

2') [s[sNP1 V (NP2)] [v_PDuration]] -- SSH

3') [sNP1 [v_P V (NP2) Duration]] --CH

Closely related to the issue of the distribution of duration phrases is the interpretation of duration phrases. Essentially, duration phrases have two types of interpretations (see Ernst 1987 and the references cited there): duration since completion of an event (abbreviated as SCE duration, following Ernst) such as (1) and the duration of an event⁵ (Event duration) such as (4).

- 4) - \ ✓ ✓ ✓
 Ta kan wo hen jiu.
 he look me very long
 'He looked at me for a long time.'

The SSH claims that the difference in interpretation is the result of difference in structures. A duration phrase in structure (2') is interpreted as an SCE duration; whereas a duration phrase in structure (3') is interpreted as an Event duration. Namely, within this hypothesis, duration phrases can occur in either structure (2') or structure (3'). But a duration phrase in (2') is interpreted as SCE duration; the duration phrase in (3') is interpreted as Event duration. The different structures (2') and (3') dictate the interpretation of duration phrases.

In contrast, the CH allows only one structure (3') for duration phrases. The duration phrase in this single structure may have either SCE duration or Event duration interpretation (or both interpretations), depending on the semantic compatibility of these duration phrases with other constituents in the VP. That is, within the CH, the difference in interpreting duration phrases does not lie in the difference in syntactic structures but in semantic compatibility between duration phrases and other elements in the VP.

In this paper, we want to make two claims. The first claim is that both (2') and (3') are possible structures for duration phrases, no matter whether the duration phrase is interpreted as SCE or Event duration. Neither the SSH nor the CH is sufficient to account for the distribution of the duration phrases. The SSH cannot account for the fact that Event duration phrases do occur in structure (2') and SCE duration phrases do occur in structure (3') and the CH cannot account for the fact that both SCE and Event duration phrases do occur in structure (2'), as well as in structure (3'). The structures (2') and (3') must both be available for an duration phrase.

Our second claim concerns the interpretation of duration phrases. We propose that the interpretation of duration phrases is sensitive to the types of cooccurring verbs as proposed by Vendler (1967), which is modified and applied to Chinese by Tai (1984). Moreover, we show that structural differences in duration phrases result in differences in interpretations, although such structural differences are not the structural contrast given in (2') and (3'). Rather, the relevant structural difference lies in whether the duration phrase is in postverbal or preverbal position. We show that the form [Numeral + Time word] can function as a temporal phrase in preverbal position. This recognition makes it possible to state that the interpretation of duration phrases is always sensitive to the verb typology proposed by Vendler and Tai. We articulate and justify these two claims in Sections 1. and 2. respectively.

1. Distributions

The SSH states that the duration phrase in structure (2') can only have an SCE duration interpretation and the duration phrase in structure (3') has an Event duration interpretation:

The SSH:

- 2') [s [sNP1 V (NP2)] [v_PDuration]] --SCE duration
 3') [s NP1 [v_P V (NP2) Duration]] --Event duration

In contrast, the CH claims that structure (2') does exist. The duration phrase in structure (3') alone has possible interpretations, SCE duration and Event duration:

The CH:

- 2') *[s [sNP1 V (NP2)] [v_PDuration]]
 3') [s NP1 [v_P V (NP2) Duration]] --SCE, Event Durat

We argue in this section that an SCE duration phrase occur in structure (2') and (3') (Section 1.1.). An Ev duration phrase can also occur in structure (2') and (3') (Section 1.2.).

- 2') [s [sNP1 V (NP2)] [v_PDuration]]-SCE, Event Durat
 3') [sNP1 [v_P V (NP2) Duration]] --SCE, Event Durati

1.1. SCE duration phrases

In this section, we show that structures (2') and (3') must both be possible for SCE duration phrases. As seen in the previous section, the structure of SCE duration phrase is controversial: the SSH requires the SCE duration phrase to occur in structure (2') but the CH requires this duration phrase to occur in structure (3'). We will show that neither the SSH and the CH is sufficient to account for the distribution of the SCE duration phrases. The arguments of either hypothesis only show the existence of one structure but do not actually argue against the co-existence of the other structure. Furthermore, there is evidence arguing the existence of both of the structures in (2') and (3').

We first briefly summarize the previous arguments for and against the SSH and the CH (Section 1.1.1.). Since there have been direct arguments for the existence of the structure derived by the CH (henceforth referred to as Complement Structure), we concentrate on establishing the existence of the structure offered by the SSH (henceforth referred to as the Predicate Structure as in 2'). We show in Section 1.1.2. that the arguments against the SSH do not in fact argue against the existence of the Predicate Structure. Then, we show in Section 1.1.3 that the distribution of adverbials and the scope of negations argue for the existence of the Predicate Structure. The existence of such a structure is also manifested in the positions of boundary pauses. Therefore, we conclude in section 1.1.4. that the Predicate Structure in (3'), as well as the Complement Structure in (2') must both be possible for SCE duration phrases.

1.1.1 Previous arguments for/against the SSH

In this section, we briefly recapitulate the previous arguments for the SSH and then summarize the arguments against the SSH.

According to Ernst (1987 and the references cited there, particularly Teng 1975), there are essentially two arguments for the SSH (SCE duration phrase occurring in the Predicate Structure 2').⁶ First, the existence of sentences like (5) indicate that (1) can be derived from (5) through the deletion of you:

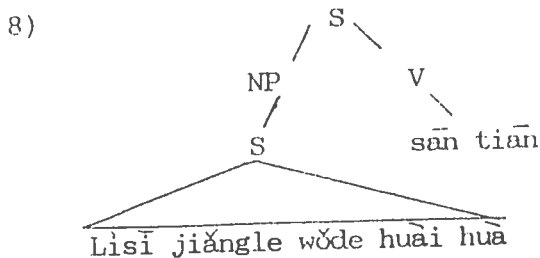
- 5) ✓ / ✓ / ✓ - /
 Wo lai Meiguo you san nian le.
 I come America have 3 year ASP
 'It has been three years since I came to America.'

The potential problem of how an NP can be a VP is avoided.

