Frames of reference and the encoding of spatial location in Mandarin Chinese

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This article attempts to account for how the static spatial relations of location between objects are encoded in Mandarin Chinese with Levinson's notions of frames of reference and Talmy's concept of Figure-Ground relations as theoretical guidance. Space is relational in nature, and spatial relations are embodied concepts that are at the heart of our conceptual system. That's why they cannot be seen in the way physical objects are observed. Accordingly, I am inclined to propose that spatial relations are not natural entities in the physical world, but abstract ones that are construed and conceptualized subjectively by human beings. In accordance with the relational nature of space, Mandarin Chinese speakers usually encode the abstract spatial relation *X Spatially Relates To Y* into a linguistic representation as *X V Y* (*P*) where *P* is optional, when a pure static spatial relation of location between objects is construed, or into a linguistic representation as *X V_P zài Y P* where V_P stands for verbs of posture, when the object being located is conceived as being spatially related in a certain manner with respect to the reference object. Usually, such linguistic representations as *X V Y* (*P*) and *X V_P zài Y P* are usually realized in Mandarin Chinese as two types of locative constructions: spatial relation constructions of containment/enclosure and spatial relation constructions of proximity/adjacency. What's more, though locative constructions are related in some way to existential constructions in Mandarin Chinese, they are actually distinct from each other in three ways from a cognitive linguistics perspective: (i) they encode different spatial relations, (ii) they reveal different Figure-Ground relations, and (iii) there is a difference in definiteness of the two nominals involved.

1.   Introduction

Ever since cognitive linguistics has come into being as a theoretical approach to linguistic studies, space in language becomes an important topic of current research. There are three reasons for this according to Levinson and Wilkins. First, "it may help to reveal the underlying conceptual structure in human spatial thinking." Second, "the very variability of language promises an interesting insight into the possible cultural variability of spatial thinking". Third, "this reasoning presumes a close correlation between spatial language and spatial thinking" (Levinson & Wilkins 2006: 1). Based on these ideas, this article will attempt to focus on the encoding of spatial location in Mandarin Chinese, specifically on how Mandarin Chinese encodes the static spatial relations between objects through clause-level constructions. It is hoped that the specific features revealed in this aspect of Mandarin Chinese may contribute to the studies in language typology, because "[e]very language has its own unique system of meanings encoded in grammar", and "[t]he meanings encoded in grammar – just like those encoded in the lexicon – are language-specific" (Wierzbicka 1996: 404, 456).

This aim will be achieved mainly by focusing on the ways in which Mandarin Chinese speakers organize their observations of the spatial relations between objects into linguistic structures, with Levinson's (1996, 2003) notions of frames of reference and Talmy's (1972, 1975, 1983, 2000) concept of Figure-Ground relations as theoretical guidance. Therefore, in the sections to come, Section 2 will briefly introduce the three types of frames of reference proposed by Levinson, Section 3 will be a general outline of Talmy's Figure-Ground relations, and Section 4 will briefly discuss the localizers functioning as spatial postpositions in Mandarin Chinese. The fifth section will cover the encoding of spatial location in Mandarin Chinese, focusing specifically on the spatial relation construction of location and its subtypes. The final section will be the concluding remarks.

2.   Frames of reference

Space is "a boundless, three-dimensional extent in which objects and events occur and have relative position and direction" (McHenry 1993: 61). However, the relative position/direction between objects does not exist naturally in the world around us by itself. It is rather a kind of spatial relation which is construed and conceptualized by human beings because it is the objects and their relations but not space itself that we humans perceive and construe in space. "Spatial relations indicate the location of one object by specifying its position relative to a second object" (Carlson 2000: 94) in linguistic expressions. The object whose position is

specified with reference to another object may be called the located object (O_L), while the object which serves to specify the location of the located object may be termed as the reference object (O_R). Between O_L and O_R, there may form a certain kind of spatial frame of reference.

As is proposed by Levinson (1996, 2003), there are three types of frames of reference, which are termed intrinsic, relative and absolute frames of reference. The intrinsic frame of reference "involves an object-centred coordinate system, where the coordinates are determined by the 'inherent features', sidedness or facets of the object to be used as the ground" (Levinson 1996: 140, 2003: 41). The relative frame of reference is a viewer-centred frame of reference, which assumes a 'viewpoint' "given by the location of a perceiver in any sensory modality", and a figure and ground distinct from the viewpoint of the perceiver. "It thus offers a triangulation of three points, and utilizes coordinates fixed on" the viewpoint "to assign directions to figure and ground" (Levinson 1996: 142, 2003: 43). The absolute frame of reference "refers to the fixed direction provided by gravity (or the visual horizon under canonical orientation)" (Levinson 1996: 145, 2003: 47).

