

## CHAPTER 7

### FROM EVENTUALITY STRUCTURE TO PHRASE STRUCTURE

#### 1. Introduction

So far we have discussed the relevant phenomena in Chinese, Japanese, and English with respect to unselectiveness of subject and object. If our analyses are correct, we have shown that it is necessary to relativize the phrase-structural height in the light verb structure to which lexicalization applies. This is a variation among languages that the Lexicalization Parameter, postulated in Chapter 2, is meant to capture, restated below ((120) of Chapter 2):

(1) *Lexicalization Parameter*

Languages may vary on the phrase-structural heights which L-Syntax reaches.

In the case of English, L-Syntax applies to the whole light verb structure, hence the whole light verb structure is turned into an individual verb with a full range of arguments. Thus the saturation of the external and internal arguments are obligatory, and unselectiveness of subject and object, that is, free replacement of these arguments by some other thematic expressions, is not allowed. In the case of Japanese, L-Syntax applies to a lower height in the light verb structure, excluding the subject-selecting light verb. Thus Japanese exhibits unselectiveness of subject, but not object, as the internal argument has been encompassed into the argument structure of the verb along the process of lexicalization. In the case of Chinese (including Mandarin and other Chinese dialects), lexicalization trivially applies to the verb itself, and the whole light verb structure is reproduced in S-Syntax. As such, free replacement of the light verbs, along with the arguments that they license, is allowed, leading to those phenomena that we refer to as unselectiveness of subject and object.

All these, as we have shown, are captured by the Lexicalization Parameter stated in (1). But a question that naturally emerges is why there is such a variation among languages with respect to the lexicalization of the light verb structure. There is little chance for (1) to be a principle in UG. For one thing, what is lexicalization, and how is it executed in the grammar? For another, why should lexicalization apply to different heights in the light verb structure in different languages, and what determines these settings? These questions bring up a desire for us to try to reduce the Lexicalization Parameter in (1) to more fundamental principles in grammar. This chapter will be focusing on them.

In the following, we will first show that the determining factor that underlies this variation is the inherent telicity of verbs in different languages -- rich in English but impoverished in Chinese. If the function of the light verb structure is to encode the telicity property into a verb, the richness of inherent telicity in English verbs naturally leads to the placement of the light verb structure in Lexicon (L-Syntax), and the impoverishment of inherent telicity in Chinese verbs leads to the placement of the light verb structure in Syntax (S-Syntax). This distinction, furthermore, can be retrieved to the different natures of light verbs in English and Chinese. We will suggest that the light verbs in English are morphological, just like the case of Archaic Chinese, so that they must feed morphological operations in L-Syntax, whereas the light verbs in Chinese are semantic in nature, hence they are immune to L-Syntactic operations and enter S-Syntax. We will also postulate an organization of grammar in which all these elements and operations are located in an appropriate way. After this, we will examine the phrase structures in English and Japanese, explicate the characteristics of their phrase structures in terms of such typological notions as analyticity and syntheticity, and propose that all languages are underlyingly analytic at some grammatical level(s), along the spirit of Baker's (1988a) Uniformity of Theta Assignment Hypothesis (UTAH). At the end of the chapter are some concluding remarks.

## 2. Telicity in verbs and the nature of light verbs

In this section we look at the telicity of verbs in English and Mandarin Chinese. We will show that, while verbs in English have rich inherent telicity, which justifies a classification of event types for them, verbs in Chinese don't -- as a matter of fact, *all verbs in Mandarin Chinese may assume any type of eventuality use*. Thus verbs in Chinese don't have inherent telicity, and their particular eventuality uses must be determined by the light verb structures in which they occur. To deal with this difference, we propose that the light verbs must be distinguished into two types, morphological and semantic, and they occur in different components in the grammar, Lexicon (L-Syntax) and Syntax (S-Syntax). This distinction yields the difference in inherent telicity between English and Mandarin Chinese verbs.

### 2.1 Telicity in English and Mandarin Chinese verbs

#### 2.1.1 Types of events in English and Mandarin Chinese

Starting from Vendler (1957), types of events come into the linguistic inquiry as an fundamental aspect of natural language semantics. We have mentioned that, as Hinrichs (1985) points out, Vendler's four type of events can be distinguished in terms of their internal temporal properties, restated below ((69) of Chapter 2):

(2)	<i>States:</i>	Non-temporal properties
	<i>Activities:</i>	Temporal properties without change of resultant state
	<i>Accomplishments:</i>	Temporal properties with developmental change of resultant state
	<i>Achievements:</i>	Temporal properties with punctual change of resultant state

Examples for the four types of event include the following:

- (3)    *States:*                    like, know, resemble, etc.  
           *Activities:*                run, eat, see, etc.  
           *Accomplishments:*    build, bake, watch, etc.  
           *Achievements:*        die, win, discover, etc.

The distinctions among these four different types of event are linguistically justified. For instance, the verbs of states cannot occur in the *when*-clause or take the progressive aspect (Bach 1981, Kratzer 1988), as shown below:

- (4)    a.        \*When Mary knows French, she knows it well.  
           b.        \*Jim is liking Jane.

Activities, accomplishments, and achievements also perform unique linguistic behaviors. For example: activities are known to exhibit cumulativity, whereas accomplishments and achievements don't (Lassersohn 1995); the entailment *If x  $\phi$ -ed in an hour, then x was  $\phi$ -ing during that hour* only applies to accomplishments, but not to achievements (Dowty 1979).

These claims are exemplified by the following examples:

- (5)    a.        If Jane ran from 5:00 pm to 6:00 pm, then she ran at all time points within that stretch of time.  
           b.        Jane built a house in three days, therefore she was building that house during those three days.  
           c.        #Jane won the competition in three days, therefore she was winning that competition during that three days.

For detailed discussions on the relevant questions, see Dowty (1979), Bach (1981), Hinrichs (1986), Lassersohn (1995), among many others. From these works, it is clear that

the distinctions of event types among English verbs are well motivated. Each verb in English belongs to some event type, exhibiting specific telicity properties.<sup>1</sup> Liberal uses of verbs in ways at odds with what their event types permit, for instance, to use a stative as an accomplishment or an achievement as an activity, is generally not possible. The telicity properties are inherent in the English verbs and generally cannot be changed.

Chinese verbs, however, exhibit exactly this kind of changes. We look at Tai's (1984) observation first. Tai's (1984) observation is that, there don't seem to be accomplishments in Mandarin Chinese. To support this claim, the following evidence is given. Typically, the use of accomplishment verbs in English like *paint* and *kill* involves a resultant state. In view of this fact, negating the resultant state that an accomplishment verb is supposed to imply will leads to unacceptability of the sentence, since a semantic contradiction will result. In Mandarin Chinese, however, the use of such verbs as *hua* 'paint' and *sha* 'kill' seems to be free from such a logical restriction. Consider the following sentences:

- (6) a. Laozhang zuotian hua-le yi-fu hua, keshi mei hua-wan.  
 p.n. yesterday paint-Perf one-Cl picture however no paint-complete  
 'Laozhang painted a picture yesterday, but didn't finish it.'
- b. Laozhang sha-le Laowang san-ci, keshi Laowang dou mei si.  
 p.n. kill-Perf p.n. three-time however p.n. all no die  
 'Laozhang killed Laowang three times, but Laowang never died.'

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<sup>1</sup> Some times a English verb can assume more than one type of event use. For example, as many researchers have pointed out, adding an telic bound to an activity verb will turn the predicate into an accomplishment one (cf. Dowty 1979, Higginbotham 1999, Rappaport 1999, among others)

- |     |    |  |                  |
|-----|----|--|------------------|
| (i) | a. | Jane pushed a cart.                    | (Activity)       |
|     | b. | Jane hammered a piece of iron.         | (Activity)       |
|     | c. | Jane pushed a part to the supermarket. | (Accomplishment) |
|     | d. | Jane hammered a piece of iron flat.    | (Accomplishment) |

We will leave the relevant questions open.

In both (6a-b), the main statement is followed by a conjunct which denies the existence of the resultant state that supposedly should be implied by the verb *hua* 'paint' or *sha* 'kill'. The two sentences, however, are perfectly acceptable. Notice that the English verbs *paint* and *kill* don't allow such a use (thus the glosses for (6a-b) are logical contradictions to an English speaker) -- if John painted a picture, then there must be a picture painted; and if John killed Jane, Jane must be dead. This, apparently, is not the case for the Mandarin Chinese verbs *hua* 'paint' and *sha* 'kill'. To make sure about a resultant state when these verbs are used, other grammatical means must be resorted to, compounding being one of them. Thus, *sha* 'kill' doesn't necessarily entail the death of the patient object, but *sha-si* 'kill-dead' does; *hua* 'paint' doesn't necessarily entail the existence of a picture the product, though *hua-wan* 'paint-finish' does. To Tai (1984), this fact indicates that such verbs as *hua* 'paint' and *sha* 'kill' are not inherently accomplishments, and, what is more, there actually don't seem to be real accomplishment verbs in Mandarin Chinese. Consequently, Tai (1984) proposes that there are only three types of events in Mandarin Chinese verbs: states, activities, and results (achievements).

### *2.1.2 Lack of inherent telicity in Mandarin Chinese verbs*

Based mainly on Tai's (1994) observation, Sybesma (1997) explicitly claims that Chinese doesn't have inherently telic predicates. We have seen that Tai's (1984) observation that there don't seem to be accomplishment verbs in Mandarin Chinese. Sybesma (1997) further suggests that achievements are not an independent type of event in Mandarin Chinese verbs either. To Sybesma (1997), Mandarin Chinese only has states and activities. Here we would like to make an even more radical claim; that is, verbs in Mandarin Chinese don't have inherent eventuality (telicity) properties at all. The consequence from this claim is that *all kinds of verbs can assume any type of eventualistic use*. Below are examples supporting this claim.

To start with, let's look at the stative verbs. We observe that the stative verbs in Mandarin Chinese can be used as activities, achievements, and accomplishments:

(7) *Activity use of statives*<sup>2</sup>

- a. Women zheng-zai **liaojie** zhege xianxiang de genyuan.  
we right-now **understand** this phenomenon Mod origin  
'We are [trying to] understand the origin of this phenomenon.'
- b. Laowang zuijing zai **xihuan** Madanna.  
p.n. recently at **like** Madonna  
'Recently Laowang is fond of Madonna.'

(8) *Achievement use of statives*

- a. Laowang **pang** le.  
p.n. **fat** Prt  
'Laowang [becomes] fat.'
- b. Zhe-duo hua **hong** le.  
this-Cl flower **red** Prt  
'This flower [becomes] red.'

(9) *Accomplishment use of statives*<sup>3</sup>

- a. Na-zhan deng **liang**-de dajia zheng-but-kai yan.  
that-Cl light **bright**-Ext everyone open-not-open eye  
'That light is so bright that no one can open the eyes.'

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<sup>2</sup> We had some discussions on the stative verbs in section 2.2.1 and 2.2.4 of Chapter 3. There we observed that the statives in Mandarin Chinese are generally incompatible with locative subjects, and we attributed this phenomenon to the requirement for the light verb EXIST to occur with a telic verb. But in (7a-b), the *statives* *liaojie* 'understand' and *xihuan* 'like' are used as activities, and, in this case, it seems that locative subjects are much better, as the following examples indicate:

- (i) a. Women de shiyansi-li zhang-zai liaojie zhege xianxiang de genyuan.  
we Mod laboratory-in right-now understand this phenomenon Mod origin  
'(Lit.) In our laboratory is [trying to] understand the origin of this phenomenon.'
- b. Zhengge xuexiao-li dou zai xihuan Madanna.  
whole school-in all at like Madonna  
'(Lit.) Everywhere in the school is fond of Madonna.'

- b. Zhe-fu hua **gui**-de mei-ren mai-de xia-shou.  
 this-Cl painting **expensive**-Ext no-one buy-Ext fetch-hand  
 'This painting is so expensive that no one dares to buy it.'

In (7a-b), the stative verbs *liaojie* 'understand' and *xihuan* 'like' have the progressive aspectual marker *zai* 'at' preceding them, which converts them into an activity in progress.

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<sup>3</sup> Strictly speaking, the *statives* *liang* 'bright' and *gui* 'expensive' in (9a-b) are not accomplishments in the typical sense, as the resultant states 'no one can open the eyes' and 'no one dares to buy it' are realized as independent syntactic expressions introduced by the extension marker *-de*. We classify their uses in (9a-b) as accomplishments since, in these structures, they are hosted by the light verb CAUSE, the head of accomplishment predicates. This clarification applies to other examples below in the text.

An interesting question arises here about the causative uses of statives in Mandarin Chinese. In section 3.2.4 of Chapter 3 we observed that the statives in Mandarin Chinese generally cannot assume causative use, the examples being the following kind (repeated from (83a-b) of Chapter 3):

- (i) a. \*Fawen **dong**-de Laowang jiao'ao buyi.  
 French understand-Ext p.n. arrogant not-stop  
 'Understanding French makes Laowang so arrogant.'  
 b. \*Malilian Monglu **xihuan**-de Xiaoli wanshang shui-bu-zhao-jiao  
 Marilyn Monroe like-Ext p.n. night cannot-sleep  
 'Liking Marilyn Monroe makes Xiaoli unable to fall asleep in the night.'

However, the use of statives in (9a-b) is significantly different from that in (ia-b), in the sense that the statives *liang* 'bright' and *gui* 'expensive' in (9a-b) denote properties pertaining to the causer subjects, *na-zhan deng* 'that light' and *zhe-fu hua* 'this painting', whereas the statives *dong* 'understand' and *xihuan* 'like' in (ia-b) don't denote properties pertaining to the causers, *Fawen* 'French' and *Malilian Monglu* 'Marilyn Monroe'. As a matter of fact, the relationship between the causer subjects and the statives in (9a-b) are sort of an active one -- (9a) somehow has a meaning that the light *emitted* by that light is so strong that no one can open the eyes, and (9b) that the price of the painting goes so high that no one dares to buy it. Of course, these meanings are quite vague and therefore don't seem to be able to serve a firm basis for criteria. Nonetheless, it seems that whether the statives denote potential or inherent properties of the causers matters for them to be used in the causative way, namely hosted by the light verb CAUSE. The situation is fairly much like the case of causativization of unaccusatives in Mandarin Chinese, as shown below (see section 3.1 of Chapter 2 and examples there):

- (ii) a. Chaungzi **po** le.  
 window break Prt  
 'The window broke.'  
 b. Taifong **chui-po** chuangzi le.  
 typhoon blow-break window Prt  
 'The typhoon broke the window.'