The second argument for the SSH comes from the interpretations for (6-7):

- 6) Lisi jiāng le sān tiān wǒde huāi huà.
 talk ASP 3 day my bad word
 'Lisi spoke ill of me for three days.'
- 7) Tā sān nián (dōu) měiyǒu lái Měiguó.
 he 3 year all not come America
 'He hasn't been to America in three years.'

The underlined duration phrases in (6-7) cannot be interpreted as SCE duration phrases but must indicate the duration of an event. If SCE duration phrases are generated as the predicate of a sentential subject, the phrase of SCE duration interpretation follows, since we cannot have a VP inside a subject. For example, sentence (6) cannot be derived from the structure in (8):



This argument is not only an argument for the SSI but also an argument against the CH where the SCE duration phrase must occur in a Complement Structure (3').

There are three arguments against the SSH and for the CH, as given in Ernst (1987). The first argument involves the unacceptability of sentences like (9).

- 9) *Zhīmíng dǎ diànhuà gěi péngyǒu hěn jiǔ le.
 hit phone to friend very long PAR
 'It's been a long time since Zhiming called friends.'

If hén jiu can be a VP predicated of the sentential subject (the Predicate Structure), there is no reason why (9) should be unacceptable. However, if we adopt the proposal that hén jiu is generated as a complement within VP, coupled with the postverbal constraint proposed by Huang (1982) or Li (1985) which basically prohibits two constituents cooccurring postverbally within a VP, the unacceptability of (9) would be accounted for.

The second argument against the SSH involves instances with verb reduplication as in (10).

- 10) Zhiming dá diànhuà gěi péngyǒu, dǎle hén jiu le.
hit phone to friend hit-ASP very long ASP
'It's been a long time since Zhiming called his friend.'

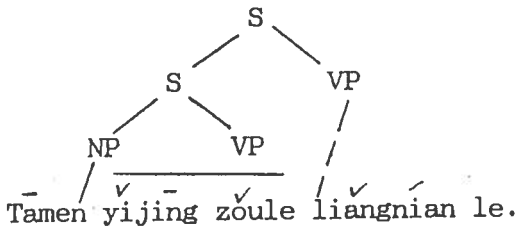
It is not clear how the acceptability of (10) should be accounted for within the SSH, which analyzes the SCE duration phrase hén jiu as the predicate of a sentence containing sentential subject. If hén jiu is the predicate of the sentence, it is not clear what the status of the verb within the aspect marker dǎle is. However, if hén jiu is a phrase within the VP, dǎle can be the main verb. Sentence (10) is therefore acceptable by the CH since the duration phrase is in complement position.

The third argument against the SSH is based on the distribution of adverbs like yǐjīng 'already' and cái 'only then' in (11).

- 11) Tāmen yǐjīng zǒule liǎng nián le.
they already left two year ASP
'They have been gone for two years already.'

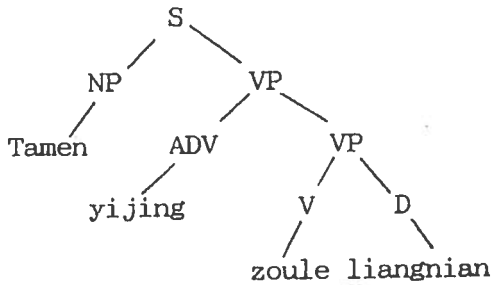
Such adverbs as yǐjīng must c-command the constituents that they have scope over. The SSH says that tāmen yǐjīng zǒule is a sentential subject. Therefore, yǐjīng cannot c-command outside the sentential subject and have scope over sān nián

11a)



On the other hand, the CH allows the adverbial yijing c-command and therefore have scope over the VP containing and the duration phrase.

11b)



Crucially, sentence (11) has the interpretation that yiji has scope over liang nian. Therefore, the structure in (11) is the correct structure, i.e., the duration phrase is the main predicate.

As for the lack of SCE duration interpretation sentences such as (6-7), which is an argument for the SSH, is dismissed by Ernst (1987) on the claim that the unavailability of a certain interpretation need not be due to lack of a certain structure but may be due to some semantic compatibility properties. (We postpone the discussion semantic compatibility until Section 2.)

In brief, the lines of arguments in Ernst (1987) are (i) that sentences such as (9-11) cannot be accounted for by the SSH and (ii) that the sentences in (6-7) need not be accounted for by the SSH. Therefore, the SSH cannot be correct and the CH should be adopted.

Recapitulating, there is evidence that the Complement Structure by the CH must exist, as seen in the distribution of adverbials such as yíjīng (11) and the acceptability of sentences with verb reduplication (10). In contrast, it seems that no convincing evidence has been proposed for the existence of the Predicate Structure by the SSH. Below, we argue for the existence of the Predicate Structure. We show that the arguments against the SSH do not actually argue against the existence of the Predicate Structure allowed by the SSH (Section 1.1.2.). In fact, there is evidence that the predicate Structure exists (Section 1.1.3.).

1.1.2. Re-evaluation

We start with the argument concerning the fact illustrated by (11): the distribution and interpretation of adverbials such as yíjīng 'already,' cái 'then.' Closer examination of the lines of this argument suggests that this argument in fact is not an argument against the existence of the Predicate Structure offered by the SSH. It only points out the existence of the Complement Structure provided by the CH. The essence of the argument based on (11) indicates that sentences of the form in (11) cannot be accounted for by the SSH. However, if we allow the Complement Structure to exist, as well as the Predicate Structures, sentence (11) can still be accounted for.

In fact, if we want to rule out the possibility of the Predicate Structure offered by the SSH, we should argue that sentences like (12) are unacceptable, based on the fact that adverbials occur before VP because of their being V_I modifiers.

- 12) Tamen zóule yíjīng liang nian le.
'They have been gone for two years.'

- 13a) Ta yijing xiang ta *yijing jie le qian.
 cai *cai
 zhishao *zhishao
 jiu *jiu
 he from him borrow ASP money
 'He already/only/at least/only borrowed money from him.'
- b) *Ta jie yijing/cai/zhishao/jiu qian
 he borrow money
- b') Ta yijing/cai/zhishao/jiu jie le qian.

