

On the Syntactic Status of Infinitival *to**

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Cho, Keeseok. 2009. On the Syntactic Status of Infinitival *to* *Linguistic Research* 26(3), 147-160. The purpose of this article is to discuss the syntactic structure of infinitival TP and offer an alternative analysis of the infinitival *to*. In current generative grammar it is generally assumed that the infinitival TP is headed by the infinitival *to*. This analysis is dependent on affix hopping of the infinitival *to* onto a main verb, just as a tense affix undergoes affix lowering to a bare main verb in tensed clauses. The problems of such previous analyses will be discussed with regard to the blocking effect of the negative element *not* in negative sentences. An alternative idea will be suggested that the infinitival *to* is not the head of TP but the head of LinkP. Under this alternative analysis we will have to adopt the null Tense for the infinitival TP. So in sentences containing embedded infinitival clauses such as *It is possible for John to pass the exam* and *He hopes to pass the exam*, the embedded clause subjects *John* and *PRO* are not at the specifier position of the infinitival *to*, which will be shown to be a link in this study, but at the specifier position of the null Tense. (Cyber Hankuk University of Foreign Studies)

Key Words blocking effect, infinitival *to*, link, affix hopping, null Tense, infinitival TP

1. Introduction

Based on the idea that theta roles should be assigned within the m-command domain of predicates, Chomsky (1981) suggested a syntactic structure such as (1).

(1) [_{CP} Comp [_{IP} Infl [_{NegP} Neg [_{VP} Subject V]]]]

In structure (1) a subject is base-merged at the specifier position of VP where it receives a theta role within the m-command domain of the verb and raises to the specifier position of IP to receive Case.

Pollock's (1989) Split Infl Hypothesis splits the dual headed Infl into Tense

* I would like to thank two anonymous reviewers for their insightful comments and critiques.

and Agr and attributes the cross-linguistic differences of verb location with respect to frequency adverbs to different distances of main verb movements, so that we have a syntactic structure such as (2).

- (2) [_{CP} Comp [_{TP} Tense [_{NegP} Neg [_{AgrP} Agr [_{VP} Adv [_{VP} V]]]]]]

Chomsky (1991) adopts the Split Infl Hypothesis and reverses the relative position of Tense with respect to Agr on the basis of morphological evidence that agreement morphemes are outside tense morphemes and postulates another Agr between NegP and VP such as (3).

- (3) [_{CP} Comp [_{AgrsP} Agrs [_{TP} Tense [_{NegP} Neg [_{AgroP} Agro [_{VP} V]]]]]]

The Agr above Tense is involved in subject-verb agreement and nominative case assignment, and the Agr below Tense is Agro involved in object-verb agreement and accusative case assignment.

Baker (1988) and Larson (1988) suggest a double verb phrase structure for double internal argument constructions on the basis of Uniform Theta Role Assignment Hypothesis (UTAH) and asymmetric c-command requirement between binder and bindee, respectively. The double verb phrase structure is as follows.

- (4) [_{CP} Comp [_{AgrsP} Agrs [_{TP} Tense [_{NegP} Neg [_{AgroP} Agro [_{VP} V [_{VP} V]]]]]]]]

Chomsky (1995) adopts the double verb phrase structure put forth by Baker (1988) and Larson (1988) and eliminates the theory-internal concept Agr and offers a syntactic structure such as in (5).¹⁾

- (5) [_{CP} Comp [_{TP} Tense [_{NegP} Neg [_{VP} V [_{VP} V]]]]]]

Syntactic structure (5) is one of the most up-to-date versions of syntactic structures in generative grammar. To the verb-based sentential structure such as in (5), Cho (2006) offers a contrast and puts forth a predicate-based sentential

1) In the double verb phrase structure put forth by Baker (1988), the upper verb is just an empty place.

structure such as in (6).

(6) [_{CP} (Comp) [_{TP} (Tense) [_{NegP} (Neg) [_{LinkP} (Link) [_{AspP} (Asp) [_{PredP} Pred]]]]]]]

A comparison of sentential structures in (5) and (6) shows that they have the same structures from CP to NegP but have different syntactic structures below NegP. The verb phrase in (5) is divided into LinkP, AspP, and PredP in (6). In the next section we will discuss in detail the motivations for postulating LinkP, AspP, and PredP.

