

Definite Spans and Blocking in Classifier Languages

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Abstract This paper presents a new DP analysis of classifier languages. The motivation for this analysis comes from the classifier-modifier construction (CMC) in Thai, in which a predicative modifier can license a bare classifier, resulting in a definite singular interpretation. I argue that the definite readings are due to a null choice-functional determiner (Reinhart 1997, Winter 1997), which takes the modifier as its complement (Kayne 1994). I propose that the modifier licenses the bare classifier, otherwise prohibited, because head raising relative clause structures bleed the environment for a D-Clf-N *span* to be realized as a bare noun (Brody 2000, Svenonius 2012, a.o.). I argue that this coalescence-based account of definite noun phrases, specifically definite bare nouns, is an improvement on accounts based on head movement (Cheng and Sybesma 1999) or semantic type-shifting (Chierchia 1998). This analysis correctly derives the generalization that languages allowing definite bare classifiers mostly prohibit definite bare nouns, captures Chierchia’s nominal typology without resorting to semantic variation, and provides a novel explanation for the apparent optionality of functional morphology in analytic languages.

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1 Introduction

Despite substantial research on noun phrases in classifier languages, a number of questions about their syntax remain open.¹ For example, there is general disagreement about if and when nouns in classifier languages project functional structure. Even among analyses which postulate functional structure, there is disagreement about the relationship between classifiers, determiners, and definiteness.

These issues come together in the analysis of definite bare nouns, which are common nouns occurring alone in argument positions that refer to familiar or unique individuals in some context. Two diverging views of definite bare nouns are outlined below:

- (1) The semantic variation view (Chierchia 1998)
 - a. The denotation of nouns in classifier languages are of an argumental type (type $\langle e \rangle$), denoting kinds (or masses) (cf. Krifka 1995).²
 - b. The kind-level denotation of nouns in classifier languages is different from the predicative denotation of nouns in number-marking languages, explaining why articles are needed with nouns in these languages in order to create arguments.
 - c. Numeral classifiers produce countable atoms (an atomic predicate) from a kind denotation (cf. Ionin and Matushansky 2006).³
 - d. Definite interpretations of bare nominal arguments arise from semantic type-shifting mechanisms applied directly to the noun (cf. Dayal 2004).⁴
 - e. Definite bare nouns lack functional structure (cf. Fukui 1986, Fukui and Takano 2000, Dayal 2004, Bošković 2008, Cheng 2011).

¹A brief clarification of the term ‘classifier language’ is in order: the term here is short for ‘numeral classifier language’, a grouping which is vexing on its own as well (Greenberg 1977). The languages I intended to include are those which cannot combine numerals with almost any common nouns, but instead require the aid of a functional morpheme meaning something like ‘unit’ and reflecting semantic properties of the common noun. I have a strong areal bias towards East and Southeast Asian classifier languages; I know too little about potentially related phenomenon in Mesoamerica and South America (e.g. Aikhenvald 2000), some of which apparently have numeral classifiers, to make any intelligent comments on them. I will not discuss languages with nominal gender or noun classifiers (e.g. Jacalteco, Craig 1986), though a few comments on gender are made in the conclusion.

²Details of Chierchia’s and Krifka’s analyses differ, particularly in the denotation of the classifier.

³Ionin and Matushansky assume that the denotation of common nouns is universally predicative.

⁴Dayal also assumes that the denotation of common nouns is universally predicative.

- (2) Predictions of the semantic variation view (cf. Chierchia 1998, p. 354)
- a. Nouns which must be counted by combining with classifiers are kinds, and thus can function directly as arguments.⁵
 - b. Generalized number marking systems are in complementary distribution with generalized classifier systems.⁶

This variationist analysis has been worked out for at least Mandarin (Yang 2000), Japanese (Kurafuji 2004), Korean (Kim 2005), and Thai (Piriyawiboon 2010). The predictions in (2) are largely borne out. Still, some empirical issues have arisen for this view. One salient problem is the recent discovery of putative definite articles in Yi, which indicate functional structure must be present in some classifier languages (Jiang and Hu 2010). Another problem is the fact that classifier languages such as Bengali, Cantonese, and Hmong do not allow definite interpretations of bare nouns in most contexts (Cheng and Sybesma 1999, Gerner and Bisang 2010, Simpson et al. 2011). In other words, the view that the kind or mass-like denotation of nouns in classifier languages entails their ability to occur as definite bare nouns is false.

The second view of definite bare nouns follows the spirit of the Minimalist Program in its attempts to avoid fundamental differences in the syntax of different languages and in the syntax-semantics interface (cf. Longobardi 2005).

- (3) The universalist view
- a. The mapping between syntax and semantics is universal. (cf. Longobardi 1994, 2005).
 - b. Definite bare nouns project functional structure in argument positions (Cheng and Sybesma 1999, 2005, Borer 2005, Simpson 2005, Watanabe 2006, Wu and Bodomo 2009, a.o.).
 - c. Definite bare nouns undergo head movement to Clf or D.
- (4) Predictions of the universalist view
- a. Standard effects of head movement should be seen when there are definite interpretations of noun phrases in classifier languages (Li 1999, Simpson 2005).
 - b. Some classifier languages have overt definite articles (Jiang and Hu 2010).

⁵This prediction is intentionally stated as a one-way implication; it is well known that number marking languages often allow bare nominal arguments, including definite bare nouns. This is true in Russian and Hindi Dayal (2004) and is more often true than not in Niger-Congo languages. Additionally, it is stated as a property of nouns, rather than languages, as both “classifier languages” and “number marking languages” show substantial variation in this regard.

⁶Specifically, bare nouns in classifier readings are vague with respect to number, allowing singular and plural reference (Rullman and You 2006). Plural marking in classifier languages is distinct from number inflection: it is optional and applies to proper nouns and pronouns. Many cases are often restricted to animate nouns and has definite pragmatics (Iljic 1994, Kurafuji 2004, Nakanishi and Tomioka 2004). Korean and Indonesian plural markers have a wider distribution and allow indefinite interpretations, but they are optional, and bare nouns in both languages still allow both singular and plural readings (Chung 2000, Kim 2005).

There are actually two versions of this analysis. The first takes functional structure in classifier languages to be different from DP structure in languages with articles, with indefinite noun phrases held to be larger than definite noun phrases, as the latter involve only a ClfP (Cheng and Sybesma 1999, 2005); the second version maintains that all languages share essentially the same functional structure (Borer 2005, Simpson 2005, Wu and Bodomo 2009, Liao and Wang 2011). This latter group is the most in the spirit of the Uniformity Principle of Chomsky (2001), which states that languages are uniform except for “easily detectable properties of utterances” (2). These two basic disagreement is about the role of classifiers, either taking them to be the syntactic correlate of definite articles in classifier languages (Cheng and Sybesma 1999) or the correlate of number marking (e.g. Borer 2005). In both approaches, however, *definite* bare nouns project functional structure, either DP or ClfP, and undergo head-movement.

The problem for the universalist view as stated above is that the evidence for head movement of definite bare nouns in classifier languages is weak at best; the claim is potentially unfalsifiable as presented. So while associations between, e.g., classifiers and definiteness, and demonstratives and definiteness have been established, I know of no distributional evidence suggesting that definite bare nouns must be displaced from their normal position in classifier languages.⁷ This is especially clear in Mandarin, where bare nouns freely receive definite interpretations, but they occur in their normal position at the right edge of the noun phrase regardless of its interpretation.⁸ Yet if nouns do not move to D, how is an empty D head licensed? Definite interpretations of bare nouns are more salient in subject position than in object position (Cheng and Sybesma 1999), a fact that seems to go against the predictions of the Empty Category Principle, otherwise active in licensing null indefinite determiners in object position in Chinese (Cheng and Sybesma 1999).

So we remain without a convincing analysis of definite bare nouns in classifier languages. This paper offers a new analysis of definite bare nouns which has the empirical scope and of the head-raising analysis without the unwanted predictions about noun location. The leading idea is that definite bare nouns are a morphological *span* (Svenonius 2012) resulting from coalescence of the functional projections of the noun. Generally, the span analysis is very similar to the universalist view: it postulates a non-trivial inventory of D heads in classifier languages and maintains a universal, transparent mapping between syntax and semantics. Furthermore, the span analysis finds strong motivation from a nominal modification pattern in Thai, the main focus of this paper.

In Thai, a bare classifier can be licensed by a following predication modifier, such as a relative clause. When this special licensing relationship holds, the construction is interpreted as definite:

⁷This is not to suggest there are no good candidates for head movement in the DPs of classifier languages. One possible instance of head movement is the derivation of plural *-men* in Chinese (Li 1999), another is the alternation in the position of the numeral ‘one’ in Nung and Thai (Simpson 2005).

⁸Dayal (2004, p. 415) presents another argument against this view based on the limited availability of indefinite interpretations in subject position in classifier languages.