Examples in (13) illustrate the fact that adverbials like yijing 'already,' cai 'only,' zhishao 'at least,' jiu 'only' basically occur before a VP.⁸ These adverbials therefore cannot occur after the verb of the sentence. If zoule in (11) were the verb of the whole sentence, the adverb yijing should not occur after the verb. Sentence (12) should be unacceptable; however, sentence (12) is as good as sentence (11). The acceptability of (12) therefore undermines the argument that sentence (11) is a counterexample to the claim that the duration phrase occurs in a Predicate Structure. Indeed, the acceptability of (12) argues for the existence of Predicate Structures offered by the SSH, as we will discuss in more detail in the next section.

The argument against the SSH concerning (10), repeated below, again is not a real argument against the existence of the Predicate Structure proposed by the SSH:

- 10) Zhiming da dianhua gei pengyou, dale hen jiu le.
 hit phone to friend hit very long PAR
 'It's been a long time since Zhiming called friend.'

the adverb in (14) unambiguously indicates that the structure is the Predicate Structure. This amounts to saying that is not a counterexample to the existence of the Predicate Structure offered by the SSH.

In brief, although the facts concerning (9-11) have been proposed to be arguments against the SSH, none of the arguments really argue against the existence of the Predicate Structure. The argument based on (9) is not convincing due to the acceptability of the related examples such as (14). Arguments based on (10) and (11) only argue for the existence of Complement Structure by the CH. They do not argue against the existence of the Predicate Structure. In fact, the acceptability of (14) and (12) actually argues for the existence of the Predicate Structure. We turn to further arguments for the existence of the Predicate Structure next.

1.1.3. The existence of the Predicate Structure

In the previous section, we have seen some instances which indicate the existence of the Predicate Structure. In particular, the distribution of adverbials in sentences (12) and (14), repeated below, indicates that the duration phrase is the predicate of the whole sentence, instead of the verb zoule/da dianhua. The verbs are the predicates of sentence subjects.

12) [Tamen zoule] yijing liang nian le.
'They have been gone for two years.'

14) [Zhiming da dianhua gei pengyou (a)], yijing jiu le.
hit phone to friend PAR already
'It has already been a long time that Zhiming called his friend.'

Moreover, the existence of a pause preceding the duration phrase indicates that there is a subject/predicate boundary preceding the duration phrase. Namely, the duration phrase is the predicate, i.e., the Predicate Structure.

In addition to the distribution of adverbials and the existence of pauses, there is further syntactic evidence arguing for the existence of the Predicate Structure. We discuss two such cases below; one regarding the scope of negation and the other regarding movement of constituents.

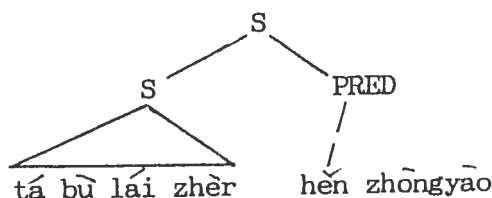
First we note that, just as adverbials such as 'already' only have scope over elements c-commanded by the adverbials, negation can only have scope over the elements c-commanded by the negation word.

16a) $\bar{t}a \text{ } \bar{b}u \text{ } \bar{l}ai \text{ } \bar{z}h\bar{e}r, \check{h}en \text{ } \check{z}h\bar{o}ng\check{y}ao.$
 he not come very important
 'It is important that he does not come here.'

b) $\bar{y}a\bar{o}sh\bar{i} \text{ } \bar{t}a \text{ } \bar{m}ei \text{ } \bar{l}ai, \check{j}iu \text{ } \check{h}en \text{ } \check{h}ao.$
 if he not come then very good
 'If he did not come, then it was good.'

In (16a), the negation word bù 'not' can only have scope over 'come here'. It cannot have scope over 'important' because 'not' does not c-command 'important'.

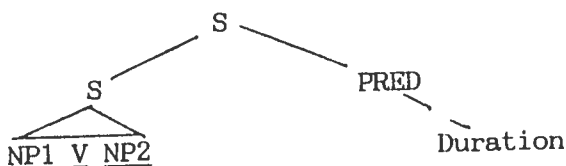
17a)



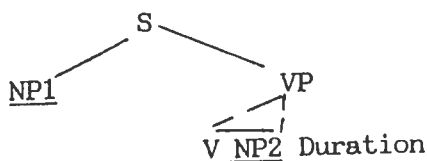
Bù in (17a) does not c-command the predicate 'very important.' Therefore, sentence (16a) cannot mean 'That he comes here is not important.' Similarly, the negation word mei in (16b) only has scope over the elements that it c-commands.

Secondly, adopting either the Predicate Structure or the Complement Structure has very different predictions with respect to the ability of certain elements to move. It has been a standard assumption in the tradition of Generative Grammar that only constituents can be moved. Therefore, for a string [NP1 V (NP2) Duration], adopting the Predicate Structure [NP1 V (NP2)] duration] means that [NP1 V NP2] can move as a whole because the elements [NP1 V NP2] form a constituent S as in (19a). In contrast, adopting the Complement Structure [NP1 [V (NP2) duration]] predicts that [NP1 V NP2] cannot be moved since they do not form a constituent as in (19b):

19a)



b)



Therefore, the acceptability of a sentence with [NP1 V NP2] in a dislocated position would argue for the existence of the Predicate Structure in (19a). Indeed, we do have acceptable sentences of this type.

- 20) Ta lai Meiguo, wo tingshuo yijing henduo nian le.
 he come America I hear-say already many year PAR
 'That he came to America, I heard that (it) has
 already been many years.'

The acceptability of (20) therefore argues for the existence of the Predicate Structure.

Recapitulating, four types of structures have been presented that require the existence of the Predicate Structure.

- 21a) the distribution of adverbials such as (12) and (14)
- b) the existence of a pause before the duration phrase as in (14)
- c) duration phrases outside the scope of negation words such as (18)
- d) [NP1 V NP2] in [NP1 V NP2 Duration] bear constituent, based on the movability of such string as in (20)

Consequently, we claim that the Predicate Structure must be available.

