

## Diachronic Verb Movements in Chinese

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### Abstract

There occurred two verb movements in the development of Modern Chinese. One preposes a verb signifying the direction of a displacement motion or action denoted by the main verb, and the other preposes a verb clarifying the direction of such displacement with respect to the speaker's position. Given the properties of the main verb and the two directional verbs, a natural way to accommodate them is to project three VPs with the three verbs as heads and render their semantic relation as verb-complementation relation between the main verb and the VP headed by the first directional verb, and between the first directional verb and the VP headed by the second directional verb. Under this analysis, the two diachronic verb movements can be simply captured by verb-raising and NP-movement.\*

**Key Words:** Verb Compound, NP Object, Functional Category, Semantic Selectional Restriction, Morpho-syntax, Minimalist Theory, Verb-raising, NP-movement

### 1. Introduction

Lü (1984:35-37) states that in Contemporary Chinese the NP object of the directional verb compound can occur in three positions: i) between the first verb and the second verb of the verb compound, as in (1a); ii) between the second verb and the third verb of the verb compound, as in (1b); and iii) after all three verbs of the verb compound, as in (1c) (note: ASP = aspect marker; CL = classifier):

- (1) a. **Lisi qian-le yi pi ma chu lai.**  
Lisi bring-ASP one CL horse exit come
- b. **Lisi qian-chu-le yi pi ma lai.**  
Lisi bring-exit-ASP one CL horse come
- c. **Lisi qian-chu-lai-le yi pi ma.**  
Lisi bring-exit-come-ASP one CL horse  
'Lisi brought out a horse.'

Zhang (1991) observes that of the three types of directional verb compounds shown by (1) above, only the one in (1a) was available in Early Modern Chinese, as exemplified by (2) and (3) below (Zhang, 1991:185):

- (2) **Ru Roo ba qi shang lai, wo ze dingge xiang dui.**  
you if take flag up come I will dingge fight against  
'If you raise the flag, I will fight against you with *dingge* (a weapon).'
- (3) **Dai zhai shi zuo fan zi chi-le, song yi fen shang lai.**  
At meal time cook rice self eat-ASP bring a CL up come  
'Cook and eat the food at the meal time, and bring me a portion of the food.'

It was not until the Modern Chinese period that the directional verb compound shown by (1b) was available, according to Zhang (1991). This is exemplified by (4) and (5) below (Zhang, 1991:185):

- (4) **wo bian shi huo keng zhong jiu-chu ni er lai.**  
 I would seem fire pit in save-exit your son come  
 'I seemed to have saved your son out of the fire pit.'
- (5) **kuai qian-guo ma lai.**  
 quickly lead-cross horse come  
 'Bring the horse here quickly.'

Moreover, the availability of the directional verb compound in (1c) happened much later, due to the fact that in Modern Chinese the third verb of the directional verb compound, which is either lai 'come' or qu 'go' and signals the speaker-oriented direction, did not appear before the NP object according to Lü (1984). Thus, this type of directional verb compounds must come into being while Modern Chinese was developed into Contemporary Chinese, as further exemplified by (6) and (7) below:

- (6) **ta ban-hui-lai-le yi ba yizi.**  
 he move-return-come-ASP one CL chair  
 'He moved a chair back (towards the speaker).'
- (7) **Lisi cha-shang-qu-le yi ge biaozi.**  
 Lisi insert-ascend-go-ASP one CL marker  
 'Lisi inserted a marker up there (away from the speaker).'

Zhang (1991) argues that the directional verb compound in (1b) was derived from that of (1a), and such a derivation was phonologically driven, because in Modern Chinese monosyllabic verbs tend to develop into bi-syllabic ones by having something attached to their ends. To be more specific, the second verb chu 'exit' in (1a) moves forward and attaches itself to the first verb qian 'bring', thus yielding the bi-syllabic verb compound qian-chu 'bring-exit' in (1b). This analysis is compatible with the historical fact that the second verb of the directional verb compound, which signifies the direction of a displacement motion or action denoted by the first verb, was originally a notional word and later changed into a semi-functional verbal category which is parallel to an aspect marker (cf. Chao, 1968; Lü, 1984; Zhang, 1991). As soon as this verb became a semi-functional verbal category, it is no surprise that it would move forward and attach itself to the first verb, as a functional verbal category usually does. Therefore, this verb movement is morphologically driven too, in a sense.

