From caused-motion to spatial configuration

Placement verbs in Mandarin

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This study re-examines Mandarin Placement verbs from a lexical-constructional perspective and redefines the class with semantic-to-syntactic properties pertaining to lexicalization patterns in Mandarin. It aims to show that Placement verbs lexicalize a cognitively salient causal chain that extends from an agentive motion to locational change and to resultant spatial configuration. The event chain serves as the conceptual basis for linking motion-triggered events and states that are syntactically distinct in profiling the three contingent stages: caused to move → caused to be → spatially grounded. Although English Placement verbs (put, hang, etc.) are typically taken to be exemplars of the caused-motion construction, this study shows that Placement verbs may be distinguished syntactically and semantically from pure Caused-Motion verbs and posture-based Spatial Configuration verbs. While the three classes of verbs may be viewed as demonstrating respectively the individuated stages of the proposed event chain, Placement verbs are the only class that encompasses all three event types in their meanings and are associated with a wide range of semantically compatible constructions. The three stages are discussed with graphical representations and collocational distinctions. Further sub-classifications of the Mandarin Placement verbs are provided with different semantic profiles for each subclass. Crucial to the analysis is the fact that location-profiled uses of Placement verbs outnumber path-profiled uses in Mandarin, indicating a categorical shift from motional to locational predication. By teasing out the language-specific and class-specific lexicalization patterns that are collo-constructionally definable, the study demonstrates the usefulness of a lexical-constructional approach in fine-tuning verbal semantic distinctions for cross-linguistic and cross-categorial comparisons.

Keywords: Placement verbs in Mandarin, caused motion, spatial configuration, causal chain, lexical-constructional approach

1.   Introduction

Lexical semantic studies have been on the frontiers of linguistic inquiries as the meanings of verbs often determine and shape the potential scope of argument expressions. This study aims to provide a thorough description and analysis of the Mandarin Placement verbs from a lexical-constructional perspective. It shows that the range of verb meanings is manifested through the range of collo-constructional associations, which are critical in identifying language-specific and class-specific semantic distinctions.

1.1   Mandarin Placement verbs

As Croft (1990: 48) proposed that a verb represents "a categorization of events", a systematic investigation of verb classes may contribute to the understanding of the fundamental mechanisms of human cognition (Croft & Cruse 2004; Langacker 1987). This study focuses on investigating the characteristic behavior of Mandarin Placement verbs (henceforth PL verbs), which describe a basic event type whereby an Agent (the mover) causes a Figure (the moved entity) to be placed at a Ground (the location). As Narasimhan et al. (2012: 1) clearly state, "Across cultures, simple actions of putting things in places … are a ubiquitous part of everyday experience…" The class includes a large number of motion-triggered verbs in Mandarin, such as *fàng* 放 'put', *guà* 掛 'hang', *cún* 存 'store', *bǎi* 擺 'set', *zhuāng* 裝 'load/fill', *sāi* 塞 'insert', *dǎo* 倒 'pour', *pō* 潑 'splash', and other semantically related verbs. However, compared to other motion-related verbs, Mandarin PL verbs are less understood and under-represented as a major class. Previous studies on Mandarin PL verbs focused mainly on the agentive-causative use of the representative member *fàng* 放 'put, place' and its highly polysemous behavior (e.g. Chang 2015; Chen 2012; Cheng 2008; Liu & Chang 2015b; Liu 2003; Luo 2011). A more comprehensive study of this class of verb in Mandarin is needed for a language-specific account and cross-linguistic comparison.

The class of PL verbs is potentially heterogeneous, as evidenced from earlier studies of English PL verbs. According to FrameNet,[1] a database built upon Frame Semantics (Fillmore 1982; Fillmore & Atkins 1992), the English 'placing' frame is linked to seven subframes, each with a distinct set of roles (see Appendix A). In Levin (1993), 'verbs of putting' are listed as the first major class with ten sub-classes. Pauwels (2000) compared the varied properties of the near-synonym set of *put*, *set*, *lay*, and *place* and concluded that the verbs encode different levels of specificity. Given that "languages vary widely in the kinds of notions they encode

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1.   https://framenet.icsi.berkeley.edu/fndrupal/

in verbs" (Narasimhan et al. 2012: 9), a series of eminent questions arise: **what about Chinese PL verbs? How does Chinese lexicalize the various distinctions of placement? What aspects of the placing event are syntactically encoded and semantically differentiated?**

To answer these questions, we examined the prototypical PL verbs in Mandarin, such as *fàng* 放 'put', *guà* 掛 'hang' and *zhuāng* 裝 'load/fill', and propose a revision of the lexical semantic properties of this class of verbs. This study aims to show that PL verbs in Mandarin lexicalize a cognitively salient event chain (Croft 1990) extending from a motional cause to locational change and to spatial configuration. The event chain serves as the conceptual basis for linking motion-initiated and causally related events that are syntactically distinct with varied semantic profiles (Langacker 1987; 1990). The three different stages of a motional chain involve 'cause to move', 'cause to change location' and 'cause to be at a location', each of which depicts a distinct scene with distinct constructional realizations. Based on distributional patterns of constructional variations, PL verbs in Mandarin can be further distinguished into different subtypes with distinct lexical semantic properties.

Studies of English PL verbs have shown that the prototypical PL verb *put* is viewed mainly as denoting a caused-motion event, i.e. to cause an entity to move to some position (e.g. Goldberg 1995; Levin 1993). As it is used predominantly in an agentive-transitive pattern, the verb *put* does not allow a syntactic alternation for locative predication or locative inversion,[2] as exemplified in (1) below:

(1)   English Placement verb *put*:   (Levin 1993: 111)
    a.   Caused motion: I put the books on the table.
    b.   Locative predication: *The books put on the table.
    c.   Locative inversion: *On the table put the books.

In terms of grammatical distribution, English PL verbs are more restricted than their Chinese counterparts. While English *put* cannot be used in locative predication (Ameka & Levinson 2007) or locative inversion (Pan 1996) without passivation (e.g. *The book is put on the table./On the table was placed a book.*), Mandarin PL verbs can readily occur in these two constructions without additional marking, as exemplified in (2) below:[3]

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2.   Here the term "locative inversion" is simply used to refer to the construction of "LocNP VP NP" without adopting the theoretical account of the derivation and argument structure (cf. Bresnan 1990; Levin & Rappaport Hovav 1995: 215–274). Such a construction may be termed differently as locative verb subject (LVS) construction, (stative) existential construction/sentence, and presentative sentence, etc. (Chen & Jing-Schmidt 2014; Yang & Pan 2001; Li & Thompson 1981).

3.   The examples given here are skeleton sentences for clear illustration and contrast. Some may argue that the Mandarin sentences in (2b–d) may be simply viewed as having a 'topic-comment' structure, but this is not supported by that fact that (2c–d) are not attainable for other caused-motion verbs such as *ban* 搬 or *yi* 移 'move'. Please see § 4.1 for discussion.

(2) a. *Wǒ bǎ shū fàng dào/zài zhuō-shàng.*   (agentive-transitive)
       1p.s BA book put to/at   table-on
       'I put the book onto/on the table.'

     b. *Shū fàng dào/zài zhuō-shàng le.*   (inchoative change of location)
       book put to/at   table-on   ASP
       'The book got placed on the table.'

     c. *Shū fàng zài zhuō-shàng.*   (resultative state: Figure-anchored)
       book put at table-on
       'The books were put/placed on the table.

     d. *Zhuō-shàng fàng le/zhe shū.*   (resultative state: Ground-anchored)
       table-on   put ASP book
       'On the table were placed some books.'

In the above, Example (2a) demonstrates the agentive-volitional use, (2b) the inchoative change, (2c) the resultative state of the Figure, and (2d) the locative inversion. According to Liu & Chang (2015a), locative inversion in Mandarin denotes a spatial configurational relation that profiles a Ground-anchored view of a locative state. The examples in (2) clearly show that Mandarin PL verbs are allowed to occur in a wider range of constructions, lexically encoding three different event types that signal the contingent stages of a motional chain from caused-motion to locational change to spatial configuration, as summarized below.

Table 1. The event chain of placement

Event chain	Cause-motion ⇒	Locational change ⇒	Spatial configuration
Semantic profile	Motional Path	Inchoative relocation	Figure-anchored or Ground-anchored

The three stages of the causal chain highlight different facets of a cognitively contingent event series: a caused motion (Stage 1) triggers a locational change (Stage 2) and then results in the relocation of the moved Figure in relation to the Ground (Stage 3). By encompassing all three stages in their meanings, Mandarin PL verbs display collo-constructional variations with different semantic profiles (Langacker 1990). When aligned with typical caused-motion verbs such as *bān* 搬 'move', they may profile an agentive cause and a motional path marked by the goal marker *dào* 到 'to' (Liu, Hu, Tsai & Chou 2015), as in (2a); when used to predicate locational change only, the Figure is highlighted and the inchoative aspect marker *le* 了 is used to signal a change of state, as in (2b). When used to profile the ending state of a spatial configuration, they may profile a Figure-anchored (2c) or Ground-anchored (2d) view of the spatial arrangement.

The potential range of form-meaning associations will be discussed in detail in the subsequent sections. As a starting point, the frequency distribution of the

three stages are illustrated with the uses of the prototypical member *fàng* 放 'put' in Sinica Balanced Corpus, as given below:

Table 2. The distribution of the three stages of *fàng* 'put' in Sinica Corpus[4]

	Agentive	Inchoative	Resultative	Total
fàng 放 'put'	546 (67%)	25 (3%)	250 (30%)	821 (100%)

As shown in Table 2, the agentive-volitional use of *fàng* (67%) outnumbers the other two types. This distributional pattern demonstrates the general usage of Mandarin PL verbs.

1.2   The database and methodology

The analyses in the paper are mainly based on corpus data from Sinica Balanced Corpus[5] (10 million words) and Chinese Gigaword (10 billion words).[6] Except for the purpose of easy contrast, the majority of the examples given in this paper are extracted from the two corpora. Corpus examples are occasionally simplified for ease of reading and understanding, and non-corpus examples are mainly used for simple comparison (as in (2)) or syntactic tests that illustrate the acceptable vs. unacceptable contrast (as in (23–24)).

In terms of theoretical framework, the paper adopts a lexical-constructional approach to analyzing the semantic-to-syntactic distinctions of PL verbs, as will be further detailed in § 2.3. It examines the compatibility between verbs and constructions to reveal the construction-associated lexical semantic properties (cf. Boas 2003; Iwata 2004; 2005a; 2005b).

The rest of the paper is organized as follows: § 2 provides a review of previous works on English and Mandarin PL verbs, followed by an account of the lexical-constructional approach; § 3 then offers detailed lexical-constructional analyses of Mandarin PL verbs, followed by further discussions of relevant issues in § 4; § 5 is a preliminary attempt to distinguish the potential subclasses of Mandarin PL verbs; and § 6 concludes the study with a discussion of its significance.

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4.   The data in Table 2 only include complete sentences of *fàng* denoting the meaning of placing, instead of releasing in the corpus. For the total number of *fàng* 放 + prep. (eg., *fang-jìn* 放進 "put in") in Table 3, the Chinese Word Sketch was utilized, which segmented "*fàng* 放 + prep" as one word. As a result, the total numbers of *fàng* 放 in the two tables appear to be different.

5.   http://asbc.iis.sinica.edu.tw/

6.   https://catalog.ldc.upenn.edu/LDC2003T09

2. Previous studies of Placement verbs

In this section, some of the previous studies on Placement (PL) verbs will be reviewed. It starts from PL verbs in English, and then moves to PL verbs in Mandarin Chinese.

2.1 Placement as a subtype of caused-motion event

Placement verbs in English are viewed mainly as encoding the meaning of caused-motion. As Goldberg (1995: 60) states, "*put* lexically designates a type of caused-motion event, and caused motion is of course the semantics associated with the caused-motion construction". From the constructional perspective, the argument structure of *put* is compatible and fused with the Caused Motion Construction with three participants: Cause-Putter, Theme-Puttee, and Goal-Put.Place, as specified below in Figure 1. For Goldberg, the Put.Place role is a type of goal, typically required in a Caused Motion Construction.
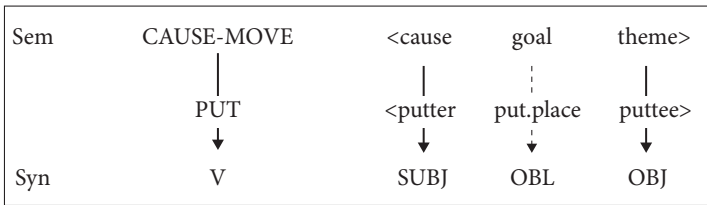
Sem	CAUSE-MOVE		<cause	goal	theme>
	PUT		<putter	put.place	puttee>
Syn	V		SUBJ	OBL	OBJ

Figure 1. Caused motion construction with the verb PUT (Goldberg 1995: 52)

Since the verb *put* involves an oblique-PP argument, the status of the PP has been debated about in previous literature (Gawron 1986; Pustejovksy 1991; Levin & Rappaport Hovav 1991). What is relevant to our study is that this class of verbs involves a caused-motion with a resultative state. Slobin, Bowerman, Brown, Eisenbeiss, & Narasimhan (2011) took the Placement event as denoting a caused motion event type that involves four conceptual components: Figure (the object that is caused to move), Action (the Placement action), Goal (the intended end location of the Figure), and Relation (the resulting spatial relationship between the Figure and the Goal). The four components are specified in the following way as given in Figure 2.
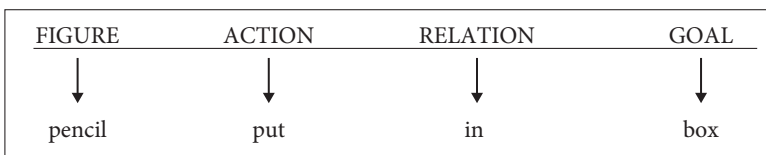
FIGURE	ACTION	RELATION	GOAL
pencil	put	in	box

Figure 2. Semantic components of a caused motion event (Slobin et al. 2011: 135)

It should be noted that the component "Relation" in Slobin et al.'s terms is to specify the fact that a placement event in English involves a resultative spatial state, instead of a motional path. That is, Placement verbs lexically encode a combination of process and state, as also claimed by Pustejovksy (1991). This study will further show that the composition of motion plus configurational state lexicalized in PL verbs sets them apart from pure Caused-motion verbs (e.g. *move*) and spatial configuration verbs (e.g. *stand*).