1.1.4. Coexistence of the Predicate Structure and the Complement Structure

The previous discussions show that the arguments against the SSH do not actually argue against the existence of the Predicate Structure. Instead, there is syntactic evidence that the Predicate Structure must be available. On the other hand, examples such as (11) concerning the distribution of adverbials indicate that the Complement Structure must also be available. Instances of structures containing reduplication of verbs as in (10) also argue for the existence of the Complement Structure. This amounts to saying that the Predicate Structure and the Complement Structure must both be available. Therefore, a surface form [NP1 (NP2) Duration] is ambiguous in its structure.

22a) [NP1 [V (NP2) Duration]] --the Complement Structure

b) [[NP1 V (NP2)] Duration] --the Predicate Structure

The availability of both structures in (22) is manifested in various syntactic structures. We illustrate this structural ambiguity below.

First, VP-modifying adverbials such as yíjīng and cái must occur before the VP. Such adverbials can occur in two positions in the form [NP1 V (NP2) Duration]: before the V according to (22a) or before Duration according to (22b).¹⁰

- 23a) Ta yíjīng [laile liang nian le].
 he already came two years PAR
- b) [Ta laile] yíjīng liang nian le.
 he came already two years PAR

Sentence (23b) is in contrast to (24b) with the form [NP1 V NP2] where the adverbials can only occur in preverbal position.

- 24a) Ta yíjīng laile Meiguo.
 he already came America
- b) *Ta laile yíjīng Meiguo.
 he came already America

Sentence (23b) is acceptable because liang nian 'two years' is the predicate, according to the Predicate Structure. However, the only possible verb in (24) is lai. Therefore, sentence (24b) is unacceptable.

Secondly, the availability of two structures in (22) allows negation to occur in different positions.

- 25a) [Ta mei/bu lai] yíjīng liang nian le.
 he not come already two year PAR
 'It's already been two years since he stopped coming.'
- b) [Ta lai] hai mei liang nian.
 he came yet not two years
 'It has not been two years since he came.'

The structure in (22b) allows two possible positions for the negation word: either before the predicate of the embedded clause in subject position as in (25a) or before the predicate of the main clause as in (25b). However, the scope of negation is different from these two sentences since their structures are different.

Moreover, we expect a negation word to occur before the V in (22a), as in (26b) below. However, following the observation by Huang (1984) and Lee (1986) that a numeral phrase cannot occur within the scope of negation (26a),¹¹ we also find that sentence (26b) is unacceptable with the duration phrase (a numeral phrase) within the scope of a negation word.

- 26a) *Ta mei mai liangben shu.
 he not buy two books
 'He did not buy two books.'
- b) *Ta yijing mei lai liang nian le.
 he already not come two years
 'He has not been here for two years.'

The position of yijing in (26b) indicates that the duration phrase in this sentence is not the main verb but is within the VP, an instance of the Complement Structure (see note 10). Therefore, the duration phrase is within the scope of negation. The unacceptability of sentence (26b) therefore parallels to the unacceptability of (26a).

Thirdly, the availability of two structures in (22) is further supported by the possible positions of pauses. A sentence with the form (22a) has a major pause before the verb but a sentence with the form (22b) has a major pause before the duration phrase.

- 27a) Ta a, yijing laile liang nian le.
 he PAR already came two years PAR
- cf. a') ?? Ta yijing laile a, liang nian le.
 he already came PAR two years PAR

- b) Ta laile a, yijing liang nian le.¹²
 he came PAR already two years PAR

Consequently, we conclude that both the Predicate Structure and the Complement Structure must be available for the SCE duration phrase. Next, we show that the other type of duration phrase, the Event duration phrase, also occurs in both the Predicate Structure and the Complement Structure. Therefore, both structures are available for duration phrases in general.

1.2. Event Duration Phrases

In the previous section, we showed that SCE duration phrases can occur in both the Predicate Structure and the Complement Structure based on the following five criteria:

- | The Predicate Structure
[[NP1 V (NP2)] duration]] | The Complement Structure
[NP1 [V (NP2) duration]] |
|---|---|
| a. Position of adverbials
[[NP1 V (NP2)] ADV duration] | [NP1 ADV [V (NP2) duration]] |
| b. Verb reduplication
impossible | Verb reduplication possible |
| c. Scope of negation (the underlined elements are within scope of negation)
[[NP1 NEG <u>V (NP2)</u>] duration] | *[[NP1 NEG <u>[V (NP2) duration]</u>]
(the indefinite duration phrase cannot fall within the scope of negation) |
| d. Major boundary pause
possible before the duration phrase | Major boundary pause not possible before the duration phrase |
| e. Constituency
NP1 V (NP2) can be moved | NP1 V (NP2) cannot be moved |

Following the same lines of arguments, we find that Event duration phrases occur in both the Predicate Structure and the Complement structure.

28) Position of adverbials:

- a) [Ta zuo shi] yijing henduo nian le
 he do thing already many year ASP
 'He has been doing things for many years.'
- a') Ta yijing [zuo henduo nian le].¹³
 he already do many years ASP
 'He has done (things) many years.'

The acceptability of both sentences indicates both the Predicate Structure (28a) and the Complement Structure (28a) are possible.

Verb Reduplication

- 28b) Ta zuo shi zuo hen jiu le.¹⁴

The possibility of verb reduplication indicates that the Complement Structure is possible.

Scope of Negation

- 28c) [Ta mei zuo shi] yijing henduo nian le.
 he not do thing already many years ASP
 'He has not done things for many years.'
- c') *Ta yijing mei zuo (shi) henduo nian le.
 he already not do thing many year ASP

The acceptability of (28c) indicates that the Predicate Structure is possible. The unacceptability of (28c) indicates that the duration phrase must be within the scope of negation, predicted by the Complement Structure.

Major Boundary

28d) [Ta zuo shi] a, yijing henduo nian le.
 he do thing PAR already many years ASP

d') Ta a, [yijing zuo henduo nian le].
 he APR already do many years ASP

The position of a subject/predicate boundary break indicates that (28d) is a Predicate Structure and (28d') is a Complement Structure.

Constituency

28e) [Ta zuo shi], wo zhidao yijing henduo nian le.
 he do thing I know already many years ASP
 'That he has done things, I know has been many years.'

