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A'-movement and quantifier scope in the Thai *thuuk* passive

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1 Introduction

The classical Government and Binding (GB) analysis of the passive construction is now widely accepted within generative circles for English and other Western languages. However, the passive construction in Asian languages exhibits very different characteristics from the English passive, and the classical analysis of the English passive fails to account for many of these characteristics. A number of alternative analyses, often language-specific, have been proposed for Asian passive constructions, and Huang (1999) has attempted to correlate recent analyses of the passive in Chinese, Japanese, and Korean to determine a new set of passive universals.

This paper first attempts to make a modest contribution to Huang's endeavor by applying a recent analysis of the Chinese passive described in Huang (1999) to one form of the Thai passive to show where the analysis succeeds and where it fails. The proposed analysis for the Chinese passive construction considered here involves A'-movement of a null operator. This paper presents data showing that the Thai *thuuk* passive exhibits many of the characteristics of A'-movement described for the Chinese passive. It then explores scope reconstruction effects in the Thai passive in order to learn more about the structure of the Thai passive and theories of relative scope interaction.

2 The Thai and Chinese languages

Thai and Chinese share a number of typological characteristics, despite belonging to different language families, and application of analyses of Chinese syntactic constructions to similar constructions in Thai is often quite productive.[1] This section describes the main typological characteristics of the two languages.

Like Chinese, Thai is a tonal language. It has five tones: low, mid, high, rising, and falling. In comparison, Mandarin has four tones, Cantonese has nine, and Taiwanese has eight. Also like Chinese, most native Thai words are monosyllabic; however, Thai has borrowed a number of polysyllabic words from Sanskrit, Pali, and English.[2]

Neither Thai nor Chinese inflects for number, gender, case, or tense. Both languages use compounding, affixation, and reduplication to derive new words. Both are pro-drop languages, and both contain serial verb constructions, including coverb constructions in which a lexical verb behaves like a preposition. Both languages form yes-no questions using particles (though Chinese has other strategies as well) and leave wh-words in situ. Finally, both languages have nominal SVO word order, although some linguists have argued that Mandarin is undergoing a change to SOV word order. (Hudak 1990; Li and Thompson 1990)

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[1] Thai belongs to the Thai-Kadai language family, while Chinese belongs to the Sino-Tibetan family.

[2] Li and Thompson (1990) note that modern Mandarin differs from other dialects in that it contains so many compound words that, strictly speaking, it is no longer possible to classify it as monosyllabic.

Because of slight differences in Chinese and Thai word order, differences between passive sentences in the two languages become evident when other material, such as adverbs and prepositional phrases, is added to the basic structure; however, based on the similarities of the basic structures, it seems reasonable to attempt to analyze Thai and Chinese passives in the same way. The next section describes the Thai passive in greater detail and attempts to account for its properties using the analysis of the Chinese passive described in Huang (1999).

3 The *thuuk* passive construction in Thai

This section first describes some characteristics of the *thuuk* passive construction in Thai. It then briefly summarizes three early analyses of the *thuuk* passive and compares them with early analyses of the Chinese passive, concluding that these analyses of the passive in the two languages suffer from the same problems. Next, this section examines a new analysis for the Chinese passive described in Huang (1999), and demonstrates that the long *thuuk* passive in Thai has the same structure as the Chinese long passive.

3.1 General characteristics of the Thai passive

Thai has a number of passive constructions. Prasithrathsint (1988) describes nine different passive-like constructions that occur in written Thai between 1802 and 1982. Each of these nine constructions emerged at a different point in time and serves a slightly different purpose. A full consideration of all nine constructions is beyond the scope of this paper, so from this point, discussion is restricted to the *thuuk* passive construction, and all mentions of "the Thai passive" can be taken to refer to the *thuuk* passive.

Like the Mandarin passive, the *thuuk* passive has two forms, one with an Agent and one without, as shown in (1):

(1) a. NP_1 thuuk NP_2 VP
deeŋ tʰuuk dam kʰaa.
Daeng THUUK Dam kill
Daeng was killed by Dam.

b. NP_1 thuuk VP
deeŋ tʰuuk kʰaa.
Daeng THUUK kill
Daeng was killed.

These two structures are referred to as the long and short passive, respectively. Huang (1999) describes separate analyses for the long and short passive structures in Chinese; however, due to space considerations, this paper will consider only the long passive (the form that contains an Agent).

A second major characteristic of the *thuuk* passive is that *thuuk* is generally considered to be a verb, not a preposition as has been suggested for the Mandarin passive marker *bei*. A number of linguists have argued in support of this claim. Simpson (1992) provides the strong argument that the passive *thuuk* can be modified by the aspectual marker *ca*; the following sentences from my informants and from Wongbiasaj (1979) show that other aspectual markers can be used with the passive *thuuk*, as well.

(2) bun kʰɤɤj tʰuuk kʰon kʰamooj rot
Bun PAST THUUK someone steal car
Bun experienced someone stealing his car.

(3) kʰaw kamlaŋ tʰuuk naŋsɤɤpʰim wít͡ɕaan (Wongbiasaj 1979, (17))
he PROGR THUUK newspaper criticize
He is being criticized by the newspaper.

I will discuss the claim that *thuuk* is a verb in more detail below.

A third major characteristic of the *thuuk* passive is that it has strong adversative connotations. Prasithrathsint (1988) and Singnoi (1999) have noted that these connotations are gradually becoming weaker, possibly due to the influence of English, but both also note that the non-adversative use of *thuuk* is still considered odd, if not unacceptable, by most speakers, as shown by (4) and (5):

(4) ? nakrian tʰuuk t͡ɕʰomt͡ɕʰɤɤj (Singnoi 1999, (32))
pupil THUUK admire
A pupil was admired.

(5) ? kʰaw tʰuuk kʰruu t͡ɕʰom (Thepkanjana 1986, (149))
he THUUK teacher praise
He was praised by the teacher.

Most linguists who have studied *thuuk* attribute its adversative connotations to its likely derivation from the lexical transitive verb *thuuk* meaning, "to touch, to come into contact with, to be affected by". Wongbiasaj (1979) and Thepkanjana (1986) offer the following examples of *thuuk* used in this way:

(6) pʰom tʰuuk luukbɔn tʰii hua (Wongbiasaj 1979, (4))
I (masc.) THUUK ball at head
A ball hit me on my head. (*lit.*, I came into contact with a ball on my head.)

(7) pʰom tʰuuk ʔakaat naaw majdaj (Wongbiasaj 1979, (5))
I THUUK weather cold cannot
I can't be exposed to the cold weather.

(8) pʰiwnaŋ tʰuuk faj (Thepkanjana 1986, (157))
body skin come into contact with fire
The body skin was touched by fire.

Linguists have offered a number of arguments to support the hypothesis that the passive *thuuk* is derived from the lexical verb *thuuk*. First, as noted above, the passive *thuuk* is also generally regarded as a verb. Given that one of the meanings of the active verb *thuuk* is "to be affected by", it is easy to imagine how speakers might have begun using the active *thuuk* to describe situations in which its subject was adversely affected by some event, and that *thuuk* then became further grammaticalized into the present-day passive *thuuk*. Singnoi (1999) provides a possible derivation from active *thuuk* into passive *thuuk*.

Secondly, Wongbiasaj (1979, 1980), Thepkanjana (1986), and Singnoi (1999) note that the syntactic and semantic constraints on active *thuuk* and passive *thuuk* are very similar. Wongbiasaj (1980) claims that both forms of *thuuk* imply that the action is inherently unintentional, and Thepkanjana supports this argument in saying that neither the subject of the active *thuuk* nor the subject of the passive *thuuk* is in a position to control or initiate the action described in the sentence. Wongbiasaj, Thepkanjana, and Singnoi all note that both forms of *thuuk* have the adversative connotation. And finally, Wongbiasaj (1979) notes that neither the active nor the passive form allows the Agent and Patient to be co-referential.

The above arguments highlight some of the major syntactic and semantic restrictions on the use of the passive *thuuk*. One further syntactic restriction on the passive form is Singnoi's (1999) observation that the passive *thuuk* can be used only with active transitive verbs; she offers the following as counterexamples:

(9) * t͡ɕʰan tʰuuk siat͡ɕaj (Singnoi 1999, (38))
I THUUK regret
* I was regretted.[3]

(10) * kʰaw tʰuuk hoklom (Singnoi 1999, (39))
he THUUK fall down
* He was fallen down.