2.2   Studies on Mandarin Placement verbs

A few previous studies have looked at Mandarin PL verbs (Chen 2009; Chen 2012; Cheng 2008; Li & Thompson 1981; Xu 1998b). Among them, Cheng (2008) attempted to provide a comprehensive overview of verbs of putting in English and Chinese by comparing the caused-motion construction in the two languages. It extended Levin's (1993) original classification of English putting verbs into 17 subclasses with Chinese corresponding verbs; however, no clear justification was given for the revision. Adopting an experimental paradigm, Chen (2012), uses video clips to elicit the use of PL verbs in describing various placing and removing events.[7] Among the verbs chosen by the participants, *fàng* 放 'put' is used most frequently to denote a general range of events that involve "putting a large range of inanimate Figure entities with different physical properties, i.e. cup, rice, box, book, apple, stone, pen, and rope, at various kinds of locations such as table, shelf, floor, tree branch, and hole." (Chen 2012: 43). Chen then classified the elicited verbs into sub-groups based on their semantic features. The subgroups include (a) *dressing* verbs (*chuān* 穿 and *dài* 戴 'put on'), which take clothing as Figure and body as Ground, as in (3a); (b) verbs specifying spatial relations between Figure and Ground, such as *sāi* 塞 'stuff' and *chā* 插 'insert' specifying the tight-fitting, as in (3b); (c) verbs specifying intentionality and control, such as *rēng* 扔 'throw' specifying intentional tossing of a Figure, as in (3c); and (d) verbs encoding instrumental Placement, including *bào/līng/tí* 抱/拎/提 'hold/carry in hand' (arm or hand as Instrument), as in (3d).

(3)   Examples of subgroups of Mandarin Placement verbs   (Chen 2012: 44–46):[8]
   a.   *Yī-gè   rén   bǎ   wàitào chuān-shàng   le.*
        one-CL person BA   coat   put on-ascend PFV
        'A person put on a coat.'

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    b.   *Nà-gè   rén   bǎ làzhú chā-jìn   zhútái.*
        that-CL person BA candle insert-enter candle-stand
        'That person inserted the candle in the candle stand.'

    c.   *Tā   bǎ shū rēng zài dì-shàng.*
        1p.s BA book throw at   ground-on
        'She threw the book on the ground.'

    d.   *Tā   bǎ shū bào zài shǒu-shàng.*[9]
        1p.s BA book hold at   hand-on
        'She held the book in her hand.'

With regard to syntactic constraints, Chen (2012) asserts that Mandarin PL verbs are most commonly used with the marked transitive BA-construction, viewed as the 'disposal construction' (Chao 1968; Li & Thompson 1981), rather than the default transitive pattern "NP1 V NP2 PP". Three reasons are given for the collocation with BA: (a) the meaning of placement (*i.e.* caused the Figure's change of location) matches well the disposal and manipulation meaning of the BA-construction; (b) it fits the preference of iconicity in Chinese, as we should grab (the lexical meaning of *bǎ* 把) the Figure first before putting it on a Ground; and (c) BA-construction allows the structure of post-verbal locative, which is preferred in Chinese. However, as observed in Cheng (2008), the default transitive pattern and other agentive constructions are also commonly found, as shown in (4) to (7):

  (4) Agent + Theme + Location:[10]
      Zhāngsān fàng le   yì-běn shū zài zhuōzi-shàng.
      Chang-san put ASP one-CL book at   table-on
      'Chang-san put a book on the table.'

  (5) Agent + Location + Theme:
      a.   *Zhāngsān fàng zhuōzi-shàng yì-běn shū.*
          Chang-san put table-on   one-CL book
          'Chang-san put a book on the table.'

      b.   *Zhāngsān zài zhuōzi-shàng fàng le   yì-běn shū.*
          Chang-san at   table-on   put ASP one-CL book
          'Chang-san put a book on the table.'

  (6) Theme + Agent + Location:
      a.   *Nà-běn shū zhāngsān fàng zài zhuōzi-shàng.*
          that-CL book Changsan put   at   table-on
          'That book, Chang-san put it on the table.'

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9. Please note that this Example (3d) is created by the author, since Chen (2012) did not give any example of these verbs in the discussion.

10. In this study, Theme/Location are interchangeable with Figure/Ground.

b. *Nà-běn shū bèi   zhāngsān fàng zài zhuōzi-shàng.*
that-CL book passive Changsan put at   table-on
'That book was put on the table by Chang-san.'

(7) Location + Agent + Theme:
a. *Zhuōzi-shàng zhāngsān fàng le   yì-běn shū.*
table-on   Chang-san put ASP one-CL book
'On the table, Chang-san put a book.'
b. *Zhuōzi-shàng bèi   zhāngsān fàng le yì běn shū.*
table-on   passive Chang-san put ASP one-CL book
'On the table was put a book by Chang-san.'

Among these alternations, it is argued by Cheng that the preverbal locative con-
struction "NP1 PP V NP2" in (3b) is the prototypical caused-motion structure
associated with Mandarin PL verbs (see also Xu 1998a). Other alternations are
viewed as involving the same semantic elements and share the same conceptual
content, and thus only differ at the syntactic level. No matter which construction is
taken to be most typical with PL verbs, both Chen (2012) and Cheng (2008) only
focused on the discussion of agentive uses of PL verbs.

However, based on corpus observation, instances with PL verbs do not always
express the full range of core arguments: Agent, Theme, and Location. PL verbs
in the corpus often display intransitive constructions without an agent, which will
be discussed in the next section. Given the assumption of Construction Grammar
(Goldberg 1995), different syntactic patterns are mapped with different construc-
tional meanings. It is then important to see how constructional variations can help
reveal the lexical semantic distinctions encoded in PL verbs in Mandarin.

2.3   Theoretical approach: Lexical-constructional approach

In this study, we adopt the lexical-constructional approach to verbal semantics, exam-
ining the compatibility between verbs and constructions to reveal the construction-
associated lexical semantic properties (Iwata 2004; 2005a; 2005b; Boas 2003).

In most lexical semantic studies, a commonly held belief is that the meaning
of a verb is manifested in syntactic realizations (Levin 1993; Levin & Rappaport
Hovav 1996). Under this premise, verb meanings can only be distinguished if
they are syntactically relevant and detectable to signal the syntactic-to-semantic
linking. From a cognitive semantic perspective, greater emphasis is placed on the
conceptual framework as a prerequisite to defining meaning. According to Frame
Semantics (Fillmore 1982; Fillmore & Atkins 1992), the meaning of a verb can be

defined only in relation to a structured background of eventive knowledge and experiences. The background frame is shared by semantically related lemmas that can best be described and unified with a set of frame-specific participant roles, called Frame Elements. Expanding upon the frame-verb relation by integrating verb meanings with syntactically detectable constructional patterns, the proposed research **will adopt a hybrid approach that refines the semantic notion of frames with the aid of formal constraints from Construction Grammar** (Goldberg 1995; 2010). A construction is defined as a basic form-meaning mapping template that can be instantiated with semantically compatible verbs as instances of construction realization. Thus, constructions and verbs, both as meaning-bearing units, go hand-in-hand in defining the argument expressions characteristic of a given background frame (cf. Liu & C-W Chang 2015; Liu & J-C Chang 2015a; Liu 2018).

The construction-based approach is powerful in its account for idiosyncratic uses of a verb in a non-typical syntactic frame (e.g. *He sneezed the napkin off the table.*), which can be readily explained as being derived from constructional coercion without postulating additional lexical rules (Goldberg 1995). However, to capture the finer lexical distinctions, the approach itself needs to be constrained by a deeper consideration and incorporation of lexical specificities. In this study, we take the lexical-constructional approach by focusing on the semantics of verbs that enable constructional associations. As Iwata (2004: 1) stated, "in order to explain why that verb can be sanctioned by that construction at all, a detailed analysis of verb meanings is called for." We adopt the lexical-constructional model proposed by Iwata (2005a; 2005b) to account for the mapping relation between verbal meanings and constructional meanings. In this model, there is the distinction of Lexical Head Level Meaning (L-meaning), which is encoded in the verb(s)' event scenario *per se* and is independent of any syntactic construction, and Phrasal Level Meaning (P-meaning), which is associated with a certain syntactic frame as reflecting its thematic core. In terms of the syntactic realization, the L-meaning will map into the P-meaning once the meanings are matched and thus realized with the syntactically associated frame (construction). In addition, the L-meaning may contain more than one part, and therefore "when that part of the L-meaning is compatible with a thematic core is profiled (Langacker 1987; 1990) with the rest of the L-meaning backgrounded, a lexical verb occurs in a relevant syntactic frame" (Iwata 2005a: 362–363). The model is exemplified in Figure 3 with the case of *load,* which participates in the locative alternation.

L-meaning:

Someone (α) transfers objects (β) onto the bottom surface of a container (γ), and   fills that container (γ) with those objects (β)

P-meaning:

Someone (X/α) transfers objects (Y/β) onto the bottom surface of a container (Z/γ)

Someone (X/α) fills a container (Y/γ) with objects (Z/β)

thematic core:

X causes Y to go Z

X affects Y by adding Z

syntactic frame:

$NP_X V NP_Y PP_Z$

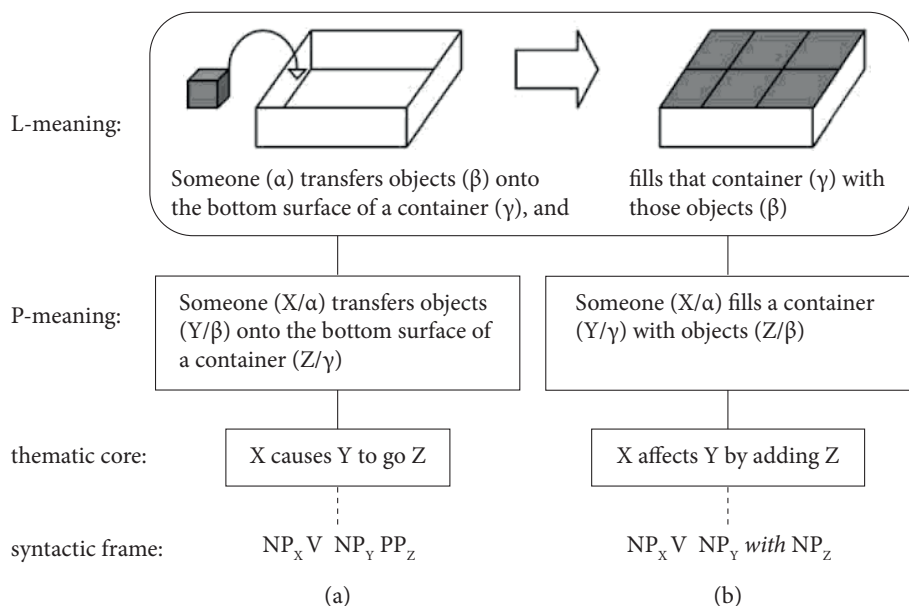$NP_X V NP_Y$ *with* NP_Z

(a)

(b)

Figure 3. 'Fusion' of *load* in locative alternation in Iwata's lexical constructional approach (Iwata 2005b: 108)

As Figure 3 shows, the lexical meaning of *load* contains not only a 'placing' event, but also a 'filling' event; therefore, it can be expressed with two different syntactic frames, forming the locative alternation.

In the following section, we will apply this lexical constructional model to the analysis of Mandarin Placement verbs. Lexical senses will be analyzed initially via syntactic realizations. The profiling specifications of individual verbs or verb classes will then be identified with lexical constructional variations that serve as formal indicators of semantic distinctions. In sum, the lexical semantic specificities of verbs and verb classes will be examined in terms of the interaction between verbs and constructions, or the verb-construction associations.

3.   Redefining Mandarin Placement verbs: From caused-motion to spatial configuration

3.1   Distinct properties of Mandarin Placement verbs

There are apparent constructional differences between Mandarin and English PL verbs in lexicalization pattern and syntactic range. Besides having a similar set of semantic components (Agent, Theme, and Location), PL verbs in Mandarin show unique language-specific properties distinct from those of their English

counterparts. There are at least four dimensions for comparison. Firstly, in terms of lexical origin, English, along with other Germanic languages, lexicalizes some basic PL verbs with "posture-based pattern", as *set* and *lay* originate from *sit* and *lie* respectively (Pauwels 2000; Newman 2002; Lemmens 2006). Most Mandarin PL verbs, however, are not lexically derived from posture verbs, nor do the majority of posture verbs denote placement events (Liu & Chang 2017), as in (8).[11] It may be argued that, English also lexicalizes non-posture-based PL verbs such as *put* (which is derived from Middle English *putten* 'to push') in daily expressions as in the use of Mandarin *fàng* 放. In this regard, Mandarin and English are typologically similar;[12] however, it should be noted that, while *put* is set as the default PL verb in English, the posture-based *set* and *lay* remain the dominant use as basic PL verbs in Germanic languages (Pauwels 2000). The posture- vs. non-posture-based distinction can be seen as indicating different sources of conceptualization and lexicalization for the placing event. Secondly, in terms of constructional range, Mandarin PL verbs such as *fàng* 放 and *bǎi* 擺 'put/place' can be used in locative inversion without additional marking, while English verbs *put* and *place* cannot be readily used in locative inversion without being passivized, as shown in (9) (Bresnan 1990; Levin & Rappaport Hovav 1995). Thirdly, in terms of argument selection, the English *fill-load* distinction with different argument selections doesn't seem to surface in Mandarin. As illustrated in (10), the corresponding verb *zhuāng* 裝 'put into' can denote either *fill* or *load* in profiling a Container-Containee relation in (10a). While English *fill* can only take a Container as the direct object (10b), Mandarin *zhuāng* 裝 can select either the Container or Containee as the direct object (10c). The meaning of *fill* in signaling a completely affected Container has to be expressed in Mandarin by a V(erb)-R(esult) compound with the resultative *mǎn* 滿 'full' (10d). Fourthly, in terms of syntactic alternation, the Container-Containee

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11. It should be noted that an exception to this observation seems to be the posture-based verb *lì* 立 'to stand', which can be used to denote placement. Compared to other posture verbs, the verb is a more archaic form in denoting posture. In Sinica Corpus, *lì* 立 is restricted in its human posture use as it only denotes the stative sense of 'maintaining posture' (*lì zài nàli* 'stands there'), but not '(someone) assuming posture' as in *lì qilai* 立起來 '(someone) *stands up*'. There appears to be a functional division between *lì* 立 (to place) and *zhàn* 站 (to stand) in contemporary usage. See detailed discussions in § 4.2.