2. Predicate-based Syntactic Structure

Cho (2006) offers a predicate-based syntactic structure such as in (7) as an alternative to the verb-based syntactic structure.

(7) [_{CP} (Comp) [_{TP} (Tense) [_{NegP} (Neg) [_{LinkP} (Link) [_{AspP} (Asp) [_{PredP} Pred]]]]]]]

Structure (7) is different from the verb-based syntactic structure in that LinkP, AspP, and PredP are postulated below NegP.²⁾ We will review the motivations for postulating three new syntactic components below NegP.

The reason why PredP is postulated in place of the Verb Phrase is that tense is not separated from all verbs but only from predicate verbs. Let us consider the following sentences.

- (8) a. He kissed her.
 b. He did not kiss her.
 c. Did he kiss her?
 d. What he did was kiss her.
 e. Kiss her he did.
 f. She was kissed by him.
 g. Sue was cute.
 h. Sue was not cute.
 i. Was Sue cute?

2) The parenthesis simply indicates optionality.

- j. *How Sue was was be cute.
- k. *Be cute Sue was.

(8a) is a declarative sentence and has a tense verb. The tense is separated from the verb in negative sentences such as in (8b); in interrogative sentences such as in (8c); pseudo-cleft sentences such as in (8d); VP-preposed sentences such as in (8e); and passive sentences such as in (8f). The tense, however, is not separated from non-predicate verbs such as *was* in (8g). For instance, in negative sentences such as (8h), interrogative sentences such as (8i), in pseudo-cleft sentences such as (8j), and in VP-preposed sentences such as (8k) the tense cannot be separated from the non-predicate verbs. These are empirical reasons to separate tense from predicate verbs and thus postulate PredP as a separate syntactic element.

Cho (2006) postulates AspP in addition to PredP. Consider the following syntactic structure.

- (9) a. He does not drink.
- b. He was generous.
- c. Jim was smoking a cigar.
- d. The project was finished.
- e. The boss has hired new employees.
- f. They are against Jack breaking up with his girl friend.

The predicate is a main verb in (9a), an adjective in (9b), a progressive present participle in (9c), a passive past participle in (9d), a perfective past participle in (9e), a preposition in the matrix clause of (9f), and a gerund in the embedded clause of (9f). The predicate *smoking* in (9c) has a progressive aspect and the predicate *hired* in (9e) has a perfective aspect. The aspect can be separated from the predicate, just as the tense can be separated from the predicate. Consider the following sentences.

- (10) a. A cigar was being smoked by Jim.
- b. New employees have been hired by the boss.

In (10a) the progressive aspect *being* is separated from the predicate *smoked* and in (10b) the perfective aspect *been* is separated from the predicate *hired*

We can postulate AspP on the basis of the separation of the aspect from the predicate, as we postulate PredP on the basis of separation of the tense from the predicate. The postulation of AspP gives a syntactic structure such as (11).

- (11) [_{CP} (Comp) [_{TP} (Tense) [_{NegP} (Neg) [_{AspP} (Asp) [_{PredP} Pred]]]]]

Cho (2006) postulates another syntactic constituent LinkP in addition to PredP and AspP. Let us consider the following sentences.

- (12) a. John is not rich.
 b. Mary will not be rich.
 c. He has not completed his work.
 d. She will not have completed her work by then.
 e. They consider Harry indulgent to his children.
 f. They are against Harry being indulgent to his children.
 g. The boss hired two men.
 h. Two men were hired by the boss.
 i. The boss will hire four women.
 j. Four women will be hired the boss.

In (12a) *rich* is a predicate, *not* is a neg, and *is* is a tense. Since Cho (2006) separates tense from predicate verbs, the non-predicate tensed verb *is* in (12a) is not parsed into tense and *be* but rather the syntactic constituent Tense by itself. In (12b) *will* is the tense, and *rich* and *not* are respectively the predicate and the neg, as they are in (12a). Then what is the syntactic role of *be*? It must be a link joining the tense *will* and the predicate *rich*. In (12c) *completed* is a predicate, and *has* and *not* are the tense and the neg, respectively. For reasons already mentioned, *has* in (12c) will not be further decomposed into the present tense and *have*. When the tense is represented by a modal auxiliary verb such as in (12d), it cannot be directly followed by a perfective predicate *completed*, but there should be a link such as *have* between them.