This analysis further applies to the formation of the directional verb compound in (1c), as the third verb of the directional verb compound, which is either lai 'come' or qu 'go', was originally a notional word and later developed into a semi-functional verbal category too (cf. Chao, 1968; Li & Thompson, 1981; Lü, 1984). Thus, it is natural that the third verb would also move forward and attach itself to the amalgamation of the first verb and second verb. In other words, this verb movement is also morphologically driven. If the movement analysis of the formation of the directional verb compounds in (1b) and (1c) is sound, then the next question we may need to ask ourselves is: whether we can capture and account for such diachronic verb movements within the framework of current theory of linguistics. This article attempts to answer this question by discussing the properties of the Chinese directional verb compound, and proposing a morpho-syntactic analysis of the two diachronic verb movements within the framework of minimalist theory. I will show how this morpho-syntactic analysis can incorporate the thematic relations between verbs and their arguments in the Chinese directional verb compound construction, and how it can capture the distribution of the NP object of the Chinese directional verb compound. I will also provide both empirical motivation and theoretical arguments for this morpho-syntactic analysis.

## ***2. The properties of the Chinese directional verb compound.***

According to Chao (1968), Li and Thompson (1981) and Lü (1984), the directional verb compound in Chinese can be made up of three verbs, of which the first verb conveys a displacement motion or action (e.g. fei 'fly', ju 'lift', pao 'run', reng 'throw', tiao 'jump', and zou 'walk'), the second verb shows the general direction of such displacement (only eight verbs can serve as the second verb of the Chinese directional V-V-V compound: i.e. jin 'enter', chu 'exit', shang 'ascend', xia 'descend', qi 'rise', hui 'return', guo 'cross', and kai 'open'), and the third verb signals the direction of such displacement with respect to the speaker's position: that is, the displacement is either towards the speaker (lai 'come') or away from the speaker (qu 'go').<sup>1</sup>

- (8) V<sub>1</sub> (displacement) – V<sub>2</sub> (general direction) – V<sub>3</sub> (speaker-oriented direction)
- a. **Zhangsan ling-qi-lai-le yi ge shoutidai.**  
Zhangsan lift-rise-come-ASP one CL handbag  
'Zhangsan lifted a handbag up.'
- b. **ta gan-chu-qu-le yi zhi laoshu.**  
she chase-exit-go-ASP one CL mouse  
'She chased a mouse out.'

There exists a semantic selectional restriction on the co-occurrence of the displacement verb (V<sub>1</sub>) and the general directional verb (V<sub>2</sub>): that is, the directionality denoted by the general directional verb must be compatible with the inherent directionality implied by the displacement verb. Otherwise, the directional verb compound would be ill-formed (cf. Chao, 1968; Li & Thompson, 1981; Lü, 1984; Lu, 1973, 1977; Zhang, 1991):

- (9) a. **hei qi manmande jiang-xia-lai-le.**  
black flag slowly fall-descend-come-ASP  
'The black flag slowly went down.'
- b. **\*hei qi manmande jiang-shang-lai-le.**  
black flag slowly fall-ascend-come-ASP
- (10) a. **hong qi manmande sheng-shang-qu-le.**  
red flag slowly rise-ascend-go-ASP  
'The red flag slowly went up.'
- b. **\*hong qi manmande sheng-xia-qu-le.**  
red flag slowly rise-descend-go-ASP
- (11) a. **ta chi-jin-qu-le san wan fan.**  
he eat-enter-go-ASP three CL rice  
'He ate three bowls of rice.'
- b. **\*ta chi-chu-qu-le san wan fan.**  
he eat-exit-go-ASP three CL rice

The similar semantic selectional restriction is also observed on the co-occurrence of the general directional verb (V<sub>2</sub>) and the speaker-oriented directional verb (V<sub>3</sub>): that is, the directionality shown by the speaker-oriented verb must be compatible with the directionality signified by the general directional verb. Otherwise, the directional verb compound would be ill-formed too:

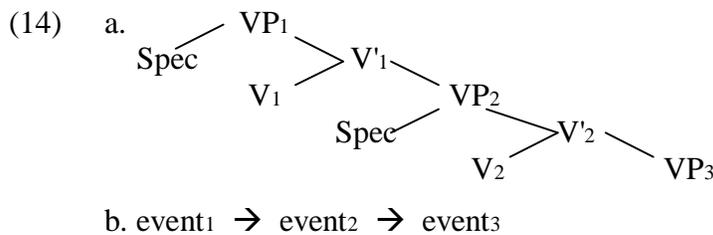
- (12) a. **ta jian-qi-lai-le yi ben shu.**  
she pick-rise-come-ASP one CL book  
'She picked up a book.'
- b. **\*ta jian-qi-qu-le yi ben shu.**  
she pick-rise-go-ASP one CL book
- (13) a. **ta tui-kai-lai-le na shan chuangzi.**  
he push-open-come-ASP that CL window  
'He pushed that window open.'
- b. **\*ta tui-kai-qu-le na shan chuangzi.**  
he push-open-go-ASP that CL window

### 3. Theoretical background.

The discussion in the sections above leads to the following two generalizations about the Chinese directional verb compound construction:

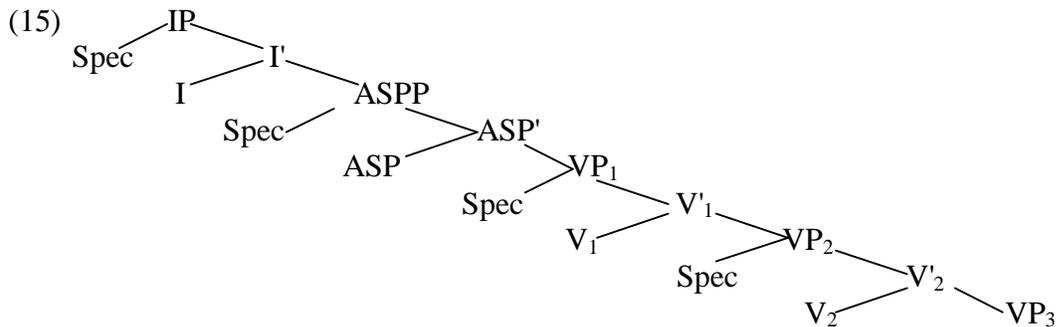
- A) The Chinese directional verb compound may consist of three verbs, of which the first verb conveys a displacement motion or action, the second verb indicates the general direction of such displacement, and the third verb clarifies the direction of such displacement with respect to the speaker's position;
- B) There is a semantic selectional restriction on the co-occurrence of the first and second verbs of the Chinese directional verb compound, and also on the co-occurrence of its second and the third verbs.

Thus, the events associated with the three verbs of the directional verb compound in Chinese can be captured along the lines of Vendler's (1967) and Dowty's (1979) complex event structure for accomplishment verbs.<sup>2</sup> That is, each of the three events associated with the three verbs of the Chinese directional verb compound projects its own predicate structure with the corresponding verb as its head. The relations between the three events associated with the three verbs of the Chinese directional verb compound can be rendered as verb-complementation relations between the first verb and the VP-predicate headed by the second verb, and between the second verb and the VP-predicate headed by the third verb. On a par with the syntactic relations, there are also similarly asymmetric semantic relations between the three events associated with the three verbs of the Chinese directional verb compound: that is, the displacement action or motion conveyed by its first verb "implicates" the general direction denoted by its second verb; the general direction denoted by its second verb "implicates" the speaker-oriented direction signified by its third verb (cf. Baker, 1988; Hale & Keyser, 1993).<sup>3</sup>



The verb-complementation relations between V1 and VP2 and between V2 and VP3 in (14a) are quite plausible, as the syntactic embedding usually corresponds to a semantic composite in which the event denoted by the subordinate VP is a proper part of the event denoted by the super-ordinate verb (cf. Hale & Keyser, 1993).

Based on the syntactic structure and its associated semantic relations shown by (14ab), we can establish the basic structure of the directional verb compound construction in Chinese as follows, assuming the VP-internal subject hypothesis (Kuroda, 1988) and a version of Chomsky's (1995) clausal structure (note: ASPP = Aspect Phrase):



With the basic structure of the Chinese directional verb compound construction given in (15), we now proceed to offer a morpho-syntactic analysis of the two diachronic verb movements shown by (1bc) above.