12. This 'posture-based' pattern is found not only in English, but also in other Germanic languages as Dutch, German, and Swedish. However, these Germanic languages are different from English as they lexicalize these "caused-posture verbs" as the default way to express placement. For example, in Dutch, the prototypical Placement verbs are *zetten* 'set' and *leggen* 'lay', which are derived from posture verbs *zitten* 'sit' and *liggen* 'lie'; and while *doen* 'do' is also used as a PL verb, it is not the preferred and can only be used in certain contexts. (Serra Borneto 1996; Hansson & Bruce 2002; Lemmens 2006; Narasimhan & Gullberg 2011).

or Content-Location Alternation observed in English *spray/load* verbs (e.g. *spray paint on the wall* vs. *spray the wall with paint*, see Pinker 1991; Goldberg 1995; Boas 2003) seems to correspond to different versions of the Mandarin BA construction with either the Content or the Location as the affected object, as shown in (11).

(8)   Most Mandarin posture verbs cannot be used as Placement verbs (except for *lì* 立 'to stand'):
    a.   Mandarin (non-posture-based placement):
        Wǒ bǎ shū *zuò/*tǎng/fàng/bǎi zài zhuō-shàng.
        1p.s BA book ***sit/*lie/put/set**   at   table-on
        'I *sat/*laid/put/placed the book on the table.'
    b.   English (posture-based placement):
        I **set/laid** (i.e. caused to sit/lie)**/put/placed** the books on the table.

(9)   Mandarin PL verbs can be readily used in locative inversion:
    a.   Chinese locative inversion:
        Zhuō-shàng fàng   zhe jǐ-fèn   zhōngwén bàozhǐ.
        table-on   put/place ASP several-CL Chinese   newspaper
        #'On the table were put several Chinese newspapers.'
    b.   English locative inversion: On the table (were) *put/*placed some newspapers. (has to be passivized)

(10)   Mandarin *zhuāng* 'fill/load' is underspecified with argument selection:
    a.   *Wǒ zài bēizǐ-lǐ   **zhuāng** diǎn shuǐ, zài bǎ xǐyīfěn*
        1p.s in cup-inside fill/load some water, then BA washing-powder
        dǎo-jìnqù.
        pour-into
        'I put some water into the cup, and then poured the cloth-washing powder into it.'
    b.   *Jǐngchá   jiāng dúpǐn **zhuang** shàng tuīchē, dǎo-rù   fùjìn*
        Police officer JIANG drug load   onto trolley, pour-into nearby
        de fénshāolú.
        DE incinerator
        'The police officer loaded the drugs onto a trolley and poured them into an incinerator nearby.'
    c.   English *fill* only selects a Container as direct object:
        I filled **the bucket** with water. → *I filled water into the bucket.
    d.   Mandarin *zhuāng* may take either Containee or Container as direct object:
        i.   *Zhuāng* + Containee
            Shuǐ-tǒng zhuāng le xǔduō shèn-jìn-lái de shuǐ.
            bucket   fill   ASP a-lot-of infiltrated DE water
            'The bucket is filled with a lot of water that has infiltrated.'

ii. *Zhuāng* +Container
Fùzhuó dújì de cántǔ yě dōu yǐ zhuāng tǒng mìfēng.
Adhere toxin DE soil also all already fill bucket seal
'All of the toxic soil are already packed and sealed.'

e. The meaning of *fill* is expressed with a V-R compound in Mandarin denoting total effect
Māmā cháng zài xiàtiān-lǐ bǎ yùgāng zhuāng -mǎn shuǐ.
mother often in summer-inside BA bathtub fill-full water
'In the summer days, Mom often filled the bathtub with water.'

(11) Mandarin Locative Alternation in BA-construction

a. Location as affected object
Tāmen bǎ zuǐchún, yáchǐ dōu tú-shàng yíngguāng rǎnliào.
3p.p BA lips teeth all spread-on fluorescent dyes
'They painted their lips and teeth with fluorescent dyes.'

b. Content as affected object with postverbal locative
Tāmen bǎ yíngguāng rǎnliào tú zài zuǐchún hé yáchǐ shàng.
3p.p BA fluorescent dyestuff spread at lips and teeth on
'They painted fluorescent dyes on their lips and teeth.'

The differences outlined above call for a comprehensive re-examination of the class of Mandarin PL verbs, whose semantic scope and categorial membership need to be soundly defined before a detailed analysis of the subclasses can be launched.

3.2 Placement verbs *vs.* caused motion verbs and posture verbs

As discussed above, Mandarin PL verbs show some language-specific properties that are quite distinct from their English counterparts. Categorially, these unique properties set them apart from pure caused-motion and posture verbs in Mandarin. As already mentioned, English verbs of putting cannot take a prepositional phrase headed by the goal preposition *to* or source preposition *from*, which is considered to be a crucial difference that separates placement from other caused-motion verbs, as in (12):

(12) a. I moved/*put the book from the chair to the table.
b. I put the book on/onto/under/near the table.

It is noted that even though *put* may occur with a path+endpoint preposition such as *unto*/*into*, a pure goal marker 'to' is not allowed, which indicates that verbs of putting subcategorize a locative, rather than a goal argument in English. In contrast, Mandarin PL verbs are less constrained, as they are compatible with both Source and Goal markers *cóng* 從 'from' and *dào* 到 'to', as well as the locative marker *zài* 在 'at/in/on', as exemplified in (13).

(13)   Placement verbs: *fàng* 'put' and *guà* 'hang'
a.   *Yī-nán-yī-nǚ*   *zhèng máng zhe bǎ lǜyóuyóu de xīn chá*
one-male-one-female PROG busy ASP BA greeny   DE new tea
*cóng kuāngzǐ-lǐ.   Yī-xiǎo-bǎ   yī-xiǎo-bǎ   fàng **dào** guō-lǐ.*
from basket-inside one-small-CL one-small-CL put **to**   boiler-inside
'The men and women are busy in putting the greeny new teas to the boiler from the basket bit by bit.'
b.   *Dùxiàng bǎ zhè-gè zuòpǐn fàng zài yī-gè   mùxiāng-lǐ.*
Duchamp BA this-CL work   put at   one-CL wooden box-inside
'Duchamp put this work in a wooden box.'
c.   *Tā   yào bǎ zhè-xiē tú   guà **dào** qiáng-shàng.*
3p.s want BA this-CL chart hang **to**   wall-on
'He wants to hang these charts unto the wall'

The compatibility with both goal-PP with *dào* 'to' and locative-PP with *zai* 'at' is a unique property of PL verbs that helps distinguish PL verbs from pure Caused-motion verbs such as *bān* 'move' that prefer a goal argument with *dào* 'to' or a source argument with *cóng* 'from', but not a locative with *zài* 'at/in/on':

(14)   Caused-motion Verb: *bān* 'move'
a.   *Wángwěi… jīngcháng zhǔdòng zài shàngkè-qiān bāng lǎoshī   cóng*
Wang-wei often   actively at class-before   help teacher **form**
*bàngōngshì bǎ qìcái   bān **dào** jiāoshì.*
office   BA equipment move **to**   classroom
'Before the class, Wang often helps the teacher to take the equipment to the classroom from the office.'
b.   *Tāmen bǎ shēnghuó bìxūpǐn   dōu bān   dào/*zài liàntuánshì.*
3p.p   BA life   necessities all   move **to/*at**   practice studio
'They move all of the life necessities to the studio.'

More convincing evidence can be found in corpus distribution. In both Sinica Balanced Corpus and Chinese GigaWord, there is a clear distributional skewing betweenthe two verbs *fàng* 放 'put' and *bān* 搬 'move' in their collocational frequency with the static locative marker *zài* 'at' vs. the goal marker *dào* 'to'/*jìn* 'into'/*rù* 'into', as given in Tables 3 and 4.

Table 3. The distribution of *fàng* 'put' vs. *bān* 'move' with *zài* 'at'/*dào* 'to'/*jìn* 'into'/*rù* 'into' in Sinica Corpus

	zài 在	*dào* 到	*jìn* 進	*rù* 入	Total
fàng 放 'put'	**980 (76%)**	69 (5%)	113 (9%)	133 (10%)	1295 (100%)
bān 搬 'move'	0	**159 (84%)**	21 (11%)	10 (5%)	190 (100%)

Table 4. The distribution of *fàng* 'put' vs. *bān* 'move' with *zài* 'at'/*dào* 'to'/*jìn* 'into'/*rù* 'into' in Gigaword

	zài 在	*dào* 到	*jìn* 進	*rù* 入	Total
fàng 放 'put'	24384 (80%)	2704 (9%)	2223 (7%)	1106 (4%)	30417 (100%)
bān 搬 'move'	2 (0.04%)	3203 (60%)	1635 (30.46%)	507 (9.5%)	5347 (100%)

It is evident from the above tables that 76% of *fàng* 放 'put' in Sinica Corpus and 80% in Gigaword collocate with *zài* 在 'at', while almost 0% of *bān* 搬 'move' occurs with *zài* 在. In contrast, 84% of *bān* 搬 'move' in Sinica Corpus and 60% in Gigaword collocate with the goal marker *dào* 到 'to' and another 40% with *jìn* 進 or *rù* 入 'into'. The distributional skewing clearly indicates that PL verbs prefer the static locative *zài*, while the Caused motion verbs prefer goal markers *dào/jìn/rù* 'to/into'. The semantic implication of the skewing is that PL verbs lexically encode the meaning 'caused to BE-AT, while caused-motion verbs encode the meaning 'caused to MOVE-TO'. Thus, PL verbs can be categorically distinguished from caused-motion verbs by collocational preferences:

(15) Lexical semantic distinction between Caused motion and Placement verbs
  a. Caused Motion (*bān* 搬, *yí* 移): caused to MOVE-TO → typically collocate with goal *dào* 到
  b. Placement (*fàng* 放, *bǎi* 擺, *guà* 掛): caused to BE-AT → typically collocate with locative *zài* 在

In addition, PL verbs are also distinctly different from posture verbs in Mandarin, unlike their English counterparts. According to Levin (1993: 112), English *put*-verbs include a subclass called "putting in a spatial configuration," which are posture-based verbs that can occur in the causative vs. inchoative (transitive vs. intransitive) alternation, predicating either a Figure (theme) or a Ground (location):

(16) a. Cheryl stood/put the books on the table.
  b. The books stood/*put on the table.
  c. On the table stood/*put the book.

In Levin's terms, the English posture verbs can denote "putting in a spatial configuration". However, the common Mandarin posture verbs *zhàn* 站 'stand', *zuò* 坐 'sit', or *tǎng* 躺 'lie' cannot be used transitively to denote putting something in a spatial configuration, as illustrated in (17). One exception seems to be *lì* 立 'stand', which is an archaic posture verb and used less frequently with human subjects (see detailed discussion in § 4.2).

(17) **Wǒ bǎ shū zhàn qǐlái/ zài zhuōshàng.*
     1p.s BA book stand up/at   table-on
     #'I stood the book up/on the table'

On the other hand, unlike English PL verbs, Mandarin PL verbs may be used intransitively to denote various locative meanings.[13] All things considered, Mandarin PL verbs are less restricted in the range of their constructional associations, capable of occurring in four different constructions with specific eventive information: agentive caused motion, locative inchoative change, locative-state predication, and locative inversion, as exemplified in (18). The four constructions pertain to four different event types with different constructional meanings as specified in (19):

(18) a. Agentive caused motion:
         Wǒ bǎ qiú fàng zài zhuō-shàng.
         1st BA ball put at   table-on
         'I put the ball on the table.'
    b. Locative inchoative:
         Qiú fàng zài zhuō-shàng le.
         ball put at   table-on   ASP
         'The ball was put on the table.'
    c. Locative state:
         Qiú fàng zài zhuō-shàng.
         ball put at   table-on
         'The ball is on the table. '
    d. Locative inversion:
         Zhuō-shàng fàng zhe qiú.
         table-on   put ASP ball
         'On the table were put a ball.'

(19) a. Agentive caused motion → X causes Y to move/be at Z
    b. Locative inchoative → X changes its location to Y
    c. Locative predication → X is in the location of Y
    d. Locative inversion → In X there is Y

It should be noted that the last two constructions, locative predication and locative inversion, both denote a resultative, durative state, from either the perspective of the moved entity (Theme or Figure) or the location (Ground).

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13. As indicated by one of the reviewers, this may be partly due to the typological feature of Mandarin as it allows "topic-comment" type of sentence structure (Chao 1968). However, it has to be noted that not all transitive verbs with a locative *zai*-PP can be used intransitively: *wǒ bǎ xiǎo míng dǎ zài dì shàng* 我把小明打在地上 → **xiǎo míng dǎ zài dì shàng* 小明打在地上.

From the above observations, we see that Mandarin PL verbs encompass a broader range of constructional variations, which shows that they lexically encode a wider scope of semantic peculiarities, allowing them to denote both caused motion and spatial configuration. Nevertheless, Mandarin PL verbs behave differently from pure caused motion verbs that do not allow a locative-*zài* argument as well as pure posture verbs that do not allow causative-transitive uses (see more details in § 4.1). As a result, we need to redefine the language-specific properties of Mandarin PL verbs as they should be lexically distinguished from both caused motion and spatial configuration verbs. Mandarin PL verbs are categorically unique in that they encompass a contingent event chain from caused motion to spatial configuration. They are lexically specified with a composite meaning including all the intermediate stages from an agentive motion to a resultative state pertaining to the spatial relation between a Figure and Ground, as discussed in the next section.