The matrix predicate is a verb in (12e) and a preposition in (12f). When the matrix predicate is a preposition as in (12f), there should be a link such as the gerund *being* in the embedded clause because the matrix predicate *against* cannot be directly followed by the embedded adjective predicate *indulgent*. In (12g) the

predicate and the tense are not separated but they are one syntactic element. If the syntactic constituent Tense is recognized as a separate element from the syntactic constituent predicate -- as the predicate cannot represent the tense as in (12h) -- the tense and predicate become separate syntactic constituents. In the same way, in sentences such as (12a), (12c), (12e), (12g), (12h), and (12i) there are no linking elements. However, when the tense cannot be followed directly by the predicate, such as in (12b), (12d), or (12j), or when the matrix predicate cannot be directly followed by the embedded predicate such as in (12f), there should be an intermediate link between the tense and the predicate or between the matrix predicate and the embedded predicate. Therefore, the link should be postulated as an independent syntactic constituent, as are Asp and Pred³⁾.

(13) [_{CP} (Comp) [_{TP} (Tense) [_{NegP} (Neg) [_{AspP} (Link) [_{PredP} Pred]]]]]

To see how LinkP and AspP are ordered with respect to each other, we will have to consider sentences that have both link and aspect. Consider the following sentences.

- (14) a. John was scolded.
 b. Mary has done her project.
 c. John will be scolded.
 d. Mary will have done her project.
 e. Mary will have been doing her project.

In (14a) and (14b) the tense and predicate are separate elements. Where the case that the predicate is a passive participle such as in (14a), a *be*-verb is used as a

3) Consider that α and β are two adjacent syntactic constituents. If α cannot subcategorize for β or a certain element within β , then there should be a link between α and β . Suppose that α is a modal auxiliary such as *will* or *can* and β is not a bare verb. Then there should be a linking bare verb between α and β , so that α can subcategorize for the link phrase that contains β . Suppose that α is a two-place prepositional predicate and β is a tenseless clausal object that has no gerund predicate. Then there should be a linking gerund between α and the non-gerund predicate within β , so that α can subcategorize for the tenseless clausal object that contains the linking gerund before the predicate.

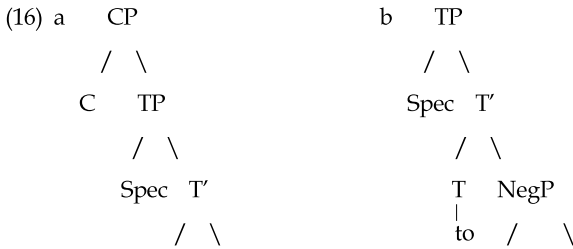
Suppose that α is a three-place predicate that has two internal arguments β and γ . If γ or predicate within γ is not the type of element that α can subcategorize for, then there should be a link between α and the predicate within β , so that α can subcategorize not only for β but also for γ .

tense verb. Where the predicate is a perfective past participle such as in (14b), *have* is used as a tense verb. In (14c) *be* is not a tense verb but a link conjoining the tense modal *will* and the passive predicate *scolded*. In (14d) *have* is not used as a tense verb but a link connecting the tense modal *will* and the perfective predicate *done*. The *be*-verb is used as an inflected tense verb in (14a) and a bare link verb in (14c). This shows that the tense verb and the link verb are of the same type. In (14e) *Mary* is a subject, *will* is a tense, *have* is a link, *been* is a perfective aspect, *doing* is a progressive predicate, and *her project* is an object. Since *been* follows *have*, we should rightfully postulate the link before the aspect such as in (15).⁴⁾

(15) [CP (Comp) [TP (Tense) [NegP (Neg) [LinkP (Link) [AspP (Asp) [PredP Pred]]]]]]]

3. The Problems of the Current Analysis of Infinitival TP

In generative grammar *to*-infinitival TP is generally assumed to have the following structural configuration.⁵⁾



4) In structure (15) Neg, Link, and Asp are parenthesized because they are not always filled positions. And in sentences such as "He kissed her," where the negative element, the link element, and aspectual element are missing, the tense and predicate are one amalgam. However, even in such a simplified sentence, the tense and the predicate are basically separate, such as in "He did kiss her." When the initial sentence "He did kiss her" is not to be a negative sentence nor to be an interrogative sentence, it ends up as "He kissed her" by tense lowering to the predicate.

