fluidic way, such as liquid and gas. Fluid is manifested in 97% of the sentences in the data, with 82% of them realized as the subject and 15% as the direct object of the verb.

(5) 水 漏出来 了。
 Shui lou-chu-lai le
 water leak-exit-come PERF
 ‘The water leaked out.’

(6) 屋顶 漏水 了。
 Wuding lou-shui le
 roof leak-water PERF
 ‘The roof leaked water.’

Example (5) shows the Fluid *shui* ‘water’ is realized as the subject of the clause, whereas in (6) it is the direct object of the verb *lou* ‘leak’. Fluid is the most frequently expressed conceptual element of Fluidic Motion. Out of 100 sentences, only three do not display the Fluid in the surface structure, as in (7 – 9a).

(7) 暖气 坏 了， 屋顶 也 漏 了。
 Nuanqi huai le wuding ye lou le
 Warm-air break PERF roof also leak PERF
 ‘The heat failed, and the roof also leaked.’

(8) 那个 桶子 还 能 盛 水， 不会 漏。
 Na-ge tongzi hai neng cheng shui bu-hui lou
 That-CLF bucket still can contain water NEG-will leak

‘That bucket still holds water; it won’t leak.’

(9) a. 屋顶 会 漏。
Wuding hui lou
roof will leak
‘The roof will leak.’

b. *屋顶 漏 了。
Wuding lou le
roof leak PERF
‘The roof leaked.’

The parallel sentence structure in (7) allows the Fluid to be omitted in order for the second clause to mirror the first one. The verb *huai* ‘break’ can never be followed by an object; however, given the right circumstance, the object of *lou* ‘leak’ may be omitted. In this example, the Mandarin speaker has the mental representation of the Fluid as water because it frequently associates with roof leaking. In (8), although the Fluid *shui* ‘water’ is omitted from the second clause, it is previously mentioned in the first one. Therefore, the role of Fluid can be inferred even though it is not found in the typical subject or object syntactic position. Inference based on the context or the semantics of the sentence may also explain the absence of Fluid *shui* ‘water’ from (9a). However, it is not clear why a similar expression in (9b) is ungrammatical when the Fluid is omitted. It seems that tense and aspect also affect the syntactic realization of Fluid in Mandarin, and further inquiry into their role may be in order.

4.2 Source, Goal, and Area

The Source is the origin from which the Fluid moves. Source is often omitted; only 33% of the sentences in the data have it represented either as the subject, object, or PP complement in the surface structure, as in (10a – c), respectively.

(10) a. 他的 眼眶 溢出 泪水。
Ta-de yankuang yi-chu leishui

3SG.M-POSS eye-socket overflow-exit tear-water
 ‘His eyes overflowed with tears.’

b. 他的 泪水 溢出 眼眶。
 Ta-de leishui yi-chu yankuang
 3SG.M-POSS tear-water overflow-exit eye-socket
 ‘Tears welled up in his eyes.’

c. 泪水 从 他的 眼眶 溢出。
 Leishui cong ta-de yankuang yi-chu
 Tear-water from 3SG.M-POSS eye-socket overflow-exit
 ‘Tears welled up in his eyes.’

Here the Source *yankuang* ‘eye sockets’ is realized as the subject of the clause (10a), as the object of the serial verbs *yi-chu* ‘overflow-exit’ (10b), and as the complement to the preposition *cong* ‘from’ (10c). Interestingly, there seems to be a close semantic and grammatical relation between the directional complement *chu* ‘exit’ and the Source. It is consistently observed in my data that the Source and the directional complement *chu* ‘exit’ tend to co-occur. But when *chu* ‘exit’ is accompanied by the Deictic Path *lai* ‘come’ or *qu* ‘go’, the Source may be omitted, as in (5). The Fluid *shui* ‘water’ occupies the subject slot, the serial verbs *lou-chu-lai* ‘leak-exit-come; leak out’ describe the Motion, and the Source can be inferred from the context. Other circumstances where Source is absent involve natural elements. For example, the Source in (11) is omitted because it can be understood as the sky in the speaker’s folk knowledge.

(11) 大雨 直泻 下来。
 Da-yu zhi-xie xia-lai
 big-rain straight-pour descend-come
 ‘The rain was pouring down.’

