

An Optimality Theoretic Analysis of the Distribution of Hakka Prepositions *DI, DO, BUN, LAU, TUNG, ZIONG**

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This paper has three purposes. The first purpose is to examine the uses of the prepositions: *di, do, bun, lau, tung, ziong*, and generalize an overall structural pattern for the Hakka VP involving prepositional phrases. The second purpose is to distinguish between the PPs functioning as complements and adjuncts of the verb, and argues that the two types of PPs may occur in four different syntactic positions depending on their syntactic and semantic functions. The third purpose is to formulate an Optimality Theoretic analysis to account for the different positioning of PPs. The analysis is achieved through two rounds of OT evaluation. The first round is based on the semantic OT, by which each PP receives its complement or adjunct interpretation when appearing in the VP. The second round is syntactically oriented. By proposing various manifestations of Generalized Alignment Constraints for complement PPs associated with different semantic functions and adjunct PPs exhibiting a relatively more peripheral relation with the verb, this paper will show that the interaction of these alignment constraints provides an alternative account for the distribution of the four different kinds of PPs.

Key words: Hakka, Optimality Theory, prepositional phrase

1. Introduction

Hakka¹ prepositional phrases follow the general word-order pattern of Chinese languages, in which the head preposition precedes its NP complement and occurs at the left edge of a PP. A few examples are given below:²

- (1) **bun** taingin
to adult
'to adults'

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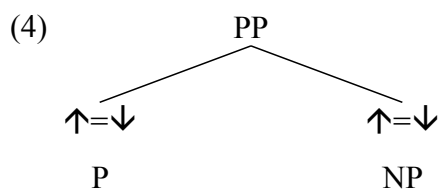
¹ The two major dialects of Hakka in Taiwan "Si-ien" and "Hoi-liuk" are contrasted mainly in their tonal systems. Fundamentally the Si-ien Hakka has six tones and the Hoi-liuk Hakka has seven tones (Xu 2001); high tones in Si-ien are pronounced as low tones and low tones pronounced as high tones in Hoi-liuk, and vice versa. The two dialects also differ in some of their lexicon and collocational expressions; however, due to cultural and geographic proximity, two of them share more and more mixed features in all respects. In this paper, all the data presented is based on Hoi-liuk Hakka spoken in Miaoli, Taiwan. It should be noted that the Hakka dialect spoken in Miaoli is now often referred to as the "Hoi-si" dialect. It is a mixture of Hoi-liuk and Si-ien dialects. The structure of Hoi-si is primarily based on the Hoi-liuk dialect, and at the same time it borrows some vocabulary from Si-ien, which made this dialect different from other Hoi-liuk dialects spoken in Taiwan.

² This paper uses the following glosses: ASP "aspectual marker," CL "classifier," COMP "complementizer," MOD "modification," PART "particle," PASS "passive," PAT "patient," POSS "possessive," RVC "resultative verbal compound."

(2) **di** mangin ge vukha
 at who POSS home
 ‘at whose home’

(3) **tung** ge zhak penyiu
 with that CL friend
 ‘with that friend’

The internal structure of Hakka preposition phrases is illustrated by the tree diagram presented in (4), in which the preposition heads a functional projection and selects an NP as its complement branching on the right.



To further investigate the syntactic and semantic properties of PPs in Hakka, this paper is organized as follows. Section 2 examines in detail the function and distribution of PPs projected by various head prepositions. In this section the PPs associated with different semantic roles will be divided into two groups: complements and adjuncts, and the discussion will emphasize the position they may occur in sentences. Section 3 provides an Optimality Theoretic approach to account for the data, and then followed by a conclusion in section 4.

2. Hakka prepositions

The Hakka prepositions can be classified as a grammatical category with the capability to bring out at least the temporal, locative, directional, associative, benefactive information and to mark the passive and emphatic functions to the event indicated by the VP. In this section, we first examine the meaning and function of PPs affiliated with various prepositions that very commonly occur in Hakka, and then their distribution and syntactic status (complement or adjunct interpretation) will be discussed.

2.1 Preposition: *di*

The morpheme *di* is probably the most uncontroversially identifiable preposition in Hakka. It occurs quite frequently in oral and written expressions, functioning to point out the temporal or locative information to an event. The following examples (5) and (6) illustrate these functions.

- (5) Gi **di libaingit** voi hi hokgau tuk yinvun.
 he on Sunday will go school study English
 ‘He goes to school studying English on Sunday.’
- (6) Gi **di hokgau** tuk yinvun.
 he at school study English
 ‘He studies English at school.’

Now contrast with the following examples, in which the prepositional phrases headed by *di* occur in other positions in the same sentence.

- (7) a. (***Di**) **libaingit** gi voi hi hokgau tuk yinvun.
 on Sunday he will go school study English
 ‘He goes to school studying English on Sunday.’
 b. *Gi voi hi hokgau tuk yinvun **di libaingit**.
 he will go school study English on Sunday
 ‘He goes to school studying English on Sunday.’
- (8) a. ***Di hokgau** gi tuk yinvun³.
 at school he study English
 ‘He studies English at school.’
 b. *Gi tuk yinvun **di hokgau**.
 he study English at school
 ‘He studies English at school.’

³ One may argue what causes the ungrammaticality of (8a) might not be the positioning of the locative PP, since the sentence turns grammatical as long as another *di* is inserted between the subject and the verb:

(i) Di hokgau, gi **di** tuk yinvun.
 at school he DI study English
 ‘At school, he is studying English now.’

In effect, (8a) and (i) present two different kinds of constructions. In (i), the second *di* behaves as a linking verb functioning to indicate the occurrence of an action on the subject, and the entire expression can be identified having a “topic-comment” reading, in which an independent clause is taken as the comment made about the sentence-initial topic, and a pause normally exists as an in-between to separate the topic and the comment. Besides, the expression in (i) does not receive the habitual reading as (6) possibly does, but it must be used to describe the current status about the subject.

When a *di*-phrase functions to denote place information to the verb, as in (8), it is completely unacceptable to place the *di*-phrase in any position other than the left edge of VP. Similarly, when a *di*-phrase functions to denote temporal information, locating it in the post-verbal position renders absolute ungrammaticality, as shown in the second example of (7). The positioning of the temporal *di*-phrase in (7a) may sound better, but we can argue that the time indication is preferably to be expressed by an NP if it occurs in the sentence-initial position. Compare (7a) with the following example (9), when the *di*-phrase occurs at the left edge of VP, the time indication may alternatively be expressed by a PP or an NP; namely, the temporal preposition *di* may overtly or covertly emerge in the VP.

- (9) Gi **(di) libaingit** voi hi hokgau tuk yinvun.
 he on Sunday will go school study English
 ‘He goes to school studying English on Sunday.’

The above examples show that *di*, combining with a noun phrase to form an adverbial expression of time and place, preferably occurs at the left peripheral position of a VP. In other words, the canonical position for the PP headed by *di* is to the immediate left of the VP it modifies.

2.2 Preposition: *do*

The prepositional *do* occurs with a verb, and the projected PP is in some way associated with locative interpretation. As explained by Lai (1988, 2002), the prepositional use of *do* functions to introduce the source, the goal, or the place information to further extend the meaning of the verb. Examining the following examples:

- (10) a. Gi zang **do miguet** zonloi.
 he just from America come.back
 ‘He just came back from the United States.’
 b. Gi **do hokgau** hanglu.
 he at school walk
 ‘He is walking at school.’
 c. Gi oi hanglu **do hokgau**.
 he want.to walk to school
 ‘He wants to walk to school.’

All the above *do*-phrases co-occur with the main verb, and in the first example of (10), the *do*-phrase indicates the source location from which the event represented by the verb begins; in the second example, the *do*-phrase points out the general location in which the event of the verb takes place; while in the third example the *do*-phrase states the goal toward which the action of the verb is directed.

It should be noted that when *do* appears in the pre-verbal position, it is interchangeable with the preposition *di*; on the other hand, *do* cannot be replaced by *di* if the *do*-phrase appears post-verbally. This is demonstrated in the following (11).

- (11) a. Gi zang **di miguet** zonloi.
 he just from America come.back
 ‘He just came back from the United States.’
- b. Gi **di hokgau** hanglu.
 he on school walk
 ‘He is walking at school.’
- c. *Gi oi hanglu **di hokgau**.
 he want.to walk to school
 ‘He wants to walk to school.’

The following generalization can be made concerning the syntactic position where *do* may occur in sentences. When the phrasal projection headed by *do* functions to bring out the source or the general locative information to the verb, it precedes the verb and canonically occurs at the left edge of VP. In that case the meaning and positioning is similar to the uses of the *di*-phrase. Contrastively, if a *do* heading functional projection acquires the semantic meaning to indicate the direction or the goal of verbs, it obligatorily follows the verb.

2.3 Preposition: *lau/tung/ziong*

The three prepositions *lau*, *tung*, and *ziong* exhibit very similar syntactic and semantic behavior in some respects, and at the same time, their differences can be found if we further compare and contrast their constructions when appearing in sentences. Among the three morphemes, *lau* is the one that displays the most versatile functions. As proposed by Lai (2003a, b), *lau* contains at least the following five different senses: as a comitative marker, a source marker, a goal marker, a benefactive marker, and a patient marker. It may be argued that the comitative *lau* is actually related to two distinctive grammatical functions: a comitative preposition and a coordinative conjunction. However, since the distinction between them is neither

straightforward nor uncontroversial, this paper will neglect the comitative use of *lau* to avoid causing some unnecessary complexity in our analysis.

- (12) a. Gi **lau** **gei** **gien** **diam** mai yit tiau nge.
 he from that CL store buy one CL fish
 ‘He bought a fish from that store.’
- b. Gia moie diamdame **lau** **gi** gong ge kien siicin.
 his daughter quietly to he say that CL event
 ‘His daughter quietly told him (said to him) that event.’
- c. Gia me **lau** **gi** mai dong do su.
 his mother for he buy really many book
 ‘His mother bought many books for him.’
- d. Gi **lau** **gia** **moie** ga-tet le.
 he PAT his daughter marry-RVC PART
 ‘He has married his daughter to someone.’