The acceptability of (28e) indicates that a Predicate Structure must be possible.

Sentences in (28) therefore argue for the coexistence of the Predicate structure and the Complement structure for Event duration phrases.

In section 1.1., we showed that both the Predicate Structure and the Complement Structure are possible for SCE duration phrases. In this section, we showed that the same structures are possible for Event duration phrases. Therefore, we conclude that both the Predicate Structure and the Complement Structure are available to any duration phrases, including both SCE and Event duration phrases. Neither the SSH nor the CH describes the full range of facts. The SSH cannot account for the fact that Event duration phrases do occur in the Predicate Structure and the fact that SCE duration phrases do occur in the Complement Structure; the CH cannot account for the fact that both SCE and Event duration phrases occur in the Predicate Structure.

An interesting question following this conclusion is how the duration phrase is to be interpreted. We turn to the interpretation of duration phrases next.

2. Interpretation of duration phrases

Although we have shown the Predicate Structure and the Complement Structure must both be possible for either SCE duration phrases or Event duration phrases, we have not discussed why some duration phrases can only have one interpretation rather than the other. In particular, we have not discussed in detail the lack of SCE duration interpretation for sentences such as (6) and (7), repeated below which is an argument by the SSH against the CH.

- 6) Lisi jiang le san tian wode huai hua.
talk ASP 3 day my bad word
'Lisi spoke ill of me for three days.'
- 7) Ta san nian (dou) meiyou lai Meiguo.
he 3 year all not come America
'He hasn't been to America in three years.'

We have so far simply accepted Ernst's claim that the lack of SCE duration interpretation is the result of semantic compatibility rather than the lack of certain structures. In the same paper (Ernst 1987), it is also mentioned that the classification of verbs cannot be sufficient to determine the interpretation of duration phrases. For example, although punctual verbs tend to cooccur with the SCE duration interpretation of the duration phrase, there seem to be no punctual verbs which allow an SCE interpretation.

- 29) Ta gai fangzi henduo nian le.
he build house many years PAR
'It has been many years since he build the house.'

In (29), 'build' is not a punctual verb and yet it allows SCE interpretation for the duration phrase. Therefore, the

classification of verbs is not adequate to predict the interpretation of duration phrases.

In this section, we will show that the interpretation of duration phrases correlates with different types of verbs and verb phrases if we adopt an appropriate classification, such as the one proposed by Vendler (1967) and modified by Tai (1984).¹⁵ Furthermore, we will show that the interpretation of duration phrases not only depends on the types of verbs but also is sensitive to the positions where duration phrases occur.

2.1. Verb classifications

It has been proposed in Vendler (1967) that verbs (and verb phrases, see note 15) can be classified into four types: achievement verbs (spontaneous change of states, e.g., arrive, die), accomplishment verbs (change of states after activities, e.g., build a house, draw a circle), activity verbs (continuous, repeatable activities, e.g., running, swimming) and state verbs (continuous state, e.g., like, hate). Crucially, achievement verbs and accomplishment verbs involve changes of state (the completion of an event) but activity verbs and state verbs do not involve changes of state (the non-completion of an event). Tai (1984) applies Vendler's proposal to Chinese and claims that Chinese does not distinguish achievement verbs from accomplishment verbs. What is relevant to our discussion is the distinction between the completion and non-completion of events (whether there is change of states) in Chinese; i.e., Chinese distinguishes verb phrases indicating completion of events from those indicating on-going states/activities (non-completion).

Adopting Vendler and Tai's classification of verbs, which distinguishes verbs indicating completion from those indicating non-completion of events, we naturally expect that

the interpretation of duration phrases will correlate with the type of verbs and verb phrases. Duration phrases occurring in verb phrases denoting non-completion will be interpreted as the duration of an on-going state/activity (Event duration). Duration phrases occurring in verb phrases denoting completion of events will be interpreted as duration since completion of events (SCE duration). When a verb phrase can mean either completion of events or non-completion, the duration phrase in such a verb phrase will be ambiguous: SCE interpretation or duration of an on-going state/activity (referred to as Event duration, see note 2). These correlations are indeed correct.

- 30a) Tā dào le sān tiān le. -- SCE duration
 he arrived three day PAR
 'He has arrived for three days.'
- b) Tā jiāo le sān tiān le. -- Event duration
 he teach ASP three day PAR
 'He has been teaching for three days.'
- c) Tā xǐhuan le sān tiān le. -- Event duration
 he like ASP three day PAR
 'He has liked (it) for three days.'
- d) Tā zǒu le sān tiān le.
 'He has left for three days.' - SCE duration
 'He has been walking for three days.' -Event duration
- e) Tā gāi fāngzi sān tiān le.
 he build house three day PAR
 'He has been building a house for three days.' -SCE duration
 'It has been three days since he built a house.'
 --Event duration

The examples in (30) illustrate how the interpretation of duration phrases is affected by the verb phrases. If a verb phrase indicates completion of an event (change of states occurs), SCE interpretation obtains. If a verb phrase indicates the on-going state/activity (no change of state occurs), Event duration interpretation (non-completion interpretation) obtains. For example, 'arrive' in (30a) is an achievement verb in Vendler's classification, a verb indicating completion of events. Therefore, the duration phrase in (30a) can only have an SCE interpretation. In (30b), the verb 'teach' is an activity verb; therefore, the duration phrase indicates the length of time of teaching. 'Like' in (30c) is a state verb, therefore the interpretation is a non-Completion (Event duration) interpretation. In (30d), the verb zoule can mean either 'left' (an achievement verb) or 'has been walking' (an activity verb), therefore the ambiguity in interpreting the duration phrase. In (30e), gai fangzi can be 'building a house' in which the building has not been completed. Thus, the duration phrase is interpreted as the duration of an on-going activity. On the other hand, gai fangzi can also mean 'built a house,' completion of an event; therefore, the duration phrase is interpreted as SCE duration accordingly.

Having illustrated how the interpretation of duration phrases is correlated with the types of verbs and verb phrases, we next proceed to show that the positions where duration phrases occur interact with the types of verbs/verb phrases to derive different interpretations of duration phrases. At the same time, we offer an account for the lack of SCE interpretation in (6-7), which has not been accounted for so far.