Accordingly, it can be said that, of the three types of frames of reference, the intrinsic and absolute ones are binary while the relative one is ternary (see Zlatev 2007: 328). To be specific, the intrinsic frame of reference is a binary spatial relation with two arguments, O_L and O_R. The spatial position of O_L is specified with reference to the intrinsic properties of O_R. For example, in *The cat is in front of the chair*, *the cat* is O_L and *the chair* is O_R. It is the intrinsic FRONT feature of the latter that is employed to locate the spatial position of the former. The absolute frame of reference also expresses a binary spatial relation between O_L and O_R in accordance with the cardinal directions, asserting that O_L can be found in a search domain at the fixed bearing from O_R. In such a frame of reference, absolute spatial terms like *east*, *west*, *north* and *south* are normally employed, as in *San Francisco is west of Berkeley*, which is true regardless of the viewer's location because such absolute spatial terms "do not demand that their interpretation take into account some person's viewpoint location" (Dancygier & Sweetser 2014: 164). In sharp contrast, the relative frame of reference expresses a ternary spatial relation with three arguments, the viewer (though usually implicit in the linguistic representation), O_L and O_R, where the spatial relation between O_L and O_R is specified with reference to the viewer's viewpoint. In other words, it is the viewer's viewpoint that assigns a temporary feature to O_R, based on which the spatial position of O_L is specified. For example, *the ball* and *the tree* are O_L and O_R respectively in *The ball is in front of the tree*. However, *the tree* itself does not possess a FRONT feature of its own. It is the side of the tree which faces the viewer's front that is assigned a temporary FRONT feature, with respect to which the spatial position of *the ball* is located from where the viewer is standing.

In sum, these frames of reference are employed by the viewer when she conceives and represents a spatial scene. With the intrinsic frame of reference, the viewer conceives the spatial relation between O_L and O_R by means of the intrinsic properties of O_R to locate O_L, but with no involvement of the viewer herself. With the absolute frame of reference, the viewer conceives the spatial relation between O_L and O_R in accordance with the cardinal directions to locate O_L, but with no application of the intrinsic properties of O_R and with no involvement of the viewer herself, either. And with the relative frame of reference, the viewer conceives the spatial relation between O_L and O_R by first applying to O_R her own physical feature, which is then employed to locate O_L, for which it can be said that the relative frame of reference has the viewer herself involved to some degree.

3.   Figure-ground relations

In cognitive psychology, the figure/ground alignment refers to the basic principle of cognitive and perceptual experience by virtue of which humans perceive (or cognize) entities as standing out against others (Lemmens 2016: 93). According to Croft and Cruse, it is Talmy (1972, 1975, 1983, 2000) who has first introduced the figure-ground distinction into cognitive linguistics from Gestalt psychology. He uses the figure-ground relation to account for the expression of spatial relations in natural language. All spatial relations in language – both location or motion – are expressed by specifying the position of one object, the **figure**, relative to another object, the **ground** (sometimes more than one ground object) (Croft & Cruse 2004: 56). However, it should be noticed that, as Talmy himself points out, "[t]he terms Figure and Ground have been taken from Gestalt psychology, but they are written with capitals to mark the distinctness of their linguistic usage from their original usage" (Talmy 2000: 312). In their linguistic usage, they have their own specific characterizations. "The Figure is a moving or conceptually movable entity whose path, site, or orientation is conceived as a variable, the particular value of which is the relevant issue," whereas "[t]he Ground is a reference entity, one that has a stationary setting relative to a reference frame, with respect to which the Figure's path, site, or orientation is characterized" (Talmy 2000: 312, also see Talmy 1975: 419, 1983: 232).

Talmy suggests that a situation can be considered to consist of, or be partitioned into the components of, one object moving or located with respect to another object. The object which is considered as moving or located with respect to another object is or functions as the Figure, and the object with respect to which a first object is considered as moving or located is or functions as the Ground (Talmy 1972: 10–11). In his further studies, Talmy has identified a list of definitional and associated characteristics of objects that favor the construal of the

Figure or Ground in the domain of spatial relations, as is shown in Table 1 (Talmy 2000: 315–16, also see Talmy 1983: 230–31).

Table 1. The characteristics of Figure and Ground

	Figure	Ground
Definitional Characteristics	Has unknown spatial (or temporal) properties to be determined	Acts as a reference entity, having known properties that can characterize the Figure's unknowns
Associated Characteristics	– more moveable – smaller – geometrically simpler (often pointlike) in its treatment – more recently on the scene/in awareness – of greater concern/relevance – less immediately perceivable – more salient, once perceived – more dependent	– more permanently located – larger – geometrically more complex in its treatment – more familiar/expected – of lesser concern/relevance – more immediately perceivable – more backgrounded, once Figure is perceived – more independent

Accordingly, (1) and (2) below can clearly be accounted for by these characteristics proposed by Talmy. (1) is rather odd due to the fact that its assignment of a Figure role to *the house* and a Ground role to *the bike* flouts most of the associated characteristics (Talmy 2000: 316), whereas (2) is normal and acceptable because of the fact that its assignment of a Figure role to *the bike* and a Ground role to *the house* conforms to most of the associated characteristics.

(1) ? The house is near the bike.

(2)   The bike is near the house.

In other words, from the perspective of Levinson's frames of reference, (1) is quite odd and even unacceptable in that *a bike*, in comparison with *a house*, is small, movable, and less perceivable, thus it usually cannot function as the O_R to locate an O_L such as *a house*. Normally, it is in the other way round. When we try to describe the spatial relation between *a house* and *a bike*, it is the former that is usually used as the O_R to specify the position of such an O_L as the latter, but not the other way round. Thus, it can be inferred that in spatial relations, the object that is used as the O_R usually serves as the Ground whereas the object that is used as the O_L normally functions as the Figure.

