Definiteness in Nuosu Yi and the theory of argument formation*

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Abstract

This paper analyzes argument formation in Nuosu Yi, a language that is typologically unusual in having classifiers as well as a definite determiner. Also unusual is the fact that demonstratives do not combine directly with nouns in this language but require the mediation of classifiers. Properties such as these are shown to pose a challenge to current accounts of argument formation. The Neocarlsonian approach of Chierchia (1998) explains the absence of definite articles in classifier languages as resulting from considerations of economy. If nouns in classifier languages are names of kinds, they can occur directly as arguments of verbs, thereby obviating the need for extra structure to host a determiner. The data from Nuosu Yi alters the empirical generalization and calls for a modification of the explanation. The specific account of Nuosu Yi that is presented bears on current discussions about the nature of argument formation. Must arguments necessarily occur with overt or covert determiners or is it possible for languages to differ in this respect? Must bare nominal arguments necessarily denote kinds or can they denote properties? In this sense, the discovery of a new type of classifier language contributes to a theory of language variation and argument formation in general.

1. Yi: a different kind of classifier language

I begin the paper by presenting the key features of argument formation in Nuosu Yi, one of the Yi languages spoken in southern Sichuan and northern Yunnan, China.[1] The goal of this section is to show that Nuosu Yi is a classifier language which has several of the familiar properties of classifier languages common to this region. At the same time, there are a few crucial respects in which it is different. This makes Nuosu Yi, which I will refer to simply as Yi, typologically interesting. The theoretical challenge posed by the data presented in section 1 will be taken up in sections 2 and 3.

1.1 Yi as a classifier language

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[1] Yi belongs to the Tibeto-Berman branch within the Sino-Tibetan family. The standard as well as the best preserved Yi language is its northern branch, which is referred to as *Nuosu Yi*. Most data from Nuosu Yi in this paper was collected from my collaborative work with Suhua Hu, a native speaker of Nuosu Yi, from Fall 2009 to Fall 2014 and my consultant work with two native Nuosu Yi speakers from Summer 2015 to Fall 2015. Data from the literature will be duly noted.

Yi is a language that requires classifiers to mediate between numerals and nouns in numeral constructions, as shown in (1).[2]

(1) a. *nga si-hni nyip *(ma) mo ox.*
I girl two Cl see Asp
'I saw two girls.'
b. *cyx mu nyip *(ma) shep bo ox.*
3sg horse two Cl look-for go Asp
'He/She went to look for two horses.'
c. *yy-gge nyip *(bix) adi jjo.*
water two cup there have
'There are two cups of water over there.'
d. *viex-vie tshi/nyip/suo *(pu)*
flower one/two/three Cl
'one/two/three flower(s)'

The nouns *si-hni* 'girl' and *mu* 'horse' in (1a-b) are conceptually count but pattern with conceptually mass nouns like *yy-gge* 'water' in (1c) with respect to the inability to combine directly with numerals. It is safe to conclude from this paradigm that Yi is a classifier language, like Mandarin or Japanese. It is therefore unsurprising that it should display many of the same properties. For example, the noun does not change form regardless of whether the numeral is singular or plural, as can be seen from (1d).

Further evidence of the similarity between Yi and better known classifier languages comes from an examination of bare nouns. Yi bare nouns can freely serve as arguments, appearing with kind-level predicates, in generic/characterizing sentences, as well as in episodic statements (Hu 2012, Jiang 2012). The paradigm below fits in with the description of Mandarin in Yang (2001):

(2) a. *wox-nuo gi ox.*
bear extinct Asp
'The bear is extinct.'
b. *si-hni njiet-ap-mip tat-xi.*
woman diligent should
'Women should be diligent.'
c. *nga ke mo ox.*
I dog see Asp
(i). 'I saw a dog/dogs.'
(ii). 'I saw the dog(s).'

Note that in episodic statements like (2c), bare nouns have indefinite as well as definite readings. Taking their indefinite reading first, (3a) shows that they display the same scope properties as Mandarin bare nouns, and indeed kind-denoting bare nouns generally (Yang 2001, Dayal 2004).

[2] There are some exceptions to this generalization. For example, some disyllabic cardinals like 'fifty' (*ŋɯ-tshi* in Yi) can directly combine with a noun without the presence of a classifier. According to our Yi informant, the phenomenon in Yi might be a relic of Old Yi. We will leave for future research the question of why certain disyllabic cardinals allow classifiers optionally.

As discussed initially in Carlson (1977), English kind-denoting bare nouns take obligatory narrow scope with respect to other operators, such as negation. (3a)-(3b) provide evidence of the obligatory narrow scope property of bare nouns in Yi:

(3) a. *nga ke ap-mo*.
I dog not-see.
(i) 'I didn't see dogs.' ¬ > ∃
(ii) Not: 'I didn't see certain dogs.' *∃ > ¬
b. *ne ssox-sse shyp ngop ddu ggep la go-li, nga khat ox.*
you student bring my home hang-out come if, I happy Asp
(i) 'If you bring students to hang out in my house, I will be happy.' *if* > ∃
(ii) Not: 'If you bring certain students to hang out in my house, I will be happy.' *∃ > *if*

The definite reading of Yi bare nouns, noted in (2c), is also supported by a third reading of (3a), namely "I didn't see the dog(s)," as well as a third reading of (3b), namely "if you bring the students to hang out in my house, I will be happy," where happiness is contingent on the totality of the contextually salient group of students being present. It is further confirmed by examples like (4) where the bare noun in the second sentence is anaphorically linked to the girl introduced in the first sentence. Again, this is typical of classifier languages like Mandarin (Yang 2001), Japanese (Nemoto 2005) or Thai (Piriyawiboon 2010), to name a few:

(4) *si-hni ma sini sse-vo ma i-go nyi, si-hni jjy nra.*
girl Cl and boy Cl room sit, girl very beautiful
'A girl and a boy are sitting in the room, the girl is very pretty.'

Before I move on to some less expected properties of Yi nominals, let me note that there is a range of classifiers attested in Yi. Our primary focus here will be on 'individual classifiers', those that go with conceptually count nouns. These are also known in the literature as 'sortal classifiers' (Lyons 1977: 463; Aikhenvald 2000: 115) or 'count classifiers' (Cheng and Sybesma 1999: 515). Individual classifiers in Yi are sensitive to animacy, shape, dimension and size of nouns (Gerner 2013: 66-75). However, the classifier *ma* that I have used for illustration is the most general one and can combine with a wide range of nouns, including conceptually mass nouns (Gerner 2013: 72).[3] Yi, of course, has other types of nominal classifiers as well: container classifiers (e.g. *pi* 'bottle'), standard measure classifiers (e.g. *shy* 'liter'), group classifiers (e.g. *bbot* 'group'), and partitive classifiers (e.g. *zip* 'layer'). Such unit forming expressions are not specific to classifier languages and will not feature prominently in our discussion in this paper. I therefore do not provide examples here (see Gerner 2013 for details).

[3] Different from the general classifier *ge* in Mandarin, which is applicable to conceptually count nouns (Chao 1968: 588; Norman 1988: 115) (i), the general classifier *ma* in Yi can be used with both conceptually count nouns and conceptually mass nouns (Gerner 2013: 72-73) (ii).

(i) a. *san ge jidan* b. *ba ge mogui* c. **liang ge tong* d. **san ge sha* (Mandarin)
three Cl egg eight Cl demon two Cl copper three Cl sand
'three eggs' 'eight demons'

(ii) a. *va-qip suo ma* b. *nyit-cy hxit ma* c. *jjy nyip ma* d. *hmyx-shy suo ma* (Yi)
egg three Cl demon eight Cl copper two Cl sand three Cl
'three eggs' 'eight demons 'two pieces of copper' 'three grains of sand'
(Gerner 2013: 72-73)

1.2 The unexpected definite article

We have seen many respects in which Yi is unexceptional, but in this section I present the first surprising property of Yi. Typically, languages in which bare nouns have definite readings do not have overt definite articles. This is as true of classifier languages like Mandarin or Bangla as it is of non-classifier languages like Hindi or Russian (Dayal 2004, 2012, 2014). Languages with overt definite articles like English only allow indefinite readings for bare plurals. We have seen that bare nouns in Yi have definite readings, but as we will see, Yi also has a morpheme *su,* which has been noted to contribute definiteness (Chen 1989; Hu 2002, 2012; Jiang and Hu 2010; Liu and Gu 2011; Jiang 2012; Gerner 2013).[4]

The particle *su* appears in the final position in the nominal domain and turns indefinite numeral classifier phrases into definites:

(5) a. *cyx mu suo ma shep bo ox.*
3sg horse three Cl look-for go Asp
'He/She went to look for three horses.'
b. *mu suo ma su nra jjy nra.*
horse three Cl Su fat very fat
'The three horses are very fat.' (Jiang and Hu 2010)

In (5a), the phrase *mu suo ma* 'three horses' is mentioned for the first time in the discourse. In contrast, the *su*-phrase *mu suo ma su* 'the three horses' in (5b) refers to some salient objects familiar to the hearer. The *su*-phrase is not exchangeable for the indefinite numeral classifier phrase. That is, if three horses are already under discussion, (5a) cannot be used. Conversely, in a situation in which three horses are unfamiliar to the hearer, the sentence in (5b) is infelicitous.

The particle *su* has the same effect in the context of numeral-less or bare classifier phrases (ClPs). Consider the following, where (6a) has a singular indefinite reading, while (6b) has a singular definite reading. For now, let us assume that there is a silent 'one' in such cases:

(6) a. *tsho ma dza dzu njuo.*
man Cl rice eat Progressive
'A man is having a meal.'
b. *tsho ma su dza dzu njuo.*
man Cl Su rice eat Progressive
'The man is having a meal.' (Jiang and Hu 2010)

As before, (6a) is infelicitous if there is already a man under discussion; (6b) is infelicitous if there is no man salient in the context.

The following examples establish the maximality presuppositions of *su* phrases explicitly:

[4] The origin of the morpheme *su* is the noun 'person' in Yi (Dai and Hu 1999; Hu 2002; Gerner 2013). In addition to appearing in the nominal domain, *su* can also appear in the clausal domain with various uses. When *su* appears in the clausal domain, *su* has been claimed to be a topic marker (Chen 1985; Hu 2002), a nominalizer/complementizer (Jiang and Hu 2010; Liu and Gu 2011; Gerner 2013), or a gerundive marker (Liu and Gu 2011). Discussions of the grammaticalization of *su* can be found in Dai and Hu (1999), Kokado (2000), Hu (2002), Hu and Jiang (2010), and Liu and Gu (2011).