As we pointed out in section 3.1 of Chapter 2, to make an unaccusative causative, an action verb, typically an activity, must be inserted into the structure, with the causer argument that it introduce. Notice that, in (iib), the relationship between the causer *taifong* 'typhoon' and the action verb *chui* 'blow' is exactly like the one between the causers and the statives in (9a-b). That is, the verb *chui* 'blow' denotes a property pertaining to the causer *taifong* 'typhoon', as typhoons blow (at least in Mandarin Chinese). It thus seems that this relationship is an important condition for the derived causative sentences in Mandarin Chinese (absolute to some speakers, but not for others; see footnote 17 of Chapter 3). We will leave the relevant questions open.

In (8a-b), the adjectives *pang* 'fat' and *hong* 'red' are used as inchoatives. In (9a-b), the adjectives *liang* 'bright' and *gui* 'expensive' occurs with a *-de* resultative expression (cf. section 3.2.3 of Chapter 3), with themselves functioning as the cause of the resultant state introduced by *-de*. Thus (7-9) show that statives in Mandarin Chinese can be used as any of the other three eventuality types of predicate.

Next we look at the activity verbs. Activity verbs in Mandarin Chinese can be used as statives, achievements, and accomplishments, as exemplified below:

(10) *Stative use of activities*

- a. Zhe-ba dao **qie** rou.  
this-Cl knife **cut** meat  
'This knife is [for the use of] cutting meat.'
- b. Zhe-zhong yao **chi** tou-tong.  
this-kind medicine **eat** head-ache  
'This kind of medicine is [for curing] headache [when] digested.'

(11) *Achievement use of activities*<sup>4</sup>

- a. Laowang **pao** le.  
p.n. **run** Prt  
'Laowang [starts] running.'
- b. Laowang nian xiaoshuo le.  
p.n. **read** novel Prt  
'Laowang [starts] reading novels.'

(12) *Accomplishment use of activities*

- a. Zhe-chang dianying **kan**-de wo xin-jing-dan-zhan.  
this-Cl movie **watch**-Ext I heart-shocked-gut-shivering  
'Watching this movie made me so scared.'

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<sup>4</sup> (11a) has another reading according to which Laowang fled. We ignore this reading.

- b. Na-chang yanchang-hui **jiao**-de wo houlong dou ya le.  
 that-Cl concert **scream**-Ext I throat even coarse Prt  
 'Screaming in that concert made my throat even become coarse.'

(10a-b) are adopted from Chapter 4. In (10a), the light verb USE stacks upon the VP that the main verb *qie* 'cut' projects, and in (10b), the light verb USE stacks upon the VP that the verb *chi* 'eat' projects. In both sentences, there is no agentivity or sense of action, thus the two verbs *qie* 'cut' and *chi* 'eat' are used in a stative way. In (11a-b), the verbs *pao* 'run' and *nian* 'read' are used as inchoatives, as they imply a sense of inception of action. (12a-b) are similar to those that we have discussed in Chapter 3, where an action verb is used as a causative verb taking a causer subject. In these two sentences, the verbs *kan* 'watch' and *jiao* 'scream' denote the actions that cause certain resultant states. In short, from (10-12), it is clear that activity verbs in Mandarin Chinese can assume either of the other three eventualistic uses.

Then we look at the achievement verbs. Again, achievement verbs in Mandarin Chinese can assume either of the other three eventuality uses, as statives, activities, and accomplishments:

(13) *Stative use of achievements*

- a. Yesu **si**-le san-tian, ranhou fu-huo le.  
 Jesus **die**-Perf three-day then resurrect Prt  
 'Jesus was dead for three days, then resurrected.'
- b. Laowang **ying**-le yi-zhengzi, zuihou haishi shu le.  
 p.n. **win**-Perf a-while eventually still lose Prt  
 'Laowang kept winning for a while, but eventually lost.'

(14) *Activity use of achievements*<sup>5</sup>

- a. Ni daodi **si**-bu-**si**?  
you the-hell **die**-not-**die**  
'Are you going to die or not?'
- b. Ni daodi **ying**-bu-**ying** Laozhang?  
you the-hell **win**-not-**win** p.n.  
'Do you want to win Laozhang or not?'

(15) *Accomplishment use of achievements*<sup>6</sup>

- a. Laowang **si**-de dajia dou gandong-bu-yi.  
p.n. **die**-Ext everyone all moved no-stop  
'Laowang's death deeply moved everyone.'
- b. Laowang **ying**-de dajia jiao-ku-lian-tian.  
p.n. **win**-Ext everyone cry-bitter-reach-sky  
'That Laowang won made everyone bitterly annoyed.'

In (13a-b), *si* 'die' and *ying* 'win' are used to denote stative situations in which the subjects are in: Jesus was dead for three days before he resurrected, and Laowang kept wining for a while before he eventually lost. In (14a-b), *si* 'die' and *ying* 'win' are used to denote agentive action that are under the volition of the subjects. In (15a-b), *si* 'die' and *ying* 'win' denote the

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<sup>5</sup> (14a-b), in particular (14a) may sound awkward to some Mandarin Chinese speakers. However, if the following situation is given, (14a) can be much better. Suppose in a war game someone was shot. According to the rule this person must lie down immediately pretending he is dead. However, he hadn't have enough fun in spending his energy and hence refused to "die". At last a quarrel burst out and other "warriors" shouted to him: "*Ni daodi si-bu-si?* [Are you going to die or not?]" (= (14a)). In this scenario, whether to get into the state of dead, and to keep in that state, are under the volition of the subject. This is clearly an activity use. As to (14b), suppose that someone has the ability to win some game, but he sort of hesitates to do so because his best friend, Laozhang, is in the game too and losing this game may be a terrible harm to his self-esteem. In this situation, the coach may shout to the subject that "...((14b))..." Again, what we have here is a volitional use of the verb *ying* 'win', an activity use.

<sup>6</sup> Again, (15a) (but not (15b)) will sound awkward to many Mandarin Chinese speakers. But if the verb *si* 'die' in (15b) is construed as an agentive action, in such a situation that one man decided to die so as to save other people's lives, then this sentence would be much better.

causes for certain resultant states. Again, (13-15) indicate that achievement verbs in Mandarin Chinese can assume either of the three other eventuality uses.

Lastly, we look at the accomplishment verbs. The situation is the same: accomplishment verbs in Mandarin Chinese can assume stative, activity, or achievement use:

(16) *Stative use of accomplishments*

- a. Na-dong fangzi **gai** zai shan-ting-shang, nan-kan-ji le.  
that-Cl house **build** at moountain-top-on ugly-looking-extremely Prt  
'That house, being located on the top of the mountain,  
is extremely ugly.'
- b. Zhe-ben shu **fang** zai shu-jia-shang, yijing shi nian le.  
this-Cl book **put** at book-shelf-on already ten year Prt  
'This book has been on the book shelf for ten years.'

(17) *Activity use of accomplishments*

- a. Laowang **gai** na-dong fangzi shi nian le.  
p.n. **build** that-Cl house ten year Prt  
'Laowang has been building that house for ten years.'
- b. Laowang **fang** xingli, zenme fang zhemo jiu?  
p.n. **put** luggage how-come put such long  
'Why does Laowang spend so much time putting down the luggage?'

(18) *Achievement use of accomplishments*

- a. Laowang **gai** fangzi le.  
p.n. **build** house Prt  
'Laowang [starts] building a house.'
- b. Laowang zai yinhang-li **fang** qian le.  
p.n. at bank-in **put** money Prt  
'Laowang [starts] putting money in the bank.'

In (16a-b), the verbs *gai* 'build' and *fang* 'put' are stative, since their meaning in the sentences are very similar to "exist" or "be". In (17a-b), *gai* 'build' and *fang* 'put' denote actions that are still in progress, hence they are activities. In (18a-b), *gai* 'build' and *fang* 'put' denote inception of the actions of building and putting, thus they are inchoatives. Once again, (16-18) show that accomplishment verbs in Mandarin Chinese can assume either of the other three eventuality uses.

In view of the examples in (7-18), we now realize that it's inappropriate to say that a verb in Mandarin Chinese belongs to certain type of eventuality, since all kinds of verbs may assume any type of eventuality use. A generalization follows from this observation. That is, the Mandarin Chinese verbs indeed don't have inherent telicity. Though Sybesma (1997) reduces the event types in Mandarin Chinese verbs to activities and states, the examples in (7-18) indicates that an even more radical move can be taken; namely, the verbs in Mandarin Chinese don't inherently belong to any type of eventuality. The particular telic or atelic uses of Mandarin Chinese verbs are determined by external factors, crucially by the S-Syntactic light verb structures in which they occur.<sup>7</sup>

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<sup>7</sup> A clarification is in order here. As we see in (7-18), for statives, their activity uses require the presence of the progressive aspectual marker *zai* 'at', and for all types of verbs, the inchoative use usually needs the presence of the sentence final particle *le*. In view of these, one may assume that the particular eventuality uses of Mandarin Chinese verbs in fact are triggered by aspectual morphemes such as *zai* and *le*, rather than by abstract entities like light verbs. But we suggest that this not the right way to look at the relevant phenomena. For one thing, even if the progressive aspectual marker *zai* is directly related to the activity use of statives, we still need an explanation why the progressive morpheme *be...ing* in English cannot be suffixed to a stative and turn it into an activity, as the ungrammaticality of such sentences *\*We are understanding the root of this question* evidences (example (19a) in the text below). To pin down the difference between verbs in Mandarin Chinese and in English, resorting to the light verb structures is still indispensable. As to the sentence final particle *le*, in fact it has nothing to do with inchoativity of the verbs. The example given below can show this point:

- (i) Laozhang *gai-le* *san-dong* *fangzi* *le*  
 p.n. build-Perf three-Cl house Prt  
 'Laozhang built three houses.'

In (i) the verb *gai* 'build' is used as an accomplishment, and the inchoativity has a direct bearing with the perfective aspectual marker *-le* and the numeral object *san-dong fangzi* 'three houses'. The sentence final particle *le* doesn't play a role here. Comparing (i) with (ii), the point will be clearer:

## 2.2 The nature of light verbs in English and Mandarin Chinese

In the previous subsection, we have seen that verbs in Mandarin Chinese lack inherent telicity. This is in sharp contrast to the case of English, where verbs have rich inherent telicity and, as a consequence, are readily classifiable as falling into some particular types of eventuality. It is easy to see that the telicity properties for English verbs are *lexical* in nature, since free uses of a verb as some other type of eventuality is not allowed. Thus, (7-18) would be totally unacceptable if they are translated into English. Below are some examples:

- (19) a. \*We are **understanding** the root of this question.  
(Stative used as activity)
- b. \*John **reads** novel.  
(Activity used as inchoative (in the sense of "John starts reading novels"))
- c. \*Jesus **died** for three days, then resurrected.  
(Achievement used as stative)
- d. \*John **builds** that house for ten years.  
(Accomplishment used as activity)

At this point, it is essential to ask the following questions: Why is there such a sharp contrast between English and Mandarin Chinese with respect to verbs in this aspect? How

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- (ii) Laozhang gai-le san-dong fangzi, ranhou chizhi le.  
p.n. build-Perf three-CI house then resign  
'Laozhang built three houses, and then resign.'

In (ii), there is an additional conjunct following the (i) statement. In this case *le* doesn't occur in the first conjunct, yet the verb *gai* 'build' still assumes accomplishment use, with an achievement sub-component. Thus the inchoativity here has no bearing on *le*. As a matter of fact, *le* in (i) and (ii) (as well as in those examples with it in the text) functions to indicate that the proposition that it is attached to has come into being. In other words, it has a propositional scope. Sun (1996) considers the sentence final particle *le* as a (propositional) perfect marker. Also see Shen (2001) on interesting discussions on *le*, who also takes *le* as a propositional marker serving the confirmation of the truth of the proposition it is attached to.

can it be derived? Below we will propose an account based on the distinction of two types of light verb, morphological and semantic.

### 2.2.1 Semantic light verbs vs. morphological light verbs

In section 5 of Chapter 5, we had a discussion on the change of the light verb syntax in the history of Chinese. It was observed there that, though contemporary Chinese doesn't permit derived uses of verbs, adjectives, and nouns, in Archaic Chinese such derived uses are productive and liberal. We repeat some examples below (the (a) examples in (83-85) and (87-88) of Chapter 5):

#### (20) *Causativization of verbs, adjectives, and nouns in Archaic Chinese*

- a. zhi Zilu su, sha ji wei su er **shi** zhi.  
stop Zilu stay-for-night, kill chicken cook rice and **eat** him  
'...invited Zilu to stay for a night, slaughtered a chicken,  
and cooked rice to feed him'  
(*Weizi, Lunyu*, 500 BC.)
- a. gu tian jiang jiang da-ren yu si-ren ye,  
therefore Heaven will fall great-responsibility to that-person Prt,  
bi xian **ku** qi xin-zhi, **lao** qi jin-gu  
definitely first **bitter** his heart-mind, **laborious** his muscle-bone  
'Therefore, if Heaven is going to assign great responsibility  
to some person, His Majesty definitely will first set his heart in  
bitterness and his body in laborious situations...'  
(*Gaozi, Mengzi*, 300 BC.)

- c. Wu jian Shenshu, Fuzi suo-wei sheng si er **rou** gu ye.  
 I see p.n. master so-call live death and **flesh** done Prt  
 'I saw Shenshu, who, as said the master, is like a dead man brought  
 back to life, and a bone caused to regrow flesh.'  
 (*Xianggong 22nd year, Zuozhuan*, 300 BC.)
- a. xin **bei** qing-xiang, zhi **xiao** wan-cheng,  
 heart **humiliated** official-minister, ambition **small** emperor  
 ji shou zhi zheng, hun-luan bu-zhi  
 once give him governance dark-chaotic not-ruled  
 '[Those people] despise the officials and ministers as humiliated,  
 and consider the emperor as insignificant; but once they are granted the  
 power to rule, they only make things chaotic and can't maintain an order.'  
 (*Yan-tie lun*, 100 BC.)