5) (i) IP

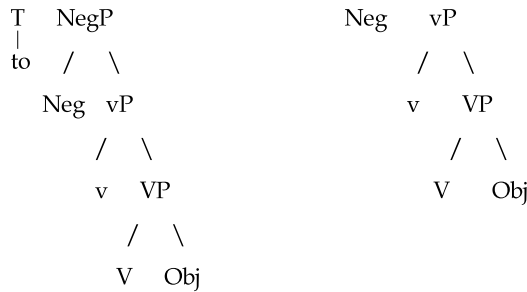
/ \

PRO I'

/ \

to VP

Horstein, Nunes, and Grohmann (2004: 121) introduce structure (i) where PRO is at the specifier position of IP.



The *to*-infinitival TP will have a structural configuration (16a) or (16b) depending on whether it is a control infinitival construction or an ECM infinitival construction. In (16a) which is a control infinitival construction, the PRO subject is base-merged at Spec of vP to have a theta role, receives null Case through Agree with the infinitival tense *to*, and is raised to Spec of TP to satisfy the EPP requirement. In (16b) which is an ECM infinitival construction, the subject is an overt argument with phonological content, which differs from the null subject PRO in that it receives Case from the TP-external Case assigner. In both (16a) and (16b) the infinitival *to* is a head of TP.

The analysis of the infinitival *to* as a head of the TP is faced with empirical problems with regard to word order in negative sentences. Consider the following sentences.

- (17) a. He hopes [_{CP} [_{TP} PRO to [_{vP} pass [_{VP} the exam]]]]
 b. She hopes [_{CP} [_{TP} PRO [_{NegP} not to [_{vP} fail [_{VP} the exam]]]]]]
 c. You expect [_{TP} Mary to [_{vP} finish [_{VP} the work in time]]]]
 d. You expect [_{TP} Mary [_{NegP} not to [_{vP} scold [_{VP} her children]]]]

In (17a) the embedded clause is a control infinitival clause. The null subject PRO is at the spec of the infinitival Tense *to*. In (17b) the embedded clause is a negative control infinitival clause. The problem is that the infinitival tense *to* does not precede but follows the negative element *not*. So the analysis of the infinitival tense *to* as a head of TP have difficulties accounting for word order.

The problems of word order are not confined to the negative control infinitival clauses. In (17c) the embedded clause is an ECM infinitival clause. The subject *Mary* is at the spec of the infinitival Tense *to*. In (17d) the embedded clause is a negative ECM infinitival clause. We have the same problems as we

have for (17b). The infinitival tense *to* does not precede but follows the negative element *not*. Such linear order between *to* and *not* are not compatible with syntactic analyses such as (16a) and (16b), where the infinitival *to* is a head of TP that dominates NegP.

For the problematic linear order between *not* and *to* in negative infinitival clauses, Cowper (1992) suggests that the infinitival tense *to* undergoes affix lowering to the main verbs and thus follows *not* in sentences such as (17b) and (17d). This solution, however, is not tenable because of the blocking effect of *not* against affix lowering. Let us consider the following sentences.

- (18) a. He did kiss her.
 b. He kissed her.
 c. She does like him.
 d. She likes him.
 e. He did not miss his family.
 f.*He not missed his family.
 g. She does not drink coffee.
 h.*She not drinks coffee.

In (18a) the tense and the verb are separate, and the sentence has an additional emphatic meaning. In (18b) the tense undergoes lowering to the main verb, and the additional emphatic meaning disappears. The same process takes place in sentences (18c) and (18d). In (18e), which is a negative sentence, the tense and the verb are separate, but the tense lowering leads to ungrammatical sentences such as in (18f). The same is true in sentences such as in (18g) and (18h). This clearly shows that *not* blocks the affix lowering.⁶⁾ Therefore Cowper's (1992) solution for the problematic linear order between *not* and *to* is not acceptable.

The analysis of the infinitival *to* as a head of the TP has another empirical problems. Let us consider the following sentences.

- (19) a. He should stop gambling.

