

Perspectives on Prepositions

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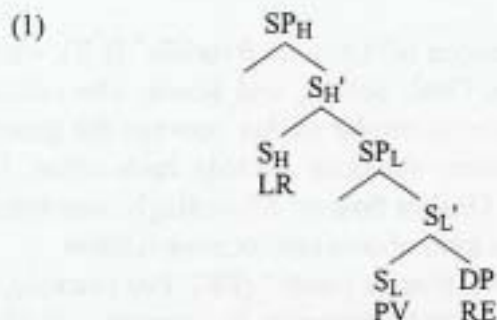
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Movement within a Spatial Phrase

1. Introduction¹

This paper presents a unified syntactic account of the different morphological and syntactic representations of such spatial expressions as English *from behind the table* and Chinese *cong zhuozi houmian* 'from table behind.' Based on facts from various languages, I will arrive at the following theoretical conclusions:

1. A spatial expression can be semantically analyzed into three elements: LOCATIVE RELATION (LR), PLACE VALUE (PV), and REFERENCE ENTITY (RE). The morphological realization of each of these elements can be found in various languages.
2. A spatial expression has a split spatial phrase (SP) structure. The higher SP is headed by an LR element, and the lower SP is headed by a PV element, as shown in (1):



3. The three elements undergo merging and moving operations in the computational system deriving various orders of a spatial expression across languages.
4. Each of the two SPs can be either prepositional, postpositional or nominal, even within a single language.

In Section 2, I will present my semantic decomposition analysis of spatial phrases. Section 3 will show how the syntactic analytic elements which encode the three semantic elements are ordered differently in various languages. In Section 4, then, I will put forward my

¹ I wish to thank Hubert Cuyckens, Dieter Gasde, Brigitta Haftka, Daniel Hole, Günter Radden, Tonjes Veenstra, Chris Wilder, members of Focus-Syntax project group of ZAS, and the participants of the Workshop on Prepositions at Hamburg University (June 26–27, 1998) for their constructive comments and discussion. I would also like to thank Päivi Koskinen and Chris Wilder for their patience to discuss data with me of their native languages (Finnish and English, respectively). All remaining errors are mine.

The term *spatial expression* in this paper is not a technical term. It is used to refer to any linguistic element encoding spatial information, regardless of the syntactic category of the element in the language.

proposal for split spatial phrases and illustrate how the various orders listed in Section 3 are derived. I will then present four pieces of evidence for my proposal in Section 5. Finally, I will conclude my paper in Section 6 with a brief summary.

2. Semantic decomposition of a spatial phrase

2.1. Three semantic elements

Generally speaking, a spatial expression can express the Position, the Goal, the Source, or the Route of an entity or a state or event. I will group these four notions under the general term "Locative Relations."² For instance, the English *on* in (2a) denotes a Position relation, *from* in (2b) a Source relation, *to* in (2c) a Goal relation, and *via* in (2d) a Route relation.

- (2) a. There is a book on the table.
 b. He came from Berlin.
 c. She went to Berlin.
 d. The train goes to Berlin via Hannover.

Thus, the first semantic category of a spatial expression is "Locative Relation" (LR), which is a generalization capturing the notions Position, Goal, Source, and Route. The relation between the abstract LR and the Goal, for example, is similar to that between the general category "Tense" and past tense. The four locative relations exclude each other. For instance, if the LR in (2a) is Position, it cannot be Goal or Source. Accordingly, one spatial expression in a specific clause can denote only one kind of concrete locative relation.

Secondly, a spatial expression must contain a "Reference Entity" (RE). For example, in *on the table*, the table is the reference entity of the spatial expression. It contrasts with other entities such as a chair or a house.

Finally, in many cases, a spatial expression encompasses a "Place Value" (PV). For example, *on the table* expresses the place value SURFACE with respect to the reference entity the table. Similarly, *under the table* lexicalizes the place value SPACE BELOW with respect to the table. Different place values contrast with each other, e.g. SURFACE is in contrast to SPACE BELOW.³

² Source, Goal, and Route can be grouped into a more general dynamic category Path, and as such contrast with the static category Position. Other terms for Position and Path used in the literature are: Locative and Directional (cf. Bennett 1975; Somers 1987), Place and Path (Jackendoff 1990), and non-motional and motional (Gruber 1976). For a finer semantic analysis of these locative relations, see Svorou (1994) and Kracht (1998), among many others.

³ For a detailed Place Value analysis of English locative prepositions, see Bennett (1975: 92) and Lindstromberg (1998), among many others. For an interesting discussion of realization of PV in various languages, see Heine, Claudi & Hünnemeyer (1991). The authors of these studies use different terms for what I refer to in this paper as Place Value.

2.2. Morphological realizations of the three semantic elements LR, PV, and RE

The morphological realization of the three semantic elements LR, PV, and RE is different across languages and may even be different within one language.