(21) *Intentional use of adjectives and nouns in Archaic Chinese*

- b. gu ren bu du **qin** qi qin, bu du **zi** qi zi  
 so people not only **parent** their parent not only **son** their son  
 'so people not only take their parents as parents, only their sons as sons  
 [they also treat other people just like they treat their own parents  
 and sons.]'  
 (*Liyun, Liji*, 300 BC.)

The root of this modern/ancient discrepancy can be found in the change of the nature of light verbs in the history of Chinese, as we pointed out in Chapter 5. The course of change is the following. In the pre-ancient and the early Archaic Chinese, the derived uses of lexical items were actually triggered by morphological elements such as the prefix \*s- (for causativization) (cf. T. Mei 1991) and the suffix \*-s (for nominalization of verbs and verbalization of adjectives and nouns) (cf. T. Mei 1981). Later on in history, however, these

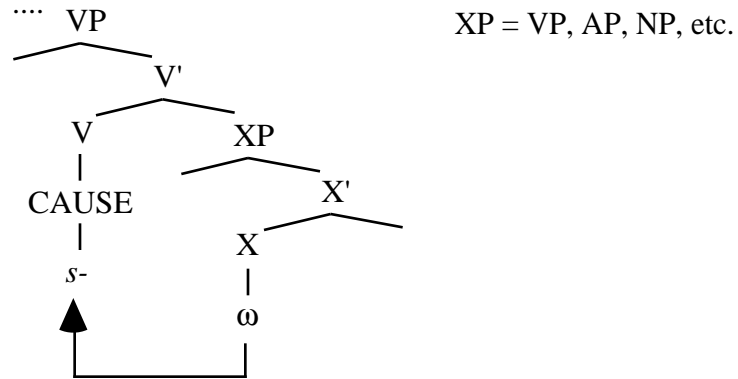
affixes underwent weakening and eventually disappeared, with their distinctive functions shifted to the inflectional forms of the lexical items -- the voicedness of the onset consonant (*ching-zhuo bie yi* ' (lit.) voiced-voiceless distinguish meaning') for the transitive-intransitive alternation, and the *qu* tone for verbalization and nominalization (cf. T. Mei 1981).<sup>8</sup> But the process of weakening kept going on, and all these inflectional distinctions are now either frozen in lexical items, or simply lost. Our analysis in Chapter 5 for this process of change focuses on the weakening of the light verbs in the history of Chinese. Supposed that the affixes such as \*s- and \*-s were actually light verbs. Then, the historical change that occurred to them in fact was a weakening of their independent status, or, simply put, functionalization. In the beginning (in the pre-ancient and the early Archaic Chinese), they were full-fledged lexical items with a grammatical function and a phonetic form (though as bound morphemes). But later in the course of change, weakening deprived their phonetic forms and left them a status of being morphological features to be matched with the appropriate inflectional forms of the main predicates. Finally, the process of weakening erased the morphological features entirely, and what remain now are purely semantic predicates, namely light verbs such as CAUSE, without any correlate with morphology. The course of change are reproduced below ((110-112) of Chapter 5):

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<sup>8</sup> The *qu* tone in Modern Mandarin is realized as a high-low contour, but it is not clear what its precise form was in ancient and middle Chinese.

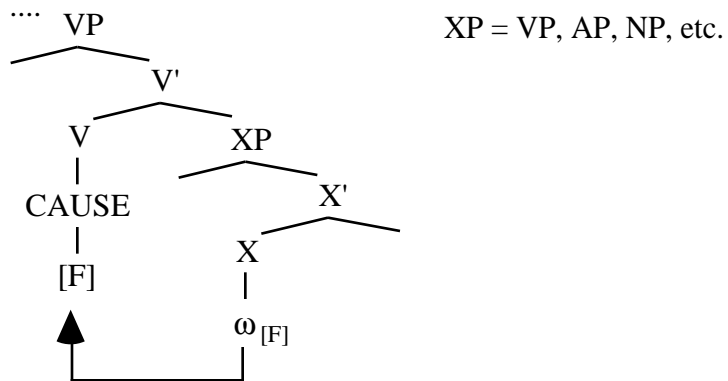
(22) *Head movement in proto-Chinese and pre-ancient Chinese:*

*Driven by affixation*



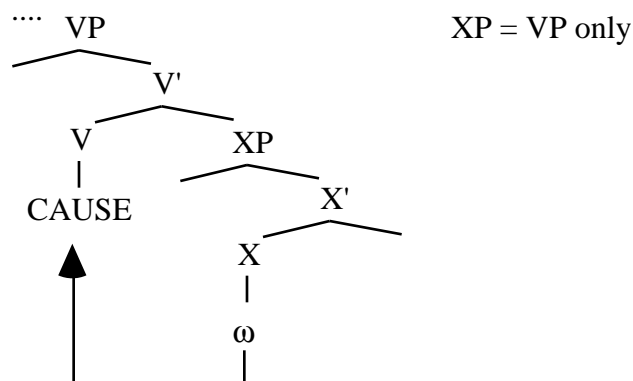
(23) *Head movement from Archaic Chinese to the early Medieval Chinese:*

*Driven by feature checking*



(24) *Head movement from Medieval Chinese to Contemporary Chinese:*

*Driven by semantic requirements*



In summary, Chinese has experienced a historical change from a *morphological language*, with affixation or morphological alternation, to a *semantic language*, with only eventuality predicates. Accordingly, there have been two types of light verbs in the light verb structure in Chinese, *morphological light verbs*, i.e. those in Archaic and Medieval Chinese in the form of affixes or features, and *semantic light verbs*, i.e., the eventuality predicates in contemporary Chinese. Liberal derived uses of verbs, adjectives, and nouns are possible only in light verb structures where the light verbs are morphological, as morphology functions as a driving force for head movement to the light verbs, overriding semantic factors.

Now, a remarkable observation for our concern is that, English resembles Archaic and Medieval Chinese. Indeed, we find many instances of derived uses of verbs, adjectives, and nouns with inflections or affixations, such as *shelf* → *shelve*, *red* → *redden*, *force* → *enforce*, and so on.<sup>9</sup> A corollary therefore follows:

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<sup>9</sup> Of course, not all derived uses of lexical items in English have concomitant morphological changes, such as *thin* in *The cook thinned the gravy*, *box* in *John boxed those books*, and so on. We don't have an explanation for why there is such an inconsistency in the English lexical items.

(25) *Liberal derived verbal uses of lexical items are possible only if the triggering light verbs are morphological in nature.*

We already know from the discussion in Chapter 2 and 6 that the light verb structure in English is located in L-Syntax. With the corollary (25), we can further make the following hypothesis:

(26) *If the light verbs in a language are morphological, then the light verb structures they project are located in L-Syntax.*

The intuition behind the hypothesis in (26) is that, morphological light verbs are on a par with those elements that compose verbs in the morphological component in a language, such as the prefix *en-*, the suffix *-en*, and so on in English. In other words, light verbs such as DO, CAUSE, and BECOME in English are *affixes* that attach to a root, namely the (derived) verb, and as such encode specific eventuality properties to it. The only special thing about these "affixal" light verbs, as compared to other affixes of the normal type, is that they don't have independent phonetic forms. Except this, they have the same status as those morphological elements that enter morphological operations.<sup>10</sup> If the hypothesis (26) is correct, it is natural that the light verb structures in English must be located in L-Syntax, since they are morphological entities, projected from morphological affixes.

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<sup>10</sup> The proposal we are making here is very close to the concept of "Word Syntax" proposed by Selkirk (1982) (short-handed as W-Syntax, as opposed to S-Syntax). In Selkirk's (1982) framework, word formation in English, including inflectional and derivational morphology, as well as compound formation, fall into a specific component of grammar, namely W-Syntax, and share with S-Syntax formal properties such as X' Convention and principles of projection. The only significant divergence in our theory from Selkirk's (1982) is that, while we propose productive head movements in L-Syntax for English, Selkirk (1982) is conservative in admitting the application of Move- $\alpha$  in the component of W-Syntax. The origin of this divergence, of course, is our introduction of light verbs as affixes in English seeking to be incorporated to some root. Incidentally, not all bound morphemes are affixed to roots in W-Syntax (roughly equivalent to our L-Syntax). Selkirk cites Kayne (1975) that elements such as cliticization in French may be accounted for as an instance of syntactic movement.

Mandarin Chinese, on the other hand, exhibits a quite different situation. We have argued that the light verbs in contemporary Mandarin Chinese have entirely lost all their morphological correlates. They are purely semantic predicates.<sup>11</sup> As such, when they get into L-Syntax, the component where morphological elements feed morphological operations, nothing happens to them; they are simply sent to S-Syntax intact, feeding syntactic operations such as Merge and Move. Thus the non-morphological, semantic nature of the light verbs in Mandarin Chinese leads them to S-Syntax, composing S-Syntactic entities. So, the different natures of the light verbs in English and Chinese determine the grammatical levels at which the light verb structures should be projected, and also the ways that phrase structures are constructed in these two languages. In the next subsection we will take a closer look at how these proposals work, and propose a new organization of the grammar that captures what we postulate here.

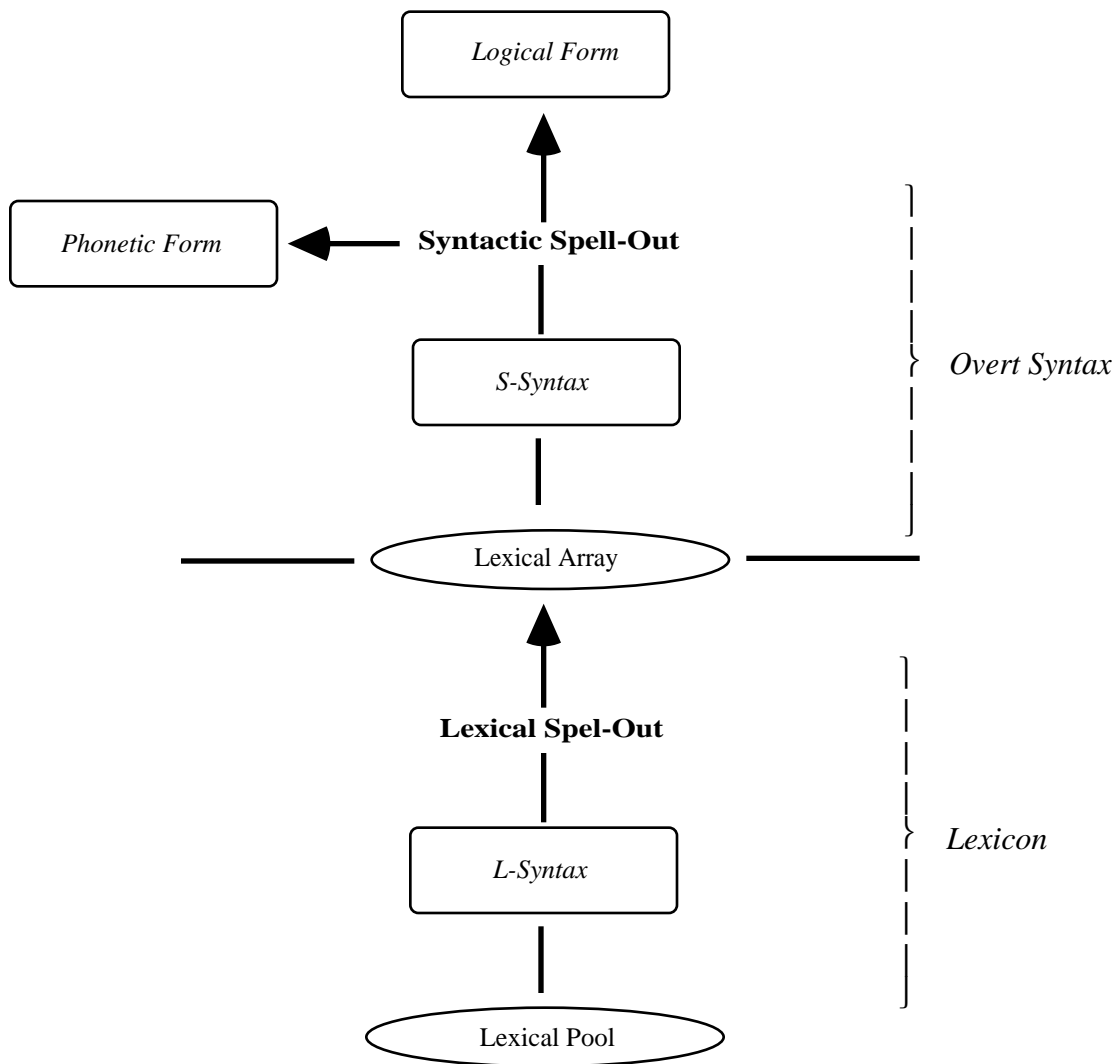
### *2.2.2 The organization of grammar*

The organization of grammar that we propose is represented in the following diagram:

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<sup>11</sup> In the system that we assume for Mandarin Chinese syntax, purely semantic entities are not strange things to have in the grammar. Recall from section 2.3.2 about the empty tense operator *Op* in Mandarin Chinese. It doesn't have a phonetic form and as a result is immune from morphological processes. Yet it has a concrete semantic function, namely to pass the tense value given in the context to the predicate. Thus *Op* is a purely semantic predicate too. Another example is the empty interrogative operator that Tsai (1994) posits for the unselective binding of Wh-nominals in Mandarin Chinese (also see and Reinhart 1993). Unlike the case of English, where the Wh-force is realized in the morphological composition of the Wh-words, and the case of Japanese, where the Wh-force is realized in morphemes attached to syntactic phrases (cf. Watanabe 1992), Mandarin Chinese has its Wh-operator occurring highly in C without morphological correlates, which, as a consequence, motivates unselective binding instead of A'-movement.