3.3   Placement verbs encode an event chain

To account for the constructional associations of PL verbs in Mandarin, it is proposed that PL verbs should be viewed as composite in lexical meaning, complex in event structure and extendable in causal inference. They encode a serial event chain from 'caused to move' to 'caused to be relocated', along with a locational change that results in a spatial configuration. The series of events are evidenced with constructional variations that highlight the semantics of each stage. Such an event chain can be best understood under the notion of causal chain (Croft 1990: 48–50). It is proposed by Chafe that verbs represent categorizations of events, and a verb category may be defined as denoting a segment of a causal chain. Verbs are semantically and syntactically different from nouns in that they cannot be spatially isolated or autonomously manipulated. Verbs encode event structures that can only be individuated in terms of causation. Since any action may 'cause' a change, multiple categorizations of an actional event are made possible. Croft argued that most of the transitive verbs can denote three eventive views of a single event structure. An event may contain a series of segments, and each simple event constitutes one segment of the causal network. For example, a causative actional event 'The rock broke the window' involves a three-part causal chain: someone/something acts on the window, the window changes its state, and the window is in a resultative state, as illustrated in (20) (Croft 1990: 53–54):

(20)   A causal chain:

a.	Causative action:	The rock broke the window.
b.	Inchoative change of state:	The window broke.
c.	Stative result:	The window is broken.

The three different views of the event represent three contingent stages of the causal chain, comprising the causation, the change of state and the resultative state. The transitive view highlights the initiating cause; the inchoative view highlights the change of state and omits the agent's causation; and the stative view only focuses on the resultative state without reference to the preceding cause. In short, the action-initiated event is viewed as a tripartite "Cause-Become-State" causal chain, which encodes different semantic properties of three cognitively contingent serial stages. This causal analysis is applicable to other types of transitive events that start with a causative action or motion. Through causal inferences, a single verb is able to encompass varied syntactic expressions that encode the complete event chain from marking the starting point (causation), to the intermediate point (inchoative change), and to the ending point (resulting state) of an event.

In the same vein, a placing event, similar to the transitive-causative event of breaking, can be also analyzed as involving the following three segments: (1) an Agent acts on a Figure in placing the Figure at the Ground, which implicates (2) the locational change of the Figure, which results in (3) the spatial configuration of the Figure in relation to the Ground. This event chain is based on the natural inference of eventive contour of a caused motion. Note that the last stage is a resultative state that involves a Figure and a Ground, and thus it can be viewed from two perspectives: either Figure-anchored or Ground-anchored. The event chain for placement is described below in (21) and graphically represented in Figure 4:[14]

(21)   The placement causal chain
    a.   Causative: Someone acts on the Figure to place it at a Ground
    b.   Inchoative: The Figure changes its locational state
    c.   Stative result of the Figure: The resultative state of the Figure in the relation to the Ground
    d.   Stative result of the Ground: The resultative state from the perspective of the Ground

The graphic representations in Figure 4 help to show how the tripartite event chain can be conceptualized and dep at different stages: from caused-motion (Stage 1) to change of location (Stage 2) to spatial configuration (Stage 3a–b). In sum, the interrelation between agentive placement and spatial configuration is eventively inferred; that is, an agentive caused-motion naturally triggers the relocation of an entity to a new spatial configuration.

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14. Thanks to Mr. Ian Joo, my former student, for drawing the graphs in Figure 4.

Stage 1: Caused-motion

Stage 2: Change of location

Stage 3a: Figure-anchored spatial configuration

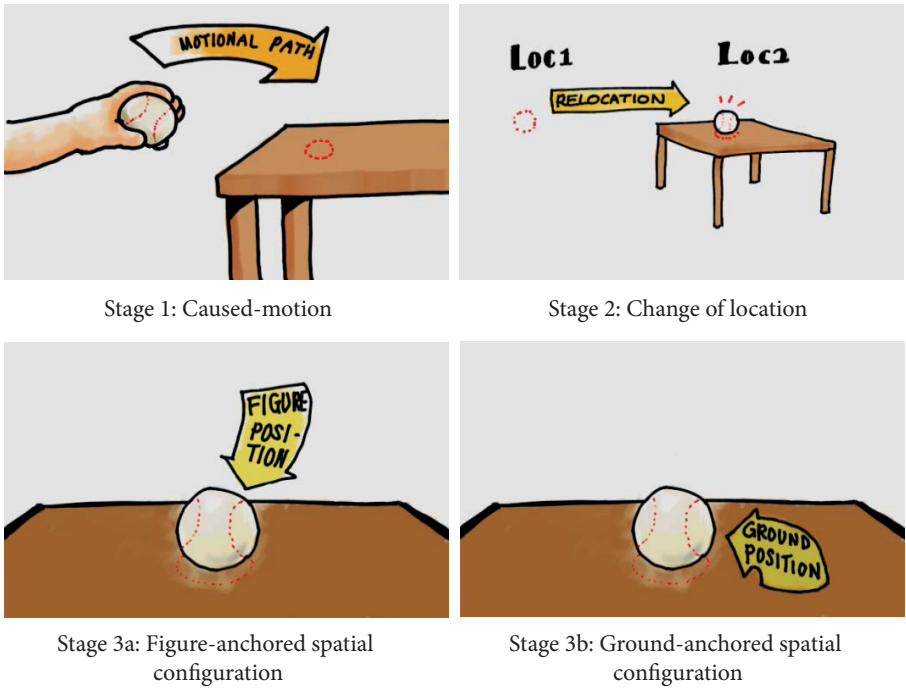Stage 3b: Ground-anchored spatial configuration

Figure 4. Graphical representation of the stages in a placement event chain

The evidence of the three-stages of PL verbs can be found in corpus distribution and syntactic tests. As shown earlier in Table 2, all three uses are evidenced in Sinica Corpus with the agentive transitive use being predominant: agentive use (67%), inchoative use (3%) and resultative use (30%). The distributional skewing may be accounted for in terms of saliency of agentivity, since placing requires an initiating agent that 'deliberately' acts 'under manual control' (Bowerman et al. 2004: 10). The deliberate agent is the first cause that triggers the placing chain.

As for syntactic tests,[15] the agentive-causative meaning can be evidenced with the use of volitional adverbs, such as *gùyì* 'purposely', or agentive manner adverbs, such as *xiǎoxīn-dì* 'carefully'. The stative constructions are incompatible with such agentive adverbs:

(22)   Agentive-volitional adverbs
   a.   *Tā   gùyì/xiǎoxīn-dì   bǎ   shū   fàng zài   zhuō-shàng.*
         3p.s purposely/carefully BA   book put at   table
         'He purposely/carefully put the book at the table.'

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15. Syntactic tests are added here to answer one reviewer's concern about the existence of the three contrastive meanings of Placement verbs in Mandarin.

b. ?*Shū   gùyì/xiǎoxīn-dì   fàng zài zhuō-shàng le.*
   Book purposely/carefully put at   table   ASP
   'The book is purposely/carefully put at the table.'

c. ?*Zhuō-shàng gùyì/xiǎoxīn-dì   fàng zhe shū.*
   table-on   purposely/carefully put ASP book
   'On the table purposely/carefully put the book.'

Between the non-agentive uses, only inchoative change is compatible with punctual adverbs such as *yīxiàzǐ* 'instantly' which may go with a path change (marked by the goal marker *dào*) or state change (marked by aspectual *le*). On the other hand, only the durative result state is compatible with a durative adverb such as *yīzhí* and the durative marker *zhe*:

(23) Punctual adverbs with locational or state change
   a.   Locational change of the figure:
        Hǎojǐ-běn shū   yīxiàzǐ fàng dào zhuō-shàng le/*zhe.
        Several-CL book at-once put to   table-on   LE/* ZHE
        'The books were put onto the table at once.'
   b.   State change of the ground:
        Zhuō-shàng yīxiàzǐ fàng le/*zhe   hǎojǐ-běn shū.
        table-on   at-once put LE/*ZHE several-CL book
        'On the table (were) put several books at once.'

(24) Durative adverbs with durative state marker *zhe*
   a.   Figure-oriented durative state:
        Shū   yīzhí   zài zhuō-shàng fàng zhe/*le.
        Book always at   book-on   put ZHE/* LE
        'The book has been always put on the table.'
   b.   Ground-oriented durative state:
        Zhuō-shàng yīzhí   fàng zhe/*le   shū.
        Table-on   always put ZHE/*LE book
        'On the table there has always been the book.'

The adverbs in the above examples are meaning-discriminating, which serve as syntactic tests to highlight the semantic contrast of the three stages. In Figure 5 below, the image schema illustrates the causal stages and the form-meaning correlations between PL verbs and the varied constructional associations. As introduced before, Iwata's (2005a; 2005b) lexical constructional model is adopted to account for the lexical peculiarities. For the L-meaning, it should be clear that Mandarin PL verbs can be viewed exactly as encoding a tripartite "Cause-Become-State" causal chain. And various syntactic alternations arise when different segments of the L-meaning are profiled. As illustrated in Figure 5, Mandarin PL verbs syntactically participate in three types of syntactic frames that semantically profile three stages of a causal chain
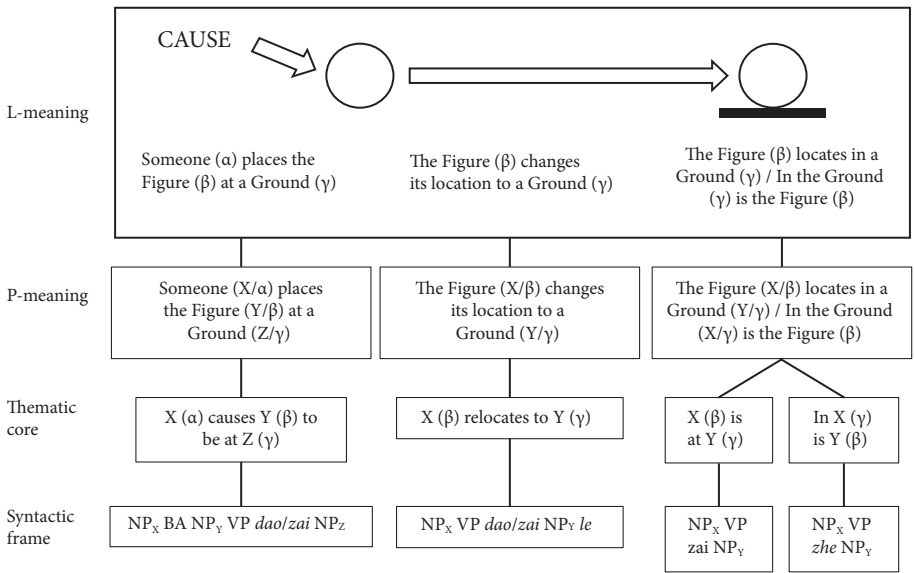
Figure 5. 'Fusion' of Mandarin PL verbs and constructions

with varied P-meanings and thematic cores. The three syntactic frames help define the constructional patterns of the three stages: Agentive caused motion (Stage 1), Inchoative change of location (Stage 2), and Resultative spatial state (Stage 3), which may be viewed from the perspective of either the Figure or the Ground.

The model helps to tease out the semantic-to-syntactic correlations observed in PL verbs. As verbs and constructions are both form-meaning mapping entities, they go hand-in-hand in manifesting the different eventive meanings mapped with the three stages. The initial stage of causing placement is realized with the agentive-transitive construction; the relocational change is realized with by the in-choative construction; and the resultative state is realized with a Figure-anchored or Ground-anchored locative construction. The form-meaning mapping interactions in the three stages are illustrated below in (25)–(27):

(25) Stage 1: Agentive caused-motion
 a. BA-construction
   Dùxiàng bǎ zhè-gè zuòpǐn fàng zài yī-gè   mùxiāng –lǐ.
   Duchamp BA this-CL work   put at one-CL wood.box-inside
   'Duchamp put this work in a wooden box.'
 b. Preverbal-locative PP
   Tā zài pén-lǐ   fàng le sān-gè jīdàn.
   3p.s at bowl-inside put LE three-CL egg
   'He put three eggs in the bowl.'

    c.   Postverbal-locative PP without BA
        Tā   xíguàn   měitiān zǎochén fàng wǔbǎi-kuài zài zhuō-shàng.
        3p.s be-used-to everyday morning put 500-dollar at   table-on
        'He is used to putting 500 dollars on the table in every morning.'

(26) Stage 2: Inchoative change of location or state (with inchoative *le*)
    a.   Figure-anchored
        Kěshì zhè-kuài shítóu zěnme fàng zài lù-zhōngjiān le?
        But   this-CL stone why   put at   road-middle LE
        #'But why this stone was put/placed in the middle of the road?'
    b.   Ground-anchored
        Guāncái-zhōng dāngrán shìxiān   fàng le yǐ
        coffin-inside   of course in advance   put LE already
        fāchòu-de sǐmāo.
        stinky-DE dead.cat
        #'In the coffin, of course, had already been put a dead-cat in advance.'

(27) Stage 3: Resultative spatial configuration (with durative *zhe*)
    a.   Figure-anchored
        Wǒ-de xǐyījī   fàng zài dǐnglóu.
        my   washing machine put at   attic
        #'My washing machine is put on the attic of the house.'
    b.   Ground-anchored
        Dì-shàng   hái fàng zhe yī-gè lóngzǐ, lóngzǐ-lǐ   yǒu liǎng-tiáo
        Ground-on also put ZHE one-CL cage,   cage-inside have two-CL
        shé   zài   rúdòng.
        snake PROG creep
        #'On the ground is put a cage, in the cage there are two snakes that are creeping.'

3.4   Constructional features associated with the event chain

What is noticeable is that the different constructions are patterned with different prepositional and aspectual markers that are semantically compatible with the constructional meanings, reinforcing the eventive information pertaining to the different stages of the causal chain.

In terms of argument structure, when denoting caused-motion in (25), PL verbs occur with three participants, Agent, Figure, and Ground, depicting an Agent-initiated event of relocating the Figure to a Ground, which may profile a motional path with *dào* 到 'to' or a locative endpoint with *zài* 在 'at/in'. This is why PL verbs are conventionally regarded as caused-motion verbs in Mandarin (c.f. Cheng 2008; Luo 2011), although collocational differences may set them apart, as discussed above in § 3.2.

The three arguments in the caused-motion event are often encoded with the BA-construction, as in the corpus example: *Dùxiàng bǎ zhè-gè zuòpǐn fàng zài yī-gè mù-xiāng-lǐ* 杜象[把]_BA 這個作品放[在]_at [一個木箱裏]_endpoint 'Duchamp put this work in a wooden box'. As discussed in § 2.2., Chen (2012) gave three reasons in using BA: (1) agentive caused-motion placement shows the disposal and manipulation meaning; (2) it fits the preference of iconicity in Chinese; and (3) BA-construction allows the structure of post-verbal locative as a delimiting boundary. It is well known that BA-construction describes a telic/bounded event (Sybesma 1992; Yong 1993; Liu 1997), and it is exactly the postverbal prepositional phrase that helps to mark the telic endpoint of the placing event. In aspectual terms, the placement event also matches the BA-construction in situation types. The caused placement involves an action (process) with a clear terminal point (result) and thus PL verbs may also be considered to denote a type of accomplishment event (Vendler 1967; Dowty 1979; Smith 1991). In other words, BA-construction marks not only the volitional start point, but also the telic endpoint of relocation.