- (5) a. thúrian [_{CP} thîi sùk]
 durian REL ripe
 ‘a/the durian(s) that is/are ripe’
 b. thúrian lûuk [_{CP} thîi sùk] = the Classifier-Modifier Construction (CMC)
 durian CLF REL ripe
 ‘the durian that is ripe’
 c. *thúrian [_{CP} thîi sùk] lûuk
 durian REL ripe CLF

Relative clauses follow nouns in Thai, as shown in (5a). The same example demonstrates that when relative clauses follow bare nouns, the noun phrase can be interpreted as definite or indefinite, singular or plural. Yet a bare (i.e. non-enumerated) classifier can intervene between the noun and relative clause, resulting in a definite singular interpretation for the noun phrase as a whole, as shown in (5b). The position of this classifier before the relative clause is crucial; when classifiers follow relative clauses, they cannot occur bare (5c). I will refer to the construction in (5b) as the *Classifier-Modifier Construction* (=CMC). The CMC has been noticed before in some form or another in most previous literature on Thai DPs (Haas 1942, Jones 1970, Hundius and Kölver 1983, Visonyangoon 2000, Kookiatikoon 2001, Singhapreecha 2001, Piriawiboon 2010).

There are two challenges for a formal analysis of the CMC, outlined in section 2. The first challenge is understanding how relative clauses and other modifiers ‘license’ classifiers in the CMC. As the following example shows, bare *noun-classifier* sequences are ungrammatical in Thai:

- (6) *thúrian lûuk
 durian CLF

Thus, the presence of the classifier in (5b) depends on the following modifier. Relative clauses and other modifiers are traditionally analyzed as adjuncts. Adjuncts neither need to be licensed, nor do they license other elements of a phrase. Thus, the ability for relative clauses to license the classifier in the CMC is surprising.

The second challenge presented by the CMC is semantic. While modified bare nouns can be interpreted either as indefinite or definite (5a), instances of the CMC must be interpreted as definite (5b). As there is no overt reflex of this definite interpretation, there is an apparent mismatch between syntax and semantics.

In section 3 I argue that the CMC is derived by the head-raising analysis of relative clauses (Kayne 1994), and that relative clauses are the complement of a determiner in Thai. Evidence for this conclusion comes from the ability of the *noun-classifier* sequence in the CMC to be reconstructed into the relative clause. The null determiner which takes the relative clause as its complement accounts for the referential interpretation of the CMC.

In section 4, I argue that head-raising relative clauses license the existence of bare classifiers in Thai precisely because the classifier is not the complement of D. I argue that such cases, such as (7a), are *blocked* by the availability of definite bare nouns in Thai

(Visonyangoon 2000, Piriawiboon 2010), as in (7b):

- (7) a. *[_{DP} thúrian lûuk] yùu bon tó?
 durian CLF LOC on table
 b. [_{DP} thúrian] yùu bon tó?
 durian LOC on table
 ‘The durian is on the table.’

Following Hankamer and Mikkelsen (2005) and Embick and Marantz (2008), I argue that the relevant notion of blocking applies at PF, during lexical insertion. Specifically, Thai has the following rule for the pronunciation of a DP *span*:

- (8) [D [Clf [N]]] \leadsto N

Pronunciation of the classifier is generally only forced by the presence of additional heads which interrupt this span. In the CMC, however, this rule does not apply because the D takes a CP rather than a Clf as its complement, forcing the pronunciation of each head.

In section 5, I survey the expression of definiteness in classifier languages and show that most of the described cases fall under the purview of this theory. In particular, it has been observed that languages which allow definite bare classifiers generally do not allow definite bare nouns (Simpson, Soh, and Nomoto 2011). This generalization follows from the prediction that the rule in (8) is not present in languages with definite bare classifiers, leading to the absence of definite bare nouns. A number of problematic cases are introduced and discussed as well.

In the discussion (section 6), I conclude that the spanning approach to definite bare nouns has strong empirical support and opens a potentially new avenue for the study of analytic languages like Thai. In particular, while the absence of inflectional morphology in such languages has generally been correlated with the absence of structure (e.g. Fukui 1986), I conjecture that isolating languages instead have a complex set of spanning rules. In addition, the spanning analysis advocated in this paper allows a restatement of Chierchia (1998)’s typology of number marking and classifier languages which captures the basic intuitions of this analysis without postulating variation in the denotation of nouns.

2 Properties of the CMC

This section makes three key observations about the CMC. Section 2.1 examines the classifier in the CMC, showing it is a genuine numeral classifier. In section 2.2, I demonstrate that only predicative modifiers that can appear in the CMC. Last, section 2.3 describes the referential interpretation of the CMC, showing that both definite and specific indefinite readings are allowed, the latter only in the presence of indefinite determiners.

2.1 Classifiers as Functional Heads

The CMC is surprising because of the absence of a numeral or determiner, which are generally needed to license classifiers in Thai. Indeed, the classifier in the CMC may be preceded by a numeral or quantifier:

- (9) a. thúrian sǎam lûuk thîi mǎn
 durian 3 CLF REL stinky
 ‘the three durians that are smelly’
 b. thúrian thúk lûuk thîi mǎn
 durian every CLF REL stinky
 ‘every durian that is smelly’

These examples show that the classifier appearing in the CMC is a ‘true’ classifier.

Classifiers in Thai have been analyzed as functional projections of the noun (Visonyang-oon 2000, Kookiattikoon 2001, Singhapreecha 2001, Piriya-wiboon 2010). Strong evidence for this conclusion is the coordination of noun phrases containing classifiers, which must be interpreted as the coordination of two separate DPs. Such an example is provided in (10a), where classifiers-modifier constituent in the CMC is coordinated:

- (10) a. [_{DP} thúrian lûuk thîi mǎn] lǎ? [_{DP} lûuk thîi sùk]
 durian CLF REL stinky and CLF REL ripe
 ‘the durian that is smelly and the durian that is ripe’
 b. ?[_{DP} thúrian lûuk [_{CP} thîi mǎn] lǎ? [_{CP} thîi sùk]]
 durian CLF REL stinky and REL ripe
 ‘the durian that is smelly and that is ripe’

Despite the plausibility of an interpretation where the durian is both smelly and ripe (most ripe durian are, in fact, quite smelly), the coordinated property interpretation of (10a) is not available. Instead, the coordination must be interpreted as applying to two separate objects: one smelly durian, and another ripe one. If the classifier is removed from the second conjunct, the interpretation with coordinated properties re-emerges (10b).

These examples would be surprising if the classifier were part of the modifier, but are expected if the classifier is a functional projection of the noun. We can thus preclude an analysis of the CMC based on a non-standard analysis of its classifier.

2.2 Modifiers in the CMC

Below I examine properties of the modifier in the CMC. First, to qualify as a case of the CMC, modifiers must follow the classifier. This is because modifiers only license classifiers when they follow them:

- (11) a. thúrian lûuk [_{CP} thîi mǎn]
 durian CLF REL stinky
 ‘the durian that is smelly’

- b. *thúrian [_{CP} thǐi mǎn] lûuk
 durian REL stinky CLF

Example (11b) rules out analyses relying on the general semantic contribution of the relative clause within the noun phrase. For example, Dayal (2005) analyzes a number of other instances of licensing by relative clauses by appealing to the idea that clausal modifiers supply DPs with a situation variable they might otherwise lack. But a purely semantic account cannot explain relative clauses in Thai only license classifiers when they follow them; a structural explanation is needed.

All of the examples of the CMC up to this point have contained relative clauses, but many other modifiers also occur in the CMC, including relative clauses (12a), adjectives (12b) (preferably reduplicated) and prepositional phrases (12d):

- (12) a. [_{DP} thúrian lûuk [_{CP} thǐi mǎn]] yùu khâaŋ-nôok
 durian CLF REL stinky LOC side-out
 ‘The durian that’s smelly is outside.’
 b. [_{DP} thúrian lûuk [_{AP} mǎn-mǎn]] yùu khâaŋ-nôok
 durian CLF stinky-REDUP LOC side-out
 ‘The smelly durian is outside.’
 c. [_{DP} thúrian lûuk [_{PP} bon tǔ?]] mǎn mâak
 durian CLF on table stinky very
 ‘The durian on the table smells really bad.’

Possessive NPs can also occur after a bare classifier with contrastive focus on the possessor:

- (13) [_{DP} thúrian lûuk [_{POSSP} khǎŋ Nít]] yùu khâaŋ-nôok
 durian CLF POSS Nit LOC side-out
 ‘NIT’s durian is outside.’ (not Nat’s) (cf. Piriyawiboon 2010, p. 79)

Piriyawiboon (2010, p. 79) presents the same example as ungrammatical, and it is indeed unnatural without contrastive focus. At this point it is unclear whether (13) is an instance of the CMC proper or a separate phenomenon.

While the class of modifiers which can occur in the CMC is broad, a number of interpretive differences obtain between modifiers that directly follow nouns in Thai and those in the CMC. These differences, first noted by Kookiattikoon (2001), roughly correlate with the distinction between attributive and predication modification (Bolinger 1967, Siegel 1976, Larson 1998, a.o.).

The following examples with verbal modifiers of nouns illustrate this difference:

- (14) a. ná-rian tên-ram
 student dance
 ‘a dance student’
 b. nók phûut-dâj
 bird speak-can

‘a bird that can talk’

Kookiattikoon (2001, p. 188)

In the examples above, the modifier restricts the basic sense of the noun. So rather than referring to students in general, (14a) is restricted to students of dance. Likewise, (14b) is restricted to the kind of bird which is capable of talking (e.g. parrots and parakeets).

When classifiers intervene, the same verbal modifiers no longer restrict the sense of the noun, but are interpreted predicatively:

- (15) a. nák-rian khon tên-ram
 student CLF dance
 ‘the student who is dancing’
 b. nók tua phûut-dây
 bird CLF speak-can
 ‘the bird that can talk’

Kookiattikoon (2001, p. 189)

The verb ‘dance’ in (15a) has lost its strictly attributive use and now is predicated of a student at a particular place and time. Similarly, the bird described by (15b) must actually be capable of talking, not just a bird of the appropriate type. Summarizing, modifiers occurring in the CMC must be interpreted predicatively.