6) In (18a) and (18e) the tense and the main verb are separate, but only (18a) has the additional emphatic meaning. The lack of emphatic meaning in (18e) relates to the impossibility of the affix lowering. The emphatic meaning accrues to the sentence only when the tense and the verb are separate, although affix lowering is possible.

- b. She should not stop drinking.
- c. The man will arrive in time.
- d. The woman will not leave her office.
- e. Students ought to study hard for their exams.
- f. Teachers ought not to give corporal punishment any more.

In (19a) the modal auxiliary *should* that represents present tense is Tense. In (19b) the modal auxiliary *should* is followed by the neg *not*. In (19c) the modal auxiliary *will* that represents future tense is Tense. In (19d) the modal auxiliary *will* is followed by the neg *not*. The order between the tense verb and the negative element are compatible with the order of Tense and Neg in syntactic structures such as (1), (2), (3), (4), (5), and (6). In (19e) the modal auxiliary *ought* that represents present tense must be Tense. Then what is the syntactic function of *to*? It cannot be tense for two apparent reasons. First, the infinitive marker *to* does not represent the tense. Second, the position of Tense is already occupied by *ought* that represents present tense. The infinitive marker *to* must be a link that mediates between the modal auxiliary *ought* and the bare infinitive *study*.⁷⁾

In (19f) the modal auxiliary *ought* is followed by the neg *not*, which is followed by the infinitive marker *to*. If the infinitive marker *to* is Tense, then Tense in sentence (19f) is followed by Neg, which is followed by another Tense. The postulation of Tense, Neg, and Tense is not compatible with any of syntactic structures such as (1), (2), (3), (4), (5), and (6). This provides us with empirical reasons why we cannot regard the infinitive marker *to* as head of TP.⁸⁾

7) The modal auxiliary *ought* differs from other auxiliaries such as *should*, *will*, or *may* in that it cannot subcategorize for bare infinitive verb.

8) (i) *[_{CP} [_{TP} She tried [_{CP} [_{TP} [_{LinkP} to may leave]]]]].
 (ii) *[_{CP} [_{TP} She wanted [_{CP} [_{TP} [_{LinkP} to can leave]]]]].
 (iii) [_{CP} [_{TP} She did tried [_{CP} [_{TP} to go]]]].
 (iv) *[_{CP} [_{TP} She tried [_{CP} [_{TP} [_{LinkP} to do go]]]]].

Adger (2003: 163) argues that the infinitival marker *to* should be tense on the basis of complementary distribution of the infinitival marker *to* and modal auxiliary verbs. However, the complementary distribution of the infinitival marker *to* and modal auxiliary verbs can be accounted for under the predicate-based syntactic structure as well. In (i) and (ii) the LinkP is headed by *to*, which is followed by modal auxiliary verb *may*. This word order is not possible under the predicate-based syntactic structure. In the matrix clause of (iii) the emphatic auxiliary verb *did* occupies the tense position. In the embedded clause of (iv) the LinkP is headed by *to*, which is followed by the emphatic auxiliary verb *did*. This is not possible either under the predicate-based syntactic structure.

4. An Alternative Analysis of the Infinitival *to*

In the previous section we discussed the problematic aspects of previous analyses that regard the infinitival *to* as the head of the infinitival TP. In this section we will provide an alternative analysis that regards the infinitival *to* as a link in the sentential structure (15). Consider the following sentences.

- (20) a. I expect [_{Object} success].
 b. *I expect [_{Object} succeed].
 c. I expect [_{Object} to succeed].
 d. I expect [_{Object} John's success].
 e. I expect [_{Object} John to succeed].

