

The Denotation and Morphosyntax of Bare Nouns in Javanese: Against the Nominal Mapping Parameter*

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1. Introduction

In this paper, I argue against Chierchia's (1998a, b) Nominal Mapping Parameter (NMP) from Javanese and develop an alternative, purely syntactic account of the effects that the NMP was designed to capture. I first show that Javanese poses an empirical challenge to the NMP because this language does not fit into any one of the three language types that should exhaustively classify all natural languages under Chierchia's typology. I propose a new parametric syntactic account, whereby languages differ with respect to how high a language allows its bare nominal to grow, drawing on the related ideas independently argued for in recent work as in Grimshaw (1991), Massam (2001), and Guilfoyle and Noonan (1992). I show that this parametric analysis of the height of the nominal functional structure derives a variety of morphosyntactic properties of bare nominals across languages, including those noted by Chierchia, in tandem with the independently motivated language-particular values for Number: {singular, plural} vs. {neutral, plural}.

2. Chierchia's 1998a, b nominal mapping parameter

The NMP proposed recently by Chierchia (1998a, b) claims that languages differ in whether bare nouns in a language are mapped onto kinds, properties, or both at the syntax-semantics interface. One important aspect of this proposal lies in the fact that setting of this parameter uniquely determines the set of morphosyntactic properties of bare nominals in a given language. Since bare nominals are mapped onto one of the three logical types, Chierchia's NMP makes a strong claim that three and only three language types can exhaustively characterize all naturally occurring human languages. Let us see what those three language types are and what morphosyntactic profile bare nominals in these three language types exhibit.

The first type of languages is a [+arg, -pred] language such as Chinese and Japanese where bare nominals are mapped onto kinds <e>, "functions from worlds (or situations) into pluralities, the sum of all instances of the kind" (Chierchia 1998a: 349). Languages of this type allow determinerless, bare arguments because kinds are saturated in the Fregean sense. Languages of this type also lack any morphological plural since kinds are mass-like in that a particular kind cannot differentiate between singular and plural instances of that kind. As Chierchia (1998a: 351) remarks, "Fido is as good an instance of the dog-kind as Fido and Barky are. This means that the property corresponding to a kind comes out as being mass." This makes sense under Chierchia's definition of mass terms because mass nouns, in turn, "come out of the lexicon already pluralized...a mass noun, such as, say, *furniture* will be true in an undifferentiated manner of

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singular pieces of furniture as well as of pluralities thereof...quite literally the neutralization of the singular/plural distinction (Chierchia 1998a: 347). For the same reason, languages of this type develop a generalized classifier system; a kind cannot be individuated hence needs an appropriate counting level for each nominal element. Chierchia notes that languages like Chinese and Japanese are classified as instances of the [+arg, -pred] language type since these languages allow bare nominal arguments, lack morphological plural, and develop a generalized classifier system.¹

The second type of languages is a [-arg, +pred] language like French and Italian whereby bare nouns are mapped onto properties <e, t>. Languages of this type do not allow bare nouns because they are not saturated in the Fregean sense. Instead, bare nouns must combine with Ds (overt or covert) so that they serve as saturated nominal arguments <e>. Languages of this type also have the singular-plural distinction and the mass/count distinction since the specification of bare nouns as <e, t> does not specifically require them to be all mass as in Chinese and Japanese. Chierchia (1998a: 355), for example, states that “since the mass/count distinction concerns the extension of predicates, there is no reason not to expect that some nouns have a count extension, while others have a mass one”.

The third and last type of languages is a [+arg, +pred] language like English and Russian whereby mass and bare plurals are mapped onto kinds <e> but count nouns are mapped onto properties <e, t>. Chierchia (1998a) argues that, as the setting of the NMP suggests, nominals in this type of language shows a mixed set of morphosyntactic properties; bare nominals are possible when they are mass or bare plural (hence kind-denoting/[+arg] as in Chinese and Japanese) but, at the same time, the mass/count distinction and the singular/plural distinction are active (hence predicate-denoting/[+pred] as in French and Italian).