Some adjectives show similar contrasts depending on whether they occur in the CMC (for similar examples, see Kookiattikoon 2001, p. 194):

- (16) a. nák-tên sǎy
 AG-dance beautiful
 ‘a beautiful dancer’ (beautiful person or dances beautifully)
 b. nák-tên khon sǎy
 AG-dance CLF beautiful
 ‘the beautiful dancer’ (only a beautiful person)

The adjective *sǎy* ‘beautiful’ has two available interpretations in (16a), either making an assertion about the quality of the dancer or the person who is dancing. This contrast disappears in (16b), where only the latter interpretation is available, the only interpretation allowed with an adjectival main predicate, e.g. *The dancer is beautiful*. Thus, the correlation between the CMC and predicative interpretations is maintained.

Similarly, Kookiattikoon (2001) observes that while nominal modifiers of nouns are allowed directly following the noun, a classifier cannot occur before these modifiers:

- (17) a. nák-rian (*khon) phêet
 student CLF medicine
 ‘a medical student’
 b. khruu (*khon) físìk
 teacher CLF physics
 ‘a physics teacher’
 c. nók (*tua) pàa
 bird CLF forest

‘forest bird’

(Kookiattikoon 2001, p. 188-189)

The nominal modifier in (17) are non-intersective (Siegel 1976). That is, they identify a subtype of the kind denoted by the head noun rather than naming an independent property that holds of the head noun. Once again, the inability of these modifiers to occur in the CMC correlates with their inability to serve as predicates, e.g. **This student is medical*.

In summary, only predicative modifiers are allowed in the CMC in Thai.⁹ This restriction is not surprising inasmuch as the CMC constitutes a case of *indirect modification*, which Sproat and Shih (1988) observe is correlated with predicative interpretations. Below I will conclude, following Cinque (2010), that this restriction can be captured by analyzing predicative modifiers in the CMC as (reduced) relative clauses.

2.3 Definiteness, Specificity, and Singularity

Just as modifiers have a special interpretation when they follow classifiers, so do noun phrases as a whole have a special interpretation when they contain the CMC: noun phrases containing the CMC are referential. The generalization seems to be that while cases of the CMC without numerals must be definite and singular, instances of the CMC with numerals can be specific indefinite:

- (18) a. $[[N-Clf-Mod]]$ ‘Bare CMC’ = singular and definite
 b. $[[N-Num-Clf-Mod]]$ ‘Num + CMC’ = specific indefinite or definite

The easiest way to see the referential restriction on the CMC is to examine environments where the CMC is prohibited, including generics (19) and existential constructions (20).

- (19) *taam-thamadaa thúrian lûuk sùk-sùk wăan mâak
 generally durian CLF ripe sweet very
 ‘Generally ripe durian are very sweet.’ (intended)

- (20) a. *mii thúrian lûuk sùk-sùk khâṇ-nôṁk
 exist durian CLF ripe outside
 b. *mii thúrian sǎam lûuk sùk-sùk khâṇ-nôṁk
 exist durian three CLF ripe outside

(cf. Visonyangoon 2000, p. 81)

Furthermore, noun phrases containing the CMC can serve as complements of the equative copula $kh\bar{u}u$, but they cannot occur as the complement of the predicative copula pen :¹⁰

- (21) a. Nik $kh\bar{u}u$ khon thîi chán rák
 COP:EQ CLF REL 1SG love

⁹There is a distinct class of non-predicative modifiers which license classifiers in Thai. These non-predicative are deictic in nature, including demonstratives and ordinals, and thus constitute a separate phenomenon, discussed in part in section 3.3.

¹⁰See Kuno and Wongkhamthong (1981) for more on these copula.

- ‘Nick is the person that I love.’
 b. *Nik **pen** khon thii chán rāk
 COP:PRED CLF REL 1SG love

(Ruangjaroon 2005, p. 105)

The inability of the CMC to occur in predicative positions (21b) demonstrates that it must be interpreted referentially.

The referential interpretations of the CMC are evident in discourse anaphoric contexts. In (22a), umbrellas are introduced into the discourse. The CMC is used to refer to them in (22b), where they are both unique and familiar, characteristic traits of definite noun phrases (Heim 1982, Löbner 1985):

- (22) a. Nát sǎm [[rôm sǐi-dɛɛŋ nəŋ-khan] lé? [rôm sǐi-dam
 Nat buy umbrella color-red one-CLF and umbrella color-black
 nəŋ-khan]] maa.
 one-CLF PRF
 ‘Nat bought one red umbrella and one black umbrella.’
 b. tɛə mʰa klap bʰan, (khǎw) mǎj chɔɔp [(rôṁ) khan sǐi-dɛɛŋ]
 but when return home 3s NEG like umbrella CLF color-red
 ‘But when he returned home, he didn’t like the RED umbrella.’

In this context, *rôṁ* ‘umbrella’ in (22b) is anaphoric, and the adjective *sǐi-dɛɛŋ* ‘red’ is focused, just as in the gloss, where primary focus must be on the adjective *red*, because *umbrella* is given by the discourse.

The CMC can be used in this environment even if a numeral precedes the classifier:

- (23) a. Nát sǎm [[rôṁ sǐi-dɛɛŋ sǎm-khan] lé? [rôṁ sǐi-dam
 Nat buy umbrella color-red two-CLF and umbrella color-black
 sǎm-khan]] maa.
 three-CLF PRF
 ‘Nat bought two red umbrellas and three black umbrellas.’
 b. tɛə mʰa klap bʰan, (khǎw) mǎj chɔɔp [(rôṁ) sǎm-khan sǐi-dɛɛŋ]
 but when return home 3s NEG like umbrella two-CLF color-red
 ‘But when he returned home, he didn’t like the two red umbrellas.’

So the Num+CMC is compatible with definite interpretations.

Further evidence for definiteness comes from the *consistency* effect of Löbner (1985), devised to distinguish definite articles from demonstratives:

- (24) a. #The boy is sleeping but the boy is not sleeping.
 b. That boy is sleeping but that boy is not sleeping.

Piriyawiboon (2010) applies this test to Thai, showing that Thai demonstrative noun phrases do not exhibit consistency effects as expected. With bare CMCs, however, the consistency effect does arise:

- (25) #[[dèk khon thîi son] nɔɔn yùu] tɛɛ [[dèk khon thîi son] mây.dây
 child CLF REL naughty sleep IMP but child CLF REL naughty NEG
 nɔɔn yùu]
 sleep IMP
 #‘The naughty boy is sleeping but the naughty boy is not sleeping.’

Thus, we can conclude that bare CMCs must be interpreted as definite.

Likewise, instances of the Num+CMC also show consistency:

- (26) #[[dèk sǎam khon thîi son] nɔɔn yùu] tɛɛ [[dèk sǎam khon thîi
 child some CLF REL naughty sleep IMP but child some CLF REL
 son] mây.dây nɔɔn yùu]
 naughty NEG sleep IMP
 #‘The three naughty boys are sleeping but the three naughty boys are not sleeping.’

However, if the CMC is preceded by a ‘true’ indefinite quantifier such as *baaŋ* ‘some’, consistency effects do not arise:

- (27) [[dèk baaŋ khon thîi son] nɔɔn yùu] tɛɛ [[dèk baaŋ khon thîi
 child some CLF REL naughty sleep IMP but child some CLF REL
 son] mây.dây nɔɔn yùu]
 naughty NEG sleep IMP
 ‘Some naughty boys are sleeping but some naughty boys are not sleeping.’

The distinction between weak quantifiers and numerals is the motivation for restricting quantified instances of the CMC to numerals: (27b) indicates that the presence of a non-numeral indefinite quantifier allows non-referential readings.

Partitives provide evidence for further splits in the interpretation of the CMC. Specifically, Num+CMC allow partitive readings (28b) but bare CMCs do not:

- (28) a. mii mǎa sǐi dam sǎam tua khâaw bâan maa ...
 have dog color black 3 CLF enter house come
 ‘Three dogs came into the house.’
 b. ... sǎŋ tua sǐi dam rêəm hâw-hǎŋ
 2 CLF color black begin bark
 ‘Two of the black dogs started barking’
 c. *... tua sǐi dam rêəm hâw-hǎŋ
 CLF color black begin bark
 ‘One of them began barking.’

Enç (1991) has showed that partitives are specific because they are anaphoric to a definite set, but they are not maximal. The contrast above clearly thus shows that when numerals are present, the CMC can receive specific indefinite interpretations, though instances of the bare CMC can only be interpreted as definite.

The table below summarizes the possible interpretations of the CMC:

(29)

	Definite	Specific indefinite	Existential	Generic
(N)-CLF-Modifier	✓	×	×	×
(N)-NUM-CLF-Modifier	✓	✓	×	×

The generalization is that the CMC must be interpreted as referential. Specific indefinite interpretations are only allowed when a numeral precedes the classifier.

2.4 Summary

Classifiers occurring in the CMC should be regarded as genuine classifiers in the sense that they are functional projections of the noun and they can serve as the restriction for numerals. While the class of modifiers which can follow the classifier in the CMC is quite broad, these modifiers must receive predicative interpretations. Finally, it was shown that noun phrases containing the CMC must be interpreted referentially.