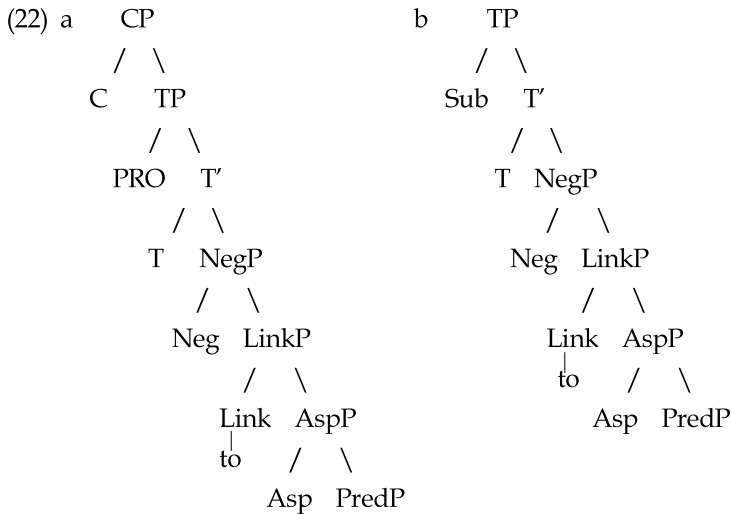
Sentences (20a), (20b), (20c), (20d), and (20e) are all transitive constructions. Sentence (20a) has a verbal predicate *expect* and a nominal object *success*. Sentence (20b) has a verbal predicate *want* and a verbal object *succeed*. Sentence (20b) is not grammatical. However, the intermediate infinitival *to* such as in (20c) changes the ungrammatical sentence to a grammatical sentence. This clearly shows that the infinitival *to* plays the same syntactic role of link as does *be* in (12b) and (12j), *have* in (12d), and *being* in (12f).

The same is true in sentences (20d) and (20e). Sentence (20d) has a nominal object *John's success*. Sentence (20d) has a verbal object *John to succeed*, and thus the syntactic relation between the matrix verbal predicate *expect* and the verbal object *John to succeed* is not possible without the infinitival *to*, which should be syntactically regarded as a link.

- (21) a. He got [_{NP} his wife_i] [_{CP} [_{TP} PRO_i to clean the room]].
 b. He had [_{NP} his wife_i] [_{CP} [_{TP} PRO_i clean the room]].

Sentences (21a) and (21b) are lexical paraphrases. The embedded clause of (21a) is a *to*-infinitival construction while the embedded clause of (21b) is a bare infinitival construction. Regardless of the presence of the infinitival *to*, the embedded clauses in (21a) and (21b) are both object-controlled PRO infinitival clauses. In the embedded clause of (21a), we need the infinitival *to*, which is a link that mediates between the matrix predicate *got* and the verbal internal

argument *clean the room*. However, in the embedded clause (21b), we do not need the link *to* simply because the matrix predicate *had* is one of the causative verbs that can select a verbal internal argument without the link *to*. Other causative types of verbs are *help*, *let*, *make*, and *bid*. All these provide us with empirical reasons to believe that the infinitival *to* is syntactically a Link rather than a Tense.⁹⁾ Therefore, for the control infinitival constructions and the ECM infinitival constructions respectively, we will have to adopt the following structural configurations, where the infinitival *to* is a link and where PRO and the overt subject are at the specifier position of null Tense.



5. Conclusions

This study discussed syntactic structures in generative grammar and offered an alternative analysis of the infinitival *to* under the predicate-based syntactic

9) (i) Brian is the best candidate.
(ii) The best candidate is Brian.

The notion of linker is introduced for copular verbs such as *is* in (i) and (ii) by den Dikken (2006: 143). The notion of linker, however, is different from the notion of link in this study. The link does not have any grammatical meaning such as tense, progressive aspect, or perfective aspect. It is simply a syntactic mediator between such syntactic elements α and β that the former cannot subcategorize for the latter.

structure. The former analysis of the infinitive marker *to* as a head of TP was problematic in three significant respects. First, the order between the tense and the neg cannot be accounted for. Second, the infinitive maker *to* does not represent tense at all in sentences such as *Students ought to study hard for their exams*. Third, it is not possible to explain sentences such as *Teachers ought not to give corporal punishment any more* under any of syntactic structures in generative grammar.

The alternative analysis regarded the infinitive marker *to* as a link that mediates between syntactic elements. This alternative analysis is a clear contrast to the current analysis in generative grammar that regards the infinitival *to* as a head of the infinitival TP structure. If the alternative analysis in this study is correct, the infinitival TP will always have a null Tense and the empty category argument PRO in the control infinitival constructions and the overt subject in the ECM infinitival constructions will no longer be at the specifier position of the infinitival *to* but at the specifier position of the null Tense. The alternative analysis is a better alternative in that we can dispense with the empirical problems of the former analysis.

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Received: 2009. 07. 22

Revised: 2009. 12. 01

Accepted: 2009. 12. 14