### 4. A morpho-syntactic analysis

Given the basic structure of the Chinese directional verb compound construction displayed by (15), we would expect the three types of directional verb compound constructions in (1abc) to share the same underlying structure in (1'), due to the fact that in (1abc) the subject is the Agent of the first verb, and the direct object is the Theme of the first verb and the Experiencer of the second and third verbs, as shown below:

- (1') [IP [I ] [ASPP [ASP -le ] [VP<sub>1</sub> [NP<sub>1</sub> Lisi] [V<sub>1</sub> [V<sub>1</sub> qian]  
Lisi bring  
[VP<sub>2</sub> [NP<sub>2</sub> yi pi ma] [V<sub>2</sub> [V<sub>2</sub> chu] [VP<sub>3</sub> [NP<sub>3</sub> Pro] [V<sub>3</sub> [V<sub>3</sub> lai]]]]]]]]]]]]  
one CL horse exit come

With this structural analysis, the two diachronic verb movements shown by (1bc) above can be simply captured by verb-raising and NP-movement without any other stipulation. Let us consider the derivation of (1b) from (1') first: i) the general directional verb chu 'exit' is first raised from V<sub>2</sub> to V<sub>1</sub> to compound with the displacement verb qian 'bring' by verb incorporation (cf. Baker, 1988), whereas the speaker-oriented directional verb lai 'come' is left behind to stay put in V<sub>3</sub>; the resulting V-V compound qian-chu 'bring-exit' is then raised into ASP to amalgamate with the aspect marker -le; the amalgamation qian-chu-le 'bring-exit-ASP' is further raised to I to check its agreement feature (cf. Chomsky, 1995); ii) NP<sub>1</sub> Lisi receives a  $\theta$ -role from V<sub>1</sub> and moves into the Spec of IP to check its Case (cf. Chomsky, 1995); iii) NP<sub>2</sub> yi pi ma 'a horse' receives a  $\theta$ -role from V<sub>2</sub> and moves into the Spec of ASPP to check its Case; and iv) NP<sub>3</sub> Pro is properly controlled by NP<sub>2</sub> yi pi ma 'a horse' or its trace that is the closest nominal c-commanding Pro (cf. Huang, 1992). The derivation of (1b) from (1') is displayed below:

- (1'b) [IP Lisi<sub>i</sub> [I [[qian-chu<sub>k</sub>]<sub>I</sub>-le]<sub>m</sub>] [ASPP yi pi ma<sub>j</sub> [ASP t<sub>m</sub>] [VP<sub>1</sub> [NP<sub>1</sub> t<sub>i</sub>] [V<sub>1</sub> [V<sub>1</sub> t<sub>i</sub>]  
Lisi bring-exit-ASP one CL horse  
[VP<sub>2</sub> [NP<sub>2</sub> t<sub>j</sub>] [V<sub>2</sub> [V<sub>2</sub> t<sub>k</sub>] [VP<sub>3</sub> [NP<sub>3</sub> Pro] [V<sub>3</sub> [V<sub>3</sub> lai]]]]]]]]]]]]  
come

The derivation of (1c) from (1') is almost the same as that of (1b), except for the following: i) the speaker-oriented directional verb lai 'come' is first raised from V<sub>3</sub> to V<sub>2</sub> to compound with the general directional verb chu 'exit'; ii) the resulting V-V compound chu-lai 'exit-come' is then raised from V<sub>2</sub> to V<sub>1</sub> to compound with the displacement verb qian 'bring' (the formation of such a V-V-V compound follows the same principle that governs the generation of verb compounds in lexicon: that is, a verbal morpheme conveying an activity linearly precedes a verbal morpheme signifying the direction of such an activity; a verbal morpheme signifying the direction of an activity linearly precedes a verbal morpheme clarifying such a direction regarding the speaker's position); iii) the V-V-V compound qian-chu-lai 'bring-exit-come' is further raised to ASP to amalgamate with the aspect marker -le; and iv) the amalgamation qian-chu-lai-le 'bring-exit-come-ASP' is finally raised to I to check its agreement feature. Thus, the derivation of (1c) from (1') is illustrated by (1c') below:

- (1'c) [IP Lisi<sub>i</sub> [I [[qian-[chu-lai<sub>k</sub>]<sub>I</sub>]<sub>m</sub>-le]<sub>n</sub>] [ASPP yi pi ma<sub>j</sub> [ASP t<sub>n</sub>] [VP<sub>1</sub> [NP<sub>1</sub> t<sub>i</sub>] [V<sub>1</sub> [V<sub>1</sub> t<sub>m</sub>]  
Lisi bring-exit-come-ASP one CL horse  
[VP<sub>2</sub> [NP<sub>2</sub> t<sub>j</sub>] [V<sub>2</sub> [V<sub>2</sub> t<sub>i</sub>] [VP<sub>3</sub> [NP<sub>3</sub> Pro] [V<sub>3</sub> [V<sub>3</sub> t<sub>k</sub>]]]]]]]]]]]]

The above analysis further extends itself to account for the derivation of (1a): i) the displacement verb qian 'bring' is raised from V<sub>1</sub> to ASP to amalgamate with the aspect marker -le; the resulting qian-le 'bring-ASP' is then raised to I to check its agreement feature; and ii) the corresponding NP-movements are the same as those presented in (1'b) and (1'c) above:

- (1'a) [IP Lisi<sub>i</sub> [I [qian<sub>k</sub>-le]<sub>I</sub>] [ASPP yi pi ma<sub>j</sub> [ASP t<sub>i</sub>] [VP<sub>1</sub> [NP<sub>1</sub> t<sub>i</sub>] [V<sub>1</sub> [V<sub>1</sub> t<sub>k</sub>]  
Lisi bring-ASP one CL horse  
[VP<sub>2</sub> [NP<sub>2</sub> t<sub>j</sub>] [V<sub>2</sub> [V<sub>2</sub> chu] [VP<sub>3</sub> [NP<sub>3</sub> Pro] [V<sub>3</sub> [V<sub>3</sub> lai]]]]]]]]]]]]  
exit come

The motivation and arguments for the verb-raising and the NP-movements in the derivation of (1a), (1b) and (1c) above are presented as follows. First, the verb-raising from V<sub>3</sub> to V<sub>2</sub> and the verb-raising from V<sub>2</sub> to V<sub>1</sub> are morphologically driven, due to the fact that there is a strong tendency in Modern Chinese for verbs to be bi-syllabic, and in Contemporary Chinese for verbs to be multi-syllabic, and that the second and third verbs of the Chinese directional verb compound are semi-functional verbal categories, which can be "attracted" by the first verb into its checking domain to merge or compound with the latter (cf. Chomsky, 1995).

The verb-raising from V<sub>1</sub> to I through ASP is also morphologically driven: i) the aspect marker -le in ASP is a bound morpheme that must be morphologically attached to a lexical verb or a verb compound (Dai, 1992); and ii) the inflectional features of the directional verb compound need to be checked against the features of I, in order for the compound to enter the PF component under Spell-Out (cf. Chomsky, 1995). These verb-raising are also legitimate under the Minimal Link Condition (Chomsky, 1995) since each of the four steps (i.e. from V<sub>3</sub> to V<sub>2</sub>, from V<sub>2</sub> to V<sub>1</sub>, from V<sub>1</sub> to ASP, and finally from ASP to I) attaches the verb or verb compound to the nearest head target that immediately C-commands the phrase of which the verb or verb compound is the former head, without skipping an already-filled head position in between.