The Goal is the destination to which the Fluid moves. Only 30% of the sentences in the data have it displayed, either as the object (12 – 13) or PP complement (15). Most of the time, Goal is simply omitted (14).

(12) 池里的 水 溢流 到 旁边的 草地 上。
 Chi-li-de shui yi-liu dao pangbian-de caodi shang
 Pond-in-MOD water overflow-flow arrive nearby-MOD lawn on
 ‘The water in the pond overflowed onto the nearby lawn.’

(13) 溪水 流进 一个 小 池塘 里。
 Xishui liu-jin yige xiao chitang li
 Creek-water flow-enter one-CLF small pond in
 ‘The creek water flows into a small pond.’

(14) 潮水 急速 涌了 进来。
 Chaoshui jisu yong-le jin-lai
 Tide-water rapid gush- PERF enter-come
 ‘The tidewater gushed in rapidly.’

(15) 农民的 汗水 都 滴落 在 泥土 上。
 Nongmin-de hanshui dou di-luo zai nitu shang
 farmer-POSS sweat all drip-fall LOC soil on
 ‘The farmer’s sweat fell into the soil.’

In (12) and (13), the Goals *pangbiande caodi* ‘nearby lawn’ and *xiao chitang* ‘small pond’ are realized as the objects of the serial verbs *yi-liu-dao* ‘overflow-flow-arrive; overflow onto’ and *liu-jin* ‘flow-enter; flow into’, respectively. Similar to the relation between *chu* ‘exit’ and the Source, the directional complements *dao* ‘arrive’ and *jin* ‘enter’ seem to require the Goal to be overtly expressed. The Goal may be omitted, however, if either of the directional complements *dao* ‘arrive’ and *jin* ‘enter’ is followed by the Deictic Path *lai* ‘come’ or *qu* ‘go’, as in (14). As

for the Goal realized as a PP complement, it is usually specified by the location marker *zai*, such as *nitu* ‘soil’ in (15).

The Area is the setting in which the Fluid’s movement takes place on an unspecified Path. It rarely surfaces in Mandarin. Only 10% of the sentences have it displayed, either as the direct object of the verb or a PP complement, as in (16) and (17), respectively.

(16) 小溪 蜿蜒 流过 村庄。
 Xiaoxi wanyan liu-guo cunzhuang
 small-creek meander flow-pass through village
 ‘The creek meanders through the village.’

(17) 颜料 在 画布 上 流动。
 Yanliao zai hua-bu shang liu-dong
 paint LOC paint-cloth on flow-move
 ‘The paint flowed on the canvas.’

In (16), the Area *cunzhuang* ‘village’ is the direct object of the serial verbs *liu-guo* ‘flow-pass through; flow through’. In (17), the Area *hua-bu* ‘paint-cloth; canvas’ is indicated by the location marker *zai*.

4.3 Path

The Path is the trajectory along which the Fluid moves from the Source to the Goal. In Mandarin, Path may be realized in various ways: encoded in the directional complement or the main verb, denoted by a prepositional phrase, or indicated by the verb *shun* or *yan* ‘go along’ and an object. 78% of the sentences in the data have the Path displayed in one way or another¹⁰. Sometimes Path may be represented more than once in a sentence even though speakers would consider it redundant.

¹⁰ The percentage may be a little lower as some of the sentences have the Path information represented more than once and were counted multiple times for the number of occurrence.

- (18) a. 泉水 涌出 地面。
 Quanshui yong-chu dimian
 spring-water gush-exit ground-surface
 ‘Springwater gushes out of the ground.’
- b. * 泉水 涌出来 地面。
 Quanshui yong-chu-lai dimian
 spring-water gush-exit-come gound-surface
 ‘Springwater gushes out of the ground.’
- c. 泉水 从 地面 涌出来。
 Quanshui cong dimian yong-chu-lai
 spring-water from gound-surface gush-exit-come
 ‘Springwater gushes out of the ground.’

In (18a), the Path is indicated by the directional complement *chu* ‘exit’. This is the most common way to express the Path in Mandarin, accounting for 57% of the sentences in the data. Other examples include *di-xia* ‘drip-descend; drip down’ and *jian-qi* ‘splash-rise; splash up’, etc. The directional complements usually occur after the head verb, with only one in the data appearing before the head verb, i.e., *shang-zhang* ‘ascend-rise; rise up’. Additionally, when followed by the Deictic Path *lai* ‘come’ or *qu* ‘go’, the directional complements usually prohibit any objects (18b) and occur at the end or near the end of the sentence (18c).

The Path may also be displayed in a prepositional phrase that is marked by *wang* ‘toward’, as in (19a).

- (19) a. 泉水 往 外 涌出 地面。
 Quanshui wang wai yong-chu dimian
 spring-water toward out gush-exit ground-surface
 ‘Springwater gushes out of the ground.’

In this example, the Path information is expressed in two ways, first by the PP *wang wai* ‘toward outside; outward’ and then the directional complement *chu* ‘exit’. Another common preposition used for Path is *xiang* ‘toward’. For example, *xiang shan-xia* ‘toward hill-down; downhill’. Path may also be expressed by using the verb *shun* or *yan* ‘go along’, as in (19b).

b. 泉水 沿着 管子 涌出 地面。
 Quanshui yanzhe guanzi yong-chu dimian
 spring-water go along-DUR pipe gush-exit ground-surface
 ‘Springwater gushes out of the ground through the pipe.’

c. 泉水 沿着 管子 往 外 涌出 地面。
 Quanshui yan-zhe guanzi wang wai yong-chu dimian
 spring-water go along-DUR pipe toward out gush-exit ground-surface
 ‘Springwater gushes out of the ground through the pipe.’

In (19b), the Path is not only denoted by the serial verbs *yong-chu* ‘gush-exit; gush out’ but also the VP *yan-zhe guanzi* ‘go along the pipe’. Note that Paths may be represented in a combination of these different grammatical forms although speakers typically would not say that. In (19c), the Paths are manifested by the VP *yan-zhe guanzi* ‘go along the pipe’, the PP *wang wai* ‘outward’, and the directional complement *chu* ‘exit’. Lastly, information about the Path may be lexicalized in the main verb, as in (20 - 21).

(20) 河水 涨 了。
 Heshui zhang le
 river-water rise PERF
 ‘The river water has risen.’

(21) 水 满起来 了。
 Shui man-qi-lai le
 Water fill-rise-come PERF
 ‘The water has filled up (the container).’

The verbs *zhang* ‘rise’ in (20) and *man* ‘fill’ in (21) conflate the Motion and the Path to denote an upward movement. Out of 17 Fluidic Motion verb roots in the data, they are the only two displaying this lexicalization pattern. Although they are conceptualized as Path verbs, they do not indicate any specific Paths but merely a general upward direction. Additionally, the Path verbs may also be accompanied by the directional complements *qi-lai* ‘rise-come’ in colloquial speech to further emphasize the upward motion, as in (21).

4.4 Manner

The Manner refers to the way that the Fluid moves. Manner is expressed in 73% of the sentences in the data, either by the main verb of Motion (67%), the adverbial phrase (6%), or both, as in (22 – 23).

(22) a. 水花 溅了 他 满身。
 Shui-hua jian-le ta manshen
 water-droplet splash-PERF 3SG.M full-body
 ‘Water splashed all over his body.’

b. 水面 溅起 水花。
 Shuimian jian-qi shui-hua
 water-surface splash-rise water-droplet
 ‘Water splashes from the surface.’

c. 涨潮 时， 浪花 飞溅。
 Zhangchao shi lang-hua fei-jian
 rise-tide when wave-droplet fly-splash
 ‘The waves splash high when the tide rises.’

(23) 海水 正在 崖脚下 轻轻地 泼溅着。
 Hai-shui zhengzai ya-jiao-xia qingqing-de po-jian-zhe

sea-water PROG cliff-foot-down lightly-ADV splash-splash-DUR
 ‘The seawater is lapping gently against the cliff base.’

In (22a), the Manner is lexicalized in the main verb *jian* ‘splash’. The Manner verb may be followed by a directional complement as the Path satellite. For example, *jian-qi* ‘splash-rise; splash up’ in (22b). The parallel V₁-V₂ form also allows the main verb to be modified by another Manner verb. In (22c), the V₁ *fei* ‘fly’ modifies the main verb V₂ *jian* ‘splash’ to depict the turbulent waves. As for (23), Manner is manifested in two ways. First, it is encoded in the parallel V₁-V₂ *po-jian* ‘splash-splash’, with both of the near-synonymous verbs individually conflating Motion and Manner. Second, it is expressed by the adverbial phrase *qingqing-de* ‘lightly’ to describe the gentle movement of the seawater.

Among the 17 verb roots that evoke the FLUIDIC MOTION frame, 14 are Manner verbs (see Appendix 2). This pervasive lexicalization pattern begs the questions: Can any Manner be conflated with Motion verbs in Mandarin? What constrains the conflation if any? According to Chu’s (2004) ‘inseparability condition’ hypothesis (p. 196), Manner can be conflated with Motion only if it is an intrinsic property of the motion. For example, we can conflate ‘moving’ and ‘on foot at a normal pace’ to form the single verb ‘walk’, but we cannot conflate ‘moving’ and ‘smiling’ (while moving) because the mental state of the Figure is not conceptualized as an intrinsic property of Motion. Chu’s hypothesis can also be applied to Fluidic Motion verbs in Mandarin. The Manner information encoded in the main verb is typically about the amount, speed or force of the fluid, which are conceived as the inherent properties of Fluidic Motion.

5. Discussion

In the analysis, I have demonstrated how the six frame participants of Fluidic Motion events are conceptualized, how they are represented in surface structures in Mandarin, and how they relate to each other semantically and syntactically. The table below shows the percentage of occurrence for each FE in the data according to the grammatical categories.

Table 1. Syntactic realization of the FEs

	Subject	Object	Main verb	Directional complement	PP complement	Other	Total
Fluid	82	15					97
Source	15	4			14		33
Goal		18			12		30
Area		4			6		10
Path			5	57		PP: 10 VP: 4 Other: 2	78
Manner			67			ADP: 6	73

* Total of 100 sentences.

According to Table 1, Fluid (97%), Path (78%), and Manner (73%) are the conceptual elements most frequently manifested in Fluidic Motion events. Although they can surface in more than one way, they each have a preferred syntactic position. Fluid tends to fill the subject slot (82%), and Manner occupies the main verb position (67%) followed by a directional complement as the Pat satellite (57%). Therefore, Fluidic Motion events in Mandarin are most likely being expressed in the following sentence pattern (Figure 2), with a typical example shown in (24).

Figure 2. Basic sentence pattern for Fluidic Motion events

Subject	+	V ₁	+	V ₂
Fluid		Manner		Path

- (24) 岩浆 喷 出来 了。
- Yanjiang pen chu-lai le
- rock-fluid spurt exit-come PERF
- ‘The lava spurted out.’

The Fluid *yanjiang* ‘lava’ fills the subject slot, the Manner is lexicalized in the main verb *pen* ‘spurt’, and the Path is expressed by the directional complements *chu-lai* ‘exit-come’. This observation is potentially useful for language pedagogy and curriculum design. For example, since this is the most basic and pervasive sentence pattern for Fluidic Motion expressions, it should be first introduced to learners of Mandarin before other less common patterns.

Some cross-linguistic differences between Mandarin and English are also found in this study, and they may pose difficulties for second language learners. Take *lou* ‘leak’ for example. Compared to Mandarin, the syntactic realization of the Fluid is less constrained in English, so the same leaking event may be expressed in four different ways, as in (25a - d).

- (25) a. The water leaked.
 b. The roof leaked.
 c. The roof leaked water.
 d. Water leaked from the roof.

The Source is optional in both English and Mandarin. It is also common to omit the Fluid from the English sentence (25b). However, Fluid is almost always represented in Mandarin. It occurs in 97% of the sentences in the data and surfaces in two distinct patterns. The most common pattern has been discussed above (Figure 2). Here I illustrate it again with the verb *lou* ‘leak’.

- (26) a. 水 漏下来 了。
 Shui lou-xia-lai le
 water leak-descend-come PERF
 ‘The water leaked.’

- b. * 水 漏 了。
 Shui lou le
 water leak PERF
 ‘The water leaked.’

In (26a), the Fluid *shui* ‘water’ fills the subject slot while the Path is displayed by the directional complements *xia-lai* ‘descend-come’. With this pattern, the sentence is ungrammatical without the Path, as in (26b). English, however, does not have this requirement. In fact, none of the English sentences in (25) express the Path. This does not mean that English speakers pay less attention to Path. On the contrary, comparative research on the rhetorical styles of S-languages and V-languages finds that speakers of S-languages, e.g., English, tend to provide rich Path descriptions (Cadierno, 2008). The lack of Path expressions in (25) is likely due to the fact that the examples are not from naturally elicited data. They are also not enough quantitatively to claim a pattern. However, the difference in Path requirements that we observe here may suggest that English is less restricted syntactically than Mandarin in this type of Motion expressions.

The second pattern in which the Fluid is manifested in Mandarin features the Fluid as the direct object of the verb, as in (27a) and (27c).

- (27) a. 屋顶 漏 水 了。
 Wuding lou shui le
 house-top leak water PERF
 ‘The roof leaked water.’
- b. * 屋顶 漏 了。
 Wuding lou le
 house-top leak PERF
 ‘The roof leaked.’
- c. 漏 水 了。
 Lou shui le
 leak water PERF
 ‘The water leaked.’
- d. * 漏 水 下来 了。
 Lou shui xia-lai le

leak water descend-come PERF
 ‘The water leaked.’

In (27a), the Source *wuding* ‘roof’ occupies the subject position and the Fluid *shui* ‘water’ serves as the direct object of the verb. While it is grammatical to omit the Fluid from the object slot in English, it is not in Mandarin (27b). When the context can be inferred, the Source may be absent, as in (27c). It is also important to note that this pattern prohibits the Path from surfacing (27d). Additionally, the verb must be a monosyllabic word. When the expression of the Motion is idiomatized, it may be lexicalized as a verb-object compound, e.g., *liuxie* ‘flow-blood; bleed’ (Li & Thompson, 1989). With regard to second language learning, if teachers of Mandarin can tease out these two patterns of Fluidic Motion expressions for learners, it might simplify the learning task for them.

Cross-linguistic differences can be challenging for translators as well, including machine translation. I will briefly discuss an example below to show a glimpse of the challenges.

(28) a. * 屋顶 泄漏 了。
 Wuding xie-lou le
 house-top leak-leak PERF
 ‘The roof leaked.’

b. ? 屋顶 漏 油 了。
 Wuding lou you le
 house-top leak oil PERF
 ‘The roof leaked oil.’

c. 屋顶 漏 水 了。
 Wuding lou shui le
 house-top leak water PERF
 ‘The roof leaked water.’

According to Google Translate¹¹, *The roof leaked* is translated into **Wuding xie-lou le* in Mandarin, as in (28a). However, this sentence has two problems. First, although the English translation for *lou* and *xie-lou* are both *leak*, the subject argument of *xie-lou* is restricted to the role of Fluid. Here in (28a), the Source *wuding* ‘roof’ fills the subject slot, so the verb choice is incorrect. Second, even if the translation program is able to select the correct verb, it still needs to decipher what kind of fluid was leaking based on the semantic information of other frame participants or the context of the utterance. This is because normally the role of the Fluid must be represented in the surface structure in Mandarin. Although example (28b) is grammatical, it is anomalous because speakers typically associate a leaky roof with water (28c) rather than oil.

In their article discussing the Mandarin FrameNet project, You and Liu (2005) note that although the conceptual structure of a given frame may be the same in English and Mandarin, there are large gaps between the two languages in terms of lexicalization patterns and syntactic realizations. Chu (2004) also suggests that “we should expect considerable cross-linguistic variation in the realization of specific kinds of manners in motion events” (p. 198). He finds that some [Manner + Motion] confluences in English cannot occur in Mandarin. For example, the Manner verb *hop* does not have a single equivalent word in Mandarin. To express this motion in Mandarin, one would have to describe it with an adverbial phrase, e.g., *dan-jiao-tiao* ‘one-foot-jump’ or *yong yizhi jiao tiao* ‘jump with one foot’ (p. 198). Additionally, English verbs can conflate the sound of moving and Motion, but Mandarin has to describe the sound with an adverbial phrase, as in (29a) (p. 199).