The transitive pattern can also occur without BA, as illustrated in (25b–c), with either a preverbal or postverbal locative PP. Previous literature has suggested that locative PPs can be distinguished into 'inner' vs. 'outer' locatives: inner locative refers to the place where an entity exists or ends up, while outer locative refers to the place where the event happens (Fillmore 1968; Tai 2006). In Mandarin, preverbal PPs often encode an outer location, an adjunct that can be commonly added to VPs, but the post-verbal PP only encodes an inner locative, an internal argument that is selected by certain types of verbs (Tai 2006). It is then followed by Liu & Chang (2015) to propose that Mandarin verbs pertaining to Figure-Ground spatial relation can select an inner locative in either the preverbal or postverbal position. PL verbs are the prototypical members denoting such Figure-Ground relation and thus can express an inner locative in either position.

In contrast, the subsequent stages, the inchoative change and resultative state, both depict a non-agentive event, are realized with two arguments only, the Figure and the Ground.

When denoting a change of location as in (26), it often takes the inchoative aspectual marker *le* 了 in marking the actualization of the change in time.[16] The change may also be viewed from the perspective of the Figure or the Ground, leading to figure-anchored vs. ground-anchored locative expressions. The expressions

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16. The function of the aspect marker *le* in Chinese is debatable, although, as seen in previous literature, it is commonly regarded as a marker of the perfective or perfect aspect (see Wang 1965; Chao 1968; Li & Thompson 1981; Chang 2003; Chen & Jing-Schmidt 2014). Whether it is positioned as verb-final or sentence-final, it marks a change of state at the verbal or clausal level, i.e. it signals the 'happening' or actualization of the V or VP in time (see Chu 2016; Liu 2017). In our case, *le* marks the realization of a locational change of the Figure in relation to the Ground.

highlight a locational change in terms of the spatial relation between Figure and Ground. Verbs that can enter the syntactic patterns denote the sense of changed state (Piñón 2001; Schäfer 2009), as the viewpoint is shifted from an agentive action to the change of state.

When denoting the resultative state of spatial configuration in (27), either the Figure or the Ground may be predicated, profiling a Figure-anchored or Ground-anchored view of the spatial relation. The Figure-anchored viewpoint introduces the locational state with the Figure as thematically more important and hence the subject. On the other hand, locative inversion, which highlights the Ground as the topical element, is used to express the Ground-anchored view of the spatial configuration. According to Liu & Chang (2015a), locative inversion in Mandarin does not simply express existence, but more importantly, a Ground-to-Figure spatial configurational relation. Verbs occurring in this construction may denote a cause, manner, or means for an entity to enter or be located at the Ground.

It is worth mentioning at this point that the choice of the topical element or viewpoint has to do with information structure at the discourse level, which is not fully addressed in this study. In the wealth of literature that deals with the topic-comment relation, it is commonly agreed that the selection of topical element may constrain the word-order and other structural features (e.g. Halliday 1967; Li & Thompson 1981: 85–102, 509–517 for discussion; LaPolla 1995; Vallduví & Engdahl 1996). In the Figure-anchored viewpoint, the Figure is selected as the anchor point, i.e. it serves as the topic with its thematic importance in the discourse for the speakers to comment on. It can serve as the answer to the question "What happens to the Figure?" or "Where is the Figure?" As a result, the Figure appears in the sentence-initial position in the form "FigureNP VP at-GroundNP (cf. Tsao 1978; 1979; Li & Thompson 1981: 85–102). When the Ground is considered to be more topical, as to answer the question of "What is on the table?"), locative inversion may be used with the Ground in the sentence-initial position "GroundNP V FigureNP" (see Yang & Pan 2005; Chen & Jing-Schmidt 2014, for discussions of locative inversion in Mandarin).

In terms of aspectual marking, either *zhe* or *le* can occur in locative inversion, signaling a durative or inchoative aspect. The aspectual marker *zhe* is durative and stative in nature (e.g. Li & Thompson 1981), indicating the meaning that "an entity is introduced in a lasting atemporal state" (Chen & Jing-Schmidt 2014: 18), which matches the durative state profiled in Stage 3. But when *le* is used, at verb-final or sentence-final positions, it marks the happening of an event or inchoative state (e.g. Shih 1990; Smith 1991; Chu 2016) and signals that "a new entity is introduced at the endpoint of an action viewed in its entirety" (Chen & Jing-Schmidt 2014), which matches the profiled change in Stage 2. In short, locative inversion can be

used in profiling stage 2 or 3, with different co-occurring aspectual markers (*le* vs. *zhe*) that signal different facets of the eventive chain.

In view of the distribution with *zài*-PP vs. *dào*-PP given in Tables 3 and 4, it is clear that PL verbs collocate more frequently with the locational marker *zài* 在 'at' (80% in Gigaword) than the path-goal marker *dào* 到 'to' (9%), showing that they differ from purely caused motion verbs, such as *bān* 'move', which lexically encode a dynamic path-goal with *dào* 到 'to' or *jìn/rù* 'into (99.5% in Gigaword). As a result, caused motion verbs do not participate in stative-durative constructions such as locative inversion, which denotes a stative spatial relation and is thus incompatible with a motional path-goal. More details will be given in the next section.

In sum, this section provides a lexical-constructional analysis of Mandarin PL verbs. The observed syntactical behavior of PL verbs is explained as lexically encoding a three-stage event chain based on the eventive inference from caused-to-move, caused-to-be, to spatial configurational state. Different stages of the causal chain can be profiled with different constructional patterns associated with specific constructional meanings that match the verb meanings. More detailed discussions will be given in the next section concerning issues of lexicalization.

4.   Further discussions

4.1   Language-specific lexicalization pattern

As we have seen, Mandarin and English PL verbs describe the basic activity of placing and display language-specific lexicalization patterns. As defined in Talmy (1985: 59), "lexicalization is involved where a particular meaning component is found to be in regular association with a particular morpheme". Lexicalization patterns help to reveal how lexical meaning components interact with each other in defining the range of meaning of a particular word. One of the key meaning components in the lexicalization of PL verbs is the 'locative'. It has been shown in Tables 3 and 4 that Mandarin PL verbs mainly collocate with locative *zài*-PP, but they are also compatible with Goal or Source PP, as exemplified in (13a) and repeated here in (28):

(28)   *Yī-nán-yī-nǚ*   *zhèng máng zhe bǎ   lùyóuyóu de   xīn   chá **cóng***
      one-male-one-female PROG busy ASP BA greeny   DE new tea **from**
      *kuāngzǐ-lǐ.   yī-xiǎo-bǎ   yī-xiǎo-bǎ   fàng **dào** guō-lǐ.*
      basket-inside one-small-CL   one-small-CL put **to**   boiler-inside
      'The men and women are busy with putting the greeny new teas to the boiler from the basket bit by bit.'

This flexibility with both locative and goal complement is peculiar to Mandarin since it is not applicable to English PL verbs, as observed in Levin (1993). In her comprehensive work of English verb classes (Levin 1993), PL verbs are called Verbs of Putting and ten subclasses are distinguished according to their differences in diathesis alternation: *Put* Verbs, Verbs of Putting in a Spatial Configuration, *Funnel* Verbs, Verbs of Putting with a Specified Direction, *Pour* Verbs, *Coil* Verbs, *Spray/Load* Verbs, *Fill* Verbs, *Butter* Verbs, and *Pocket* Verbs. Each of the subclasses is defined with distinct semantic-to-syntactic properties; for example, *Pour* verbs relate to putting liquids on surfaces or in containers, which form the only subclass that allows *from* phrases (e.g. *Tamara poured water from/out of the pitcher* (Levin 1993: 115). Relatively speaking, the first two verb classes, *Put* Verbs and Verbs of Putting in a Spatial Configuration have a broader scope of meaning and the other subclasses are more specified in the manner of placing or semantic specificity of the placed entity. According to Levin (1993: 112), *Put* verbs refer to putting an entity at some location via a prepositional phrase headed by one of a range of locative prepositions (*in, at, on, under, above*); however, they are incompatible with the Goal preposition *to* or the Source preposition *from*,and do not allow intransitive uses in the so-called Locative Alternation as *Spray/Load* verbs do, as illustrated in (29).

(29)   English *put* verbs
　　　a. I put the book on the table/at the door/in the room.
　　　b. *I put the book to/from the table. → incompatible with goal/source prepo-
　　　　　　　　　　　　　　　　　　　　　　　　sitions (to/from)
　　　c. *I put the book on the table　　　→ incompatible with Locative Alternation
　　　d. *I put the table with the book.

It is made clear by Levin that *Put* verbs do not occur with path-denoting PPs denoting Goal or Source, which marks one major distinction between PL verbs and Caused-motion verbs in English. Caused motion (CM)verbs such as *move* typically prefer a Path-argument (*to* a Goal and/or *from* a Source), while PL verbs typically occur with a non-motional locative PP. Such a rigid distinction is not observed in Mandarin, as Mandarin PL verbs are flexible in taking a goal or locative argument. This shows that seemingly equivalent verbs in two languages may not be identical in their conceptual structures and lexical semantic scopes. PL verbs in Mandarin and English demonstrate different lexicalization tendencies with different syntactic and semantic specificities. Mandarin PL verbs may align with Caused-motion verbs while English cuts the boundary more rigidly. Nevertheless, there are still fuzzy cases that blurred the lexical boundaries. As shown below, the English *put* can be used with semi-path prepositions such as *onto* or *into*, which denote both a location and a goal, as in (30). This fuzziness or indeterminacy is characteristic of various categories in natural language.

(30)   *Put* verbs with locative-goal headed by prepositions *onto* or *into*
       *I put the book **onto** the table/**into** the bag.*

Central to the issue of lexical boundary is the question of lexical 'brotherhood'. In English, as Levin describes (1993: 112), one kin to *put* verbs are verbs of Putting in a Spatial Configuration. Unlike *put* verbs, this particular subclass may denote a spatial configurational result and can thus participate in causative-inchoative alternation and locative inversion, as exemplified below in (31).

(31)   Verbs of putting in a spatial configuration in English
       a.   *He stood the books on the table.*
       b.   *The books stood/*put on the table.*
       c.   *On the table stood the books.*

The fact that Putting-in-a-Spatial-Configuration verbs such as *stand* or *sit* behave differently from prototypical *Put* verbs may be a direct result of their lexical origin: they are essentially posture verbs that may be used intransitively or transitively in English. The verb *stand* typically encodes a human posture that serves as the conceptual basis for deriving a "caused posture" (Lemmens 2006), whereby an inanimate entity was 'postured' at a location and the postural state of the entity can be profiles:

(32)   Posture verb *stand*
       a.   Human posture: *Cheryl stood on the corner/Cheryl stood up.*
       b.   Caused posture: *Cheryl stood the book on the table.*
       c.   Inanimate posture: *The book stood on the table.*

The examples show that caused posture is derived from posture verbs in English. However, as discussed above, most Mandarin PL verbs are not posture-derived and they may readily occur in causative-inchoative and locative inversion alternation, indicating their semantic compatibility with the meaning 'putting in a spatial configuration'. In other words, Mandarin posture verbs are not lexically akin to PL verbs and behave differently from PL verbs in that they do not participate in agentive-causative constructions to denote 'caused posture' (placement), as exemplified in (17) and repeated here in (33):

(33)   a.   **Wǒ bǎ shū   zhàn qǐlái.*
            1p.s BA book stand up
            [#]'I stood the book up.'
       b.   **Wǒ bǎ shū   zhàn zài zhuō-shàng.*
            1p.s BA book stand at   table-on
            [#]'I stood the book on the table.'

However, there is an exception. The verb *lì* 立, a more archaic form for 'stand', gives rise to posture based Placement as we can say: *tā bǎ páizi lì zài dì-shàng* 'He stood the post on the ground'. One may argue that Mandarin is not different from English since posture-derived Placement verbs can still be found in Mandarin. However, it has to be noted that 立 is indeed a more archaic form and the majority of posture verbs in contemporary Mandarin, such as *zhàn* 站 'stand', *zuò* 坐 'sit', *tǎng* 躺 'lie', are not used for Placement. A close examination of Sinica Corpus reveals that only 8.2% of *lì* 立 are used to denote Placement and most frequently it is used for posture related meanings (38.8% for human posture, 38.8% for inanimate posture, 14.2% for creation), as shown in Table 5 below. The examples of the different uses of *lì* 立 in the database are illustrated below:

Table 5. The distribution of *lì* 'stand' in Sinica Corpus

Semantics	Placement	Human posture	Inanimate posture	Creation	Total
Counts	7 (8.2%)	33 (38.8%)	33 (38.8%)	12 (14.2%)	85

(34) Postural state of humans
Liúsū zhàn-zài ménkǎn-shàng, Liǔyuán lì-zài tā shēnhòu.
Liusu stand-at doorsill-on Liuyuan stand-at 3s.g. body-back
'Liusu stands on the doorsill, and Liuyuan stands behind her.'

(35) Posture state of inanimates
Yī-zhī jiāngjìn yǒu qīshí-niàn lìshǐ-de chénzhòng píxiāng
One-CL close have seventy-year history-DE heavy luggage
lì-zài qiáng-biān.
stand-at wall-edge
'A heavy luggage which has about 70 years of history stands against the wall.'

(36) Placement of inanimates
Wǒ bǎ tā lì-zài mén-biān-de qiáng-shàng.
1p.s BA it stand-at door-edge-DE wall-on
'I stood it against the wall.'

(37) Creation of inanimates
Tāmen kěnéng tì Lǎobāo lì yī-zūn wěirén tóngxiàng ma?
3p.p possible for Old-Bao stand one-CL great man bronze statue PRT
'Is it possible for them to stand a statue for Old-Bao?'

Such diverse uses are not found in the other Mandarin verb for 'stand'-*zhàn* 站, which is mainly used for human posture. Table 6 below shows the corpus distribution of *zhàn* 站 in Sinica Corpus.