3 The CMC and Head-Raising Relatives

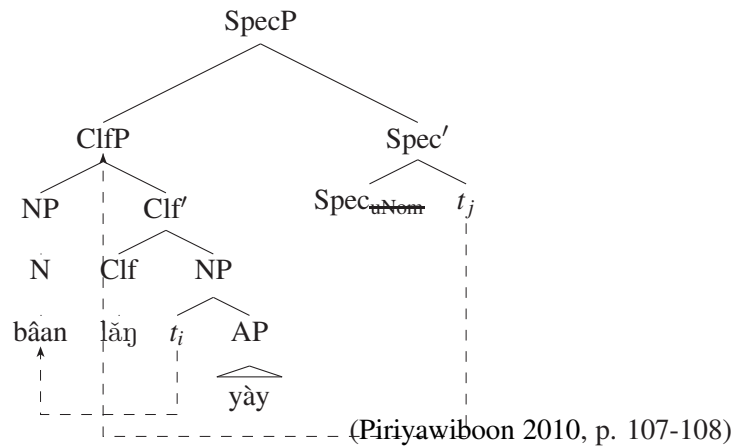
In this section I pursue the intuition, present in earlier analyses of the CMC (Visonyangoon 2000, Piriawiboon 2010), that definite and specific readings of Thai noun phrases involving a classifier arise due to the presence of a null determiner. The novel component of my proposal is that this null determiner can take relative clauses and small clauses as its complement. This proposal will serve as an important ingredient in the analysis of classifier licensing by the CMC in section 4.

3.1 Previous Analyses of the CMC

Before introducing my analysis, I will review the proposals of Piriawiboon (2010) and Visonyangoon (2000) and show where problems persist. Piriawiboon (2010) assumes that adjectives (presumably also relative clauses) occurring to the right of the classifier are right-adjoined to NP. Piriawiboon proposes that a sub-projection of the NP, the lower segment created by adjunction, is moved to the specifier of ClfP, followed by movement of the ClfP to the specifier of a higher Spec(ific)P:

- (30) a. *bâan lăŋ yày*
 house CLF big
 ‘the big house’

b.

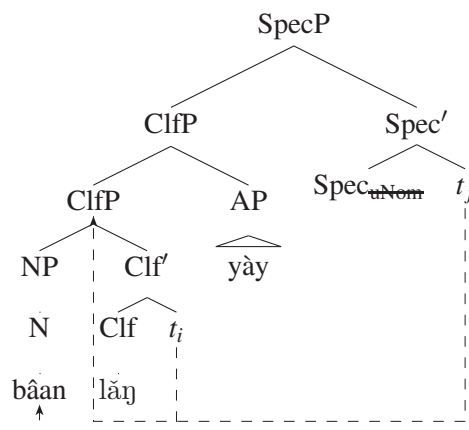


Several components of the analysis above are standard in the analysis of Thai noun phrases. For example, leftward NP-movement is assumed in most generative work on Thai (Stein 1981, Visonyanggoon 2000, Singhapreecha 2001), as are additional instances of leftwards phrasal movement to derive, e.g., the DP-final position of demonstratives. These mechanisms will be assumed throughout the paper.

The main problem with the proposal in (30) is that it must adopt a nonstandard theory of movement. Movement in minimalism is driven by downward probes attracting the closest category that matches the type of the probe. Thus, there is no way to force movement to target the lower NP in a principled way in (30).

This problem could be avoided by adopting a structure where the AP is attached to the ClfP, or some other projection above NP:

(31)



Visonyanggoon (2000) makes a similar proposal, though she puts the adjective (or relative clause) in the specifier of ClfP, the position she takes deictic modifiers such as demonstratives to occupy.

The main problem with these analyses is that they do not provide an account of how the modifier licenses the classifier. This failure is most clear in the adjunction analyses in (30) and (31). While Visonyanggoon's proposal to place the licensing modifier in the same

structural position as a deictic modifier (e.g. demonstratives) does account for the licensing requirement (assuming that a filled specifier licenses a classifier, also not straightforwardly derivable from independent principles), the modifiers in the CMC are clearly distinct from deictic modifiers. First, deictic modifiers are not predicative, at least not transparently so, while modifiers in the CMC are necessarily predicative (section 2.2). Second, deictic modifiers can co-occur with these predicative modifiers in the CMC, as we will see below.

However, these proposals agree that the referential nature of the CMC should be attributed to a null D above the classifier. However, they do not account for the necessary association of the CMC with a referential interpretation. This is because these analyses attach the modifier to a constituent below DP, leading to the incorrect prediction that they should be able to receive indefinite interpretations, as do other classifier projections when they occur with, for example, numerals. In summary, analyses based on simple attachment of the modifier to some position in the DP spine does not seem to provide a satisfactory analysis of the referential or classifier licensing properties of the CMC.

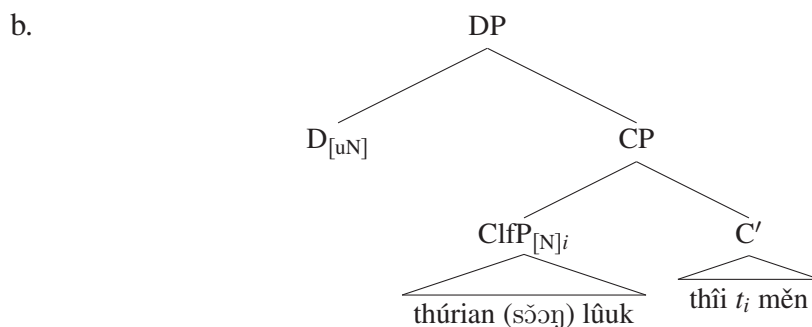
3.2 A Null Determiner

The first ingredient in an analysis of the CMC is the source of the definite and specific interpretations associated with it. One possibility would be to associate the referential interpretation with the classifier itself, as proposed by Cheng and Sybesma (1999) to account for definite bare classifiers in Cantonese (55). The most obvious problem with this proposal is that classifiers frequently occur in indefinite noun phrases (Wu and Bodomo 2009), as just noted. We will see below that classifiers also must be reconstructed into the relative clause in certain cases. Thus, I conclude that classifiers cannot be the source of the referential interpretation.

Instead, I attribute the definite and specific interpretations of the CMC to a null determiner, as in the analyses above. Specifically, I propose that this null determiner takes the relative clause as its complement, following Kayne (1994):

(32) *Structure for bare CMC with relative clause*

- a. thúrian (sǒɔŋ) lúuk thîi mǎn
 durian two CLF REL stinky
 ‘the (two) durian(s) that is/(are) smelly’



The structure above is typically associated with the head-raising analysis of relative clauses, though the D-CP structure is at least in principle independent from the head-raising analysis. I provide further evidence for head-raising below.

Recall that the presence of a numeral in the CMC corresponds to a difference in its interpretation, as summarized below:

- (33) a. $\llbracket N\text{-}Clf\text{-}Mod \rrbracket$ = definite singular
 b. $\llbracket N\text{-}Num\text{-}Clf\text{-}Mod \rrbracket$ = specific indefinite or definite

Definite interpretations are generally attributed to an ι -operator (e.g. Partee 1987), which encodes maximality and familiarity, while specific indefinites are typically analyzed as choice functions (Reinhart 1997, Winter 1997, a.o.), an analysis which solved the long-standing problem of wide-scope indefinites (e.g. Fodor and Sag 1982). As the ι -operator is just a special choice function that encodes uniqueness and familiarity, Chierchia (2005) argues that definites and specific indefinites are identical except for the requirement that a specific indefinite must be existentially closed. The uniqueness typical of definites arises due pragmatic restrictions on choice functional domain: definites arise when the context only contains a single individual (or group). Therefore, under this view there is only one choice functional operator, which I will call D_{cf} .

Following Chierchia, I take the difference between definite and specific indefinite interpretations of D_{cf} to be transparently realized by the binary feature $[\pm DEF]$. The featural difference between $[\pm DEF]$ corresponds to two substantive differences in the syntax of these heads. First, only $[+DEF]$ licenses a null variant of the numeral ‘one,’ explaining why only definite singular interpretations are allowed in the absence of a numeral in (33a). This ability to license null ‘one’ is shared by $D_{cf}:[+DEF]$ with other strong and definite determiners in Thai (such as strong quantifiers, demonstratives, etc.) The second difference between $[\pm DEF]$ is that only $[-DEF]$ is endowed with an uninterpretable existential feature $[u\exists]$, checked via Agree by its interpretable correlate $[\exists]$, hosted on an existential operator freely merged in the scope position of the DP (Reinhart 1997, Chierchia 2001). These differences are summarized below:

- (34) a. $[+DEF]$: Licenses null ‘one’
 b. $[-DEF]$: Possesses $[u\exists]$

As a choice function, D_{cf} can take any complement of type $\langle e, t \rangle$ (the type of sets) as long as it contains an accessible NP to check its $[uN]$ feature. This proposal restricts the CP complements of D_{cf} to relative clauses (and possibly small clauses, see footnote 12), as these clause types have both an accessible noun phrase and are the appropriate semantic type. This aspect of my proposal accounts for the observation that modifiers in the CMC must be predicative (section 2.2). Of course, D_{cf} can also take extended nominal projections as its complement provided that they are of the appropriate type. We will review these structures and the constraints on them in section 4.