In (12a), the *lau*-phrase indicates the source from which something has been taken away. In contrast, the prepositional phrase in (12b) denotes the opposite direction of the source. The head preposition *lau* in this sentence denotes a goal, and it is to this destination that some information has been transferred. In (12c) the *lau*-phrase marks the notion of benefaction, in which the object of *lau* refers to the target who benefits from the event. Finally, *lau* in (12d) assigns the patient sense to its objective NP; to be exact, it emphatically marks the NP that has been in some way affected by the event that the predicate describes.

Tung is a near synonym of *lau*. The two morphemes seem to be very similar in their syntactic and semantic behavior. Like the prepositional uses of *lau*, *tung* can also be used as a source marker, a goal marker, a benefactive marker, and a patient marker; therefore, all the above four *lau*-phrases in (12) can be substituted by a *tung*-phrase, and with the substitution of *tung* for *lau*, the meaning of each sentence remains the same.

- (13) a. Gi **tung** **gei** **gien** **diam** mai yit tiau nge.
 he from that CL store buy one CL fish
 ‘He bought a fish from that store.’
- b. Gia moie diamdame **tung** **gi** gong ge kien siicin.
 his daughter quietly to he say that CL event
 ‘His daughter quietly told him (said to him) that event.’

- c. Gia me **tung gi** mai dong do su.
 his mother for he buy really many book
 ‘His mother bought many books for him.’
- d. Gi **tung gia moie** ga-tet le.
 he PAT his daughter marry-RVC PART
 ‘He has married his daughter to someone.’

However, some differences actually exist between the semantic senses related to *lau* and *tung*. In this paper I will show at least the following two salient differences. First, as demonstrated in (14), when the preverbal prepositional phrase is associated with the patient role, the NP that follows *tung* may not be inanimate, but such restriction does not apply to the *lau* construction.

- (14) a. Gi **lau/?tung ge bun su** mai-zeu le.
 he PAT that CL book buy-RVC PART
 ‘He has bought that book.’
- b. Gi **lau/?tung fan** siit-ciang-ciang.
 he PAT rice eat-clear-clear
 ‘He ate up all the rice.’

Second, when a patient argument is marked in the preverbal position by a prepositional phrase, *lau* is preferable to *tung* in heading this preverbal functional projection if the PP expresses the meaning that is somewhat malefactive. In other words, comparing with *lau*, *tung* is semantically incompatible with the malefactive sense, as shown by the two sentences in (15).

- (15) a. Gi **lau/?tung ge zhak seilai** da-si-tet le.
 he PAT that CL boy beat-dead-RVC PART
 ‘He beat that boy and which made the boy dead.’
- b. Gi **lau/?tung sinsang** hi do mien-fung-fung.
 he PAT teacher irritate COMP face-red-red
 ‘He irritated the teacher to the degree that the teacher’s face has turned red.’

In section 3.1, an explanatory account will be provided with the Optimality Theoretic framework to further illustrate the semantic restrictions related to *tung*.

Another related preposition *ziong* differs from *lau* and *tung* in that it is not allowed to mark the source, the goal, nor the benefactive senses, as seen in (16). On

the other hand, when used as a patient marker, *ziong* is probably the default marker, which is not subject to any kind of semantic restriction; see the examples in (17).

- (16) a. *Gi **ziong** **gei** **gien** **diam** mai yit tiau nge.
 he from that CL store buy one CL fish
 ‘He bought a fish from that store.’
- b. *Gia moie diamdame **ziong** **gi** gong ge kien siicin.
 his daughter quietly to he say that CL event
 ‘His daughter quietly told him (said to him) that event.’
- c. *Gia me **ziong** **gi** mai dong do su.
 his mother for he buy really many book
 ‘His mother bought many books for him.’
- (17) a. Gi **ziong** **lepsep** fit-tet le.
 he PAT garbage discard-RVC PART
 ‘He dumped the garbage.’
- b. Gi **ziong** **sinsang** hi do mien-fung-fung.
 he PAT teacher irritate COMP face-red-red
 ‘He irritated the teacher to the degree that the teacher’s face has turned red.’
- c. Gi oi **ziong** **moie** ga bun ge zhak seilai.
 he will PAT daughter marry to that CL man
 ‘He will marry his daughter to that man.’

The closest synonym of *ziong* in Mandarin Chinese is the morpheme *ba*, which is normally associated with an NP denoting the patient role in the preverbal position. One of the major claims about the grammatical status of *ba* is to take *ba* together with its following NP as a PP (Mei 1972, Li 1990). However, the PP account of the *ba*-construction has been questioned by other linguists. A significant argument is that *ba*-phrases do not behave exactly like other PPs. Ritter & Rosen (2000) observe that while PPs are generally allowed to appear both preverbally and postverbally, *ba*-phrases obligatorily occur in preverbal positions. In addition, as argued in Rhys (1996), when a preverbal PP functions as an adverbial modifier, it may appear in the sentence initial position, but a preverbal *ba*-phrase never occurs sentence initially; instead, it has to be closer to the main verb and is encoded with the function to indicate a patient argument. The Hakka counterpart preposition *ziong*, when serving to bring in a patient argument to the following verb, may also be identified as a PP parallel to the Mandarin *ba*-construction. In response to the queries about the validity of this PP analysis, this paper will make the following claim: *ziong*-phrases are known to be associated with particular syntactic position and semantic function, and it is this

feature which distinguishes them as a distinctive type of preverbal PP. They differ from other preverbal PPs in that syntactically they are nearer the verb comparing to those whose position is closer to the left periphery of sentences, and semantically they introduce a patient or a theme argument to the verb, as opposed to the adverbial function commonly associated with other preverbal PPs.

Regardless of the various meanings and functions that the three prepositions *lau*, *tung*, and *ziong* may associate with, from the above examples (12) throughout (17) we can argue that the only position in sentences where the three prepositions may possibly occur is in the preverbal position; more precisely, the leftmost position of a VP.

2.4 Preposition: *bun*

The Hakka morpheme *bun* can be used to express a variety of grammatical functions. The most common ones include the main predicate of sentences, a goal marker indicating the recipient for the transference of patient/theme from the agent, an agent marker denoting the performer of an action, and a complementizer connecting two clauses and showing the relation between them; see Lai (2001) for the detailed illustration of the different uses of *bun*. This paper will focus on the prepositional uses of *bun*, which is believed to be closely related to two syntactic constructions: ditransitive and passive constructions. In the former construction, *bun* is seen as the counterpart of the Mandarin Chinese *gei*; while in the latter construction, *bun* is by and large equivalent to the Mandarin Chinese *bei*.

- (18) a. Ge zhak seingine sung yit liap lingo **bun gi**.
 that CL kid give.as.gift one CL apple to he
 ‘That kid gave an apple to him as a present.’
- b. Ge zhak seingine **bun gi** ma do gieuzii le.
 that CL kid PASS he scold COMP cry PART
 ‘That kid was scolded to cry by him.’

Bun in (18a) functions to indicate a recipient for the predication of a giving-verb. In (18b), *bun* is an agent marker indicating a demoted argument in the passive construction, which serves as an action performer for the verb predication.

As mentioned earlier, the ditransitive *bun* corresponds to *gei* in Mandarin Chinese. Many Chinese linguists have proposed important arguments concerning the syntactic analysis of *gei* in ditransitive constructions. The arguments state how researchers disagree with each other on determining the syntactic category of *gei* in

different verbal constructions. While there are linguists proposing a more traditional account in which ditransitive *gei*-phrases should be treated as PPs functioning to indicate an indirect object to the verb (Tang 1979, Li & Thompson 1981), other linguists argue that *gei* should be verbal in nature. When *gei* directly follows the verb, it is a suffix attaching to the verb; on the other hand, when a direct object is inserted between the verb and the *gei*-phrase, *gei* is a lexical verb and the sentence should be identified as a serial verb construction (Huang & Ahrens 1999). In Ting & Chang's (2004) proposal, they counter the serial verb account of *gei*. They argue instead that the postverbal *gei* is polysemous and must be analyzed as being associated with different grammatical categories. When *gei* directly follows the verb, it is the second component of a verbal compound. When *gei* follows both the verb and the direct object, it may be a preposition or a complementizer depending on the type of phrasal constituent it selects as the complement.

In this paper, I will argue that *bun* in ditransitive constructions should never be identified as a verb; instead, it is a preposition followed by an NP functioning as an indirect object of the verb. The prepositional account of *bun* can be supported by the following three linguistic tests. First, unlike the Mandarin Chinese *gei*, when *bun* immediately follows the verb, it is not allowed to be attached an aspectual marker. Examine the examples in (19).

- (19) a. Gi zia bun *go ngai ng cien yen.
 he lend to ASP I five thousand dollar
 'He used to lend me five thousand dollars.'
- b. Gi na bun *den gia laie ge bun su.
 he take to ASP his son that CL book
 'He is handing that book to his son.'
- c. Gi sung bun *le ge zhak hoksange liong gi bit.
 he give.as.gift to ASP that CL student two CL pen
 'He has given two pens to that student as the present.'

Second, while most verbs can be modified by adverbs, *bun* contradicts this verbal property by the fact that when it follows both the main verb and the direct object, it cannot be modified by an adverb; instead, the adverbial modifier can only modify the main verb. The ungrammaticality is shown in (20) below.

- (20) a. *Gi na ng cien yen taifong bun ngai.
 he take five thousand dollar generously give I
 'He took five thousand dollars and generously gave the money to me.'

- b. Gi **taifong** na ng cien yen bun ngai.
 he generously take five thousand dollar to I
 ‘He generously took five thousand dollars to me.’