Secondly, the movement of NP<sub>1</sub> Lisi into the Spec of IP and the movement of NP<sub>2</sub> yi pi ma 'a horse' into the Spec of ASPP are forced by the Case Filter and legitimate under the Shortest Movement Condition (Chomsky, 1995), due to the verb-raising. That is, as the verb compound qian-chu 'bring-exit' or qian-chu-lai 'bring-exit-come' is raised from V<sub>1</sub> into ASP to form the chain (qian-chu-(lai)<sub>k, t<sub>k</sub></sub>) with the minimal domain {Spec of ASPP, Spec of VP<sub>1</sub>, VP<sub>2</sub>}, the Spec of ASPP and the Spec of VP<sub>1</sub> become equidistant from VP<sub>2</sub> or any element it contains. Hence, NP<sub>2</sub> yi pi ma 'a horse', as a specifier of VP<sub>2</sub>, may move to the Spec of ASP by crossing the Spec of VP<sub>1</sub> which is filled with NP<sub>1</sub> Lisi. When the verb compound is further raised from ASP to I to form the new chain (qian-chu-(lai)<sub>i, t<sub>i</sub></sub>) with the minimal domain {Spec of IP, Spec of ASPP, VP<sub>1</sub>}, the Spec of IP and the Spec of ASPP are equidistant from VP<sub>1</sub> or anything it contains. Thus, NP<sub>1</sub> Lisi, as a specifier of VP<sub>1</sub>, is able to move into the Spec of IP by crossing the Spec of ASPP which is now occupied by NP<sub>2</sub> yi pi ma 'a horse'.

### 5. Conclusion

In this article, I have discussed the two diachronic verb movements that are related to the formation of the Chinese directional verb compound. One of them took place when Early Modern Chinese evolved into Modern Chinese, and the other one happened when Modern Chinese was developed into Contemporary Chinese. In order to account for the two diachronic verb movements within the current theory of linguistics, I have proposed a morpho-syntactic analysis, based on the properties of the Chinese directional verb compound construction. As presented above, this morpho-syntactic analysis does not only incorporate the thematic relations between the three verbs and their arguments in the Chinese directional verb compound construction, but also capture the distribution of the NP object of the verb compound as the side effects of the verb-raising and NP-movements. Given both its empirical evidence and theoretical motivation, this morpho-syntactic analysis should shed a light on the study of the Chinese verb compound construction, and contribute to an understanding of language development and word formation in Chinese.

In addition, this morpho-syntactic analysis treats the formation of the Chinese directional verb compound as a type of "word formation" in the sense of Distributed Morphology (Halle & Marantz, 1993): i.e. the creation of a complex syntactic head by means of merger, as it joins a V with the head of its complement VP and forms a new word in which two or three verbs remain separate morphemes. The organization or ordering of the two or three verbal morphemes in this complex syntactic head, as shown by the discussion in the sections above, follows the same principle that governs the generation of the Chinese verb compound in lexicon: namely, a verbal morpheme conveying an activity linearly precedes a verbal morpheme signifying the general direction of such an activity; a verbal morpheme signifying the general direction of an activity linearly precedes a verbal morpheme clarifying such a direction regarding the speaker's position. As the formation of directional verb compounds in Chinese both creates a new morphological head or word and conforms to such a syntactic principle as the Head Movement Constraint or the Minimal Link Condition, it is simultaneously morphological and syntactic, parallel to the process of denominal verb derivation in English as proposed by Hale and Keyser (1993).

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## Notes

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<sup>1</sup> The Chinese directional verb compound may also consist of two verbs, of which the first verb conveys a displacement motion or action, while the second verb either signifies the general direction of such displacement (i.e. jin 'enter', chu 'exit', shang 'ascend', xia 'descend', qi 'rise', hui 'return', guo 'cross', or kai 'open'), or signals the direction of such displacement with respect to the speaker's position (i.e. lai 'come' or qu 'go') (cf. Chao, 1968; Li & Thompson, 1981; Lü, 1984):

(i) V<sub>1</sub> (displacement) - V<sub>2</sub> (general direction)

a. ta dai-shang-le      maozi.

he wear-ascend-ASP hat

'He put on the hat.'

b. **Lisi zou-jin-le wuzi**

Lisi walk-enter-ASP house

`Lisi walked in the house.'

c. **wo tang-xia-le.**

I lie-descend-ASP

`I lay down.'

(ii) V<sub>1</sub> (displacement) - V<sub>2</sub> (speaker-oriented direction)a. **ta song-lai-le yi ben shu**

he send-come-ASP one CL book

`He brought a book over here.'

b. **ta na-qu-le wode luyinji.**

she take-go-ASP my tape-recorder

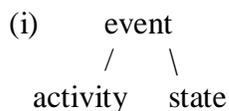
`She took away my tape-recorder.'

c. **Lisi pao-lai-le.**

Lisi run-come-ASP

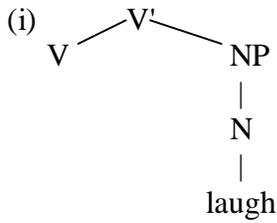
`Lisi ran over here.'