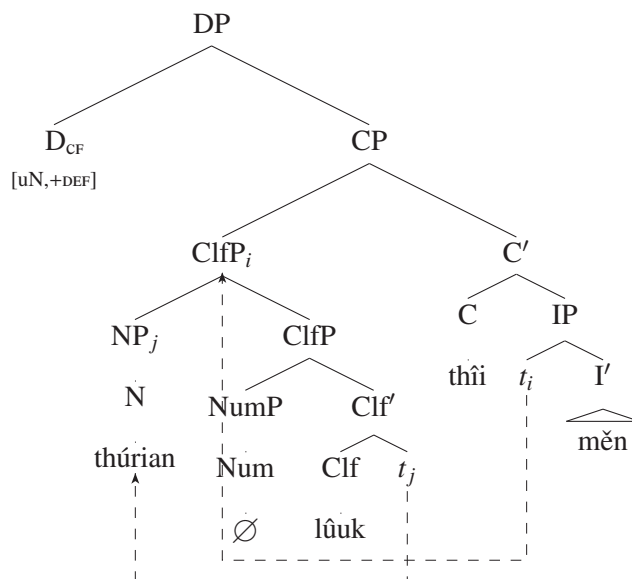
To summarize, the referential interpretations characteristic of the CMC can be attributed

to a null determiner interpreted as a choice function, D_{CF} . In addition to $[\pm def]$, I assume that D_{CF} is endowed with a $[uN]$ feature which requires that it c-command an accessible NP. The semantics of choice functions are rich enough to account for the full range of CMC interpretations, including the interpretation of definite and specific indefinite noun phrases, which vary depending on the feature setting of $[\pm def]$. The $[+DEF]$ feature licenses null ‘one’, while the $[-DEF]$ requires existential closure of the choice function. D_{CF} alternates with overt quantificational determiners such as *thúk* ‘every.’ D_{CF} can take any complement as long as it is of type $\langle e, t \rangle$. This analysis predicts that D_{CF} should be able to take bare classifiers as its complement, contrary to fact. Before the question of why bare classifiers are ungrammatical is addressed, the following section deals with the internal structure of the CMC.

3.3 The Internal Structure of the CMC

The analysis of the CMC outlined above had two ingredients. The first was the null determiner, D_{CF} . The second was the ability of D_{CF} to take a CP complement, following the analysis of relative clauses in Kayne (1994). The full proposed structure and derivation for Thai is detailed below:

(35)



There is solid support for the head-raising analysis of relative clauses in Thai. Jenks (forthcoming) presents evidence from island violations and weak crossover which demonstrate that Thai relative clauses involve movement. Evidence from quantifier scope and idiom reconstruction furthermore suggests that relative heads can be reconstructed into the relative clause. One crucial piece of evidence for head-raising comes from the ability of deictic modifiers to be reconstructed into the clause (Bhatt 2002):

- (36) bòtkhwaam chabàb sùtháaj thîi nít phûut wâa chòomskîi khîian chûu wâa
 paper CLF last thîi Nit say wâa Chomsky write name wâa
 on phases.
 on phases
 ‘The last paper that Nit said that Chomsky wrote is “On Phases.”’

Two readings are available for the sentence above: 1) Nit mentioned several papers of Chomsky’s and the last one he mentioned is ‘On Phases’ and 2) The content of Nat’s claim is that the Chomsky’s final paper was ‘On Phases.’ This replicates Bhatt (2002)’s novel argument for the head-raising analysis of relative clauses in English. Because these examples require that the deictic modifier be reconstructed into the relative clause, they entail that the entire *noun-classifier-deixis* sequence must be part of the relative head rather than just the noun itself. Therefore, the classifier in these examples is not a projection above the relative clause, but originates inside of it. These conclusion essentially forces the D-CP complementation structure above in the absence of other complex mechanisms.¹¹

In addition to providing a straightforward explanation of the reconstruction data in (36), the head-raising analysis also provides a transparent explanation for the requirement that the deictic modifier precede the relative clause:

- (37) a. thúrian lûuk diw thîi sùk
 durian CLF only REL ripe
 ‘the only durian that’s ripe.’
 b. *thúrian lûuk thîi sùk diw
 durian CLF REL ripe only
- (38) a. thúrian lûuk rêek bon tó?
 durian CLF first on table
 ‘the first durian on the table’
 b. *thúrian lûuk bon tó? rêek
 durian CLF on table first

We now have a principled way of accounting for this asymmetry: while the deictic modifier is adjoined to ClfP, the relative clause, and apparently the prepositional phrase (see below), are both complements of D_{CF}:

- (39) [DP D_{CF} [CP [ClfP *thúrian lûuk diw*]_i *thîi* [TP *t_i sùk*]]] = (37a)

To review, I take the modifier in the CMC to be the complement of D_{CF}. The strongest piece of evidence for this claim is the observation that deictic modifiers can be interpreted inside of CP. I assume that such an analysis can be extended to other modifiers, such as prepositional phrases, which could be analyzed as predicates of small clauses with a ClfP

¹¹ An alternative would be to postulate reprojection of the ClfP (cf. Bhatt 2002, Aoun and Li 2003, a.o.). I take reprojection to be freely available, but structures in which the ClfP reprojects will be subject to the same constraints as cases where D takes ClfP with no relative clause as its complement, which are outlined below.

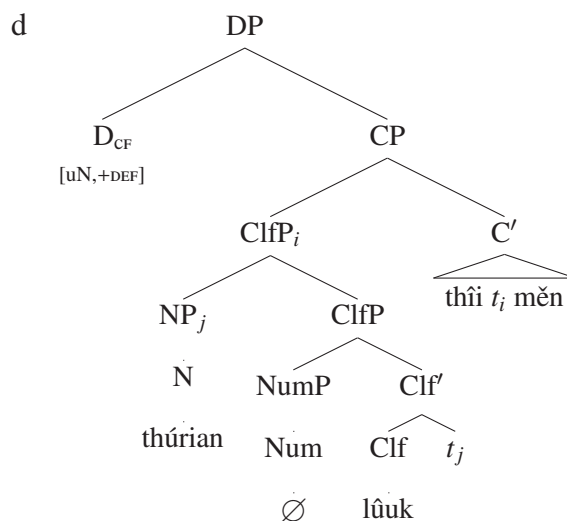
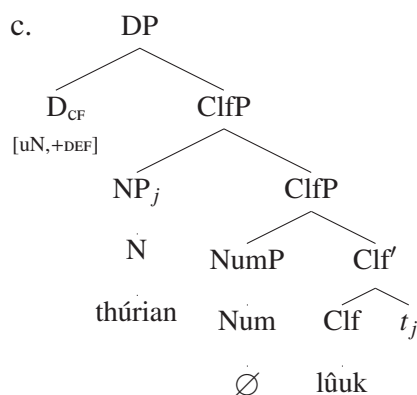
‘subject.’ Under this view, small clauses would also be possible complements of D_{CF} . Semantically, both small clauses and relative clauses are taken to be interpretable as predicates, and thus serve as suitable complements to D_{CF} .¹²

4 Spanning, Blocking, and Definiteness

At this point I have established a structure for the CMC that accounts for several of its key properties. These properties include 1) the referentiality of the CMC, accounted for by D_{CF} , 2) the association of this interpretation with modification, accounted for by the proposal that D_{CF} can take a CP or small clause as its complement, a proposal that also accounted for 3) the observation that modifiers in the CMC must be interpreted predicatively.

However, the ability of the modifier to license a classifier in the CMC remains a mystery. The solution put forward in this section takes the structural distinction between unmodified DPs (40a,c) and DPs containing the CMC (40b,d):

- (40) a. *thúrian lûuk
 durian CLF
 b. thúrian lûuk thîi mễn
 durian CLF REL stinky
 ‘the durian that is smelly’



Rather than accounting for the ungrammaticality (40a) in isolation, we now confront the more specific task of explaining the contrast in grammaticality between (40c) and (40d).

Some principle is needed which rules out the ability of ClfPs to occur as complements of D_{CF} : [+DEF] in (40a). If they occurred, these bare ClfPs would be interpreted as definite

¹²The claim that small clauses can be interpreted as predicates may seem bizarre. In fact, such an analysis is required if DP-internal small-clauses exist at all, as these small clauses must serve as the argument to definite articles in languages like Dutch and English (Corver 1998, den Dikken 1998, 2006).

and singular. Yet bare nouns in Thai independently allow definite interpretations:

- (41) thúrian (yùu khâaŋ-nôk)
 durian COP:LOC side-out
 ‘The durian(s) is/are outside.’

Below I lay out an analysis of definite bare nouns in Thai where they are the morphological realization of the complete DP structure in (41c).

Numerous analyses of English and other languages have identified a process of PF-merger, whereby a sequence of heads in the extended projection of some lexical category are realized in one position (Brody 2000, Embick and Noyer 2001, Bobaljik 2002, Williams 2003). I will use the term *span* to refer to such a sequence, and will call this process *spanning*, following the recent formulation of (Svenonius 2012). For example, the head sequence T-*v*-V are realized as an inflected verb in the present and past tense in English:

- (42) a. [T_[PRES,3SG] [*v* [V]]] \leadsto *V-s*
 b. [T_[PAST,3SG] [*v* [V]]] \leadsto *V-ed*

The \leadsto symbol, read ‘is realized as’, represents spanning itself.¹³

Spanning is crucially independent from head movement. First, spanning does not apply in the syntax while head movement has clear syntactic effects such as feeding further instances of head movement, e.g. Romance *v* moves to T then to C in polar questions. Second, a span is generally realized in the position of the lowest head, e.g. the English verb spans in (42) are realized in *v* after V-to-*v* head movement. Third, spanning rules *block*, in some relevant sense, the periphrastic realization of the same projection line. Thus, *goes* blocks *does go* while *went* blocks *did go* (cf. Poser 1992). Following Hankamer and Mikkelsen (2005) and Embick and Marantz (2008), I take this blocking process apply during vocabulary insertion: whenever the structural description for the relevant span is met, a word which is lexically specified as being able to realize that span.