Third, like the case of Mandarin *gei*, when the main verb selects a second VP as the complement, the object NP inside the second VP theoretically should be extractable, see (21a) through (21c).

- (21) a. Gi cut ng cien yen [**mai ge liap linggo**].
 he spend five thousand dollar buy that CL apple
 ‘He spent five thousand dollars to buy that apple.’
 b. Gi cut ng cien yen mai *t* ge [**ge liap linggo**]
 he spend five thousand aollar buy MOD that CL apple
 ‘The apple which he spent five thousand dollars to buy...’
 c. [**Ge liap linggo**], gi cut ng cien yen mai-do ge *t*
 that CL apple he spend five thousand dollar buy-RVC MOD
 ‘That apple, the one he purchased with five thousand dollars...’

However, compare the sentences in (21) with those in (22) below, we therefore can argue that since the Hakka *bun* cannot be stranded, as shown in (22a) through (22c), it is problematic to analyze *bun* as a verb in Hakka.

- (22) a. Gi sung cien [**bun ge zhak seimoi**].
 he give.for.free money to that CL girl
 ‘He gave money to that girl as the present.’
 b. *Gi sung cien bun *t* ge [**ge zhak seimoi**]⁴
 he give.for.free money to MOD that CL girl
 ‘The girl who he gave money as the present...’

⁴ One may argue that the unacceptable construction may be rescued as long as we propose a resumptive pronoun in the trace position, as in (i) below:

- (i) Gi sung cien bun **gi** ge [**ge zhak seimoi**]
 he give.for.free money to she MOD that CL girl
 ‘The girl whom he gave money to as the present...’

However, if we again compare (i) with the following unacceptable (ii), where the same syntactic process has been applied to (21b):

- (ii) *Gi cut ng cien yen mai **gi** ge [**ge liap linggo**]
 he spend five thousand dollar buy it MOD that CL apple
 ‘The apple which he spent five thousand dollar to buy it...’

The ungrammaticality of (ii) helps argue that the examples presented respectively in (i) and (ii) should be identified as two different kinds of constructions, and the *bun* in (i) behaves differently from the verbal *mai* in (ii); thus it is dubious to identify *bun* in (i) similarly as a verb analogous to the status of *mai* in (ii).

- c. *[Ge zhak seimo], gi sung cien bun t ge
 that CL girl he give.for.free money to MOD
 ‘That girl, the one he gave money as the present...’

Now we should move on to the discussion on the passive *bun*. As stated above, the equivalence of the Hakka passive *bun* in Mandarin is the morpheme *bei*. Thus, we will first examine the status of *bei* in the research of Chinese linguistics. There are at least two alternative analyses in the interpretation of the Mandarin passive *bei*. The first analysis identifies *bei* as a preposition denoting a demoted subjective argument of the verb (Wang 1970, Koopman 1984, Travis 1984, Li 1990). The second analysis treats *bei* as a verb followed by a clause, and the clause may be related to *bei* through complementation (Hashimoto 1969, Wei 1994) or control (Cheng, Huang, Li & Tang 1993, Ting 1995). One major difference between the two analyses is the syntactic function of the NP following *bei*, whether as a nominal complement bound with the prepositional *bei*, or the subject of the complement clause taken by the verbal *bei*. Again in this paper I will argue that the Hakka passive *bun* should be analyzed as a preposition, which we can find evidence from the following arguments. First, the Hakka *bun*-construction differs from the Mandarin *bei*-construction in that *bei* can be followed by either an NP or a VP, see (23).

- (23) a. Ta de xiezi bei wo tou-zou le.
 he POSS shoes PASS I steal-away PART
 ‘His shoes were stolen by me.’
 b. Ta de xiezi bei tou-zou le.
 he POSS shoes PASS steal-away PART
 ‘His shoes were stolen.’

We may argue that the two *bei*'s behave differently. As shown in below (24a), while a normal sentence is allowed to be adjoined by an adverbial modifier, if we argue that *bei* is a verb taking a clausal complement, how can we justify the ungrammaticality of (24b) in which the clause is left-adjoined by an adverb? Comparing with (24c), the left-adjunction is grammatical if the clause is subjectless, or the adverbial-adjunction occurs at the VP level. According to (24), the passive *bei* is closely bound with its following NP (if it is present), and no constituent is allowed to be inserted in-between. Their bound relation argues for a prepositional interpretation on the grammatical *bei* when it is followed by an overt NP.

- (24) a. **Qiaoqiaodi** wo tou-zou le ta de xiezi.
quietly I steal-away ASP he POSS shoes
'Quietly, I stole his shoes.'
- b. *Ta de xiezi bei **qiaoqiaodi** wo tou-zou le.
he POSS shoes PASS quietly I steal-away PART
'His shoes were quietly stolen by me.'
- c. Ta de xiezi bei (wo) **qiaoqiaodi** tou-zou le.
he POSS shoes PASS I quietly steal-away PART
'His shoes were quietly stolen.'

The Hakka passive construction exhibits even stronger bond between the passive morpheme and its subsequent NP. This is illustrated by (25) below, where *bun* always requires the presence of an NP directly following it.

- (25) a. Gi ge hai **bun** **ngai** teu-zeu le.
he POSS shoes PASS I steal-away PART
'His shoes were stolen by me.'
- b. *Gi ge hai **bun** teu-zeu le.
he POSS shoes PASS steal-away PART
'His shoes were stolen.'

Example (25b) is ungrammatical because *bun* is directly followed by a VP. The syntactic bond between *bun* and the NP can be further proved by providing the following examples in (26). In (26), when a temporal expression adjoins to the verbal predicate, it may be adjoined to the left of VP or the lower V-bar, but it never inserts between the functional *bun* and the NP following it.

- (26) a. Gi ge hai **di cobungit** bun ngai teu-zeu le.
he POSS shoes at yesterday PASS I steal-away PART
'His shoes were stolen by me yesterday.'
- b. Gi ge hai bun ngai **di cobungit** teu-zeu le.
he POSS shoes PASS I at yesterday steal-away PART
'His shoes were stolen by me yesterday.'
- c. *Gi ge hai bun **di cobungit** ngai teu-zeu le.
he POSS shoes PASS at yesterday I steal-away PART
'His shoes were stolen by me yesterday.'

The second evidence can be found by providing the following conversation in (27) as the test. The underlying argument is that when a speaker repeats part of a conversation to seek for further confirmation about a certain piece of information, it happens naturally and unconsciously that the speaker tends to repeat constituents instead of non-constituents because only a constituent can be singled out as an independent linguistic unit.

(27) A: Ge zhak seimoi bun gia tunghok ma.
that CL girl PASS her classmate scold
‘That girl was scolded by her classmate.’

B1: Ge zhak seimoi?

B2: Bun gia tunghok ma?

B3: Bun gia tunghok?

B4: *Gia tunghok ma?

In the statement about the girl’s being scolded by her classmate, it is possible to repeat the entire subject NP to check for confirmation as in B1, the entire predicate VP as in B2, the *bun*-NP combination as in B3, but it is inappropriate if we take the part after *bun* as a constituent to be repeated as in B4. This argues for the PP analysis of the *bun*-NP combination, as they form a linguistic constituent that may stand alone as an independent expression to perform a certain pragmatic function, in this case to seek for confirmation about the agent who performs the action.

From the above discussion, we see that both the passive and the ditransitive *bun* should be analyzed as a PP construction in Hakka. The prepositional phrases headed by *bun* may occur in both preverbal and postverbal positions, determined by the grammatical function assigned to them. When *bun* functions as an agent marker in passive constructions, it precedes the verb; when *bun* functions as a recipient marker in ditransitive constructions, it follows the verb.

2.5 Complement and adjunct PP

Before probing into the discussion of the syntactic status of PPs concerning their functions as the complement or the adjunct of verbs, we will first recapitulate the position in relation to the verb where each of the prepositions mentioned above might occur in sentences. As presented in the following table, a PP may occur either preverbally or postverbally, and the position depends on the semantic meaning and the grammatical function they are associated with.

Table 1. Preverbal/Postverbal position of PPs

Preposition \ Position	Preverbal	Postverbal
di	Temporal and Locative	
do	Source and Locative	Directional/Goal
lau	Source, Goal, Benefactive, and Patient	
tung	Source, Goal, Benefactive, and Patient	
ziong	Patient	
bun	Agent	Recipient

The position of Hakka PPs follows the word order generalization of Chinese languages, according to which adjunct PPs are bound with preverbal positions, while complement PPs preferably occur in postverbal positions (Mulder & Sybesma 1992, Feng 2003). As I will discuss in the following, Hakka prepositional phrases can basically be divided into two major categories: preverbal adjunct PPs and postverbal complement PPs. The preverbal adjunct PPs can further be classified into two types based on their functions and syntactic positions in tree diagrams. In addition, we may observe the fourth category in which a preverbal preposition functions to denote the following NP as an agent or a patient argument to the verb. The PPs of this category are complements of verbs appearing in the preverbal position.

The first type of PPs precedes the verb, acting as a preverbal adjunct modifying the VP. Phrases headed by *di* and *do* functioning to indicate the temporal, source and locative information belong to this type. The second type of PPs are also preverbal adjuncts modifying the VP they adjoin to. Phrases headed by *lau* and *tung* with the grammatical functions to introduce a source, goal and benefactive argument to the verb can be classified into this type. When the two types of PPs co-occur to modify the same verb, the precedence order shows that the PP of the first type must precede that of the second type, as shown in (28) and (29) below:

- (28) a. Gi [**di libaingit**] [**tung/lau gieue**] sesiin.
 he on Sunday for dog bathe
 ‘He bathed the dog on Sunday.’
 b. *Gi [**tung/lau gieue**] [**di libaingit**] sesiin.
 he for dog on Sunday bathe
 ‘He bathed the dog on Sunday.’
- (29) a. Gi [**do toibet**] [**tung/lau ge gien diam**] mai suigo.
 he in Taipei from that CL store buy fruit
 ‘He bought fruit from that store in Taipei.’