2.2.1. Analytical forms denoting LR, PV, and RE

PV and LR, as well as RE, are each encoded in a separate morpheme or word in Chinese, Japanese, Indonesian, Saramaccan, and in some English and German expressions. In (3), the noun *xiangzi* 'chest' is an RE element, the prepositions *zai* 'at,' *cong* 'from,' and *wang* 'to' denote the LRs of Position, Source, and Goal, respectively, and the post-nominal particles *shang* 'surface,' *xia* 'under,' and *li* 'in' express the PVs of SURFACE, LOWER, and INTERIOR, respectively. Similarly, in (4), the noun *teeburu* 'table' is an RE element, the postposition *ni* 'at, to' denotes the LR of Position or Goal, *kara* 'from' denotes the LR of Source, and the post-nominal *ue* 'surface' and *sita* 'under' express the PVs of SURFACE and LOWER, respectively.

(3) Chinese

- | | | |
|---|--|--|
| a. <i>zai xiangzi shang</i>
at chest surface
'on the chest' | b. <i>cong xiangzi xia</i>
from chest under
'from under the chest' | c. <i>wang xiangzi li</i>
to chest in
'into the chest' |
|---|--|--|

(4) Japanese⁴

- | | | |
|--|--|--|
| a. <i>teeburu-no ue ni</i>
table-GEN surface at
'on the table' | b. <i>teeburu-no sita kara</i>
table-GEN under from
'from under the table' | c. <i>teeburu-no ue ni</i>
table-GEN surface to
'onto the table' |
|--|--|--|

In Indonesian, the LR Position is realized as the word *di*, the LR Source is realized as the word *dari*, and the LR Goal is realized as the word *ke* or *kepada*. Among the various PV elements, *dalam* encodes INSIDE, *atas* encodes SURFACE, *bawah* encodes UNDER, and *depan* encodes FRONT. Thus in (5a), the three words *di* 'at,' *atas* 'top,' and *medja* 'table' encode the LR Position, the PV SURFACE, and the RE table, respectively. In (5b), the three words *ke* 'to,' *dalam* 'inside,' and *kelas-nja* 'class-his' encode the LR Goal, the PV INTERIOR, and the RE his class, respectively.

- (5) a. *Djaket jang saja djahit untuk Hasan ter-letak di atas medja.*
Coat COMP I sew for Hasan ACCID-lie at top table
'The coat that I sewed for Hasan is lying on the table.' (Chung 1976: 62)
- b. *Setiap anak mem-bawa buku ke dalam kelas-nja.*
Each child TRANS-bring book to inside class-his
'Each child brought a book to his class.' (Chung 1976: 42)

⁴ The following abbreviations are used in the glosses in examples throughout this paper: II 2nd person; 3SG 3rd person singular; 3PL 3rd person plural; ACC accusative; APPL applicative; ASP aspect; COMP complementizer; HON honorific; DAT dative; FM focus marker; GEN genitive; HAB habitual; IND indicative; MOD modifier; NOM nominative; PL plural; PRS present; Q question; RES resultative; SB subject.

In English phrases such as *into the lake*, *onto the table*, and *from behind the table*, the forms *to* and *from* express the LR of Goal and Source respectively, while *in* in *into*, *on* in *onto*, and *behind* in *from behind the table* express the PV of INSIDE, SURFACE, and BACK SPACE, respectively.⁵ Similarly, German *von hinter dem Tisch* 'from behind the table' also encodes LR, PV, and RE by separate forms: *von* 'from' is an LR-Source element, *hinter* 'behind' is a PV-SPACE BEHIND element, and the nominal *dem Tisch* 'the:DAT table' is an RE element.

2.2.2. Portmanteau morphs denoting PV and LR

PV and LR are expressed by a single portmanteau morph in Finnish and Chichewa. In Finnish, PV and LR are encoded by a case marker on nominals or pre- or postpositions (Päivi Koskinen, p.c.). In Chichewa, PV and LR are encoded by a noun-class prefix (Bresnan & Kanerva 1989). The data in (6) are Finnish examples. The adessive case marker *-llä* in (6a) encodes the LR of Position and the PV of OUTSIDE, while the illative case marker *-on* in (6b) encodes the LR of Goal and the PV of INSIDE. A locative preposition or postposition can also encode a more specific PV. For instance, in (6c), the adessive case marker *-llä* indicates the LR of Position and the general PV of OUTSIDE, and the preposition *lähe* 'near' expresses the more specific feature of the PV, PROXIMITY. In (6d), however, the postposition *-alla* 'under' encodes three pieces of information: the LR of Position, the general PV of CLOSENESS, and the more specific feature of the PV, SPACE BELOW.⁶

- | | | |
|-----|---|---|
| (6) | a. <i>pöytä-llä</i>
table-ADESSIVE
'on the table' | b. <i>talo-on</i>
house-ILLATIVE
'into the house' |
| | c. <i>lähe-llä</i> <i>koti-a</i>
near-ADESSIVE home-PARTITIVE
'near home' | d. <i>sängy-n alla</i>
bed-GEN under-ADESSIVE
'under the bed' |

2.2.3. Zero form of PV

In Chinese, a proper noun RE, e.g. *Zhongguo Yinhang* 'China Bank,' or an RE comprising both a proper noun and a common noun, e.g. *Beijing cheng* 'Beijing city,' can take various PVs, as illustrated in (7). However, if the RE is a bare proper name denoting a Place, such as *Bolin* 'Berlin' in (8) and (9), the PV of INSIDE always takes a zero form in Chinese.⁷

⁵ The English PV-LR-RE order can be derived from incorporation. The order of elements of an incorporation word can be different from that of the corresponding non-incorporation form (Baker 1988). Thus *from behind the table* has the order LR-PV-RE, while *onto the table* has the order PV-LR-RE.