If we think of definite bare nouns in Thai as a span, several key properties of Thai nominal syntax follow naturally. First, it becomes a nontrivial property of Thai that a bare nouns can be interpreted as definite: this now follows from the existence of a rule like (43a) below. This is an important consequence because not all classifier languages have such rules, as the following section will demonstrate.¹⁴ Second, the ability of the CMC to

¹³I have simplified the operation as the morphological details are trivial in analytic languages like Thai. The novel claim here is that morphological operations like spanning are active at all in languages without inflectional morphology. In inflectional languages, issues such as allomorphy, morphological displacement, and phonological optimization must be handled more carefully. See the references above for more on these issues.

¹⁴A principled account of indefinite noun phrases can also be made to follow from this account, though doing so would take me beyond the scope of this paper. The basic split in Thai (and most other classifier languages) seems to be between bare nominal indefinites and indefinites with numerals or other weak quantifiers. In most classifier languages, indefinite bare nouns allow generic as well as non-specific, narrow-scope indefinite readings. On the other hand indefinites with numerals and weak quantifiers allow specific indefinite or pure existential readings. These interpretations follows if the indefinite bare nouns are structurally reduced, as in the analysis of Chierchia (1998), while indefinites containing numerals and weak quantifiers project a DP

‘license’ classifiers is now predicted (The \rightarrow symbol in (43b) represents the realization of the structure rather than a spanning rule, the $>$ symbol represents precedence).

- (43) a. $[D_{CF:[+DEF]} [Clf [N]]] \leadsto N$
 b. $D_{CF:[+DEF]} [CP [ClfP N (Num) Clf] C \dots] \rightarrow D > Clf > N > C > \dots$

Because the $ClfP$ is not the complement of D in (43b), the structural description for the spanning rule in (43a) is not satisfied. As a result, each head in the structure must be spelled out separately. It is an independent property of Thai that the $D_{CF:[+DEF]}$ has a zero realization; in the following section we will see that it does have a phonological realization in some classifier languages. I propose that the rule in (43a) is active in all classifier languages which allow definite bare nouns.

One issue which this analysis brings up is how definite bare nouns can be interpreted as both singular and plural. I take this to be due to the choice of (silent) classifier: a true sortable classifier leads to a singular interpretation, while a group classifier leads to a plural interpretation; ample evidence for such ‘plural classifiers’ can be found in other classifier languages such as Cantonese which overtly realize this distinction.¹⁵

As discussed above, all of the realizational theories above must have a mechanism which allows the ‘low’ realization of a span, whether this is an operation such as lowering, as in Embick and Noyer (2001), or a simple parameter specifying where a span is pronounced, as in Brody (2000). This low pronunciation of the definite span accounts for the otherwise normal syntax of definite bare nouns:

- (44) a. $n\grave{a}ŋs\ddot{i}$ $[_{CP}$ $th\ddot{i}$ $N\acute{a}t$ $ch\ddot{o}p$ t_i $] [_{POSSP}$ $kh\ddot{O}ON$ $ph\ddot{o}m$ $]$
 book REL N. likes POSS 1SG
 ‘my book(s) that Nat like’ Thai
 b. $[_{CP}$ wo de $] [_{CP}$ $Zhangsan$ $xihuan$ t_i de $] shu$
 1SG MOD Z. likes MOD student
 ‘my book(s) that Zhangsan like’ Mandarin

The syntactic regularity of definite bare nouns in Thai and especially Mandarin is the major problem for head-movement approaches. As mentioned in the introduction, these facts leave proponents of head-movement without any actual evidence for the existence of such an operation. Spanning not only accounts for these facts but predicts that the realization of the nominal projection line should be low.

Another advantage of the spanning analysis over head-movement is that the absence of the classifier in definite noun phrases is accounted for directly. That is, the claim that definite bare nouns are the realization of all nominal extended projections entails that the classifier be silent. There is no such expectation in the head-movement approach; some

with either a $[-DEF]$ choice functional head or an existential quantifier.

¹⁵This issue is actually somewhat complicated for Thai: there is a lexical plural marker *phûak*, limited to +human nouns, which can either be realized in a classifier position or as a prefix on the noun. It is quite possible that these latter cases are instances of D-Clf span as described below for Cantonese rather than the D-Clf-N span otherwise active in Thai.

null classifier head would need to be posited which triggered head movement, and that null classifier head would need to be selected by another null D head which triggered further movement in turn. This produces the expectation that some languages might allow overt classifiers to trigger head movement; to my knowledge such languages are not part of the typology of classifier languages, discussed in the following section.

Spanning also accounts for the more complex paradigm involving modified noun phrases introduced at the beginning of section 2.2, where we saw that only relative clauses following the classifier license it:

- (45) a. thúrian [_{CP} thîi mễn]
 durian REL stinky
 ‘the durian(s) that is/are smelly’
 b. thúrian lûuk [_{CP} thîi mễn]
 durian CLF REL stinky
 ‘the durian that is smelly’
 c. *thúrian [_{CP} thîi mễn] lûuk
 durian REL stinky CLF

Suppose that relative clauses in Thai involve either reprojection of the noun (Jenks forthcoming) or the D-CP structure outlined in the previous section. (Instances of reproduction are structurally indistinguishable from adjunction):

- (46) a. *Reprojection structure for (45a)* b. *Raising structure for (45b)*
-

The application of the definite bare noun spanning rule is straightforward in (46a), while (46b) is an instance of the CMC. (45c) is predicted to be impossible because the structural description for a span is met and the spanning rule has not applied.

This morphological approach to definiteness has been adopted for languages where definiteness can have an affixal exponent on the noun. The best example of this is definite marking in Danish (Hankamer and Mikkelsen 2002, 2005). In Danish, definiteness can either be marked by a bound form, which appears as a suffix on the noun (47a), or a free form, which appears as an article (47b) (Hankamer and Mikkelsen 2002, exx. 1, 6):

- (47) a. hest-en b. den røde hest c. *den hest
 horse-DEF DEF red horse DEF horse
 ‘the horse’ ‘the red horse’

As (47c) shows, the two forms of definiteness marking are in complementary distribution. While the bound form must occur on bare (unmodified) nouns, the free form occurs on most modified noun phrases. Thus, the free definite marker is generally prohibited with unmodified nouns. Matushansky (2006a) and Embick and Marantz (2008) propose that a spanning rule basically identical to the Thai rule above applies in Danish. Thus, Danish is Thai with an overt D.

From this perspective, it is unsurprising that restrictive relative clauses in Danish can occur with the free form of the definite marker. Like in Thai, there is evidence that Danish relative clauses are generated by movement of the relative head (Åfarli 1994):

- (48) den hest som vandt løb-et
 DEF horse that won race-DEF
 ‘the horse that won the race’ (Hankamer and Mikkelsen 2005, ex. 43)

Despite these similarities, the ability of adjectives to license the free definite article distinguishes Danish from Thai. While predicative adjectives can occur in the CMC, adjectives do not force the classifier to be overt in Thai.

I do not take this to reveal a deep flaw for my analysis of Thai, as the syntactic constituents which prohibit spans from being realized vary from language to language; thus, while negation is not a head in French for the purpose of head-movement (Pollock 1989), negation nevertheless blocks verbal spans in English, triggering *do*-support. One possibility is that the constraints on spanning are subject to variation, and are not universal; another possibility is that these different languages have different structure (Katzir 2011).¹⁶

Additional cases where modification appears to license definite articles are actually quite common. Consider the following paradigms from Kayne (1994, pp. 100-103):

- (49) a. *the Paris
 b. the Paris that I knew
 c. the Paris of my youth
- (50) a. *John remembers the ones.¹⁷
 b. John remembers the ones he had last night. (“dreams”)
 c. John remembers the ones of his youth.

¹⁶ Another difference between Thai and Danish is that while PPs can occur in the CMC in Thai, they can occur with the bound form of the definite article in Danish, meaning they do not block the spanning rule from applying.

¹⁷ Kayne does not observe this point, but *the one(s)* is allowed in certain environments where there seems to be a contextually supplied restrictor, e.g. *You are the ONE(S)*. Such examples must be pronounced with focus on *one*.

- (51) a. *Jean a vu celui.
 Jean has seen *celui*
 b. celui envoyé à Jean
 celui sent to Jean
 ‘the one sent to Jean’
 c. celui de Jean
 celui of Jean
 ‘the one of Jean’ (=‘Jean’s’)

Beginning with example (49), Matushansky (2006b) argues that proper names in English involve an instance of m-merger, an operation in the same family as spanning, between D and N. Because m-merger is sensitive to the intervention of modifiers such as relative clauses, D must be pronounced when modifiers are present. The cases of *celui* and *the one* are more straightforward: in both English and French, DP spans without focused lexical nouns are generally rendered as pronouns. If pronouns are spans, then the ability of modifiers to exceptionally license the distinct pronunciation of these heads is because the structural description for spanning is not satisfied in these examples.¹⁸ In conclusion, then, the CMC in Thai can be placed alongside similar paradigms in Danish, French, and English, and their analysis can be unified, though a number of details remain unresolved.