Table 6. The distribution of *zhàn* 'stand' in Sinica Corpus

Semantics	Human posture	Inanimate posture	Placement	Total
Counts	667 (99.4%) (168 (25%) for 'getting into a posture')	4 (0.6%)	0	671

When comparing the distributions of the two verbs for 'stand', *lì* 立 vs. *zhàn* 站, it is clear that *zhàn* 站 is more exclusively used for human posture (99%) and no placement use is available (0%). As a posture verb, *zhàn* 站 may also mean 'getting into a posture' or 'assuming a posture' as in '*zhàn qǐ-lái*' 'stand up', which is rarely found with *lì* 立. The capability of denoting 'get into a posture' or 'assume position' is considered to be prototypical for posture verbs (Talmy 1985: 117–123; Levin & Rappaport Hovav 1995: 126–133). It is then fair to say that compared to *zhàn* 站, the verb *lì* 立 is less prototypical as a posture verb.

4.2 Lexical vs. typological properties

Another issue that needs to be discussed is how much of the language-specific lexical properties are verb-specific? How much is typologically accountable? As shown previously in (9b), PL verbs in Mandarin can be de-agentivized in unmarked intransitive uses without the additional marking of passivization, which is required in English (e.g. *On the table were put some newspapers*). This difference may be attributed to the typological difference between Mandarin and English as it is generally proposed that Mandarin allows the 'topic-comment' structure (cf. Chao 1968; Li & Thompson 1981, 1982; among others), whereby a patient-subject can be fronted as a topical element without extra marking. In such topic-prominent languages like Mandarin, it is common for a sentence to take "only a topic but not a subject", as exemplified in (38) and (39) from Li & Thompson (1981: 88–89):

(38) *Nà   běn shū   chūbǎn le.*
      That CL   book publish ASP
      'That book, (someone) has published it.'

(39) *Zhè   gè tímù zuì   hǎo bùyào tí   chū lái.*
      This CL topic most good don't bring:up exit come
      'This topic, (you'd) better not bring it up.'

In (38) and (39), the agent of the event is not present and the patient is fronted in the topic-comment structure. For the intransitive uses of Mandarin PL verbs, one may argue that the unmarked inchoative and locative inversion constructions can also be viewed as a consequence of the topic-comment structure. However, it has to be pointed out that not all transitive verbs with a locative PP in Mandarin can

be readily detransitivized into a topic-comment structure without passive marking; for example, *wǒ bǎ tā dǎ-hūn zài dì-shàng* 我把他打昏在地上 cannot be expressed as **tā dǎ-hūn zài dì-shàng* 他打昏在地上. The lexical specificity of PL verbs proposed in this study is still critical in determining its formal properties. Caused motion events are spatial movements that implicate a locational change while other non-spatial actions may not have this implication. Other non-spatial changes of state are normally marked with an overt resultative, as also observed in Tham (2012; 2013), where she argues that caused change of location verbs implicate an inferred result while caused change of state events require a V-R compound. This contrast can be illustrated in the examples below:

(40) a. *Qián   cún   le.*   (Caused change of location implicated)
money store LE-ASP
'The money has been saved (in the bank).'

 b. *Bēizi dǎ-pò   le.*   (Caused change of state marked by V-R)
cup   hit-break LE-ASP
'(lit.) The cup was hit-broken.'

Tham claims that caused change-of-location events can be expressed monomorphemically by the verb only, such as *cún* 'store' in (40a), but caused change-of-state (COS) events are typically expressed by V-R compounds (or RVCs), such as *dǎ-pò* 'hit-break' in (40b).[17] This contrast shows that Placement verbs inherently encode 'a change of location' in their meanings, which is evidenced from the fact that they can readily participate in the inchoative construction without adding an R-element. Consequently, 'the change of location' may implicate a resultant state of spatial configuration. Thus, the final stage – 'the relocated Figure must land in a Ground' – can be inferred as the final part of the causal chain proposed in § 3.3.

The observations outlined above show that while Mandarin does allow a freer selection of subject due to its typological tendency of topic-comment structure, verbal semantics still plays a role in constraining the surface form-meaning mapping alternatives. Given the language-specific properties of Mandarin PL verbs discussed so far, the section below attempts to provide a preliminary analysis of the potential subclasses.

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17. Note that the examples here refer to 'caused' change of state, not pure change of state predicates like *pò* 'be broken'.

5. Potential subclasses of Placement verbs in Mandarin

As proposed above, Mandarin PL verbs are lexicalized with three basic semantic roles (Agent, Figure, and Ground), encode a three-stage causal chain, and allow a wide range of constructional variations. Their lexicalization tendencies are also different from those in English, as briefly introduced in § 3.1. To further explore the language-specific lexicalization patterns, the class of verbs can be further divided into well-defined subclasses with finer distinctions in their lexicalized meanings. It is proposed that while all PL verbs are capable of describing the three stages of the tripartite event structure, they may highlight different semantic-to-syntactic specificities that give rise to the potential subclasses. In line with the concepts of frame semantics (Fillmore 1982), the core elements, Agent, Figure, and Ground, the placement frame may vary in semantic features, which can be viewed in relation to the notions of base and profile defined in Langacker (1990). Mandarin PL verbs are anchored in the tripartite event structure as a base, and different subclasses may choose to profile a different facet of the core elements involved with manifested syntactic consequences. In other words, the proposed subclasses may profile some lexical semantic peculiarities that are syntactically manifested in the associated collo-constructional distinctions. Based on collo-constructional evidences, three major subclasses of PL verbs are distinguished: placing at a location, placing into a container, and placing unto a surface. Within each subclass, further grouping of verbs into subtypes is also necessary given that there are fined-tuned distinctions among the verb members, as summarized in Appendix B. Details of the proposed classification are discussed in the following sections.

5.1 Subclass 1: Placing at a location

This subclass basically encodes 'placing an entity (Figure) at a designated location (Ground)'. The verbs in this group may all participate in the basic constructions associated with the three stages of the serial event. Within the subclass, lexical specifications can be found that pertain to semantic features of the Figure/Ground or the manner/purpose of placing, giving rise to finer subcategorization of subtypes with fine-grained syntactic differences in argument expression.

For example, verbs of putting (*zhìfàng* subtype 置放類) denote the most general sense of placement, which are semantically and syntactically less restricted than verbs of arranging (*páishè* subtype 排設類), such as *pái/páiliè* 排/排列 'set, line up' or *bǎishè* 擺設 'arrange', which denote 'placing with a designated pattern or distribution'. The specific manner encoded in arranging verbs allows them to take an incremental theme with the resultative marker *chéng* 成 (V-*into*) to introduce the product of placing in a special arrangement, as in (41).

(41) Verbs of arranging with an incremental theme
Zìbìzhèng értóng   wán wánjù shí   yě   piānài jiāngyìng-de wánjù, bìng
Autism   children play toy   when also prefer hard-GEN toy   and
zǒngshì huì jiāng   tāmen pái-chéng yí-liè.
always will JIANG them line-into one-line
'The children who have autism like to take the hard toys to play, and always line up the toys.'

Other subtypes include verbs of hanging that may collocate with upward directionals *shàng/shànglái* 上/上來 'upward' (e.g. *guà-shàng qiáng* 掛上牆 'hung up to the wall'); verbs of sticking that denote placing by tight connecting with specified instrument and often collocate with potential-resultative complement (e.g. *nián de/bú zhù* 黏得/不住 'able/unable to stick'); verbs of coiling that denote placing with circling motion, which is means-specified and may take a boundary argument (e.g. *chánrào sìzhōu* 纏繞四周 'coil the four sides'); verbs of carrying that specify a bodily manner with incorporated body part which serves as the default Ground when used with locative *zài* (e.g. *káng zài jiānshàng* 扛在肩上 'carried on the shoulders'); and verbs of clothing with highly specified Figure (clothes) and Ground (body).

5.2   Subclass 2: Placing into a container

The second subclass contains the verbs that semantically profile the event of 'placing some Containee into a Container (i.e. a confined space)'. The most prominent lexical property of the verbs in this subclass (such as *zhuāng* 裝 'put in/load' or *tián* 填 'fill up') is that they generally select a Container as Ground with PP-selection of *zài…lǐ* 'inside of', as given in (42). As for the features of Figure, the verbs may specify either a solid or fluid Containee. In profiling the Container-ground, these verbs can syntactically express the container as the direct object, as in (43),[18] but also as an overtly marked instrument, as in (44). These expressions are not readily attainable for Subclass 1 verbs.[19] Most members of the subclass may participate in

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18. There are more examples, such as *zhuāng xiāngzǐ / tián biǎogé /tú miànbāo / jìn shuǐchí* 裝箱子/填表格/塗麵包/浸水池 'load the box/fill the verbs of coiling form/spread the bread/soak the pool'.

19. The verb *fàng* 放 is the most prototypical and frequently used PL verb that denotes the widest scope of semantic-to-syntactic flexibility. Given its high frequency and semantic underspecification, *fàng* may display multi-categorial membership as it may also be used as Subclass 2 verb in taking a Container as Ground, as suggested by one of the reviewers, in '*fàng le yīxiē cháyè zài guànzi lǐ* 放了一些茶葉在罐子裡. This multi-categorial membership is addressed at the end of this section.

locative inversion with either the durative aspectual marker *zhe* or the inchoative actualization marker *le*:[20]

(42) Container as Ground with PP-selection

    a. *Wáng fēngquán jiāng qián zhuāng zài **lǐhé-nèi**, dài*
        Wangfengquan JIANG money put at **giftbox-inside** bring
        dào fàndiàn.
        to hotel
        'Mr. Fengquan Wang put the money in a gift box and brought it to the hotel.'

    b. *Tā xíguàn měitiān zǎochén *zhuāng/fàng wǔbǎi-kuài*
        3p.s be-used-to everyday morning *load/put 500-dollar
        zài zhuō-shàng.
        at table-on
        'He is used to putting 500 dollars on the table every morning.'

(43) Profiled Container as direct object

    a. *Kèyùn yèzhě āi-jiā-āi-hù sāi xìnxiāng.*
        tour-bus agents house-to-house insert mailbox
        'The tour-bus agents inserted (direct mails) in the mailbox house to house.'

(44) Profiled Container as Instrument:

    a. *Guòqù nóngmín yìbān yòng biānzhī-dài zhuāng cǎizhāi-de miánhuā.*
        past farmer generally use woven bag load pick-GEN cotton
        'In the past, the farmers generally use woven bags to load the cotton they collected.'

    b. **Nóngmín yòng miánhuā zhuāng biānzhīdài.*
        farmer use cotton load woven bag
        #'The farmers use cotton to load the woven bags.'

(45) Locative inversion

    a. *Xiāngzǐ-lǐ zhuāng le/zhe mǎnmǎn-de zhūbǎo hé jīnbì.*
        box-insiDE load LE/ZHE full-DE jewelry and gold
        'In the box (are) loaded with full of jewelry and gold.'

    b. *Chōutì-lǐ sāi le/zhe yì-duī wàzǐ.*
        Drawer-insiDE stuffed LE/ZHE one-pile socks.
        'Inside the drawers stuffed a pile of socks.'

It has to be noted that the overt marking of Container as an Instrument in (44a) is a crucial distinction of Subclass 2 from Subclass 3, which only allows a Containee-instrument, but not a Container-instrument (44b).

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20. Please note that some verbs of loading, such as *dào* 'pour', may not be readily used in locative inversion. According to one reviewer, the sentence *Bēizǐ-lǐ dào le yìxiē shuǐ* 杯子裡倒了一些水 'In the cup (was) poured some water.' is not well-formed without a proper context.

While English makes a distinction between liquid vs. solid containee as in the *fill-load* contrast, Mandarin does not seem to be sensitive to the type of containee. Members of this group include verbs of loading/filling such as *zhuāng* 裝 that are most representative and less restricted in the semantic features of Container and Containee, verbs of stuffing (*tián* 填) with a specified Container (confined in space) and specified manner (pressing), verbs of pouring (*dào* 倒) that take liquid Containee (*dào-shuǐ* 倒水) or solid ones (*dào-lājī* 倒垃圾), verbs of soaking (*zhù* 注) that require liquid-type of Container. Other members may encode a specified manner or purpose, such as verbs of storing (*chǔcún* 儲存) that denote 'placing in the confined space with the purpose of storing'. The specific purpose in the meaning of 'store' verbs, such as *cáng* 藏 'store, hide' or *bǎocún* 保存 'store, keep' allows them to profile an argument of duration, indicating the period of time for storing, as in (46).

(46)   Verbs of storing with a duration argument
Lǐlùnshàng,   lěngdòng pēitāi   kě   bǎocún yìliǎngbǎi-nián.
Theoretically frozen   embryo can keep   one or two hundred-year
'Theoretically, frozen embryo can be kept for one or two hundred years.'

5.3   Subclass 3: Placing onto a surface

This subclass encodes placing some substance onto a surface, profiling a Surface-substance relation. In other words, verbs in this group lexically require some kind of dispersible substance (liquid or non-liquid) as the moved Figure and a flat surface as the Ground. As given in (47), these verbs can participate in the Locus-Loctum variation, taking either the Substance-figure or the Surface-ground as direct object (Levin & Rappaport Hovav 1991; Liu 2002). At first sight, these verbs share a similar property with verbs in Subclass 2 as they can also take the Ground as direct object:

(47)   Profiled Surface as direct object
Xiǎoxūn wèi àirén mǒ   yí-piàn tǔsī   dāng zǎocān.
Xiǎoxūn for lover smear one-CL toast as   breakfast
'Xiaoxun smears (butter) on the toast for her lover for breakfast.'

This syntactic distinction sets Subclasses 2 and 3 from Subclass 1. However, the major difference between the last two subtypes is that Subclass-3 verbs may only take the Substance-figure, but not the Surface-ground, as an overt instrument, leaving the Surface-ground to be the direct object, as given in (48):

(48) Dispersible Substance as Instrument

a. *Yí-ge   fùrén   <u>yòng</u> rèyóu lín   zài zhàngfū shēnshàng.*[21]
one-CL woman use   hot-oil pour at   husband body
'A woman used hot oil to pour on her husband's body.'

b. *Gōngrén zhèng yòng hóng-yóuqī tú   zhe bái-qiáng.*
worker   PROG   use red-paint   spread DUR white-wall
'The workers are using red paint to paint the white walls.'

c. **Wǒ yòng bái-qiáng tú   hóng-yóuqī.*
1p.s use   white-wall spread red-paint
#'I used white walls to paint the red paint.'