A final characteristic of *thuuk* that will be useful in later analysis is that *thuuk*, like the passive marker in Chinese, allows what are referred to as inclusive indirect passives. Huang (1999) describes the indirect passive in general, and subdivides it into two forms: the inclusive (or possessive) indirect passive and the exclusive (or adversative) indirect passive. In the inclusive indirect passive, "the subject is related to some other position than the object within the predicate (e.g., the possessor of the object)". In the exclusive indirect passive, "the subject is not apparently related to any position in the predicate at all". (11a) and (11b) give English examples of the inclusive indirect passive and the exclusive indirect passive, respectively:

(11) a. John had his child scolded by Mary. (Huang 1999, (80b) & (82b))
b. Mary had John crying on her.

Lekawatana (1970) and Surintramont (1979) offer the following examples for Thai:

(12) sudaa tʰuuk kʰamooj kʰɯn baan (Lekawatana 1970, (261))
Sudaa THUUK thief enter house
Suda had a thief break into her house.

(13) bun tʰuuk kʰon kʰamooj rot[4] (Surintramont 1979, p. 7)
Bun THUUK someone steal car
Bun had his car stolen on him by someone.

[3] The English glosses are my own.
[4] Surintramont's examples use the more colloquial passive marker *doon*, but my informants assure me that there is effectively no difference in meaning or connotation when *thuuk* is used instead of *doon*.

(14) bun tʰuuk kʰamooj rot
Bun THUUK steal car
Bun had his car stolen on him.

Thepkanjana (1986) and Singnoi (1999) analyze the indirect possessive passive in Thai in some detail. Thepkanjana notes that the subject of an indirect possessive passive is felt to be directly affected by, and to suffer strongly as a result of, the action described by the embedded clause. Singnoi adds that the possessed NP must be inanimate, and that sentences such as the following, in which the possessed NP is animate, are ungrammatical:[5]

(15) * t͡ɕʰan tʰuuk kʰaw teʔ maa (Singnoi 1999, (45c))
I THUUK he kick dog
I was adversely affected by him kicking my dog.[6]

Having described the salient characteristics of the *thuuk* passive construction, we can turn to its analysis. The next section describes three early analyses of the *thuuk* passive and discusses the arguments for and against each one.

3.2 Early analyses of the Thai passive

Linguists have been attempting to analyze the *thuuk* passive using generative techniques since 1961, and three major analyses have been proposed. Wongbiasaj (1979) describes these analyses in detail; this section briefly summarizes her descriptions, using more modern terminology where appropriate, and adds further support to her conclusions when possible.

3.2.1 The transformational analysis

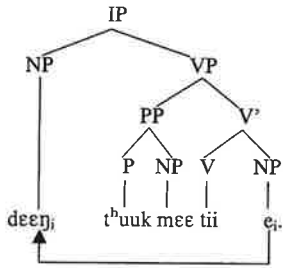
The transformational analysis of the *thuuk* construction is based on the traditional GB analysis of the English passive.[7] We can therefore infer that it has the following characteristics:

(16) 1. The passive marker *thuuk* absorbs the accusative case of the verb and the external theta role of the verb.
2. The Patient NP moves from the object position to the empty subject position to gain case, leaving an NP-trace in the object position.
3. The internal theta role of the verb is passed from the NP-trace in the object position to the Patient NP in the subject position along the chain left by the Patient NP's movement.
4. The passive marker *thuuk* acts as a preposition, forming an adjunct PP with the Agent NP.

[5] Thepkanjana (1986) offers as an example of the indirect passive the sentence "Surii thuuk khon lakphaa luuk", which loosely translates to "Surii suffered from someone kidnapping her child". However, my Thai informants uniformly reject this sentence. One of my Chinese informants, Shao-Ming Lee, noted that in Chinese, the possessed NP can be an inanimate object, an animal, or a child, but not an adult; this may have originally been the case in Thai as well.
[6] The English gloss is my own.
[7] Wongbiasaj attributes this analysis to Chaiyaratana (1961) and notes that it was proposed for pedagogical purposes. The relevant entry from Wongbiasaj's bibliography is as follows: Chaiyararatana, C. 1961. *A comparative study of English and Thai syntax*. Ph.D. dissertation, Indiana University.

In this analysis, the underlying structure of a passive sentence is as follows:

(17)



(Daeng was hit by Mother.)

This analysis is problematic in several ways. The first two problems are identical to problems that Huang (1999) describes for an early analysis of the Chinese passive called the movement analysis. The first problem is that, contrary to (16.1) and (16.3), above, the subject position is a theta position, and therefore the external theta role of the active verb has not been absorbed. Simpson (1992) presents the following data showing that expletives cannot appear in the subject position, indicating that it is a theta position:

(18) * man thuuk khaw tii phom (Simpson 1992, (6))
It THUUK he hit me (masc.)
* It (Expl.) thuuk he hit me.

The subject therefore appears to be base-generated in place.[8] Simpson notes that the presence of indirect passives further supports this argument. In the following sentence, the house plays the role of the Patient, while Surii is given the role of Experiencer:

(19) surii thuuk khamooj khɯn baan.
Surii THUUK thief enter house.
Surii had her house burgled.

Finally, he points out that since *baan* can occur in the object position, the verb seems able to assign accusative case, so there is no case-related motivation for movement of the object as there is in English, contradicting (16.2) above.

The second major problem is that, as discussed in Section 2, *thuuk* is generally considered to be a verb rather than a preposition, which goes against the assumption in (16.4), above.

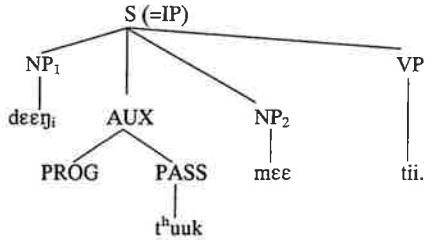
These problems show that the transformational analysis is not a satisfactory explanation of the structure of the Thai passive. The embedding analysis, described in Section 3.2.3, eliminates the problems described above, but, as we will see, it also has flaws. Before examining the embedding analysis, however, it might be useful to look at a second early analysis of the Thai passive, the underlying auxiliary analysis.

[8] Or, more likely, it is base-generated in, and receives its theta-role at, Spec-VP (following the VP-internal Subject Hypothesis), and moves to Spec-IP to satisfy the Extended Projection Principle or to check its case features, depending on the framework being used.

3.2.2 The underlying auxiliary analysis

This analysis[9] of the *thuuk* construction proposes that *thuuk* is an auxiliary verb and is therefore base-generated under I^0. The following diagram illustrates the underlying structure proposed for this analysis:

(20)



(Wongbiasaj 1979, (15))

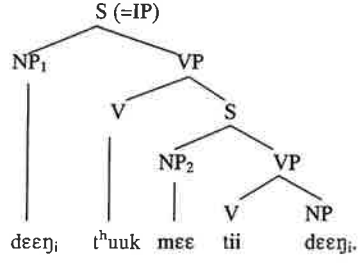
Wongbiasaj notes that this analysis has several advantages over the transformational analysis—namely, that the passive has its own D-structure and that the status and position of *thuuk* are clearly defined.

However, she points out that this analysis presents several problems, as well. First, it requires a new phrase structure rule that has the unusual property, for Thai, of an NP appearing between an auxiliary verb and a VP. Secondly, the passive *thuuk* does not fall into any of the categories usually found in I^0, such as tense or agreement. Finally, placing *thuuk* in I^0 effectively breaks the semantic relationship between the active and passive forms of *thuuk*. She rejects this analysis on the basis of these arguments.

3.2.3 The embedding analysis

The embedding analysis seems to be the most popular analysis of the *thuuk* passive to date; Filbeck (1973), Wongbiasaj (1979), Thepkanjana (1986), and Simpson (1992), among others, have argued in favor of it.[10] This analysis assumes that the active sentence is embedded within the passive sentence, giving the underlying structure shown in the following diagram:

(21)



(Wongbiasaj 1979, (16))

[9] Wongbiasaj attributes this analysis to Warutamasintop (1975). The relevant entry from Wongbiasaj's bibliography is: Warutamasintop, Worawut. 1975. Handouts for the 8th international conference on Sino-Tibetan language & linguistics.

[10] Wongbiasaj attributes the first mention of this analysis to Warotamasikkhadit (1963). The relevant entry from Wongbiasaj's bibliography is as follows: Warotamasikkhadit, Udom. 1963. *Thai syntax: an outline*. Ph.D. dissertation, University of Texas at Austin.

Wongbiasaj describes three advantages to this approach. First, it does not require an additional phrase structure rule for Thai, as the transformational analysis does. Secondly, the active and passive sentences have different underlying structures, but they are nonetheless clearly related. Finally, and perhaps most importantly in her opinion, *thuuk* is treated as a verb, and therefore the syntactic and semantic relationship between the active *thuuk* and the passive *thuuk* can be maintained.