4.   Localizers as spatial postpositions

In Mandarin Chinese, there is a class of words which usually follow a noun or noun phrase (a nominal hereafter) in syntactic structures to single out, or to profile in Langacker's terminology, a location out of the entity designated by the nominal. For example, the words *lǐ* 'in' and *shàng* 'on' in *fāngjiān lǐ* 'in the room' and *zhuō·zi shàng* 'on the table' single out respectively the inside of *fāngjiān* and the upper surface of *zhuō·zi*. In the Chinese linguistics literature, such words are classified as localizers (Chao 1968, Zhu 1982, Wen 1984, Liu et al. 2001, Shao 2007, Chappell & Peyraube 2008, Cheung 2016a, 2016b), locative markers (Xing 1997), locative particles (Li & Thompson 1981, Liu 1998), locative terms (Fang 2004, Wu 2008), location words (Ross & Ma 2006), position words (Loar 2011), position indicators (Yip & Rimmington 2016), NP enclitics (Sun 2008) or postpositions (Chen 1978, Ernst 1988, Liu, 2008, Fang 2014, Zhang 2014, 2016a, Paul 2015), to cite but a few.

Superficially, there seems to be no agreement on the classification of such words as *lǐ* 'in' and *shàng* 'on' in Mandarin Chinese. "Actually, 'postposition' implies a syntactic treatment, while 'enclitic' implies a morphological interpretation" (Xu 2008: 6). Then, it may well be inferred that all the other terms of "localizers", "locative markers", "locative particles", "locative terms", "location words", "position words" and "position indicators", broadly speaking, imply a semantic treatment in that their focus is on the spatial location they themselves specify. I would rather treat such words both semantically and syntactically at the same time. From a semantic viewpoint, these words "usually express the (spatial and temporal) locations (lit. or fig.) of things" (Chao 1968: 621). From a syntactic viewpoint, they always follow the nominal immediately in locative phrases, due to which they "are often regarded as forming a part of speech as postpositions" (Chao 1968: 397). Therefore, taking both their semantic meaning and syntactic behavior into consideration, I am inclined to propose that words like *lǐ* 'in' and *shàng* 'on' in Mandarin Chinese, when they occur after the nominal in locative phrases, should be regarded as spatial postpositions. In the term "spatial postposition", "spatial" refers to the postposition's function of specifying a particular spatial location out of the entity which the nominal signifies, and "postposition" refers to the fact that it always occupies the phrase-final position in locative phrases. Just as Chao points out, "they are translatable into [English] prepositions. For this reason, they are also called postpositions" (Chao 1968: 621–622). This is different from the case in the English language in that such words usually precede the nominal in locative phrases in English so that they are called spatial prepositions, and this is rather similar to the case in the English language in that both spatial postpositions in Mandarin Chinese and spatial prepositions in English "specify a location or change in position of an object in space" (Coventry & Garrod 2004: 6–8).

It is worth mentioning that the localizers that can function as spatial postpositions in Mandarin Chinese may be either a simple word or a complex word. The latter is usually formed by adding a suffix to the former. For example, suffixes *-tou* and *-mian* can be added to *shàng* and *lǐ* to form such complex postpositions as *shàng·tou* 'upon' and *lǐ·mian* 'inside' respectively, as in (3) and (4) below (see Chao 1968: 620, Xing 2017: 220).

(3)   杯子 在 桌子　上头。
　　 Bēi·zi zài zhuō·zi shàng·tou
　　 Cup   be table   on top
　　 The cup is on the table.

(4)   笔　在 盒子 里面。
　　 Bǐ   zài hé·zi lǐ·mian
　　 Pen be box   inside
　　 The pen is in the box.

5.   Encoding of spatial location in Mandarin Chinese

5.1   Spatial relations and spatial relation constructions

Coventry and Garrod (2004: 3) point out that "being able to describe where objects are, and being able to find objects based on simple locative descriptions, can be regarded as basic skills for any competent speaker of a language." This is certainly true. What is more, the basic skills to describe the location of objects necessarily depend on the human ability to construe and conceptualize the spatial relations between objects in the world around us. Spatial relations, i.e., the relative position/direction between objects in space, are actually perceived and constructed through human observation and conceptualization. As such, a spatial relation usually involves three factors: two objects (O_1 and O_2) and a viewer (V), as is shown in Figure 1.
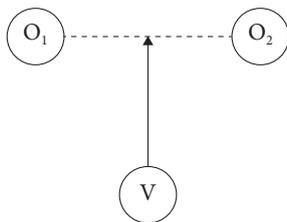

Figure 1. Three factors in a spatial relation

Figure 1 indicates how the spatial relation between O_1 and O_2 comes into being. Of the three factors involved, V is the key subjective factor who actively does the observation and conceptualization, while O_1 and O_2 are the objective factors, i.e., the physical objects existing in the outside world which receive V's observation and conceptualization. However, physical objects do not reveal any relation out of themselves, which is shown by the dashed line between them. It is V who construes some spatial relation out of O_1 and O_2 through her active observation, perception and conceptualization, as is indicated by the arrowed line. For example:

(5) 灯　　在 桌子　　上边。
     Dēng zài zhuō·zi shàng·bian
     Lamp be   table   above
     The lamp is above the table.