2.2. Duration phrases within NPs

In this section, we show that the position of duration phrases will affect the interpretation of such phrases. I illustrate this by sentence (6), repeated below. The duration phrase in this sentence can only have an Eve duration interpretation. It cannot have an S interpretation.

- 6) Lisi jiang le san tian wode huai hua.
 talk ASP 3 day my bad word
 'Lisi spoke ill of me for three days.'

We show that the lack of SCE interpretation in (6) is due to the fact that sentence (6) has the structure of (31) where the duration phrase is within an NP.

- 31) [_SNP1 [vpV [NP_{Duration} NP2]]]

Based on the fact that duration phrases are NPs, Li (198) argues that the duration phrase in the form [V + Duration + NP] is in the Specifier of NP position, illustrated (32). Therefore, the use of de is possible a topicalization of [Duration NP] is also possible.

- 32a) Ta zoule [san tian (de) lu].
 he walked three day DE road
 'He walked for three days.'
- a') [San tian de lu], ta yi tian jiu zou wan le.
 three day DE road he one day then walk-finish
 ASP
 'Three days' journey, he finished in one day.'
- b) Ta paole [san tian (de) yiyuan].
 he ran three days DE hospital
 'He has been running to the hospital for three days.'

- b') $\bar{S} \bar{a} \bar{n} \bar{t} \bar{i} \bar{a} \bar{n} \bar{d} \bar{e} \bar{y} \bar{i} \bar{y} \bar{u} \bar{a} \bar{n}, \bar{t} \bar{a} \bar{p} \bar{a} \bar{o} \bar{l} \bar{e},$ (liang tian de fanguan, ta que bu pao).
 three day DE hospital he ran two days DE restaurant he surprisingly not run
 'Three days' hospital, he ran; (but surprisingly, two day's restaurant, he would not run).'

The string [Duration + NP] forms a constituent as the topicalized structures and the occurrence of de indicate. This constituent quantifies over the verb, i.e., the quantity or extent of certain activity/event. Sentence (32a) means the quantity/extent of walking is three days' journey. Although zou can also mean 'leave,' it does not make sense to say that the extent/quantity of leaving is three days. 'Leave,' an achievement verb, indicates spontaneous change of events and cannot have a quantity or extent. Similarly, the object plus the duration phrase in (32b) quantifies over the extent of running. Following these lines, sentence (6) would mean that the quantity or extent of talking is three days' words (bad words about me). One prediction of this account is that if a verb cannot be quantified over, the sentence would not have an appropriate interpretation, which is true:

- 33) * $\bar{T} \bar{a} \bar{d} \bar{a} \bar{o} \bar{l} \bar{e} \bar{s} \bar{a} \bar{n} \bar{t} \bar{i} \bar{a} \bar{n} (\bar{d} \bar{e}) \bar{M} \bar{e} \bar{i} \bar{g} \bar{u} \bar{o}.$
 he arrived three day America

'Arrive' is an achievement verb which indicates spontaneous change of states. As such, it cannot have a quantity or extent. However, the duration phrase in this structure denotes the quantity/extent of the verb. Therefore, sentence (33) is ruled out, due to the conflict between the function of the duration phrase in this pattern and the property of the verb. In brief, a duration phrase occurring in the pattern [V + duration + (de) + NP] is interpreted as the duration of an event/activity (Event duration) rather than the duration since the completion of the event (SCE duration). The position of the duration phrase thus forces an Event duration

interpretation in sentence (6). Below, we show that preverbal duration phrase exemplified in (7) is actually not a duration phrase but a temporal phrase. The distinction between duration phrases and temporal phrases offers an account for the lack of SCE interpretation in instances such as (7).

2.3. Duration phrases vs. Temporal phrases

First consider sentence (7), repeated below.

- 7) Ta sān nian (dōu) meiyǒu lái Meiguó.
 he 3 year all not come America
 'He hasn't been to America in three years.'

Recall that the problem with sentence (7) is that the duration phrase does not have an SCE interpretation. The discussion of verb classifications seems to suggest an answer for the lack of an SCE duration interpretation in this case. Note that the verb phrase meiyǒu lái Meiguó indicates an on-going state instead of completion of events. According to our discussion in section 2.1, the duration phrase cannot have an SCE duration interpretation, which is exactly how (7) is interpreted. However, this suggestion does not seem to account for all instances with preverbal duration phrase. Indeed, this suggestion would lead us to predict that the duration phrase should have an SCE interpretation if the verb phrase in (7) is replaced by a verb phrase indicating completion of events.

- 34) *Ta sān nián (dōu) dào lái Meiguó.
 he three year all arrived America

However, sentence (34) does not have an appropriate interpretation at all. This is surprising if we say that the interpretation of duration phrases depends on the types of verb phrases. Below, we show that (34) does not pose a problem for our claim that interpretations of duration phrases are determined by verb types. The duration phrase in (34) is actually not a duration phrase but a temporal

It has been observed by J. Huang (p.c.) that the underlined phrase in (35) has a definite interpretation, in contrast to the underlined phrase in (36) which has an indefinite interpretation:

- 35) Ta san nian dou laile.
 he three years all came
 'He has been coming for (these) three years.'
- 36) Ta laile san nian le.
 he came three years PAR
 'He has been here for three years.'

Huang suggests that, although 'three years' in (36) is a duration phrase, 'three years' in (35) is not a duration phrase. It is a temporal phrase: (35) is exactly like (37).¹⁶

- 37a) Ta zhei san nian dou laile.
 he these three years all came
 'He has been coming these three years.'
- b) Ta zhei xingqi dou laile.
 he this week all came
 'He has been coming this week.'

Sentences (37a-b) mean for a certain period of time (these three years/this week), he has been coming here. An event occurring with such temporal phrases must be reiteratable or able to continue for the period of time denoted by the temporal phrase. Such a temporal phrase will therefore be incompatible with verbs denoting a spontaneous change of states, as in (38):

- 38) *Ta zhei xingqi dou daole Meiguo.
 he this week all arrived America

For the same reason, sentence (34) is unacceptable.