Furthermore, this analysis solves the problems associated with the transformational analysis described in Section 3.2.1. Because there is no movement involved, the matrix subject is base-generated in place and receives its theta role from *thuuk*. Furthermore, because *thuuk* is a verb, it naturally does not behave like a preposition.

Wongbiasaj notes, however, that other linguists have criticized this analysis on the basis of the interaction of *thuuk* with modifiers such as manner adverbs and the progressive morpheme *kamlaŋ* ("in the process of (doing V)"). The basic problem, as she describes it, is that whether or not the use of these modifiers is grammatically acceptable appears to depend on the semantic properties of the embedded verb, which can be taken to imply that the embedded verb is the main verb and *thuuk* is an auxiliary verb. However, she argues, in support of the embedding analysis, that *thuuk* and the embedded verb take modifiers compositionally.

A second problem with this analysis is essentially the same as a problem that Huang (1999) describes for an early analysis of the Chinese passive called the complementation analysis. The complementation analysis for the Chinese passive assumes that, when the matrix subject and the embedded object are coreferential, the embedded object must be deleted. If this is in fact the case, then the embedded object is effectively a small pro—a non-overt pronoun—which should be able to freely alternate with an overt pronoun. However, Huang points out that an overt pronoun in the embedded object position is ungrammatical in Chinese, and the following sentence illustrates that it is ungrammatical in Thai, as well:[11]

(22) * dɛɛŋ tʰuuk dam tii kʰaw
Daeng THUUK Dam hit him
(Intended: Daeng was hit by Dam.)

This evidence implies that the embedded object is not a non-overt pronoun, but rather something that moves away, and hence cannot be realized overtly. In light of this, it seems likely that there is in fact some sort of movement in the Chinese and Thai passives.

Huang notes that the movement analysis and the complementation analysis for Chinese each solve the problems of the other. As a result, linguists have recently proposed that Chinese passives be analyzed in the same way as English *tough*-constructions—an analysis that incorporates both movement and complementation, neatly solving the problems of both of the previous analyses.[12] Section 3.3 describes

[11] Wongbiasaj (1979) and Simpson (1992) present data almost identical to (22) that seems to indicate that an embedded object that is co-referential with the matrix subject can be overt. However, my informants universally felt that the co-referential overt object was ungrammatical.

[12] Huang attributes this analysis to Feng (1995). The relevant entry from Huang's bibliography is as follows: Feng, S. 1995. "The Passive Construction in Chinese". Ms., *Studies in Chinese Linguistics* 1, 1-28.

the movement-and-complementation analysis for the Chinese long passive in more detail.

Furthermore, since the transformational and embedding analyses in Thai suffer from the same problems as the movement and complementation analyses, respectively, for Chinese, it might be possible to successfully apply the movement-and-complementation analysis of the Chinese long passive construction to the Thai *thuuk* passive construction. Section 3.4 attempts to do just this.

3.3 The A'-movement and predication analysis

As noted above, the problems associated with the movement and complementation analyses of the Chinese passive seem to be mutually exclusive, in that each approach solves the problems of the other. This observation has recently led linguists to propose that Chinese passives be analyzed like the English *tough*-construction, which has the form shown in (23):

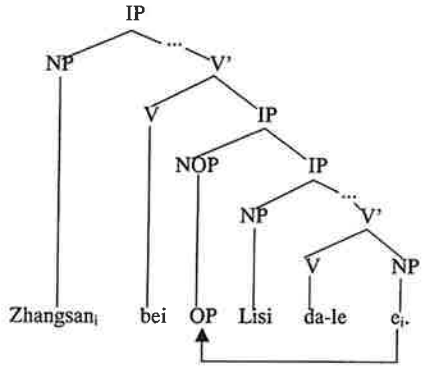
(23) This problem$_i$ is easy PRO to solve t_i.

In the standard analysis of the English *tough*-construction, the *tough*-adjective takes a subject and a clausal complement, and a null operator (NOP) moves from the embedded object position to Spec-CP, from where it is predicated on the matrix subject. (24) illustrates this configuration:

(24) $[_{IP\text{-}1}\ [_{NP}$ This problem$]_i$ is $[_{AdjP}$ easy $[_{CP}$ NOP$_i$ $[_{IP\text{-}2}$ PRO to solve $t_i]]]]]$

Similarly, in Huang's description of the *tough*-construction analysis of the Chinese passive, the Chinese passive marker *bei* takes a subject and a clausal complement. However, in the Chinese passive, there is no CP for the NOP to move to, and it instead adjoins to the embedded IP, from where it is predicated on the matrix subject. The following diagram illustrates this structure:

(25) (Huang 1999, (21))



Because of the lack of CP intervening between the matrix VP and the embedded IP, this structure has the property of Exceptional Case Marking—that is, the matrix verb, *bei*, assigns accusative case to the embedded subject.

This analysis solves the problems of the movement approach for Chinese in the same way that the complementation approach for Chinese solves them: *bei* is a verb with its own subject, to which it assigns case and a theta role, and the following verb is in a separate clause. In addition, it solves the problem with the complementation approach in the same way that the movement approach solved it—that is, by postulating the existence of something (in this case, a null operator) that moves away, and hence cannot be realized overtly.

As noted above, then, this analysis incorporates both movement and complementation. However, Huang points out that a defining characteristic of this analysis is that it involves A'-movement rather than A-movement. We therefore expect it to exhibit clear indications of A'-movement, and Huang is able to provide a number of pieces of evidence exhibiting such indications. Those characteristics of A'-movement that are relevant to the Thai *thuuk* passive—namely, long-distance passives, island sensitivity, and resumptive pronouns—are described briefly below.

The first indication of A'-movement that Huang notes is that Chinese allows long-distance passives. Huang points out that, while not acceptable for A-movement, this sort of long-distance movement is characteristic of A'-movement, and that English *tough*-constructions exhibit similar long distance movements, as in (26):

(26) This problem is too easy for me to ask the teacher to help me solve.[13]

Huang (1999) adds that, in *tough*-constructions that exhibit these long-distance movements, "the NOP structure must be non-finite, non-propositional (must contain control PROs)", and that this is also a property of Chinese long-distance passives. This observation provides further support for the argument that the Chinese passive has a structure similar to that of the English *tough*-construction.

The second indication of A'-movement that Huang describes is that these long-distance passives exhibit island sensitivity, as shown in (27):

(27) Zhangsan bei wo tongzhi Lisi ba zanmei *(ta) de shu dou mai-zou le.[14]
Zhangsan BEI me inform Lisi BA praise (him) DE book all buy-away PERF
Zhangsan had me informing Lisi to buy up all the books that praise *(him).

He points out that, without the resumptive pronoun in the object position, the sentence becomes ungrammatical, and goes on to argue, in favor of A'-movement, that "there is no similar deletion analysis that would account for this distribution of an empty object: allowing long-distance dependency but not into a complex NP".

A third indication of A'-movement is that, although resumptive pronouns are not allowed in simple passive sentences, they are allowed in somewhat longer passive sentences in Chinese. Compare the following examples:

(28) a. * Zhangsan bei Lisi da-le ta. (Huang 1999, (5a))
Zhangsan BEI Lisi hit-PERF him
Zhangsan was hit (*him) by Lisi.

b. Zhangsan bei Lisi da-le ta yi-xia. (Huang 1999, (34))
Zhangsan BEI Lisi hit-PERF him once.
Zhangsan was hit once by Lisi.

[13] Huang 1999, (26).
[14] Huang 1999, (30). I have changed his gloss slightly.

Huang makes several observations regarding these two sentences. First, they are identical except for the extra material at the end of (28b). Secondly, the pronoun in (28b) is bound by the NOP adjoined to the IP, which is an A'-position; therefore, the pronoun is locally A'-bound but locally A-free, so Principle B of the Binding Theory is not violated. Thirdly, optional resumptive pronouns are also found in more complicated relative clauses, such as the one in (29); since relative clauses involve A'-movement, this observation lends support to the proposal that Chinese passives also involve A'-movement.

(29) Lisi huaiyi (ta) tou-le qian de nei-ge ren zou-le.[15]
Lisi suspect (he) steal-PERF money DE that person leave-PERF
The person that Lisi suspected [he] stole the money has left.

Huang's final observation regarding (28) is that it is not entirely clear why (28a) does not allow the use of a resumptive pronoun, but (28b) does.

Although the A'-movement-and-predication analysis (or "A'-movement analysis", for short), of the Chinese passive is very attractive, in that it has all the advantages of the earlier analyses and solves all their problems, it may have a problem of its own. In essence, it proposes an Exceptional Case Marking (ECM) structure for Chinese passive sentences. In the classic ECM structure, the complement position of the matrix verb is occupied by a non-finite IP. The non-finite I^0 cannot govern the embedded subject, which means that it also cannot block government by other potential governors. The matrix verb is therefore able to assign accusative case to the embedded subject. As Huang himself, Nguyen (2001), and Andrew Simpson (personal communication) point out, it is not clear whether, in the structure proposed for the Chinese passive, the NOP adjoined to the embedded non-finite IP is able to govern the embedded subject, thereby acting as a barrier to ECM. Huang assumes that the adjoined NOP does not constitute a barrier and, for the purposes of this paper, I will also assume that it does not.

3.4 Applying the A'-movement analysis to the Thai passive

Since, as shown in Section 3.2, neither the transformational analysis nor the embedding analysis alone can adequately account for the facts concerning the Thai passive, it might be possible to successfully apply the A'-movement and predication analysis described for the Chinese passive in Huang (1999) to the Thai passive. In order to do this, we must first determine whether the underlying structure of the *thuuk* passive is the same as the structure of the Chinese passive, and then determine whether the *thuuk* passive shows the same characteristics of A'-movement that the Chinese passive shows.

As noted above, Huang (1999) describes an Exceptional Case Marking structure for the Chinese passive, in which the matrix verb *bei* takes a non-finite IP complement and assigns accusative case to the embedded subject. A null operator moves up from the embedded object position to adjoin to the embedded IP—an instance of A'-movement—and is co-indexed with the matrix subject. The remainder of this section will show that the basic characteristics of this analysis may plausibly hold for the *thuuk* passive construction as well.

First, many linguists agree that *thuuk* takes an IP as its complement, as Huang argues for *bei*. Thepkanjana (1986) points out that sentences formed with *thuuk* do

[15] Huang 1999, (36).

not allow the use of an overt complementizer, indicating that *thuuk* does not take a CP complement:

(30) * surii tʰuuk tʰii/waa naaj tamni? (Thepkanjana 1986, (173))
Surii THUUK COMP boss blame
(Intended: Surii was blamed by her boss.)

Simpson (1992) and Singnoi (1999) both observe that the embedded clause does not allow aspect markers, such as the progressive marker *kamlaŋ* and the future marker *ca*, which indicates that the lower IP is non-finite. The following sentences illustrate this point:

(31) a. luuk kamlaŋ tʰuuk tʰɤɤ saŋsɔɔn (Singnoi 1999, (72b-c))
child PROGR THUUK her teach
Her child is being taught by her.

b. * luuk tʰuuk tʰɤɤ kamlaŋ saŋsɔɔn
child THUUK her PROGR teach
(Intended: Her child is being taught by her.)

(32) a. dɛɛŋ t͡ɕʰa? tʰuuk lek tii
Daeng FUTURE THUUK Lek hit
Daeng will be hit by Lek.

b. * dɛɛŋ tʰuuk lek t͡ɕʰa? tii
Daeng THUUK Lek FUTURE hit
(Intended: Daeng will be hit by Lek.)

A second characteristic of the structure Huang describes is that the Agent, while case-marked by the matrix verb *bei*, otherwise behaves like the subject of the embedded verb and not like the object of a preposition. In support of this characteristic for *thuuk* passives, Singnoi (1999) argues that the Agent is indeed an embedded subject, and provides data to that effect. In particular, she claims that one of the characteristics of subjects in Thai is that they can control coreferential deletion in some coordinate conjunctions. In the following example, either the matrix subject or the embedded subject can control the null pronoun in the coordinate clause:

(33) dɛɛŋ tʰuuk dam laj t͡ɕon $\varnothing_{i,j}$ nɯaj. (Singnoi 1999, (60b))
Daeng THUUK Dam chase till tired.
Daeng was chased by Dam until he(Daeng/Dam) was tired.

The final characteristic of the A'-movement analysis of the Chinese passive is the A'-movement itself. Huang provides a number of diagnostics for A'-movement; the ones that can be usefully applied to the *thuuk* passive are the existence of long-distance passive structures, island sensitivity, and the use of resumptive pronouns in complex environments.

Like Chinese, Thai allows long-distance passives, as shown by (34) and (35).

(34) dɛɛŋ$_i$ kʰɤɤj tʰuuk dam soŋ tamruat maa t͡ɕap (kʰaw$_i$).[16]
Daeng ASP THUUK Dam send police come arrest (him)
Daeng$_i$ had Dam sending the police to come arrest him$_i$.

(35) kʰaw$_i$ tʰuuk pʰom soŋ kʰon paj kʰaa (kʰaw$_i$).[17]
he THUUK me send person go kill (him)
He had me sending someone to go and kill him.

In addition, both of the above sentences allow an optional resumptive pronoun. However, resumptive pronouns in the *thuuk* passive seem to be more restricted than in the Chinese passive, as the following questionable sentence shows:

(36) ?? dɛɛŋ$_i$ tʰuuk dam tii kʰaw$_i$ nɯŋ kʰraŋ.
Daeng THUUK Dam hit him one time
Daeng was hit once by Dam.

Furthermore, the *thuuk* passive, like the Chinese passive, seems to exhibit island sensitivity. For example, the complex noun phrase *people who worship him* in (37) contains a resumptive pronoun that refers to the matrix subject. The sentence is ungrammatical without the resumptive pronoun.

(37) tʰaan$_i$ tʰuuk ratt^{h}abaan soŋ tamruat paj t͡ɕap kʰon tʰii
He THUUK government send police go arrest people who

kʰawrop buuchaa *(tʰaan$_i$).
worship him

He was affected by the government sending police to arrest people who worship him.

Based on the results of these diagnostics for A'-movement, and the fact that the long *thuuk* passive seems to parallel the Chinese long passive so closely, I can argue that the long *thuuk* passive, like the Chinese long passive, involves A'-movement of a NOP.

Having arrived at this conclusion, the question arises as to what effect the presence and movement of the NOP might have on relative scope effects. Section 4 examines the effect of the null operator in the *thuuk* passive on relative quantifier scope; however, before proceeding to that discussion, I would like to digress briefly to examine the movement-and-complementation analyses from a Minimalist perspective, which will be relevant later in this paper.

3.5 A Minimalist view of the A'-movement analysis

The A'-movement analysis that Huang (1999) describes for the Chinese long passive was written within the GB framework, and seems to work reasonably well in that

[16] After Huang 1999, (24).
[17] Simpson 1992, (29).

framework. However, in light of the recent trend towards Chomsky's Minimalist Program, it might be useful to examine this analysis from a Minimalist perspective to see what sorts of problems might be encountered and whether these problems can be overcome.

3.5.1 Some relevant Minimalist ideas

The Minimalist Program proposed by Chomsky (1993, 1995) is a direct descendent of Government and Binding Theory, and as such retains some of the basic tenor of GB. However, as the name suggests, one of the main goals of Minimalism is to provide a simpler, more streamlined framework that constrains the possibilities of language to the actualities that have been observed. One of the results of this simplification has been the proposal that movement takes place only for the purpose of checking features.

In very simple terms, the theory of feature-checking argues that lexical items, such as nouns, verbs, wh-words, and quantifiers, carry features, such as case, agreement, tense, and wh-features, that must be checked against identical features on relevant functional heads—for example, tense features on the verb, and the subject's case and agreement features, are checked against corresponding features in Infl. Features can be checked in one of three configurations. In the first configuration, a lexical item or a phrase raises to the Spec position of the relevant functional head, from where it can check its features against those of the head. In the second possible configuration, a lexical item or a phrase raises to adjoin to the relevant head. In the third and least common configuration, a phrase raises to adjoin to the Spec position of the relevant functional head.

A useful tool that has been adopted by many linguists is the Split-Infl Hypothesis, which argues that IPs are split into (at least) subject Agreement (AgrS) projections and Tense (T) projections. It has been further argued that VPs are dominated by an object Agreement (AgrO) projection.[18] In feature-checking terms, AgrS and AgrO are functional heads that carry features against which subjects can check their agreement and nominative case features, and objects can check their agreement and accusative case features, respectively. Using the examples of subject and verb, the subject of a sentence raises from its base-generated position in Spec-VP (following the VP-Internal Subject Hypothesis) to Spec-AgrSP to check its nominative case and agreement features, and the verb of a finite clause raises to adjoin to T^0, from where it can check its tense features. In an ECM structure like the one proposed for the Chinese long passive, the subject of the lower clause raises to Spec-AgrOP, above the matrix VP, to check its agreement and accusative case features.