In (5), *dēng* 'lamp' and *zhuō·zi* 'table' are two particular objects existing by themselves in the conceived scene. It is V's construal and conceptualization of their relative positions within the scene that attribute a vertical spatial relation to these two objects. As is correctly pointed out by Lakoff and Johnson, spatial-relations concepts are embodied. They are at the heart of our conceptual system. They are what make sense of space for us. They characterize what spatial form is and define spatial inference. But they do not exist as entities in the external world. We do not see spatial relations the way we see physical objects. For instance, we do not see nearness and farness. We see objects where they are and we attribute to them nearness and farness from some landmark (Lakoff & Johnson 1999: 30). It can thus be inferred that spatial relations are not natural entities in the physical world but abstract ones which are construed and conceptualized subjectively by human beings (Zhang 2016b: 11). Therefore, "[s]patial relations do not exist in the real world; rather, they exist in minds" (Mark & Frank 1989).

All languages of the world provide their speakers with various linguistic structures to express themselves, including structures to encode spatial relations between objects. The structures to encode such spatial relations may be regarded as "spatial relation constructions" (Croft 2001: 60). To be specific, a spatial relation construction can be defined as a linguistic expression that encodes the relative relation between two or more objects in space, i.e., a form-meaning pair (Goldberg 1995) or a symbolic structure (Langacker 2008) representing the spatial relation between objects. Based on the spatial nature of objects and the viewer's viewpoint of observation and way of construal, the spatial relations between objects may be either static or dynamic, according to which a speaker may employ different types of spatial relation constructions to encode the static and dynamic spatial relations between objects. Therefore, spatial relation constructions may be classified into spatial relation constructions of location, spatial relation constructions

of motion, spatial relation constructions of existence/appearance, spatial relation constructions of fictive motion, and so on (see Zhang 2016b: 22). In what follows, the article will focus on how Mandarin Chinese speakers encode the static spatial relations between objects by means of spatial relation constructions of location.

5.2 Encoding of spatial location in Mandarin Chinese

The spatial system of language "imposes a fixed form of structure on virtually every spatial scene" (Talmy 1983: 229). When a speaker of Mandarin Chinese tries to locate the position of an object, she has to do it with reference to another object. In doing so, firstly, she has to observe the two objects, and secondly, she has to construe a spatial relation between them in the conceived scene. Based on her observation and construal, she can encode such a spatial relation into a linguistic expression called the spatial relation construction of location. In such a construction, the object to be located, i.e., O_L, usually functions as the Figure and occupies the subject position while the object used as the reference object, i.e., O_R, plays the role of the Ground and occupies the object position. For example, when a speaker of Mandarin Chinese tries to describe the spatial relation between *shū* 'book' and *zhuō·zi* 'table' in the observed situation in which there is a *zhuō·zi* with a *shū* on it, as is shown in Figure 2, she may usually encode such a kind of spatial relation by means of a construction as (6).
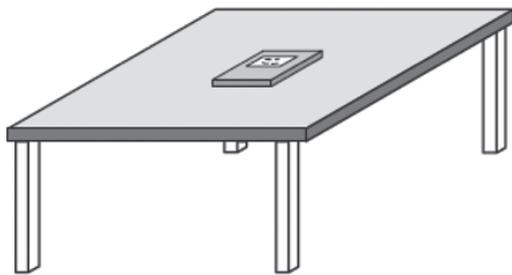

Figure 2. *Shū* and *zhuō·zi* (adapted from Ungerer & Schmid 2006: 165)

(6) 书   在 桌子   上。
     Shū   zài zhuō·zi shàng
     Book be table   on
     The book is on the table.

In such a construction as (6), *shū* 'book' is used as O_L and put in the subject position, and *zhuō·zi* 'table' is used as O_R and placed in the object position. The construction as a whole specifies the particular location of *shū* on the surface of

zhuō·zi (as for the functions of the verb *zài* 'be/exist at/in' and the postposition *shàng*, see below).

Frawley points out, "space is a relational concept", and "[*l*]*ocation* is the relative spatial fixedness of entities". "The constant relational nature of space can be expressed as an abstract formal relation between (at least) two participants: *X Spatially Relates To Y*, where *X* is the located object, and *Y* is the reference object" (Frawley 1992: 250–251). According to this relational nature of space, Mandarin Chinese speakers usually encode the abstract spatial relation *X Spatially Relates To Y* into a linguistic representation as *X V Y (P)*, where *X* stands for O_L, *Y* for O_R, *V* for the stative verb *zài* or a verb of posture such as *zuò* 'sit' and *zhàn* 'stand', and *P* for postposition, and the brackets mean that *P* may be used in some cases and may not be used in other cases. That is, it is optional under certain conditions (see below).