⁶ See the Appendix for more Finnish data.

⁷ In English, the PV of INSIDE takes the form of *inside* rather than *in* when the LR is Source: *from inside/*in*, regardless of whether the RE is a place name or not.

- (7) a. *zai* {*Zhongguo Yinhang/ Beijing cheng*} {*fujin / nanmian / limian*}
 at China Bank / Beijing city nearby/ south / inside
 b. *cong* {*Zhongguo Yinhang/ Beijing cheng*} {*fujin / nanmian / limian*}
 from China Bank / Beijing city nearby/ south / inside
 c. *xiang* {*Zhongguo Yinhang / Beijing cheng*} {*fujin / nanmian / limian*}
 to China Bank / Beijing city nearby/ south / inside
- (8) a. *zai Bolin* {*fujin / nanmian*}
 At Berlin nearby/ south
 b. *cong Bolin* {*fujin / nanmian*}
 from Berlin nearby/ south
 c. *xiang Bolin* {*fujin / nanmian*}
 to Berlin nearby/ south
- (9) a. *zai Bolin* (**li*/**limian*) a'. *za hezi li/limian*
 at Berlin inside at box inside
 b. *cong Bolin* (**li*/**limian*) b'. *cong hezi li/limian*
 from Berlin inside from box inside
 c. *xiang Bolin* (**li*/**limian*) c'. *xiang hezi li/limian*
 to Berlin inside to box inside

2.3. Non-lexicalized LR, PV, and RE

An LR may not be lexicalized. In such a case, the exact LR is understood from the context. This is shown by the English prepositional phrase *behind the curtain*. The preposition *behind* expresses the PV SPACE BEHIND, but the related LR may vary. The examples in (10) show that *behind the curtain* can denote the LR of Route (10a), Goal (10b), and Position (10c–d). Similarly, the preposition *in* expresses the PV INTERIOR consistently, but the related LR can be either Position, as shown by the sentence-initial *in* in (10e), or Goal, as shown by the other *in* in (10e).

- (10) a. Trevor went behind the curtain to the table. (Route)
 b. Trevor went behind the curtain and stayed there. (Goal)
 c. Trevor trembled behind the curtain. (Position)
 d. The man behind the curtain cried. (Position)
 e. In the mall, he put a letter in the mailbox. (Position, Goal)

In Section 5.4, I will assume that in cases such as (10), the syntactic category for LR is not lexicalized, and thus the exact LR is expressed by the syntactic and semantic context. In particular, if these spatial phrases are integrated into an atelic predicate, as in (10c) or (10d), or are external adverbials, as in (10e), they denote a Position LR; otherwise, they may denote a Non-Positional LR, such as Goal, Source, and Route, integrating with the verb meaning (cf. Talmy 1991).

The linguistic context which helps to express the LR can also be morphological. While such German prepositions as *von* 'from,' *zu* 'to,' *nach* 'to,' *gegen* 'towards' are lexicalized LR markers, many other prepositions are not (some of them, for instance, are overt PV realizations; e.g. the preposition *auf* 'on' or the postposition *gegenüber* 'across from, opposite'). LRs which are not lexicalized are expressed by both the verb meaning and the case

marker of the RE nominal. In (11), for instance, the dative case of the determiner expresses the LR of Position, and the accusative case of the determiner expresses the LR of Goal.

- (11) German: *auf dem Tisch* *auf den Tisch*
 surface the:DAT table surface the:ACC table
 'on the table' 'onto the table'

Similarly, it is possible that a PV is not lexicalized. In such a case, no specific place value is implied. This is shown by the contrast in the following pair:

- (12) a. Trevor walked to the supermarket, but he didn't enter it.
 b. *Trevor walked into the supermarket, but he didn't enter it.

In (12a), there is no PV element in the first conjunct; as such, the negation of the entering event in the second conjunct, which implies the negation of the PV INTERIOR, does not cause a semantic conflict in the sentence. In contrast, in (12b), the morpheme *in* in the word *into* expresses the PV INTERIOR, which is in contradiction with the negation of the PV meaning of INTERIOR in the second conjunct. Thus the sentence is unacceptable.

Sometimes, a non-lexicalized PV is understood from our world knowledge. In (13), the preposition *at* lexicalizes a LR. The PV of (13a) is understood as PROXIMITY while that of (13b) is understood as INTERIOR.

- (13) a. He sat at the table.
 b. He was at his office.