(27) *The organization of grammar*



There are several special features in this organization of grammar. First, we propose that all lexical items come from a component that we call Lexical Pool. Lexical Pool contains all lexical entries in the language, like a pool filled with morphemes. These lexical items can be free morphemes or bound morphemes. The bound morphemes can be morphological roots and affixes, or they can be bound words that can head independent syntactic categories. Second, we follow HK's (1991, 1993) insight and assume that lexical representations (HK's LRS representations) and syntactic representations are homogeneous (also see Selkirk 1982

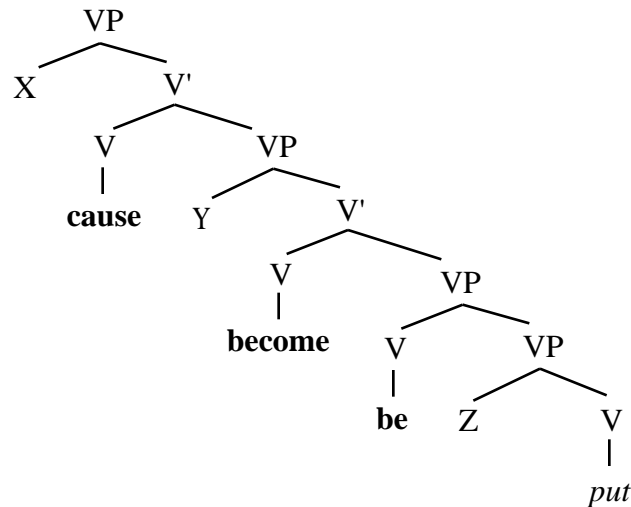
on W-Syntax, which we referred to in footnote 10). That is, lexical processes are syntactic, too, executed in the component of L-Syntax. Thus syntax in the broad sense starts from the point where lexical entries enter L-Syntax. Third, the output representation of L-Syntax undergoes an operation that we call Lexical Spell-Out. This is in fact the lexical version of the operation Spell-Out proposed by Chomsky (1995). The idea behind it is quite straightforward: it is in fact what we call lexicalization in earlier discussions, an operation that works on the hierarchical structure of a light verb structure after conflation, via pruning, truncation, and erasure, turning a structure into an individual lexical item, which then feeds Lexical Array (Chomsky 1998, equivalent to Numeration in Chomsky 1995). From Lexical Array up is what is typically known as overt syntax, or syntax in the narrow sense, which we refer to as S-Syntax. After the applications of such operations as Merge and Move, a sentential phrase structure is constructed, sent to LF and PF at the point of Spell-Out (which we term "Syntactic Spell-Out" to be distinguished from Lexical Spell-Out), meeting the interface conditions and reaching convergence. In short, the organization of grammar in (27) isn't too deviant from the one proposed by Chomsky (1995), except that the scope of syntax is extended down to Lexicon, with the components Lexical Pool, L-Syntax, and Lexical Spell-Out as grammatical levels in the architecture of grammar.

Having introduced the organization of grammar, let's have do some exercise with it and see how it works in English and in Mandarin Chinese. Let's once again take the verb of placement *put* in English and *fang* 'put' in Mandarin Chinese as examples. Firstly we look at the case of the English verb *put*.

Suppose that Lexical Pool in English contains a limited set of morphological light verbs, which we represent as **do**, **cause**, **become**, etc., along with other bound morphemes, such as *-en*, as well as words, such as *put*. All these items are listed in Lexical Pool in an unorganized way. Light verbs **do**, **cause**, **become**, etc. are on a par with other morphological affixes and feed morphological processes, yet without independent phonetic forms. As an accomplishment verb, *put* must have the three light verbs **cause**, **become**, and

**be** in its eventuality structure. So these light verbs are drawn from Lexical Pool along with the verb *put*, combining with each other and projecting into a light verb structure in L-Syntax, as below:<sup>12</sup>

(28) *From Lexical Pool to L-Syntax*

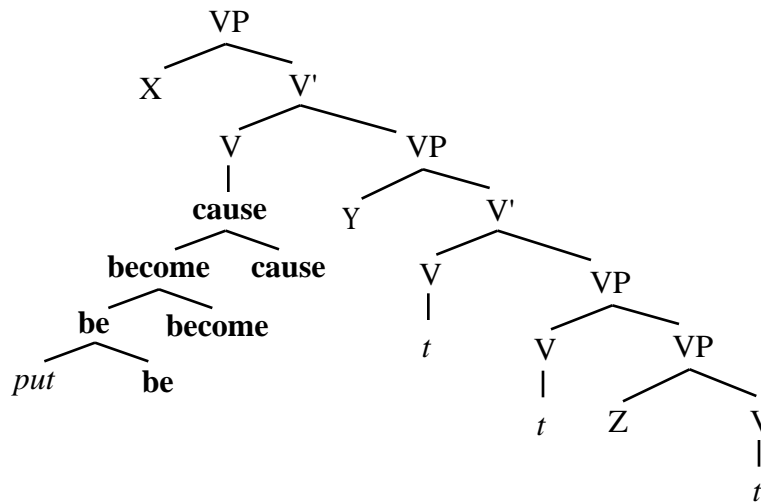


We assume that the light verbs **cause**, **become**, and **be** don't really take lexical items as arguments in L-Syntax; they only take variables that we depict as X, Y, and Z in (28), provided by the grammar symbolizing the relevant positions. They will be later converted into slots in the argument structure of the verb *put*, in the form of argument variables to be  $\theta$ -bound. The next thing that happens to the light verb structure in (28) is the application of incorporation, which merges the heads together. Since the light verbs **cause**, **become**, and **be** are morphological in nature, this operation actually is an instance of *morphological affixation*. The resulting structure is as follows:

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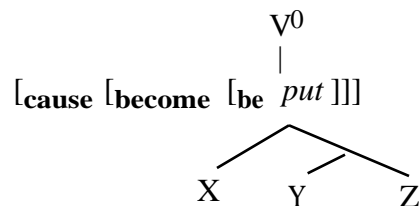
<sup>12</sup> If we assume the theory of bare phrase structure and the ways phrase structures are built in Chomsky (1995), the operations of Merge in (28) and those of Move in (29) will be intermingled with each other. Nothing is crucial in this aspect. We can construct the structure in strict conformity with Chomsky's (1995) theory of bare phrase structure without affecting the point we are making. This applies to the construction of all other structures below in the text.

(29) *L-Syntactic operation: affixation*



Now, Lexical Spell-Out applies to the structure in (29). Basically, what should be done is the conflation of the whole light verb structure, including pruning branches with traces, linearizing the hierarchical structure, and relabeling the top VP node as a  $V^0$ . The result is an individual verb *put*:

(30) *Output of Lexical Spell-Out*

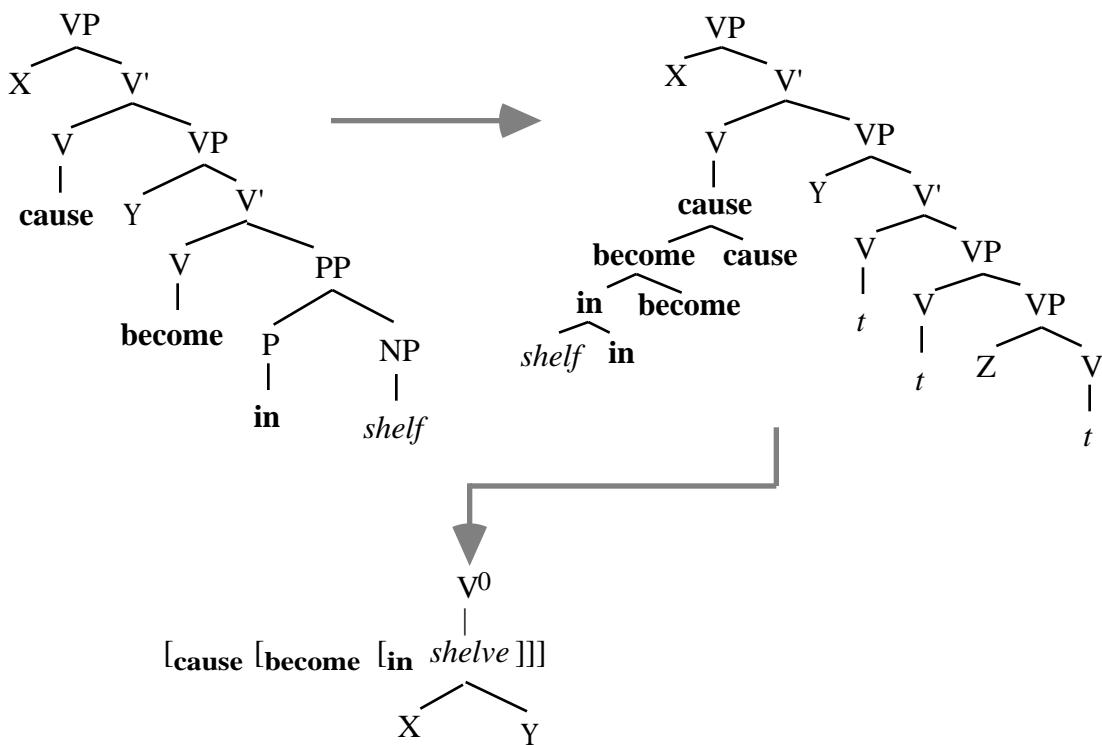


It is the structure in (30) that enters Lexical Array for further S-Syntactic processing. All the information relevant for the eventuality structure is encompassed into it -- the composing elements of the eventuality structure (causativity, inchoativity, and state), a hierarchical structure for the arguments, and a phonetic form *put*. In S-Syntax, the three variables X, Y

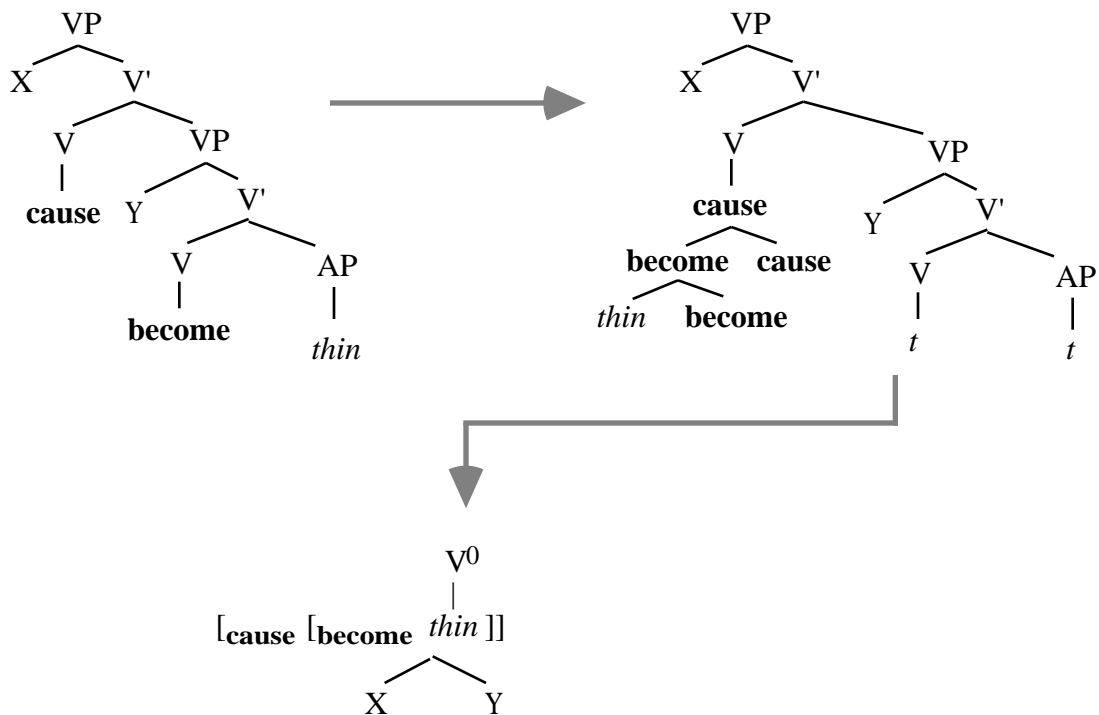
and Z must be bound to satisfy the requirement of  $\theta$ -binding (Higginbotham 1985). The S-Syntactic phrase structure is constructed accordingly. We will return to this topic in next section.

This is the way we derive the accomplishment verb *put*, with its eventuality property and argument structure. Other verbs, including denominals and deadjectivals, can be derived in the same way via L-Syntactic operations. For examples, the denominal *shelve* and deadjectival *thin* in English will have the following L-Syntactic representations and outputs from Lexical Spell-Out:

(31) *The derivation of the denominal verb shelve*



(32) *The derivation for the deadjectival verb thin*



All these are done in L-Syntax, in conformity with our observation in section 3.3.2 of Chapter 2.

At this point, there is a question that we must address. The motivation for locating the light verb structures in English in L-Syntax is the fact that verbs in English cannot assume liberal eventualistic uses, as in the case of Mandarin Chinese. Thus, while the verb *fang* 'put' in Mandarin Chinese can freely assume stative, activity, and achievement uses, the verb *put* in English must be an accomplishment throughout. We attribute this characteristic of English verbs to the morphological nature of their underlying light verb structures. But now consider the light verb structure for the verb *put* in (28) again. In this structure three light verbs, **cause**, **become**, and **be**, stack upon the verb *put*. It is clear that stacking of all the three light verbs is *obligatory* for the verb *put*, as *put* is always used as an accomplishment verb. But why is the stacking of all these three light verbs mandatory? It

then becomes a question why *put* can't occur in a light verb structure where there is only **be**, or **be** plus **become**, resulting in stative or inchoative use for *put*. The same consideration applies to the case of denominals like *shelve* in (31); why can't the verb *shelve* be used in a stative or inchoative way, with **in** or **in** plus **become** only?<sup>13</sup>

As HK (1993) point out, these questions must be more or less retrieved to the idiosyncratic lexical properties of the relevant lexical items. Even so, however, we still suggest that these lexical properties be encoded in morphological ways. In the case of *put*, let's assume that, actually, it is a *bound morpheme* instead of a free morpheme, and that it must be made free via morphological affixation. Suppose that what it requires is the affixation of the morphological elements **cause**, **become**, and **be**, those that compose the light verb structure in (28). As a result, the verb *put* will have a lexical specification in Lexical Pool as below:

(33) { *put* <**cause**, **become**, **be**> }

The specification in (33) states that the verb *put* requires the affixation of three morphological elements, **cause**, **become**, and **be**, and this requirement is represented by the presence of the relevant features in the specification of *put* in (33). These features must be checked off before the verb *put* reaches Lexical Spell-Out (otherwise "lexical crash" will result), hence a light verb structure such as (28) is mandatory. In (28), *put* incorporates to the three light verbs cyclically, and checks off the features along the way. This checking process is on a par with the syntactic feature checking or agreement. Thus the construction of the light verb structure and the incorporation of the verb with light verbs in English are morphology-driven, on a par with S-Syntactic operations.