Based on the definitional and associated characteristics of the objects involved, the linguistic representation *X V Y (P)* can be realized as two types of static spatial relation constructions of location: a spatial relation construction of containment or enclosure and a spatial relation construction of proximity or adjacency. The former encodes a spatial relation of O_L being contained or enclosed by O_R, and the latter encodes a spatial relation of O_L being near or adjacent to O_R.

5.2.1 X V Y *(P) encoding a contained-container or an enclosed-enclosure relation*

When the speaker of Mandarin Chinese conceives a spatial relation between O_L and O_R with O_L being contained or enclosed by O_R in accordance with the intrinsic frame of reference, the inherent properties of O_R are employed to locate O_L. Such a spatial relation between O_L and O_R may be encoded into a construction in the form of *X zài Y* or a construction in the form of *X zài Y P* where *P* is obligatory. When O_L is inside the location of O_R, a construction in the form of *X zài Y* is employed on condition that the noun designating O_R is a place noun.[1] For example:

(7)   他的 父母　 在 北京。
      Tā-de fùmǔ　 zài Běijīng
      His　 parents be Běijīng
      His parents are in Beijing.

(8)   小王　　 在 图书馆。
      Xiǎo Wáng zài túshūguǎn
      Xiao Wang be library
      Xiao Wang is in the library.

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1. Place nouns are nouns which denote locations and directions (see Chao 1968: 519–533, Xing 2017: 219–220).

In (7) and (8), *Běijīng* is a proper place noun designating the capital city of China, and *túshūguǎn* 'library' is a proper place noun referring to a special kind of buildings where books are stored for people to read. *Tā-de fùmǔ* 'his parents' and *Xiǎo Wáng* are located as being inside the location of *Běijīng* and *túshūguǎn* respectively. However, when O_L is outside the location of O_R, the form of *X zài Y P* is used even if the noun designating O_R is a place noun. For example:

(9) 小王　　　在 图书馆　　外面。
    Xiǎo Wáng zài túshūguǎn wài·mian
    Xiao Wang be library   outside
    Xiao Wang is outside the library.

(10) 高雪坤　　　在 办公室　　外面。
    Gāo xuěkūn zài bàngōngshì wài·mian
    Xuekun Gao be office   outside
    Xuekun Gao is outside the office.

As is indicated by (9) and (10), the postposition *wài·mian* 'outside' is obligatory because *Xiǎo Wáng* and *Xuěkūn Gāo* are outside the location of *túshūguǎn* 'library' and *bàngōngshì* 'office' respectively. Therefore, it can be inferred that, when Mandarin Chinese speakers encode a spatial relation of O_L as being inside the location of O_R by means of the intrinsic properties of O_R on condition that the noun designating O_R is a place noun, the construction in the form of *X zài Y* is employed, and when a spatial relation of O_L as being outside the location of O_R is encoded by means of the intrinsic properties of O_R, the construction in the form of *X zài Y P* with *P* as an obligatory element is used even though the noun designating O_R is a place noun.

When the speaker of Mandarin Chinese conceives a contained-container or an enclosed-enclosure relation out of O_L and O_R with O_L inside or outside the location of O_R, she usually encodes such a relation into a construction in the form of *X zài Y P* with *P* as an obligatory element on condition that the noun referring to O_R is an entity noun. For instance:

(11) 大衣　　在 衣橱　　里。
    Dàyī   zài yīchú   lǐ
    Overcoat be wardrobe in
    The overcoat is in the wardrobe.

(12) 学生们　　　在 操场　　上。
    Xuéshēng-men zài cāochǎng　shàng
    Students   be playground on
    The students are on the playground.

(13) 学生们　　　　在 操场　　　外边。
　　　 Xuéshēng-men zài cāochǎng　　wài·bian
　　　 Students　　　　be playground outside
　　　 The students are outside the playground.

In these examples, *yīchú* 'wardrobe' and *cāochǎng* 'playground' are both entity nouns used as O_R to locate the position of O_L (*dàyī* 'overcoat' and *xuéshēng-men* 'students' respectively). (11) expresses a container-contained relation of O_L being contained by O_R, i.e., *dàyī* being inside *yīchú*. Both (12) and (13) express an enclosed-enclosure relation. The former encodes a spatial relation of O_L (*xuéshēng-men*) being inside the region of O_R (*cāochǎng*), whereas the latter encodes a spatial relation of O_L (*xuéshēng-men*) being outside the region of O_R (*cāochǎng*). In all these three examples, the postpositions *lǐ* 'in', *shàng* 'on' and *wài·bian* 'outside' are obligatory. Otherwise, unacceptable constructions will be produced, as is indicated in (14) and (15).

(14) *大衣　　　在 衣橱
　　　 Dàyī　　　zài yīchú
　　　 Overcoat　be wardrobe

(15) *学生们　　　　在 操场
　　　 Xuéshēng-men zài cāochǎng
　　　 Students　　　　be playground

5.2.2   X V Y P *encoding a proximity or adjacency relation*

When the speaker of Mandarin Chinese construes a spatial relation of one object being near or adjacent to another object, her construal may usually be based on an intrinsic frame of reference, a relative frame of reference or an absolute frame of reference. If her construal is done by means of an intrinsic frame of reference, the intrinsic properties of O_R are employed to locate O_L and the spatial relation between O_L and O_R is either a vertical relation or a horizontal relation, which will be encoded into a spatial relation construction of proximity or adjacency in the form of *X zài Y P*. For example:

(16) 吊灯　　　在 餐桌　　　上面。
　　　 Diàodēng　zài cānzhuō　　shàng·mian
　　　 Chandelier be dining table above
　　　 The chandelier is above the dining table.