3. The denotation and morphosyntax of bare nominals in Javanese

The NMP has been called into question in recent years. In a series of recent work, Schmitt and Munn (1999, 2002) show that Brazilian Portuguese is a counterexample to the NMP and argue for a purely syntactic account of the morphosyntactic profile of bare nominals in this language by extending Bobaljik’s (1995) Free Agr Parameter to the nominal domain.² More importantly for the purposes of this paper, Chung (2000) argues that the NMP makes incorrect predictions concerning the morphosyntax of bare nouns in Indonesian, arguing that this hypothesis imposes too tight a mapping between the syntax and semantics of nominals. Specifically, Chung argues that Indonesian allows bare arguments and develops a classifier system but crucially has plural morphology marked by reduplication, a combination of the morphosyntactic properties that would be unpredictable by Chierchia’s conception of [+arg, -pred] languages. The purpose of this section is to show that Javanese

¹ This claim is incorrect, however, since Japanese does have plural morphology marked by *tachi*-suffixation (a productive plural formation) or reduplication of the root (a less productive plural formation), as in (ia) and (ib), respectively. The initial consonant of the copied word in (ib) undergoes sequential voicing from /h/ to /b/.

| | | | | | | | |
|-------|-------------------------------|----------------------|-------------------|----|-------------------------------|----------------------|---------------|
| (i)a. | Shonen-tachi-ga boy-PL-Nom | kooen-de park-Loc | asonda. played | b. | Hito-bito-ga person-PL-Num | kooen-ni park-Loc | kita. came |
| | ‘Boys played in the park.’ | | | | ‘People came to the park.’ | | |

The existence of these plural formation processes poses a problem for Chierchia’s NMP since Japanese, being a [+arg, -pred] language, should not have plural morphology due to the kind denotation of bare nouns explained above in the text. The alternative syntactic account proposed in section 4.2 is consistent with the existence of plural morphology in Japanese.

² See section 4.3 for short discussion of bare nominals in Brazilian Portuguese.

also presents itself as another counterexample to the NMP. All the examples from Javanese in this paper are from the Ngoko register of the language. The line of argumentation presented below for this purpose is modelled on that developed by Chung (2000). To the extent that Chung's description of the morphosyntax of Indonesian nominals noted above is correct, Javanese turns out to pose a stronger case against the NMP than does Indonesian because Javanese behaves similar to Indonesian but lacks any sort of classifier. See Sato (forthcoming), however, where I claim that Indonesian is not a classifier language, as argued by Chung, but behaves identically to Javanese in all respects relevant to the NMP.

Let us start by noting that Javanese permits bare, determinerless nominals to occur freely in all argument positions. This property is illustrated in examples in (1a-d).

- (1) a. *Buku* *larang*.
 book expensive
 'A book/the book/books {is/are} expensive.'
- b. *Esti* *tuku buku*.
 Esti buy book
 'Esti bought a book/the book/books.'
- c. *Esti* *nukokke uwong buku*.
 Esti buy man book
 'Esti bought a man/the man/men a book/the book/books.'
- d. *Esti* *entuk informasi seko buku*.
 Esti get information from book
 'Esti got information from a book/the book/books.'

This free occurrence of bare arguments shows that Javanese cannot be a [-arg, +pred] language such as Italian. Under Chierchia's NMP, this means that Javanese should be either a [+arg, -pred] language like Japanese or a [+arg, +pred] language like English. As far as the examples in (1a-d) are concerned, Javanese looks like a [+arg, -pred] language for the following reason. As indicated by the English translations in (1a-d), Javanese does not have an indefinite or definite article as in English, with the relevant difference being only made by reference to contexts, a point to which we return in section 3.2. This property is expected under [+arg, -pred] languages (Chierchia 1998b: 91, 92). An indefinite article is a variant of the first numeral and the name of a kind cannot pick out a singular instance of that kind. Thus, this type of language lacks an indefinite article. This language type also lacks a definite article because, when attached to a bare noun, the definite article singles out the sum of all members of the set denoted by the noun as the maximality operator. Accordingly, the definite article provides essentially the same information as the name of a kind, hence is redundant. In the next two sections, I show, drawing on the line of arguments made by Chung (2000) on the basis of Indonesian, that Javanese is neither a [+arg, -pred] language like Japanese or [+arg, +pred] language like English.