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<sup>13</sup> See HK (1993) for the observation that inchoatives are more restricted than middles in English, which we briefly mentioned in section 1.2 of Chapter 3.

As to the denominals in English like *shelve*, a similar account can be proposed. There is actually a cognitive basis for the causative/agentive use of denominals in English. As Kiparsky (1997) insightfully observes, the semantics of denominals in English has a direct bearing on the way the referents of the nouns are *canonically used* according to the social conventions. This semantics, to a great extent, entails an agentive or causing user of the referent of the noun. Suppose that this semantics somehow influences the lexical component of English, and motivates the grammar to assign the set of features <**cause**, **become**, P> (P can be either HAVE-ON or BE-IN or possibly some other prepositional predicate; see Kiparsky 1997) to a noun if it enters a syntactic configuration toward verbal use. In other words, a noun is turned into a bound verbal root before it feeds the denominalization process. Thus the lexical specification for a noun like *shelf* when it is pulled out from Lexical Pool to L-Syntax will be as follows:

(34) { *shelf* <**cause**, **become**, P> }

Again, for the features in (34) to be checked off, *shelf* must occur in a light verb structure where **cause**, **become**, and some P are present. If this sketch of the account is on the right track, it is actually the cognitive aspect in the use of denominals that attributes agentivity or causativity to them, mediated by morphological feature assignment. The formal operations are the same, though, and this account pushes us to conceive of English as a highly *agglutinating language* with respect to the formation of verbs.

In summary, we propose that the morphological character of the light verbs and the bound nature of the verbs result in the L-Syntactic light verb structures in English. To wit, everything in English is morphological and bound, which forces the light verb structures to be constructed before the verbs reach Lexical Spell-Out.

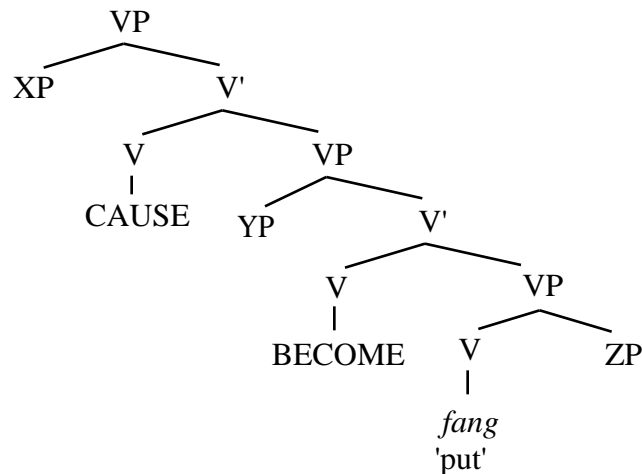
Next we look at the verb *fang* 'put' in Mandarin Chinese. In Lexical Pool, Mandarin Chinese has a similar set of lexical entries as in English, including the verb *fang* 'put', and

the light verb DO, CAUSE, BECOME, etc. Now, since the light verbs in Mandarin Chinese are purely semantic, they don't need to be processed in L-Syntax when they are pulled out from Lexical Pool. Also, due to the isolating character of Mandarin Chinese, its verbs have the status of free morphemes, and hence they pass L-Syntax without need for affixation of other morphological elements. Thus, both the verbs and the light verbs freely go through the component of L-Syntax, and trivially undergo Lexical Spell-Out, entering Lexical Array ready for S-Syntactic processing. Then Merge applies. For the accomplishment use of *fang* 'put', the following items, among others, are drawn from Lexical Pool through L-Syntax to Lexical Array:

- (35) *Items in Lexical Array for the accomplishment use of fang 'put'*  
 {... *fang*, CAUSE, BECOME, ...}

And the items in (35) compose a light verb structure as follows:

- (36) *S-Syntactic representation for the accomplishment use of fang 'put'*



Here in (36), the light verbs CAUSE and BECOME stacks on the VP that *fang* 'put' projects, with the argument they license, XP and YP. Notice that XP and YP are real

maximal projections of nominal expressions present in Lexical Array, rather than variables as in the case of English. ZP can be a locative expression introduced by the verbal element *zai* 'at', which conjoins with *fang* 'put' to form a complex predicate (cf. section 2.2.3 of Chapter 3).<sup>14</sup> The operation Move then applies to this structure, raising the verb *fang* 'put' up to BECOME and CAUSE, for semantic requirements such as Even Identification (cf. Kratzer 1996). Syntactic Spell-Out applies to the resulting structure pruning the tree branches and conflating the complex structure, and sends it to PF (and LF), as shown below:

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<sup>14</sup> In addition to a location phrase introduced by *zai* 'at', ZP actually can be a simply directional, as the following examples show:

- (i) a. ba qian fang **xia**  
Disp money put down  
'put down the money'
- b. ba qian fang **shang-qu**  
Disp money put up-go  
'put the money up [there]'

Still, ZP can be a complement that denotes the "phase" the object ends up in ("phase complements"; cf. Chao 1968), as below:

- (ii) a. ba qiang fang **diao**  
Disp gun put drop  
'drop the gun off hand'
- b. ba gou fang **kai**  
Disp dog put open  
'let the dog free'

Also, ZP can be a location phrase introduced by the element *dao* 'to', which we suppose to be a verb too:

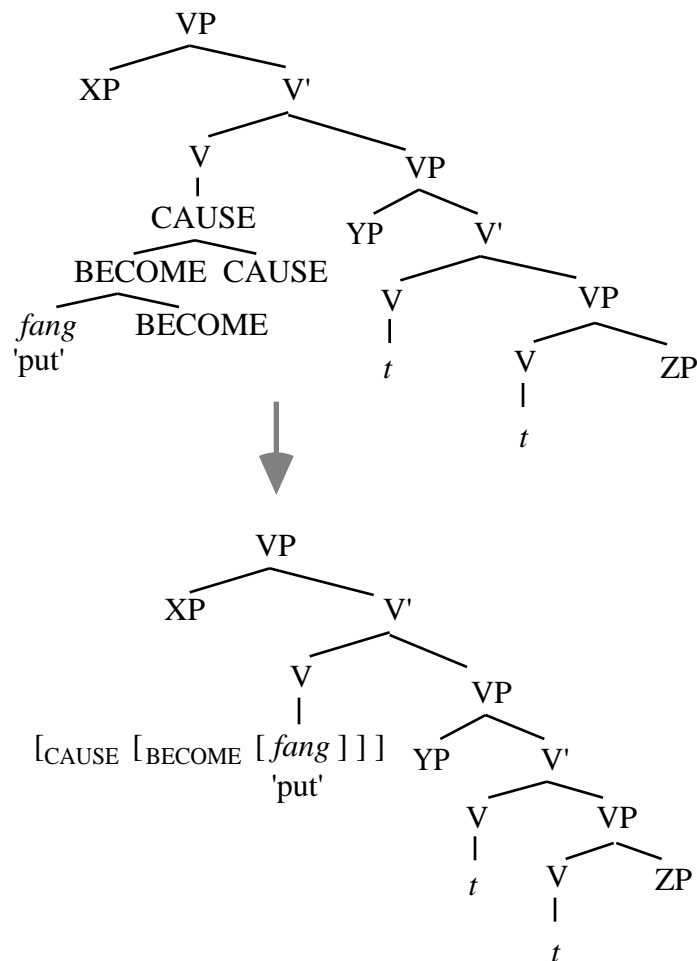
- (iii) ba shou fang **dao tou-shang**  
Disp hand put to head-on  
'put the hands on the head'

ZP can even be a pure location phrase introduced by no element:

- (iv) ba qian fang **chuang-dixia**  
Disp money put bed-under  
'put the money under the bed'

Of course, ZP doesn't need to occur, as we have shown in section 2.2.3 of Chapter 3 (in particular, the examples in (55a-b)). This indicates that the location expression is not an argument to the verb *fang* 'put'.

(37) *From S-Syntax to Spell-Out*



Of course, the light verbs drawn from Lexical Pool don't have to be CAUSE and BECOME. Nothing prevents other light verbs, like DO and HOLD, or even BECOME without the accompany of CAUSE, from being pulled out from Lexical Pool through L-Syntax to Lexical Array and participating in the construction of the light verb structure with *fang* 'put' in S-Syntax. They are all isolated free morphemes immune from morphological processes in L-Syntax. So, as we have observed, the verb *put* 'fang' in Mandarin Chinese may freely assume all other three eventuality uses, as a stative, activity, or an achievement. Thus, the

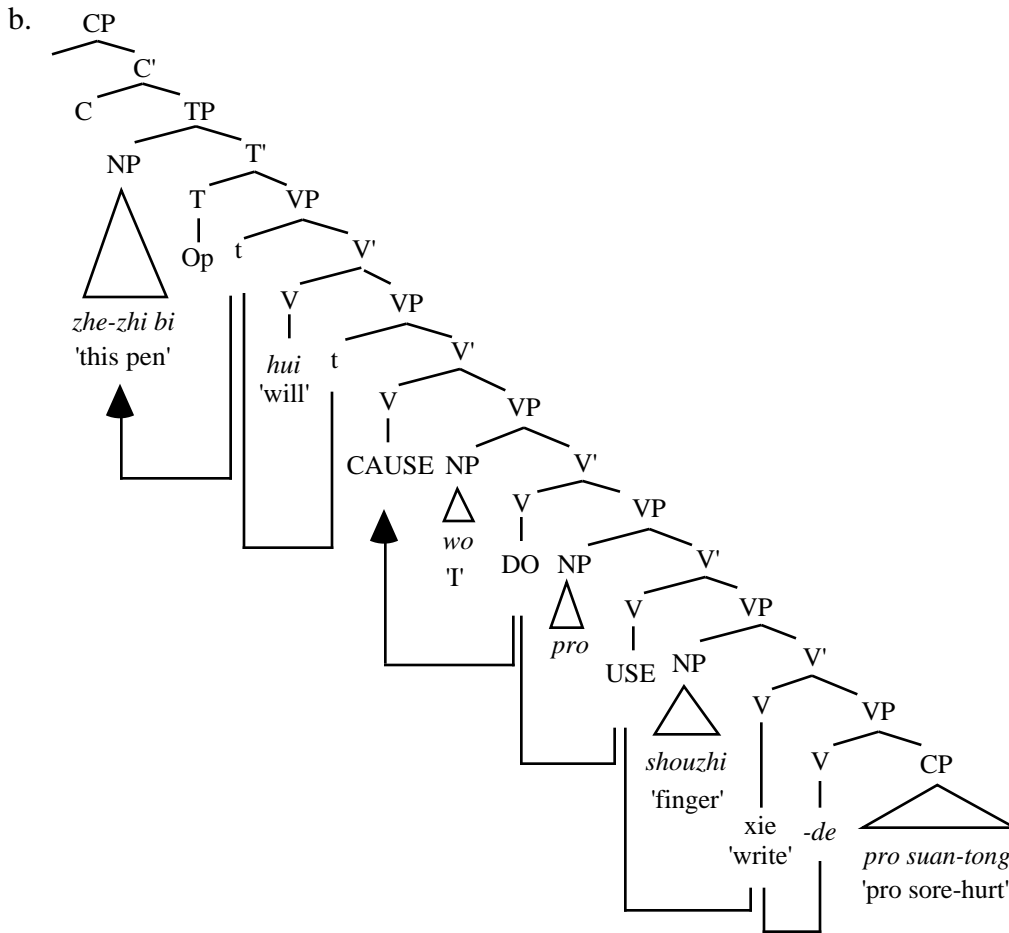
isolating character of verbs and the semantic nature of light verbs result in the S-Syntactic light verb structures in Mandarin Chinese, in sharp contrast with the case of English.

In conclusion, we propose to reduce the effects of the Lexicalization Parameter in (1) to some more fundamental aspects of the languages, that is, the morphological vs. semantic contrast of the light verbs, and the typological characteristics of verbs, in English and Mandarin Chinese. The distinction between English and Mandarin Chinese in these aspects has far-reaching consequences for the nature of phrase structures in these two languages. In fact, as we will show, the nature of the light verbs in a language determines the nature of its phrase structure. We turn to this topic in next section.

### **3. Phrase structures and arguments**

From the discussions above, it becomes clear why Mandarin Chinese is a *Davidsonian language* -- as the light verbs in Mandarin Chinese are semantic in nature and immune from morphological processes in L-Syntax, they freely pass L-Syntax and enter S-Syntax, serving as the building blocks for the phrase structures. Thus their eventuality functions are explicitly manifested in S-Syntactic representations of Mandarin Chinese sentences. This is a clear case that the nature of light verbs determines the nature of the phrase structure in a language. To cite an example from Chapter 5, we have the phrase structure in (38b), with a number of light verbs, and the logical representation in (38c), with eventuality predicates in one-to-one correspondence with the light verbs, for the Mandarin Chinese sentence in (38a) (= (42) of Chapter 5):

- (38) a.   Zhe-zhi bi hui xie de wo shouzhi suan-tong.  
          this-Cl pen will write Ext I finger sore-painful  
          'Using this pen to write made my fingers sore and hurt.'



c.  $\langle w, t \rangle \exists x [ \text{CAUSE}(x, \text{this pen}) \wedge \text{DO}(x, \mathbf{I}) \wedge \text{USE}(x, \text{this pen}) \wedge$   
 $\text{Write}(x) \wedge \text{RESULT}(x, [(\text{My}) \text{ fingers sore and hurt}] ]$

In the following discussions, we will look at the way that phrase structures in English are constructed. It will be shown that phrase structures in English demonstrate a quite different character from those in Mandarin Chinese -- they are based on the argument structure of the main verb and  $\theta$ -binding of the arguments. We will also take a look at the way that phrase structures in Japanese are constructed, and show that it is a mixture of the cases of Mandarin Chinese and English, in line with the observation in Chapter 6 that Japanese is half way between English and Mandarin Chinese with respect to unselectiveness of subject and object. After looking at the phrase structures in English and Japanese, we will have a

discussion on such typological terms as "analytic" and "synthetic" and try to provide an explication for these terms from the ways that phrase structures are constructed in Mandarin Chinese, English, and Japanese. The claim that we shall make in view of the results from all these discussions is: all languages are analytic at some level(s) in the grammar, though later L-Syntactic or S-Syntactic operations may make them synthetic.