- b. *Gi [tung/lau ge gien diam] [do toibet] mai suigo.
 he from that CL store in Taipei buy fruit
 ‘He bought fruit from that store in Taipei.’

The third type of PPs constantly occurs in the postverbal position. The PPs that belong to this type include the ones headed by *do* and *bun* functioning to indicate respectively the goal and the recipient to which the action of VP is directed. As shown in the following (30), this type of PPs is the verbal complement which obligatorily appears after the verb. The absence of this type of PPs causes ungrammaticality.

- (30) a. Gi oi hanglu *(do hokgau).
 he want.to walk to school
 ‘He wants to walk (to school).’
 b. Ge zhak seingine sung yit liap lingo *(bun gi).
 that CL kid give.as.gift one CL apple to he
 ‘That kid gave an apple (to him) as a present.’

We may find exceptional cases showing the non-obligatory existence of a complement PP. As in (31) below, a verb like *mai* may optionally be used as a transitive or a ditransitive verb, depending on the argument structure of the verb.

- (31) a. Gi mai [yit bun su] [bun ngai].
 he buy one CL book to I
 ‘He bought a book to me.’
 b. Gi mai [yit bun su].
 he buy one CL book
 ‘He bought a book.’

Both sentences in (31) are syntactically well-formed. In (31a) the argument structure of the verb requires three participants: an agent, a theme and a recipient to be involved in the activity; in (31b) though, only two participants are required: an agent and a theme. We argue that the *bun* heading PP in (31a) is a complement of the main verb because we are allowed to swap the position of the PP with the NP which semantically denotes the theme. As demonstrated in (32), when two constituents co-occur at the same side of the predicate, the complement must be closer to the predicate than the adjunct does. If the PP can cross the objective NP to the immediate right of the verb, it must take the syntactic function as a complement of the verb.

- (32) Gi mai [bun ngai] [yit bun su].
 he buy to I one CL book
 ‘He bought me a book.’

Some complement PPs may be preverbal, in this paper they are classified as the fourth type of PPs. Prepositions such as *tung*, *lau* and *ziong*, when occurring in the preverbal position, may be used as a patient marker to bring out an essential argument to the verb. Another preposition having the similar function is the morpheme *bun*. When used in the passive construction, it functions as an agent marker indicating the demoted argument of the verb. This type of PPs is realized as the oblique complement of the verb. They differ from the first two types of preverbal PPs in two ways. First, unlike the adjunct PPs, the occurrence of a preverbal complement PPs is not optional. The examples in (33) and (34) below show the obligatory occurrence of the preverbal PP complements headed respectively by the patient and the agent marker, which in comparison with the optional PP adjuncts, is required by the head verb.

- (33) a. Gi[tung ge gien diam] [ziong suigo] mai-ciang-ciang.
 he for that CL store PAT fruit buy-clear-clear
 ‘He cleared/bought all the fruit in that store.’
 b. Gi [ziong suigo] mai-ciang-ciang.
 he PAT fruit buy-clear-clear
 ‘He cleared/bought all the fruit.’
 c. *Gi [tung ge gien diam] mai-ciang-ciang.
 he for that CL store buy-clear-clear
 ‘He cleared/bought (all the things) in that store.’
- (34) a. Gi [di libaingit] [bun gia moie] ma.
 he on Sunday PASS his daughter scold
 ‘He was scolded by his daughter on Sunday.’
 b. Gi [bun gia moie] ma.
 he PASS his daughter scold
 ‘He was scolded by his daughter.’
 c. *Gi [di libaingit] ma.
 he on Sunday scold
 ‘He was scolded on Sunday.’

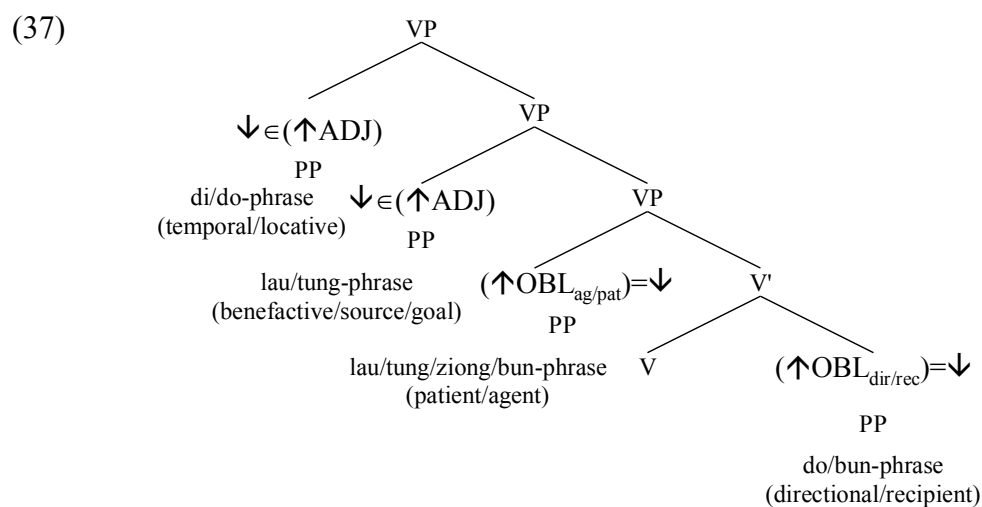
Both (33b) and (34b) are syntactically acceptable with the preverbal adjunct PP being deleted. However, the two (c) sentences in (33) and (34) turn out to be unacceptable when the PP undergoing deletion is the complement PP.

Second, when both the adjunct and the complement PPs co-occur in the same VP, the precedence order must be specified in a designated way. Consider the examples in (35) and (36), which show that the complement PP headed by the patient marker *ziong* or the agent marker *bun* generally follows the different kinds of adjunct PPs.

- (35) a. Gi [tung gia moie] [ziong cien] van-tet le.
 he for his daughter PAT money return-RVC PART
 ‘He paid off all the money for his daughter.’
- b. *Gi [ziong cien] [tung gia moie] van-tet le.
 he PAT money for his daughter return-RVC PART
 ‘He paid off all the money for his daughter.’
 (but: He used the money to pay off the debt for his daughter.)
- (36) a. Gi [di gungyen] [bun gieue] dui den.
 he in park PASS dog chase ASP
 ‘He is being chased by the dog in the park.’
- b. *Gi [bun gieue] [di gungyen] dui den.
 he PASS dog in park chase ASP
 ‘He is being chased by the dog in the park.’
 (but with a contrastive focus reading: It is in the park (not any other location)
 where he is being chased by the dog.)

Thus, the well-formedness of a Hakka sentence prefers the oblique complement to be closer to the verb while at the same time pushing the adjuncts to the more peripheral position.

Generalizing all these four kinds of PPs into the syntactic scheme of the same VP, the structural template can be depicted as in (37):



In this structure, four types of PPs are recognized. The first two types appear in the adjunct position, which left-adjoin to the VP. Another two types of PPs involve complementation, which can be found as the verb selects a preverbal PP as its complement to express the agent or the patient role, or in cases when a postverbal PP is selected to be the complement providing additional information about the direction or the recipient as an extension of meaning required by the verb.

3. The Optimality Theoretic analysis

In this section, an analysis based on the Optimality Theoretic approach (Prince & Smolensky 1993) is proposed. Before we are ready to develop a syntactic OT analysis on the distribution of different kinds of PP within the VP construction, we would first propose a semantic OT analysis with the purpose to assign appropriate syntactic role, i.e. complement or adjunct, to a PP which exhibits semantic parsing in correspondence with the subcategorization of verbs. The tableau evaluation of a syntactic OT approach pursues the “meaning to form” derivation. In this version of analysis the given input is the meaning representation of a syntactic construction, which generated a set of semantically equivalent syntactic forms competing for the grammatical output (Grimshaw 1997). The semantic OT approach, in contrast, pursues the “form to meaning” derivation; i.e., a grammatical form is taken as the input for the tableau analysis, generating alternative meaning representations as candidates to be evaluated, and the optimal meaning could be derived through candidate competition (Hendriks & de Hoop 2001).

In the Hakka case concerning the distribution of PPs, I suggest that we adopt the OT-based analysis from both directions; specifically, a bidirectional approach that provides the capacity for two rounds of optimization process (Blutner 2000). The first round of optimization is based on the OT-semantics, with which the complement and adjunct interpretations compete for the better representation of a given PP form, and the subcategorization frame of the verb is determinant in defining the constraints in effect. The second round of process is based on the OT-syntax. All the PPs at work are now associated with either the complement or adjunct interpretation, the association has been decided earlier through the previous round of optimization. The possible permutations of these PPs then compete with each other to derive the grammatical word orders. The first round of optimization is presented in section 3.1, which also provides an extra analysis to illustrate the semantic functions and restrictions with reference to the three semantically related morphemes *lau*, *tung* and *ziong*. The following sections from 3.2 through 3.5 deal with the second round of OT process. In this round the syntactic analysis is further organized into four stages. The

first stage generalizes the positioning of postverbal PP complements and preverbal PP adjuncts with three Generative Alignment Constraints. The second stage deals with the problem that a certain type of complement PPs empirically appears in the preverbal position. The solution is to further propose a more specific constraint for the PP complements based on their semantic meanings and functions. The third stage handles the word order between the two types of PP adjuncts marked with different semantic functions. At this stage, again, a more specific constraint for the PP adjuncts needs to be proposed to help filter out the unwanted permutation during the process of candidate competition. The final fourth stage focuses on the temporal prepositional constructions involving the morpheme *di*. The analysis proposed in this stage will deal with the situation that the temporal *di*-phrases differ from the other PPs in that they may occur at the sentence initial position without the overt presence of the head preposition *di*.