3.1. Javanese is not a [+arg, -pred] language

Recall from section 2 that the three properties of bare nominals in the [+arg, -pred] language type are all correlates of the single parameter that states that they each denote a particular kind. This class of language lacks morphological plural, allows bare nominal arguments, and develops a generalized classifier system. Since Javanese allows bare nominal arguments, let us suppose that it is a [+arg, -pred] language like Japanese. The NMP then predicts that this language should a)

lack morphological plural and b) develop a generalized classifier system. Both of these predictions, however, are falsified by examples in (2a, b) and (3a, b) (cf. note 1).

- | | | | | | | | | | |
|--------|----------------------------|------|-------------------|-------|----|-------------------------|---------|-------------------|-------|
| (2) a. | Esti | tuku | buku | telu. | b. | Esti | mangan | pelem | loro. |
| | Esti | buy | book | three | | Esti | eat | mango | two |
| | 'Esti bought three books.' | | | | | 'Esti ate two mangos.' | | | |
| | | | | | | | | | |
| (3) a. | Esti | tuku | <i>buku-buku.</i> | | b. | Esti | nata | <i>meja-meja.</i> | |
| | Esti | buy | book-RED | | | Esti | arrange | table-RED | |
| | 'Esti bought books.' | | | | | 'Esti arranged tables.' | | | |

The examples in (2a, b) show that Javanese is not a classifier language at least of the canonical [+arg, -pred] languages such as Japanese and Chinese. This property distinguishes Javanese from Indonesian, which Chung (2000) claims is a classifier language (see Sato forthcoming, however, for an opposing view). The examples in (3a, b) show that reduplication has the semantic function of deriving a form that is specifically plural. These examples, thus, indicate that Javanese lacks a classifier system and has plural morphology, quite contrary to what the NMP leads us to predict. Based on these two grounds, I conclude that Javanese is not a [+arg, -pred] language like Japanese.

3.2. Japanese is not a [+arg, +pred] language

There are two reasons to think that Javanese is not a [+arg, +pred] language such as English. The first argument concerns the scopelessness of bare nominals in Javanese under their indefinite interpretation. Chierchia (1998a: 368) observes, following the lead of Carlson (1977), that bare plurals in English behave as kinds in that they must take scope under negation whereas indefinites can take wide scope over negation. This contrast is illustrated in examples in (4a, b).

- (4) a. I didn't see ***spots*** on the floor.
 ⇒ Neg>indefinite (narrow scope): I did not see any spot on the floor.
 * indefinite>Neg (wide scope): There is a spot that I failed to see on the floor.
- b. I didn't see *a **spot*** on the floor.
 ⇒ Neg>indefinite (narrow scope): I did not see any spot on the floor.
 * indefinite>Neg (wide scope): There is a spot that I failed to see on the floor.
- (Chierchia 1998a: 368)

If Javanese is a [+arg, +pred] language, then the NMP predicts that a bare nominal argument in this language should also allow the wide scope reading with respect to negation under its indefinite reading, as English indefinites. (Recall that Javanese does not have the indefinite vs. definite distinction overtly marked by D heads, which is determined by contexts.) This prediction is incorrect, however, as shown by example in (5a), where the indefinite nominal argument *kotoran* ‘spot’ obligatorily scopes under negation. A relative clause strategy is used instead, as shown in (5b), to express the wide scope reading of this argument with respect to negation.