### **3.1 Phrase structure in English and Japanese**

#### *3.1.1 Phrase structure in English*

We have seen in section 3.3.2 of Chapter 2 that denominals in English like *shelve* shouldn't have a complex structure in the S-Syntactic representation as Chomsky (1995, 1998) and HK (1997) suggest. Rather, they should be just individual verbs. In the previous section we tried to derive this result, by resorting to the morphological nature of the light verbs in English and the L-Syntactic light verb structures they compose. Thus a light verb structure in English surfaces to S-Syntax as an individual verb with an organized set of arguments. The central concern in the construction of phrase structures in English, therefore, should be the realization of the arguments in the S-Syntactic representation. The proposal that we are going to make in the following is based on this presupposition.

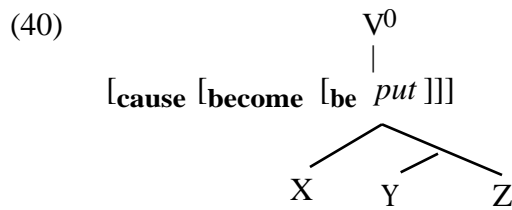
Suppose that the grammar contains some mechanism which freely projects functional projections (cf. Kayne 1994). To be specific, those functional projections are Larsonian VP shells (Larson 1988, Chomsky 1995). Furthermore, in conformity with the spirit of the postulation of the Larsonian VP shells, we make the following assumption:

(39) In English, an argument is hosted by a VP.

Suppose that a verb has two arguments in its argument structure. According to (39), the internal argument will be merged to the specifier position of the VP that the verb projects (Bowers 1993), and, for the external argument, the grammar will generate a VP shell to host

it, by having the external argument merged to its specifier position. If the verb has three arguments, one more VP shell will be generated to host the third argument, and so on and so forth. Below we will see how (39) works in English.

Once again, let's take the verb of placement *put* as an example. From (30) in the previous section we know that Lexical Spell-Out on the light verb structure in which *put* occurs yields an individual lexical item *put* as follows:



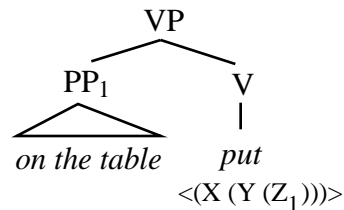
We will simplify (40) as *put*  $\langle(X (Y (Z)))\rangle$ . Here we have three argument variables, X, Y, and Z, open to interpretation. Assuming the general restriction in grammar against unbound variable in natural language, these variables must be bound, by way of  $\theta$ -binding of Higginbotham (1985). When an argumental expression is merged to the structure, it  $\theta$ -binds an argument variable in the argument structure of the verb.  $\theta$ -binding proceeds following the hierarchy imposed among the argument variables, so, in the case of *put*  $\langle(X (Y (Z)))\rangle$ , Z must be bound first, then Y, and lastly X. This guarantees the right hierarchical order of the argumental expressions. (But see next subsection for the case of Japanese, in which this condition may be relaxed.)

Supposed we have a sentence as follows:

(41) John put a book on the table.

To start with, the verb *put* and the location expression *the table* are drawn from Lexical Array.<sup>15</sup> The two elements are merged together, and project into a VP, as below:

(41) *Step 1: Merging of the locative argument*

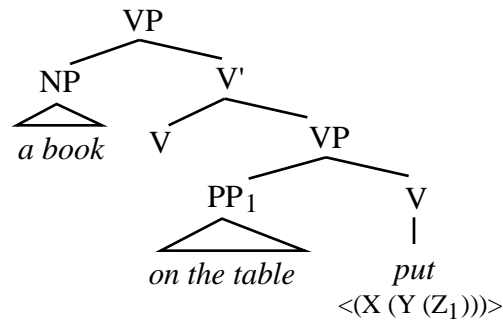


When the location argument *the table* is merged with the verb *put*, it  $\theta$ -binds the variable *Z* in the argument structure of *put*. This binding relation is marked by the same subscript on the PP and the argument variable *Z*. (Note incidentally that this location argument is realized syntactically as PP, rather than NP. We assume that this has to do with the realization of inherent Case and is related to the thematic nature of the variable *Z*.) Next, the theme argument *a book* is drawn from Lexical Array and merged to the structure in (41). Since the structure in (41) has reached to maximal projection, and since ternary branching is not permitted by grammatical principles, a VP shell must be generated with the theme argument *a book* merged to its specifier. This is shown below:

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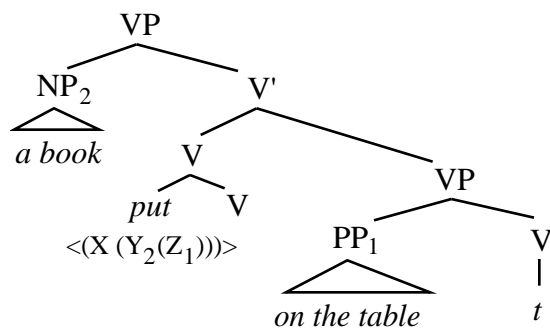
<sup>15</sup> Of course, for the NP *the table* there are two independent lexical items, *the* and *table*, in Lexical Array. These two items are drawn from Lexical Array and compose an NP via Merge. Here and in the following discussions we ignore these operations.

(42) *Step 2: Merging of the theme argument*



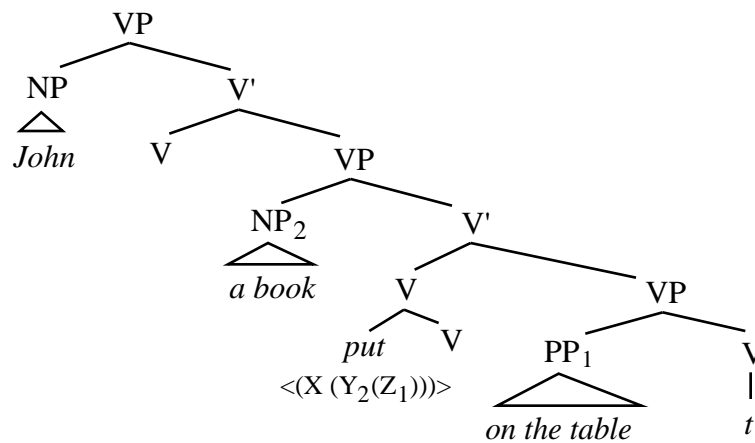
At this stage, however, the variable Y hasn't been  $\theta$ -bound by the theme argument *a book*. We assume that a local Spec-Head configuration is required for  $\theta$ -binding, on a par with feature checking or agreement in general. This requirement then motivates the verb *put* to move up and incorporate to the empty V above, for checking the argument variable Y in its argument structure. This move is shown below:

(43) *Step 3: Incorporation to V*



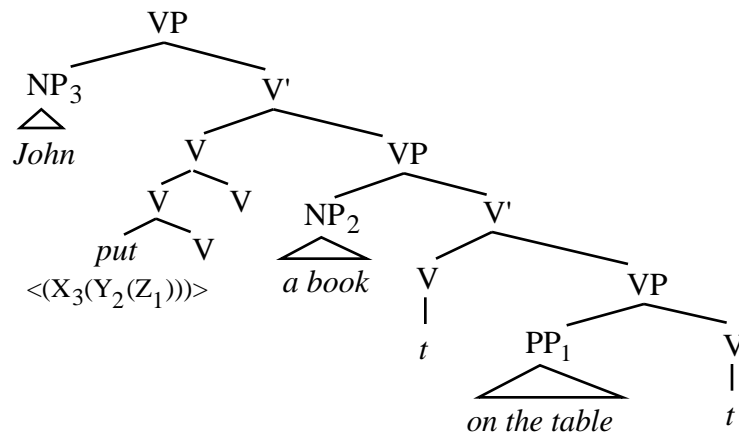
Lastly, the agent argument *John* is drawn from Lexical Array. Again, a new VP shell is generated to host this argument, as below:

(44) *Step 4: Merging of the agent argument*



The need to have the variable X  $\theta$ -bound once again motivates the verb *put* to move up, incorporating to the higher V:

(45) *Step 5: Incorporation to V*



At this stage, all variables for *put* have been  $\theta$ -bound, and the predicate is formed. There are of course higher functional categories to be merged to the structure, such as T and C, and the agent argument *John* must raise up to the specifier position of TP to satisfy the EPP requirement for the English sentences. We omit these operations here. In conformity with

Pollock (1989) and Chomsky (1995), we assume that verb movement of *put* stops at the position as in (45); it doesn't go any higher, unlike languages such as French, where verbs move to T.

Thus, we propose a theory of English phrase structure (at least an essential part of it, the predicate) based on free generation of VP shells and  $\theta$ -binding of argument variables in the argument structure of the main verb. In short, the construction of phrase structure in English is driven by the need for the argument variables in the verb to be  $\theta$ -bound. Since we assume that  $\theta$ -binding of the argument variables meets the Spec-Head locality condition (hence cyclic  $\theta$ -binding in (41-45)), what we have here is fairly much like an *agreement* operation. Understood this way, a puzzle inherent in such proposals as Kratzer's (1996) gets clarified. As we have introduced in section 4 of Chapter 2, Kratzer (1996) proposes that the external argument in English sentences is selected by an independent head, Voice, which hosts the function of agentivity, and the main verb moves up to Voice for Event Identification and takes over the external argument by the way. An important question about this proposal is that, clearly, Voice with the function of agentivity only occurs with those verbs that are already *inherently agentive* -- we cannot simply take some non-agentive verb and have the functional category Voice stacking upon it, twisting it into an agentive verb. Thus it appears that, even if there is an independent head other than the main verb that selects the external argument in an English sentence, the thematic function that this head is supposed to carry has already been in the main verb. Therefore, in English, the incorporation of the main verb to this higher head seems to us to be more for *agreement* purpose, rather than Event Identification. Now in our theory this puzzle resolves. Indeed, there is an independent head that hosts the external argument (and also other arguments) in English sentences, namely a VP shell, but the main verb moves to it to have its argument variable  $\theta$ -bound, in the way which we have just described as being fairly like agreement.

To conclude, phrase structure in English doesn't have a Davidsonian character; rather, it is very much like agreement, in terms of the structural configuration in which  $\theta$ -

binding is achieved. Again, the nature of the light verbs in English, in an indirect way though, determines the nature of its phrase structure. As the light verbs in English are morphological, they must be incorporated into the main verb and form an individual verb before they reach S-Syntax. All the arguments that they license are then encompassed into the individual verb as argument variables in the resulting argument structure. The concern to realize these arguments by way of  $\theta$ -binding therefore becomes the major driving force in the process of the construction of phrase structure. VP shells are generated to host these arguments. These VP shells constitute the main body of the phrase structures in English. Since their only function is to serve as the carrier for the arguments, they are completely devoid of semantics. This characteristic of English phrase structure arises from the lexicalization of the entire light verb structure into an individual verb, a consequence of the morphological nature of the light verbs. Thus, we once again have an instance for the claim that the nature of light verbs in a language determines the nature of its phrase structure.

### *3.1.2 Phrase structure in Japanese*

In this subsection we look at the way that the phrase structure in Japanese is constructed, again using the verb of placement *oku* 'put' as an example. We will start from the lexical items in Lexical Pool.

From section 5.2 of Chapter 2 and section 2.1 of Chapter 6, we know that Japanese exhibits unselectiveness of subject, but not object. This means that, in a Japanese sentence, there is an argument variable for the internal argument in the argument structure of the verb, but no variable argument for the external argument, which is introduced via the merging of a subject-selecting light verb. In the case of *oku* 'put', the two internal arguments, the location and the theme, are mandatory, but the external argument, namely the agent, is not. We repeat some relevant examples below ((109a-b) and (114b) of Chapter 2):

- (46) a. Haruki-wa tsukue no ue-ni issatsu no hon-o oi-ta.  
 p.n.-Top table Mod on-Dat one-CI Mod book-Acc put-Past  
 'Haruki put a book on the table.'
- b. Sono hon-ga tsukue no ue-ni oi-te aru.  
 that book-Nom table Mod on-Dat put-Ger have  
 'That book put on the table.'
- c. \*Sorera hon-wa san-ko no hako-o oi-ta  
 those boo-Top three-CI Mod box-Acc put-Past  
 'Those books put three boxes.'

To cope with these observations, we have to make the following assumptions. Just like Mandarin Chinese and English, in Lexical Pool, Japanese contains a set of light verbs. In this set, we have DO, CAUSE, EXIST, and possibly some others, which are subject-selecting light verbs, and also **become**, **be**, and possibly others, which are object-selecting light verbs. Those light verbs in the former subset are free morphemes that can surface up to S-Syntax immune from morphological operations, just like the light verbs in Mandarin Chinese, but those in the latter subset are morphologically affixal elements that must feed morphological operations in L-Syntax, just like the light verbs in English. At the starting point in Lexical Pool, these items are listed in an unorganized way, as below:

(47) *In Lexical Pool*

..... CAUSE **be** EXIST DO **become** *oku* .....

We assume that verbs in Japanese are bound morphemes, the same as verbs in English, but not to so much an extent as the English verbs. For the verb *oku* 'put', it only has the lexical specification <**become, be**>. <sup>16</sup> So the relevant lexical items are drawn from Lexical Pool, combining with each other, projecting a light verb structure in L-Syntax as below:

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<sup>16</sup> There seems to be evidence for this proposal. An interesting observation about Japanese, as compared to Mandarin Chinese, is that the internal arguments always have to be realized as such when two verbs are conjoined to form a complex verbal phrase, whereas the external arguments don't. Look at the following examples:

- (i) a. Haruki-wa kabin-o nagutte-kowasi-ta.  
 p.n.-Top vase-Acc hit-break (trans.)-Past  
 'Haruki hit the vase and broke it.'  
 b. \*Haruki-wa kabin-o nagutte-koware-ta.  
 p.n.-Top vase-Acc hit-break (intrans.)-Past  
 'Haruki hit the vase and [had] it broken.'

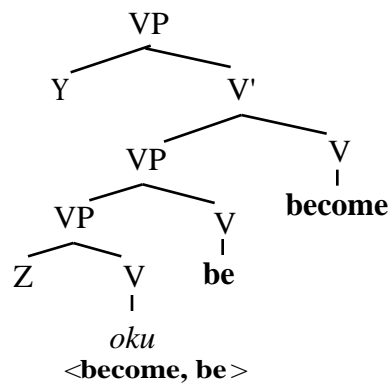
In both (ia-b), we have a serial verb structure with *-te* conjugation of the activity verb *naguru* 'hit' followed by the verb *kowasu* 'break (trans.)' or *kowareru* 'break (intrans)'. However, as shown here, only (ia) is grammatical, where the transitive verb *kowasu* 'break (trans)' is used. The interesting point in these examples is the question why (ib) is ungrammatical. This is in sharp contrast with the case of Mandarin Chinese, where sentences parallel to (ib) are perfect:

- (ii) a. Laozhang da-po huaping.  
 p.n. hit-break vase  
 'Laozhang hit the vase and had it broken.'  
 b. Laozhang ba huaping da-de po le.  
 p.n. Disp vase hit-Ext break Prt  
 'Laozhang hit the vase to the extent that the vase broke.'

In (iia-), the (resultative) verb *po* 'break' is an inchoative, and hence is equivalent to *kowareru* 'break (intrans)' in (ib).

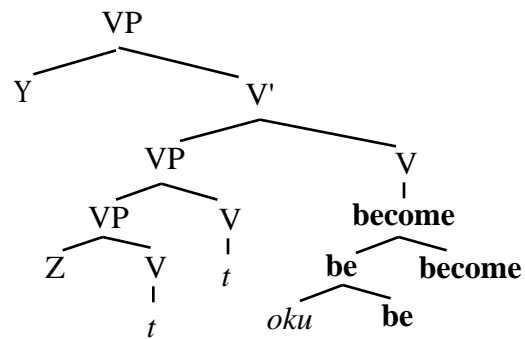
It seems that, in Japanese, verb conjunction requires the conjoining verbs to share all arguments in the same way of licensing. Thus the *-o* object in (ia) must be the internal argument for both 'hit' and 'break', and the subject must be the external argument for both of the verbs too. This requirement receives an explanation if the internal argument in Japanese is licensed via  $\theta$ -binding, while the external argument is licensed via the merger of some light verb. In (ia), the object *kabin* 'vase'  $\theta$ -binds the (internal) argument variables in the argument structures of *naguru* 'hit' and *kowasu* 'break (trans)' in an across-the-board fashion, serving as the linking for the composition of the resulting complex predicate, hence there's no problem with (ia). In (1b), however, the verb *kowareru* 'break (intrans)' doesn't have an internal argument variable to be  $\theta$ -bound. (Actually it doesn't have any inherent argument, according to the analysis we put forth in section 2.1.3 of Chapter 6.) As a consequence, there is not link that chains up *naguru* 'hit' and *kowareru* 'break (intrans)' in (ib) for the purpose of complex predicate formation. Therefore the conjunction of the two verbs in (ib) is illegitimate, giving rise to ungrammaticality. Mandarin Chinese, on the other hand, is free from such a restriction. Verbs in Mandarin Chinese don't take arguments anyway, hence the composition of complex predicate with multiple verbs is liberal, in most cases carried out by light verbs. See Y. Li (1993) and Nishiyama (1998) for the same effect in compound formation in Japanese.

(48) *L-Syntactic representation for oku 'put'*



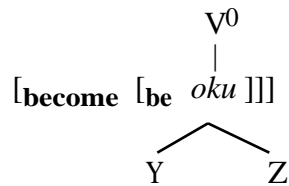
Then verb movement applies to raise *oku* 'put' up to **be** and **become**, yielding the following structure:

(49) *Incorporation in L-Syntax*



Lexical Spell-Out applies to the structure in (49), resulting in the individual verb *oku* 'put' in (50):

(50) *After Lexical Spell-Out*



We will simplify (50) as  $\textit{oku} \langle (Y (Z)) \rangle$ .

As an individual verb,  $\textit{oku} \langle (Y (Z)) \rangle$  enters Lexical Array to be drawn to S-Syntax. However, before getting to S-Syntax, there is something that makes the construction of phrase structure in Japanese somewhat complicated than the case of English. It has to do with the right order among the internal arguments. As a language permitting free scrambling of syntactic phrases, Japanese has sometimes been considered as a non-configurational language (see Saito 1985 for discussion). Thus, in the case of *oku* 'put', the following two sentences, where the only difference is the order between the accusative theme and the dative location, are both acceptable without significant difference in meaning:

- (51) a. Haruki-wa tukue no ue-ni san-satu no hon-o oi-ta.  
 p.n.-Top table Mod on-Dat three-CI Mod book-Acc put-Past  
 'Haruki put three books on the table.'
- b. Haruki-wa san-satu no hon-o tukue no ue-ni oi-ta.  
 p.n.-Top three-CI Mod book-Acc table Mod on-Dat put-Past  
 'Haruki put three books on the table.'

However, Saito (1985) has shown that the projection VP is indeed needed in the Japanese sentence, hence Japanese is not really non-configurational. Furthermore, there is evidence that, for examples like (46a-b), (46a) should be the underlying structure, and (46b) results

from scrambling of the accusative theme to the position in front of the dative location.

Consider the following two examples:

- (52) a. Haruki-wa hitotu no tukue-ni dona-hon-demo oi-ta.  
p.n.-Top one Mod table-Dat what-book-any put-Past  
'Haruki put all books on a table.'  
 $\Rightarrow$  *Unambiguous*;  $\exists > \forall$
- b. Haruki-wa dona-hon-demo hitotu no tukue-ni oi-ta.  
p.n.-Top what-book-any one Mod table-Dat put-Past  
'Haruki put all books on a table.'  
 $\Rightarrow$  *Ambiguous*;  $\exists > \forall, \forall > \exists$

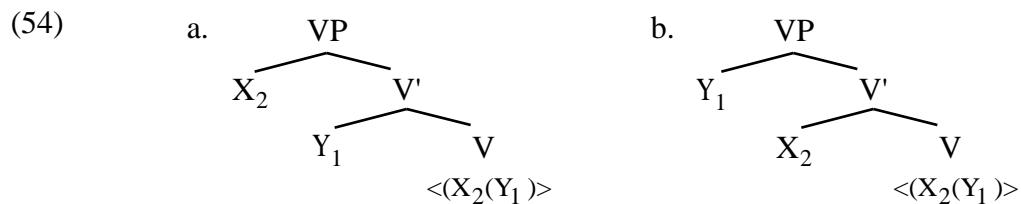
It has been observed in Japanese that scrambling induces scopal ambiguity among quantifiers (Hoji 1985, Aoun and Li 1993). As (52b), in which the theme precedes the location, exhibits scopal ambiguity, whereas (52a), in which the location precedes the theme, does not, it must be the case that (52b) results from the application of scrambling to (52a). Thus the original word order for such sentences must be such that the location precedes the theme. So (51a) should stand for the structure prior to the application of scrambling, namely, the underlying structure for (51b).

This observation nonetheless poses a problem for the argument structure we posit for *oku* 'put' derived in (47-50). If (51a) and (52a) represent the underlying structures, then the theme argument, Y, must be lower than the location argument, Z, in the light verb structure, contrary to the hierarchical ranking we posit in (47). Thus, if we insist on the L-Syntactic light verb structure in (47) (which is (partially) identical to the L-Syntactic structure for *put* in English in (28) except the order of the head), we have to figure out some way to solve the problem.

Actually we have a suggestion toward the solution. The order among the argument variables is so important in a language like English because, as we assume in (39), in English, there must be a VP as the host for each argument. Since  $\theta$ -binding of the argument variable must meet the Spec-Head configuration, the verb *put* incorporates up in a cyclic way, yielding the correct surface word order. Now, suppose we have the following assumption for Japanese:

(53) In Japanese, all arguments are hosted by the same VP projection.

The effect of the assumption in (53) is this. If (53) holds, all arguments (those that  $\theta$ -bind the argument variables in the argument structure of the verb, excluding the external argument) in a Japanese sentence are merged to the specifier position of the VP projected by the main verb. There is no need for the grammar to generate empty VP shells. As such, all arguments will be in the same Spec-Head relationship with the main verb, so that they are all local to the argument variables as far as  $\theta$ -binding is concerned. Hence the order of the arguments won't matter any more. The following diagrams demonstrate this point:

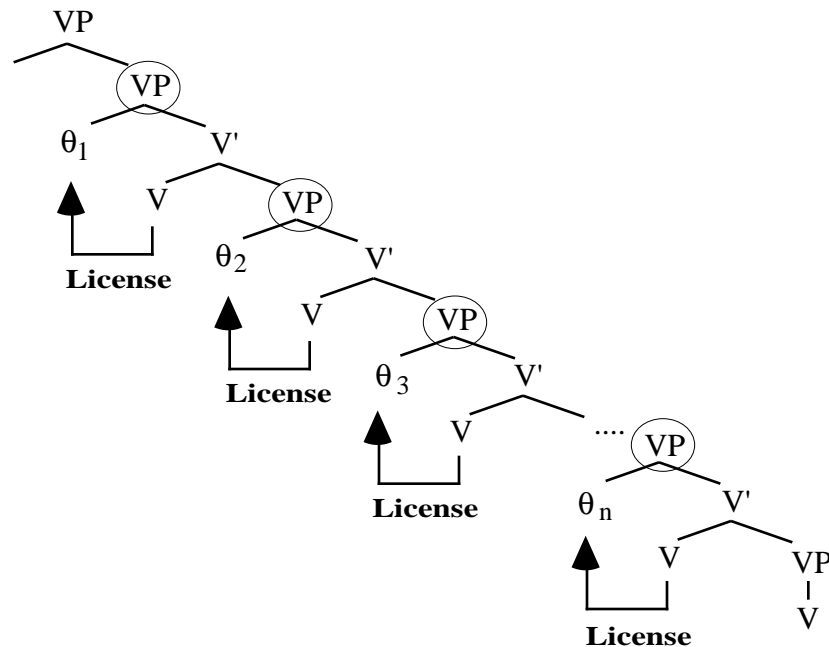


In (54a) and (54b), the verb V has two argument variables to be  $\theta$ -bound, X and Y. In these two structures they are indeed  $\theta$ -bound, though the binders are in different hierarchical orders. However, since these two arguments are both specifiers of the same VP projection and share the same Spec-Head configuration, it doesn't matter with order is exploited for the purpose of  $\theta$ -binding. Of course, there can be other grammatical principles that mandate a

particular order between the arguments in the structure, for example Case, and indeed that's what we will be resorting to. We will return to it later.

If the assumption in (53) is correct, then the phrase structures in Japanese will be somehow "compressed" in comparison to languages such as English and Mandarin Chinese, as where there are multiple-VP structures (for multiple arguments) in English and Mandarin Chinese, there are mono-VP structures in Japanese. There does seem to be grounds for such an assumption. An interesting case comes from a comparison of Mandarin, on the one hand, and Japanese, on the other. As we claimed in Chapter 5, Mandarin Chinese syntax is light verb syntax. Essentially, Mandarin Chinese sentences are constructed via complementation of VP projections, full or light. Thematic expressions are introduced into the sentence along the way, licensed directly by the verbs in a one-to-one fashion. Thus the Mandarin Chinese sentence can be represented in the following schematic structure:

(55) *The construction of phrase structure in Mandarin Chinese and the way thematic expressions are licensed*





- c. \*gogo-o taberu  
 afternoon-Acc eat  
 '(Intended) dine in the afternoon'
- d. \*zutuu-o taberu  
 headache-Acc eat  
 '(Intended) eat for headache'

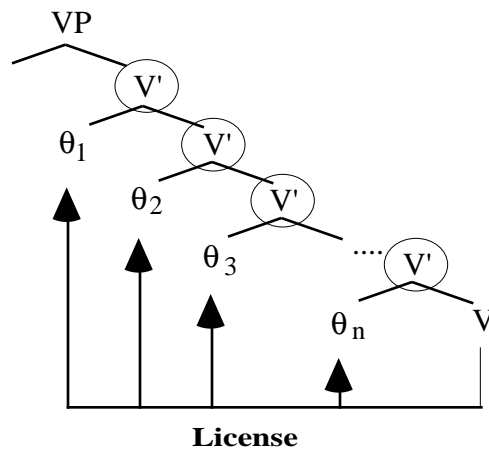
There is, however, an important observation that we should mention: all the ungrammatical examples in (57a-d) can be turned grammatical by simply changing the case markers. In all of these examples, the NPs are uniformly marked with the accusative case marker *-o*, in conformity with the examples of Mandarin Chinese in (56a-d). But if we change *-o* to some other case markers with appropriate thematic functions, the examples will become perfect:

(58) *Japanese*

- a. oogi-na tyawan-**de** taberu *(Instrument)*  
 big rice-bowl-Instr eat  
 'se a big bowl to eat'
- b. resutoran-**de** taberu *(Location)*  
 restaurant-Loc eat  
 'dine at some restaurant'
- c. gogo-**ni** taberu *(Time)*  
 afternoon-Dat eat  
 'dine in the afternoon'
- d. zutuu (no tame)-**ni** taberu *(Reason)*  
 headache (Mod reason)-Dat eat  
 'eat for headache'

Since changing the case markers makes (57a-d) grammatical, it looks as if the case markers in Japanese served the same function as the light verbs in Mandarin Chinese with respect to the licensing of thematic expressions. But of course the case markers in Japanese are not thematic role assigners (cf. Hoshi 1998 for a view close to this); they just realize the thematic roles. These case markers must themselves be licensed by the main verb. Thus, those functions that the light verbs in Mandarin Chinese assume seem to be all "compacted" into the main verb itself in Japanese, from which the different thematic roles get realized, via case markers. So we may suppose the following schematic structure for the predicate in a Japanese sentence:

(59) *The construction of phrase structure in Japanese and the way thematic expressions are licensed*



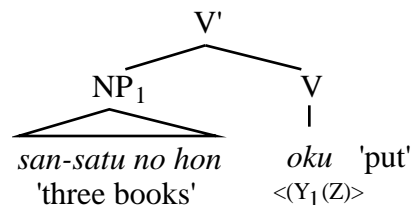
If all these are plausible, Japanese indeed exhibits a "compressed" type of phrase structure, and it will be natural to assume that all arguments (excluding the external argument) in a Japanese verb can be hosted within a single VP, as assumed in (53), rather than a different VP for each argument.