(7) a . *si-hni ma sini sse-vo ma i-go nyi, si-hni ma su jjy nra.*
girl Cl and boy Cl room sit, girl Cl Su very beautiful
'A girl and a boy are sitting in the room; the girl is very pretty.'
b. *si-hni nyip ma sini sse-vo ma i-go nyi, si-hni nyip ma su jjy nra.*
girl two Cl and boy Cl room sit, girl two Cl Su very beautiful
'Two girls and a boy are sitting in the room; the two girls are very pretty.'
c. #*si-hni nyip ma sini sse-vo ma i-go nyi, si-hni ma su jjy nra.*
girl two Cl and boy Cl room sit, girl Cl Su very beautiful
'#Two girls and a boy are sitting in the room; the girl is very pretty.'

One may wonder, of course, whether *su* phrases are demonstrative phrases since definiteness is expressible in all classifier languages through demonstratives. We see below that Yi has distinct demonstrative expressions which occur immediately to the right of the noun and to the left of classifiers. The following tests in (8), as first proposed by Löbner (1985) for English and further adopted by Dayal (2004) for languages that freely allow bare nouns, show that *cyx/a-zzyx* is a demonstrative while *su* is a definite article.

(8) a. *nga si-hni cyx/a-zzyx ma hxie-vur, si-hni cyx/a-zzyx ma hxie-ap-vur.*
I girl this/that Cl like girl this/that Cl like-not
'I like this/that girl but don't like this/that girl.
b. # *nga si-hni ma **su** hxie-vur, si-hni ma su hxie-ap-vur.*
I girl Cl Su like girl Cl Su like-not
'#I like the girl but don't like the girl.'

Based on the above, we can conclude that Yi is unusual in allowing definiteness to be expressed both by bare nouns and through the use of a definite determiner:

(9) a. *si-hni ma sini sse-vo ma i-go nyi, si-hni jjy nra.*
girl Cl and boy Cl room sit, girl very beautiful
'A girl and a boy are sitting in the room, the girl is very pretty.'
b. *si-hni ma sini sse-vo ma i-go nyi, si-hni ma su jjy nra.*
girl Cl and boy Cl room sit, girl Cl Su very beautiful
'A girl and a boy are sitting in the room, the girl is very pretty.'

Before concluding this section, a few other properties of *su*-phrases are worth noting. Let us first consider sentences where the plural-like morpheme *ggex* appears in the same position as classifiers. This morpheme has been treated as a classifier in Jiang (2012) and Gerner (2013).[5] The addition of this morpheme, as in (10a), leads to a plural interpretation (Jiang 2012: 325-330, Gerner 2013:76). Now, when *su* is added, as in (10b), it leads to a definite plural interpretation, not a generic interpretation. That is, the situation is parallel to English plural definites:

[5] Jiang (2012) suggests that the morpheme *ggex* is a partitive classifier, similar to the morpheme *xie* in Mandarin, which has been analyzed as a partitive classifier (e.g. Chao 1968; Li 1999; Jiang 2012), a plural classifier (e.g. Cheng and Sybesma 1999), and a vague classifier (e.g. Liao 2011). Gerner (2013: 76) describes the morpheme *ggex* as a collective classifier which is compatible with demonstratives and *su*.

(10) a. *si-hni ggex sini sse-vo ggex i-go nyi, si-hni ggex su jjy nra.*
girl Cl and boy Cl room sit girl Cl Su very beautiful
'Some girls and some boys are sitting in the room; the girls are very beautiful.'
b. *a-nyie ggex su a-hie yo yie.*
cat Cl Su mouse catch should
'The cats should catch mice.'
Not: 'Cats should catch mice.'

The incompatibility of *su* phrases and genericity transfers over to the singular. And in this, it differs from English which does allow kind/generic readings for the definite singular (e.g. Krifka et al 1995; Dayal 2004):

(11) *ke ma su mit te-go vo.*
dog Cl Su hungry when bark
'The dog (a particular one) barks when it is hungry.'
Not: 'The dog (kind) barks when it is hungry.'

A final interesting property of *su* phrases is that they cannot combine directly with bare nouns (Jiang and Hu 2010; Jiang 2012; Gerner 2013), as shown by (12), where there is no classifier or plural morpheme intervening between them. The other word order *su si-hni* 'su girl' is also unacceptable:

(12) **si-hni su jjy nra.*
girl Su very beautiful (Jiang and Hu 2010)

One possibility worth addressing is that *su* could be a case marker that contributes definiteness in the same way that the accusative case is known to do in many languages (Comrie 1981: 132; Enç1991: 4). So far we have seen *su* combining with nouns in subject and object positions. The following shows that it can co-occur with overt oblique case markers, suggesting that it cannot be a case marker:

(13) *Aka bbap-ga ma su ta la.*
Aka village Cl Su Ablative come
'Aka comes from the village.'

Based on the data discussed here, then, I take Yi to be a classifier language that allows definite readings for bare nouns while also having a genuine definite determiner.

1.3 Demonstratives in Yi

Classifier languages may not have determiners but they are known to have demonstratives and we saw that Yi does too. Yi demonstratives were shown to occur in a different position from the definite determiner. There are two further properties of demonstratives that are worth noting. The first is not altogether surprising. Demonstratives and the definite article cannot co-occur in Yi:

(14) a. *tsho cyx/a-zzyx ma su
man this/that Cl Su
'this/that man'
b. *tsho cyx/a-zzyx nyip ma su
man this/that two Cl Su
'these/those two men'

More surprising, however, is the fact that Yi does not allow demonstratives to combine directly with nouns:

(15) *tsho cyx / *cyx tsho
man this this man

This contrasts with the well-known pattern seen in Mandarin, for example (Chao 1968; Tang 1990, 2007; Li 1998, 1999; Cheng and Sybesma 1999, Yang 2001, X. Li 2011, 2013, a.o.):

(16) zhe ren / zhe ge ren / zhe liang ge ren (Mandarin)
this man / this Cl man / this two Cl man
'this man' / 'this man' / 'these two men'

As far as I am aware, the pattern in Mandarin is representative of classifier languages generally. The need for a classifier to mediate between a noun and a demonstrative has been previously noted only for Cantonese (Matthews and Yip 2011: 107), Wu (X. Li 2011: 6, ft 3) and Southern Min (Tang 2007: 980). The facts of Yi raise the question of whether the requirement for a mediating expression in both forms — those with the definite determiner and those with the demonstrative — should have a common explanation.

1.4 Interim summary

We have seen that Yi is a classifier language that is unexceptional in some respects: it has bare nouns that freely serve as arguments with kind/generic, narrow scope indefinite and definite readings. However, it differs from other classifier languages in also having an overt definite article. This is at odds with an observation in the literature that the presence of definite articles blocks the possibility of definite readings for bare nouns. We also saw that demonstratives and the definite article in Yi both require the mediation of a classifier. These properties of Yi nominals raise several interesting questions for a theory of argument formation. I start by providing an analysis of the Yi facts in section 2, before addressing the implications of such an analysis for a cross-linguistic theory of the relationship between the morpho-syntax and the semantics of nominals in section 3.

2 Yi as a [+arg, -pred] Language

In this section, I explain the properties of Yi within a Neocarlsonian account of bare nominals. The system I adopt includes a set of ranked type-shifting operations and a principle blocking covert type-shifting operations in the presence of corresponding overt correspondents. I also argue for a particular view of the semantics of numeral constructions in classifier languages. The goal here is to present an internally coherent picture of argument formation in Yi. Discussion of the choices made here in relation to other possibilities will be presented in Section 3.

2.1 Bare arguments in Yi

Let us adopt the view that all bare nominal argument terms denote kinds and that their object level meanings are derived from their basic kind level meaning (Carlson 1977, 1989; Chierchia 1998; Dayal 2004, 2011a).[6] This view of Yi bare nominals is consistent with the position, going back to Krifka (1995), that bare nominals in classifier languages denote kinds, and that classifiers serve to shift the denotation from kinds to objects. As shown in Section 1, Yi shows some typical properties associated with other classifier languages: bare nouns appear freely in argument positions and require a classifier in order to combine with a numeral. Our starting point then is that Yi belongs to the set of languages classified as [+arg, -pred] in Chierchia (1998). The rest of the discussion in this subsection focuses on deriving the object level meanings of bare arguments in this language.

I give below the specific version of the Neocarlsonian approach adopted in this paper, due to Chierchia (1998), with the specific modification of *Rank of Meaning* from Dayal (2004).[7]

(17) Chierchia's (1998) type-shifting operations:
  a. Kind-related type shifts:
    (i) Predicativize: $^{\cup}k = \lambda x\,[x \leq k_s]$, if k_s is defined, else undefined. $\langle e^k\rangle \rightarrow \langle e,t\rangle$
    (ii) *Derived Kind Predication* (DKP):
      If P applies to objects and k denotes a kind, then $P(k) = \exists x[^{\cup}k(x) \wedge P(x)]$
  b. Three canonical argument forming type-shifts (ARG):
    (i) Nominalize: $^{\cap}P = \lambda s\, \iota\, P_s$, if $\lambda s\, \iota\, P_s$ is in K, else undefined. $\langle e,t\rangle \rightarrow \langle e^k\rangle$
    (ii) Iota: ιX = the largest member of X if there is one, else, undefined. $\langle e, t\rangle \rightarrow \langle e\rangle$
    (iii) Existential closure: $\exists X = \lambda P\, \exists y[X(y) \wedge P(y)]$ $\langle e, t\rangle \rightarrow \langle\langle e,t\rangle,t\rangle$

(18) a. *Ranking of Meaning*:
    (i) $^{\cap} > \{\iota, \exists\}$;
    (ii) $\{^{\cap}, \iota\} > \exists$ (revised in Dayal (2004))
  b. *Blocking Principle* ('Type Shifting as Last Resort')
    For any type shifting operation τ and any X: $*\tau(X)$, if there is a determiner D such that for any set X in its domain, $D(X) = \tau(X)$

In the two kind-related type shifts in (17a), the 'up'-operator $^{\cup}$ predicativizes kinds and maps kind-level individuals to properties. In (17b), the three canonical argument forming operations turn properties into arguments. The 'down'-operator $^{\cap}$ in (17bi) nominalizes, mapping those properties that correspond to kind individuals (e.g. Chierchia 1984; Partee 1986). Importantly, plural properties can be turned into kinds, but singular ones cannot. This is so because the semantics of singularity clashes with the conceptual notion of a kind (Dayal 1992; Chierchia 1998). In (17bii), the iota operator 'ι' shifts properties to arguments with a definite interpretation and is used to interpret the definite article *the* in English (e.g. Sharvy 1980); in (17biii), '$\exists$' shifts

[6] Crucially, there can be mass kinds (e.g. water-kind) and count kinds (e.g. book-kind), depending on whether the instances of the kinds are atomic/whole objects or not (Chierchia 2010, see also Lima 2014).

[7] For simplicity, I avoid reference to the world argument. For instance, I treat $^{\cap}$, ι and $\exists$ as functions of type $\langle\langle e,t\rangle, e/\langle\langle e,t\rangle,t\rangle\rangle$ rather than $\langle\langle s, \langle e,t\rangle\rangle, e/\langle\langle e,t\rangle, t\rangle\rangle$. I superscript e^k to indicate that reference is to kind level individuals and use *e* for reference to object level individuals.

properties into existential generalized quantifiers and is traditionally taken to be the meaning of the indefinite article *a*/*an* in English (e.g. Montague 1974: 216).