3.1 First round of optimization—semantic OT

The PPs do not inherently pair with a complement or adjunct interpretation; on the other hand, the interpretation is by and large determined by the strict subcategorization statement (Chomsky 1965) of a given verb in a clause. This is illustrated in (38):

- (38) a. sung: V ‘give as a gift’
 [+__ NP NP NP] [+__ NP NP PP]
 <+agent><+recip> <+theme> <+agent><+theme><+recip>
- b. dui: V ‘chase’
 [+__ NP NP] [+__ NP PP]
 <+agent><+patient> <+patient><+agent>
- c. mai-ciang-ciang: V ‘clear (buy all the items provided)’
 [+__ NP NP] [+__ NP PP]
 <+agent><+theme> <+agent><+patient>

In above examples, each lexical entry contains the syntactic information which includes what syntactic category the word belongs to and what statements/arguments are required in the item’s context. In addition, the semantic representation associated with each selected statement is also expressed in these entries. It should be noted that the verb subcategorizations presented in (38) do not intend to show the position of verbs with respect to other required statements.

(41) ***Subcategorize-COMP**: A verb must be subcategorized for all and only its complements.

***Subcategorize-ADJ**: A verb must be subcategorized for all and only its adjuncts.

Constraints ranking: *Subcategorize-COMP >> *Subcategorize-ADJ

(42)

PP1: <i>di ambuteu</i>	*Subcategorize-COMP	*Subcategorize-ADJ
Complement	*!	
☞ Adjunct		*

(43)

PP2: <i>bun gi</i>	*Subcategorize-COMP	*Subcategorize-ADJ
☞ Complement		*
Adjunct	*!	

As shown in (40), the predicator *sung* is subcategorized for a PP with recipient denotation. Therefore in (42), if the temporal PP *di ambuteu* receives the complement interpretation, presented by the first candidate, it must be ruled out since the complement PP is not specified in the subcategorization frame of the verb. Similarly, in (43), if the recipient PP *bun gi* receives the adjunct interpretation, as illustrated by the second candidate, it must be ruled out since the adjunctive PP is specified in the subcategorization of the verb *sung*. Under this evaluation, the optimal mapping is *di ambuteu* → adjunct; *bun gi* → complement.

When a verb like *dui* is used in the passive voice, it is subcategorized for a patient NP and an agent PP, as presented in (44):

(44) $\left(\begin{array}{l} \text{PRED } \textit{dui} \text{ 'chase' } [+ __ \text{ NP } \text{ PP}] \\ \qquad \qquad \qquad \langle +\text{patient} \rangle \langle +\text{agent} \rangle \\ \text{NP1 } \textit{gi} \text{ 'he' } [+ \text{patient}] \\ \text{PP1 } \left[\begin{array}{l} \text{PRED } \textit{di} \text{ } (\uparrow \text{THEMATIC}) = \text{LOC } [+ __ \text{ NP}] \\ \text{OBJ } \textit{gungyen} \text{ 'park'} \end{array} \right] \\ \text{PP2 } \left[\begin{array}{l} \text{PRED } \textit{bun} \text{ } (\uparrow \text{THEMATIC}) = \text{AGENT } [+ __ \text{ NP}] \\ \text{OBJ } \textit{gieue} \text{ 'dog'} \end{array} \right] \end{array} \right)$

The OT analysis pairs the locative PP with the adjunct interpretation, and the PP denoting the agent role with the complement interpretation, as illustrated in the following (45) and (46):

(45)

PP1: di gungyen	*Subcategorize-COMP	*Subcategorize-ADJ
Complement	*!	
☞ Adjunct		*

(46)

PP2: bun gieue	*Subcategorize-COMP	*Subcategorize-ADJ
☞ Complement		*
Adjunct	*!	

The last case is provided with the verbal predicator *mai-ciang-ciang*, which may have the following functional structure when used in sentences:

(47) (

PRED	<i>mai-ciang-ciang</i> ‘clear (buy all the items)’	[+__ NP PP]	
			<+agent> <+patient>
NP1	<i>gi</i> ‘he’	[+agent]	
PP1	[PRED <i>di</i> (↑ THEMATIC)= TEMP [+__ NP]]
	OBJ <i>cobungit</i> ‘yesterday’		
PP2	[PRED <i>tung</i> (↑ THEMATIC)= BEN [+__ NP]]
	OBJ <i>ge gien diam</i> ‘that store’		
PP3	[PRED <i>ziong</i> (↑ THEMATIC)= PAT [+__ NP]]
	OBJ <i>suigo</i> ‘fruit’		

)

When three different kinds of PPs co-occur in the same VP, again the optimization process associate both the temporal and the benefactive PPs with adjunctive interpretations, and here only the PP of patient role indication is interpreted as the complement of predicator. See the three tableaux presented in (48) throughout (50).

(48)

PP1: di cobungit	*Subcategorize-COMP	*Subcategorize-ADJ
Complement	*!	
☞ Adjunct		*

(49)

PP2: tung ge gien diam	*Subcategorize-COMP	*Subcategorize-ADJ
Complement	*!	
☞ Adjunct		*

(50)

PP3: ziong shuigo	*Subcategorize-COMP	*Subcategorize-ADJ
☞ Complement		*
Adjunct	*!	

The OT approach developed in this section applies the constraint hierarchy that is based on the subcategorization frame of the predicator verb to all the PP constituents enclosed in the functional structure of the verb. As stated earlier at the beginning of section 3, the purpose is to predict the complement or adjunct interpretation on a given PP form, which as will be shown in the succeeding section, is pretty crucial in deciding the appropriate syntactic position when we are about to deal with their relative order within clauses.

Finally, at the end of this section, we solve a subsidiary problem and that is the distinction between three semantically related morphemes *lau*, *tung* and *ziong* when used as a patient marker. To recapture the previously mentioned semantic restrictions related to the three morphemes, I repeat (51) and (52), the earlier examples listed respectively in (14), (15) and (17).

- (51) a. Gi **lau**/?**tung** **ge** **bun** **su** mai-zeu le.
 he PAT that CL book buy-RVC PART
 ‘He has bought that book.’
- b. Gi **lau**/?**tung** **sinsang** hi do mien-fung-fung.
 he PAT teacher irritate COMP face-red-red
 ‘He irritated the teacher to the degree that the teacher’s face has turned red.’
- (52) a. Gi **ziong** **ge** **bun** **su** mai-zeu le.
 he PAT that CL book buy-RVC PART
 ‘He has bought that book.’
- b. Gi **ziong** **sinsang** hi do mien-fung-fung.
 he PAT teacher irritate COMP face-red-red
 ‘He irritated the teacher to the degree that the teacher’s face has turned red.’

The examples in (51) illustrate the inappropriateness of using the preposition *tung* in the context where the following NP denotes an inanimate object (51a), or in cases when the PP is encoded with the malefactive meaning (51b), but the preposition *lau* is not subject to the same restrictions. The examples in (52) show that the use of preposition *ziong* is similar to *lau*, which is free from the restrictions that have been imposed upon *tung*.

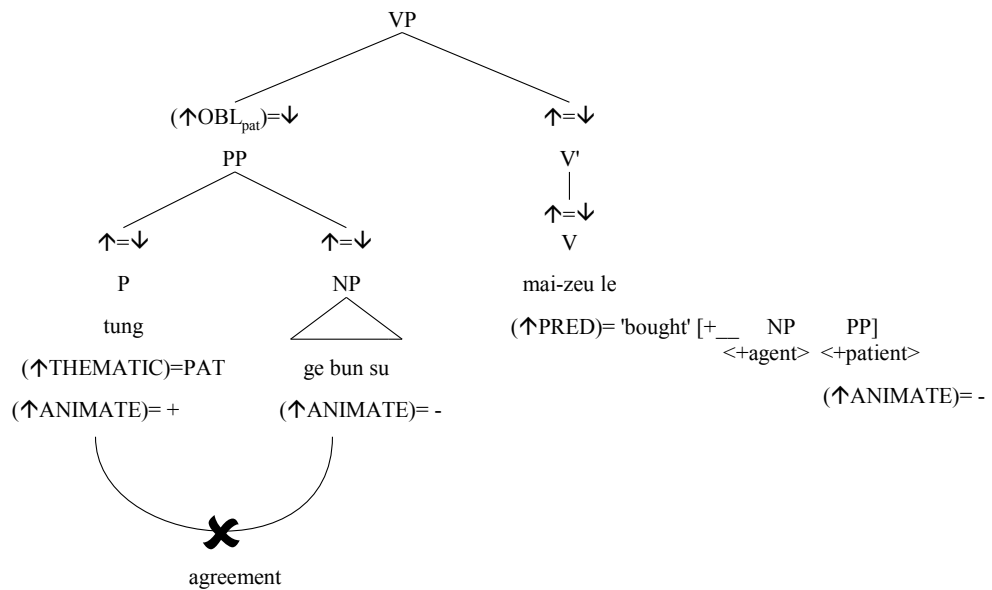
The explanation for the semantic restrictions on *tung* lies with the agreement of semantic features between the preposition and its subcategorized NP statement. Consider the following feature specification of the three prepositions under discussion: *lau*, *tung* and *ziong*.