(17) 小猫　　在 餐桌　　　下面。
　　　 Xiǎomāo zài cānzhuō　　xià·mian
　　　 Kitten　　be dining table under
　　　 The kitten is under the dining table.

(18) 他的 塑像 在 办公楼   前面。
　　　Tā-de sùxiàng zài bàngōnglóu   qián·mian
　　　His   statue be office building front
　　　His statue is in front of the office building.

(19) 他的 车 在 办公楼   后面。
　　　Tā-de chē zài bàngōnglóu   hòu·mian
　　　His   car be office building behind
　　　His car is behind the office building.

Examples (16)–(19) all involve the intrinsic properties of the reference objects *cānzhuō* 'dining table' and *bàngōnglóu* 'office building'. (16) and (17) express a vertical relation of *diàodēng* 'chandelier' as being above *cānzhuō* and *xiǎomāo* 'kitten' as being under *cānzhuō* whereas (18) and (19) express a horizontal relation of *tā-de sùxiàng* 'his statue' as being in front of *bàngōnglóu* and *tā-de chē* 'his car' as being behind *bàngōnglóu*. That is, the top-bottom property of O_R (*cānzhuō*) is employed to locate the position of O_L (*diàodēng* and *xiǎomāo*) in (16) and (17), and the front-back property of O_R (*bàngōnglóu*) is used to locate the position of O_L (*tā-de sùxiàng* and *tā-de chē*) in (18) and (19).

　　If a speaker of Mandarin Chinese construes a spatial relation of proximity or adjacency out of two objects by means of the relative frame of reference, her own viewing point has to be involved due to the fact that the object employed as O_R lacks the spatial features of 'front-back' and 'left-right'. In such a case, her own 'front-back' or 'left-right' will be assigned to the object functioning as O_R, and the spatial relation conceived between O_L and O_R will be a horizontal relation, which will be encoded into a spatial relation construction of proximity or adjacency in the form of *X zài Y P* as well. For example:

(20) 篮球   在 树 前面。
　　　Lánqiú   zài shù qián·mian
　　　Basketball be tree front
　　　The basketball is in front of the tree.

(21) 篮球   在 树 后面。
　　　Lánqiú   zài shù hòu·mian
　　　Basketball be tree back
　　　The basketball is behind the tree.

(22) 小孩儿 在 大 石头 左边。
　　　Xiǎoháir zài dà shítóu zuǒ·bian
　　　Child   be big stone left
　　　The child is on the left of the big stone.

(23) 小孩儿　在　大　石头　右边。
Xiǎoháir zài dà shítóu yòu·bian
Child   be big stone right
The child is on the right of the big stone.

It is obvious that objects such as *shù* 'tree' and *shítóu* 'stone' do not possess the spatial properties of *front-back* or *left-right*. Therefore, when a speaker as the viewer and conceptualizer tries to locate an object in relation to such objects, her own *front-back* property or *left-right* property must be involved in her construal. As is indicated in (20)–(23), the speaker's *front-back* property is assigned to *shù* and her *left-right* property to *shítóu*. Thus, *shù* and *shítóu* acquire a temporary feature of *front-back* and *left-right* respectively, with respect to which *lánqiú* 'basketball' is located as being in front of *shù* in (20) and behind *shù* in (21), and *xiǎoháir* 'child' is located as being on the left of *shítóu* in (22) and on the right of *shítóu* in (23).

Additionally, there is another case in which the speaker of Mandarin Chinese may sometimes construe a spatial relation of proximity or adjacency out of two objects by means of the absolute frame of reference. In such a case, the speaker conceives a spatial scene, in which one object is located with another object as the reference object on the basis of the cardinal directions. Then, such a spatial relation of proximity or adjacency will also be a horizontal relation. When she describes such a horizontal relation between O_L and O_R, she may encode it into a spatial relation construction in the form of *X zài Y P* in Mandarin Chinese, too. For example:

(24) 郑州　　　在 开封　　西边。
Zhèngzhōu zài Kāifēng xī·bian
Zhèngzhōu be Kāifēng west
Zhèngzhōu is to the west of Kāifēng.

(25) 开封　　在 郑州　　　东边。
Kāifēng zài Zhèngzhōu dōng·bian
Kāifēng be Zhèngzhōu east
Kāifēng is to the east of Zhèngzhōu.

(26) 新乡　　在 郑州　　　北边。
Xīnxiāng zài Zhèngzhōu běi·bian
Xīnxiāng be Zhèngzhōu north
Xīnxiāng is to the north of Zhèngzhōu.

(27) 郑州　　　在 新乡　　南边。
Zhèngzhōu zài Xīnxiāng nán·bian
Zhèngzhōu be Xīnxiāng south
Zhèngzhōu is to the south of Xīnxiāng.