The morphological analysis of Thai I provided in this section relies on the claim that definite bare ClfPs blocked by definite bare nouns, which arise due to the application of the spanning rule in (43a). This predicts that if a language allows bare ClfPs (and many do) and also allows bare nouns, that they should not have overlapping uses. In the following section I will try to show that this is correct.

5 Definiteness in Classifier Languages

Classifier languages fall into three categories with respect to definite noun phrases. Focusing solely on discourse anaphoric, unmodified noun phrases in subject position, classifier languages allow either a bare noun (section 5.1), a bare classifier-noun sequence (section 5.2), or exhibit some overt morphosyntactic reflex of definiteness (section 5.3).

¹⁸This analysis of *one* makes the strong prediction that whenever *one* occurs with a relative clause, the relative clause must be analyzed with the raising analysis. The sentence below is a problem for this prediction:

- (52) I saw the one of John_i that he_i didn’t want me to. (one=picture)

This example may not be a problem for the proposed account because the presence of the complement of *John* alleviates the competition with the pronoun, because pronouns cannot take complements (**it of John*). Thus, a matching structure would be allowed in (52), potentially accounting for the absence of a Condition C violation in this case, though this could also follow from the claim that it is the higher copy of the relative head that is interpreted.

5.1 Classifier Languages with Definite Bare Nouns

Classifier languages allowing definite interpretations of bare nouns are abundant,¹⁹ including at least Japanese (Kurafuji 2004), Korean (Kim 2005), Mandarin and Min Chinese (Cheng and Sybesma 1999, 2005), Thai (Piriyawiboon 2009), and Burmese (notes).²⁰ It is interesting that this list includes almost all of the well-described head final classifier languages, which also tend to be languages where classifiers can follow nouns within the DP. (The exception to this generalization is Bangla, where the definiteness/specificity involves movement (see section 5.3).)

In the theory being pursued here, these languages can all realize a full DP span as a noun. That is, they have the morphological realization rule proposed in (43a) for Thai, repeated below:

$$(53) \quad [D_{CF:[+DEF]} [Clf [N]]] \rightsquigarrow N$$

Intervening material, such as numerals besides null ‘one’, quantifiers, and demonstratives destroy the environment for this rule. In environments without these elements, the structural description for the rule above is satisfied and it must apply, the main prediction of this analysis. In other words, languages with generalized definite bare nouns should not allow the definite classifier-noun sequences described in the following section. This is true; none of the languages above allow definite bare classifiers. The complementarity between definite bare nouns and definite bare classifiers is by now a relatively well known distinction between Mandarin and Cantonese (Cheng and Sybesma 1999); the following section shows that this complementarity seems to hold in most classifier languages.

5.2 Classifier Languages with Definite Bare Classifiers

In contrast to the languages above which only allow definite bare nouns, many classifier languages mark definiteness with a bare classifier-noun sequence. This mechanism for marking definiteness is illustrated below for Cantonese and Vietnamese:

- (54) **Con cho** thich an thit
 CLF dog like eat meat
 ‘The dog likes to eat meat.’ (Vietnamese; Trinh 2010, ex. 30b)

- (55) **Zek gau** soeng gwo maalou
 CLF dog want cross road
 ‘The dog wants to cross the road.’ (Cantonese; Cheng and Sybesma 2005, ex. 24a)

This group is also very plentiful, including, in addition to Cantonese and Vietnamese, White Hmong (Bisang 1993), Green Hmong (Lyman 1979), Yay (Hudak 1991a), Nung (Saul and Wilson 1980), and Lungming Tai (Hudak 1991b). Strikingly, every language in this group

¹⁹This list is limited to better-described languages because grammars of lesser-described languages often do not describe the possible interpretations of bare nouns.

²⁰I have set aside languages which do not require classifiers for inanimate nouns (e.g. Indonesian and Khmer).

has the order Num-Clf-N within the DP. This group includes segments of Sinitic and Mon-Khmer, but almost all Hmong-Mien languages examined fall into this group (though see the discussion of Weining Ahmao below), as do Northern Tai and Kam-Sui languages. There seems to be a strong areal component to this group as well, as most Montagnards of Laos, northern Vietnam, and Southeast China fall into this group; Cantonese and Vietnamese are simply the national languages spoken closest to these groups.

Definite bare classifiers have alternately been taken to constitute evidence for Clf→D movement (Simpson 2005, Wu and Bodomo 2009), or the more radical claim that classifiers are D heads (Cheng and Sybesma 1999, 2005, 2012). With spanning, however, such languages could simply have the following rule in which D-Clf spans are realized as a Clf:

$$(56) \quad [D_{\text{Clf}:[+\text{DEF}]} [Clf]] \rightsquigarrow Clf$$

An analysis which adopts this rule captures the best properties of both the head movement analysis: it maintains a unified analysis of DP structure across languages, while capturing Cheng and Sybesma's intuition that the classifier in these languages realizes definiteness.

The spanning analysis of bare classifiers predicts that languages which allow definite bare classifiers will not allow definite bare nouns. This follows from the observation that the environment for the definite bare noun rule in (53) is more specific than the rule in (56), as the structural description of the former rule includes an additional element.

This prediction is mostly correct. In the relevant languages with existing description, a dispreference for definite interpretations of bare nouns is reported. Cheng and Sybesma (1999) make such a claim for Cantonese, Trinh (2010) for Vietnamese, and Gerner and Bisang (2010) observe that "[Hmong] languages differ from other isolating languages of the area (such as Chinese or Kam-Tai languages) with respect to the use of bare nouns. In (Hmong) languages, bare nouns always have a non-referential reading and cannot be used to refer to an entity in the physical world. . ." (p. 587).

However, recent work by Simpson, Soh, and Nomoto (2011) challenges the complementarity of definite bare classifiers and definite bare nouns within a language. In their study, Simpson *et al.* examine the judgments of native speakers of Cantonese, Hmong, Vietnamese, and Bangla (see the following section) regarding the acceptability of bare classifiers and bare nouns in definite contexts. They found that while bare classifiers were preferred in cases of familiar, discourse anaphoric reference, other kinds of definites, especially those involving a contextually or culturally unique entity, a definite bare noun is often allowed. Similarly, Löbel (2000) observed that in Vietnamese, nouns such as *vua* 'king' and *trio* 'sky' are exceptional in allowing definite bare uses.

Suppose that these nouns allow definite bare uses because they do not project classifiers in their syntax. Because a classifier is absent, the structural description for the rule in (56) is not met so definiteness cannot be marked with a bare classifier. Classifiers are absent in these cases because classifiers take kinds and produce atomic predicates which are suitable for counting and deixis. But in any normal world, the sort denoted by a unique noun such as 'sun' has only one member, rendering the denotation of the kinds identical to the denotation of the atomic predicate. This captures Simpson *et al.* (2011)'s observation that

contrast between tokens in the context licenses bare classifiers while uniqueness licenses bare nouns. If this analysis is on the right track, it predicts that in an imaginary context with multiple suns, a classifier should emerge.²¹

With these cases in mind, it is possible that relative to a particular speaker, context, and noun, bare definite nouns and bare definite classifiers are in complementary distribution.²² Even if this prediction turns out to be wrong, it seems that there is good evidence pointing towards the fact that languages which allow definite bare classifiers are distinct from those allowing definite bare nouns. This is predicted by the spanning analysis because the rule which realized a D-Clf span as a Clf would always be blocked by the more specific rule which realized a D-Clf-N span as a N.

5.3 Overt Markers of Definiteness in Classifier Languages

This section relates the theory above to four classifier languages which have some clear exponent of definiteness. Such cases are uncommon, though it is unclear if this is simply a reflex of our available sample. The realization of definiteness differs from language to language, so I deal with each in turn. Two languages, Wenzhou Chinese and Weining Ahmao, mark definiteness via inflection on the classifier itself. The third case, Bangla, involves movement of the NP in definite noun phrases. Last, in Yi, D_{CF} is realized overtly as an article.

In Wenzhou Chinese, definiteness can be marked on directly on classifiers by altering the tone of the classifier (Cheng and Sybesma 2005, p. 266):

- (57) $\eta^4 \text{ ci}^3 \quad \text{ma}^4 \text{ pa}\eta^3 \quad / \quad \text{pa}\eta^7 \quad \text{si}^1$.
 I want buy CL^{volume} / CL.DEF^{volume} book
 ‘I want to buy a/the book.’

A similar but more complex case is found in Weining Ahmao (Hmong-Mien), where classifiers inflect to reflect the gender of the speaker, number, and definiteness (Gerner and Bisang 2010). Like in Wenzhou, the classifier undergoes a tonal alternation as well as a change in voicing.

In principle, the patterns described in Wenzhou Chinese and Weining Ahmao could be captured either by Clf-to-D head-movement or by a D-Clf span, as both kinds of rules have been postulated to account for cases of fusional morphology. However, while Wenzhou Chinese allows definite bare nouns, Weining Ahmao does not. The spanning analysis predicts that definite bare nouns should be impossible in these languages, as the environment for the D-Clf spanning rule would be the same as the rule which produced a definite bare noun. Thus, Wenzhou Chinese is a clear counterexample to this claim. Postulating

²¹Context alone may also be sufficient to render a classifier unnecessary when a particular kind has only one member. Nouns meaning ‘mother’, ‘father’, and ‘teacher’ are candidates for such uses, for example at home or in a classroom. More systematic study is needed to determine precisely when these definite bare uses of nouns are permitted.