With this detour, let's come back to the S-Syntactic representation for the verb *oku* 'put'. Suppose that we have a Japanese sentence as below:

- (60) Haruki-wa san-satu no hon-o tukue no ue-ni oku.  
 p.n.-Top three-Cl Mod book-Acc table Mod on-Dat put  
 'Haruki puts three books on the table.'

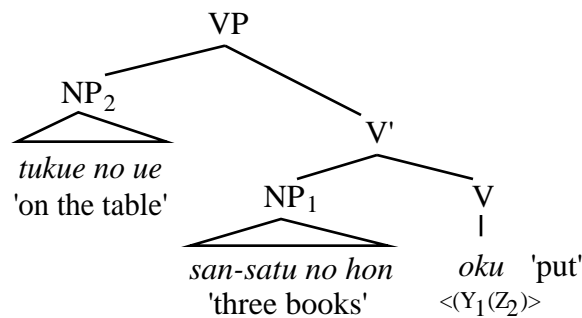
First of all, the lexical item *oku*  $\langle(Y(Z))\rangle$  is drawn from Lexical Array. There are two argument variables to be  $\theta$ -bound, so the theme argument *san-satu no hon* 'three books' and the location argument *tukue no ue* 'on the table' are drawn from Lexical Array as well and merged to *oku*  $\langle(Y(Z))\rangle$ . But since in Japanese all arguments can be hosted by a single VP, there is no need for the grammar to generate an additional VP shell, hence it doesn't matter which argument goes first for the purpose of  $\theta$ -binding of the argument variables. At this point, we assume that Case theory comes into play. Suppose that accusative case marking in Japanese requires adjacency between the argument and the verb. Thus the theme argument has to be merged first, yielding the following structure:

- (61) *Step 1 in S-Syntax: Merge*



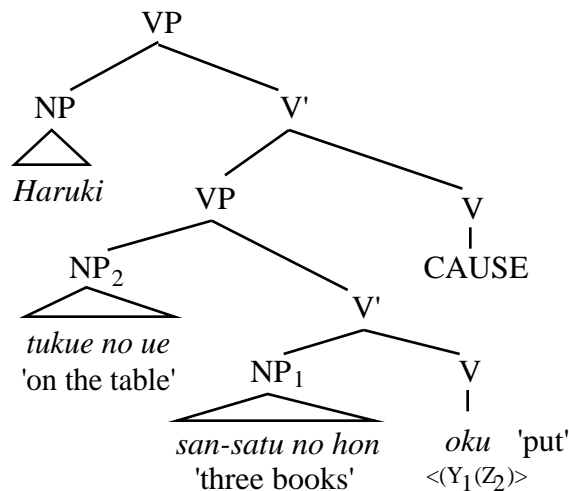
Then the location argument is merged, yielding the following structure:

(62) *Step 2 in S-Syntax: Merge*



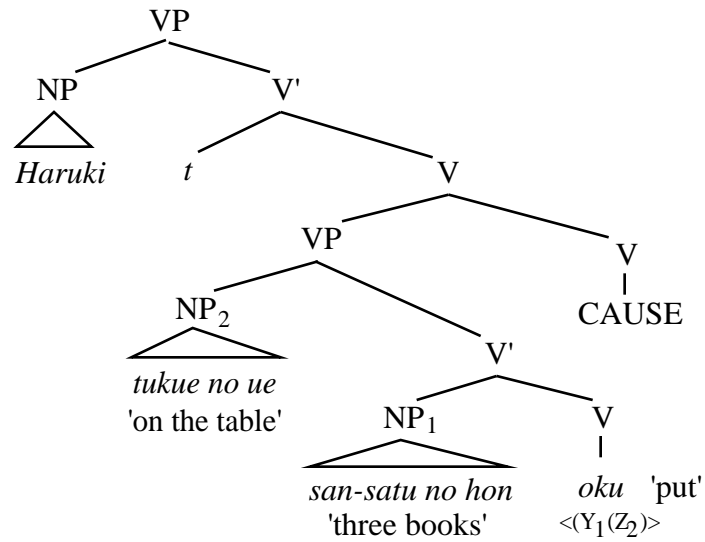
At this point, both the argument variables Y and Z are properly  $\theta$ -bound. Now the subject-selecting light verb joins the play. In the present case, the subject-selecting light verb is CAUSE. CAUSE in Japanese is a free morpheme in Lexical Pool, just like its counterpart in Mandarin Chinese. Therefore it travels all the way through L-Syntax intact to Lexical Array, and enters S-Syntax. To continue the process, CAUSE is drawn from Lexical Array and merged to the structure in (62), along with the agent argument it licenses. The result is the following structure:

(63) *Step 3 in S-Syntax: Merge*



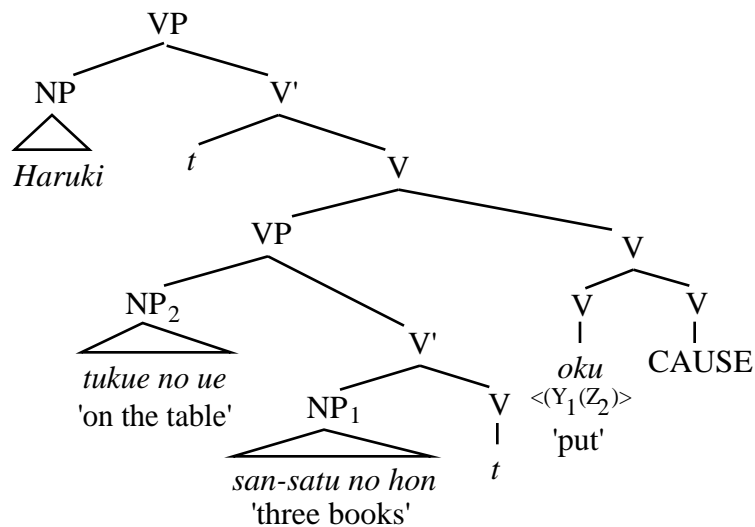
In section 2.2.3 of Chapter 6 we proposed that the complement of a light verb in Japanese is incorporated to it. The next step that carries (63) on, then, will be the following:

(64) *Step 4 in S-Syntax: Incorporation*



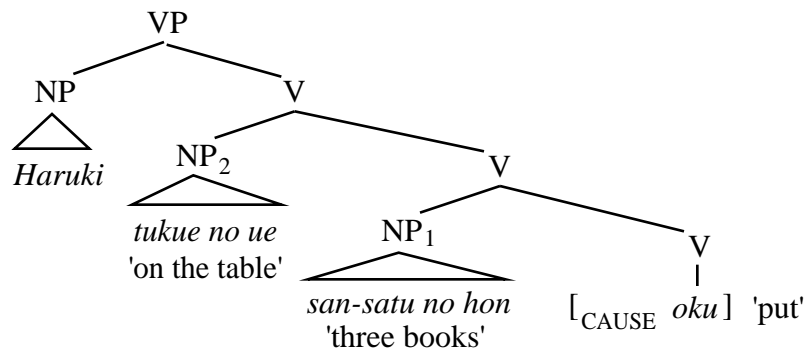
After the incorporation of the VP complement to CAUSE, the verb *oku* 'put' is incorporated to CAUSE too:

(65) *Step 5 in S-Syntax: Incorporation*



This structure then undergoes Syntactic Spell-Out and is sent to PF, yielding the following surface structure (higher functional projections such as T and C are omitted):

(66) *After Syntactic Spell-Out*



It is in this structure that Case is realized. The arguments in this structure may undergo scrambling (probably in PF), giving rise to different word orders among the arguments.

To conclude the discussion on the construction of phrase structure in Japanese, it appears that there are several major differences that demarcate Japanese from languages like

Mandarin Chinese (and English) -- that a single VP can host more than one arguments, and that a complement is incorporated to the light verb that takes it. These factors contribute to the shaping of phrase structure in Japanese, and, metaphorically speaking, make it "compressed" compared to the phrase structure in Mandarin Chinese and English. These factors may be reduced to more fundamental grammatical characters in Japanese. We will leave them to future researches.

### **3.2 Explicating analyticity and syntheticity**

In this chapter we have seen how the grammar constructs a phrase structure for a predicate from an underlying eventuality structure in Mandarin Chinese, English, and Japanese. Though many questions are left unexplored, in particular those related to Case, we believe that we have approached some fundamental aspects of the phrase structures in these languages, and demonstrated how they should be looked at. To draw an end, we would like to briefly address a question related to the typology of languages. Diversity among natural languages, particularly in their phrase structures, has been one of the central questions in the pursuit for an understanding of UG (cf. Fukui 1995, Fukui and Takano 1998). Phrase structures in natural languages may differ in the ways that the morphological elements compose syntactic words. Thus, there are analytic (isolating) languages, where a morpheme constitutes a word, such as Mandarin Chinese and Vietnamese; there are also synthetic (agglutinating) languages, where several morphological elements constitute a syntactic word, such as Turkish and Japanese; furthermore, there are inflectional (fusional) languages where, though it appears that several morphological ingredients can be found in a syntactic word, no individual morphological form can be explicitly discerned in the composition of the syntactic word, as the case of Latin and Sanskrit. (For an introduction and relevant references on these terms, see Comrie 1989, Malmkjaer 1991, Crystal 1997, among many others.) In the generative literature, Baker (1988a, 1996) conducts an in-depth investigation on polysynthetic languages, and manages to decompose the surface synthetic

forms of sentences into underlying analytic syntactic representations. From his analysis, Baker (1988a) postulates the now widely known hypothesis, UTAH (Baker 1988a: 46):

(67) *Uniformity of Theta Assignment Hypothesis (UTAH)*

Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-structure.

One of the important consequences from UTAH is that the sentences in all natural languages must be analytic in the D-structural representation, where all thematic elements are isolating. It is later syntactic operations, such as incorporation, that make the phrase structures in a language synthetic. However, in view of the discussions on Mandarin Chinese, English, and Japanese in this thesis, UTAH appears to be too restrictive. We can in fact postulate a more general corollary, stated below:

(68) *Corollary on Analyticity of Phrase Structure (CAPS)*

All natural languages are analytic at some grammatical level or levels. The grammatical level or levels at which a language exhibits analyticity is determined by the nature of its light verbs.

Let's examine the cases of Mandarin Chinese, English, and Japanese and see how CAPS gets inferred from them. Usually English and Mandarin Chinese are considered as analytic languages (though English may be a little more synthetic than Mandarin Chinese -- there are productive inflectional (though impoverished) and derivational morphology in the word formation in English). However, these two languages are analytic at different grammatical levels. In the case of English, the analytic part of the sentence lies in the component of L-Syntax, where light verbs with specific thematic functions build on each other and form a light verb structure, the basis for the S-Syntactic representation of the sentence. Though

there can be multiple-VP structures in the S-Syntactic representation for English sentences, those VPs are merely shells without thematic load. Mandarin Chinese, on the other hand, has its analyticity realized in the component of S-Syntax. All its light verbs are independent, morphology-free items and don't compose light verb structure in L-Syntax. Rather, they go directly to S-Syntax, build sentence structures, and consequently embody the Davidsonian character of the sentences. S-syntactic incorporation of the main verb to the light verbs, nonetheless, disguises the S-Syntactic analyticity of Mandarin Chinese sentences, and makes them synthetic. Japanese exhibits an even more interesting type of analyticity, as its "splits" its analyticity across two grammatical levels, L-Syntax and S-Syntax. Under our analysis, arguments in the Japanese sentences are introduced into the structure by light verbs. However, in Japanese, those light verbs that introduce internal arguments are morphological, whereas those that introduce external arguments are semantic. This mixture of two kinds of light verbs in Lexical Pool leads Japanese to a situation in which arguments are introduced at two distinct grammatical levels, giving rise to split analyticity. We summarize all these in the below table:

<i>Language</i>	<i>L-Syntax</i>	<i>S-Syntax</i>	<i>At Spell-Out</i>
<i>Mandarin Chinese</i>	N.A.	Analytic	Synthetic
<i>English</i>	Analytic	Synthetic	Synthetic
<i>Japanese</i>	Partially analytic	Synthetic & analytic	Synthetic

As shown in the table, all the three languages manage to become synthetic at the output level of overt syntax, via verb movement.<sup>17</sup> But they exhibit analyticity of their phrase structure at different grammatical levels. This diversity, as we have shown, can be accounted for in

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<sup>17</sup> We can well imagine about languages which remain analytic throughout the derivation. Taiwanese is a case fairly close to that. From the discussion in section 4.2 of Chapter 5, we learned that Taiwanese typically realizes the subject-selecting verbs via lexical spell-out, rather than incorporation of the main verb to them. As a consequence, Taiwanese appears to be more analytic than Mandarin at the output level of derivation (cf. Cheng et al 1997).

terms of elementary grammatical factors, primarily the nature of the light verbs in the language. If all these are on the right track, our analyses demonstrate that the fundamental typological variations among languages can be captured in grammatical theory, in an empirical and substantive way.

#### **4. Concluding remarks**

In this thesis we discussed a wide range of phenomena, and argued that the nature of the phrase structure in a language is correlated to the nature of the light verb in that language. Also, in the discussions, we approach such typological notions as "analytic" and "synthetic". I believe that some of the proposals in this thesis have captured important aspects of the phrase structures in natural languages, which can serve the basis for further grammatical research on the typology of languages. We see that different languages may have very different properties and exhibit very distinct characteristics and grammatical behaviors. A satisfactory parametric theory on linguistic variations, therefore, necessarily involves complex sub-theories and account for idiosyncratic properties of languages. I hope that this thesis can contribute to that theory, and I hope that this thesis can be a work that motivate the reader to think more on the diversity among languages and the underlying grammatical principles that stand behind it.