Zhèngzhōu, *Kāifēng* and *Xīnxiāng* are three cities in Henan Province, China. In these examples, the speaker of Mandarin Chinese employs the absolute spatial postpositions of *xī·bian* 'west', *dōng·bian* 'east', *běi·bian* 'north' and *nán·bian* 'south' to locate the spatial position of *Zhèngzhōu* (O_L) as being west of *Kāifēng* (O_R) in (24), *Kāifēng* (O_L) as being east of *Zhèngzhōu* (O_R) in (25), *Xīnxiāng* (O_L) as being north of *Zhèngzhōu* (O_R) in (26) and *Zhèngzhōu* (O_L) as being south of *Xīnxiāng* (O_R) in (27). These encodings do not involve the intrinsic properties of O_R, nor the speaker's viewing point due to the particular nature of the cardinal directions of *dōng* 'east', *xī* 'west', *nán* 'south' and *běi* 'north'.

5.2.3 X V_p zài Y P *encoding a spatial relation with some manner of O_L involved*

What has been discussed thus far is that the linguistic representation of *X V Y* (*P*) in Mandarin Chinese is only the encoding of the absolute static spatial relations between two objects. Here, the absolute static nature of spatial relations is conveyed by the stative verb *zài*. In addition, the spatial relation between two objects may also involve some manner of O_L. Specifically, O_L may be conceived as being spatially related in a certain manner with respect to O_R, which can be called a spatial relation of states of posture.[2] When the speaker of Mandarin Chinese construes such a spatial relation with the manner of O_L taken into consideration, she usually encodes it into a linguistic representation of *X V_p zài Y P*, where V_p stands for verbs of posture, and *zài…P* forms a circumposition (Liu 2002, 2008: 47) with *zài*[3] as the preposition and *P* as the postposition. For example:

(28) 老人　躺　在　床　　上。
　　　Lǎo rén tǎng zài　chuáng shàng
　　　Old man lie　Pre[4] bed　　on
　　　The old man lies on the bed.

(29) 他的　母亲　坐　在　树　下。
　　　Tā-de mǔqīn　zuò zài shù xià
　　　His　mother sit　Pre tree under
　　　His mother sits under the tree.

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2. States of posture represent the states which can usually be controlled by animate O_Ls. They are different from absolute states in that they are subject to change whereas the absolute states are not (see Loar 2011: 129).

3. In Mandarin Chinese, the word 在 (*zài*) may function either as a verb or as a spatial preposition according to its syntactic behavior.

4. "Pre" stands for "preposition."

(30) 那个 男孩儿 站   在 桌子 上。
    Nà-ge nánháir zhàn zài zhuō·zi shàng
    That boy   stand Pre table   on
    That boy stands on the table.

(31) 小狗   趴 在 桌子 下面。
    Xiǎo gǒu pā zài zhuō·zi xià·mian
    Puppy   rest Pre table   under
    The puppy rests under the table.

As is indicated by the verbs of posture *tǎng* 'lie', *zuò* 'sit', *zhàn* 'stand' and *pā* 'rest/ lie', each of (28)–(31) encodes the spatial relation between O_L and O_R with a certain manner of O_L involved. To be specific, *lǎo rén* 'old man' (O_L) is located as being on *chuáng* 'bed' (O_R) in a lying manner in (28), *tā-de mǔqīn* 'his mother'(O_L) as being under *shù* 'tree' (O_R) in a sitting manner in (29), *nà-ge nánháir* 'that boy' (O_L) as being on *zhuō·zi* 'table' (O_R) in a standing manner in (30), and *xiǎo gǒu* 'puppy' (O_L) as being under *zhuō·zi* (O_R) in a resting manner in (31).

What's more, the preposition *zài* and the postposition in the circumposition *zài… P* perform different functions in profiling spatial locations. The preposition *zài* is a "light" preposition and profiles an abstract spatial location while the postposition *P* profiles a concrete spatial location (see Li 2009: 105). Take (30) and (31) for example. The circumposition is *zài…shàng* in the former whereas it is *zài… xià·mian* in the latter, and the noun functioning as O_R refers to the same kind of object, i.e., *zhuō·zi*, in both examples. Since the preposition *zài* only designates an abstract spatial location, it is the postpositions *shàng* 'on' and *xià·mian* 'under' that profile different concrete spatial locations. In (30), the postposition *shàng* singles out the particular concrete upper surface of *zhuō·zi* on which *nà-ge nánháir* 'that boy' stands. In contrast, the postposition *xià·mian* in (31) specifies the particular concrete region underneath *zhuō·zi* where *xiǎo gǒu* 'puppy' rests.

Therefore, it can be proposed that, when Mandarin Chinese speakers encode the spatial relation between O_L and O_R with some manner of O_L involved, circumpositions are usually employed with the preposition *zài* profiling an abstract spatial location out of O_R and the postposition a particular concrete spatial location out of O_R. Thus, it is the cooperation of the preposition and the postposition that designates a spatial relation between O_L and O_R. It has to be mentioned in passing that the objects functioning as O_L in the spatial relations with their manner involved should be animate beings, such as *lǎo rén* 'old man', *tā-de mǔqīn* 'his mother', *nà-ge nánháir* 'that boy' and *xiǎo gǒu* 'puppy' in (28)–(31).