The absence of RE is shown in the following Chinese example:

- (14) *Ta zai shangmian xie le zi.*
 I at surface write ASP character
 'I wrote characters on [a certain object].'

The RE of the spatial phrase *zai shangmian* 'at surface' in (14) is implied in the discourse context, e.g. a piece of paper or a board. I will assume that the RE here is a context-bound pro-form.

2.4. LR forms with context-sensitive interpretations

The English preposition *to* can express either Goal, as in (15a), where the PP is integrated with the motion verb *ride*, or Position, as in (15b), where the PP is integrated with the nominal *the buildings*:⁸

- (15) a. Each morning, we rode our bike to school.
 b. The buildings to your left are over 400 years old. (examples from Cuyckens 1998)

⁸ The English prepositions *to* and *from* mean 'with respect to' rather than Goal or Source when the PP they head is an adjectival complement.

The English preposition *at* can express either Position, as in (16a), or Goal, as in (16b):

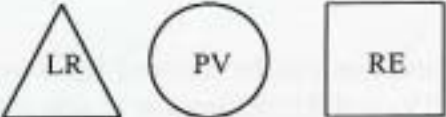
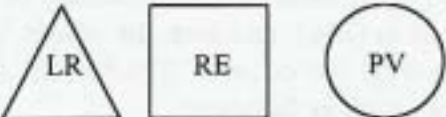

- (16) a. He was at his office.
 b. He {looked/shot/threw a stone/rushed} at her.

Similarly, in Chichewa, noun class prefix 17 *ku-* can denote three LRs: Position, as in (17a), Goal, as in (17b), and Source, as in (17c):

- (17) a. *Mu-ma-thamang-á ku-ti?*
 II:HON:SB-PRS:HAB-run-IND 17-Q
 'Where do you usually run?'
 b. *Mu-ma-thamang-ír-á ku-ti?*
 II:HON:SB-PRS:HAB-run-APPL-IND 17-Q
 'Where do you usually run to?'
 c. *Mu-ma-chokér-á ku-ti?*
 II:HON:SB-PRS:HAB-come-IND 17-Q
 'Where do you come from?' (examples from Bresnan & Kanerva 1989: 39)

3. Basic orders of the three elements

Different languages may employ different basic orders of the analytic forms denoting LR, RE, and PV. (18) illustrates the basic order of the three elements in Indonesian, German, English, Chinese, and Japanese.

- (18) a.  Indonesian *di atas meja*
 at surface table
 'on the table'
 German *von hinter dem Tisch*
 from behind the:DAT table
 English 'from behind the table'
- b.  Chinese⁹ *zai zhuozi shang*
 at table surface
 'on the table'
- c.  Japanese *teeburu-no ue ni*
 table-GEN surface at
 'on the table'

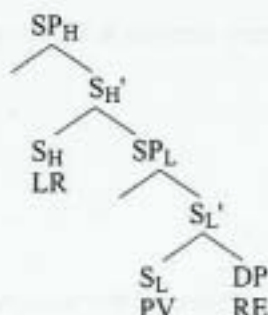
⁹ The order of LR, RE, and PV is also found in Saramaccan (T. Veenstra, personal communication).

4. The syntactic structure of spatial expressions

4.1. Proposal: Split spatial phrases

An important assumption of this paper is that a phrase projection in all languages is in the order of Specifier–Head–Complement (Kayne 1994). For spatial expressions, I propose a structure which contains two layers of maximal projections: SpatialP–High (SP_H) and SpatialP–Low (SP_L). The former is headed by a syntactic element (word or morpheme) which denotes LR, while the latter is headed by a syntactic element which denotes PV. As shown in (1), repeated here as (19), the complement of S_H is SP_L , and the complement of S_L is a nominal (DP, for instance) which denotes RE. I will discuss the syntactic categories of both SPs in Section 5.5.

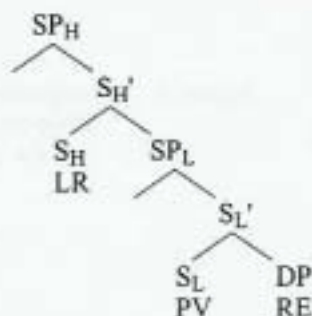
(19)



4.2. Deriving various orders

Cross-linguistic order variations of spatial expressions can be derived by movement, as shown in (20). In (20a), the three elements, LR, PV, and RE, all remain in situ, and thus the order of LR–PV–RE is derived. This order is found in Indonesian, English expressions such as *from behind the table*, and German expressions such as *von hinter dem Tisch* 'from behind the table.' In (20b), the RE DP undergoes raising to the Spec position of SP_L , thus giving the order LR–RE–PV. This order is found in Chinese and Saramaccan. In (20c), the RE DP first moves to the Spec position of SP_L , as in (20b), and then the whole SP_L undergoes raising to the Spec position of SP_H . In this way, the order of RE–PV–LR is derived. This order is found in typical head-final languages such as Japanese.