Table 2. Feature specification of *lau/tung/ziong* '(↑ THEMATIC)= PAT'

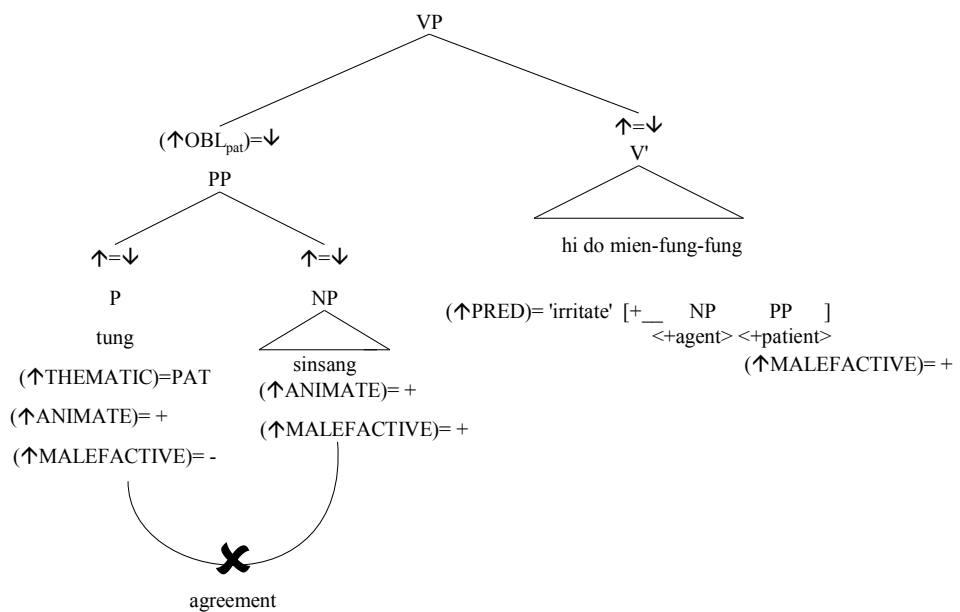
semantic feature	lau	tung	ziong
[animate]	[α animate]	[+ animate]	[α animate]
[malefactive]	[α malefactive]	[malefactive]	[α malefactive]

With this feature specification in mind, the ungrammaticality of *tung* appearing in (51a) and (51b) can be attributed to the disagreement in semantic feature between the predicator preposition and the NP, as depicted in (53) and (54):

(53)



(54)



The tree in (53) corresponds to the ungrammatical sentence (51a), in which the preposition *tung* disagrees with the NP in [animate] feature; while the tree in (54) explains the ungrammatical expression (51b) by showing their disagreement in [malefactive] feature. With an OT model, we can propose the following Faithfulness constraints on features agreement, which outrank the constraint IDENT to force segment replacement when the semantic agreement between the preposition and its NP complement breaks.

(55) **Faith-SemF(animate)**: Semantic agreement must be reached between the preposition and its subcategorized NP in the feature [animate].

Faith-SemF(malefactive): Semantic agreement must be reached between the preposition and its subcategorized NP in the feature [malefactive].

IDENT: Identical values of all the features must be preserved between input and output.

The tableaux shown in (56) and (57) work through the cases of (53) and (54), showing that the OT can capture the phenomenon mentioned above.

(56)

	Faith-SemF (animate)	Faith-SemF (malefactive)	IDENT
...tung ge bun su...	*!		
☞ ...lau ge bun su			*
☞ ...ziong ge bun su...			*

(57)

	Faith-SemF (animate)	Faith-SemF (malefactive)	IDENT
...tung singsang...		*!	
☞ ...lau singsang...			*
☞ ...ziong singsang...			*

The ranking **Faith-SemF(animate), Faith-SemF(malefactive) >> IDENT** predicts the replacement of *lau* or *ziong* over the inappropriate *tung* in the semantic context where the complement of the preposition is inanimate, or in cases when the PP functions to express a malefactive event. The former situation fatally violates the constraint **Faith-SemF(animate)** as shown in (56), while the latter fatally violates **Faith-SemF(malefactive)**, as in (57), both irretrievable violations save the violation on **IDENT**, rendering the change of linguistic elements possible.

3.2 Second round of optimization—syntactic OT

Once we have decided the complement or adjunct interpretation for each PP enclosed in the VP construction, we can continue to the second round of syntactic OT analysis. As shown below, the development of a syntactic OT approach on the distribution of PPs can be divided into four stages.

3.2.1 Stage one—preverbal adjunction and postverbal complementation

As mentioned in section 2, Hakka adjunct PPs are always found in preverbal positions, while complement PPs preferably occur in postverbal positions. By adopting the Optimality Theoretic analysis, this word order generalization can be accounted for through the interaction of three Generalized Alignment Constraints (McCarthy & Prince 1993a, b), as defined in (58):

- (58) **ALIGN-L (X, XP)**: Align X with the left edge of the XP that dominates it.
ALIGN-L (YP, XP): Align YP, which appears to be an adjunct of XP, with the left edge of the XP that dominates it.
ALIGN-L (ZP, XP): Align ZP, which appears to be a complement of X, with the left edge of the XP that dominates it.

The first positional constraint **ALIGN-L (X, XP)**, which functions to enforce a non-phrasal head node X to the left edge of its phrasal projection XP, must outrank **ALIGN-L (ZP, XP)**, which enforces all complements of X being positioned at the initial position of the same XP projection. The constraint ranking ensures the structure of both VP and PP to be left-headed and right-branching. On the other hand, knowing that in Hakka a VP allows only the left adjunct of PP adjunctions, the constraint **ALIGN-L (YP, XP)**, which enforces the adjuncts of an XP to be phrasal initial, must outrank **ALIGN-L (X, XP)**, so that a PP adjunct is allowed to left adjoin to a VP and thus it may precede the head verb within the VP domain. The proposed constraint ranking is generalized in (59):

- (59) **ALIGN-L (YP, XP) >> ALIGN-L (X, XP) >> ALIGN-L (ZP, XP)**

Now given the following two grammatical sentences in (60), both sentences show an example of the ditransitive construction, which involves a ditransitive verb *sung* followed by two complements. The direct object is realized by an NP, and the indirect object is realized by a PP headed by the preposition *bun*. By comparing the two sentences in (60), we can find that the relative word order between the two postverbal

complements, the direct objective NP and the indirect objective PP, is syntactically free; namely, the *bun*-heading PP can freely occur before or after the objective NP.

- (60) a. Gi [di ambuteu] sung [yit liap linggo] [bun gi].
 he at night give.as.gift one CL apple to he
 ‘That kid gave an apple to him as a present at night.’
 b. Gi [di ambuteu] sung [bun gi] [yit liap linggo].
 he at night give.as.gift to he one CL apple
 ‘That kid gave to him an apple as a present at night.’

The grammaticality of the two sentences in (60) can be accounted for by the OT-based analysis presented in the following tableau (61):

(61)

Verb: sung ‘give as gift’ ADJ: di ambuteu ‘at night’ COMP1: yit liap linggo ‘an apple’ COMP2: bun gi ‘to him’	ALIGN-L (YP, XP)	ALIGN-L (X, XP)	ALIGN-L (ZP, XP)
sung [di ambuteu] [yit liap linggo] [bun gi]	*!		*****
[bun gi] sung [di ambuteu] [yit liap linggo]	*!*	*	***
[di ambuteu] [bun gi] sung [yit liap linggo]		**!	****
[di ambuteu] [bun gi] [yit liap linggo] sung		**!*	***
☞ [di ambuteu] sung [bun gi] [yit liap linggo]		*	*****
☞ [di ambuteu] sung [yit liap linggo] [bun gi]		*	*****

It should be noted that in this paper, the evaluation of Generalized Alignment Constraints takes into account the degree of violation. Taken in this sense, violations of all the alignment constraints proposed in (58) should be calculated cumulatively, as the constraints are designed to measure the distance between the two designated edges of the referring categories.

From the above tableau, we can see that assigning the highest ranking to the constraint **ALIGN-L (YP, XP)** rules out the first two candidates in which the adjunct PP appears in any other position except phrase initial. Then, the dominance of **ALIGN-L (X, XP)** over **ALIGN-L (ZP, XP)** in the constraint hierarchy ensures the head verb to appear in the second position right after the adjunct PP, which left the last two candidates as the grammatical outputs. The tableau analysis successfully accounts for the two well-formed sentences in (60), where the adjunct PP occupies the left-most position in the VP, followed by the head verb, and then the two phrasal complements. The precedence order of the two postverbal complements is unconstrained.

3.2.2 Stage two—preverbal complementation

It may sound ideal to identify the syntactic function of PPs as complements or adjuncts according to their position in relation to the head verb; that is, all the preverbal PPs are verbal adjuncts, while all the postverbal PPs are verbal complements. However, it is indeed an overgeneralization to build such an absolute association, as demonstrated in (62) below:

- (62) a. Gi [tung ge gien diam] [ziong suigo] mai-ciang-ciang.
 he for that CL store PAT fruit buy-clear-clear
 ‘He cleared/bought all the fruit in that store.’
- b. Gi [di gungyen] [bun gieue] dui den.
 he in park PASS dog chase ASP
 ‘He is being chased by the dog in the park.’

The two sentences in (62) repeat the previous examples listed earlier in (33) and (36) in this paper. As it has been argued that the preverbal PP projected by the patient marker *ziong* in (62a) and the PP projected by the passive marker *bun* in (62b) are actually complements of the verb, the two sentences display counter-examples against the overgeneralization addressed in the previous paragraph.

Now if we go back to the theoretic model we have developed so far, we find that the OT account that has been established up to this point fails to generate the two grammatical sentences in (62), where the PP complement appears preverbally preceding the head verb. The wrong prediction can be seen in the following tableau (63), indicated by the symbol ⊗ in all the following tableaux. In this tableau the ungrammatical pattern “ADJ Verb COMP” is problematically selected as the optimal output when the PP complement is expressed by a *ziong*-phrase functioning to denote the patient role or by a *bun*-phrase denoting the demoted agent role. We know the output generated by the tableau in (63) is incorrect because according to (62), the only grammatical pattern allowed in this case is “ADJ COMP Verb,” where both the verbal adjunct and complement precede the head verb.