(29) a. 卡车 轰鸣着 穿过了 小镇。
 Kache hong-ming-zhe chuan-guo-le xiao-zhen
 Truck OMP-emit sound-DUR go through-cross-PERF small-town
 ‘The truck roared across the town.’

b. ? 卡车 吼着 穿过了 小镇。
 Kache ho-zhe chuan-guo-le xiao-zhen
 Truck roar-DUR go through-cross-PERF small-town

¹¹ Google Translate Web site: <https://translate.google.com/>

‘The truck roared across the town.’

In (29a), the single verb *roar* is used to simultaneously describe the truck’s Motion and sound of moving in English. To express the same semantics of the sentence in Mandarin, one would have to use two separate linguistic forms to represent the Motion and the sound. The Motion is indicated by the serial verbs *chuan-guo* ‘go through-cross’, and the sound is expressed by the onomatopoeia *hong* and the verb *ming* ‘emit (sound)’. The construction in (29b) is doubtful because *ho* ‘roar’ is only used for certain animals. This constraint on the conflation of Motion and the sound of moving is also observed in my data, as in (30).

- (30) 自来水 哗哗地 流着。
Zilaishui huahua-de liu-zhe
tap water OMP-ADV flow-DUR
‘The tap water is gurgling.’

In English, the Fluidic Motion and the sound of moving are conflated in the single verb *gurgle*. In Mandarin, however, the sound of water moving is conveyed separately by the adverbial phrase *huahua-de* (onomatopoeia). Similar findings are also noted in communication events. Shi (2008) studies communication verbs in direct quotes and finds that English often uses a single verb to indicate a speaking event and convey information about the Manner whereas Mandarin requires an additional expression for the Manner. For example, the English Manner verb *grumble* is translated into Mandarin *baoyuan-zhe shuo* ‘complain-DUR say; say in a complaining way’. Based on these studies, it seems that Manner encoded in the main verb is much less pervasive in Mandarin than in English. Thus, when translating a verb from English to Mandarin, one would likely need to unpack the English verb by considering other semantic information encoded in the verb.

With regard to the typology of Motion verbs in Mandarin, it is found that 70.6% of the verb roots that evoke the Fluidic Motion frame are Manner or Cause verbs (Co-event). Together with the frequent use of directional complements as Path satellites, Mandarin demonstrates an S-framed lexicalization pattern, as Talmy (2000) suggests. According to the quantitative data, about 38 % of the sentences display this pattern. By comparison, only 5% of them encode the

Path in the main verb, i.e., the V-framed pattern. Chu's (2004), however, claims that Mandarin exhibits a 'parallel system of conflation', for it frequently uses both S- and V-framed lexicalization patterns to express Motion events. In other words, the set of directional verbs are frequently used as the complement to the main verb and as the main verb. I speculate that the parallel system is probably more pervasive in other types of Motion events than Fluidic Motion. The discrepancy between these findings may suggest that rather than a wholesale typology on a given language, analysis of Motion verbs should be conducted frame by frame due to intra-language differences.

6. Conclusion

Although Mandarin and English may share the same conceptual structure of Fluidic Motion events and they both demonstrate the S-framed lexicalization pattern in this domain of motion, there are also striking differences in the surface realizations of conceptual elements as well as in the capacity of lexical items conflating conceptual elements. As Shi noted (2008), "languages are often specific in their lexico-syntactic representation of semantic structures" (p. 184). Frame semantics is a useful framework for comparing and contrasting semantic and syntactic structures across languages. The approach also helps us more fully understand the meaning and usage of a word through our knowledge of the various conceptual roles associated with that word and the relations between the roles.