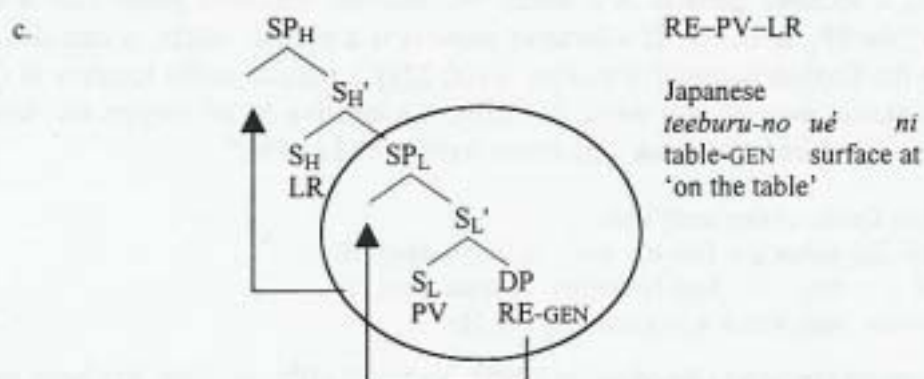
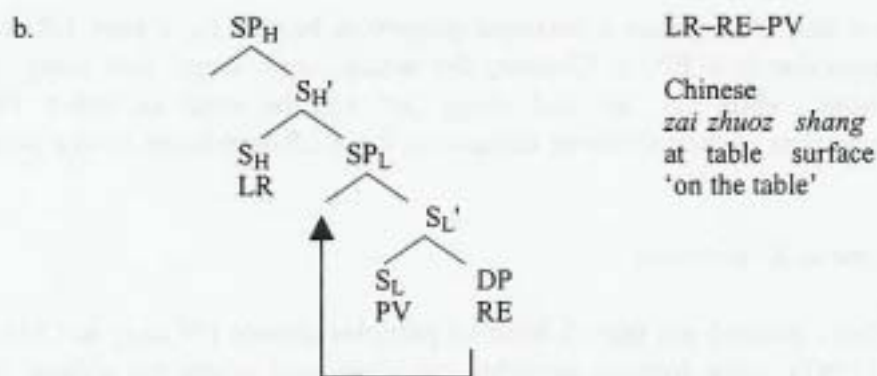
(20) a.



LR–PV–RE

Indonesian
di atas média
at surface table
'on the table'

German: *von hinter dem Tisch*
English: *from behind the table*



5. Evidence for the proposal

5.1. Pure LR words as X⁰ elements

There is no dispute over the prepositional status of the English words *at*, *from*, and *to*. Each of these LR prepositions heads a prepositional phrase (PP). In Chinese, the four pure LR words, *zai* 'at,' *cong* 'from,' *wang* 'to,' and *xiang* 'to,' take the word or phrase which encodes RE and PV as their complement. This can be seen from the fact that no focus marker can occur between LR and the RE-PV elements (cf. 21c), which follows from the general requirement that focus markers cannot occur between a head and its complement in Chinese (cf. 21a-b).

- (21) a. *Ta mai-le (*shi) zheiben shu.*
 he buy-ASP FM this book
 'He bought this book.'
- b. *Genju (*shi) zheige yuanze*
 according:to FM this principle
 'according to this principle'
- c. *Ta cong (*shi) jia li lai.*
 he from FM home in come
 'He came from home.'

My conclusion is that there exists a maximal projection headed by a pure LR word. In English, this projection is a PP; in Chinese, the words *cong* 'from' and *wang* 'to' are typical prepositions, while *zai* 'at' and *xiang* 'to' can be used as either verbs or prepositions. Regardless of their syntactic categories, these LR words can head a phrase.

5.2. Pure PV forms as X⁰ elements

In this paper, I have pointed out that all locative particles encode PV only in Chinese. As argued by Liu (1997), some locative particles are nouns and others are phrasal suffixes (enclitics). If a locative particle is a noun, the relevant maximal projection is an NP. Accordingly, the SP_L is an NP. If a locative particle is a phrasal suffix, it can also head a phrase. Like the English possessive marker 's (cf. 22a), a phrasal suffix locative in Chinese can target a phrase as well as a word. In (22b), the locative *li* 'in' targets the whole DP *naben Lao Hu xie de shu* 'the book which was written by Lao Hu.'

- (22) a. [the Queen of England]'s hat
 b. *zai* [[DP_{naben} [CP *Lao Hu xie e_i de*] *shu_i*] *li*]
 at that Lao Hu write COMP book in
 'in the book which was written by Lao Hu'

In recent literature (reviewed by Manzini 1998), a phrasal affix, or clitic, has been analyzed as a functional head. I thus conclude that there exists a second phrasal projection, which is headed by a pure PV element.

5.3. Head position parameters and the complement raising of SP

Why can the complement of S_L or S_H undergo raising, as I proposed in (20b) and (20c), respectively? I will show that this kind of complement raising is required by the consistency of the complement position of the category in the given language.