In brief, the similarity between interpreting the preverbal duration phrase in (35) and interpreting the temporal phrase in (37), in contrast to instances with postverbal duration phrase such as (36), makes it possible to claim that the duration phrase in (35) is actually a temporal phrase instead of a duration phrase. The unacceptability of (34) thus is on a par with the unacceptability of (38). Sentence (34), whose unacceptability was not expected by our claim that the interpretation of duration phrases is sensitive to the types of verbs/verb phrases, actually does not contain a duration phrase but contains a temporal phrase.

This proposal, however, has not solved the problem raised in (7) where the preverbal time phrase sān nián 'three years' does not seem to require a definite interpretation, particularly when dou does not occur. Indeed, when dou does not occur, sān nián is interpreted as an indefinite duration phrase. We argue below that the possibility of a duration phrase in preverbal position is related to the occurrence of negation in sentence (7).

2.4. Duration phrases as indefinite NPs

In this section, we show that the property of duration phrases being indefinite NPs accounts for the fact that a duration phrase occurs preverbally only when the sentence is in the negative form. Related to this, we will also discuss the status of dou in the relevant sentences.

We begin by noting that dou before the VP in (35) is obligatory but is optional in sentences like (7) and (39) respectively. Namely, dou is obligatory when there is no negation word.

Hudson (1986) claims that the occurrence of indefinite NPs must be licensed. The licenser can be the adverb d or verbs (or some others). What is relevant to our discussion is that indefinite NPs generally occur with dou in postverbal position in order to be licensed by dou verbs. A duration phrase is an indefinite NP. Thus, duration phrase must be licensed. We saw in Section that a duration phrase can occur in postverbal position. As such an indefinite duration NP can be licensed by dou verbs. In preverbal position, an indefinite NP cannot be licensed by verbs, but can be licensed by dou. When d occurs, however, an indefinite duration phrase cannot remain indefinite. This is because the totalizing adverb dou has the function of definitizing a numeral NP. A duration phrase licensed by dou will therefore get a definite interpretation, which is like a temporal phrase. Thus, a preverbal numeral time phrase cooccurring with d cannot be interpreted as a duration phrase but must be interpreted as a temporal phrase.

Not only can a preverbal indefinite phrase be licensed by dou, it can also be licensed by you 'have,' whether analyzed as a verb or not, as seen in (40) below:

- 40) You yige rén lái le.
 have one man come ASP
 'A man came.'

Moreover, when a you phrase occurs before a VP, it can denote duration:

- 41a) Wo you san tian mei lái le.
 I have three days not come ASP
 'I have not been here for three days.'
- b) Wo you san tian mei zuo shì le.
 I have three days not do thing ASP
 'I have not done things for three days.'

Interestingly, when there is a you phrase before the VP, this VP must be in the negative form:

42a) *Wo you san tian lai le.
I have three days come ASP

b) *Wo you san tian zuo shi le.
I have three days do things ASP

Following the proposal of the SSH that you can be deleted, we expect that when a duration phrase occurs before a VP, this VP must be in the negative form. This amounts to saying that a preverbal duration phrase is licensed by an implicit you. In contrast to the cases with the totalizing adverb dou, you does not have a definitizing function. An indefinite time phrase therefore can remain indefinite, obtaining a duration phrase interpretation.

We thus answered the two questions raised earlier. A preverbal indefinite phrase must be licensed. The licenser can be dou or you. Dou makes an indefinite NP definite. You does not make an indefinite NP definite. Moreover, when you plus a duration phrase occurs before a VP, this VP must be in the negative form. You can be deleted. Therefore, when dou occurs, a preverbal time phrase must be interpreted as a temporal phrase (which is definite) and cannot be interpreted as a duration phrase (which is indefinite). When dou does not occur, the time phrase can be interpreted as a duration phrase only when the VP is in the negative form. The deleted you functions as the licenser of the indefinite duration NP.

3. Conclusion

In this paper, we have argued that duration phrase no matter whether they are interpreted as SCE or Event duration, can be generated within a VP (the Complement Structure) or as a predicate (the Predicate Structure). The Predicate Structure and the Complement Structure must both be available in order to capture the ambiguity and syntactic behavior of the duration phrases. The ambiguity in structure has various syntactic and phonological manifestations such as the scope of negation, adverbial movability of constituents and the distribution of pauses. Furthermore, we showed in Section 2. that the interpretation of duration phrases depends not only on the types of verbs/verb phrases but also on the structure where duration phrases occur (such as within NPs, preverbal vs. postverbal positions). We also distinguished duration phrases from temporal phrases and related this distinction to the properties that duration phrases are indefinite NPs and that indefinite NPs must be licensed. These claims account for why certain duration phrases have only SCE or Event duration interpretation, why certain duration phrases have both interpretations (see examples in (30)), why certain sentences are anomalous as in (31) and (32) and why preverbal duration phrases must occur in sentences of the negative form. In brief, the interaction between the distribution of duration phrases and the types of verbs/verb phrases accounts for different interpretations of duration phrases. Apparent counterexamples to this generalization are in fact the results of the interaction between the distribution of duration phrases and the property of duration phrases being indefinite NPs.

NOTES

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1. Instead of the term duration adverbials used in Ernst (1987), we use the term duration phrases in this paper. This is to avoid the general confusion between the terms **adverbials** and **adverbs**, as pointed out by Ernst (p.c.). Moreover, as will be seen later in the text, duration phrases are NPs. It does not matter to the discussion in the paper whether these duration phrases are adverbials or not. What matters is that these duration phrases are NPs.

2. In Chinese, the number and the type of constituents that can occur in postverbal position are quite restricted. The postverbal constraint proposed in Huang (1982) and Li (1985) is designed to capture such restrictions. However, there are some controversies as to the exact nature of the postverbal constraints as well as how the postverbal constraints should be formulated. We will not enter into the controversy in this paper. However, the discussion on the structures of duration phrases in this paper will offer tests for the proposed postverbal constraints.

3. This analysis has also been argued for by Huang & Mangione (1985) in Lexical Functional Grammar. Due to the different frameworks assumed, we will not discuss their analysis in this paper. However, see Li (1985) for a discussion of some problems with their analysis.