6.   Concluding remarks

To sum up briefly, speakers of Mandarin Chinese may usually perceive and construe two types of static spatial relations between two objects. When one object is conceived as being contained or enclosed by another object, a contained-container/ enclosed-enclosure relation is conceptualized. When one object is conceived as being near or adjacent to another object, a proximity/adjacency relation comes into being. These static spatial relations are usually encoded into a linguistic representation of $X\ V\ Y\ (P)$ in Mandarin Chinese. Additionally, when one object is conceived as being spatially related in a certain manner to another object, a spatial relation with some manner of the first object involved is conceptualized. This kind of spatial relation is then normally encoded into a linguistic representation of $X\ V_p\ z\grave{a}i\ Y\ P$ in Mandarin Chinese. The linguistic representations of $X\ V\ Y\ (P)$ and $X\ V_p\ z\grave{a}i\ Y\ P$ are further realized as spatial relation constructions of containment/ enclosure or spatial relation constructions of proximity/adjacency.

Before wrapping up this article, I would like to draw attention to another aspect of these spatial relation constructions. Lyons puts forward a hypothesis that "in many, and perhaps in all, languages existential and possessive constructions derive (both synchronically and diachronically) from locatives" (Lyons 1967: 390). No matter whether existential and possessive constructions are really derived from locative constructions or not, existential constructions may at least be related to locative ones in some way. As is pointed out by Clark, each of the constructions of (32)–(35) contains the same surface constituents (Clark 1978: 87):

(32)   There is a book on the table.

(33)   The book is on the table.

(34)   Il y a un livre sur la table.

(35)   Le livre est sur la table.

Both (32) and (33) in English contain a nominal (*a book* and *the book*) and a locative phrase (*on the table*), and the two constructions in French also contain a nominal (*un livre* and *le livre*) and a locative phrase (*sur la table*), but their word order is different (see Clark 1978: 87) in both English and French. This is also true of Mandarin Chinese as in (36) and (37) below.

(36) 桌子　上　有⁵ 一本 书。
Zhuō·zi shàng yǒu yīběn shū
Table on   be a   book
On the table is a book.

(37) 书　在 桌子　上。
Shū zài zhuō·zi shàng
Book be table   on
The book is on the table.

As is revealed by (32), (34) and (36), existential constructions require the expletive *there* and *il* in English and French respectively to fill in the clausal subject position whereas the locative phrase (*zhuō·zi shàng* 'on the table') is directly used as the clausal subject in Mandarin Chinese.

Lyons further takes the following as well-known facts:

> In some languages (e.g. Turkish) the possessive is structurally similar to the existential; in others (e.g. Chinese, Hindi, Russian, Gaelic, Swahili) the possessive is structurally similar to the locative; in others (e.g. English, Greek, Latin) the existential is structurally similar to the locative.   (Lyons 1968: 495)

However, I would rather argue that, in Mandarin Chinese, locative constructions are more similar to existential ones than to possessive ones in that both locative and existential constructions reveal some spatial relation, though rather different in nature, between objects, whereas possessive constructions do not. Even so, locative and existential constructions in Mandarin Chinese are distinct from each other in three ways from a cognitive linguistics perspective. First, locative constructions are linguistic representations that encode a spatial relation of location whereas existential constructions are linguistic representations that encode a spatial relation of existence. Second, they reveal different Figure-Ground relations. In locative constructions, the nominal designating the object to be located with respect to another object always occupies the clause-initial position and functions as the Figure, such as *shū* 'book' in (37) and the nominal (in the locative phrase) designating the reference object always follows the verb or the preposition *zài* and serves as the Ground, such as *zhuō·zi* 'table' in (37). Therefore, a Figure-before-Ground relation comes into being. In contrast, in existential constructions, the

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5. The verb 有 in Mandarin Chinese means 'be' or 'exist' in existential constructions as (36). It means 'have' or 'possess' in possessive constructions as (i) below:

(i) 我 有　一本 书。
Wǒ yǒu yī běn shū
I   have a   book
I have a book.

nominal (in the locative phrase) signifying the object that serves as the location in which another object exists always occurs at the clause-initial position and functions as the Ground, such as *zhuō·zi* 'table' in (36) and the nominal designating the object that exists in the location of the Ground object always occupies the clause-final position and functions the Figure, such as *shū* 'book' in (36). Thus, a Ground-before-Figure relation is brought into being. Third, there is a difference in definiteness of the two nominals in locative and existential constructions. Although the nominal in the locative phrase (*zhuō·zi shàng* 'on the table') functioning as the Ground is definite in both kinds of constructions, the nominal (*shū* 'the book' as in (37)) serving as the Figure is definite in locative constructions, but the nominal (*yīběn shū* 'a book' as in (36)) playing the role of the Figure is indefinite in existential constructions. Therefore, Mandarin existential constructions are regarded as a kind of reference-point construction which performs the discursive function[6] of introducing new participants into discourse.

Acknowledgements

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6. For details about the discursive functions of Mandarin existential constructions, see Zhang (2016a).

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