(63)

Verb: mai-ciang-ciang ‘clear out’/ dui ‘chase’ ADJ: tung... (benefactive)/ di... (locative) COMP: ziong... (patient)/ bun... (passive)	ALIGN-L (YP, XP)	ALIGN-L (X, XP)	ALIGN-L (ZP, XP)
Verb ADJ COMP	*!		**
Verb COMP ADJ	*!*		*
⊗ ADJ Verb COMP		*	**
COMP Verb ADJ	*!*	*	
⊗ ADJ COMP Verb		**!	*
COMP ADJ Verb	*!	**	

⊗⊗ = wrong predictions

A solution to this is to further propose a more specific constraint **ALIGN-L (PP_{Agent/Patient}, XP)**. This constraint requires the PP complement of verbs surfaces in the phrase initial position as long as the PP functions to indicate the patient or the agent role for the semantic domain of the head verb. The constraint is defined in (64):

(64) **ALIGN-L (PP_{Agent/Patient}, XP)**: Align PP with the left edge of the XP that dominates it iff the PP is a complement of X and it is associated with the agent or the patient semantic role.

Now the new OT tableau successfully generates the correct grammatical output pattern. See the following tableau in (65) for the constraints interaction:

(65)

Verb: mai-ciang-ciang / dui ADJ: tung... / di... COMP: ziong... (patient) bun... (agent)	ALIGN-L (YP, XP)	ALIGN-L (X, XP)	ALIGN-L (PP _{Ag/Pat} , XP)	ALIGN-L (ZP, XP)
Verb ADJ COMP	*!		**	**
Verb COMP ADJ	*!*		*	*
ADJ Verb COMP		*	**	**!
COMP Verb ADJ	*!*	*		
⊗ ADJ COMP Verb		**	*	*
COMP ADJ Verb	*!	**	**	

In this tableau the equal ranking between **ALIGN-L (X, XP)** and **ALIGN-L (PP_{Agent/Patient}, XP)** is decisive in saving the fatal violation identified in the previous tableau (63) on the grammatical pattern “ADJ COMP Verb.” The candidate “ADJ Verb COMP” collects double violations on the constraint **ALIGN-L (PP_{Agent/Patient}, XP)** by positioning the PP complement postverbally in the phrase final position, which balances the violations of the candidate “ADJ COMP Verb” on the constraint

ALIGN-L (X, XP) where the PP complement precedes the verb, and the verb occurs phrase-finally. Then the constraint **ALIGN-L (ZP, XP)** optimally selects “ADJ COMP Verb” over “ADJ Verb COMP” given the fact that the former candidate has the complement phrase closer to the left edge of the VP. The analysis provided in (65) successfully selects the grammatical pattern “ADJ COMP Verb” as the optimal output based on this proposed constraint ranking: **ALIGN (YP, XP) >> ALIGN (X, XP), ALIGN-L (PP_{Agent/Patient}, XP) >> ALIGN-L (ZP, XP).**

3.2.3 Stage three—two types of preverbal adjunction

In the earlier section 2.5, I have mentioned that the preverbal adjunct PPs can actually be divided into two kinds. The temporal and locative PPs projected by *di* and *do* belong to one kind, and the PP constructions involving the head prepositions *lau* and *tung* with the function to introduce a source, goal and benefactive argument to the verb are members of another kind. It has also been maintained that if the two kinds of PPs co-occur modifying the same VP, the temporal/locative PP must precede the source/goal/benefactive PP to appear in the more peripheral position.

While the OT analysis established so far works pretty well to generate the positioning of different types of PPs, a problem arises as it fails to account for the restricted word order when the structure of a VP contains simultaneously the PP adjunction of these two kinds of preverbal PPs, as shown in (66). The sentence (66a) involves three preverbal PPs. The PP which is closest to the main verb, headed by the preposition *ziong*, is a preverbal complement bringing out the patient argument to the verb. The other two PPs are adjuncts. The *di*-phrase functions to indicate temporal information, and the *tung*-phrase expresses the benefactive meaning, stating that the following NP object is benefiting from the action of VP. As shown in (66a), the temporal PP must precede the benefactive PP; if we switch the position of the two preverbal adjuncts, the sentence becomes unacceptable, see (66b).

- (66) a. Gi [**di cobungit**] [**tung ge gien diam**] [ziong suigo] mai-ciang-ciang.
 he in yesterday for that CL store PASS fruit buy-clear-clear
 ‘He cleared/bought all the fruit in that store yesterday.’
- b. *Gi [**tung ge gien diam**] [**di cobungit**] [ziong suigo] mai-ciang-ciang.
 he for that CL store in yesterday PASS fruit buy-clear-clear
 ‘He cleared/bought all the fruit in that store yesterday.’
 (but with a contrastive focus reading: It is yesterday (not any other time)
 when he cleared/bought all the fruit in that store.)

Given the above two sentences in (66), the analysis developed up to this point, however, wrongly allows the free ordering between the two adjunct PPs. The tableau provided in (67) below shows this false prediction:

(67)

Verb: mai-ciang-ciang ADJ 1: di... (temporal) ADJ 2: tung... (benefactive) COMP: ziong... (patient)	ALIGN-L (YP, XP)	ALIGN-L (X, XP)	ALIGN-L (PPAg/Pat, XP)	ALIGN-L (ZP, XP)
ADJ1 ADJ2 V COMP	*	**	***	***!
ADJ2 ADJ1 V COMP	*	**	***	***!
↷ ADJ1 ADJ2 COMP V	*	***	**	**
☹↷ ADJ2 ADJ1 COMP V	*	***	**	**
COMP ADJ1 ADJ2 V	**!*	***		
ADJ1 COMP ADJ2 V	**!	***	*	*
ADJ1 V ADJ2 COMP	**!	*	***	***
V ADJ1 ADJ2 COMP	**!*		***	***

The evaluation shown in (67) problematically selects the candidate “ADJ2 ADJ1 COMP V” as the equally optimal ordering pattern, indicated by the symbol ☹. According to (66), when a temporal *di*-phrase and a benefactive *tung*-phrase co-occur in the same VP, the former PP must precede the later one; the swap of position will lead to ungrammaticality.

To eliminate the ungrammatical pattern from the list of grammatical outputs, I propose another constraint **ALIGN-L (PPTemp/Loc, XP)**, which requires any adjunct PP encoding temporal or locative information to appear at the left edge of VP. This constraint is defined in (68) below:

(68) **ALIGN-L (PPTemp/Loc, XP)**: Align PP with the left edge of the XP that dominates it iff the PP is an adjunct of XP and it is used to express the temporal or the locative information to further modify the verb.

Now, see the following tableau in (69) for the revised constraints ranking and interaction:

(69)

Verb: mai-ciang-ciang ADJ 1: di... (temporal) ADJ 2: tung... (benefactive) COMP: ziong... (patient)	ALIGN-L (PPTemp/ Loc, XP)	ALIGN-L (YP, XP)	ALIGN-L (X, XP)	ALIGN-L (PPAg/Pat, XP)	ALIGN-L (ZP, XP)
ADJ1 ADJ2 V COMP		*	**	***	***!
ADJ2 ADJ1 V COMP	*!	*	**	***	***
☞ ADJ1 ADJ2 COMP V		*	***	**	**
ADJ2 ADJ1 COMP V	*!	*	***	**	**
COMP ADJ1 ADJ2 V	*!	***	***		
ADJ1 COMP ADJ2 V		***!	***	*	*
ADJ1 V ADJ2 COMP		***!	*	***	***
V ADJ1 ADJ2 COMP	*!	***		***	***

In (69), the ungrammatical pattern “ADJ2 ADJ1 COMP V” is now ruled out by positioning the temporal PP headed by *di* to the right of the benefactive *tung*-phrase, leading to a fatal violation on the newly proposed high-ranking constraint **ALIGN-L (PPTemp/Loc, XP)**. Thus, the optimization process left only the pattern “ADJ1 ADJ2 COMP V” as the winning output. The constraint hierarchy is summarized in the following (70).

(70) **ALIGN-L (PPTemp/Loc, XP) >> ALIGN (YP, XP) >> ALIGN (X, XP),**
ALIGN-L (PPAgent/Patient, XP) >> ALIGN-L (ZP, XP)

3.2.4 Stage four—the sentence initial *di*-construction

As shown previously in example (7a), when the prepositional *di*-phrase is used as a time indicator, it may occur at the sentence initial position preceding both the verb and the subject NP. The construction is nevertheless subject to the condition that the functional *di* may not be overtly presented in the sentence. Some examples are listed in the following (71):

- (71) a. (*Di) **libaingit** gi voi hi hokgau tuk yinvun.
on Sunday he will go school study English
‘He goes to school studying English on Sunday.’
- b. (*Di) **cokbungit** gi siit-tet sam van fan.
on yesterday he eat-RVC three CL rice
‘He ate three bowls of rice yesterday.’

On the other hand, when the same temporal phrases appear in the preverbal position following the subject NP, the preposition *di* may or may not overtly occur, see the examples in (72):

- (72) a. Gi **(di) libaingit** voi hi hokgau tuksu.
 he on Sunday will go school study
 ‘He usually goes to school to study on Sunday.’
 b. Gi **(di) cokbungit** siit-tet sam van fan.
 he on yesterday eat-RVC three CL rice
 ‘He ate three bowls of rice yesterday.’

To account for this syntactic phenomenon of temporal expressions, we need to propose another alignment constraint **ALIGN-L (PP_{Temp}, S)**, which aligns the temporal PP with the left edge of the sentence containing it, see (73).

- (73) **ALIGN-L (PP_{Temp}, S)**: Align PP with the left edge of the sentence that contains it iff the PP is an adjunct functioning to indicate temporal information.

The constraint (73) and the previously proposed constraint **ALIGN-L (PP_{Temp/Loc}, XP)** in (68) must be equally ranked to specifically confine the ordering of temporal expressions to the initial position of either the VP or the Sentence. Additionally, the two alignment constraints must then be outranked by another markedness constraint ***_s[Func...]**, defined in (74), which penalizes any functional word occurring at the initial position of a sentence.