4. In order to dismiss some of the potential counter-examples to their analyses, Chen (1973), Huang (1982) and Li (1985) mention in footnotes that the structure by the SSH is also possible for (1). However, none of them elaborate on how or why this is possible.

5. Event here is used in a very loose sense. The crucial distinction for us is the change or non-change of state completion or non-completion of activities/events.

6. C-command here is defined as in Rinehart (1976):
c-commands B if A and B do not dominate each other and the first branching node dominating A also dominates B.

7. There is no discussion on what such semantic compatibility properties are in Ernst (1987). In Section 2, we try to answer this question.

8. Some adverbials and prepositional phrases are either adjoined to S or VP. The word order in (i) does not argue against our claim in the text because of the different adjunction possibilities adverbials and prepositional phrases (see Lee 1986):

- i) $\bar{\quad} \quad \bar{\quad} \quad \check{\quad} \quad \backslash \quad \check{\quad} \quad / \quad \backslash \quad \backslash \quad / \quad \backslash \quad \backslash \quad / \quad \backslash$
Ta gen wo zhishao bu hui bu tongyi.
he with me at least not will not agree

9. In fact, the duration phrase occurring in a negative sentence or a sentence containing a negative sentence subject is not interpreted as an SCE duration phrase anymore. It should be interpreted as an Event duration. See the discussion in section 1.2.

10. For the sentence of the form in (i), there should be two possible structures:

- i) $\bar{\quad} \quad \check{\quad} \quad \bar{\quad} \quad / \quad \check{\quad} \quad / \quad / \quad / \quad /$
Ta yijing lai le liang nian le.
he already come ASP two year ASP
- a. $\bar{\quad} \quad \check{\quad} \quad \bar{\quad} \quad / \quad \check{\quad} \quad / \quad \check{\quad} \quad / \quad /$
[Ta yijing lai le] liang nian le.
- b. $\bar{\quad} \quad \check{\quad} \quad \bar{\quad} \quad / \quad \check{\quad} \quad / \quad \check{\quad} \quad / \quad /$
Ta [yijing lai le liang nian le].

However, the structure in (a) does not seem to be possible, just as the corresponding part in English is not acceptable:

- ii) 'It has been two years since he has already come.'

If it is correct to claim that sentence (i) only has the structure in (ia), the position of yijing is an indication of the structure containing duration phrases. When yijin immediately follows the subject as in (i), the sentence is a Complement Structure; when yijing immediately precedes the duration phrase, such as (23b) in the text, the sentence is a Predicate Structure.

11. Lee (1986) accounts for the unacceptability of (25a) by the Isomorphic Principle which states that the c-command relation of QPs (which include numeral phrases at S-structure) must be preserved at Logical Form (LF) following Huang (1982). At S-structure, the negation word c-commands the QP two books. The QP two books must be raised at LF and the raising results in a structure where the QP c-commands the negation word, violating the Isomorphic Principle. For more details, see Lee (1986:Section 1.3.)

12. The counterpart of (27b) corresponding to (27a') seems to be acceptable:

- i) Ta a, laile yijing liang nian le.
he came already two years PAR

The acceptability is not unexpected given that (i) can be a topic-comment structure: he is a topic of the sentence.

13. In (28a'), the object thing of the verb do does not occur, in contrast to the corresponding sentence (28a). This is due to the constraint that an object of the verb does not cooccur with another complement in postverbal position. See note 2.

14. Note that an adverbial such as yijing can occur either before the first verb or the second one as in (i) and (ii) below.

- i) Ta zuo shi yijing zuo hen jiu le.
 he do thing already do very long ASP
 'He has done things for a long time.'
- ii) Ta yijing zuo shi zuo hen jiu le.
 he already do things do very long ASP
 'He has done things for a long time.'

It is possible that there is an empty subject before yijing in (i), as indicated in Lee (1983). The duration phrase in both sentences is still a complement.

15. The discussion on the classification of verbs by semanticists does not distinguish verbs from VPs.

16. In Chinese, a definite NP does not need demonstrative such as zhei/nei 'this/that':

- i) Shu, wo kan-wan le.
 Book I read-finish PAR
 '(This/that) book, I have finished reading.'

REFERENCES

- Chao, Yuen Ren. 1968. A Grammar of Spoken Chinese. Berkeley: University of California Press.
- Chen, Chung-Yu. 1978. 'Aspectual Features of the Verb and the Relative Positions of the Locative,' JCL, 6.1.
- Ernst, Thomas. 1987. 'Duration Adverbials and Chinese Phrase Structure,' in JCLTA.
- Huang, C.R. & L. Mangione. 1985. 'Reanalysis of de WCCFL 3.

Huang, C-T James. 1982. 'Logical Relations in Chinese and the Theory of Grammar,' Doctoral dissertation, MIT, Cambridge, Massachusetts.

Hudson, Wesley. 1986. 'Predication and Licensing of Indefiniteness,' ms., University of Southern California, California.

Lee, Tom. 1986. 'Studies on Quantification in Chinese,' Doctoral dissertation, University of California, Los Angeles, California.

Li, Y. Audrey. 1983. 'Case and Word Order in Chinese,' ms., University of Southern California, Los Angeles, California.

Li, Y. Audrey. 1985. 'Abstract Case in Chinese,' Doctoral dissertation, University of Southern California, Los Angeles, California.

Mei, Kuang. 1972. 'Studies in Transformational Grammar of Modern Standard Chinese,' Doctoral dissertation, Harvard University.

Rinehart, Tanya. 1976. 'The Syntactic Domain of Anaphora,' Doctoral dissertation, MIT, Cambridge, Massachusetts.

Tai, James H-Y. 1984. 'Verbs and Times in Chinese: Vendler's Four Categories,' CLS Parasession on Lexical Semantics.

Teng, Shou-Hsin. 1975. 'Predicate Movements in Chinese,' JCL 3:1, 60-75.

Travis, Lisa. 1983. 'Parameters and Effects of Word Order Variation,' Doctoral dissertation, MIT, Cambridge, Massachusetts.

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