With this brief description of feature theory and Agreement projections, we can move on to a Minimalist version of the analysis for the Chinese passive that Huang (1999) describes. The next section examines the A'-movement analysis for the Chinese and Thai passives from a Minimalist perspective.

3.5.2 A Minimalist structure for the Chinese and Thai passive constructions

As described in Section 3.3, the A'-movement analysis of the Chinese passive proposes that a null operator (NOP) moves from the embedded object position to adjoin to the embedded non-finite IP. According to Minimalist theory, in order for the

[18] It should be noted that Chomsky (1995) argues against Agreement projections, and instead proposes a theory that incorporates *v*P shells and multiple specifier positions for certain functional heads. There seems to be evidence for both proposals; however, as the AgrP proposal works better for my purposes, I will use it in this paper.

NOP to move, it must have a feature to check and a functional head to check its feature against.

NOPs have classically been treated as null wh-operators, and so it can be assumed that the NOP has a wh-feature to check. However, there is no functional head for the NOP to check this feature against. Wh-features are normally checked against a C^0, and the tree structure of the *tough*-construction in English—the original inspiration for the A'-movement analysis of the Chinese long passive—contains a CP. In the analysis of the Chinese passive, however, the CP has been eliminated so as not to act as a barrier to the ECM ability of *bei*, and the NOP is left without a head against which to check its wh-feature.[19]

There is, however, another possibility. Huang (1999) describes the Chinese passive as having "two predicates, the primary predicate *bei*, and the *secondary* predicate realized by the NOP structure". It may therefore be possible that the NOP has a predication feature, and that there is a functional head for predication against which the NOP can check this feature. Bowers (1993) has proposed just such a functional head, a PrP.

In Bowers' analysis, the PrP is a complement of an I or V, and takes a VP, NP, AP, or PP complement. Bowers proposes that the subject of the sentence is base-generated in Spec-PrP, rather than Spec-VP, and moves to Spec-IP to get case. The direct object is base-generated in Spec-VP and moves to Spec-AgrOP to get case. Because of the locations he proposes for base-generation of the subject and object, Bowers' proposal may not quite work as it stands for the purposes of this analysis. However, for now, I will adopt his Predicate projection and leave the question of where subjects and objects are base-generated for further research.

Whether the PrP in the Chinese and Thai passive structure is located in the complement position of the matrix I or the matrix V also remains to be worked out; however, the complement position of the matrix I seems to be the better alternative. I will briefly examine these two possibilities in turn. In the first possibility, where the PrP is in the complement position of the matrix I, the PrP is located above the base-generated location of the matrix verb. This position does not seem particularly desirable, since, for the purposes of this analysis, the PrP contains the secondary predicate, the NOP, and it therefore seems more appropriate for the PrP to be located under the matrix verb, which is the primary predicate. However, the final location of the matrix verb is above the PrP, adjoined to $AgrS^0$, so perhaps the complement position of the matrix I is in fact an acceptable location for the PrP.

In the second possibility, the PrP is in the complement position of the matrix V. In this case, the embedded subject is in a higher position, Spec-AgrOP, at LF, which is much less desirable even than having the PrP above the base-generated location of the matrix verb. Furthermore, a PrP in the complement position of the matrix verb would have to have the property of not being a barrier to ECM.

Although this brief discussion of the PrP does not provide a great deal of evidence to support the existence of a PrP in the Chinese and Thai passive structures, and many of the details of this hypothetical PrP remain to be ironed out, it does at least seem possible to utilize Bowers' proposal to approximate a Minimalist version of the structure that Huang describes for the Chinese passive. For the purposes of this paper, it is sufficient to know that the possibilities of a PrP and of a Minimalist version of the A'-movement analysis exist.

[19] Thanks to Andrew Simpson (personal communication) for pointing out that ECM is not possible if the NOP raises to Spec-XP.

Having determined that the Chinese and Thai passive structures may well involve A'-movement of a NOP, the question arises as to what effect the presence and movement of the NOP might have on relative scope effects. The next section examines the effect of the null operator in the Chinese and Thai passives on relative quantifier scope.

4 Scope reconstruction effects in the Thai passive

Huang (1999) rejects the possibility of scope reconstruction effects in the Chinese passive, stating:

> The analysis of Chinese passives in terms of A'-movement and predication poses a problem for the account of purported scope ambiguities of Chinese passives reported in Aoun and Li (1989, 1993). Aoun and Li claim that, in contrast to their active counterparts, passive sentences like the following are ambiguous between a distributive and collective reading:
>
> (i) mei-ge xuesheng dou bei san-ge laoshi jiao-guo.[20]
> every student all BEI three teacher teach-EXP
> Every student was taught by three teachers.
>
> They argue that the collective reading is derived from the fact that the Agent 'three teachers' c-commands an NP-trace of the Theme 'every student'. According to the NOP movement analysis adopted here, a [long] passive is structurally on a par with a "tough" construction. It has been pointed out, by Higginbotham (1996)[21] citing Barbara Partee, that a *tough* construction does not exhibit scope reconstruction effects. *Everyone is hard for someone to please* has only the distributive, but not the collective, reading. It has always been my claim that the Chinese passives do not exhibit scope ambiguities any more than the actives do.
>
> (Footnote 16)

This section provides background information about theories of reconstruction effects and relative scope interaction, examines Huang's claim that the A'-movement analysis of the Chinese passive is problematic for Aoun and Li's analysis of scope interaction, presents data showing that the *thuuk* passive exhibits scope reconstruction effects, and attempts to account for these effects using existing theories of scope interactions, extending the theories where necessary.

[20] I queried three Mandarin speakers regarding their intuitions about this sentence. One felt, as Huang does, that the sentence has only the distributive reading. The second felt that it could have both readings, and the third felt that it has only the collective reading. This leads me to think that an adequate theory of scope needs to not only provide analyses that produce structures that allow ambiguous or non-ambiguous readings, but to also explain why (or at least provide for the possibility that) speakers of the same language can have such wildly varying intuitions regarding the interpretation of a sentence.

[21] The relevant entry from Huang's bibliography is as follows:
Higginbotham, James. 1996. "Semantic Computation". Ms., Oxford University.

4.1 Reconstruction effects

Simply put, reconstruction effects occur when an element that has A'-moved, such as a wh-phrase or quantifier-phrase, appears to be interpreted in its original position in order to meet some principle of syntax.[22] As an example, consider the following English sentence:

(38) [Which pictures of himself$_j$]$_i$ does Bob$_j$ like t$_i$? (Barss 2001)

According to the Binding Theory, anaphors such as *himself* must be bound in their governing category. In (38), *himself* does not seem to be bound in its governing category, and so we expect (38) to be ungrammatical. However, it is perfectly well-formed, and there must be some explanation as to why. Assuming that the underlying structure of the sentence at LF actually looks something like (39):

(39) [Which pictures of himself$_j$] does Bob$_j$ like [which pictures of himself]?

then the grammaticality of the sentence becomes much easier to explain: at LF, *himself* is interpreted as being in its lower position, where it can be bound by *Bob*. The situation is, of course, slightly more complicated, and the rest of this section briefly describes the principles that govern reconstruction effects.

GB analyses of reconstruction effects generally assumed that moved elements left a trace, and that at LF the moved element lowered back into the trace position. However, this was not considered to be a particularly elegant or economical analysis, and so Chomsky (1993) proposes an alternative theory known as the "copy theory of movement".[23] In the copy theory of movement, a copy of the moved element, rather than a trace, remains in the original position. If the element moves before Spell-Out, then one of the copies is deleted at PF (usually the lower copy, as in (38)).

Copy deletion takes place at LF, as well, but the LF deletion process has the property of being able to delete a different part of each copy, rather than being forced to delete whole copies at a time. Two principles of economy apply to LF deletion of copies; Barss (2001) describes them as follows:

(40) a. Copy Economy: Eliminate redundancy of copies, down to recoverability.
b. Operator Economy: Minimize the content of operator positions.[24]

This means that in wh-movement or quantifier-raising, the operator (wh-word or quantifier) is assumed to remain in the higher copy, and the rest of the phrase to remain in the lower copy. Based on these principles, the example in (38) has the following form at interpretation:

(41) [Which x] does Bob$_j$ like [x picture of himself$_j$]?