In English, PPs are head-initial. If the proposed two SPs are PPs, as in *from behind the table*, no complement-raising occurs (see 20a). In Japanese, PPs and NPs are both head-final. If the proposed SP_H is a PP and SP_L is an NP, the complement of both heads needs raising (see 20c). German PPs can be either head initial, as shown in (23a) and (24a), or head-final, as shown in (23b) and (24b):

- (23) a. *gemäß seinem Wunsch*
 according:to his wish
 b. *den Stimmungen gemäß*
 the moods according:to
- (24) a. *wegen schlechten Wetters*
 due:to bad weather
 b. *der großen Kälte wegen*
 the extreme coldness due:to

Accordingly, on the one hand, data like (20a) [_{pp} von [_{pp} hinter den Tisch]] show that both SPs are PPs. On the other hand, a complement of an S head raises and derives a head-final order, as shown below.

- (25) a. *gegenüber* [*der Post*] [head-initial]
 opposite the:DAT post-office
 b. [*dem Gast*]_i *gegenüber* *t_i* [head-final]
 the:DAT guest opposite

Chinese PPs and VPs are head-initial, while Chinese NPs are head-final (see, e.g., Li 1990: 6). A phrase headed by a pure LR element, such as *zai* 'at,' *cong* 'from,' *wang* 'to,' and *xiang* 'to,' is generally a PP, and it is always head-initial. On the other hand, in an expression consisting of an RE nominal and a locative particle, the locative particle is always at the end. In the following, I will show that such an expression is a nominal. If it is a nominal, the locative particle, which heads the whole nominal, is expected to occur at the end, since nominals in Chinese are head-final.

The form RE–PV in Chinese is indeed a nominal. Li (1990: 4) and McCawley (1992: 230) present some evidence to show that the form of RE–PV can appear in certain positions where NPs are allowed but PPs are excluded. For instance, the form of RE–PV in Chinese can occur to the right of the causative marker *ba*, which requires the element to its right to be a nominal. In contrast, a PP can never occur to the right of *ba*. In the following data, *jia* 'home' expresses RE, *li* 'in' expresses PV, and thus *jia-li* 'home-in' is a RE–PV form. The preposition *zai* 'at' expresses LR, and thus the PP *zai jia-li* 'at home in' is an LR–RE–PV form. The contrast in grammaticality between (26a) and (26b) suggests that, unlike the form *zai jia-li* (LR–RE–PV), the form *jia-li* (RE–PV) is a nominal.

- (26) a. *Haizi-men ba jia-li nong-de hen haokan.*
 kid-PL BA home-in make-RES verypretty
 'The children made inside of the house pretty.'
 b. **Haizi-men ba zai jia-li nong-de hen haokan.*
 kid-PL BA at home-in make-RES verypretty

In addition, the RE–PV form *jia-li* in (27a), but not the PP *zai jia-li* in (27b), can occur as the subject of a *bei*-passive:

- (27) a. *Jia-li bei haizi-men nong-de luanqibazao.*
 home-in by kid-PL make-RES mess
 'The inside of the house was made a mess by the children.'
 b. **Zai jia-li bei haizi-men nong-de luanqibazao.*
 At home-in by kid-PL make-RES mess

The claim that RE–PV is a nominal is further supported by the following two pieces of evidence. First, in Chinese the complement of a preposition must be a nominal, and the form RE–PV in Chinese can be a complement of a preposition (not necessarily a locative preposition). A PP, by contrast, can never occur as a complement of a preposition. In (28), for instance, *gei* 'for' is a beneficiary preposition, which allows its complement to be the RE–PV form *suo-li* 'institute-in,' but not the PP *zai suo-li* 'at institute-in.'

- (28) a. *Ta gei suo-li mai-le yitai diannao.*
 he for institute-in buy-ASP one computer
 'He has bought a computer for the institute.'
- b. **Ta gei zai suo-li mai-le yitai diannao.*
 he for at institute-in buy-ASP one computer

Second, if the verb *kanqilai* 'seem' is a raising verb in Chinese, as it is treated in the literature (Qu 1994), then the fact that the RE–PV form can occur as the subject of this verb shows that RE–PV can undergo NP-raising, like a regular nominal. The occurrence of a PP in the subject position of the verb *kanqilai*, however, makes the sentence unacceptable. The following data show that the RE–PV form *jie-shang* 'street-on' can be the subject of the raising verb *kanqilai*, while the PP *zai jie-shang* 'at street-on' cannot.

- (29) a. *Jie-shang kanqilai hen renao.*
 street-on seem verylively
 'The street seems to be lively.'
- b. **Zai jie-shang kanqilai hen renao.*
 at street-on seem verylively

The above evidence indicates that the RE–PV forms in Chinese are nominals. In other words, the proposed SP_L in Chinese is a nominal phrase. Since Chinese nominals must be head-final, the raising of an RE element to the left of a PV element, which is assumed to be the head of SP_L (cf. 20b), is expected.