Comparing the asymmetry between (44) and (48), we see that verbs in Subclass 3 (as in 48) only allow the Figure to be coded as the oblique Instrument and the Ground as an internal argument following the verb. This role selection signals a semantic shift to focus on the Surface-ground as it is saliently affected in the event of placing onto a surface. In contrast, Subclass 2 verbs (as in 44) only allow the Ground to be marked as an Instrument while the affected Figure is always a direct object. In view of the subclass distinctions in role selection, it is suggested that the shift of semantic profile is crucial for the classification of Mandarin PL verbs: the locative placing event (Subclass 1) focuses more on the locational change of the Figure, only allowing the Figure to be coded the affected direct object; in the event of placing into a container (Subclass 2), the Container-ground can also be taken as the direct object, signaling a semantic shift towards the Ground; in the event of placing onto a surface (Subclass 3), the semantic focus is more on the change of the Surface-ground, highlighting the holistic effect of the Ground.

The subclasses outlined above are distinguished with both semantic and syntactic considerations, as they manifest the different lexical profiles of the subgroups of PL verbs. However, it should be noted that given the nature of human categorization, fuzzy boundaries and overlapping to a certain degree are to be expected, especially for high-frequency verbs such as *fàng* 放 'put, place'. The verb *fàng* 放 is most prototypical and most frequently used among all PL verbs. It shows cross-categorial membership from a predominant Subclass 1 verb (*fàng zài* + Location) to a Subclass 2 verb (*fàng zài* + Container). This multi-categoriality of *fàng* 放 can be attributed to the effect of frequency and semantic under-specificity. The fact that *fàng* 放 is

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21. This is a simplified version of a sentence collected from Chinese Gigaword: *yī gè jídù-de tǔěrqí fùrén zài Shāwūdì ālābó de màidìnà yòng gǔntàng-de rèyóu lín-zài tā shúshuì-de zhàngfū shēnshàng, qǐtú tàng-sǐ duì tā bùzhōng-de xiānshēng* 一個嫉妒的土耳其婦人在沙烏地阿拉伯的麥地那用滾燙的熱油淋在她熟睡的丈夫身上，企圖燙死對她不忠的先生 'A jealous Turkish woman used boiling hot oil to pour on her husband's body in Saudi Arabia, in an attempt to kill her unfaithful husband by scalding him to death.'

'underspecified' in characterizing the Figure and Ground allows it to take a variety of locative/path makers, as seen in Tables 3 and 4 (roughly 80% with *zài* 'at', 9% with *dào* 'to', and 11% with *jìn/rù* 'into' in Chinese Gigaword). In this regard, *fàng* 放 is a semantically 'light' verb (Chen 2012; Liu & Chang 2018) that is capable of denoting the widest scope of semantic-to-syntactic flexibility in the class of PL verbs.

The preliminary classification of PL verbs presents a starting point for further investigation of the Mandarin-specific scheme of lexicalization patterns.

6.   Conclusion

This study is theoretically and applicatively significant by showing that there are language-specific and class-specific patterns of lexicalization in a conceptually similar domain of verbs. The paper explored the lexical semantic properties of the class of Placement verbs in Mandarin, such as *fàng* 放 'put', *guà* 掛 'hang', *zhuāng* 裝 'load', and *sǎ* 撒 'spread'. The class of verbs are redefined as encoding an event chain from caused motion to locational change to spatial configurational state. It is proposed that Placement verbs are categorically distinct from pure Caused motion and Posture verbs, as evidenced from the multiple constructional associations that are attainable with Placement verbs, but not with the other two categories of verbs. Mandarin Placement verbs encompass an extended event structure with causal inferences of three contingent stages: agentive causation, inchoative change of location, and resultative spatial state, each of which is associated with distinct syntactic patterns. The extended range of their lexical meanings allow them to be syntactically compatible with a full range of collo-constructions, including a path-goal with *dào* 到 'to' or *jìn* 'into', locative endpoint with *zài* 在 'at/in/on', inchoative predication with aspectual marker *le* 了, and locative inversion with durative marker *zhe* 著. On the basis of the shared event structure, three major subclasses are distinguished that profile different subsets of the placing activity: placing at a location (Ground-figure relation), placing into a container (Container-containee relation), and placing onto a surface (Surface-substance relation). Each subclass can be further divided into finer subtypes that are semantically and syntactically varied.

The lexical semantic distinctions of Mandarin Placement verbs observed and analyzed in the study clearly demonstrate that a lexical-constructional approach is useful in identifying the fine-grained semantic-to-syntactic differences in the verbal lexicon. Verbal distinctions are associated with constructional distinctions. Only by examining the range of collo-constructional associations can the range of lexically discriminated verbal meanings be detected. While the English Placement verbs are more aligned with agentive caused-motion verbs without entering into Locative Inversion to encode a static, spatial configurational relation, the Mandarin Placement verbs are readily used in Agentive Causation, Inchoative Change, and

Locative Inversion to encode three contingent stages of the placing-triggered causal chain. The cross-linguistic as well as cross-categorial variations in the lexical semantic encodings of verbs are well manifested in the scope of their collo-constructional variations. In sum, the lexical-constructional analysis of Mandarin Placement verbs presented in the study clearly shows that there are language-specific and class-specific distinctions in the lexicalization patterns of a conceptual domain, which are critically needed to pave the way for a meaningful cross-linguistic comparison of the verbal lexicon.

Acknowledgements

Appendix A. Placing (placement) frame in FrameNet

1. **Distinctions of Placing frames in FrameNet.**
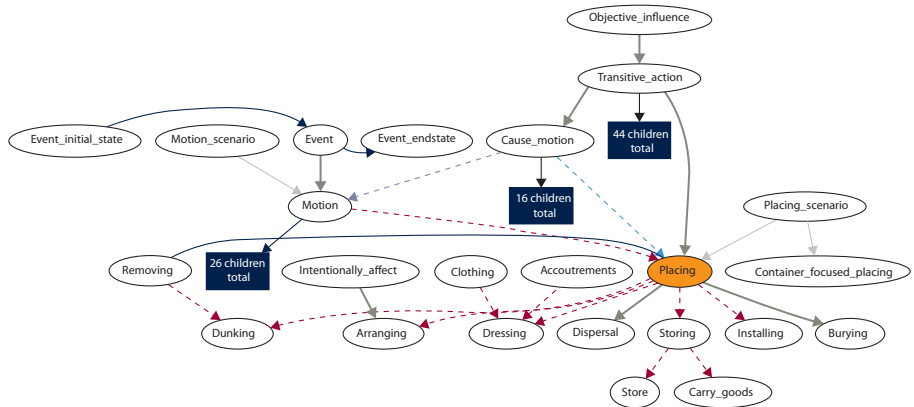
2. **Related PL frames with semantic roles**

Placing	Arranging	Burying	Dressing	Dunking	Dispersal	Installing	Storing
Agent	Agent	Agent/ Cause	Wearer	Agent	Agent/ Cause	Agent	Agent
Theme	Theme	Theme	Clothing	Theme	Individuals	Component	Theme
Goal		Goal		Substance		Fix location	Location
Config.	Config.						

Appendix B. Subclasses of Placement verbs in Mandarin

Subclass 1: Placing at a location
- Typically occur in the three basic constructions
- May be further specified with semantic features of Figure, Ground, manner, or purpose

Subtypes	Verb members	Semantic profile
Verb of putting *zhìfàng* 置放類	*fàng/zhì/fàngzhì/bǎi/bǎifàng* 放/置/放置/擺/擺放	Placing in the most general sense Underspecified with types of Figure/Ground
Verbs of storing *chǔcún* 儲存類	*cún/cáng/cúnfàng/chǔcún/chǔcáng* 存/藏/存放/儲存/儲藏	Placing with the purpose of storing May take a duration argument
Verbs of hanging *xuánguà* 懸掛類	*xuán/guà/diào/xuánguà/xuándiào* 懸/掛/吊/懸掛/懸吊	Placing against gravity May take directional *shàng/qǐ* 上/起 'up/upward'
Verbs of arranging *páishè* 排設類	*pái/páiliè/páifàng/bǎishè/chénliè* 排/排列/排放/擺設/陳列	Placing with an organized distribution May take incremental theme: V-*chéng* 成 'V-into'
Verbs of sticking *tiēnián* 貼黏類	*dìng/nián/tiē* 釘/黏/貼/	Placing by tight connecting: Instrument-specified May take a potential complement: *nián de/bú zhù* 'able/unable to stick'
Verbs of coiling *chánrào* 纏繞類	*chán/rào/wéi/chánrào/bǎng/kǔnbǎng* 纏/繞/圍/纏繞/綁/綑綁	Placing by circling motion: Means-specified May take a boundary argument *sìzhōu/zhōuwéi* 四周/周圍 'four sides'
Verbs of carrying *xìdài* 攜帶類	*dài/káng/bēi/tí* 帶/扛/背/提	Placing with a bodily manner: Manner specified with a body part Body part as the default Ground with locative *zài* 在
Verbs of clothing *chuāndài* 穿戴類	*chuān/dài/pī/chuāndài* 穿/戴/披/穿戴	Placing clothes onto the body/body part: Body as the default Ground (often omitted) Clothing item as Figure

Subclass 2: Placing into a container

- Profiles Container-containee relation (*zhuāng xiāngzǐ/*zhuāng dìbǎn* 裝箱子/*裝地板)
- Container can be profiled as direct object (*zhuāng píngguǒ/zhuāng xiāngzǐ* 裝蘋果/裝箱子)
- Container can be expressed as an instrument (*wǒ yòng xiāngzǐ zhuāng píngguǒ* 我用箱子裝蘋果)

Verbs of loading *zhuāngchéng* 裝盛類	*zhuāng/chéng /fēng/fēngzhuāng* 裝/盛/封/封裝	Container as Ground Containee as Figure: may be solid or fluid May take either Container or Containee as direct object
Verbs of stuffing *tiánsāi* 填塞類	*tián/sāi/tiánchōng/tiánsāi* 填/塞/填充/填塞	Confined-space as Container Specified with manner (pressing) and purpose (to fill up)
Verbs of pouring *dàozhù* 倒注類	*dào/zhù/guàn/dī* 倒/注/灌/滴	Specified with Liquid-containee
Verbs of soaking *jìnpào* 浸泡類	*pào/jìn* 泡/浸	Specified with Liquid-container

Subcalss 3: Placing unto a surface

- Profiles a Surface-substance relation
- Ground is perceived as a surface.
- Substance is physically dispersible.
- Substance-figure can be expressed as instrument (*tā yòng nǎiyóu tú miànbāo* 他用奶油塗麵包)

Verbs of spraying *túmǒ* 塗抹類	*tú/mǒ/cā/shì/qī* 塗/抹/擦/拭/漆	Surface-ground: cannot be expressed as instrument Substance-figure: can be expressed as instrument (*Gōngrén yòng hóng-yóuqī tú bái-qiáng* 工人用紅油漆塗白牆)
Verbs of splashing *pōsǎ* 潑灑類	*pō/sǎ/pēn/lín* 潑/灑/噴/淋	Specified with Liquid-substance *Shuǐ pō le yī dì/pēn le yī shēns* 水潑了一地/噴了一身
Verbs of spreading *sǎsàn* 撒散類	*sǎ/sàn/sànbù* 撒/散/散佈	Specified with Non-liquid-substance *lèsè sàn zài dìshàng* 垃圾散在地上

References

Ameka, Felix K. & Levinson, Stephen C. 2007. Introduction: The typology and semantics of locative predicates: Posturals, positionals, and other beasts. *Linguistics* 45. 847–872. https://doi.org/10.1515/LING.2007.025

Boas, Hans C. 2003. A lexical-constructional account of the locative alternation. In Carmichael, Lesley & Huang, Chia-Hui & Samiian, Vida (eds.), *Proceedings of the thirtieth Western Conference in Linguistics WELCO 2001*, 27–42. Fresno: Department of Linguistics, California State University.

Bowerman, Melissa & Gullberg, Marianne & Majid, Asifa & Narasimhan, Bhuvana. 2004. Put project: The cross-linguistic encoding of placement events. In Majid, Asifa (ed.), *Field Manual Volume* 9, 10–24. Nijmegen: Max Planck Institute for Psycholinguistics.

Bresnan, Joan. 1990. The syntactic projection problem and the comparative syntax of locative inversion. *Journal of Information Science and Engineering* 5(4). 375–396.

Chang, Jui-Ching. 2015. Verbal semantics and eventive inference: The case of fàng in Mandarin Chinese. Hsinchu: National Chiao Tung University. (Master's thesis.)

Chang, Jung-Hsing. 2003. State eventualities and aspect marker le in Chinese. *Taiwan Journal of Linguistics* 1(1). 97–110.

Chao, Yuen-Ren. 1968. *A grammar of spoken Chinese*. Berkeley: University of California Press.

Chen, Jidong. 2012. "She from bookshelf take-descend-come the box": Encoding and categorizing placement events in Mandarin. In Anetta, Kopecka & Narasimhan, Bhuvana (eds.), *Events of putting and taking: A crosslinguistic perspective*, 37–54. Amsterdam: John Benjamins. https://doi.org/10.1075/tsl.100.06che

Chen, Ying & Jing-Schmidt, Zhuo. 2014. The Mandarin LVS construction: Verb lexical semantics and grammatical aspect. *Cognitive Linguistics* 25(1), 1–27. https://doi.org/10.1515/cog-2013-0029

Chen, Yi-Ling. 2009. On syntax and semantics of Placement verbs in Mandarin Chinese. Tainan: National Cheng Kung University. (Master's Thesis.)

Cheng, Shan-Shan. 2008. The comparative research of caused motion construction in English and Mandarin: Based on case study of English verbs of putting and their Chinese correspondents. Shanghai: Shanghai University. (Master's thesis.)

Chu, Chauncey. 2016. A study of "perfectivity", "boundedness" and "the looming le_1" from the interface of semantics, syntax and discourse (in Chinese). In Chin, Andy & Kwok, Bit-Chee & Tsou, Benjamin K. (eds.), *The Commemorative Essays for Yuen Ren Chao, Father of Modern Chinese Linguistics*, 161–172. Taipei: Crane.

Croft, William. 1990. Possible verbs and the structure of events. In Tsohatzidis, Savas L. (ed), Meanings and prototypes: Studies in linguistic categorization, 48–73. London: Routledge.