A crucial point for the Neocarlsonian view is the difference between the indefinite readings of bare plurals and ordinary indefinites. The first allows only narrow scope indefinite readings, while the latter participates in scope interaction:

(19) a. Miles wants to meet policemen. *want* > ∃/*∃ > *want*
b. Miles wants to meet a policemen. *want* > ∃/∃ > *want* (Carlson 1977)

The above difference is explained via the sort adjusting rule of DKP in (17aii) and ∃ in (17biii): the former derives the obligatory narrow scope indefinite reading of kind-denoting bare nominals (19a), and the latter derives the flexible scope interpretations of ordinary indefinites (19b) under the generalized quantifier interpretation.

Next, let me briefly discuss the reason for the ranking in (18a) that I adopt. In Chierchia (1998), '∩' ranks over 'ι' and '∃' (18ai); this ranking is motivated by the fact that (English) plurals generally favor the kind interpretation over the indefinite one (20a). Chierchia claims that '∃' comes into the picture when '∩' is undefined. We give below examples of non kind-denoting bare plurals (but see Dayal 2013 for a different approach):

(20) a. Machines are widespread.
b. ?? Parts of that machine are widespread.
c. ?? Boys sitting here are rare. (Chierchia 1998)

A further reason for the ranking is that '∩' only changes the type of its arguments without changing the information associated with it, but '∃' introduces quantificational force in addition to changing the type of its arguments. Kind formation '∩', therefore, is more meaning-preserving than '∃' and should get picked whenever possible. Dayal (2004), however, notes that Chierchia's ranking in (18ai) would block bare nominals in determiner-less languages from having any object level meaning, definite or indefinite. She also notes that the same reasoning that favors '∩' over '∃' should apply to 'ι' as it also merely changes the type of its arguments without adding quantificational force. The revised ranking (18aii) explains the fact that bare nominals can denote kinds as well as contextually-salient entities in languages without definite determiners. That is, definite readings are never blocked by kind formation in such languages. Ranking '∃' below 'ι' is based on her claim that bare nouns in such languages are not bona fide indefinites and that their indefinite readings are derived from their kind-level meaning or from some other external source:

(21) a. *kamre meN cuuhee nahiiN haiN* (Hindi)
room in mice not are
'There aren't any mice in the room.' ¬ > ∃/*∃ > ¬
b. *waimian gou mei zai-jiao*. (Mandarin)
outside dog not be-barking
'Dogs are not barking outside.' ¬ > ∃/*∃ > ¬ (Dayal 2004)

The last piece of the theory that will be relevant to us is the *Blocking Principle* (18b) that favors overt type-shifting operations over the corresponding covert ones. The *Blocking Principle* is

what explains the difference between the anaphoric potential of bare nominals in languages like English as opposed to languages like Hindi or Mandarin, for example:

(22) a. Some children came in. *(The) children were happy. (English)
b. *kuch bacce$_i$ aaye. bacce$_i$ bahut khush lage.* (Hindi)
some children came children very happy seemed
'Some children came. The children seemed very happy.' (Dayal 2004)

With this background in place, I will now illustrate how the different readings of bare nouns in Yi in (2), repeated in (23a-c), are derived. This demonstration is a close analog of a similar demonstration for Mandarin given in Yang (2001):

(23) a. *wox-nuo gi ox.*
bear extinct Asp
'The bear is extinct.' = extinct ($\cap$bears)
b. *si-hni njiet-ap-mip tat-xi.*
woman diligent should
'Women should be diligent. ' = Gen x, s [$\cup\cap$women (x)] [diligent (x, s)]
c. *nga ke mo ox.*
I dog see Asp
i. 'I saw dogs.' = $\exists$x [$\cup\cap$dogs (x) $\wedge$ see (I, x)]
ii. 'I saw the dog(s). ' = saw (I, ι ($\cup\cap$dogs(x)))

Given that bare nouns in classifier languages are kind-referring, they can take kind-level predicates directly (23a). In generic sentences (23b), the kind term provides the restriction for the generic operator *Gen.*[8] To derive the existential reading in episodic statements we apply DKP, as in (23ci). As an immediate consequence of this, we derive the obligatory narrow scope behavior we observed in (3) in Section 1.

Let us now consider the definite reading in (23cii). As we noted above, this would not follow in Chierchia's theory, but is made possible under the revision proposed in Dayal (2004). Of course, given that we have argued for the presence of a definite determiner in Yi, this reading should be blocked, as it is in English (22a). However, setting that aside till Section 2.3.2, we see that the Neocarlsonian approach we have adopted can allow for the possibility of the definite reading.

In this subsection, we saw that the kind, generic, existential, and definite interpretations of bare nouns in Yi are correctly predicted by the Neocarlsonian approach of Chierchia (1998), with the specific modification of *Ranking of Meaning* from Dayal (2004). I will now turn to the interpretation and the structure of classifier phrases in Yi.

2.2 Classifier phrases in Yi

In this subsection, I consider both types of classifier phrases in Yi, those with numerals and those without. I will start with numeral classifier phrases.

[8] I follow Chierchia (1998) here but see Dayal (2004) for another way to achieve the same results.

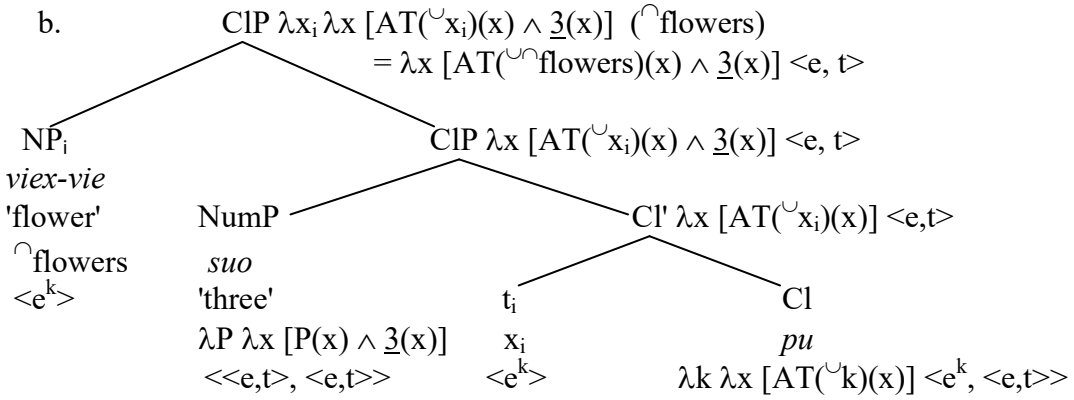
2.2.1 Numeral-classifier phrases

The behavior of Yi numeral-classifier phrases is consistent with our claim that Yi bare nouns denote kinds. When numerals, which are property-seeking, combine with kind-referring nouns, a type-mismatch arises, preventing numerals from combining directly with nouns. The Neocarlsonian approach to bare nominals in classifier languages provides a natural account for the obligatory existence of classifiers, i.e. classifiers turn kind-referring nouns into properties so that the type-mismatch can be resolved (Chierchia 1998; see also Krifka 1995).

Let us first look at the structure of numeral classifier phrases in Yi. We observe that the word order is [NP Num Cl] in (24a). I propose that this surface order is derived through movement of the NP from its base position in the structure [Num NP Cl]:[9]

(24) a. *viex-vie* *suo* *pu*
flower three $Cl_{individual}$
'three flowers'

b.



I adopt the analysis that numerals across languages are phrasal (Borer 2005; Ionin and Matushansky 2006; Di Sciullo 2012; a.o.), but nothing hinges on this for purposes of this paper. Given that Yi is a head final language (Hu 2002; Walters 2010; Liu and Gu 2011; Jiang and Hu 2010; Jiang 2012; Gerner 2013), I place the classifier head *pu* in the nominal final position.[10] The NP movement seen above draws on Simpson (2005: 309-323), where such movement is used to explain cross-linguistic variation in the ordering of constituents in the classifier phrases of South East Asian languages.

Turning to the semantics of the numeral classifier phrase in (24), there are three points that are worth noting. First, I adopt the view that individual classifiers are atomizing functions from kinds to sets of atomic entities, type $<e^k, <e,t>>$ (e.g. Chierchia 2008, 2010; Dayal 2012, 2014). The individual classifier *pu* in (24) applies to a kind and extracts the set of the corresponding atoms (i.e. the atomic instances of the flower-kind), providing the correct semantics for the numeral *suo* 'three' to combine with. *AT*, in the meaning of the classifier in (24b), takes a property and returns the set of atoms in the extension of such property. It should be clear that the proposed analysis of the individual classifier *pu* in (24) can be extended to the other classifiers mentioned in Section 1. Second, the trace of the raised NP *viex-vie* 'flower' in (24b) is

[9] The structure [$_{ClP}$ Num [$_{ClP}$ Cl NP]] has been proposed for classifier languages such as Mandarin, Cantonese Vietnamese, Thai and Burmese (Doetjes 1997; Li 1998; Cheng and Sybesma 1999; Borer 2005, Simpson 2005, a.o).

[10] A reviewer asks if Yi can be head initial in the nominal domain. As we will see in Section 2.3.1, treating Yi as head final in nominal domains directly explains the fact that both the Cl and the D heads appear in the final position.

interpreted as an indexed variable of the type e^k. The raised NP meaning is lowered into the base position through lambda conversion. Third, I adopt the view that numerals are predicate modifiers, following Ionin and Matushansky (2006).[11] Under this view, numerals always combine with atomic predicates; such a view fits nicely with the analysis of individual classifiers as atomizing functions from kinds to sets of atomic entities adopted in this paper.

In (24b), I treat numerals as predicate modifiers, and the numeral classifier phrase *viev-vie suo pu* 'three flowers' receives a predicative meaning, type <e, t>. Note that this analysis of numeral classifier phrases accounts not only for the fact that they can occur in predicative positions (25a) but also for the fact that they can be used as restrictors of demonstratives/determiners, quantifiers and the generic operator (25b-d).