One might wonder what drives the complement of the head of an SP to undergo raising. The RE element raising data considered in this paper cover Japanese, Chinese, Finnish, and German (25b). In Japanese, a raised RE element has a genitive case marker *no* (see 4). If, in Finnish, a raised RE word is independent of a LR–PV form, in other words, if a LR–PV form is not a suffix of an RE element, a genitive case marker shows up on the RE form. The contrast between the presence of a genitive case marker with a raised RE element and the absence of a genitive case marker with an unraised RE element can be seen in (30). In (30a), the phrase-final RE *koti* 'home' does not have a genitive case marker; instead, it has a partitive case marker. In (30b) and (30c), however, the phrase-initial *koti* does take a genitive case marker.

- (30) a. *lähe-llä koti-a*
 near-ADDESSIVE home-PARTITIVE
 'near home' (LR = Position)
- b. *koti-n lähe-lle*
 home-GEN near-ALLATIVE
 'to near home' (LR = Goal)
- c. *koti-n lähe-ltä*
 home-GEN near-ABLATIVE
 'from near home' (LR = Source)

In Chinese, PV forms can be either monosyllabic or disyllabic. In the latter case, *de*, which functions like a genitive case marker, can occur with a RE nominal. In (31), the PV element

is *shangmian* 'surface,' which is disyllabic, and the word *de* is optional between the RE word *zhuozi* 'table' and the PV element.^{10, 11}

- (31) *za hong zhuozi (de) shangmian*
 at red table MOD surface
 'on the red table'

Based on the above fact, I claim that complement raising in SPs may be genitive case related.¹²

5.4. Semantic evidence

As we have seen in Section 2.3, if a word which exclusively denotes an LR, such as *from* in English and *cong* 'from' in Chinese, occurs in a spatial expression, a specific LR is expressed; otherwise, no specific LR is implied. I repeat the example discussed in Section 2.3 as (32) here.

- (32) a. Trevor went behind the curtain to the table. (Route)
 b. Trevor went behind the curtain and stayed there. (Goal)
 c. Trevor trembled behind the curtain. (Position)

In the three sentences in (32), there is no syntactic element to encode an LR exclusively. The spatial expression *behind the curtain* encodes PV and RE only, without an LR. In cases like these, the relevant LR is understood from the context. It can be a Route as in (32a), a Goal as in (32b), or a Position as in (32c). In the split spatial phrase structure proposed here, S_H is the base-position for an element encoding LR, while S_L is the base-position for an element encoding PV. The expression *from behind the curtain* has the structure of

¹⁰ It has been suggested to me that the mere mention of *de*-insertion between RE and PV already justifies the analysis that a RE-PV form is a nominal in Chinese, presumably making all the other tests illustrated in (26–29) into strawman arguments. However, not all RE-PV forms can contain *de*, e.g. *zhuozi (*de) shang* 'table surface.' If an element cannot contain *de*, this does not mean that the element cannot be a nominal, so one still needs further tests to show the nominal properties of the RE-PV form. Thus *de*-insertion is not an ideal test for the nominal properties of an element. My own tests show that, in Chinese, RE-PV is always a nominal, regardless of whether it allows *de*-insertion or not.

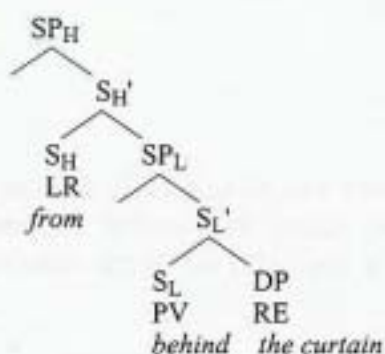
¹¹ I have no explanation for the lack of a genitive case marker for the complement of a German spatial postposition.

¹² If RE raising is a genitive case related movement, how does this analysis fit in with other possessive cases in Chinese. Does it follow that *Akiu-de che* 'Akiu's car' is derived from *che Akiu-de* 'car Akiu's'? In this paper, I restrict the discussion to inalienable possessive relations, leaving the study of expressions such as *Akiu-de che* 'Akiu's car' for future research. In fact, we can find possessor raising in Chinese independently of spatial expressions. For instance, in (i) below, the possessor *Wangmian* is raised out of a nominal and surfaces as the subject of the sentence, and no resumptive pronoun is allowed in its base position:

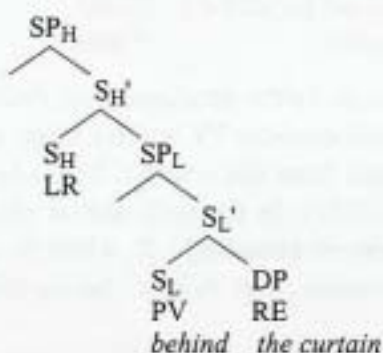
- (i) *Wangmian si le (*ta/*tade) fuqin.*
 Wangmian die ASP (he/his) father
 'Wangmian's father died.'

(33a). Without a context, *behind the curtain* has the structure of (33b), where S_H is empty and the relevant LR is semantically unspecified. The two-layered structure thus captures the distinctive semantic features between LR expressions and other spatial expressions. In other words, the semantic differences between forms like *behind the curtain* and forms like *from behind the curtain* need to be represented syntactically. The split spatial phrase structure analysis gives the two types of expressions different syntactic representations, and thus covers their semantic contrast.