²²See again Simpson et al. 2011 for finer grained observations, particularly regarding speaker variation.

head-movement for Wenzhou does not help, because the environment for head movement is the same as the environment triggering a D-Clf span. One possibility is that the same conditions triggering bare nominal uses might underlie the use of definite bare nouns in Wenzhou, but whether this observation is true awaits further work.

Another interesting case is Bangla, in which definite bare classifiers always trigger movement of the noun:

- (58) a. du-jon chele
two-CLF boy
'two boys'
b. **chele-Ta** aSBe
boy-CLF come.will
'The boy will come.' (Bangla:Indo-European, Bhattacharya 2001, ex. 9a,8a)

While Bhattacharya (2001) argues that examples such as (58b) involve head movement, Dayal (2010) shows that modifiers can accompany the fronted noun, concluding that such cases involve NP movement. Additionally, Dayal shows that Bangla bare nouns and classifiers have the same interpretive properties as those in Cantonese: while bare classifiers must be interpreted as definite (58), bare nouns must be interpreted as indefinite or generic, and cannot be used when a noun phrase is making reference to a particular individual. Thus, Bangla seems to be basically a bare-classifier language where the D-Clf spanning rule in (56) is active, but where $D_{cf}:[+DEF]$ also has an EPP feature triggering movement of the NP to its specifier.

The last instance of overt definiteness marking in a classifier language is Yi (Tibeto-Burman), which actually seems to have an overt definite article (Jiang and Hu 2010):

- (59) mu³³ sɔ³³ ma³³ (su⁴⁴) li⁴⁴ndo³³ o⁴⁴.
horse three CLF (the) lose SFP
'(The) three horses got lost.'

The Yi definite article must occur with a classifier as expected (60a), but bare nouns also are claimed to allow definite uses (60b):

- (60) a. mu³³ *(ma³³) su⁴⁴ li⁴⁴ndo³³ o⁴⁴.
horse CLF the lose SFP
'The horse got lost.'
b. mu³³ li⁴⁴ndo³³ o⁴⁴.
horse lose SFP
'The horse(s) got lost.'

Like Wenzhou Chinese, Yi falsifies the strongest prediction of the spanning approach. This is because the sequence in (60a) is exactly the sequence which is expected to be blocked by the D-Clf-N spanning rule which produces (60b).

To summarize, while Weining Ahmao and Bengali behave as expected with regard to a

the relative clause precedes the *numeral-classifier* sequence, as in (62a), the sentence is interpreted as definite (or perhaps specific), while in (62b) the sentence allows a ‘pure’ indefinite reading.

While the pre-classifier relative clauses in Mandarin trigger similar semantic effects to the Thai CMC, relative clauses do not license classifiers in Mandarin, even when they occur before them:

- (63) a. *[_{CP} wo renshi de] ge ren
 I know REL CLF person
 b. *[_{CP} mei-ge ren hui kan de] ben shu
 every-CLF person can read REL CLF book

Thus, while the Mandarin equivalent of the CMC has the same interpretive properties as the CMC in Thai, these higher modifiers cannot license classifiers in Mandarin. This is in spite of the fact that Mandarin is like Thai in allowing definite bare nouns.

It is hard to ascertain why this difference obtains between Thai and Mandarin. One possibility is that Mandarin relative heads must reproject (Aoun and Li 2003, cf.), meaning that the environment for the D-Clf-N spanning rule is never alleviated. Another possibility is that in Mandarin, covert ‘one’ cannot be licensed by D_{CF}[+DEF]. Thus, Mandarin does allow a null determiner to take a CP complement, but strong determiners do not license silent ‘one.’ Tentative support for this latter explanation comes from the possibility that a remnant of *yi* ‘one’ can be seen in the off-glide of strong quantifiers such as *mei* ‘every’ and the demonstratives *zhei* ‘this’ and *nei* ‘that’.

Indical analogues of the CMC are found in Vietnamese and Cantonese, but these languages allow definite bare classifier phrases independently ((54),(55)). Thus, the CMC in these languages simply amounts to modification of these bare classifier phrases:

- (64) cuon tudien [_{CP} ma toi thich]
 CLF dictionary that I like
 ‘the dictionary that I like’ (Vietnamese; Nguyen 2004, p. 59)
- (65) [_{CP} ngo⁵ sik¹] (go²) di¹ hok⁶saang¹
 1sg know DEM CLF.PL student
 ‘the students that I know’ (Cantonese; Matthews and Yip 2001, p. 280)

Note that Vietnamese generally has postnominal relative clauses like Thai, while Cantonese has prenominal relative clauses like Mandarin. There is little to say about such examples in light of the discussion above; they could have an identical structure to Thai, but no licensing effects emerge due to the unavailability of definite bare nouns in both languages.

In summary, close analogues to the CMC occur other classifier languages, either with corresponding semantic effects, as in Mandarin, or in basically identical structures, as in Cantonese and Vietnamese. Unlike Thai, though, none of these languages allow bare classifiers to be licensed only in the context of modification.

6 Discussion

In conclusion, spanning offers a number of advantages over previous analyses of definite bare nouns in classifier languages. First, spanning allows a universalist view of syntax-semantics mapping to be maintained, with definiteness universally realized in D. This conclusion is welcome in light of classifier languages which show clear evidence for DP structure (section 5.3), and raises the possibility that the type-shifting principles proposed in the semantics literature (Partee 1986, Chierchia 1998, Dayal 2004) are anchored to different functional categories. Second, span theory provides a principled account of the licensing puzzle presented by the Thai CMC based on the idea that spanning rules fail to apply if their structural description is not met, a phenomenon which is richly attested in other languages. Third, span theory avoids the unwanted predictions of the head-movement analysis concerning the position of definite bare nouns and overt versus covert quantifiers. Fourth, and finally, the attested variation in classifier languages not only receives a clear and simple explanation by positing different spanning rules in different languages, but the attested complementarity between definite bare nouns and definite bare classifiers is predicted.

The analysis developed here is generally compatible with crucial insights in the analysis of classifier languages proposed by Chierchia (1998). In particular, the idea that nouns in classifier languages denote kinds, hence, are number-neutral (Greenberg 1977, Rullman and You 2006) is deeply appealing as an explanation for why classifier languages need classifiers. This raises the possibility the absence of classifiers in non-classifier languages arises due to the availability of N-Clf *spans*, where ClfP = NumP (Ritter 1992, Borer 2005); strong suggestive evidence for this conclusion comes from the prevalence of gender in the nominal syntax of number-marking languages. This naturally derives a new way of stating Chierchia's typology of nominal denotations in terms of spans (where {X-Y} is a span consisting of X and Y):

(66)		<i>Available spans</i>	<i>Languages</i>	<i>Chierchia's classification</i>
	N \leftarrow	N	Cantonese, Vietnamese	[+arg,-pred]
	N \leftarrow	N, {D-Clf-N}	Mandarin, Thai	[+arg,-pred]
	N \leftarrow	N, {Clf-N}	Germanic	[+arg,+pred]
	N \leftarrow	{Clf-N}	Romance	[-arg,+pred]

The {Clf-N} span above corresponds to a traditional predicative noun, no longer basic. What distinguishes languages like English and Italian, only the former of which freely allow bare plurals, is that only in English allows the $N \rightarrow N$ rule. In languages without such a rule, a DP is needed to express kind-level and generic meanings (Dayal 2004). Another unresolved question is the status of number marking languages which allow definite bare nouns, such as Russian and Hindi (Dayal 2004). An appealing idea would be that these languages allowed both {D-Clf-N} and {Clf-N} spans, but I have argued that this is impossible; such a strict restriction may have to be abandoned, as evidence from classifier languages has also suggested, but this remains to be seen. In the typology above, this restriction has been maintained to the extent that no language has more than one nontrivial DP spanning

rule.

One issue posed by these spanning rules, particularly the definite bare noun rule, is learnability: how can Thai learners possibly know that a bare noun in Thai is the reflex of complex functional structure? It seems that this rule is unlearnable; hence, I propose that this rule is part of the initial state of acquisition. Simple evidence for this claim comes from the now-famous observation that children's speech is *telegraphic*, that is, devoid of functional morphemes (Brown 1973). Additional suggestive evidence for the basic status of definite bare nouns is their widespread distribution in classifier languages. This suggestion would presuppose Cinque (1999)'s claim that functional categories are part of UG, regardless of what the explanation for functional category sequences turns out to be (evolution, cognition, etc.). This means that when language learners use a bare noun in a definite context, this is a span. Evidence for abandoning such a rule is abundant if a language marked definiteness overtly, like in Cantonese or English. But languages like Thai and Mandarin never provide good evidence for abandoning the rule in unmarked contexts, though the CMC may provide indirect evidence to Thai learners for the existence of such a rule.

While this paper has focused on DP structure, similar issues are being debated with respect to verbal extended projections in Mandarin (Lin 2005, 2010, Sybesma 2007). My analysis implicates a solution in terms of Mandarin T-*v*-V spans being realized as V, as in English. Whether good evidence can be found for such an analysis of Mandarin or, e.g., Thai remains an open question. However, it is clear at least in Mandarin that verbs are low in the clause (before adverbs, negation, etc.), suggesting a spanning analysis may be on the right track. More generally, then, the hope is that by approaching analytic languages in terms of spanning, a complex web of realizational spanning rules might be found lurking beneath their spartan morphology.

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