Appendix 1. Glossing abbreviations

ADP	adverbial phrase
ADV	adverbial phrase marker (地 de)
CLF	classifier
DUR	durative aspect (着 zhe)
LOC	location marker
M	male
MOD	modification marker (的 de)
NEG	negation
OMP	onomatopoeia
PERF	perfective aspect (了 le)

POSS possessive marker (的 de)
 PP prepositional phrase
 PROG progressive aspect
 SG singular
 VP verb phrase

Appendix 2. Fluidic Motion verb roots in Mandarin

Manner verbs	滴 di ‘drip’, 滚 gun ‘roll’, 滑 hua ‘slide’, 溅 jian ‘splash’, 漏 lou ‘leak’ 喷 peng ‘spout’, 渗 shen ‘seep’, 泻 xie ‘cascade’, 泄 xie ‘leak’, 涌 yong ‘gush’
Cause verbs	泼 po ‘spill, splash’, 洒 sa ‘spill’
Path verbs	满 man ‘fill up’, 涨 zhang ‘rise’
Neutral verbs	流 liu ‘flow’, 漫 man ‘overflow’, 溢 yi ‘overflow’

References

- Aikhenvald, A. & Dixon, R. M. (2006). *Serial Verb Constructions: A Cross-linguistic Typology*. Oxford, U.K.; New York: Oxford University Press.
- Cadierno, T. (2008). Learning to talk about motion in a foreign language. In Robinson, P., & Ellis, N. C. (Eds.). *Handbook of Cognitive Linguistics and Second Language Acquisition (1)*. Florence, US: Routledge.
- Chen, P. (1999). *Modern Chinese: history and sociolinguistics*. Cambridge University Press.
- Chu, C. (2004). Event conceptualization and grammatical realization: The case of motion in Mandarin Chinese. Dissertation. University of Hawai’i.
- Fillmore, C. (1982). Frame Semantics. In Linguistics Society of Korea (Ed), *Linguistics in the morning calm* (pp. 111-138). Seoul: Hanshin.
- Fillmore, C., Johnson, C., & Petruck, M. (2003). Background to FrameNet. *International Journal of Lexicography*, 16(3), 235-250.
- Fried, M., & Nikiforidou, K. (Eds.). (2013). *Advances in frame semantics* (Vol. 58). John Benjamins Publishing Company.
- Guo, J. & Chen, L. (2009). Learning to express motion in narratives by Mandarin-speaking children. In Guo J., Lieven E., Ervin-Tripp S., Budwig N., Ozcaliskan S., and Nakamura K. (Eds.), *Crosslinguistic approaches to the psychology of language: Research in the tradition of Dan Isaac Slobin* (pp. 193-208). Mahwah, NJ and London: Lawrence Erlbaum Associates.

- Li, C. N., & Thompson, S. A. (1989). *Mandarin Chinese: A functional reference grammar*. University of California Press.
- Packard, J. (2000). *The Morphology of Chinese: A Linguistic and Cognitive Approach*. Cambridge, UK; New York, NY, USA: Cambridge University Press.
- Payne, T. E. (1997). *Describing morphosyntax: A guide for field linguists*. Cambridge University Press.
- Petrucci, M. R. (1996). Frame semantics. *Handbook of pragmatics*, 1-13.
- Sebba, M. (1987). *The syntax of serial verbs: an investigation into serialisation in Sranan and other languages*. Amsterdam: John Benjamins.
- Shi, D. (2008). Communication verbs in Chinese and English: A contrastive analysis. *Languages in Contrast*, 8(2), 181-207.
- Slobin, D. (1996a). From “thought and language” to “thinking for speaking.” In Gumperz, J. & Levinson, S. (Eds.), *Rethinking linguistic relativity* (pp. 70– 96). Cambridge: Cambridge University Press.
- Slobin, D. I. (1996b). Two ways to travel: Verbs of motion in English and Spanish. *Grammatical constructions: Their form and meaning*, 195-219. Oxford: Clarendon.
- Slobin, D. I. (2004). How people move. *Discourse across languages and cultures*, 195-210. Philadelphia, PA: John Benjamins Pub.
- Talmy, L. (1991). Path to realization: A typology of event conflation. *Annual Meeting of the Berkeley Linguistics Society*, 17(1), 480.
- Talmy, L. (2000). *Toward a Cognitive Semantics*. Cambridge, Mass.: MIT Press.
- Wardhaugh, R. (2010). *An introduction to sociolinguistics*. John Wiley & Sons.
- You, L. & Liu, K. (2005). Building Chinese FrameNet database. In *Natural Language Processing and Knowledge Engineering, 2005. IEEE NLP-KE '05. Proceedings of 2005 IEEE International Conference on*, 301-306.