(25) a. *Aka sini Ako* <u>*sse-vo nyip ma*</u> *ŋu*.
Aka and Ako boy two Cl be
'Aka and Ako are two boys.'

b. *mu* <u>*cyx/a-zzyx*</u> *suo ma*
horse this/that three Cl
'these/those three horses.'

c. *ssox-sse suo ma* <u>*zzix ap zzi*</u>
student three Cl every
'every group of three students'

d. <u>*si-hni suo ma*</u> *gaqip gur qy dox*.
girl three Cl piano Cl lift can
'Three girls can lift a piano. '

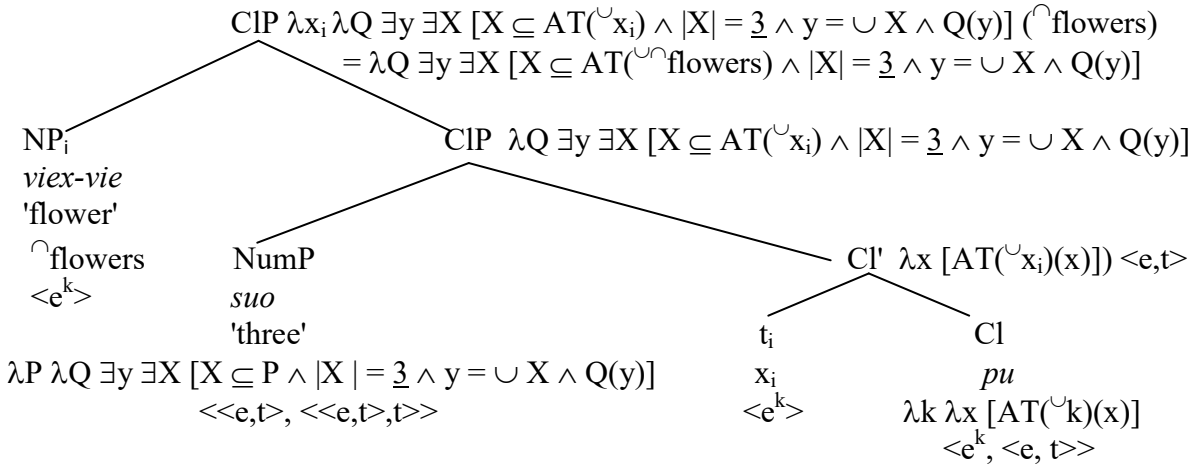
Since numeral phrases are predicative phrases in (24), we might well ask how they might be used as arguments with an indefinite interpretation, as in (5a). Here I take the position that numerals have a predictable lexical variant in which they are indefinite determiners of type <<e,t,>, <<e,t>, t>>>, as also argued for other classifier languages by Dayal (2012, 2014). The resulting numeral classifier phrase, under this analysis of numerals, is a generalized quantifier (GQ). I give below a derivation to show this:

[11] According to the account in Ionin and Matushansky (2006), the numeral 'three' in (24) has the following lexical entry:

(i) $[\![\text{three}]\!] = \lambda P \in D_{<e,t>} . \lambda x \in D_{<e>} . \exists S \in D_{<e,t>} [\prod(S)(x) \wedge |S| = 3 \wedge \forall s \in S \wedge \forall s \in S\ P(s)]$

For simplicity, I represent numerals throughout this paper directly as <u>*n*</u> (e.g. <u>2</u>, <u>3</u>), underlined to gesture towards its formal meaning, following the practice in Dayal (2014).

(26)



Note that we have treated the numeral phrase here as an argument, rather than treating it as a predicative term that undergoes ∃ type shift. The latter, for example, would be more in keeping with the proposals in Partee (1986) and Landman (2003). In discussing bare nouns, however, we saw that the ∃ type shift is not available in this language since indefinite readings associated with them do not show wide scope effects (cf. (3b)). As discussed in Dayal (2004), this situation is typical of classifier languages as well as number marking languages without overt determiners (cf. (21)). Treating numerals as indefinite determiners which are functions to existential generalized quantifiers provides a simple way of understanding the different scope properties of numeral classifier phrases and bare nouns (see also Dayal 2012, 2014 for a similar proposal for Bangla numeral classifier phrases). Of course, indefinite noun phrases are known to display exceptional scope properties and we saw in section 1 that this is true of Yi numeral phrases. I remain neutral here on the best way of accounting for such exceptional scope behavior: [12]

With this background on the role of classifiers, we are now in a position to consider the numeral-less classifier phrases. We shall see that such bare ClPs can be explained within the assumptions that we have made about bare nouns and classifiers.

2.2.2 Numeral-less classifier phrases

As we saw in Section 1.2, classifier phrases *without* numerals are also freely allowed in Yi. While numeral-less ClPs have been noted in languages like Mandarin (e.g. Lü 1944; Chao 1968), Cantonese (e.g. Cheng and Sybesma 1999, 2005) and Bangla (e.g. Dayal 2012), they are banned in some others, such as Southern Min (Cheng and Sybesma 2005), Thai (Jenks 2011) and Japanese (Jiang 2012). Here we address the issue of the indefinite interpretation of Yi numeral-less ClPs:

(27) a. *tsho ma dza dzu njuo*.
man Cl rice eat Progressive
'A man is having meal.'

b. *cyx mu ma shep bo ox*.
3sg horse Cl look-for go Asp
'He/She went to look for a horse.'

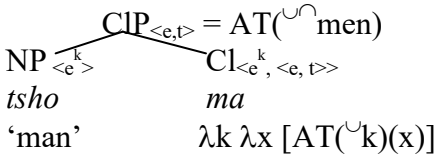
[12] We might interpret (numeral) indefinites via choice functions, for example, as argued in Reinhart (1997) and Winter (1997). See Jiang (2012) for discussion.

c. *ne* *ssox-sse ma* *shyp* *ngop* *ddu* *ggep* *la* *go-li,* *nga* *khat* *ox.*
you student Cl bring my home hang-out come if, I happy Asp
(i). 'If you bring a student to hang out in my house, I will be happy.' *if* > ∃
(ii). 'If you bring a certain student to hang out in my house, I will be happy.' ∃ > *if*

As pointed out in Section 1.2, numeral-less ClPs like those in (27) are interpreted obligatorily as singular. Descriptively speaking, such phrases are equivalent to [NP-one-Cl]. There could be two ways to account for this. One obvious way is to assume that there is a null 'one' in the syntax, so the numeral-less ClP in Yi is not really bare but has the form [Noun $\varnothing_{one}$ Cl]. A similar proposal, in fact, has been made for Mandarin and Cantonese bare ClPs, both of which allow their bare ClPs with an indefinite reading (see Cheng and Sybesma 1999; Yang 2001). However, in both languages, such phrases are only possible in object positions. This suggests an explanation in terms of licensing of the null numeral by the verb. Turning to Yi, we see that its bare ClPs are available in both subject and object positions (27), which calls into question the applicability of a null numeral account for it. In addition, there is a difference in interpretation. In other classifier languages which allow bare ClPs to occur in both subject and object positions, such as Cantonese and Bangla, bare ClPs receive a *definite* interpretation (e.g. Cheng and Sybesma 1999; Dayal 2012; Simpson et al 2011). However, the definite interpretation of bare ClPs is not available in Yi. So although the analysis of a null numeral in the syntax has some initial appeal, it does not seem optimal for Yi.

Let us therefore consider an alternative approach. We may posit the following structure and derivation for the numeral-less classifier phrase:

(28)



In (28), the classifier merges directly with the bare noun; *AT* in the semantics of the classifier, as I assumed in (24), is a function from a kind to a set of atoms. The primary advantage of the analysis in (28) is that it obviates the need for syntactic licensing and predicts the unrestricted distribution of ClPs in Yi. As we see, the output of the bare classifier phrase in (28) is a property of type <e,t>. It follows that such a phrase can function as a predicate and be used as the restrictor of demonstratives/determiners and the generic operator. It also follows that it can be turned into an argument covertly either via a null D in the syntax (Borer 2005) or an argument forming type-shift in the semantics (17b) (Chierchia 1998; Dayal 2004). Here I follow the latter approach, though the explanations I provide in the next subsection could also be implemented using the former.

To conclude, we have seen how bare ClPs can be generated. I will return to the issue of their interpretation in section 2.3.2 after discussing the role of the overt determiner.

2.3 The demonstrative and the definite article *su*

We now consider the syntax and semantics of Yi noun phrases with definite and demonstrative phrases, showing how the Neocarlsonian approach can account for them.

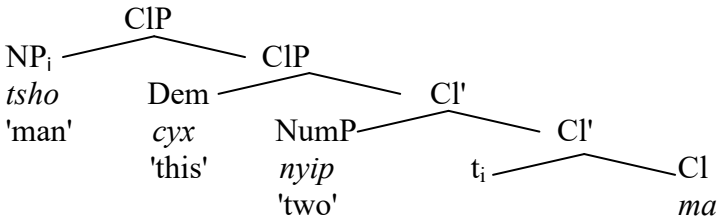
2.3.1. The syntax of demonstrative and definite nominal phrases

Given that Yi classifier phrases, with or without a numeral, can have a predicative meaning (24)/(28), we predict correctly that they can combine with demonstratives and definite determiners. Note though that there is a difference in word order in the two cases:

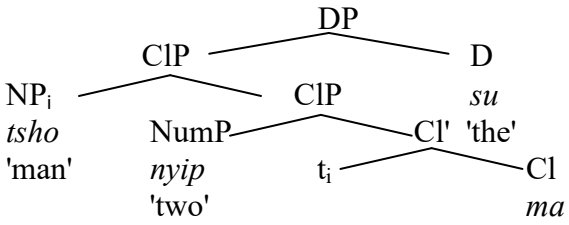
(29) a. *tsho* *cyx* *nyip* *ma*
man this two Cl
'these two men'
b. *tsho* *nyip* *ma* *su*
man two Cl the
'the two men'
c. *tsho* *cyx* *ma*
man this Cl
'this man'
d. *tsho* *ma* *su*
man Cl the
'the man'

I adopt the view that demonstratives occur in specifier positions (Giusti 1997, 2002; Brugè 2000, 2002; Alexiadou et al 2007, a.o.).[13] Definite determiners, on the other hand, occur in D which is in head final position.[14] I give the structures for (29a) and (29b) in (30a) and (30b) respectively.

(30) a.



b.



In (30a), the demonstrative appears in Spec ClP, and the bare noun *tsho* 'man' undergoes NP-fronting to the initial position of the phrase (cf. Section 2.2.1), yielding the observed word order

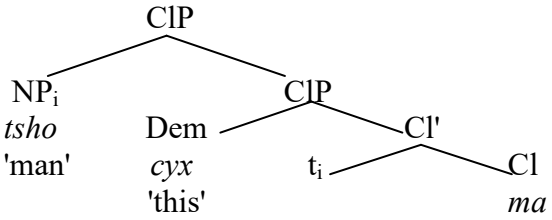
[13] One of the arguments for distinguishing demonstratives from articles/determiners is that in languages such as Romanian, Hungarian, Spanish, and Greek, the two elements can co-occur. It has been argued that demonstratives are very low specifiers and can undergo movement to higher specifier positions (e.g. Giusti 2002: 71-72; Alexiadou et al 2007: 109-115).

[14] In the proposed account of Yi, demonstratives are treated in specifier positions. One may ask why demonstratives cannot co-occur with the definite determiner, occurring in the Spec DP position in Yi. To account for this, I assume the 'doubly filled Comp Filter' effect in the nominal domain, which has been proposed to explain why the co-occurrence of demonstratives and definite determiners is attested in some languages but not in others (see e.g., Campbell 1996: 167; Panagiotidis 2000: 724; Giusti 2002: 70; Alexiadou et al 2007: 115). Under this analysis, Yi is a language similar to English which only allows either the D head or the specifier of DP to be filled but not both.