(33) a.



b.



Summarizing, I have listed four pieces of evidence to argue for a syntactic structure which has two layers of maximal projections for a spatial expression. First, a pure LR element can head a maximal projection. Second, a pure PV element can also head a maximal projection. Third, RE element raising corresponds to head position parameters. Finally, the semantic differences between LR and PV expressions need to be represented syntactically.

5.5. The syntactic categories of SP

If a spatial expression has two layers of maximal projection, as I have argued, a relevant issue to consider is what the categorial features are for each of the heads of the two SPs. If the two PPs of English phrases like *from behind the table* correspond to the two SPs, we can claim that both SPs in English can be PPs. I have argued in Section 5.3 that in Chinese, SP_L is a nominal phrase. It seems that SP_L can also be nominal in English. In (34), the SP_L is the DP *the inner part of the box* or *the bottom of the vase*.

(34) from/to [_{DP} the inner part [_{PP} of the box]] / [_{DP} the bottom [_{PP} of the vase]]

In fact, not only SP_L , but also SP_H can be nominal. Koskinen (1998) argues for the nominal status of Finnish spatial expressions such as those underlined in (35).

- (35) a. *Sofia on talo-ssa.*
 Sofia:NOM be:3SG house-INESSIVE
 'Sophia is in the house'
- b. *Sofia mene-e talo-on.*
 Sofia:NOM go-3SG house-ILLATIVE
 'Sophia goes into the house'
- c. *Sofia tule-e talo-sta.*
 Sofia:NOM come-3SG house-ELATIVE
 'Sophia comes out of the house'

She argues that, unlike adverbs, these locative expressions move like DPs (into topic position, where only DPs go, and not adjectives, participles, verbs, manner adverbs, etc.), and that, like DPs, they bear case and nominal number marking. Thus, if spatial expressions like those in (35) are nominals, we can assume that in addition to SP_L , SP_H can also be nominal. My conclusion is that both the higher and the lower heads of a spatial phrase can be either adpositional or nominal. Recall that English SP_L can be either a nominal or a PP. These facts show that the categorial variations of a SP occur both in a single language and across languages.

6. Conclusions

A spatial phrase can be semantically analyzed into three elements LOCATIVE RELATION, PLACE VALUE, and REFERENCE ENTITY. Each of these elements is realized morphologically in various languages. Syntactically, a spatial expression has a split spatial phrase structure. The higher projection is headed by an LR element, and the lower projection is headed by a PV element. Furthermore, the three elements undergo merging and moving operations in the computational system deriving various orders of a spatial expression across languages. Finally, each of the two projections can be either prepositional, postpositional or nominal, even within a single language.

Appendix: Morphological realizations of the three semantic elements in Finnish

In Finnish, LR and PV are realized in portmanteau morphs:

		LR: Position	LR: Source	LR: Goal
PLACE	INSIDE	inessive case	elative case	illative case
VALUE	OUTSIDE	adessive case	ablative case	allative case

Type-I: Nominal spatial phrase

- (36) a. *Kirja on pöydä-llä.*
book:NOM be:3SG table-ADESSIVE
'The book is on the table.'
- b. *Sofia laitta-a kirja-n pöydä-lle.*
Sophia:NOM put-3SG book-ACC table-ALLATIVE
'Sophia is putting the book onto the table.'
- c. *Sofia ott-i kirja-n pöydä-ltä.*
Sophia:NOM take-PAST:3SG book-ACC table-ABLATIVE
'Sophia took the book from the surface of the table.'
- (37) a. *Sofia on talo-ssa.*
Sophia:NOM be:3SG house-INESSIVE
'Sophia is in the house.'
- b. *Sofia mene-e talo-on.*
Sophia:NOM go-3SG house-ILLATIVE
'Sophia is going into the house.'
- c. *Sofia tule-e talo-sta.*
Sophia:NOM come-3SG house-ELATIVE
'Sophia is coming out of the house.'

Type-II: Postpositional spatial phrases

- (38) a. *Kengät o-vat sängy-n a-lla.*
shoe-PL:NOM be-3PL bed-GEN under-ADESSIVE
'The shoes are under the bed.'
- b. *Kissa juoks-i sängy-n a-lle.*
cat:NOM run-PAST:3SG bed-GEN under-ALLATIVE
'The cat ran to under the bed.'
- c. *Kissa juoks-i sängy-n a-lta.*
cat:NOM run-PAST:3SG bed-GEN under-ABLATIVE
'The cat ran from under the bed.'
- (39) *Lintu lentä-ä kato-n pää-llä.*
bird:NOM fly-3SG roof-GEN over-ADESSIVE
'The bird is flying over the roof.'
- (40) a. *kodi-n lähe-lle*
home-GENETIVE near-ALLATIVE
'to near home'
- b. *kodi-n lähe-ltä*
home-GENETIVE near-ABLATIVE
'from near home'

Type-III: Prepositional spatial phrases

- (41) *lähe-llä koti-a*
near-ADESSIVE home-PARTITIVE
'near home'

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