- (74) ***_s[Func...]**: A functional morpheme may not occur at the sentence initial position.

The proposed ranking enforces the functional *di* undergoing deletion when the head-initial *di*-phrase appears at the beginning of a sentence. The following (75) explains the relevant constraint hierarchy:

- (75) ***_s[Func...] >> ALIGN-L (PP_{Temp}, S), ALIGN-L (PP_{Temp/Loc}, XP)**

Now put the sentence provided in (71b) and (72b) into the Optimality Theoretic analysis, the result is presented in the following tableau analysis (76):

(76)

SUBJ: gi ‘he’ VP: siit-tet sam van fan ‘ate three bowls of rice’ ADJ: di cokbungit ‘yesterday’	* _s [Func...]	ALIGN-L (PPTemp, S)	ALIGN-L (PPTemp/Loc, XP)
☞ gi [di cokbungit] siit-tet...		*	
[di cokbungit] gi siit-tet...	*!		*
☞ [Ø cokbungit] gi siit-tet...			*
☞ gi [Ø cokbungit] siit-tet...		*	
gi siit-tet... [di cokbungit]		**!	*

As shown in (76), the temporal PP is allowed to occur only at the left edge of VP or the entire sentence, as constrained by **ALIGN-L (PPTemp, S)** and **ALIGN-L (PPTemp/Loc, XP)**. The second candidate even though collects only single violation on the two alignment constraints, it fatally violates the highest ranking markedness constraint *_s[Func...] by beginning the sentence initial PP with an overt preposition *di*. The presence of this sentence initial functional morpheme causes an ungrammatical judgment.

Based on this tableau analysis, we observe that a temporal PP is allowed to appear at the leftmost position of either a sentence or a VP, with a syntactic restriction being imposed on the presence of the head preposition. If the PP is sentence initial, the preposition providing temporal information must be deleted to avoid the unacceptable situation where a functional morpheme surfaces as the first element of a sentence.

To summarize the Optimality Theoretic approach developed in section 3, the following (77) restates the constraint hierarchy proposed for the Hakka case.

- (77) *_s[Func...] >> **ALIGN-L (PPTemp, S)**, **ALIGN-L (PPTemp/Loc, XP)** >>
ALIGN (YP, XP) >> **ALIGN (X, XP)**, **ALIGN-L (PPAgent/Patient, XP)** >>
ALIGN-L (ZP, XP)

4. Conclusion

In this paper, I have discussed the function of some commonly used Hakka prepositions, along with the construction related to each of them. The prepositions at issue include *di*, *do*, *tung*, *lau*, *ziong*, *bun*. Then I divided the PPs involving these prepositions into four types based on their meaning, function, position in sentences, as well as their relation with the head verb. All adjunct PPs occur in the preverbal position. PPs headed by *di* and *do* functioning to express the temporal and locative information are classified as the first type. The second type of adjunct PP comprises

those *lau* and *tung* heading phrases, which are associated with the grammatical function to introduce a source, goal and benefactive argument to the verb. The other two types are complement PPs. A PP canonically appears in the postverbal position when functioning as a verbal complement. The phrases projected by *do* with the directional function, and the phrases projected by *bun* bringing out a recipient to the verb belong to this type. On the other hand, some complement PPs empirically appear in the preverbal position. The passive *bun*-phrases and the patient-emphatic *ziong*-phrases, functioning to mark either an agent or a patient argument to the verb, are also verbal complements, but they differ from the previous complement type in that they have to precede the head verb. As shown in this paper, the four types of PPs should be assigned different syntactic positions in the tree diagrams. They must follow a certain ordering patterns to result in grammatical Hakka sentences. Finally, an OT-based approach is provided to explain and generalize the positioning of these different types of PPs. The analysis is achieved through two rounds of OT evaluation. The first round is based on the semantic OT, by which each PP receives its complement or adjunct interpretation when enclosed in the functional structure of a verb predicator. The second round of analysis is based on the interaction of six Generalized Alignment Constraints proposed on the PPs associated with different semantic meanings and syntactic functions.

References

- Blutner, Reinhard. 2000. Some aspects of optimality in natural language interpretation. *Journal of Semantics* 17:189-216.
- Cheng, Lisa L.-S., C.-T. James Huang, Y.-H. Audrey Li, and C.-C. Jane Tang 1993. Three ways to get passive. Manuscript, University of California, Irvine, USA, University of Southern California, USA, and Academia Sinica, Taiwan.
- Chomsky, Noam. 1965. *Aspects of the Theory of Syntax*. Cambridge, MA: MIT Press.
- Feng, Shengli. 2003. Prosodically constrained postverbal PP in Mandarin Chinese. *Linguistics* 41:1085-1122.
- Grimshaw, Jane. 1997. Projections, heads, and optimality. *Linguistic Inquiry* 28:373-422.
- Hashimoto, Mantaro. 1969. Observations on the passive construction. *Chi-Lin* 5:59-71.
- Hendriks, Petra, and Helen de Hoop. 2001. Optimality theoretic semantics. *Linguistics and Philosophy* 24:1-32.

- Huang, Chu-Ren, and Kathleen Ahrens. 1999. The function and category of *gei* in Mandarin ditransitive constructions. *Journal of Chinese Linguistics* 27:1-26.
- Koopman, Hilda. 1984. *The Syntax of Verbs*. Dordrecht: Foris publications.
- Lai, Huei-Ling. 1988. A Preliminary Study on Hakka "To". MA thesis, Cheng-Chi University, Taiwan.
- Lai, Huei-Ling. 2001. On Hakka Bun: A case of polygrammaticalization. *Language and Linguistics* 2:137-153.
- Lai, Huei-Ling. 2002. From verb to verbal affix: Evidence from the verb Do in Hakka. *Form and Function: Linguistic Studies in Honor of Shuanfan Huang*, ed. by Lily I-wen Su, Chinfa Lien, and Kawai Chui, 225-247. Taipei, Taiwan: Crane Book.
- Lai, Huei-Ling. 2003a. Hakka *Lau* constructions: A constructional approach. *Language and Linguistics* 4:353-378.
- Lai, Huei-Ling. 2003b. The semantic extension of Hakka *Lau*. *Language and Linguistics* 4:533-561.
- Li, Charles N., and Sandra A. Thompson. 1981. *Mandarin Chinese: A Functional Reference Grammar*. Berkeley, CA: University of California Press.
- Li, Yen-Hui. 1990. *Order and Constituency in Mandarin Chinese*. Dordrecht: Kluwer.
- McCarthy, John, and Alan Prince. 1993a. Generalized alignment. *Yearbook of Morphology*, ed. by G. E. Booij and J. van Marle, 79-153. Dordrecht: Kluwer.
- McCarthy, John, and Alan Prince. 1993b. Prosodic morphology I: Constraint interaction and satisfaction. Manuscript, University of Massachusetts, Amherst, and Rutgers University, New Brunswick.
- Mei, Kuang. 1972. Studies in the Transformational Grammar of Modern Standard Chinese. Doctoral dissertation, Harvard University, United States.
- Mulder, René, and Rint Sybesma. 1992. Chinese is a VO language. *Natural Language & Linguistic Theory* 10:439-476.
- Prince, Alan, and Paul Smolensky. 1993. Optimality Theory: Constraint interaction in generative grammar. Manuscript, Rutgers University, New Brunswick, USA, and University of Colorado, Boulder, USA.
- Ritter, Elizabeth, and Sara T. Rosen. 2000. Event structure and ergativity. *Events as Grammatical Objects*, ed. by Carol Tenny and James Pustejovsky, 187-238. Stanford: CSLI.
- Rhys, Catrin Sian. 1996. Event structure and the *ba* construction. *York Papers in Linguistics* 17:299-332.
- Tang, Ting-Chi. 1979. Double object constructions in Mandarin. *Guoyu Yufa Yanjiu Lunji [Studies in Chinese Linguistics]*, ed. by Ting-Chi Tang, 449-537. Taipei, Taiwan: Student Bookstore.

- Ting, Jen. 1995. A Non-uniform Analysis of the Passive Construction in Mandarin Chinese. Doctoral dissertation, University of Rochester, United States.
- Ting, Jen, and Miller Chang. 2004. The category of *GEI* in Mandarin Chinese and grammaticalization. *Taiwan Journal of Linguistics* 2:45-74.
- Travis, Lisa. 1984. Parameters and Effects of Word Order Variation. Doctoral dissertation, Massachusetts Institute of Technology, United States.
- Wang, Peter C. T. 1970. A Transformational Approach to Chinese *ba* and *bei*. Doctoral dissertation, University of Texas, United States.
- Wei, Pei-Chuan. 1994. Guhangu beidongshi de fazhan yu yanbian jizhi [On the development and mechanism of change of the passive construction in Classical Chinese.] *Chinese Language and Linguistics* 2:293-319.
- Xu, Zhao-Quan. 2001. *Taiwan Kejiahua Cidian [A Dictionary of the Hakka Spoken in Taiwan]*. Taipei, Taiwan: SMC Publishing Inc.

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從優選理論分析客語 *DI*、*DO*、*BUN*、*LAU*、*TUNG*、*ZIONG* 等相關介系詞片語之句法位置

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這篇文章有三個目的：一是探討客語中常見的幾個介系詞 *di*、*do*、*bun*、*lau*、*tung*、*ziong* 的用法，及其相關片語之句法結構。二是將這些常見的介系詞片語依照其功能及位置區分為四大種類。第三是以優選理論分析這些介系詞片語在句式中的分布，並歸納成制約條件排序的理論。優選理論將分為兩個步驟進行分析，第一步先將優選理論應用在語意學的範圍，藉此指定每個介系詞片語的補語或附加語功能；第二步運用優選理論於句法範疇，藉由概括對整制約條件間的排序，預測屬於每一種類介系詞片語允許且適當的句法位置。

關鍵詞：客語、優選理論、介系詞片語、句法