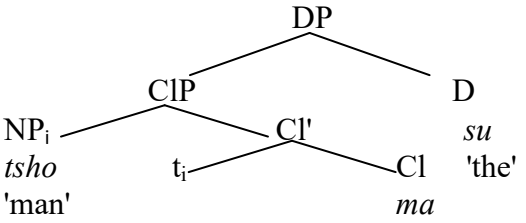
[NP Dem Num Cl]. In (30b), after the NP moves to the initial position of the ClP, the ClP merges with the definite determiner *su*, leading to the surface word order [NP Num Cl *su*]. As for the semantics of demonstratives, I follow Kaplan (1989), Wolter (2006) and Dayal (2012) and assume that they are property seeking functions with an indexical specification: *ιx [AT(⌒men))(x) ∧ 2(x) ∧ x is in this$_n$]*, in this case.

A similar account is possible for numeral-less ClPs. The demonstrative phrase in (29c) and the definite DP in (29d) have the structures in (31a) and (31b) respectively:

(31) a.



b.



Having shown why classifier phrases with demonstratives have a different word order than those with definites, I now address the fact that Yi is unusual among classifier languages in having a definite determiner at all.

2.3.2. The disappearance of blocking effects

In Section 1.2, we concluded that Yi allows definiteness to be expressed both by bare nouns and through the use of the definite determiner *su*. Two examples are repeated below:

(32) a. *si-hni ma sini sse-vo ma i-go nyi, si-hni jjy nra.*
girl Cl and boy Cl room sit, girl very beautiful
'A girl and a boy are sitting in the room, the girl is very pretty.'

b. *si-hni ma sini sse-vo ma i-go nyi, si-hni ma su jjy nra.*
girl Cl and boy Cl room sit, girl Cl the very beautiful
'A girl and a boy are sitting in the room, the girl is very pretty.'

This paradigm calls into question the status of the *Blocking Principle* (cf. (18b)), which prohibits the covert application of a type shift in a language that has a lexical exponent for that particular type shift.

The disappearance of the blocking effect in Yi, I suggest, is due to the fact that there are two distinct operations at play, the overt operation encoded in the definite D *su* and the covert operation that derives definite meanings from kind-referring bare nouns (e.g. see Trinh 2011, Dayal 2011a, Jiang 2012 for how definites can be derived from kinds). Specifically, I claim that the overt definite D *su* applies only at *higher* or more complex nominal levels (i.e. [NP Cl]/[NP Num Cl]) and turns property-denoting nominals into entities, type <<e,t>, e>; whereas the operation that covertly derives definites from kinds only applies at the *lowest* bare noun level (i.e.

[NP]) and is a function from kinds to object-level entities of type <e^k, e>. That is, it saturates the world/situation index and yields the extension of the kind at that index.

To get a sense of why there is no discernible blocking effect in (32), let us compare the situation in Yi with the situation in English. Here we must assume, crucially, that English is a [+arg, +pred] language, as proposed by Chierchia (1998). Since in English [NP] as well as [Num NP] denote properties, the definite determiner *the* and the covert type-shifting operator iota ι would apply to nominals at both levels of structure and would be functions from properties to entities, type <<e,t>, e>. Therefore, the potential definite reading of a bare plural/singular in English which would be derived via a covert application of *iota* is blocked by the equivalent lexical option, i.e. the overt determiner *the* (e.g. (22a)). This naturally raises the question why English bare NPs cannot tap into the alternative operation deriving object-level entities from kinds of type <e^k, e> to have definite readings. I will address this question in section 3.4.

Note, however, the line I am pursuing does not imply that the *Blocking Principle* is not at play in Yi. As we saw in Section 2.2.2, Yi bare ClPs [NP Cl] are predicative (c.f. (28)). Both the definite determiner *su* and the covert type-shifting operator *iota* ι are able to apply to a nominal at this structural level. The presence of an overt definite article *su* in Yi blocks the possibility of turning bare ClPs covertly into arguments with a definite reading via ι (33a). In principle, [NP Cl] can still be turned into an argument covertly with a kind or an indefinite interpretation due to *Rank of Meaning* in (18a). Turning [NP Cl] to a kind is undefined because the semantics of singularity in the meaning of [NP Cl] clashes with the conceptual notion of a kind (Dayal 1992; Chierchia 1998). Accordingly, the only possibility left is to turn [NP Cl] covertly into an argument with an indefinite reading via ∃ (33c). This indeed is what happens in Yi: its bare ClPs are indefinite only, thereby predicting the scopal properties we saw in Section 2.2.2.

(33) Argumentizing Yi bare ClPs (17b)

a. ι [NP Cl] = ι(AT(∪k)), blocked by the presence of *su*

si-hni ma sini sse-vo ma i-go nyi, si-hni ma #(su) jjy nra.
girl Cl and boy Cl room sit, girl Cl the very beautiful
'A girl and a boy are sitting in the room; the girl is very pretty.'

b. ∩ [NP Cl] = ∩(AT(∪k)), undefined for singular properties

* *wox-nuo ma gi ox.*
bear Cl extinct Asp
Intended: 'The bear is extinct.'

c. ∃ [NP Cl] = ∃(AT(∪k)), indefinite

tsho ma dza dzu njuo.
man Cl rice eat Progressive
'A man is having a meal.'

I will now discuss the final question raised by our description of Yi, namely, the obligatory presence of classifiers in noun phrases with the definite determiner or the demonstratives. The examples are repeated in (34a) and (34b):

(34) a. **si-hni su*
girl the

b. **cyx si-hni*
this girl

I propose that there is a simple type-theoretic explanation for this. Definite determiners and demonstratives are functions from properties to entities. Bare nouns in Yi are kind denoting. Hence, when determiners or demonstratives combine with kind-referring bare nouns, a type-mismatch arises. Yi requires a classifier to shift kinds to properties in order to combine with determiners and demonstratives.[15]

(35) a. * DP → composition cannot proceed, type-mismatch

NP$_{<e>}$	D$_{<<e, t>, e>}$
si-hni	***su***
'girl'	

b. * NP → composition cannot proceed, type-mismatch

Dem$_{<<e, t>, e>}$	NP$_{<e>}$
cyx	*si-hni*
'this'	'girl'

We have seen that the particular properties of Yi nominals noted in Section 1 are amenable to an analysis within the Neocarlsonian approach, using well-established principles of interpretation. In the next section, we will explore the implications of the account of Yi nominals for a cross-linguistic theory of argument formation.

3 Implications for a theory of argument formation

The facts discussed in section 1 and their analysis in section 2 lead to several interesting questions that are worth addressing: Why are classifier languages with overt article determiners possible but so rare? Is the Neocarlsonian approach best equipped to handle Yi and classifier languages in general? Can the analysis of Yi nominals be extended to other classifier languages? And perhaps most importantly, can the variation among classifier languages with respect to the definite readings of bare nouns be given a principled explanation? I address these questions, with a view to articulating what a theory of variation in the domain of nominal arguments would have to look like to capture the complex empirical picture in front of us.

3.1 Why are classifier languages with overt Ds possible but so rare?

Before the discovery of the definite determiner *su* in Yi, there was a widespread belief that classifier languages necessarily lack overt article determiners. If it is possible for a classifier language to have a determiner, the question that arises is why such languages should be so rare — so far Yi is the only language of this kind that has been attested. In answering this question,

[15] In generic sentences, I have analyzed bare nouns in Yi as undergoing predicativization via the up-operator '$^{\cup}$' (23b). One may ask why the up-operator cannot shift kinds to properties in order to allow the definite determiner or demonstratives to combine with bare nouns in Yi:
(i) *si-hni su = ι ($^{\cup}\cap$girls(x))
I would suggest that the derivation in (i) is not economical as it involves redundant computational steps. To illustrate, Ds or type-shifters are supposed to repair type mismatch and make the 'unsaturated' predicative nouns argumental (as in Higginbotham 1987; Szabolcsi 1994). Nevertheless, in (i) a type mismatch is 'created' on purpose just so it can feed the use of D in the syntax or type-shifting in the semantics. In other words, a noun that is already argumental is 'forced' to become a predicate and then back to an argument, with the same 'argumental' result. See also section 3.4 for further discussion of this issue.

we will also address the other novel property of Yi, namely the requirement that demonstratives and the definite article in Yi require the mediation of classifiers in order to combine with a noun.

Chierchia (1998) speculates that classifier languages should not have article determiners. Since nouns in classifier languages are argumental, considerations of economy rule out the presence of a determiner. There is simply no functional pressure for article determiners to develop. Chierchia's speculation might well explain why overt Ds are so rare in classifier languages. Nevertheless, it cannot be the whole story since we have evidence to the contrary from Yi. Furthermore, the logic of the framework itself foresees nominal structures that are predicative (type <e,t>), namely numeral and numeral-less classifier phrases. In principle, then, article Ds may well develop in such languages to turn such property-denoting phrases into arguments. This, together with the view that classifier languages lack functional pressure to develop a D, reconciles the existence of a classifier language like Yi with the fact that it is unique among the classifier languages attested so far.

This modification of Chierchia's proposal allows us to make two further predictions about classifier languages. It predicts that we will not find classifier languages with articles that do not also allow bare arguments. That is, it rules out a language which is like Yi with respect to having classifiers, but like French or Italian with respect to disallowing bare arguments. This is so because bare nouns in classifier languages are inherently argumental and will always be allowed as bare arguments. To appreciate this point, consider the possibility that nouns in classifier languages may enter grammatical computation as properties. One might then expect that there ought to be classifier languages like French that always disallow bare arguments, or classifier languages like English that disallow conceptually count nouns to be arguments in their singular form. As far as we know, this does not happen in any classifier language, in keeping with the kind-based analysis of bare nouns in classifier languages.

A second prediction of the current approach is that any classifier language that develops overt article Ds will not allow that D to combine directly with bare nouns. This is because bare nouns are kind-denoting and D can only apply at the level of numeral classifier phrases or at the level of an intermediate projection between numeral ClPs and bare nouns that happens to be predicative.

In addition to the above two predictions, we further expect that classifier languages with overt article Ds should behave like Yi and share the following properties: their bare nouns should freely occur in argument positions, their numeral-classifier phrases should be both predicative and argumental and have an indefinite interpretation, and their Ds should not combine directly with bare nouns but should only apply at those higher nominal levels which are property denoting. It remains to be seen whether these predictions are borne out as classifier languages are investigated further.

I have shown above why a modification of Chierchia's approach is needed and how the modified framework explains the possibility as well as the rarity of overt Ds in classifier languages. I have also discussed some predictions about the role of classifiers in the formation of definite noun phrases in such languages. I will now expand the discussion to justify the choice of the Neocarlsonian approach to noun phrase semantics in classifier languages.

3.2 The Neocarlsonian approach versus other approaches

In explaining the properties of argument formation in Yi, I adopted the Neocarlsonian view that bare nominal argument terms denote kinds and that their object level meanings are derived from their basic kind level meaning. An alternative view takes bare nominals to be

ambiguous between kind terms and indefinites, based on evidence drawn from bare plurals in Germanic languages like English and German (e.g. Krifka 1988, Wilksinson 1991, Diseing 1992, Kratzer 1995). I refer to this approach as the Ambiguity Approach after Chierchia (1998). One of the main arguments against the Ambiguity Approach is that it has problems explaining the special narrowest scope properties of bare plurals noted by Carlson (1977). In addition, a theory for predicting cross-linguistic variation in the nominal domain has not been developed within this approach, as pointed out in Dayal (2004, 2012). The Neocarlsonian approach, on the other hand, does have such a theory which draws evidence from bare nominals in a much wider range of languages, such as English, German, Italian, Mandarin, Hindi and Russian. This theory has been extended to examine bare nouns in various classifier languages such as Mandarin (e.g. Yang 2001; X. Li 2011, 2013; Jiang 2012); Japanese (e.g. Nemoto 2005), Thai (e.g. Piriyawiboon 2010; Jenks 2011), Vietnamese (e.g. Trinh 2011), and Bangla (e.g. Dayal 2012, 2014).

Although the analysis of Yi presented here does not provide definitive evidence in favor of the Neocarlsonian over the Ambiguity Approach, I demonstrated that the paradigms discussed fall readily within the predictions of a Neocarlsonian theory of variation (cf. Section 2). At the same time, the modifications prompted by the facts of Yi make further predictions about classifier languages (cf. Section 3.1). Hence, this typologically rare language in a sense provides indirect confirmation for the Neocarlsonian approach.

In addition to the debate regarding the reference of bare nominals, there is also an ongoing debate about the syntax of argument formation. Nouns have been claimed to universally denote properties and therefore must occur with an article D in order to serve as arguments (e.g. Longobardi 1994, 2001; Borer 2005). If there is no overt D, a covert D is assumed. There is also a view that the D projection is subject to parameterization (e.g. Chierchia 1998; Dayal 2004; Bošković 2005, 2007, 2008). Whether D is syntactically projected or not depends on one of two things: the possibility that nouns may be inherently argumental (i.e. kind-referring) and the availability of a semantic operation that turns nouns of the property-type into arguments, subject to some kind of blocking.

The discovery of a classifier language with an overt determiner may seem to tilt the balance in favor of the universal DP Hypothesis and also disprove the Nominal Mapping Hypothesis, since such a language contradicts Chierchia's (1998) speculation that classifier languages should not develop article determiners in their grammar. However, I would argue that the opposite is the case.

First, the universal DP hypothesis would make incorrect predictions for Yi nominal arguments. If we assume that bare nouns in Yi are property-denoting instead of kind-denoting and require a D to turn them into arguments, we would expect the determiner *su* to combine with bare nouns directly in the same way as the determiner *the* in English combines with bare nouns. However, as we saw in Section 1.2, this is disallowed in Yi. As for Chierchia's (1998) speculation that classifier languages should not develop article determiners in their grammar, I suggested in Section 3.1 that this speculation might well explain why overt Ds are so rare in classifier languages and that the logic of the framework itself foresees nominal structures that are predicative, hence providing room for article Ds to develop in such languages.

Second, a property-denoting analysis of bare nouns cannot justify the need for classifiers in general. If nouns in classifier languages are property-denoting, type <e, t>, then they will have to be true of something. There are two logical possibilities. One is to assume that these nouns are mass only properties (e.g. Krifka 2004: 193). If so, classifiers are needed to quantize these nouns,

i.e. to turn mass properties into natural sub-properties (atomic or non-atomic). Another possibility is to assume that nouns in classifier languages are properties which are underspecified for the mass-count distinction. On this view, every noun can apply to either whole individuals or to their parts. Hence, a noun like 'shrimp' in classifier languages, for example, will be true in a world of 'shrimps' or 'their parts' (i.e. shrimp meat). The same would have to be true of 'dog', 'table', 'water', 'blood' or any other noun. Then classifiers would be needed to quantize all nouns, i.e. to turn "underspecified properties" into "natural sub-properties".

Although this 'property' thesis might seem appealing, it runs into a serious problem. Both theoretical work and experimental work have argued that nouns in classifier languages make a lexical distinction between mass and count (e.g. Imai and Gentner 1997; Cheng and Sybesma 1999; Cheng, Doetjes and Sybesma 2008; Li et al. 2009; Doetjes 2012). In particular, Cheng and Sybesma (1999) have argued that the mass-count distinction manifests itself through the classifier system: one set of classifiers, i.e. 'individual classifiers', or 'count-classifiers', must combine with nouns that are conceptually-count. In contrast, other sets of classifiers, such as 'measure classifiers' and 'container classifiers', do not have such a restriction, i.e. they can combine with either conceptually count or conceptually mass nouns. The behavior of individual classifiers presupposes that nouns in classifier languages are lexically divided into count and mass, e.g. it is the lexical property of 'water' and 'flour' that prevents them from combining with individual classifiers. So if nouns in classifier languages in general are mass-only properties or are undifferentiated between mass properties and count properties, the restriction on individual classifiers would have no force. One would wrongly expect that individual classifiers should work with both types of nouns, just like other types of classifiers do. Hence, if nouns denote properties in classifier languages, the status of classifiers is put into question. On the contrary, a kind-denoting analysis of bare nouns in classifier languages provides a natural account for the obligatory existence of classifiers.

Having seen the advantages of the Neocarlsonian approach that I have adopted in explaining Yi, we now will demonstrate that such an approach indeed is equipped to handle classifier languages in general. I will do so using Mandarin as illustration.

3.3 Extending the Neocarlsonian approach to Mandarin

Mandarin is one of the best studied classifier languages (Lü 1944; Chao 1968; Tang 1990; Krifka 1995; Huang 1997, 2009, 2014; Li 1997, 1998, 1999; Chierchia 1998; Doetjes 1997, 2012; Cheng and Sybesma 1999, 2005, 2012; Cheng et al 2012; Yang 2001; Borer 2005; Simpson 2005; X. Li 2011, 2013; Jiang 2012; Zhang 2013, a.o.). Mandarin and Yi share some obvious similarities. First, they both freely allow bare nouns in argument position, with essentially the same range of interpretations.[16] Secondly, numeral classifier phrases in both languages can be predicative as well as argumental. It therefore follows that the analysis of Yi bare arguments in Section 2 should also apply to Mandarin without further stipulation. In fact, as mentioned in Section 2.1, the analysis of bare nouns in Yi presented there draws on earlier work by Yang (2001). As such, we will not repeat the account for Mandarin, referring the reader to Yang (2001) for details.

Let us focus instead on three points on which Mandarin and Yi differ and which make this comparison interesting from the perspective of building a theory of cross-linguistic variation.

[16] One reviewer points out that bare nouns in Mandarin can appear in predicate position in addition to serving as arguments. Such a predicative use of bare nouns in classifier languages can be obtained via type-shifting mechanisms of the kind discussed in Partee (1986) and Chierchia (1998).

The first is the tendency for bare nominals in sentence initial position to be interpreted as definite rather than indefinite in Mandarin (Chao 1968; Li and Thompson 1981), a tendency that is lacking in Yi. The second is the presence of syntactic restrictions on numeral-less classifier phrases in Mandarin (e.g. Lü 1944; Chao 1968; Cheng and Sybesma 1999), and its absence in Yi. The third is the ability of demonstratives to combine directly with bare nouns in Mandarin (e.g. Chao 1968; Tang 1990, 2007; Li 1998; Cheng and Sybesma 1999; Yang 2001) but not in Yi. We defer discussion of the difference between the presence of a definite determiner in Yi and its absence in Mandarin to section 3.4 and focus here on the other three properties.

Let us start with the perceived subject-object asymmetry with respect to indefinite readings in Mandarin, a phenomenon that has been taken as evidence of a null D in need of licensing:

(37) a. *you san ge xuesheng zai xuexiaoli shoushang le.* (Mandarin)
have three Cl student at school hurt ASP
'There are three students hurt at school.'
b. **san ge xuesheng zai xuexiaoli shoushang le.*
three Cl student at school hurt ASP
Intended: 'There are three students hurt at school.'
c. [$_{DP}$ D$_{ø}$ [$_{NumP}$ san ge xuesheng]] (Li 1998)

Li (1998) posits a null D which is subject to government (37c), along the lines of Longobardi (1994). One can explain the observed subject-object asymmetry seen in (37a)-(37b) as a licensing effect. The key problem with this account is that the phenomenon it seeks to capture is not real. As noted in Li (1998: 694, ft 3), examples like (37b) are usually marked as unnatural, but become acceptable if appropriate contexts are provided (see also Huang 1997; Yang 2001; X. Li 2011, 2013; Jiang 2012). Yang (2001) reanalyzes the tendency for nominal arguments in sentence initial positions to be interpreted as definites in terms of Li and Thompson's (1976, 1981) categorization of Chinese as a topic-prominent language. She shows that it is possible to get an indefinite reading for a subject phrase if the sentence initial topic position is filled by another expression. Thus, there is no real difference between Mandarin and Yi with respect to the nominal phrase itself. Yi, because it is not a topic-prominent language, does not show the tendency for clause-initial arguments to be interpreted as definite.

Turning to numeral-less ClPs, there does appear to be a real subject-object asymmetry in Mandarin, marking a genuine point of difference with Yi.

(38) a. **ge xuesheng yinggai haohao xuexi.* (Mandarin)
Cl student should good-good study
Intended: 'A/The student should study hard.'
b. *wo mai le ben shu.*
I buy Asp Cl book
'I bought a book.'
c. **wo mai le ben shu, zhi bi he kuai xiangpi.*
I buy Asp Cl book, Cl pen and Cl eraser
Intended: 'I bought a/the book, a/the pen and an/the eraser.'

In (38a), the numeral-less ClP is banned in the sentence initial position; in (38b), it is allowed in the post-verbal position. Interestingly, it is also banned in the coordinated structure in the post-verbal position (38c) (Chao 1968; Yang 2001; Jiang 2012).[17] This contrast can be explained on the view that bare ClPs in Mandarin as underlyingly [*one* Cl N] (Lü 1944; Chao 1968; Li 1997; Borer 2005; Huang 2009, 2014; Jiang 2012, 2015, Li and Feng 2015, a.o.).[18] The second difference between Mandarin and Yi, then, can be reduced to the fact that the former has an unpronounced numeral *one* in the syntax which requires licensing. As expected, its interpretation aligns with that of indefinites. Yi, instead, has a genuine bare classifier structure, consisting only of a bare noun and a classifier (c.f. (28)), which has no licensing requirement. It employs the covert type-shifting operations in (17b) to derive argumental meanings, as explicated in Section 2.2 (c.f. (33)).[19]

Let us now turn to the final difference noted earlier between Mandarin and Yi. As seen in Section 1.3, demonstratives in Mandarin can freely combine with higher projections as well as bare nouns, whereas demonstratives as well as the determiner *su* in Yi combine only with higher nominal projections that contain classifiers, never with bare nouns:

(39) *zhe ren / zhe ge ren / zhe liang ge ren* (Mandarin)
this man / this Cl man / this two Cl man
'this man' / 'this man' / 'these two men'

(40) a. **tsho cyx / tsho cyx ma / tsho cyx nyip ma* (Yi)
man this man this Cl man this two Cl
'this man' 'these two men'
b. **tsho su / tsho ma su / tsho nyip ma su*
man the man Cl the man two Cl the
'the man' 'the two men'

This contrast raises the question whether the alternation is a relative 'local' form of syntactic variation or whether it reveals something deeper about the difference between article determiners and demonstratives. I will suggest that the latter is the case: article determiners are universally property-seeking functions, type <<e,t>, e>; whereas demonstratives can be either property-seeking functions of type <<e,t>, e> or kind-seeking functions, type <e^k, e>. In particular, the same strategy to derive definites from kinds (e.g. Trinh 2011; Dayal 2011a, 2012; Jiang 2012),

[17] In addition to appearing in a position immediately following a verbal element, Mandarin numeral-less ClPs can also appear in the position immediately following a stressed nominal element such as demonstratives:
(i) *zhe/mei ben shu*
Dem/every Cl book
'this/every book'
I leave the issue of semantic composition of (i) for another occasion.

[18] The bare ClP [$_{ClP}$ ~~*one*~~ [Cl N]] and the numeral ClP [$_{ClP}$ *one* [Cl N]] in Mandarin differ semantically in that the former cannot be used in contrastive or focused environments where the information conveyed by the numeral *one* is stressed/important (Lü 1944, Li and Bisang 2012, Jiang 2012). This difference can be viewed as regulating the semantic condition for eliding *one*.

[19] One might ask what prevents a language like Mandarin from having real bare ClPs of the Yi kind. In section 3.4 I will suggest that languages vary with respect to whether they utilize covert type shifts in the formation of arguments: +/- ARG. To anticipate, if a language does not employ ARG, then its bare ClPs cannot be argumentized and must contain a silent *one*; if a language employs ARG, its bare ClPs can be argumentized, occurring freely in any argument position. On this view, Mandarin would be classified as [-ARG] and Yi as [+ARG].

plus an indexical component, can be exploited to interpret [Dem NP] in Mandarin. For instance, the semantics of Mandarin [Dem NP] phrase *zhe ren* 'this man' in (39a) can be analyzed roughly as follows: [[zhe ren]] = [$^{\frown}men_{<e^{k}>}$] ($this_{n}$) where the demonstrative is a kind seeking function with an indexical specification of type <e^{k}, e>; it saturates the (distal) situation index and yields the extension of the kind at that index.

The final difference between Mandarin and Yi, then, lies in that demonstratives in Mandarin can be either property-seeking functions or kind-seeking functions and can merge with either higher nominal phrases containing classifiers or bare nouns (39). Demonstratives in Yi, on the other hand, are exclusively property-seeking functions and can only merge with higher nominal phrases containing classifiers (40). In other words, Yi differs from Mandarin in requiring a classifier to shift kinds to properties in order to combine with demonstratives: [Dem NP] is ruled out in Yi as a result of a type mismatch.[20]

In this subsection, we saw some similarities and some differences between Mandarin and Yi. We saw that the similarities follow from basic assumptions about argument formation and their interpretations within the Neocarlsonian approach. I also suggested possibilities for cross-linguistic variations to explain the differences. We will now turn to the definite readings, a phenomenon that calls for a more fundamental shift in the picture of cross-linguistic variation in the domain of noun phrase semantics.

3.4 Variation in the definite reading of bare nouns

We have seen that most classifier languages, from the familiar ones such as Mandarin, Japanese and Vietnamese to the typologically rare ones like Yi, can simply use bare nouns for definite reference. In addition, we saw that Yi also has a genuine definite determiner *su* for definite reference. Although classifier languages with real definite determiners are rare, there are several, such as Cantonese and Bangla, where definiteness is somewhat overtly marked via more complex structures. Cantonese employs bare classifier patterns [Cl NP] as the canonical way to convey definite interpretation (Cheng and Sybesma 1999, 2005; Cheng et al 2012); Bangla uses bare classifier phrases with inverted word order to do so (Bhattacharya 1999a, b; Dayal 2010, 2011b, 2012).[21]

(41) *bzek gau zungji sek juk*. (Cantonese)
Cl dog like eat meat
'The dog likes to eat meat.' (not: dogs like eating meat) (Cheng and Sybesma 1999)

(42) a. **ta boi* (Bangla)
Cl book
b. *boi ta*

[20] As would be clear from footnotes 8 and 15, there is a potential problem with this solution. If a type-shift from e^{k} to <e,t> is available to Yi bare nouns in the restrictor of the Gen operator and in predicative positions, it is not so straightforward to block it from the complement position of demonstratives. I leave further refinements of this proposal for another occasion.

[21] Bangla allows two word orders for numeral ClPs: [Num Cl NP] and [NP Num Cl]. These two word orders correspond to two different interpretations: [Num Cl NP] gives rise to an indefinite interpretation, whereas [NP Num Cl] receives a definite interpretation (Dayal 2010, 2012). Dayal follows Bhattacharya (1999) in taking the basic word order to be [Num Cl NP] and in deriving the inverted order as the result of NP raising: [NP_{i} [Num Cl t_{i}]]. She departs from Bhattacharya in taking the base order to have specific indefinite readings in addition to non-specific readings, and the inverted order to lack specific readings.

book Cl
'the book' (Dayal 2012)

The inverted word order of the bare classifier pattern in Bangla [NP Cl] has been argued to be the result of NP raising: [NP_i [Cl t_i]], which I will adopt here.

Interestingly, in both languages bare nouns generally do not receive definite interpretations (see Cheng and Sybesma (1999, 2005) for Cantonese and Dayal (2011b) for Bangla). An example from Cantonese is given below.

(43) *(*zek*) *gau* *soeng* *gwo* *maalou*. (Cantonese)
Cl dog want cross road
'The dog wants to cross the road.' (Cheng and Sybesma 1999)

The range of options for marking definiteness in classifier languages can be summarized as follows:

(44)

	Kind	*Definite*	
Mandarin	NP	NP	
Cantonese	NP	[Cl [NP]]	
Bangla	NP	[$_{DP}$ NP_i [Cl [t_i]]]	
Yi	NP	[$_{DP}$ D_{def} [Cl [NP]]] *or* NP	(Dayal 2012)

We see that the presence of overt lexical Ds (e.g. in Yi) does not block the definite reading of bare nouns, whereas definiteness marking via complex syntactic structures (e.g. in Cantonese and Bangla) seems to exclude the definite use of bare nouns. Both facts call into question a simple version of the *Blocking Principle* as regulating the possibility of definite interpretations for bare nominals across languages. In the following I lay out a new perspective, due to Gennaro Chierchia (personal communication), for addressing the range of cross-linguistic variation that has been observed in this domain.

To set the stage for this new approach, recall the two ways in which bare nominals in languages without articles have been argued to attain definite readings. One is through the covert application of *iota* to a property denoting bare noun. This may be done directly in languages where NPs can be properties, languages that were classified as [+pred] in Chierchia (1998). Hindi has been argued by Dayal (2004) to be such a language. The issue is more pressing for languages like Mandarin that are classified as [-pred]. Yang (2001), for example, suggests the derivation in (45b). An alternative account, due to Trinh (2011), Dayal (2011a, 2012), and Jiang (2012), derives this interpretation directly by taking the extension of the kind at the relevant index, as shown in (45c). Let us call this the Evaluation Index strategy, EI for short:

(45) a. *gou* *zai* *jiao*. (Mandarin)
dog Prog bark
'The dog(s) is/are barking.'
b. barking(s)($^{\cap}$dogs) = barking(ι($^{\cup\cap}$dogs(x)))
c. barking(s)($^{\cap}$dogs) = (via EI) => barking($^{\cap}$dogs(s))

We are now in a position to draw some crucial distinctions that can help explain the paradigm we are interested in. The three canonical type-shifting operations $^{\cap}$, ι and ∃, let us classify them under ARG, given in (17b) in section 2.3.2, apply to properties. That is, they are of type <<e,t>, e> or of type <<e, t>, <<e,t>,t>>. The type-shifter involved in the EI strategy, on the other hand, applies to kinds and is of type <e^k, e>. The *Blocking Principle* as formulated in (18b) only governs the blocking of the canonical type-shifters and is not applicable to EI. So what I am going to develop is a blocking principle that can apply to EI, which draws on Chierchia (2016).

Chierchia uses *arg* for the covert type-shifting strategy EI in (45c) and *ARG* for any of the three covert canonical argumentizing type-shifting operations in (17b). He hypothesizes a 'Generalized Blocking Principle' that governs the application of "arg" and "ARG" along the following lines:

(46) Generalized Blocking Principle
For arg and any ARG
* arg (||NP||)
if there is an XP that minimally contains NP and ARG (||XP||) = arg (||NP||)

The above *Generalized Blocking Principle* (*GBP* in short) states that the covert operation "arg" on bare NPs will be blocked if there exists a covert operation "ARG" that can turn an XP that minimally contains NP into an argument with the same interpretation (i.e. definites).

"Minimally contain" can be defined at the basis of Grimshaw's (1991) notion of Extended Projection, which consists of a lexical category and extended functional categories. In our case, the functional head X (i.e. Cl) and its phrasal projection XP (i.e. ClP) are the extended projections of the lexical category N(noun) (47), and XP minimally contains NP iff the enumeration of NP is a subset of that of XP.

(47) $[_{XP}$ X $[_{NP}$ N]]

Crucially, what *GBP* suggests is the idea of not doing covertly what one can do with dedicated syntactic structure.

Let me illustrate how *GBP* accounts for the variation on definiteness marking in classifier languages that we saw at the beginning of this section. Yi would escape *GBP*, because ARG never comes into play in forming *definites*, i.e. ι is not used as a covert type-shifting operation in Yi; instead it is lexicalized as an overt definite determiner *su*:

(48) a. *si-hni ma sini sse-vo ma i-go nyi, si-hni ma su jjy nra.* (Yi)
girl Cl and boy Cl room sit, girl Cl the very beautiful
'A girl and a boy are sitting in the room; the girl is very pretty.'
b. su ($[_{ClP}$ $[_{NP}$ si-hni] ma]) = ιx [AT ($^{\cup\cap}$girls)(x)]

ARG, however, does come into play in forming *indefinites* in Yi. Consider the bare classifier pattern in (49a) and its classifier-less counterpart in (49c):

(49) a. *si-hni ma dza dzu njuo*. (Yi)
girl Cl rice eat Progressive
'A girl is having meal.'

b. ARG ([$_{ClP}$ [$_{NP}$ si-hni] ma]) = ∃x [AT ($^{\cup\cap}$girls)(x) ∧ having a meal(x)]

c. *si-hni dza dzu njuo*.
girl rice eat Progressive
'The girl is having meal.'
arg ([$_{NP}$ si-hni]) = $^{\cap}$girls(s)

d. ARG ([$_{ClP}$ [$_{NP}$ si-hni] ma]) ≠ arg ([$_{NP}$ si-hni]) (GBP inapplicable)

The bare classifier phrase in (49a) [$_{ClP}$ [$_{NP}$ si-hni] ma] and the bare noun in (49c) [$_{NP}$ si-hni] fit the structural description of *GBP* in (46). However, [$_{ClP}$ [$_{NP}$ si-hni] ma] can only be turned into an argument with an *indefinite* interpretation by ARG (49b) due to the *Ranking of Meanings* (18aii) and the *Blocking Principle* in (18b). Specifically, the overt definite determiner *su* blocks ι from turning [$_{ClP}$ [$_{NP}$ si-hni] ma] into a definite, and turning it into a kind is undefined because the singularity of the bare classifier phrase clashes with the conceptual notion of a kind (c.f. Section 2.3.2). As a consequence, the bare classifier phrase and the bare noun in Yi wind up having different interpretations, as shown in (49d). This explains why (49a) and (49c) are both allowed.

In Cantonese/Bangla, because there is no overt definite determiner like *su*, *Ranking of Meanings* (18aii) and the *Blocking Principle* in (18b) predict that the bare classifier phrase ARG ([$_{ClP}$ Cl [$_{NP}$ N]]) comes out as definite:

(50) Deriving the interpretation of bare ClPs in Cantonese/Bangla
a. ARG ([$_{ClP}$ Cl [$_{NP}$ N]]) = ιx [(AT($^{\cup}$k))(x)], *not* blocked by any overt definite D
b. $^{\cap}$x [(AT($^{\cup}$k))(x)] is undefined for singular properties
c. ∃ x [(AT($^{\cup}$k))(x)] is ruled out by *Ranking of Meaning* in (18aii)

Given that ARG ([$_{ClP}$ Cl [$_{NP}$ N]]) = arg (NP) in Cantonese/Bangla, *GBP* in (46) kicks in, and arg (NP) is blocked by the availability of (50a). This captures the generalization that the bare classifier pattern is the default way to convey definiteness and that bare nouns are not used for definite reference in Cantonese/Bangla.

Lastly, in languages like Mandarin which do not employ ARG to argumentize bare ClPs [Cl NP] (c.f. Section 3.3), *GBP* is simply not applicable.[22]

[22] One of the reviewers raises a question, namely whether or not ARG is applicable to numeral classifier phrases. A similar question has also been asked and addressed by Dayal (2013). Dayal (2013) explains why a covert application of iota in the semantics is blocked for numeral phrases in languages with overt definite determiners like English; she also explains why it is also ruled out for numeral phrases in languages without Ds like Hindi. Specifically, a derivation like (i) is banned due to *Blocking Principle* by the lexical definite determiner (e.g. *the* in 'the three boy'). However, in languages without Ds such as Hindi, a covert application of iota is predicted *incorrectly* to be possible for numeral phrases (ii) due to *Ranking of Meaning*.

(i) English: [$_{CardP}$ three$_{<<et><et>>}$ [$_{NP}$ boys$_{<et>}$]] = λx [3(x) ∧ boys(x)]= *blocked by 'the'* ⇒ ιx[3(x) ∧ boys(x)]

(ii) Hindi: [$_{CardP}$ tiin$_{<<et><et>>}$[$_{NP}$ laRke$_{<et>}$]] = λx [3(x) ∧ boys(x)] = **iota* ⇒ ιx[3(x) ∧ boys(x)]

Before ending this discussion two issues are worth noting. The first question is why English bare NPs cannot tap into the EI operation in (51b) to derive definite readings of its kind denoting bare plurals:

(51) a. Dogs are barking.
b. (51a) = *barking(s)(∩dogs) (via EI) => barking((∩dogs)(s))

I would suggest that the derivation in (51b) is ruled out for reasons of economy. In English, the overt definite determiner *the* can apply to the property-denoting nouns directly, yielding definite readings. In the derivation in (51b), two operations are involved, the application of the down-operator which derives kinds from properties and the application of the EI strategy which derives definites from kinds. When a one-step, direct derivation is available, two-step derivations of the kind seen in (51b) can be viewed as a departure from computational efficiency, a third factor principle (a term due to Chomsky (2005)) not specific to but also applicable to the human language faculty (Chomsky 2005, 2007, 2008). In other words, I suggest that EI is universally available and that it is some independent yet general principle that prevents it from applying to bare nouns in some languages (i.e. languages that are not [+arg, –pred]).

The second issue has to do with the fact that there are some contexts where Cantonese/Bangla bare nouns do have definite readings, presenting a potential counterexample to the analysis sketched above (Wu and Bodomo 2009; Simpson et al 2011; Dayal 2012).[23] I illustrate this with two examples from Cantonese, which show that both bare nouns and bare classifier phrases are acceptable for definite reference.

(52) a. Context: Mary says to John: "Take a photograph of me.' (Cantonese)
John gong2: m4 dak1. (Go3) soeng2-gei1 waai6 zo2.
John say not can Cl camera broken asp
'John says: I can't. The camera's broken.'
b. *Cam4 jat6 ngo5-dei6 heoi3 jat1 go3 fan1-lai5. (Go3) san1-loeng4 hou2 leng3.*
yesterday we go one Cl wedding Cl bride very pretty
'Yesterday we went to a wedding. The bride was beautiful.' (Simpson et al 2011)

Although I cannot provide a definitive explanation for such cases at this time, a possible solution is to make *GBP* a weak constraint. To be concrete, *GBP* would not evaluate structures of same kinds, and to place structures of different kinds in a competition lacks legitimacy and requires motivation, thus leaving some room for exceptions.

To rule out the possibility of applying the covert argumentizing operation ι to numeral phrases, Dayal assumes that the primary meaning of cardinals is that of a generalized quantifier, so if there is no overt determiner, there is no need to apply an iota operator to argumentize cardinal phrases.

Building on Dayal's (2013) assumption, perhaps we can hypothesize a general principle to block ARG from applying to numeral phrases across languages: if a nominal phrase has a predicative value of type <e, t> but also has an argumental value of type <e> or <<e, t>, t>, then ARG cannot apply to it. This principle can be viewed as a part of *Blocking Principle* and may be universal. Such a principle perhaps can be related to economy considerations or computational efficiency. But clearly these remarks are speculative at this point.

[23] See Simpson et al (2011) for further discussion. In particular, they use five primary sub-types of situations licensing the use of definite determiners in English, French etc. to probe the occurrence of the bare classifier pattern and bare nouns in definite contexts in four classifier languages, including Cantonese and Bangla.

I also note in this context that something similar has been noted for English as well. The following, from Condoravdi (1997: 69), shows some similarities with the paradigm in (52):

(53) In 1985 there was a ghost haunting the campus. *Students*/*The students* were aware of this fact/the danger.

The referential ability of the bare plurals in (53) seems to suggest that bare plurals in English behave like definite plurals and also seems to suggest the operation of *iota* (c.f. Dayal 2013). Nevertheless, as argued in Dayal (2013), we cannot equate bare plurals in English in (53) with definite plurals. One of her arguments is that bare plurals in English do not admit anaphoric definite readings:

(54) Some children$_i$ came in. *Children*$_{*i}$ sat down.

Crucially, bare nouns in Cantonese as well as those in Bangla exhibit a common pattern with regard to discourse-anaphoric definite reference, i.e. their speakers show a preference for bare ClPs over bare nouns (see Simpson et al 2011). One question that we may ask is whether bare nouns in Cantonese (e.g. (52)) should be treated as definites or bare plurals in English (e.g. (53)). If the former is pursued, we can treat *GBP* as a weak constraint; if the latter is chosen, there is no need to treat *GBP* as a weak constraint, and the examples in (52) perhaps can be explained by the account developed in Dayal (2013). I do not have arguments in favor of one or against the other at this time and therefore leave this question open for future research.

4 Summary and concluding remarks

The main purpose of this paper was to present a typologically new kind of language and to show that it exhibits the expected features of a classifier language: it has bare nouns that freely serve as arguments with kind/generic, narrow scope indefinite and definite readings. However, it also has an overt definite article which encodes presuppositions of familiarity, uniqueness and maximality. The presence of the definite article is at odds with an observation in the literature that the definite articles block the possibility of definite readings for bare nouns. I further showed that Yi has demonstratives that differ from most other classifier languages in their inability to combine with bare nouns directly. Demonstratives and the definite article in Yi both require the mediation of a classifier or a plural morpheme. The novel properties of Yi raised a series of questions concerning argument formation in Yi, the internal structure of Yi nominal arguments, language variation among classifier languages and argument formation in general.

I accounted for the properties of Yi nominal arguments within a Neocarlsonian account of bare nominals, which includes a set of ranked type-shifting operations and a principle blocking covert type shifting operations in the presence of corresponding overt versions. I also argued for a particular view of the semantics of numeral constructions in classifier languages. Crucially, I showed that a modification of Chierchia's (1998) framework is needed. The modified framework explains why classifier languages with overt Ds are possible but rare as well as allowing us to make further predictions about classifier languages: (1) a classifier language with overt article Ds which disallow bare arguments (analogue of English/Italian/French) should not exist, and (2) if an overt article D should develop in a classifier language, it should only apply at higher nominal levels which are property-denoting, e.g. at the level of property-denoting

numeral-classifier phrases, and not at the level of kind-referring bare nouns. If an intermediate projection between numeral-classifier phrases and bare nouns that is property denoting, namely a bare ClP, is available, article Ds can apply at this level as well. The modified framework further permitted a novel conjecture, namely that the development of overt article Ds in classifier languages would only be allowed if they behave in the same way as the definite article in Yi. It, of course, remains to be seen whether these predictions are borne out as classifier languages are investigated in further studies.

At the end of the paper, I suggested that the Neocarlsonian approach is better equipped to handle Yi than an alternative theory where bare nouns can be kinds as well as indefinites. The discovery of a classifier language with an overt article determiner may seem to tilt the balance in favor of the universal DP hypothesis; however, I argued that the opposite is the case. I further demonstrated that the Neocarlsonian approach to Yi nominal arguments can be extended to other classifier languages if we allow for variation in the ways in which languages mediate between a basic kind meaning for bare nominals and their object level meanings. Last, I discussed language variation among classifier languages regarding the definite reading of bare nouns, providing further cross-linguistic refinements of the basic Neocarlsonian approach to bare nominals.

The study of more classifier languages with different nominal systems may lead to an essential reorganization of the current picture. For the time being, however, studying Yi has perhaps brought us a few steps closer to a general theory of argument formation.

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