Croft, William & Cruse, Alan. 2004. *Cognitive Linguistics*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511803864

Dowty, David R. 1979. *Word meaning and Montague grammar*. Boston: Kluwer Academic. https://doi.org/10.1007/978-94-009-9473-7

Fillmore, Charles J. 1968. The case for case. In Bach, Emmon & Harms, Robert T. (eds.), *Universals in linguistic theory*, 1–25: Holt Rinehart & Winston.

Fillmore, Charles J. 1982. Frame Semantics. In *Linguistic Society of Korea* (ed.), *Linguistics in the Morning Calm*, 111–138. Seoul: Hanshin.

Fillmore, Charles J. & Atkins, Beryl T. 1992. Towards a frame-based organization of the lexicon: The semantics of RISK and its neighbors. In Lehrer, Adrienne & Kittay, Eva (eds.), *Frames, fields, and contrasts: New essays in semantics and lexical organization*, 75–102. Hillsdale: Lawrence Erlbaum.

Gawron, Jean M. 1986. Situations and prepositions. *Linguistics and Philosophy* 9(3). 327–382. https://doi.org/10.1007/BF00630274

Goldberg, Adele E. 1995. *Constructions: A construction grammar approach to argument structure*. Chicago: University of Chicago Press.

Goldberg, Adele E. 2010. Verbs, constructions, and semantic frames. In Rappaport Hovav, Malka & Doron, Edit & Sichel, Ivy (eds.), *Syntax, lexical semantics and event structure*, 39–58. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199544325.003.0003

Halliday, Michael A. K. 1967. Notes on transitivity and theme in English: Part 2. *Journal of Linguistics* 3(2). 199–244. https://doi.org/10.1017/S0022226700016613

Hansson, Kristina & Bruce, Barbro. 2002. Verbs of placement in Swedish children with SLI. *International Journal of Communication Disorders* 37(4). 401–414. https://doi.org/10.1080/1368282021000007712

Iwata, Seizi. 2004. Over-prefixation: A lexical constructional approach. *English Language and Linguistics* 8(2). 239–292. https://doi.org/10.1017/S1360674304001388

Iwata, Seizi. 2005a. Locative alternation and two levels of verb meaning. *Cognitive Linguistics* 16(2). 355–407. https://doi.org/10.1515/cogl.2005.16.2.355

Iwata, Seizi. 2005b. The role of verb meaning in locative alternations. In Fried, Mirjam & Boas, Hans C. (eds.), *Grammatical constructions: Back to the roots*, 101–118. Amsterdam: John Benjamins. https://doi.org/10.1075/cal.4.07iwa

Langacker, Ronald W. 1987. *Foundations of cognitive grammar: Theoretical prerequisites*, vol. 1. Stanford: Stanford University Press.

Langacker, Ronald W. 1990. *Concept, image, and symbol: The cognitive basis of grammar*, vol. 1. Berlin: Mouton de Gruyter.

LaPolla, Randy J. 1995. Pragmatic relations and word order in Chinese. In Downing, Pamela A. & Noonan, Michael (eds.), *Word order in discourse*, 297–329. Amsterdam: John Benjamins. https://doi.org/10.1075/tsl.30.11lap

Lemmens, Maarten. 2006. Caused posture: Experiential patterns emerging from corpus research. In Gries, Stefan Th. & Stefanowitsch, Anatol (eds.), *Corpora in cognitive linguistics: Corpus-based approaches to syntax and lexis*, 261–296. Berlin: Mouton de Gruyter.

Levin, Beth. 1993. *English verb classes and alternations: A preliminary investigation*. Chicago: University of Chicago Press.

Levin, Beth & Rappaport Hovav, Malka. 1991. Wiping the slate clean: A lexical semantic exploration. *Cognition* 41(1–3). 123–151. https://www.sciencedirect.com/science/article/pii/0010027791900342?via%3Dihub

Levin, Beth & Rappaport Hovav, Malka. 1995. *Unaccusativity: At the syntax-lexical semantics interface*. Cambridge: The MIT Press.

Levin, Beth & Rappaport Hovav, Malka. 1996. Lexical semantics and syntactic structure. In Lappin, S. (ed.), *The handbook of contemporary semantic theory*, 487–507. Oxford: Blackwell.

Li, Charles N. & Thompson, Sandra A. 1981. *Mandarin Chinese: A functional reference grammar*. Berkeley: University of California Press.

Li, Charles N. & Thompson, Sandra A. 1982. The discourse motivation for the perfect aspect: The Mandarin particle *le*. In Hopper, Paul J. (ed.), *Tense-aspect: Between semantics and pragmatics*, 19–44. Amsterdam: John Benjamins. https://doi.org/10.1075/tsl.1.05li

Liu, Feng-Hsi. 1997. An aspectual analysis of BA. *Journal of East Asian Linguistics* 6. 51–99. https://doi.org/10.1023/A:1008287920948

Liu, Meichun. 2002. Verbs of surface contact in Mandarin: A lexical semantic study. In Su, Lily I-wen & Lien, Chinfa & Chui, Kawai (eds.), *Form and function: Linguistic studies in honor of Shuanfan Huang*, 275–303. Taipei: Crane.

Liu, Meichun. 2003. Motion, direction and spatial configuration: A lexical semantic study of 'hang' verbs in Mandarin. In Shay, Erin & Seibert, Uew (eds.), *Motion, direction and location in languages: In honor of Zygmunt Frajzyngier*, 177–187. Amsterdam: John Benjamins. https://doi.org/10.1075/tsl.56.14liu

Liu, Meichun. 2017. The Chinese mind: What can Chinese tell us about grammar–a non-English biased view. (Paper presented at *the 62nd Annual Conference of International Linguistic Association*, Hong Kong, 26–28 May, 2017).

Liu, Meichun. 2018. Kuang jia wei ben gou shi wei yong ji yu yu liao ku shi zheng de han yu dong ci yu yi fen xi yu fen lei 框架為本，構式為用:基於語料庫實證的漢語動詞語義分析與分類 [A frame-based morpho-constructional approach to verbal semantics]. In Kit, Chunyu & Liu, Meichun (eds.), *Empirical and corpus linguistic frontiers*. Beijing: China Social Sciences Press.

Liu, Meichun & Chang, Che-Wei. 2015. A lexical-constructional approach to verbal semantics: The case of Mandarin 'hang' verbs. *International Journal of Knowledge and Language Processing* 6(4). 1–19.

Liu, Meichun & Chang, Jui-Ching. 2015a. Redefining locative inversion in Mandarin Chinese: A lexical-constructional approach. In Tao, Hongyin & Lee, Yu-Hui & Su, Danjie & Tsurumi, Keiko & Wang, Wei & Yang, Ying Yang (eds.), *Proceeding of the 27th North American Conference on Chinese Linguistics (27th NACCL)*, 439–461. Los Angeles: UCLA.

Liu, Meichun & Chang, Jui-Ching. 2015b. Semantic profile as a source of polysemy: Insight from the spatial-configuration verb *fàng* in Mandarin. In Lu, Qin & Gao, Helena Hong (eds.), *Chinese lexical semantics (CLSW15)*, 24–32. Switzerland: Springer. https://doi.org/10.1007/978-3-319-27194-1

Liu, Meichun & Chang, Jui-Ching. 2017. From placement to positioning: Spatial configuration verbs in Mandarin. (Paper presented at the 25th Annual Meeting of the International Association of Chinese Linguistics (IACL 25), Budapest, 25–27 June, 2017).

Liu, Meichun & Chang, Jui-ching. 2018. Placement verbs in Chinese and English: A contrastive study of lexicalization patterns. In Hong, Jia-Fei & Su, Qi & Wu, Jiun-Shiung (eds.), *Proceedings of the 19th Chinese Lexical Semantics Workshop (CLSW 2018)*, 163–197. Switzerland: Springer.

Liu, Meichun & Tsai, Hsin-shan & Hu, Chia-yin & Chou, Shu-ping. 2015. The proto-motion event schema: Integrating lexical semantics and morphological sequencing. *Journal of Chinese Linguistic* 43(2). 503–547. https://doi.org/10.1353/jcl.2015.0015

Luo, Yun-Pu. 2011. *The study of the polysemous verb 'fang4' in Mandarin Chinese*. Hsinchu: National Tsing Hua University. (Master's thesis.)

Narasimhan, Bhuvana & Gullberg, Marianne. 2011. The role of input frequency and semantic transparency in the acquisition of verb meaning: Evidence from Placement verbs in Tamil and Dutch. *Journal of Child Language* 38(3). 504–532. https://doi.org/10.1017/S0305000910000164

Narasimhan, Bhuvana & Kopecka, Anetta & Bowerman, Melissa & Gullberg, Marianne & Majid, Asifa. 2012. Putting and taking events: A crosslinguistic perspective. In Kopecka, Anetta & Narasimhan, Bhuvana (eds.), *Events of putting and taking: A crosslinguistic perspective*, 1–18. Amsterdam: John Benjamins. https://doi.org/10.1075/tsl.100.03nar

Newman, John. 2002. A cross-linguistic overview of the posture verbs 'sit', 'stand', and 'lie'. In Newman, John (ed.), *The linguistics of sitting, standing and lying*, 1–24. Amsterdam: John Benjamins. https://doi.org/10.1075/tsl.51.02new

Pan, Haihua. 1996. Imperfective aspect zhe, agent deletion, and locative inversion in Mandarin Chinese. *Natural Language & Linguistic Theory* 14(2). 409–432. https://doi.org/10.1007/BF00133688

Pauwels, Paul. 2000. *Put, set, lay, and place: A cognitive linguistic approach to verbal meaning*. Munich: Lincom.

Pinker, Steven. 1991. *Learnability and cognition: The acquisition of argument structure*. Cambridge: The MIT Press.

Piñón, Christopher. 2001. A finer look at the causative-inchoative alternation. In Hastings, Rachel & Jackson, Brendan & Zvolenszky, Zsofia (eds.), *Proceedings of Semantics and Linguistic Theory*, Vol. 11, 346–364. Ithaca: Cornell University.

Pustejovsky, James. 1991. The syntax of event structure. *Cognition* 41(1). 47–81. https://www.sciencedirect.com/science/article/pii/001002779190032Y?via%3Dihub

Schäfer, Florian. 2009. The causative alternation. *Language and Linguistics Compass* 3(2). 641–681. https://doi.org/10.1111/j.1749-818X.2009.00127.x

Serra Borneto, Carlo. 1996. Liegen and stehen in German: A study in horizontality and verticality. In Casad, Eugene H. (ed.), *Cognitive linguistics in redwoods: The expansion of a new paradigm in linguistics*, 459–505. Berlin: Mouton de Gruyter. https://doi.org/10.1515/9783110811421.459

Shi, Ziqiang. 1990. 'Decomposition of perfectivity and inchoativity and the meaning of the particle le in Mandarin Chinese'. *Journal of Chinese Linguistics* 18. 95–124.

Slobin, Dan I. & Bowerman, Melissa & Brown, Penelope & Eisenbeiß, Sonja & Narasimhan, Bhuvana. 2011. Putting things in places: Developmental consequences of linguistic typology. In Bohnemeyer, Jürgen & Pederson, Eric (eds.), *Event representation in language and cognition*, 134–165. New York: Cambridge University Press.

Smith, Carlota S. 1991. *The parameter of aspect.* Dordrecht: Kluwer Academic. https://doi.org/10.1007/978-94-015-7911-7

Sybesma, Rint. 1992. Causatives and accomplishments: The case of Chinese ba. Leiden: Leiden University. (PhD dissertation).

Tai, James H-Y. 2006. *Jingtai kongjian guanxi zai Zhongwen jufa de chengxian* 靜態空間關係在中文句法的呈現 [Representation of stative spatial relation in Mandarin syntax]. *Xiandai Zhongguoyu Yanjiu* [Comtemporary Chinese Studies] 8. 1–7.

Talmy, Leonard. 1985. Lexicalization patterns: Semantic structure in lexical forms. In Shopen, Timothy (ed.), *Language typology and syntactic description* vol. 3: *Grammatical categories and the lexicon*, 57–149. Cambridge: Cambridge University Press.

Tham, Siao Wei. 2012. Result in Mandarin verb compounds. In Guevara, Ana Aguilar & Chernilovskaya, Anna & Nouwen, Rick (eds.), *Proceedings of Sinn und Bedeutung 16*, vol. 2, 599–612.

Tham, Siao Wei. 2013. Change of state verbs and result state adjectives in Mandarin Chinese. *Journal of Linguistics* 49(3). 647–701. https://doi.org/10.1017/S0022226713000261

Tsao, Feng-Fu. 1978. Subject and topic in Chinese. In Cheng, Robert L. & Li, Yingzhe & Tang, Tingchi (eds.), *Proceedings of Symposium on Chinese Linguistics, 1977 Linguistic Institute of the Linguistic Society of America*, 165–196. Taipei: Student Book.

Tsao, Feng-Fu. 1979. *A functional study of topic in Chinese: The first step towards discourse analysis.* Taipei: Student Book.

Vallduví, Enric & Engdahl, Elisabet. 1996. The linguistic realization of information packaging. *Linguistics* 34(3). 459–519. https://doi.org/10.1515/ling.1996.34.3.459

Vendler, Zeno. 1967. *Linguistics in Philosophy*. Ithaca: Cornell University Press.

Wang, William S-Y. 1965. Two aspect markers in Mandarin. *Language* 41(3). 457–470. https://doi.org/10.2307/411788

Xu, Feng. 1998a. *Xiandai Hanyu zhifang dongci peijia yanjiu* 現代漢語置放動詞配價研究 [The valency of Placement verbs in Modern Chinese]. *Yuyan Jiaoxue Yu Yanjiu* [Language Teaching and Linguistic Studies] 3. 86–101.

Xu, Feng. 1998b. *Xiandai Hanyu zhifanglei dongci jiqi yuyi cifanchou* 現代漢語置放類動詞及其語義次範疇 [Placement verbs in Modern Chinese and the their sub-classifications]. *Hanyu Xuexi* [Chinese Language Learning] 2. 19–23.

Yang, Su-Ying & Pan, Haihua. 2001. A constructional analysis of the existential structure. In Pan, Haihua (ed.), *Studies in Chinese linguistics II*, 189–208. Hong Kong: Linguistic Society of Hong Kong.

Yong, Shin. 1993. *The aspectual phenomena of the BA construction.* Madison: University of Wisconsin. (PhD dissertation.)

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