This example describes reconstruction effects as they pertain to anaphors. Many linguists additionally attribute scope interactions between wh-phrases that do not contain anaphors, such as *who*, and quantifier phrases, such as *everyone* and *some*

[22] A-movement may also result in reconstruction effects. I will return to this topic later.

[23] Although the copy theory of movement is not commonly used in GB, it is not incompatible with GB. When appropriate, I will use it in a GB context.

[24] Barss 2001, (34).

woman, to reconstruction effects caused when the wh-phrases or quantifier phrases move to A'-positions. The following section describes some basic scope interaction effects and the theory that Aoun and Li have proposed to account for them.

4.2 Scope interaction effects

In English and a number of other languages, wh-phrases move overtly to Spec-CP either at the beginning of a sentence, as in (42a), or at the beginning of a clause, as in (42b):

(42) a. [Which pictures]$_i$ does Bob like t_i?
b. John asked what$_i$ Mary bought t_i.

In some languages, such as Hungarian and Polish, multiple wh-phrases move overtly, and in some languages, such as Chinese and Thai, no wh-phrases move overtly. It has been argued that wh-movement takes place so that the wh-phrase can take scope over the entire sentence, thereby determining the interpretation of the sentence, and consequently all wh-phrases in all languages must have moved by LF for interpretive purposes. When a wh-phrase moves, it is assumed to leave a trace (or copy) that acts as a variable that is A'-bound by the wh-word.

Similarly, it has been argued (for example, May 1985 and others) that quantifiers undergo raising at LF to an A'-position from which they can take the appropriate scope, and that they also leave traces (or copies) that act as variables bound by the raised quantifier phrase. It has further been argued that this raising process can explain ambiguities caused when two quantifiers interact in a way that allows each to take scope over the other. As an example, consider the ambiguous sentence in (43); Aoun and Li (1993) give two possible interpretations, (43a) and (43b), for this sentence.

(43) Some man loves every woman. (Aoun and Li 1993, p. 2)
a. There is a (single) man *x* such that, for every woman *y*, *x* loves *y*.
b. For every woman *y*, there is a (possibly different) man *x*, such that *x* loves *y*.

In (43a), which is known as the collective reading, the quantifier phrase (QP) *some man* has scope over the QP *every woman*, and consequently the man in question is not allowed to vary depending on which woman is being considered. In (43b), which is known as the distributive reading, the reverse is true: the QP *every woman* has scope over *some man*, and thus the man is able to vary according to the woman being considered at any given point. Aoun and Li, and many other linguists, attribute this ambiguity to the fact that (43) can have at least two different syntactic representations at LF, as in (44):

(44) a. [$_{IP}$ some man$_i$ [$_{IP}$ every woman$_j$ [$_{IP}$ x_i loves y_j]]] (Aoun and Li 1993, p. 2)
b. [$_{IP}$ every woman$_j$ [$_{IP}$ some man$_i$ [$_{IP}$ x_i loves y_j]]]

In (44a), the QP *some man* c-commands *every woman*, and so can take scope over it. In (44b), the reverse is true.

Aoun and Li (1993) build on earlier work on wh-phrase and quantifier phrase scope interaction to develop a theory that explains why the English sentences (45a,b,d) and the Chinese sentence (45e) are ambiguous, but (45c,f,g) are not:

(45) a. Some man loves every woman. (Aoun and Li 1993, p. 7)
b. Every man loves a woman.
c. Mei-ge nan-ren dou xihuan yi-ge nuren. (as b)
d. What did everyone buy for Max?
e. Mei-ge-ren dou gei Zhangsan mai-le shenme? (as d)
f. Who bought everything for Max?
g. Shei gei Zhangsan mai-le mei-ge-dongxi? (as f)

They show, furthermore, that their theory can be used to explain the ambiguity of passive sentences in English and Chinese. Critically, they assume the movement analysis for Chinese passives, which gives Chinese passives the same structure as English passives.

The next section describes the principles that their theory is based on, and their conclusions regarding how scope ambiguities arise.

4.2.1 Aoun and Li's analysis of scope syntax

Aoun and Li (1993) base their analysis of quantifier scope interaction on the following principles:

(46) *The Scope Principle* (Aoun and Li 1993, p. 8)
An operator X may have scope over an operator Y if and only if X c-commands Y or an A'-element in the chain headed by the operator Y.

(47) *The Minimal Binding Requirement (MBR)*
Variables must be bound by the most local potential A'-binder.

They define "most local potential A'-binder" as follows:

(48) X qualifies as a potential A'-binder for Y if and only if X c-commands Y, X is in an A'-position, and the assignment of the index of X to Y would not violate Principle C of the binding theory. (Aoun and Li, 1993, p. 57)

The MBR has the effect of determining which configurations of operators and variables are valid for QP/QP scope interactions and WH/QP scope interactions. QP/QP interactions can have the configurations shown in (49a-c), but only the configuration in (49c) is valid; the others are ruled out by the MBR.

(49) a. * [$_{IP}$ QP_1 [$_{IP}$ QP_2 [$_{IP}$ x_1 [$_{VP}$ ... x_2 ...]]]] (Aoun and Li 1993, p. 19)
b. * [$_{IP}$ QP_2 [$_{IP}$ QP_1 [$_{IP}$ x_1 [$_{VP}$ ... x_2 ...]]]]
c. [$_{IP}$ QP_1 [$_{IP}$ x_1 [$_{VP}$ QP_2 [$_{VP}$ ... x_2 ...]]]]

Similarly, WH/QP scope interactions can have the configurations shown in (50a-c), but only the configurations in (50a-b) are valid; (50c) is ruled out by the MBR.

(50) a. [wh_1 [QP_2 [x_2 ... x_1 ...]]] (Aoun and Li 1993, p. 69)
b. [wh_1 [x_1 [QP_2 [... x_2 ...]]]]
c. * [wh_1 [QP_2 [x_1 [... x_2 ...]]]]

Aoun and Li also assume a two-step process of quantifier raising. In the first step, the NP containing the quantifier raises to adjoin to an A'-position. This step is optional if

the NP is already in a non-theta-marked position, such as Spec-IP, and required otherwise. In the second step, the bare quantifier raises to adjoin to an A'-position that governs the NP that it raised from.

Based on these principles, Aoun and Li conclude that relative scope is determined only by elements in A'-positions—that is, only the wh-phrases and quantifier phrases at the heads of chains and their intermediate traces in A'-positions can determine relative scope. Rephrased in terms of the copy theory of movement, only copies in A'-positions are relevant to determining quantifier- and wh-phrase scope interactions.

Since the null operator proposed for the A'-movement analysis of the long passive in Chinese and Thai moves to an A'-position and binds a variable (or copy), it qualifies as a potential A'-binder according to Aoun and Li's definition, and therefore might well play a role in scope interactions. The next section shows that Aoun and Li's analysis of relative scope interactions predicts that, if the A'-movement analysis of the Chinese and Thai long passives is correct, then Chinese and Thai passives are unambiguous. It then presents data showing that, contrary to this prediction, Thai passives are, in fact, ambiguous.

4.3 Scope interactions in the Chinese and Thai passives

As noted above, Huang (1999) claims that the A'-movement analysis of the Chinese passive is problematic for Aoun and Li's analysis of scope interaction because it predicts that Chinese passives are unambiguous, contrary to Aoun and Li's claims. This section will show that, assuming the A'-movement analysis for Chinese passives holds true, Aoun and Li's analysis in fact does predict that Chinese passives are unambiguous. As we will see, however, Thai passive sentences are ambiguous, and so, if the Chinese and Thai passives have the same structure, Aoun and Li's theory does not adequately describe the data.

According to the A'-movement analysis, the basic underlying S-structure of a Chinese passive sentence is as follows:

(51) $[_{IP}\ [_{NP}$ mei-ge xuesheng dou$]_i$ bei $[_{IP'}$ NOP$_i$ $[_{IP}$ san-ge laoshi jiao-guo $t_i]]]]$

(Every student was taught by three teachers.)

In an application of Aoun and Li's theory of scope interaction to this sentence, the matrix QP *mei-ge xuesheng* ("every student") can optionally adjoin to the matrix IP, and the bare quantifier then raises to a position from which it can c-command the rest of the phrase. The embedded QP *san-ge laoshi* ("three teachers") can optionally adjoin to the embedded IP, to the matrix VP, or—if the matrix QP does not undergo optional raising to the matrix IP—to the matrix IP, after which the bare quantifier raises to a position from which it can c-command the rest of the phrase.[25] Continuing to assume that the NOP is a null wh-operator, the possibilities above result in the following potential configurations of operators and variables:[26]

[25] Aoun and Li state that if the matrix QP and the embedded QP both raise to the matrix IP, the MBR is violated, so this possibility can be ruled out from the beginning.

[26] For simplicity, I have used English words and have sometimes collapsed the two steps involved in Aoun and Li's version of quantifier raising; the end results are the same. Note that this analysis assumes, contra Aoun and Li, that Chinese subjects are base-generated in Spec-VP and raise to Spec-IP by S-structure, and that, therefore, neither of the QPs in this sentence is in a theta-position at S-structure, so that movement of the full QP is optional in both cases.

(52) The matrix QP raises to the matrix IP, and the embedded QP raises to the embedded IP (either before or after the adjoined NOP):

a. $[_{IP'}\ every_e\ [_{IP}\ x_e\ \ldots\ [_{IP'}\ wh_{NOP}\ [_{IP'}\ three_s\ [_{IP}\ x_s\ [_{VP}\ \ldots\ x_{NOP}]]]]]]$
b. * $[_{IP'}\ every_e\ [_{IP}\ x_e\ \ldots\ [_{IP'}\ three_s\ [_{IP'}\ wh_{NOP}\ [_{IP}\ x_s\ [_{VP}\ \ldots\ x_{NOP}]]]]]]$

(53) The matrix QP raises to the matrix IP, and the embedded QP raises to the matrix VP:

* $[_{IP'}\ every_e\ [_{IP}\ x_e\ [_{VP}\ three_s\ \ldots\ [_{IP'}\ wh_{NOP}\ [_{IP}\ x_s\ [_{VP}\ \ldots\ x_{NOP}]]]]]]$

(54) The matrix QP raises to the matrix IP and the embedded QP does not raise:

$[_{IP'}\ every_e\ [_{IP}\ x_e\ \ldots\ [_{IP'}\ wh_{NOP}\ [_{IP}\ [_{NP'}\ three_s\ [_{NP}\ x_s\ ]]\ [_{VP}\ \ldots\ x_{NOP}]]]]]]$

(55) The matrix QP does not raise, and the embedded QP raises to the embedded IP (either before or after the adjoined NOP):

a. $[_{IP}\ [_{NP'}\ every_e\ [_{NP}\ x_e\ ]]\ldots\ [_{IP'}\ wh_{NOP}\ [_{IP'}\ three_s\ [_{IP}\ x_s\ [_{VP}\ \ldots\ x_{NOP}]]]]]$
b. * $[_{IP}\ [_{NP'}\ every_e\ [_{NP}\ x_e\ ]]\ldots\ [_{IP'}\ three_s\ [_{IP'}\ wh_{NOP}\ [_{IP}\ x_s\ [_{VP}\ \ldots\ x_{NOP}]]]]]$

(56) The matrix QP does not raise, and the embedded QP raises to the matrix VP:

* $[_{IP}\ [_{NP'}\ every_e\ [_{NP}\ x_e\ ]]\ [_{VP'}\ three_s\ \ldots\ [_{IP'}\ wh_{NOP}\ [_{IP}\ x_s\ [_{VP}\ \ldots\ x_{NOP}]]]]]$

(57) The matrix QP does not raise, and the embedded QP raises to the matrix IP:

* $[_{IP'}\ three_s\ [_{IP}\ [_{NP'}\ every_e\ [_{NP}\ x_e\ ]]\ \ldots\ [_{IP'}\ wh_{NOP}\ [_{IP}\ x_s\ [_{VP}\ \ldots\ x_{NOP}]]]]]$

(58) Neither QP raises:

$[_{IP}\ [_{NP'}\ every_e\ [_{NP}\ x_e\ ]]\ldots\ [_{IP'}\ wh_{NOP}\ [_{IP}\ [_{NP'}\ three_s\ [_{NP}\ x_s\ ]]\ [_{VP}\ x_{NOP}]]]]$

In the configurations marked with an asterisk, the NOP meets the criteria listed in (48) for most local potential A'-binder for the embedded QP's variable; therefore, according to the configurations shown in (49), these sentences violate the MBR. In the remaining valid configurations, the matrix QP *mei-ge xuesheng* ("every student") and the NOP, which is co-indexed with the matrix QP, both c-command the embedded QP *san-ge laoshi* ("three teachers"), and so, according to this analysis, the Chinese sentence is not ambiguous. Huang's argument against Aoun and Li is therefore not with their theory, but with their claim that Chinese passive sentences are ambiguous.

If Chinese and Thai passive sentences have the same structure, then Aoun and Li's theory likewise predicts that Thai passive sentences are unambiguous. However, contrary to this prediction, the following Thai passive sentences are ambiguous:

(59) kʰamooj tʰuk-kʰon tʰuuk tamruat jiŋ.
thief every-person THUUK police shoot
Every thief was shot by a policeman.

(60) kʰamooj baaŋ-kʰon tʰuuk tamruat tʰuk-kʰon jiŋ.
thief some-person THUUK police every-person shoot
Some thief/thieves was/were shot by every policeman.

(61) nakrian tʰuk-kʰon tʰuuk kʰruu saam-kʰon kroot.[27]
student every-person THUUK teacher three-person angry-at
Every student had three teachers angry at him or her.

This creates a dilemma: Either Aoun and Li's theory is inadequate for fully describing the Thai *thuuk* passive, or else the long *thuuk* passive does not involve A'-movement of a NOP. Since the evidence for A'-movement in the long *thuuk* passive presented in Section 3 seems quite solid, it would be nice to have an analysis of scope interaction that allows us to keep the A'-movement analysis. Therefore, the next section investigates both areas of Aoun and Li's theory that might be revisable in order to account for the Thai data, and another theory of scope interaction.

4.4 Explaining scope reconstruction effects in the Thai passive

The last section demonstrated that Aoun and Li's theory of scope interaction predicts that the Chinese passive will not exhibit quantifier scope reconstruction effects (correctly so, according to Huang 1999). However, the long *thuuk* passive in Thai, which seems to have the same structure as the Chinese passive, does exhibit scope reconstruction effects. This section first attempts to extend Aoun and Li's theory to account for the Thai data and then investigates another possible theory of scope interaction. Since the problem presented by the presence of the NOP is primarily one of binding interactions, this section first considers ways to avoid this problem within Aoun and Li's theory, and then considers the theory of quantifier scope syntax proposed in Hornstein (1995), which eliminates the need for binding altogether.

4.4.1 Extending Aoun and Li's theory

As described in Section 4.3, the problem with combining the A'-movement analysis of the Thai passive with Aoun and Li's analysis of scope syntax is that, in certain configurations of operators and variables, the NOP interferes with binding of the variables left by quantifier raising, thereby rendering these configurations invalid, and the remaining valid configurations do not result in ambiguity. Two potential areas for investigation immediately present themselves: the possibility that the NOP moves and binds its variable before quantifier raising takes place and thus is unavailable to bind the variable left by the quantifier, and the possibility of a structure in which the quantifier raises from an A-position higher than the position to which the NOP moves.

The first proposal requires the postulation of two rules: one that specifies an ordering for the processes of NOP movement and quantifier raising, and a second that allows an operator to bind only one variable. The steps of the derivation would then look something like this:

(62) 1. The NOP moves to adjoin to the embedded IP, binding a variable in the embedded object position:

$[_{IP}\ [_{NP'}\ every_e\ [_{NP}\ x_e\ ]]\ \ldots\ [_{IP'}\ wh_{NOP}\ [_{IP}\ three_s\ [_{VP}\ \ldots\ x_{NOP}]]]]]$

[27] My informants agree that (59) and (61) are ambiguous. They do not all agree on (60).

2. The lower QP raises to adjoin to the matrix IP, leaving a variable in the embedded subject position:

$[_{IP'}\ three_s\ [_{IP}\ [_{NP'}\ every_e\ [_{NP}\ x_e\ ]]\ \ldots\ [_{IP'}\ wh_{NOP}\ [_{IP}\ x_s\ [_{VP}\ \ldots\ x_{NOP}]]]]]$

Although these rules would solve the problem presented by the NOP, and it might be possible to find definitions of binding that lend support to the second rule, there is no clear theoretical motivation for an ordering of NOP movement and quantifier raising. In particular, I have been assuming that the NOP is equivalent to a null wh-operator, and so if there were an ordering of NOP-movement and QR, such an ordering would also allow the following configuration of wh-phrase and QR, which violates the MBR, as described in (50c), above:

(50) c. * $[\ wh_1\ [\ QP_2\ [\ x_1\ [\ \ldots x_2 \ldots\ ]]]]$

Therefore, this idea can be rejected.