<sup>2</sup> According to Vendler (1967) and Dowty (1979), an accomplishment verb denotes a complex event that is composed of an *activity* sub-event and a resultant *state* sub-event. Each of these two sub-events projects its own predicate structure. The combination and alignment of the two sub-event structures form a complex event structure for the entire sentence:

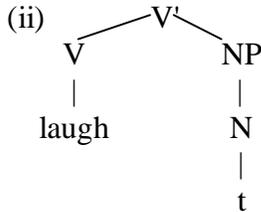


The complex event structure in (i) can apply to the events associated with the three verbs of the Chinese directional verb compound, as the Chinese directional verb compound is a subclass of accomplishment verbs (cf. Cheng, 1989): that is, the displacement motion or action conveyed by the first verb may match the *activity* part of the complex event, while the resultant direction and speaker-oriented direction signaled by the second and third verbs may correspond to the *state* part of the complex event.

<sup>3</sup> Hale and Keyser (1993) argue that the proper representation of predicate argument structure is syntactic, in the sense that each lexical head projects its own phrasal category and determines within that projection an unambiguous system of structural relations between the head, its categorial projections and its arguments (i.e. specifier and complement). This syntactic view of predicate argument structure is strongly supported by their study of denominal verbs in English: i) as denominal verbs are derived from nouns, the process involved in their derivation should be lexical; and ii) since their derivation is constrained by the principle of syntax, the process should also be syntactic. To be more specific, the evidence for the syntactic constraining of such derivation comes from their analysis of the formation of English denominal verbs as a process of incorporation (Baker, 1988), as it conforms to such a syntactic principle as the Head Movement Constraint (Travis, 1984; Baker, 1988) or its later version, the Minimal Link Condition (Chomsky, 1995). Consider unergative verbs, which represent the simplest class of denominal verbs derived by incorporation. The typical examples of unergative verbs in English are: laugh, sneeze, dance and calve, and their initial lexical projection is that of a verb and a nominal complement, as displayed below:

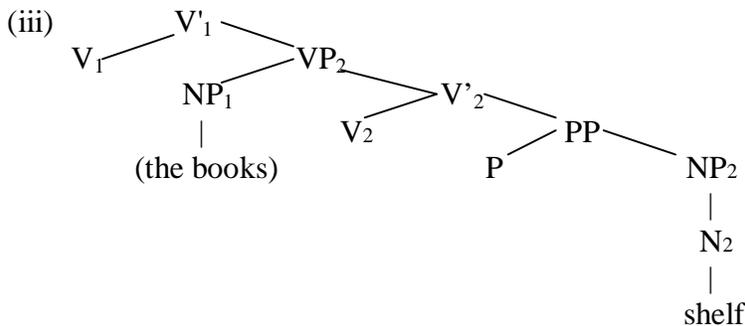


Thus, the lexical structure representation of an unergative verb, like laugh, involves incorporation of the nominal head N into V: that is, laugh in N is moved to adjoin to V. The resulting "V-N compound", of which only the N component is overt, corresponds to the denominal verb:



This head movement conforms to the Head Movement Constraint or the Minimal Link Condition: the movement of laugh from N to V attaches laugh to V, which immediately c-commands NP, without skipping an already-filled head position in between.

A more complex class of denominal verbs are locative verbs, whose typical examples in English are shelve (as in shelve the books), box (as in box the apples), and saddle (as in saddle the horse). Their initial lexical projection is identical to that of the English verb put (cf. Larson, 1988):



Thus, the surface form of the locative verb, like shelve, is derived by three applications of head movement: first, shelve in N<sub>2</sub> is moved into P; then the resulting "P-N compound" is moved into V<sub>2</sub>; and finally the "V<sub>2</sub>-P-N" compound is moved into V<sub>1</sub>. Each movement conforms to the Head Movement Constraint or the Minimal Link Condition, as it attaches the noun shelve to a head that immediately c-commands the phrase of which shelve is the former head, without skipping an already-filled head position in between:

