Generalized Clausal Modification in Thai Noun Phrases

Peter Jenks (UC Berkeley)

Abstract. The Thai particle *thîi* introduces relative clauses and noun-complement clauses, but does not introduce clausal complements of verbs. This paper provides a unified analysis for these two noun phrase-internal clauses as modifiers, and show that *thîi* can be analyzed as a compementizer which functions semantically as a lambda-operator, serving to derive CP-sized properties. This analysis is extended to the use of *thîi* in factive complements of verbs, contrastive clefts, and infinitives. Arguments are presented against the analysis of *thîi* by den Dikken and Singhapreecha (2004, *Syntax* 7.1) as a LINKER, a reflex of DP-internal predicate inversion.
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1. Introduction

Thai is one of several Asian languages, including Mandarin Chinese (e.g. Simpson 2003; Tang 1990), Korean (Sohn 2001, p. 309) and Khmer (Comrie and Horie 1995), where relative clauses and noun-complement clauses are marked with the same particle. The Thai particle, *thîi*, is shown below introducing a relative clause (1), and then a noun-complement clause (2):

(1) [$_{NP}$ nákrian$_i$ [$_{RC}$ **thîi** khruu tii $\_\__i$ (mɨawaannɨi)]] son mâak
student THÎI teacher hit *ec* yesterday naughty very
'The student that the teacher hit (yesterday) is very naughty.'

(2) chăn màj chɔ̂ɔp [$_{NP}$ khwaam.khít [$_{NCC}$ **thîi** wâa khruu khuan tii nákrian]]
1SG NEG like idea THÎI COMP teacher should hit student
'I don't like the idea that teachers should hit students.'

In both environments, *thîi* is obligatory.

The particle *thîi* is historically derived from a noun meaning 'place' with an intermediate stage in its development as a preposition (Kullavanijaya 2008); all of these uses still exist in modern Thai. Early accounts of *thîi* in Thai relative clauses identify it as a relative pronoun (Hass 1964, p. 243, Warotamasikkhadit 1972, p. 48). However, *thîi* does not resemble any Thai pronoun, given its locative origin. Other syntacticians, such as Ekniyom (1982) have concluded that *thîi* is a complementizer.

At first pass, the claim that *thîi* is a complementizer in (1) and (2) seems sufficient, given that it proceeds clauses in both examples. Yet in noun complement clauses, *thîi* is followed by another particle, *wâa*,

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historically related to a verb meaning 'to say' (e.g. Thepkanjana 1986, p. 222-225). This particle is glossed COMP because it also introduces finite clausal complements of verbs, from which *thîi* is absent:

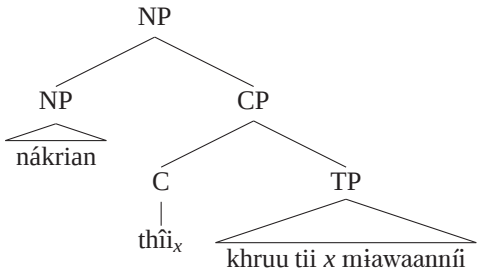
(3) a. chăn khít/phûut **wâa** khăw càʔ jáaj bâan
1SG think/say COMP 3 PROSP move house
'I think/said that he's going to move.'
b. chăn rúu **wâa** khăw càʔ jáaj bâan
1SG know COMP 3 PROSP move house
'I know whether he's going to move.'
c. chăn thăam **wâa** khăw càʔ jáajbâan máj
1SG ask COMP 3 PROSP move house YNQ
'I asked whether he's going to move.'

If *wâa* in is also as a complementizer, what is *thîi*? Why does only *wâa* occur in verbal complements? And why are both *wâa* and *thîi* required in noun complement clauses? This paper addresses these questions, providing a unified syntactic and semantic account of the particles *thîi* and *wâa*, with special attention to the former.

Relative clauses and noun-complement clauses are often seen as having different kinds of syntactic relationships with the head noun: relative clauses are adjuncts, while noun-complement clauses are complements, sisters to N^0. This claim has been challenged. For example, Stowell (1981, p. 203) argues that noun-complement clauses are appositive modifiers, rather than nominal complements (see also Grimshaw 1990 and Moulton 2009, ch. 2). Following these proposals, in this paper I propose a unified analysis of relative clauses and noun-complement clauses as modifiers in Thai. The complementizer *thîi* plays a central role in this analysis. I argue that in every environment that it occurs before a clause, it serves as a lambda operator, abstracting a predicate over a variable position within the clause.

The paper begins by examining the structure of relative clauses in Thai. An analysis of *thîi* as a fused relative operator and complementizer is presented.[1] Locality restrictions and reconstruction facts support a head-raising analysis of relative clauses in Thai, which I argue is followed by reprojection of the NP above CP (Bhatt 2002; Aoun and Li 2003):

(4) a. [NP nákrian$_i$ [RC **thîi** khruu tii $\_\_{}_i$ (mɨawaannɨi)]]
student THÎI teacher hit *ec* yesterday
'The student that the teacher hit (yesterday) is very naughty.'

b.


[1]While putative relative complementizers have been observed in many languages which are geographically close to Thai, including Mandarin Chinese (Li and Thompson 1981, p. 579-585) and Vietnamese (Nguyen 2004, p. 59-60), they also occur in the isolating Kwa languages of West Africa, including Yoruba (Bamgbósé 1975), Akan (Saah 2010), and Gungbe (Aboh 2005). They are also found in Bulgarian (Krapova 2010), Swiss German (van Riemsdijk 1989, 2003), Irish (McCloskey 1979, 2001), and Scottish Gaelic (Adger and Ramchand 2005).

I claim that the semantic function of *thîi* in relative clause is to bind the CP-internal variable, creating a property (a function of type $\langle e,t\rangle$) which corresponds in the case of (4) to just that set of individuals that the teacher hit yesterday. This analysis also accounts for a previously unexplained generalization made by Kuno and Wongkhomthong (1981b) that *thîi* can only be omitted in subject-relative clauses.

The analysis of noun-complement clauses differs in several respects, but the analysis of *thîi* in these clauses is the same: it produces a clause which is interpreted as a property. I take *wâa* to be a complementizer which allows the CP to serve as an nominalized (individual-typed) proposition. *Thîi* binds a variable corresponding to this proposition, creating a singleton property which defines that proposition. Syntactically, the two complementizers slot into the two different C positions in the extended CP of Rizzi (1997): Force for *thîi*, and Fin for *wâa*:

(5) $[_{\text{NP}}$ NP $[_{\text{ForceP}}$ thîi $[_{\text{FinP}}$ wâa $[_{\text{TP}} \ldots]]]]$

The Fin position of *wâa* is supported by its restriction to finite clauses, while *thîi* occurs in both finite and infinitival clauses. This proposal accounts both for the absence of *thîi* and the presence of *wâa* in verbal complements, as nominalized clauses are verbal arguments. Last, this analysis accounts for the absence of *wâa* in relative clauses, which must have their arguments accessible to relativization.

Thus, the central claim of this paper is that *thîi* occurs before relative clauses and noun-complement clauses because both must be interpreted as one-place predicates, i.e. properties, of either individuals or propositions. This interpretation is necessary for these clauses to serve as nominal modifiers.[2] This analysis is extended to the distribution of *thîi* in other clausal environments, such as in clefts and infinitive clauses. I argue that these environments are reducible to relative clauses or noun-complement clauses. The one exceptional case is infinitives, which I argue also serve as clausal properties, unifying the semantic proposal of Chierchia (1984) with the standard syntactic analysis of infinitives as CPs. To the extend that this analysis is successful, it provides evidence that the mapping between syntax and semantics in the Thai complementizer system is direct and transparent.

A different approach to *thîi* is pursued by den Dikken and Singhapreecha (2004), who propose that *thîi* functions as a LINKER, a marker of DP-internal predicate inversion. I examine this proposal closely and argue that their analysis does not generalize to the full distribution of the particle *thîi*. The LINKER analysis is also based on problematic assumptions about Thai classifiers, which play a crucial role in the predicate inversion proposal.

The structure of the paper is as follows. Section 2 presents the analysis of *thîi* in relative clauses, which is extended to noun-complement clauses in section 3. Section 4 examines the distribution of *thîi* in factive complements of verbs, contrastive clefts, and infinitives, arguing that the analysis presented in the earlier sections can be extended to those cases as well. Arguments against the proposal by den Dikken and Singhapreecha (2004) are presented in section 5.

2. *Thîi* as a Relative Complementizer

The example below illustrates a typical example of *thîi* in a relative clause:

(6) nǎŋsɨ̌ɨ thîi Nít sɨ́ɨ _ maa
book THÎI Nit buy *ec* ASP
'a/the book that Nit bought'

Semantically, relative clauses describe some property that holds of the head noun. In (6), for example, the property described by the relative clause defines precisely those objects which Nit bought. In order to derive

[2] A similar structural claim in an earlier theory was made by Ekniyom (1982, p. 60-61).

this property-based meaning for a clause, relative clauses are assumed to involve a relative operator, which binds a variable corresponding to the gap in the relative clause:

(7) $[_{CP}\ Op_i \ldots [_{TP} \ldots x_i \ldots]]]$

These relative operators thus take clauses and return sentences with the interpretation of a property. This 'predicativizing' function of a relative operator — often called *Predicate Abstraction* (e.g. Heim and Kratzer 1998, p. 96) — is uncontroversial, going back at least to Quine (1960). Once the relative clause denotes a property, the relative head is composed with the relative clause by Predicate Modification (e.g. Heim and Kratzer 1998, p. 65), essentially set intersection.

More controversial than the interpretation of relative clauses is the question of how the relationship between the relative clause operator and the gap is established, and what the syntactic relationship is between the relative clause and the head noun. Two kinds of data have been brought to bear on the proper analysis of relative clauses. The first kind of evidence is the existence of locality effects typical of well-known cases of A-bar movement. These include, for example, island restrictions and crossover effects. A second kind of evidence bearing on the proper analysis of relative clauses comes from reconstruction phenomena, in which the relative head is interpreted as if it were located inside of the relative clause. Such reconstruction effects have been taken as evidence for base-generating the relative head inside the relative clause and moving it to its external position, a position held, for instance, by Kayne (1994) and Bhatt (2002), among many others.[3]

The following two sections provide evidence for movement and reconstruction of the head noun in Thai relative clauses, indicating that the head-raising analysis of relative clauses is correct for Thai. Section 2.3 articulates the analysis of *thîi* as a relative complementizer in the context of this analysis. Section 2.4 examines gapless relative clauses and free relatives and argues that they can be accommodated in the proposed analysis. Section 2.5 shows that the conditions on the omission of *thîi* in subject relative clauses follows from its analysis as a relative complementizer.

2.1 Evidence for movement

In this section two kinds of evidence are provided for deriving Thai relative clauses with movement. First, Thai relative clause formation is sensitive to the island constraints on movement discovered by Ross (1967). Second, relativization in Thai leads to weak crossover violations (Postal 1971; Wasow 1979). Both of these properties are characteristic of A-bar movement.[4]

To begin, Thai relativization of both subjects and objects is sensitive to standard locality constraints on long-distance dependencies. Two examples are provided below. First, (8) illustrates that relativization out of a complex NP is unacceptable: the relative gap is located in a relative clause within a noun phrase which is an argument of the main relative clause:[5]

[3]Recent proponents of the head-raising analysis include Aoun and Li (2003); Kayne (1994); Bianchi (1999) and Bhatt (2002); Borsley (1997) is a prominent critique. Recent proponents the matching analysis include Citko (2001); Salzmann (2006) and Sauerland (1998). The head-external analysis, which involves operator movement, has fallen out of favor for English. Recent arguments against this analysis are found in Safir (1999) and Sauerland (1998). The current consensus for English seems to be that relative clauses are ambiguous between head-raising and matching (Bhatt 2002; Hulsey and Sauerland 2006).

[4]The concluions below differ from those of Hoonchamlong (1991), who argues for a non-movement based account of Thai relative clauses due to the purported absence of island effects, for example, in direct contradiction to my findings. Earlier drafts of this paper reported Hoonchamlong's examples and concluded that Thai relative clauses did not involve movement. The judgments of an anonymous reviewer conflicted with Hoonchamlong's judgments, prompting me to conduct an extensive online survey (n=66) with native speakers of Thai. This survey tested Hoonchamlong's examples as well as some other sentences at issue in an earlier draft (see below). The results of this survey were provided to reviewers. The survey corroborated the judgments of the reviewer and not with Hoonchamlong. This led to tests for reconstruction in the following section, leading to the present revision of the analysis.

[5]A similar, but much more complex, example is claimed by Hoonchamlong (1991) to be grammatical (ch. 3, ex. 111). However, the survey discussed in (fn. 4) revealed her sentence to be unacceptable.

(8) a. ??wan.níi chăn hěn [$_{NP}$ măa$_i$ [$_{RC}$ thîi Nít rúucàk [$_{NP}$ dèk$_j$ [$_{RC}$ thîi __$_i$ kàt __$_j$]]]]
today 1SG see dog THÎI Nit know child THÎI *ec* bite *ec*
'??Today I saw the dog that Nit knows the child that bit.'

b. ??wan.níi chăn hěn [$_{NP}$ măa$_i$ [$_{RC}$ thîi Nít rúucàk [$_{NP}$ dèk$_j$ [$_{RC}$ thîi __$_j$ jiŋ __$_i$]]]]
today 1SG see dog THÎI Nit know child THÎI *ec* shoot *ec*
'??Today I saw the dog that Nit knows the child that shot.'

Example (9) illustrates that relativization cannot apply across an adjunct island. The relative gap is located inside of an adjunct clause inside a relative clause:

(9) a. ??wan.níi chăn hěn [$_{NP}$ măa$_i$ [$_{RC}$ thîi Nít glúmcaj [$_{CP}$ phrɔʔ __$_i$ kàt Nɔ́ɔj]]]
today 1SG see dog THÎI Nit worried because *ec* bite Noy
'*Today I saw the dog that Nit is worried because bit Noy.'

b. ??wan.níi chăn hěn [$_{NP}$ măa$_i$ [$_{RC}$ thîi Nít glúmcaj [$_{CP}$ phrɔʔ Nɔ́ɔj jiŋ __$_i$]]]
today 1SG see dog THÎI Nit worried because Noy shoot *ec*
'*Today I saw the dog that Nit is worried because Noy shot.'

The (a) versus (b) examples for both (8) and (9) demonstrate that it does not matter whether the relativization site is in the subject or object position of the island. In either case, the resulting sentence is ungrammatical.[6]

Further evidence for movement comes from the presence of weak crossover effects in Thai. Crossover effects, described in detail for English by Postal (1971) and Wasow (1979), arise whenever a new variable binding configuration is established by a putative instance of A-bar movement. The presence of weak crossover can be shown with an overt pronoun, as in (10-a), but such sentences are somewhat unnatural in Thai independently due to its preference to have bound pronouns be null. When the bound pronoun is null, as in (10-b), the result is still degraded:

(10) a. ?*chăn chɔ̂ɔp [$_{NP}$ dèk$_i$ [$_{RC}$ thîi [$_{NP}$ mɛ̂ɛ khăw$_i$] rák __$_i$]]
1SG like child THII mother 3 loves *ec*
'?I like the child$_i$ who his$_i$ mother loves.'

b. ??chăn chɔ̂ɔp [$_{NP}$ dèk$_i$ [$_{RC}$ thîi [$_{NP}$ mɛ̂ɛ *pro*$_i$] rák __$_i$]]
1SG like child THII mother loves *ec*
'?I like the child$_i$ who his$_i$ mother loves.'

A second survey (n=19) tested the grammaticality of the sentences in (6) and (7) as well as variants with a) resumption and b) a classifier intervening between the noun and relative clause, an instance of the classifier-modifier construction (see section 5). The mean scores for these sentences were lower than a complex but grammatical test sentence, generally by about 1.5 points on a five-point Likert cale, with statistical significance at p¡0.01. This corroborated the intuitions of several native speaker linguists I consulted with who did not accept these sentences.

However, several respondents did give the island violations high marks; 5/5 scores were not uncommon. There are two possible explanations for this variability in judgments. The first possible explanation is poor design. Many speakers may not have understand the nature of the grammaticality judgment task, and because the sentences were *still interpretable*, they still opted to give them high marks. The second explanation for the discrepancy among respondents is that there was a split among Thai speakers in whether they generate relative clauses by movement as opposed to base generation of a null anaphor in the gap position. The analysis I present below can accommodate both dialects, and my conclusions about the Thai complementizer system are largely independent of which option is chosen.

[6]The surveys discussed above revealed that resumption is dispreferred to a gap in relative clauses, contra the claims of Hoonchamlong (1991) who claims that resumption is freely available. In islands, resumption has a weak ameliorative effect, but does not lead to complete grammaticality (cf. Heestand et al. 2011, for English). Subject resumption generally leads to greater amelioration than object resumption (perhaps ? for subjects versus * or ?? for objects), reflecting a general tendency for Thai speakers to prefer subject resumption to object resumption.

The existence of of weak crossover corroborates the evidence for movement provided by the existence of locality effects above.[7]

2.2 Evidence for reconstruction

In this section I establish the existence of several instances of reconstruction (or connectivity) in Thai relative clauses. I follow Chomsky (1993) in interpreting instances of reconstruction as evidence for a copy of the head noun inside the relative clause. This evidence forces the conclusion that an analysis of relative clauses be adopted where a copy of the relative head is located in the gap position, rather than, say, a trace of the a relative operator. In analyses of English relative clauses, such evidence has provided support for the head-raising or matching analysis of relative clauses (Bhatt 2002; Bianchi 1999; Hulsey and Sauerland 2006, a.o.).

I consider three kinds of evidence for reconstruction. First, I examine idiom chunks, where the idiomatic interpretation of a head noun is retained despite relativization. Second, I consider the interpretation of relative clause-external quantifiers, which I show can be interpreted with scope inside of the relative clause. The third kind of reconstruction involves deictic modifiers. As scopal elements, these modifiers give rise to ambiguities which indicate they can be interpreted in multiple positions within the relative clause (Bhatt 2002).[8]

In Thai there is a common idiom — familiar to speakers of English — about nuts and trees that carries the meaning that children are often similar to their parents:

(11) lûukmáaj lòn mâj klaj tôn
nut fall NEG far tree
i. 'The nut doesn't fall far from the tree.'
ii. 'Children aren't that different from their parents.'

The idiomatic meaning is retained when the subject of this expression is relativized:

(12) a. lûukmáaj$_i$ [$_{RC}$ thîi $\_\__i$ lòŋ klaj ton] nán hăa yâak
nut THÎI fall far tree TOPIC find difficult
i. 'Nuts that fall far from the tree are hard to find.'
ii. 'Children that are different from their parents are hard to find.'

[7] Ideally, further evidence for movement could be found from strong crossover effects. Yet these effects are difficult to establish for Thai because is both a subject and object topic-drop language (Hoonchamlong 1991; Huang 1984) and marginally allows resumption. As a result, when a relative clause contains two coindexed pronouns or gaps not in a A-binding configuration in Thai, the first pronoun can always be interpreted as a resumptive pronoun while a later gap could always be seen as an instance of topic-drop. Because of this, the claim by Hoonchamlong (1991, p. 202) that Thai lacks strong crossover effects should be taken with a grain of salt. See McCloskey (2006) on similar difficulties in finding evidence for strong crossover effects in languages that allow resumption. The problem does not arise with weak crossover: a possessive pronoun does not license topic drop, so the gap must be the tail of the A-bar chain. See section 2.3 for a possible analysis for resumption.

[8] I do not report reconstruction effects related to binding and anaphora, as the judgments I have received from speakers have shown substantial variation. An additional complication involves the fact that the general-purpose reflexive anaphor in Thai, *tua-eeŋ*, also has logophoric uses, and can appear in subject position (Haddad 2007; Hoonchamlong 1991). The logophoric use in particular makes it difficult to force anaphoric interpretations when assessing grammaticality. Regarding quantificational binding of variables, variable binding in pro-drop languages such as Thai has been observed to be sensitive to whether pronouns are overt. Given the already complicated data regarding resumption (see fn. 6), here too we find multiple difficult theoretical questions which cross purposes. Further complications include the fact that Thai has been claimed to lack Condition C effects (Larson 2006; Lasnik 1989; Lee 2003).

b. lûukmáaj$_i$ [$_{RC}$ thîi $\_\_{}_i$ lòŋ mâj klaj ton] tham-hâj phôɔ-mɛ̂ɛ sàbaaj-caj
nut THÎI fall NEG far tree CAUS parents content
'Children that aren't different from their parents put their parents at ease.'

In (12-a), both an idiomatic meaning and a non-idiomatic meaning are available, because the predicate *hăa yâak* is compatible with both. In (12-b), on the other hand, only the idiomatic reading is available due to the semantic properties of the matrix predicate.

The availability of the idiomatic interpretation for *lûukmáaj* 'nuts' as 'children' in (12) indicates that there is a copy of a relative head inside of the relative clause. The ability of this element to receive either an idiomatic interpretation or the non-idiomatic interpretation indicates that it can be interpreted either inside or outside of the relative clause.

A second argument for reconstruction comes from examples where the relative head is quantificational and it can take scope inside of the relative clause:

(13) Nít yàak phóp [phráʔ săam rûup]$_i$ [$_{RC}$ thîi nákrian thúk khon rúu càk $\_\_{}_i$]
Nit wants meet monk three CLF THÎI student every CLF know of
'Nit wants to meet three monks that every student knows.' (3 > every, every > 3)

The two relevant readings are 1) there are three monks who are very famous, and are thus known by every student (3 > every) and 2) every student knows of three different monks, perhaps ones from their home-town (every > 3). Just as with idioms, the ambiguity of (13) demonstrates that the *noun-number-classifier* constituent can be interpreted relative clause-internally.[9]

The final argument for reconstruction can be made based on the scopal properties of certain adjectival modifiers, following Bhatt (2002):

(14) [bòtkhwaam chabàb sùtthâaj]$_i$ [$_{RC}$ thîi nít phûut wâa chɔɔmskíi khĭian $\_\_{}_i$] chîi wâa
paper CLF last THÎI Nit say COMP Chomsky write name WÂA
On Phases.

'The last paper that Nit said that Chomsky wrote is "On Phases."'

This sentence can have two interpretations based on the scope of *sùtthâaj* 'last.' The first is that Nit named several papers that Chomsky has written, and that the last paper that she named was 'On Phases.' The second interpretation is that Nit made an explicit claim about the papers that Chomsky has written, namely, that the most recent or final paper that he wrote was 'On Phases.'

These two readings can be characterized as a 'high' and a 'low' reading depending on which embedded clause *sùtthâaj* 'last' is interpreted in. Bhatt (2002) argues that analogous English examples necessitate a head-raising analysis of relative clauses due to the interpretational requirements of 'last.' Thus, the evidence in (14) corroborates the evidence from idioms and quantifiers that relative clauses can be derived by movement of the head noun from a CP-internal position in Thai.

2.3 Deriving relative clauses with thîi

This section lays out a detailed analysis of relative clauses in Thai. I base the analysis of *thîi* on analogy with analyses of *wh*-in-situ in Thai and Chinese. I then extend the analysis to account for the movement and reconstruction effects presented in the previous sections.

[9] An alternative account would involve Quantifier Raising (QR) out of the relative clause. But as QR is generally clause-bound (e.g. Reinhart 1997), an analysis involving reconstruction is to be preferred if independently supported.

Tsai (1999) argues that in situ *wh*-arguments in Chinese are unselectively bound by a Q-operator in C, following similar analyses of English *wh*-in situ (Pesetsky 1987). Simple evidence for this position in Chinese comes from the fact that this operator appears overtly as the clause-final particle *ne* (Cheng 1991). Ruangjaroon (2005) pursues a similar analysis of Thai *wh*-in situ, where a Q-operator in C probes to find an indefinite *wh*-element.

I take relative complementizers in Thai to be the relative clause equivalents of the Q-operator which occurs in questions. These relative complementizers bear a [+pred] (Rizzi 1990) or [Λ] feature (Adger and Ramchand 2005) (cf. Cheng and Sybesma 2006 for Mandarin), interpreted as Predicate Abstraction (see below).[10] Following Adger and Ramchand (2005), *thîi* is also postulated to bear a [ID:dep] feature which establishes a coindexation relationship with an unvalued, [ID:] feature borne on a goal via the Agree mechanism of Chomsky (2000, 2001). The bearer of [ID:] is the tail of the A-bar chain created by relativization. In my analysis, [ID:] can occur on both pronouns (15-a) and lexical noun phrases (15-b); Adger and Ramchand only allow the former.

(15) a. $[_{CP}$ thîi$_{[\Lambda,\text{ID:dep}]} \ldots pro_{[\text{ID: }]} \ldots]$
b. $[_{CP}$ thîi$_{[\Lambda,\ \text{ID:dep, EPP}]} \ldots \text{NP}_{[\text{ID: }]} \ldots]$
c. $[_{CP}\ \text{NP}_{[\text{ID:dep}]}\ [_{C'}$ thîi$_{[\Lambda,\ \text{ID:dep, EPP}]} \ldots \langle\text{NP}\rangle \ldots]]$

The analysis involving a CP-internal pronoun in (15-a) can be adopted in cases not requiring reconstruction or including a resumptive pronoun. The structures (15-b-c) represent a head-raising derivation, needed to account for instances of reconstruction. In such cases, *thîi* would probe its complement, valuing the [ID:] feature, and triggering movement of the NP to its specifier position by virtue of an EPP feature on *thîi*.

The unvalued [ID:] feature must also occur on lower C (and *v*) heads in cases of long-distance relativization in order to derive long-distance dependencies past a single phase. Unlike languages such as Irish, where embedded complementizers can be identical to the relative complementizer in the top clause (McCloskey 2002), only the topmost complementizer is realized as *thîi* in Thai; lower complementizers are realized as *wâa* (e.g. (14)). This indicates that *thîi* is only the exponent of the [Λ] feature in Thai, rather than the [ID] probes, which can also occur on *wâa*. Further evidence that [ID:dep] can be realized on heads besides *thîi* comes from the fact that embedded *wh*-questions are also introduced by the complementizer *wâa*, indicating that the *Wh*-probe is not reflected morphologically on the complementizer in these cases (Ruangjaroon 2005).

Adger and Ramchand (2005) argue that locality constraints follow from the failure of Agree, rather than movement itself, as Agree cannot cross a completed phase. Thus, the search operation triggered by the unvalued [ID:] feature on the relativized NP or pronoun is sufficient to account for the locality restrictions observed on relativization in section 2.1. If so, once all instances of [ID:] are valued, a process which would proceed phase-by-phase, the derivation of the relative clause is complete and, and the relative clause can be merged with an external NP. This would completes the derivation of relative clauses with a base-gererated pronoun, as in (15-a).

A head raising analysis is also needed in order to account for the reconstruction facts in section 2.2. An analysis involving movement can easily be incorporated into this system: a movement-triggering EPP feature must occur on *thîi* as well as on intermediate C-heads in cases of long-distance relativization (16-a):

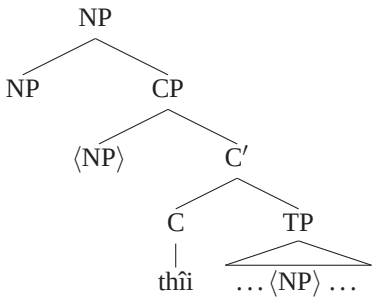
(16) a. $[_{CP}\ [_{C'}$ thîi$_{[\Lambda,\ \text{ID:dep, EPP}]} \ldots\ [_{CP}$ wâa$_{[\text{ID: ,EPP}]} \ldots \text{NP}_{[\text{ID:}]} \ldots]]]$

[10] Huang (2006) presents a novel analysis for Chinese *de* based on the idea that *de* derives an $\langle e\rangle$-typed clause in order to match the type of the head noun, which is assumed to be a kind, also of type $\langle e\rangle$, following Chierchia (1998). This remains a viable alternative for Thai, given the substantial similarities in the nominal syntax of the two languages, but several aspects of the current proposal would need to be rethought.

b. $[_{CP}\ NP_{[ID:dep]}\ [_{C'}\ thîi_{[\Lambda,\ ID:dep,\ EPP]} \ldots\ [_{CP}\ \langle NP\rangle\ [_{C'}\ wâa_{[ID:dep,\ EPP]} \ldots \langle NP\rangle \ldots]]]]$

After raising, the meaning of the relative CP must be incorporated into the meaning of the noun phrase as a whole. While one could assume that the relative CP is selected by a null D^0, as in Kayne (1994), an alternative would be to follow Bhatt (2002), Aoun and Li (2003), and others in allowing NP to move out of CP, where it would reproject:

(17)



The head-raising analysis directly accounts for the reconstruction facts under the assumption that any copy of an A-bar chain can be interpreted. If multiple copies of the head NP were listed in the numeration, as in the matching analysis of relative clauses (see fn. 3), something else must be said about how potentially different interpretations of these NPs, such as idiomatic versus literal readings, are resolved. Two options have been suggested in the literature; both are simple stipulations. First, one could postulate a rule at LF requiring semantic identity between local identical NPs, as suggested by Bhatt (2002, fn. 1). Alternatively, this problem could be resolved by claiming that only one of the NP copies is interpreted at all (Salzmann 2006). Neither proposal is at odds with my claim that *thîi* is a relative complementizer, so I do not pursue the issue further.

The [Λ] feature on *thîi* triggers Predicate Abstraction, the semantic rule for relative clause formation. Predicate Abstraction creates a one-place predicate abstracted over the base position of the head NP (18-b). Whether the higher or lower copy of the head NP is interpreted determines whether reconstruction applies; the other copy is deleted. If the head NP is interpreted internal to the CP, as in the cases involving reconstruction above, it is interpreted by Trace Conversion (Fox 2002), which allows for reconstruction by virtue of the fact that the lexical content of the head NP is retained with the lower copy (18-c). If the relative clause-external copy of the head NP is interpreted, then the relative clause-internal copy is deleted, replaced by a simple variable. The abstracted predicate then combines with the relative clause-external head, a property, by Predicate Modification, essentially set intersection (18-d):

(18) a. nǎŋsǐi $[_{CP}$ thîi$_{[\Lambda,EPP,ID:dep]}$ Nít sú~~u~~ ⟨nǎŋsǐi⟩$_{[ID:\ ]}$ maa]
book THÎI Nit buy book ASP
'a/the book that Nit bought'

b. = $[_{NP}$ ⟨book x⟩ $[_{CP}\ \lambda x_{\langle e\rangle}$.Nit bought ⟨book x⟩]] *Predicate Abstraction*

c. = $\lambda x_{\langle e\rangle}$.bought(Nit, ιy[book(y)$\wedge y = x$]) *Reconstruction via Trace Conversion*

d. = $\lambda x_{\langle e\rangle}$.book(x)$\wedge$ bought(Nit, x) *Non-reconstruction via Predicate Modification*

Scopal elements, such as weak quantifiers and adjectives, are also only interpreted in one position as they

form part of the A-bar chain.[11] Regardless of which copy of the head NP is interpreted, the role of *thîi* is clear: it establishes a dependency with the relative clause internal gap, and it abstracts a predicate over that gap.[12]

2.4 Gapless and headless relatives

Thai allows so-called gapless relative clauses, like other languages including Swiss German (van Riemsdijk 2003), Chinese (Cheng and Sybesma 2006), and Japanese (Kuno 1973), among others:

(19) [$_{NP}$ chút khrîaŋkêɛw [$_{RC}$ **thîi** kháw tham kêɛw hăaj paj sɔ̌ɔŋ baj]] pen khɔ̌ɔŋkhwăn
set crystal THII 3 CAUS glass disappear PRF two CLF BE gift
tèŋŋaan kháw
wedding 3
(lit.) 'The crystal set that he lost two glasses is his wedding present.' (Hoonchamlong 1991, p. 181)

While they have been called 'gapless', Hoonchamlong (1991) argues that relative clauses contain a null 'ProPP' gap in these cases. In (19) the ProPP would be the null equivalent of 'from it', 'it' coindexed with the relative head. Similarly, van Riemsdijk (2003) observes that gapless relative clauses involve association of the head noun with an adjunct in the relative clause.[13]

The of relative clauses in the previous section can also be extended to free relatives, which Ekniyom (p. 62-63) and Hoonchamlong (p. 179-180) both note lack overt heads:

(20) a. **thîi** khun hěn _ khɨɨ tìk 'Sears'
THII you see *ec* SPEC building
'What you see in front of you is the Sears Tower.'
b. chăn mâj chîa **thîi** khun bɔ̀ɔk _
1SG NEG believe THII 2 tell *ec*
'I don't believe what you said' (Hoonchamlong 1991, p. 179-180)

However, both authors point out that *thîi* in these examples can be preceded by dummy nouns:

(21) a. sìŋ **thîi** khun hěn _ khɨɨ tìk 'Sears'
thing THII you see *ec* SPEC building
'What you see in front of you is the Sears Tower.'
b. chăn mâj chîa sìŋ **thîi** khun bɔ̀ɔk _
1SG NEG believe thing THII 2 tell *ec*
'I don't believe what you said' (Hoonchamlong 1991, p. 180-181)

[11] Quantifiers that are reconstructed into a relative clause (e.g. (13)) could be interpreted in their base argument position, but would need to pass through a higher position in the relative clause where the quantifier could be interpreted, presumably adjoined to the relative TP, in the spirit of May 1985's analysis of Quantfier Raising.

[12] Several issues have been glossed over in this discussion relating to the inner mechanisms of Trace Conversion and the interpretation of bare nouns in Thai, which Piriyawiboon (2010, ch. 3) and Jenks (2011, ch. 3) argue are interpreted as kinds. If properties and kinds are freely accessible via the 'nom' and 'pred' type-shifting operators, the proposal above is compatible with a kind-based analysis of Thai nouns (Chierchia 1984, 1998; Partee 1987).

[13] It is interesting that languages that allow gapless relative clauses are consistently those languages where the relative operator is invariant regardless of the category or case properties of the gap. This generalization is trivially true for Japanese, which lacks a relative operator altogether, but does non-trivially hold for Chinese and Thai, as we have seen, as well as Swiss German, which uses *wo* 'where' regardless of the category of the head. That Swiss German and Thai use transparently locative operators makes the postulation of a null ProPP or PP gap all the more plausible in such cases.

Thus, it is not implausible that the free relatives in (20) are headed by a null element as well, and that these are, in fact, headed relative clauses (cf. Groos and van Riemsdijk 1981).

2.5 The optionality of thîi *in subject relative clauses*

In an early study of relative clauses in Thai, Kuno and Wongkhomthong (1981b, KW) discovered that *thîi* is obligatory in Thai relative clauses with the exception of subject relatives:

(22) a. khon [$_{RC}$ (**thîi**) _ sɨ́ɨ náŋsɨ̌ɨ lêm níi]
person THII *ec* buy book CLF this
'people who bought this book' (KW, p. 198)

b. sìŋ [$_{RC}$ *(**thîi**) khon sɨ́ɨ _]
thing THII person buy *ec*
'things that people buy' (KW, p. 205)

As pointed out by KW, this situation is the exact opposite of the one found in English, where complementizers are only obligatory in subject relative clauses.

In addition to being restricted to subject position, the interpretation of relative clauses without *thîi* is different from relative clauses with *thîi*. The following contrast illustrates the difference:

(23) a. phǒm mây chɔ̂ɔp [$_{NP}$ khon **thîi** sùp burìi]
1sg.m NEG like person THÎI smoke cigarettes
'I don't like people who smoke.' *or* 'I don't like the people who are smoking.'

b. phǒm mây chɔ̂ɔp [$_{NP}$ khon sùp burìi]
1sg.m NEG like person smoke cigarettes
'I don't like people who smoke.' (KW, p. 221)

The relative clause modifying the object in (23-a) can either refer to the generic class of smokers or people who are smoking in a particular situation. That is, the sentence can either mean that I don't like smokers in general, or that I don't like a particular person or group of people who happen to be smoking at the next table. When *thîi* is absent, as in (23-b), only the generic meaning is available.

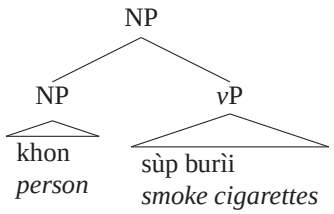
This same contrast explains the unacceptability of the following example without *thîi*:

(24) phǒm mây chɔ̂ɔp [$_{NP}$ khon *(thîi) sùb burìi nay khanàʔ thîi aacaan kamlaŋ sɔ̌ɔn]
1sg.m NEG like person THÎI smoke cigarettes in moment that teacher PROG teach
'I don't like people who smoke while teachers are teaching.' (KW, p. 221)

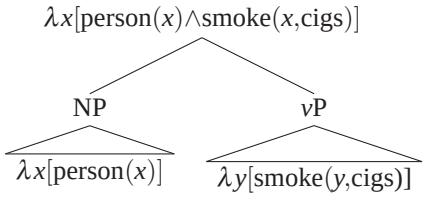
The group denoted by the relative clause is not a well established kind, like smokers, but is restricted to smokers in a particular situation. Because the property denoted by the relative clause does not refer to the general property of being a smoker, *thîi* must introduce it.

In summary, then, there are two facts that need to be explained. First, *thîi* is only optional with subject relatives, and second, these *thîi*-less subject relative clauses must be interpreted generically. The most straightforward account of both facts is that relative clauses without *thîi* are bare *v*P participles. Unlike true relative clauses, where the head noun originates internal to a clause, participles are simply adjoined to the NP:

(25) a.



b.



As (25-b) illustrates, *thîi* can be absent in subject relatives because the type of *v*P is already the same as the type of relative clauses, as the subject position is unsaturated. These participles can be directly composed with the head noun by Predicate Modification, without any need for the relative operator associated with *thîi*. Because it is a C^0, when *thîi* is present, the TP projection requiring subjects would be present as well. This subject position would then need to be abstracted over by *thîi* in subject relatives. The generic interpretation of relative clauses without *thîi* also suggests that they lack the tense semantics associated with the TP projection. Thus, the optionality of *thîi* in subject relative clauses follows directly from the proposal that it is a relative complementizer.

3. Noun Complement Clauses as Propositional Modifiers

The proposal that *thîi* is an operator, while natural for relative clauses, makes its presence in noun-complement clauses (NCCs) a puzzle. This is because the nominal associate of the NCC is not obviously associated with a gap in the NCC, and NCCs themselves are traditionally not analyzed as modifiers, but nominal complements. A further puzzle is the fact that *thîi* co-occurs with the complementizer *wâa* in NCCs, as we saw in example (2). In this section I argue that despite the lack of a gap, NCCs should be analyzed both as clausal predicates and modifiers, making the presence of *thîi* therein unsurprising.

First, section 3.1 presents syntactic arguments that Thai NCCs do not have the syntax of complements. Section 3.2 focuses on the contribution of the complementizer *wâa*, arguing that it functions to derive argumental propositions, of type $\langle e \rangle$, from propositions, following Chierchia (1984) and Potts (2002). Following this observation, section 3.3 demonstrates that the propositional nouns that occur with NCCs, such as 'idea' and 'rumor,' can be interpreted as properties of propositions. Section 3.4 presents the analysis of NCCs in Thai as clausal modifiers. Section 3.5 addresses an asymmetry between NCCs and relative clauses, unexpected under the present analysis, and suggests that it follows from the specificational nature of NCCs.

3.1 Noun-complement clauses are not complements

This section presents evidence that NCCs with *thîi* are not syntactic complements of the noun they are associated with. There are three arguments. First, the order of relatives and NCCs relative to the noun is restricted, but not in the way that we would expect if NCCs were complements: NCCs must follow relative clauses. Second, a classifier, which is a functional projection of the noun, can intervene between the head noun and NCCs. Third, instances of genuine clausal complementation within the noun phrase, such as complements of event nominals, occur without *thîi*.

I begin with a puzzle. While relative clauses can precede NCCs as in (26-a), occurring directly adjacent to the noun, NCCs cannot precede relative clauses (26-b):[14]

(26) a. chăn mâj chɨ̂ə [$_{NP}$ khàaw-lɨɨ [$_{RC}$ **thîi** chăn dây-yin _ mɨ̂ə-cháaw-níi] [$_{NCC}$ **thîi**
1SG NEG believe rumor THÎI 1SG hear *ec* time-morning-this THÎI
wâa khăw cà? jáaj bâan]]
COMP 3 PROSP move house

[14]This fact was discovered by an anonymous reviewer; earlier drafts indicated that either order of NCC or relative was allowed. The survey discussed above (fn. 4) confirmed that NCCs must follow relatives in Thai.

'I don't believe the rumor that I heard this morning that he'll move.'

b. *chăn mâj chɨ̂ə [$_{NP}$ khàaw-lɨɨ [$_{NCC}$ **thîi** wâa khăw càʔ jáaj bâan] [$_{RC}$ **thîi** chăn
1SG NEG believe rumor THÎI COMP 3 IRR move house THÎI 1SG
dây-yin _ mɨ̂ə-cháaw-níi]]
hear *ec* time-morning-this
'I don't believe the rumor that he'll move that I heard this morning.'

The requirement that relative clauses intervene between nouns and NCCs provides a compelling argument that NCCs are not complements, which form constituents with their selecting head in Thai due to its rigid word order.[15] This restriction is somewhat puzzling, however. If both NCCs and relative clauses are nominal modifiers, why should they not be able to order freely? I return to this question in section 3.5.

A further argument that NCCs are not complements comes from the requirement that bare (non-quantified) classifiers intervene between the head noun and the NCC. Below, the classifier *rɨ̂aŋ* which occurs with propositional nouns, itself a noun meaning 'story' or 'matter', is shown in this position:

(28) chăn mâj chɨ̂ə [$_{NP}$ khàaw-lɨɨ **rɨ̂aŋ** [$_{CP}$ thîi wâa khăw càʔ jáaj bâan]]
1SG NEG believe rumor CLF^{prop} THII COMP 3 PROSP move house
'I don't believe the rumor that he's going to move'

Because classifiers are usually analyzed as functional projections of the noun in Thai (e.g. Jenks 2011; Piriyawiboon 2010; Simpson 2005; Visonyanggoon 2000), the ability of this projection to intervene between the noun and an NCC is at odds with the idea that the NCC is the sister of N^0.

A third argument that NCCs are adjuncts comes from the examination of different kinds of nominalizing morphology in Thai. While in earlier examples I translated the noun *khwaam-khít* as 'idea,' its literal meaning is 'thought,' as it is derived from the verb *khít* 'think' via the derivational prefix *khwaam* 'sense, essence, gist'. The distribution of *khwaam* is restricted, as it only combines with adjectives and stative verbs, generally resulting in abstract nouns. Another nominalizing morpheme in Thai is *kaan*. This prefix, also a noun meaning 'fact, matter' is restricted to verbs referring to activities and results in event nominalizations.[16] Hass (1964, p. 29) observes that nominalizations resulting from *kaan* have essentially the same flavor as English *-ing* gerunds do. When transitive verbs are nominalized by *kaan*, their objects occur directly after them, unmarked:

(29) [$_{DP}$ kaan-khĭian còt-măaj] nâa-bɨ̀a
KAAN-write letters boring
'Writing letters is boring.'

[15] Attentive readers may have noticed both English glosses in (26) are grammatical. This may follow from the availability of extraposition in English, but not in Thai, as demonstrated in the following example:

(27) a. chăn hen [$_{NP}$ dek [$_{CP}$ thîi khruu khɨɨj tii _]] mɨə-chaaw-níi
1SG see child THÎI teacher PRF hit EC time-morning-this
'I saw the child that the teacher hit this morning.'
b. *chăn hen [$_{NP}$ dek t_i] mɨə-chaaw-níi [$_{CP}$ thîi khruu khɨɨj tii _]$_i$
1SG see child time-morning-this THÎI teacher PRF hit EC

This suggests that the NCC-RC order in English may in fact be due to the availability of extraposition for the relative clause, a topic I leave for future research. Another puzzle is that in Mandarin Chinese, in which relative clauses and complement clauses appear on the left, complement clauses must occur *closer* to the noun that the relative clause (Simpson 2003). This is a puzzle both for the analysis here and the proposal in section 3.5.

[16] For more on the distribution of two prefixes, see Prasithrathsint 1996, 2006.

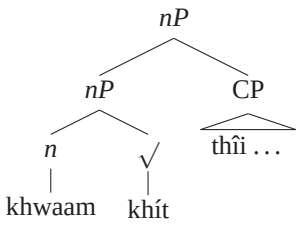
Returning to our discussion of NCCs, verbs like *khít* 'think' can occur with both kinds of nominalization, though only nominalizations formed with *khwaam* require *thîi*:

(30) a. khwaam-khít [$_{CP}$ *(thîi) wâa khruu khuan tii nákrian]
KHWAAM-think THÎI COMP teacher should hit student
'the idea/thought that teachers should hit students'
b. kaan-khít [$_{CP}$ (*thîi) wâa khruu khuan tii nákrian]
KAAN-think THÎI COMP teacher should hit student
'thinking that teachers should hit students'

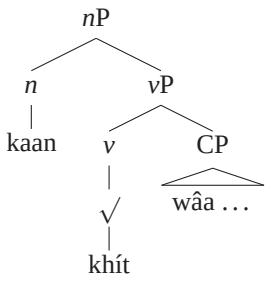
Thus, while the clause accompanying *khwaam-khit* is a typical NCC introduced by *thîi-wâa*, the complement of the *kaan*-nominalization resembles a verb-complement clause (cf. (3)). This follows the general pattern observed for *kaan*-nominalizations observed in (29), in that the form of the complement does not change if the verb is nominalized. It is clear, then, that clauses introduced by *thîi* differ in some crucial way from true clausal complements.

Adopting a Distributed Morphology analysis of nominalizing morphemes as categorical *n* heads (Embick and Marantz 2008), we can account for the difference between *khwaam* and *kaan* by proposing they combine with different kinds of elements. While *khwaam* combines directly with a root, *kaan* combines with the verb *khít* after it has taken its CP complement:

(31) a.



b.



This analysis captures the semantic generalization that *kaan* nominalizations include an event while *khwaam* nominalizations do not, supplemented by the assumption that only non-stative verbs introduce events (Kratzer 1995).

In summary, the ability of relative clauses and classifiers to intervene between between nouns and NCCs, the distinct behavior of *kaan* and *khwaam* nominalizations, and not least the morphlogical similarity between relative clauses and NCCs, all indicate that NCCs introduced by *thîi* are not nominal complements.

3.2 Propositional arguments

As indicated in the previous section, the complementizer *wâa* introduces finite clausal complements of verbs (see section 4.1 for a discussion of the exceptions):

(32) chăn khít [$_{CP}$ *(**wâa**) Waan càʔ jáaj bâan]
1SG think COMP Waan PROSP move house]
'I think that Waan is going to move.'

Why is *wâa* necessary here? As a starting point, I take *wâa* to be [+Fin], the head of the FinP of Rizzi (1997). This proposal alone is insufficient, failing to account for the absence of *wâa* in finite relative clauses, for

example.

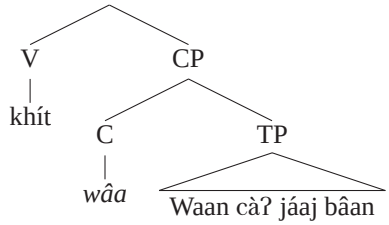
Chierchia (1984) proposes that complementizers are nominalization operators for propositions. Potts (2002) implements this idea via the NOM/$^{\cap}$ type shift of Chierchia (1984), specially defined for propositions:

(33) If $p \in D_{\langle s,t\rangle}$, then $^{\cap p}(p) = [\iota x^p : \forall w \in p : w \leq x^p]$ and $^{\cap p}(p) \in D_{\langle e\rangle}$. (Potts 2002, p. 57)

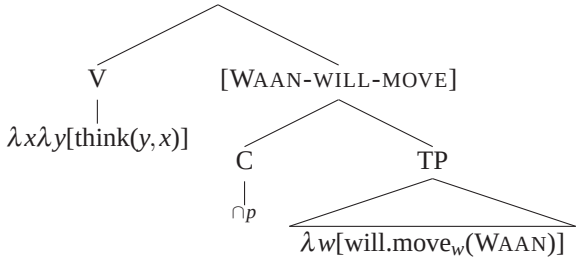
The conditional clause on the left in (33) restricts the specialized propositional NOM function to the domain of propositions. The output of NOM is of type $\langle e\rangle$, as we see in the right hand side of the definition. Thus, the overall effect of this operator is to convert a proposition, a function from worlds to truth values, into the maximal set of worlds in which the proposition is true. The ι operator is a definiteness operator, a kind of choice function which binds the sorted variable x^p, defined for propositions, and selects the maximum plurality from the set denoted by the proposition. The middle part of the equation ensures maximality: if a world is in p, then that world is a subpart ($\leq$) of x^p. The subpart operation is as defined by Link (1983).

If *wâa* is the morphological realization of the $^{\cap}$-operator for clauses, it is clear why *wâa* is necessary for CP to function as an argument:

(34) a.



b. λy[think(y,[WAAN-WILL-MOVE])]



The bracketed proposition [WAAN-WILL-MOVE] represents a propositional individual which serves as the internal argument of the verb *khít* "think." This analysis can be seen as a semantic implementation of Szabolcsi (1994)'s claim that complementizers are the clausal correlate of D, as both C and D serve as subordinators that allow these categories to function as arguments.[17]

To summarize, *wâa* serves two functions in this analysis: finiteness marking and argument formation. If *wâa* is an argument-forming operator, it provides the first part of the explanation for why *wâa* is absent in relative clauses: relative clauses are not arguments. The following section presents evidence that NCCs are not nominal arguments either, leading to an account for why *thîi* must be present in NCCs.

3.3 Propositional properties

Stowell (1981, pp. 197-203) provides a semantic argument that NCCs are not internal arguments of propositional nouns such as "thought" and "rumor." He observes that these nouns denote properties which hold of propositions.[18] The status of these nouns as properties is shown in that they occur as predicates in copular sentences such as (35-a), while NCCs occur in specificational/equative copular sentences, as in (35-b) (Higgins 1973; Potts 2002; Stowell 1981):

(35) a. That he's going to move is (just) a rumor.

[17] See Chierchia (1984) and Potts (2002) for additional arguments that CPs are sometimes of type $\langle e\rangle$.

[18] Grimshaw (1990) argues that nouns such as 'thought' are ambiguous between 'event' and 'result' nominals, and that the former cases do take an internal argument. The arguments below focus on the Thai counterparts of 'result' nominals. 'Rumor' is a good choice in Thai because it is not deverbal, but all *khwaam* nominalizations should qualify under the analysis in section 3.1.

b. The rumor is that he's going to move.

Simple evidence that (35-a) is predicational while (35-b) is specificational in English is the distribution of articles: the predicate nominal in (35-a) is indefinite.[19] We can conclude that propositional nouns such as *rumor* can be interpreted as type $\langle e,t \rangle$, as properties of propositions.

In Thai the distinction between predicational versus specificational/equative copular sentences is quite clear, as they are distinguished by different lexical copula (Kuno and Wongkhomthong 1981a). In (36) the nominal *khàaw-lɨ̀ɨ* 'rumor' functions as a predicate noun.

(36) [thîi [$_{CP}$ wâa khăw càʔ jáaj bâan]] **pen** [$_{NP}$ khàaw-lɨ̀ɨ]
THÎI COMP 3 PROSP move house BE news-rumor
'That he's going to move is a rumor.'

The copula *pen* in Thai only takes predicative nouns as complements. Therefore, we can conclude that *khàaw-lɨ̀ɨ* denotes a property in this example.[20]

In contrast, CPs can occur as bare complements of the specificational/equative copula *khɨ̀ɨ*. These complements can optionally be introduced by *wâa* as long as it is followed by a pause, though some speakers find these examples degraded. However, *thîi* can never occur following *khɨ̀ɨ*, as shown in (39-b).[21]

(39) a. [$_{NP}$ khàaw-lɨ̀ɨ] **khɨ̀ɨ** [$_{CP}$ (ʔwâa) khăw càʔ jáaj bâan]
news-rumor EQ COMP 3 PROSP move house
'The rumor is that he's going to move.'

b. *[$_{NP}$ khàaw-lɨ̀ɨ] **khɨ̀ɨ** [$_{CP}$ thîi (wâa) khăw càʔ jáaj bâan]
news-rumor EQ THÎI COMP 3 PROSP move house

[19] Mikkelsen (2005) argues that subject noun phrases in specificational clauses — 'the rumor' in (35-b) — are still properties, and that their definiteness is required for information structural reasons.

[20] Example (36) demonstrates that sentential subjects must occur with *thîi*. I take this as an indication that the subject in (36-a) is a noun phrase, rather than a CP. The simplest argument for this conclusion is that a 'dummy' noun/classifier, *rɨ̂aŋ* 'story, matter,' can be inserted in (36) before *thîi*:

(37) [$_{NP}$ rɨ̂aŋ thîi [$_{CP}$ wâa khăw càʔ jáaj bâan]] pen [$_{NP}$ khàaw-lɨ̀ɨ]
matter THÎI COMP 3 PROSP move house BE news-rumor
'That he's going to move is a rumor.'

The same facts hold for non-copular sentences with sentential subjects:

(38) a. [$_{NP}$ (rɨ̂aŋ) thîi [$_{CP}$ wâa khăw càʔ jáaj bâan]] (man) jɛ̂ɛ mâak
matter THÎI COMP 3 PROSP move house it bad very
'That he's going to move is terrible.'

b. *[$_{CP}$ wâa khăw càʔ jáaj bâan] (man) jɛ̂ɛ mâak
COMP 3 PROSP move house it bad very

If *thîi* is absent, the resulting clause headed by *wâa* is ungrammatical (38-b). The straightforward explanation of this fact is that the dummy nominal *rɨ̂aŋ* can be elided in these contexts, but is always structurally present. This entails that subjects must be noun phrases in Thai, as Alrenga (2005) suggests for English.

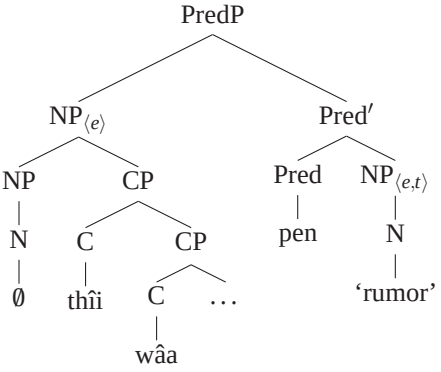
[21] Earlier versions of this paper wrongly claimed that clauses introduced by *thîi* could occur as the complement of *khɨ̀ɨ*. An anonymous reviewer found such examples ungrammatical. The reviewer did not indicate whether *wâa* could occur in complements of *khɨ̀ɨ*. These examples were found to be only marginally ungrammatical in a large-scale survey (fn. 4) and occur in corpora as well.

I take predicational copula to be transitive predicates which take predicative objects, of type $\langle e,t\rangle$, and referential subjects, of type $\langle e\rangle$.[22] Following the analysis of specificational clauses in Mikkelsen (2005), I consider specificational clauses headed by *khɨɨ* to be the inverse cases, transitive predicates which take predicative subjects and referential objects. This proposal provides a natural account of the fact that only referential noun phrases can follow *khɨɨ* (Kuno and Wongkhomthong 1981a).

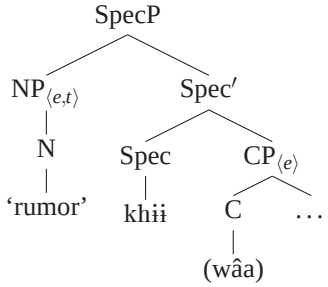
(40) a. $[\![\text{pen}]\!] = \lambda P_{\langle e,t\rangle} \lambda x_{\langle e\rangle} [P(x)]$
b. $[\![\text{khɨɨ}]\!] = \lambda x_{\langle e\rangle} \lambda P_{\langle e,t\rangle} [P(x)]$

Thus, propositional nouns are properties, while CPs without *thîi* are referential:

(41) a.



b.



To conclude, CPs headed by *wâa* are argumental, while propositional nouns are properties. Nothing has been said about the requirement that *thîi* occur with NCCs, to which we now turn.

3.4 NCCs as modifiers

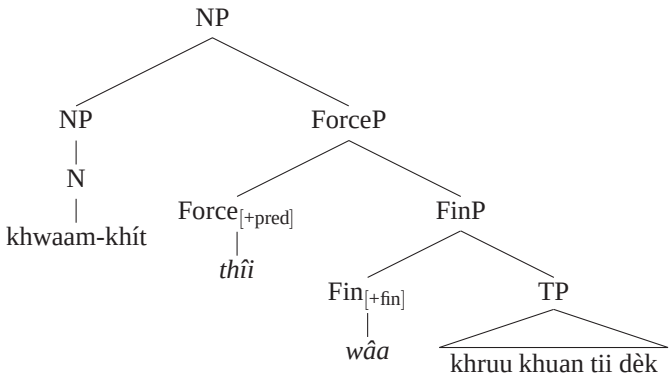
In section 2 *thîi* was analyzed as a relative complementizer, interpreted as a lambda-operator. Two derivations were considered for relative clauses, both of which resulted in structures where the CP was effectively adjoined to NP. Given the arguments in section 3.1 that NCCs are nominal adjuncts, we can postulate the same structure for NCCs.

In addition, phrase structure must accommodate both *thîi* and *wâa*. Rizzi (1997) proposes that there are two types of C-heads, Force^0 and Fin^0, and that the latter are structurally higher than the former. Its correlation with finiteness indicates that *wâa* is in the lower Fin^0 position, while *thîi* is in Force^0, just as Rizzi proposes for relative complementizers:

(42) a. chăn mâj chɔ̂ɔp khwaam-k^{h}ít **thîi** wâa khruu khuan tii dèk
1SG NEG like idea THÎI COMP teacher should hit child
‘I don’t like the idea that the teacher has hit children.’

[22] Because nouns may denote kinds in Thai (Piriyawiboon 2010; Jenks 2011), the noun *pen* can be seen as taking a nominal kind as its complement, and shifting it up to a property. See (Jenks 2011, p. 173) for a sketch of this view.

b.

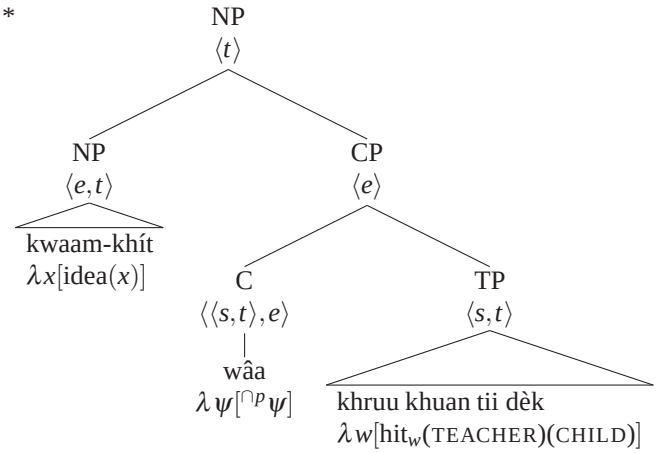


Thus, *thîi* and *wâa* map transparently into Rizzi's articulated left periphery. However, while *thîi* was argued to bind a CP-internal variable or trace in relative clauses, there is no equivalent empty category for *thîi* to bind in NCCs.

In the last two sections, however, *wâa* was argued to serve as a nominalizer, and it was further argued that propositional nouns, those that combine with NCCs, are properties of propositions, of type $\langle e,t\rangle$. We are now in a position to understand why *thîi* is necessary before NCCs: propositional nouns cannot combine directly with a nominalized proposition, such as those headed by *wâa*, as this would produce an expression of type $\langle t\rangle$:

(43) a. *khwaam-khít wâa khruu khuan tii dèk
idea COMP teacher should hit child

b. *



Without *thîi*, the NCC would saturate the the propositional noun, resulting in an anomalous noun phrase of type $\langle t\rangle$. What is wanted instead is to compose NCCs and propositional nouns within the noun phrase using Predicate Modification, the semantic rule which combined relative clauses with their head in section 2. This is where *thîi* comes in.

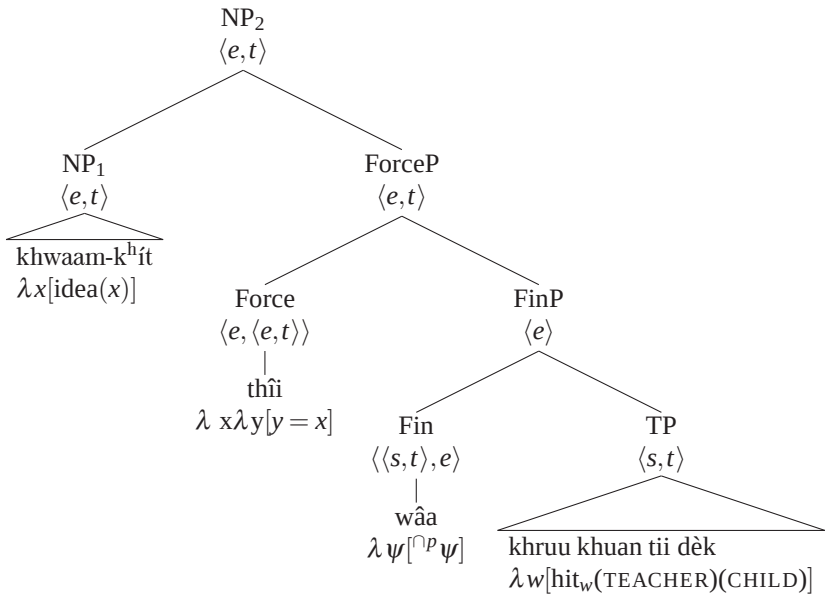
Before relative clauses, *thîi* abstracts a property over the trace of the relative head. In NCCs, *thîi* must produce a property based on the content of the proposition itself. Following Potts (2002, ex. 41), I take these latter cases to require the application of IDENT, which a rule which derives predicates from arguments (Partee 1986). The definition of IDENT is given below:

(44) $\text{IDENT}(x) = \lambda y[y = x]$

This analysis can incorporate Adger and Ramchand's [ID:] features used for relative clauses. Assume that the two pieces of IDENT are split two pieces: *thîi* is [ID : dep], as before, while *wâa* itself bears [ID:] which must be valued by Agree. When *wâa* receives the [ID : dep] feature, the Force node must introduce a variable, which is bound by *thîi* due to its [Λ] feature. It is striking that the latter part of the rule is semantically nearly identical to Trace Conversion.

When IDENT applies to the propositional individual, we get the right result, a complex predicate of type $\langle e,t\rangle$ which can be combined with the propositional noun by Predicate Modification (=PM). Below a partial interpretation of (42) under this analysis is provided:

(45) a.



b. (i) $[\![\text{FinP}]\!] = [y = [\text{TEACHER-SHOULD-HIT-CHILDREN}]]$ (by IDENT-A)
(ii) $[\![\text{ForceP}]\!] = \lambda y[y = [\text{TEACHER-SHOULD-HIT-CHILDREN}]]$ (by IDENT-B)
(iii) $[\![\text{NP}_2]\!] = \lambda x[\text{idea(x)} \wedge [x = [\text{TEACHER-SHOULD-HIT-CHILDREN}]]]$ (by PM)

In the output of this derivation, the NP as a whole has the same type as the propositional noun, type $\langle e,t\rangle$. An alternative implementation would be to simply allow *thîi* in NCCs to be interpreted as IDENT when there is no variable available in its complement.

The benefit of this account is that it explains why *wâa* is absent in relative clauses. Because *wâa* semantically 'seals off' the clause below it as a reified proposition, the presence of *wâa* in relative clauses would block the ability of *thîi* to abstract a predicate over one of the arguments of its complement.[23]

[23] An anonymous reviewer has pointed out that the nominalizers *khwaam* and *kaan*, introduced in section 3.1, can function directly as the heads of apparent NCCs, though these cases do not involve the complementizer *waa*:

(46) a. kaan **thîi** khăw laaʔOOk tham-hâj phʉan ŋoŋ
KAAN he quit cause friend confused
'That he quit confused his friends.'
b. khwaam **thîi** khăw hĭw tham-hâj phʉan ŋoŋ
KHWAAM THÎI hungry cause friend confused
'That he was hungry confused his friends.'

3.5 The ordering restriction on NCCs and relatives

In section 3.1, NCCs were shown to obligatorily follow relative clauses (RCs) in Thai. This is unexpected under the analysis above, as NCCs and RCs are both adjuncts, and both have the same category and interpretation with respect to the head noun. Another related problem is that NCCs and RCs clauses cannot be coordinated, as shown by the following example:

(47) *chăn mâj chɔ̂ɔp [$_{NP}$ khàaw-lɨ̀ɨ [$_{NCC}$ thîi wâa khăw càʔ jáaj bâan] lɛ́ʔ [$_{RC}$ thîi chăn
1SG NEG like rumor THÎI COMP 3 PROSP move house and THÎI 1SG
dây-yin mɨ̀ə.chaaw.níi]]
hear time.morning.this
'*I don't like the rumor that he'll move and that I heard this morning.'

The analysis above incorrectly predicts that this coordination should be grammatical because both RCs and NCCs are CPs headed by *thîi*.

Another difference between NCCs and RCs is that only the latter can be stacked:

(48) a. chăn mâj chɔ̂ɔp [$_{NP}$ [$_{NP}$ măa [$_{CP}$ thîi dèk tii]] [$_{CP}$ thîi hàw mâak]]]
1SG NEG like dog THÎI child hit THÎI bark a.lot
'I don't like dogs that children hit that bark a lot.'

b. *chăn mâj chɔ̂ɔp [$_{NP}$ [$_{NP}$ khàaw-lɨ̀ɨ [$_{NCC}$ thîi wâa Nít càʔ laaʔɔ̀ɔk càak ŋaan]] [$_{NCC}$
1SG NEG like rumor THÎI COMP Nit PROSP resign from work
thîi wâa khăw càʔ jáaj bâan]]
THÎI COMP 3 PROSP move house

Again, this is unexpected if NCCs are adjuncts, which generally allow recursion. To summarize, then, NCCs must occur inside of RCs, they cannot be coordinated with RCs, and NCCs cannot iterate, all contrary to the predictions of the analysis above which takes NCCs to be adjuncts.

I propose that these restrictions on NCCs are due to a semantic constraint which states that restrictive modification must be informative. For example, the ability of RCs to iterate is rooted in the recursive definition of Predicate Modification, which takes two properties and returns a complex property. However, NCCs are distinct from RCs because they require the application of IDENT, which produces properties which uniquely identify one individual. This leads to a clear account fo the semantic unacceptability of NCC recursion:

(49) a. $[\![\text{NP in (48-a)}]\!] = \lambda x[\text{dog}(x) \wedge \text{hit}(\text{child},x) \wedge \text{barks}(x)]$

b. *$[\![\text{NP in (48-b)}]\!] = \lambda x[\text{idea}(x) \wedge [x = [\text{NIT-WILL-MOVE}]] \wedge [x = [\text{NIT-WILL-RESIGN}]]]$

The meaning in (49-b), resulting from multiple NCCs, infelicitously identifies the relevant "rumor" with two separate propositional individuals, due to multiple applications of IDENT. No such problem is encountered in (49-a), however, as there is no conflict in a dog having both properties denoted by the two RCs.

With this restriction in mind, I attribute the restriction on ordering RCs before NCCs to semantics; RCs combine with nouns before NCCs because restrictive modification must be informative. After the NCC combines with the head noun, the relevant proposition has been identified, further modification is no longer

Interestingly, just as *kaan* is the nominalizer for events and *khwaam* for states, in (46) the two nominalizers occur before eventive and stative clauses, respectively. This indicates that in these cases *thîi* might not be abstracting over the proposition or an argument, but rather over the event or state variable inside each clause. Such an analysis is suggested by Cheng and Sybesma (2006) for related facts in Chinese.

informative. This amounts to an appeal against applying Predicate Modification to a singleton sets. In other words, specification must occur higher in the structure than restriction.[24]

In summary, the analysis of *thîi* as an operator introduced in the analysis of relative clauses can be extended to NCCs, with *thîi* shifting an argumental CP into a property via IDENT. The purpose of *thîi* in both NCCs and relative clauses is to abstract a predicate from a clause, thereby allowing the clause to be composed with the noun by Predicate Modification.

4. Other Environments for *Thîi*

In this section the analysis proposed for *thîi* in the last two sections is shown to account for the use of *thîi* in three environments which do not obviously resemble relative clauses and noun complement clauses: verb-complements, contrastive specificational clefts, and infinitives.

4.1 Verb complement clauses with thîi

Ekniyom (1982) observes that certain verbs can take complements headed either by *thîi* or *wâa*:

(51) a. jàaj khon nán chŭa **wâa** săamii mâj khəəj nɔ̂ɔkcaj kɛɛ ləəj
woman CLF that believe COMP husband NEG PRF cheat 3 at-all
'That woman believes in *the notion* that her husband never cheats behind her back.'

b. jàaj khon nán chŭa **thîi** săamii mâj khəəj nɔ̂ɔkcaj kɛɛ ləəj
woman CLF that believe THII husband NEG PRF cheat 3 at-all
'That woman believes in *the fact* that her husband never cheats behind her back.' (Ekniyom 1982, p. 74)

As the glosses indicate, there is a difference in the interpretation of these two sentences, in that the latter presupposes the truth of the embedded clause while the former does not. In their classic analysis of factive clauses, Kiparsky and Kiparsky (1970) conjecture that the difference between factive and non-factive complement clauses should be reduced to the presence of a null nominal head in factives. Adopting a null nominal head to explain factivity in (51-b) is appealing, as *thîi* has been shown to occur more generally in noun phrase internal clausal modifiers.

Supporting evidence for this analysis comes from the fact that the *thîi* complement in (51-b) can be followed by *wâa* and preceded by the noun *rîaŋ* 'story, matter' with no change in meaning:

(52) jàaj khon nán chŭa rîaŋ **thîi wâa** săamii mâj khəəj nɔ̂ɔkcaj kɛɛ ləəj
woman CLF that believe matter THII COMP husband NEG PRF cheat 3 at-all
'That woman believes in the fact that her husband never cheats behind her back.'

Thus, the factivity of verbal complements introduced by *thîi* can be attributed to their status as concealed NCCs. The trigger for the factive presupposition is the noun *rîaŋ*, whose presence, even if covert, necessi-

[24] Evidence that modification must be informative comes from the strangeness of modified 'unique' properties:

(50) a. #The president that lives in the White House
b. #My nose that is on my face

Both noun phrases above only make sense in a context with multiple presidents or noses, and sound strange without such a context. Such a context is unavailable once an NCCs has been combined with the noun because the NCC serves to associate the NCC with a particular propositional individual. Thanks to Clemens Mayr for this observation.

tates the inclusion of *thîi*.[25]

4.2 Contrastive clefts

Ruangjaroon (2005, ch. 4) examines the structure and interpretation of constrastive clefts in Thai:

(53) a.Ník thîi ___ pen khon tham caan tɛ̀ɛk.
Nik THII *ec* PRED person CAUS plate break
'*Nick* was the one that broke the plate'
b. khraj thîi ___ pen khon tham caan tɛ̀ɛk.
who THII *ec* PRED person CAUS plate break
'*Who* was the one that you think broke the plate?'

At first glance, *thîi* is funcitoning as a relative complementizer in these sentences as expected: it is followed by a gap, and this gap is associated with the nominal preceding *thîi*. However, if *thîi* introduces a relative clause, and everything following *thîi* is part of the relative clause, these sentences lack a main predicate altogether.

Ruangjaroon convicingly demonstrates that examples such as (53-b) are not cases of overt *wh*-movement. Ruangjaroon carefully illustrates that the information structural properties of (53) involve contrastive focus. First, (53) is associated with an existential presupposition, that is, it is associated with the presupposition 'someone broke the plate'. Second, the sentences in (53) are associated with a uniqueness presupposition: there is only one person that broke the plate. Last, the initial noun phrase must be focused in such examples.

In the structure provided by Ruangjaroon, she argues that *pen* functions as a main predicate, while *Ník thîi* or *khraj thîi* is its subject. In this context, she claims that *thîi* in these examples functions as a definite marker, given that uniqueness is a property of definiteness (p. 20). In this analysis, the examples in (52) are seen as simple predicational copular sentences.

There are several problems with this analysis. First, it is not clear why these clauses should be associated with focus on the subject, as the subject of predicational copular clauses are not focused. Second, as I take these sentences to be clefts, the absence of a relative clause is unexpected. The analysis of *thîi* as a definiteness marker introduces more complications. First, the noun phrases **Nik thîi* and **khraj thîi* are meaningless in isolation. Neither can *thîi* appear with common nouns, e.g. **măa thîi* 'dog THII.' It is not even clear that *thîi* forms a constituent with the preceding noun in these examples. Last, it is strange that a definite marker would occur with both a proper noun, which is inherently definite, and a wh-expression, an indefinite pronoun.

Rather than pursuing Ruangjaroon's analysis further, I adopt the proposal of Ekniyom (1982) which retains the analysis of *thîi* as a relative complementizer as well as providing an account for the focus on the subject. Ekniyom proposes that the contrastive clefts in (53) are inverted specificational pseudoclefts, with an initial copula, the specificational *khɨɨ*, deleted.

Ekniyom (1982) provides three arguments for this analysis. First, contrastive clefts can be preceded by the specificational copula *khɨɨ*, though it is often omitted:

(54) (khɨɨ) phûuyĭŋ khon níi ŋajlâʔ thîi chûaj phajaabaan phŏm.
SPEC woman CLF this FOC THII help take-care 1
'It is this lady who took care of me.' (Ekniyom 1982, p. 141-2)

[25] Alternatively, Haegeman and Ürögdi (2010) argue that factive clauses are *referential* clauses which involve the movement of some operator to clause initial position. The Thai facts above could be transparently mapped onto this proposal, if *rûəŋ* was such an operator whose movement was triggered by the presence of *thîi*.

Note that in Ekniyom's examples there is an overt focus marker following the initial noun phrase. These markers are also optional; the noun phrases they attach to are interpreted with focus in these examples regardless of whether the focus markers are present.

The second piece of evidence that this construction is an inverted specificational copular sentence is that (54) can be negated. The negated counterpart of *khɨɨ*, which is *mâj châj* 'not correct', occurs sentence-initially:[26]

(55) mâj châj phûuyĭŋ khon níi lɔ̀ɔk thîi chûaj phajaabaan phŏm.
NEG correct woman CLF this FOC THII help take-care 1
'It is not this lady who helped take care of me.' (Ekniyom 1982, p. 141)

Last, the sentences in (54) and (55) can occur as pseudoclefts in a standard SVO order where the copula are also obligatory:

(56) a. thîi chûaj phajaabaan phŏm khɨɨ phûuyĭŋ khon níi ŋajlâʔ.
THII help take-care 1 SPEC woman CLF this FOC
'(The person) who helped take care of me is this lady.'
b. thîi chûaj phajaabaan phŏm mâj châj phûuyĭŋ khon níi lɔ̀ɔk.
THII help take-care 1 NEG correct woman CLF this FOC
'It is not this lady who helped take care of me.' (Ekniyom 1982, p. 142-3)

In these sentences, the subject is a headless relative clause, which were argued in section 2.4 to involve a deleted head. To account for the optionality of *khɨɨ* when it occurs initially, Ekniyom proposes an optional rule of 'Initial Identificational Copula Deletion.'

In sum, the surprising distribution of *thîi* in contrastive clefts and the apparent absence of a main predicate can both be explained by Ekniyom's proposal: these sentences are inverted specificational pseudocleft with a deleted specificational copula. Under this analysis, the analysis of *thîi* as a relative complementizer can be retained.

4.3 Infinitives as properties

In addition to occuring in factive complements of verbs and contrastive clefts, *thîi* also occurs before infinitival clauses, both infinitival relative clauses such as (57-a) and infinitival complements of control verbs such as (57-b):

(57) a. Nít mii nǎŋsɨ̌ɨ thîi càʔ ʔàan lɛ́ɛw
Nit has book THII PROSP read already
'Nit already has a book to read.'
b. Nit jàak thîi càʔ tham kaanbâan
Nit want THII PROSP do homework
'Nit wants to do her homework.'

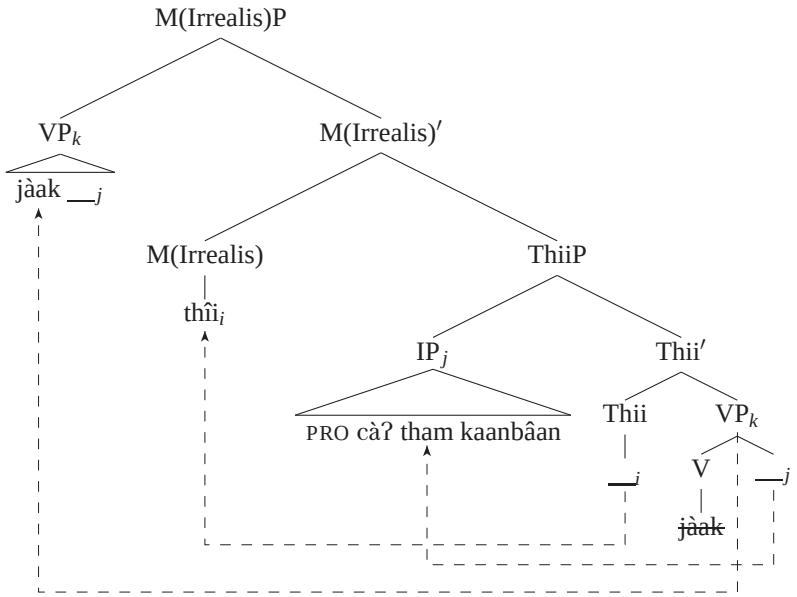
I will not discuss infinitival relatives such as (57-a) in any detail, as it is clear that the analysis of *thîi* as a relative complementizer can be straightforwardly extended to these examples: the head noun *nǎŋsɨ̌ɨ* 'book' is identified as the object of the infinitival relative, which is abstracted over by *thîi*. The control complement

[26] The specificational copula *khɨɨ* cannot occur under the scope of negation. See Chiravate (1999) for more on the polarity sensitivity of Thai copula.

in (57-b) is more difficult to account for, however, as control complements are clausal arguments, rather than nominal modifiers.

Singhapreecha (2010) proposes an alaysis of control complements such as (57-b) inspired by Kayne (2000)'s analysis of the Italian prepositional complementizer *di*. She proposes that *thîi* is base-generated in a projection above the main predicate *jàak* 'want' and triggers movemnt of an IP headed by the prospective/irrealis marker *càʔ* to its specifier position. Then, *thîi* moves to a higher projection, Modal(Irrealis)P, where it triggers movement of the remnant VP to its specifier:

(58)

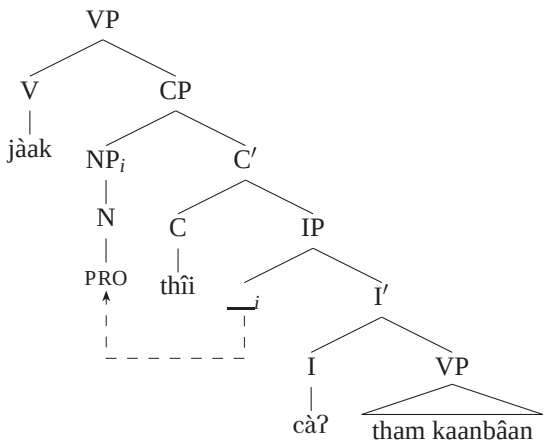


(cf. Singhapreecha 2010, ex. 53)

This proposal is puzzling for two reasons. First, as *thîi* is not a verbal head marking aspect or modality, it is not clear why it occupies a head position between the verb head and a modal head. Second, it is not clear why the M(Irrealis)P is associated with *thîi*, and is the highest functional head in the matrix clause, given 1) that the clear locus of the irrealis meaning in this sentence is the embedded clause, and 2) the clear reflex of this meaning is the prospective marker *càʔ*, which occurs in the embedded clause.

Under the view of *thîi* as a relative complementizer, infinitival complements of control verbs can be analyzed without these complications. Following the analysis of control in Chierchia (1984, ch. 3), control complements can be viewed as nominalized properties. Unlike in Chierchia's analysis, where control complements are analyzed as simple VPs, we can analyze these complements as full CPs, headed by *thii*, and with the caseless, subject oriented null category PRO base-generated in subject position:

(59)



PRO is bound by *thîi*, resulting in a property. For Chierchia, this property must then be nominalized to derive an individual-typed element which can function as the complement of the control verb. I leave the implementation of this part of the analysis to further work.

In conjunction with the analysis of *thîi*-less relatives in section 2.5, the proposal above can account for the observation in Jenks (2006) that *thîi* is optional in control complements of verbs. This is because control clauses may also be able to occur as 'reduced' VP properties with an unsaturated subject argument as in Chierchia's original proposal.

In conclusion, the analysis of *thîi* as a relative complementizer can be maintained whenever it precedes a clause, whether it is finite or infinitival. In all of these environments, *thîi* derives a clausal predicate, allowing the clause either to semantically combine with the head noun, in relative clauses and noun-complement clauses, or to satisfy the selectional requirements of a control verb.

5. Against *Thîi* as a Marker of Predicate Inversion

Den Dikken and Singhapreecha (2004, DS) argue for a radically different approach to the syntax of *thîi*. In a comparative study of French and Thai noun phrases, DS examine instances of direct and indirect modification of nouns by adjectives in both languages:

(60) a. une pizza chaude
a-FEM pizza hot-FEM
b. une pizza **de** chaude
a-FEM pizza DE hot-FEM
Both: 'a hot pizza' (French, DS ex. 2)

(61) a. dèk kèeŋ
child smart
b. dèk **thîi** kèeŋ
child THÎI smart
Both: 'the/a smart child' (Thai, cf. DS ex. 3)

DS propose that (61-b) and (60-b) involve predicate inversion (PI), a focus-related A-movement operation. For the examples above, they argue that the particle intervening between the noun and adjective is a LINKER, a syntactic pivot for PI. Another similarity is indicated in the interpretation: both (61-b) and (60-b) can be interpreted with contrastive focus on the adjective (though see below for the optionality of this interpretation for Thai).

While DS acknowledge the occurrence of *thîi* before subject relative clauses (1) and noun-complement clauses (2), they take this distribution to be an argument for their analysis, especially in light of the presence of *wâa* in NCCs. They argue that both environments involve PI. Yet we have seen that *thîi* is generally obligatory in both of these constructions, and it is puzzling that an information-structurally driven operation such as PI would be obligatory. While this casts initial doubt on their proposal, in the two following subsections I will show that the PI-based analysis is problematic both because of its assumptions about Thai noun phrase structure and because of the general distribution of *thîi*. Instead, the occurrence of *thîi* before adjectives as in (61) can be reduced to an instance of a subject relative clauses.

5.1 Problems with the derivation

Predicate Inversion was proposed to account for specificational copular sentences (Moro 1997), and has been argued to occur within DPs as well (den Dikken 1998). In the constructions for which PI has been proposed, semantic predicates appear in the surface position that subjects usually occupy, a property which serves as a basic diagnostic for PI.

However, in the putative examples of PI in (60-b) and (61-b), the subject (noun) and predicate (adjective) occur in their canonical order. To maintain a PI-based account, DS posit an additional movement operation which applies after PI, reinstating the original order. The arguments for their analysis are based on particular details of Thai DP syntax, then extended to French. The remainder of this section will argue that the analysis is untenable for Thai.

In the view of DS, PI[27] begins when a LINKER, here *thîi*, merges with a small clause (62-b-i).[28] The adjectival predicate then moves to the empty specifier position of *thîi* (62-b-ii):

(62) a. dèk *thîi* kèeŋ
child THÎI talented
'The/a talented child'

b. (i) $[_{FP}$ thîi $[_{SC}$ child talented]]
(ii) $[_{FP}$ talented$_i$ $[_{F'}$ thîi $[_{SC}$ child t_i]]]

The output of PI is A-*thîi*-N, which is unattested in Thai.

This analysis thus requires a further step in the derivation reinstating the original order of noun and adjective. To this end, DS claim that in Thai, multiple classifiers can occur within a single noun phrase, and that a classifier can intervene between a noun and an adjective, following Singhapreecha (2001). They provide the following example, though there are some questions about its grammaticality (see below):

(63) (??) rôm (khan) jàj săam khan nán
umbrella CLF big three CLF that
'those three big umbrellas' (DS, ex. 32)

DS claim that the classifier is in complementary distribution with *thîi* in sentences like (62-a) (p. 20). In light of this claim they propose a null classifier is present when predicate inversion applies. Because classifiers are usually analyzed as functional heads in the extended projection of NP, the LINKER moves to Clf^0 by head movement (64-a). This head-movement permits the NP to move to the specifier of the ClfP (64-b), reinstating the original order of subject and predicate:[29]

[27] DS present the derivation of a more complex DP with two classifiers and an overt demonstrative (pp. 20-21, ex. 35a-c), which has been simplified, *mutatis mutandis*, to focus only on the central component of their proposal.

[28] This proposal is repeated in den Dikken (2006, ch. 5), where the small clause also contains a null RELATOR. The same arguments apply to both versions of this proposal.

[29] This step involves movement of the remnant small clause in den Dikken 2006 (see fn. 28).

(64) a. $[_{\text{ClfP}}$ thîi$_j$ $[_{\text{FP}}$ talented$_i$ $[_{\text{F}'}$ t_j $[_{\text{SC}}$ child t_i]]]]
b. $[_{\text{ClfP}}$ child$_k$ $[_{\text{Clf}'}$ thîi$_j$ $[_{\text{FP}}$ talented$_i$ $[_{\text{F}'}$ t_j $[_{\text{SC}}$ t_k t_i]]]]

The motivation for each of these steps is different. While itself PI occurs because of focus on the adjective, head movement in (64-a) presumably occurs in order to provide phonological support for the classifier head. As for the uninversion in (64-b), classifiers cannot be interpreted independently of the nouns that project them, and so, DS argue, it is not surprising that the classifier and noun might need to occur locally.

However, there are several problems with the assumptions about the syntax of classifiers and *thîi* that DS base their proposal on. The first problem is DS's claim that the classifier and *thîi* are in complementary distribution, contrary to fact. Examples such as (65-a), where both occur, are quite natural:

(65) a. dèk **khon thîi** kèeŋ
child CLF THII talented
'the child who is talented'
b. *dèk **khon** kèeŋ **thîi**
child CLF talented THII
c. *dèk **thîi** **khon** kèeŋ
child THII CLF talented

Not only can *thîi* occur with a classifier, but the attested word order in (65-a) is not predicted by the derivation in (64), while the ungrammatical word orders in (65-b-c) are predicted to be grammatical. The ill-formed (65-b) might be expected to result if the overt classifier blocked the head movement of *thîi*. On the other hand, if *thîi* moved and left-adjoined to the classifier, the ungrammatical order in (65-c) would result. Example (65-a) could only result from rightward head-adjunction of *thîi* to the classifier, prohibited by DS's assumption of the Linear Correspondence Axiom (Kayne 1994). On the other hand, if *thîi-Adj* is simply seen as a subject relative clause, its alternation with an adjective can be seen as general evidence that classifiers can be licensed by following modifiers, whether relative clauses or adjectives.

Second, the constituency in (64) is problematic. Evidence from coordination suggests that the classifier does not form a surface constituent with *thîi-Adj*. When two *thîi-Adj* constituents are coordinated, the DP can be interpreted as referring to a single individual or set of individuals with a complex set of properties (66-a). Yet when two *Clf-thîi-Adj* sequences are coordinated, the DP must be interpreted as referring to two separate individuals (66-b):

(66) a. dèk **khon** [**thîi** kèeŋ] lɛ́ʔ [**thîi** ruay]
child CLF THII talented and THII rich
'The rich and talented child(ren)'
b. dèk [**khon thîi** kèeŋ] lɛ́ʔ (dèk) [**khon thîi** ruay]
child CLF THII talented and child CLF THII rich
'The rich child(ren) and talented child(ren)'

The meaning of the second example is unchanged if the head noun is repeated in the second conjunct. This indicates that conjunction of the classifier corresponds to conjunction of the entire DP. These facts do not follow from the structures in (64), but are compatible with an analysis where *thîi* forms a constituent with the adjective, as in the relative complementizer analysis.

Last, there are issues with DS's assertion that the classifier occurring before the adjective in (63) is optional. This is only partially true. In Thai, classifiers can occur outside of quantificational environments before adjectives and relatives clauses in what I have already called the classifier-modifier construction (see

ex. (28)), where they give rise to a definite singular interpretation (Piriyawiboon 2010, p. 107):

(67) a. dèk thîi kèeŋ
child THII talented
'The/(A) child(ren) who is/are talented who are talented'
b. dèk khon (thîi) kèeŋ
child CLF THÎI talented
'The talented child'

This definite interpretation only becomes evident without an overt demonstrative or quantifier, however. Because overt demonstratives require a definite interpretation, they mask the effect of the classifier, as in (63). This may be why the classifier appeared optional to DS, whose examples almost all include demonstratives. The fact that the presence of the classifier triggers a definite singular interpretation for the noun phrase indicates that the classifier is not strictly optional.

A related problem is the more fundamental question about the acceptability of (63). Visonyanggoon (2000) marks the following, nearly equivalent, sentence, as ungrammatical:

(68) *naaj khon kòn sɔ̌ɔŋ khon
boss CLF former two CLF

(Visonyanggoon 2000, ch. 3, p. 82)

Visonyangoon argues that these sentences are ungrammatical in part because *classifier-adjective* sequences require that the noun phrase be interpreted as singular, as we have just seen, in conflict with the numeral. (68) is different from (63) in that in (68) the adjective is not predicative. Yet Piriyawiboon (2010, p. 107) provides a similar judgment with respect to a predicative adjective.[30]

To summarize, there are at least three independent reasons to doubt whether a classifier phrase is always present in N-*thîi*-A constructions. First, classifiers can occur adjacent to *thîi* in a position that cannot be accounted for by the predicate inversion analysis (65-a). Second, the classifier does not form a constituent with the *thîi*-A unit (66). And third, an overt classifier before adjectives affects the interpretation and structure of the DP, casting doubt on an analysis which assumes that it might always be present.

5.2 The productivity of thîi

If a way around these structural issues could be found, an independent problem exists in the distribution of *thîi*. DS contend that *thîi* is restricted to quantificational environments with contrastive focus on the adjective, as has been observed for the French *N-de-A* construction. I show in this section that the Thai construction is more productive than its French counterpart, both in terms of its interpretation and its syntactic distribution.

Previous literature on the French *N-de-A* construction in (60-b) (Azoulay-Vicente 1985; Hulk and Verheugd 1994) observes that it is restricted to quantificational environments, including indefinites, wh-constructions, and focus constructions. In addition, *N-de-A* is associated with a particular information structural profile, where the adjective is discourse-given but contrastively focused.

In contrast, N-*thîi*-A does not have to occur in a quantificational environment in Thai; it is compatible with non-quantificational noun phrases including definites (69-a) (see also (67-b)) and generics (69-b):

[30] The question remains why examples such as (63) are sometimes judged to be grammatical. Visonyanggoon (2000, p. 70-74) demonstrates that while similar constructions are allowed, they involve cases where classifiers are used predicatively, and the class of classifiers which can be so used is limited. It might be that the predicative use of classifiers, especially with adjectives such as 'big' in Thai, are grammatical for some speakers.

(69) a. năŋsŭu thîi nâasŏncaj lêm níi
book THII interesting CLF this
'this interesting book'
b. tó? (thîi) sŭuŋ hăa yâak
table THII tall search difficult
'Tall tables are hard to find.'

Thus, Thai N-*thîi*-A has a more general syntactic distribution than French *N-de-A*. This fact casts doubt on whether the two constructions share the same structure or derivation.

In addition, unlike French *N-de-A*, contrastive focus on the adjective is not a necessary condition for *N-thîi-A*. Consider the following discourse:

(70) a. ʔó? súu tó? tua (thîi) sŭuŋ máy
NAME buy table CLF THII tall YNQ
Q: 'Did Oh buy the table that's tall?'
b. mâj.chày ʔó? súu kâw.ʔîi (thîi) sŭuŋ
no NAME buy chair THÎI tall
A: 'No, he bought a tall CHAIR.'

The question establishes 'tall table' in the discourse. The response only differs from the question in the content of the noun, resulting in contrastive focus on 'chair'. The adjective remains given. Still, *N-thîi-A* is possible in the response. So we cannot conclude that the adjective must be contrastively focused for *thîi* to occur, contrary to the claims of DS.

The ability of *N-thîi-A* to occur in contexts with contrastive focus is on the adjective could be accommodated by the analysis of *N-thîi-A* in Thai as a subject relative clause. Like many isolating languages, adjectives do not require a copula when they serve as a clausal predicate in Thai:

(71) dêk khon níi kèeŋ (mâak)
child CLF this talented very
'This child is (very) talented.'

The absence of a copula in *N-thîi-A* is not a problem for its status as a subject relative. As relative clauses are fully productive, their presence in generic and definite DPs, as well as with or without contrastive focus on the adjective, is expected. Additionally, there is intuitively greater emphasis on the adjective when it is the predicate in a relative clause compared to an attributive position.

In summary, all of the problems with the proposal of den Dikken and Singhapreecha (2004) discussed in this section, including the distribution of classifiers, the constituency of *thîi*-A, and the productivity of *N-thîi-A*, can be accounted for if *thîi*-A is simply a subject relative clause. On the other hand, French *N-de-A* may require a different analysis due to its focus-related interpretation and distributional restrictions. But the problems with the analysis of *N-thîi-A* in terms of predicate inversion undermine the plausibility of such an analysis for French.

6. Summary

This paper presented an analysis of the Thai particle *thîi* as a relative complementizer which was extended to its use in noun-complement clauses, clefts, and infinitives. What ties these environments together is that they include a clause which must be interpreted as a property. Noun phrase internally, the clause must be interpreted as a property in order to modify its nominal head by Predicate Modification. With infinitival

clauses, on the other hand, clausal properties are directly selected by the verb, following Chierchia (1984), making *thîi* necessary.

Three larger questions are raised by this proposal. First, how can variation between the Thai relative complementizer and relativization systems in other languages be accommodated? Second, to what extent can the unified treatment of relative clauses and noun complement clauses be extended to other languages, or perhaps be claimed to be universal? Third, what does the Thai system reveal about the interface between syntax and semantics?

Beginning with the question of variation in relativization systems, in section 2.3, a contrast was observed between Scottish Gaelic and Irish on one hand and Thai on the other. In the former cases, relative complementizers occur both on the relative clause and any embedded clauses out of which relativization occurs. In Thai, on the other hand, *thîi* only introduces the top clause. I proposed in section 2.3 that the complementizer in Scottish Gaelic and Irish realizes the unvalued [ID:] probe on C, also present in lower clauses in order to ensure successive cyclicity, while *thîi* simply spells out the predicate-forming [Λ]-feature. This view can account for the fact that the same complementizers are used for relativization and for *wh*-questions in Irish and Scottish Gaelic (Adger and Ramchand 2005; McCloskey 1979, e.g) while *thîi* is only used in relative clauses.

In Mandarin Chinese, the operator *de* seems to be the pure realization of [Λ] (Cheng and Sybesma 2006), while the equivalent of *wâa* is morphologically silent. Japanese and English, on the other hand, only realize C features on Fin, and have no equivalent of the [Λ]-bearing complementizers of Thai and Gaelic. This may be because *wh*/[ID]-features in these languages are generated on noun phrases themselves in these languages, as has been suggested by Adger and Ramchand (2005) for English and Aoun and Li (1993) and Tsai (1999) for Japanese.

This brings us to the second question, which is the extent to which relative clauses and NCCs might be treated on par in languages besides Thai. As noted in the introduction, Khmer, Chinese, and Korean all introduce relative clauses and NCCs with the same particle. In Mandarin Chinese, however, this "complementizer", *de*, is also used with modifiers which are not CPs. This wider distribution for *de* may be related in that it is not necessarily categorically specified as a complementizer in the same way that *thîi* is in Thai. Though it lacks a relative complementizer, only NCCs in Japanese contain the complementizer *to* (Matsumoto 1988), just as *wâa* is only present in noun-complement clauses in Thai.[31] In this same regard, in Gungbe, fact-clauses and relative clauses are introduced by the same complementizer, though they differ in the position of the definiteness marker in the noun phrase (Aboh 2005). These facts together suggest that the unified analysis I proposed fo NCCs and relative clauses in Thai could be extended to many other languages.

The last issue raised by this proposal is the nature of the syntax-semantics interface. As predicate formation is reliably realized as *thîi* in the complementizer system of Thai, the mapping between syntax and semantics can be taken to be direct and largely transparent. The connection between *wâa* and argument formation provides further evidence for a tight connection. However, the discussion above regarding morphological differences in complementizer systems reveals that the connection between syntax and semantics may be obstructed by the morphological irregularities of a given language. This conclusion fits well into one of the general desiderata of contemporary linguistic theory, namely, the reduction of crosslinguistic variation to differences in the functional inventory and its morphological realization across languages.

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[31] Thanks to an anonymous reviewer for making this connection.

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