The second proposal is that the QP undergoes quantifier raising (QR) from a position that is higher than the NOP's final position. Assuming the Agreement projections described in Section 3.5.1, the embedded subject QP would move to the AgrOP of the matrix clause, an A-position, to get case before undergoing QR. The configuration before QR is then:

(63) $[_{AgrSP}\ [_{NP'}\ every_e\ [_{NP}\ x_e\ ]]\ [_{TP}\ \ldots\ [_{AgrOP}\ three_s\ [_{IP'}\ wh_{NOP}\ [_{IP}\ [_{VP}\ \ldots\ x_{NOP}]]]]]]$

The configuration after QR is:

(64) $[_{AgrSP'}\ three_s\ [_{AgrSP}\ [_{NP'}\ every_e\ [_{NP}\ x_e]]\ [_{TP}\ldots\ [_{AgrOP}\ x_s\ [_{IP'}\ wh_{NOP}\ [_{IP}\ [_{VP}\ldots\ x_{NOP}]]]]]]]$

Aoun and Li note that this particular post-QR configuration does not violate the MBR, since the matrix subject quantifier does not c-command the variable left by the embedded subject QP, and therefore is not a potential A'-binder for it.

Having considered two potential ideas for avoiding the problem that the NOP poses for binding in Aoun and Li's theory and shown that only the second is feasible, we can turn our attention to a Minimalist theory of quantifier scope interaction that does not involve binding at all. Hornstein (1995) proposes that relative quantifier scope effects can be explained using the A-movements of QPs raising to get case. The next section describes this proposal and shows how it might work with the A'-movement analysis of Chinese and Thai passives.

4.4.2 The A-movement theory of quantifier scope

As noted earlier, one of the central thrusts of Minimalism is to simplify GB theories of the mechanisms that govern language. In true Minimalist spirit, Hornstein (1995) argues that effects generally associated with A'-movement, including quantifier raising and covert wh-movement, can be equally well explained using Minimalist principles and A-movement. In particular, he points out that, if A-movement can be assumed to leave copies, then relative quantifier scope can be explained using Agreement projections, the theory of feature-checking, and the copy theory of movement.

His assumptions are as follows. QPs must raise from their base-generated positions in VP to a Spec-AgrP position in order to gain case. When a QP moves, it leaves a copy of itself in its original position. Before interpretation, all copies except one must be deleted, and any copy may be deleted, with the restriction that definite quantifiers, such as *everyone*, can only appear outside the VP in which they originated. A scope principle similar to the one in Aoun and Li's theory determines relative quantifier scope.

According to his analysis, the ambiguous sentence *Someone attended every seminar* has the following form at LF:

(65) [$_{AgrSP}$ Someone [$_{TP}$ T [$_{AgrO}$ every seminar [$_{VP}$ someone [$_{VP}$ attended every seminar]]]]][28]

After deletion, given the restriction on definite quantifier phrases, the following two forms are possible:

(66) a. [$_{AgrSP}$ Someone [$_{TP}$ T [$_{AgrO}$ every seminar [$_{VP}$ [$_{VP}$ attended]]]]][29]
b. [$_{AgrSP}$ [$_{TP}$ T [$_{AgrO}$ every seminar [$_{VP}$ someone [$_{VP}$ attended]]]]]

In (66a), the QP *someone* takes wide scope over the QP *every seminar*. In (66b), the opposite is true.

Provided that a reasonable Minimalist version of the A'-movement analysis can eventually be developed, then combining the A'-movement analysis of the Thai passive with Hornstein's analysis of relative quantifier scope gives the following two forms, after deletion, for the ambiguous Thai sentence in (60), shown here using English words:

(67) [$_{AgrS}$ some thief THUUK [$_{TP}$ [$_{AgrO}$ every policeman [$_{VP}$ [$_{IP'}$ NOP [$_{IP}$ shoot t_n]]]]]]

(68) [$_{AgrS}$ THUUK [$_{TP}$ [$_{AgrO}$ every policeman [$_{VP}$ some thief [$_{VP}$ [$_{IP'}$ NOP [$_{IP}$ shoot t_n]]]]]]

This analysis solves the binding problem found in Aoun and Li's analysis and makes the position of the NOP irrelevant by eliminating QR, thereby also eliminating QP operators, the need for a binding requirement, and Aoun and Li's conclusion that only elements in A'-positions affect scope interactions. It also allows language-specific (and speaker-specific) interpretations of potentially ambiguous sentences, in that a particular language's (or speaker's) grammar could specify that a copy in a particular position always be deleted.

However, there are two issues with this analysis that should be pointed out. The first is Szabolcsi's (2001) argument that Hornstein's theory cannot account for the ambiguity of (69):

(69) Everyone kissed someone. (Hornstein 1995, p. 237)

Given Hornstein's assumptions, the copy of the definite QP *everyone* in the VP in (69) is required to delete, so the only copy available is in AgrSP. As Szabolcsi, and

[28] Hornstein 1995, p. 155.
[29] Hornstein 1995, p. 155.

Hornstein himself, point out, the indefinite QP *someone* can never raise to a position above *everyone*, and so the sentence is predicted to be unambiguous.

Hornstein explains this by claiming that (69) is not, strictly speaking, ambiguous, but should rather be thought of as "vague". He argues that the above sentence is true both in a model in which everyone kissed the same person and in a model in which everyone kissed a different person, and so, therefore, "the models compatible with the structure are vague as to how many kisses there are".

The second issue with this analysis is the theoretical mismatch between eliminating A'-movement for relative scope interactions and retaining it for movement of the NOP. Hornstein (2000) proposes a theory that eliminates both PRO and null operators, which might be fruitfully applied to the long passive in both Chinese and Thai. However, as this paper cannot consider such an application thoroughly, I will leave it for further research.

Despite these issues, Hornstein's analysis accounts for the quantifier scope ambiguities in the Thai long passive using simpler methods than Aoun and Li's theory of scope interaction and, furthermore, requires no modifications. It can therefore be concluded that, if a suitable Minimalist version of the A'-movement analysis can be developed, or if A'-movement can be eliminated using the techniques that Hornstein (2000) proposes, then Hornstein's (1995) analysis of relative scope interactions is the more appropriate of the two analyses that have been examined.

5 Conclusion

This paper has tackled several important issues related to the structure of passive sentences in Thai. First, it applied a recent analysis of the Chinese passive, involving A'-movement of a null operator, to the Thai *thuuk* passive, and showed that this A'-movement analysis works just as well for the Thai passive as for the Chinese passive. It then investigated the start of a translation of this analysis into the Minimalist framework; in particular, it proposed that the long passive structure in Chinese and Thai may involve a PrP, though the exact nature of this PrP remains to be determined. Finally, this paper showed that the A'-movement analysis of the long passive cannot be satisfactorily combined with Aoun and Li's theory of scope syntax to account for observed quantifier scope interaction in Thai. To solve this problem, it first attempted to extend Aoun and Li's theory to account for the Thai data and then showed that Hornstein's recent Minimalist account of relative scope interactions accounts for the data better than Aoun and Li's analysis.

This paper has also raised a number of questions for further research on Thai passives and relative scope interactions, particularly from the perspective of Minimalism. Below I outline several areas for future work.

First, there are eight other passive-like structures in Thai to be examined. Some of them exhibit topic-like qualities and so a study of these structures may contribute to current research into topicalization. In addition, judging from Prasithrathsint's (1988) survey of Thai passives in use between 1802 and 1982, there is a wealth of historical Thai data available. Huang (1999) uses historical Chinese data to shed light on the grammaticalization processes involved in passivization and on the syntactic and semantic development of the Chinese passive; investigation of the historical Thai data for similar purposes might also be very productive.

Secondly, this paper began to examine how the GB-based movement-and-complementation analyses of the Chinese passive might be translated into Minimalism. Since the general trend in linguistics seems to be towards the Minimalist

framework, working out the details of such a translation might be a useful area of research. Furthermore, as implied in Sections 3 and 4, research in this area might contribute to research into the syntax of predication.

Thirdly, this paper only touched the tip of the iceberg regarding relative scope interactions. In particular, it only discusses ambiguities arising from the interaction of universal and existential quantifiers. However, research into other types of quantifiers might be enhanced by data from Thai and, in addition, data from my informants seems to indicate that WH/QP interaction may not behave the same in Thai as it does in English. Research into both or either of these areas could yield interesting results.

Finally, as noted in Section 4, Hornstein (2000) attempts to eliminate PRO and null operators from the Minimalist framework. Given that the analysis of the long passive involves a NOP, it would be very interesting to apply his theories to the Thai and Chinese passives.

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