- (5) a. Aku ora weruh **kotoran** ning jubin.
 I Neg see spot on floor
 'I didn't see a spot on the floor.'
 ⇒ Neg>indefinite (narrow scope): I did not see any spot on the floor.
 *indefinite>Neg (wide scope): There is a spot that I failed to see on the floor.
- b. Ana **kotoran** sing aku ora weruh ning jubin.
 exist spot that I Neg see on floor
 'There is a spot that I didn't see on the floor.'
 ⇒ *Neg>Indefinite (narrow scope): I did not see any spot on the floor.
 indefinite>Neg (wide scope): There is a spot that I failed to see on the floor.

The second argument comes from the lack of pluralized/reduplicated forms in Javanese for the generic use of bare nouns. Chierchia (1998a: 362-368) notes that bare nominals in English can be inflected for plural in generic statements as in (6).

- (6) *Dogs* bark.
 ⇒ plural interpretation: There is more than one dog that barks/is barking.
 generic interpretation: It is a general property of dogs that they bark.

Now, if Javanese is a [+arg, +pred] language, the NMP leads us to the prediction that bare nominal arguments in this language should also be able to be reduplicated when interpreted as generic. The fact that example (7a) only allows the plural interpretation of the reduplicated bare argument *asu-asu* 'dogs' shows that this prediction is false. The generic reading is expressed instead in Javanese by simply using the bare nominal argument *asu* 'dog,' as shown in example in (7b).

- (7) a. Asu-asu nkegug. 'Dogs are barking.'
 dog-RED bark
 ⇒ plural interpretation: There is more than one dog that barks/is barking.
 * generic interpretation: It is a general property of dogs that they bark.
- b. Asu njegug. 'A dog/the dog/dogs bark.'
 dpg bark
 ⇒ plural interpretation: There is more than one dog that barks/is barking.
 generic interpretation: It is a general property of dogs that they bark.

It is true that the example in (7b) is naturally accounted for if Javanese is a [+arg, -pred] like Japanese because kinds are known to yield a universal reading, as noted by Chierchia (1998a: 363). But we have seen in the previous subsection that this analytic possibility is incorrect in light of the lack of a generalized clasisifer system and the presence of plural morphology marked by full reduplication of the root stem. Therefore, I conclude that Javanese is not a [+arg, +pred] language.

3.3. Section summary: Javanese as counterexample to the nominal mapping parameter

In this section, I have shown that Javanese does not fit into any one of the three language types that the NMP claims to exhaustively characterize all natural human languages. The fact that this language allows bare nominals in all argument positions shows that it is not a [-arg, +pred] language such as Italian. The presence of morphological plural marked via total reduplication of

the root stem and the lack of a generalized classifier system further show that Javanese is not a [+arg, -pred] language such as Japanese. Finally, the obligatory narrow scope reading of bare nominals with respect to negation and the lack of reduplicated forms for generic statements shows that Javanese is not a [+arg, + pred] language such as English. The cluster of the morphosyntactic properties of bare nominals in Javanese are summarized in (8a-e).

(8) The Morphosyntactic Properties of Javanese

- a. generalized bare arguments
- b. plural morphology marked via full reduplication of the root
- c. no generalized classifier system
- d. scopelessness of bare nominals under their indefinite reading
- e. lack of reduplicated forms for generic statements

These arguments show that the NMP imposes too tight a mapping between the denotation and morphosyntax of nominals in natural language, erroneously excluding the morphosyntactic pattern of bare nominals in Javanese. As noted above, similar arguments against the NMP also have been made by Schmitt and Munn (1999, 2002) for Brazilian Portuguese and Chung (2000) for Indonesian. In the next section, I provide an alternative, purely syntactic account of the observed correlation between the syntax and semantics of bare nominals that the NMP was originally designed to capture while at the same time naturally accommodating the existing morphosyntax pattern observed in Javanese.

4. How bare nominals grow across languages: A parametric morphosyntax of bare nouns

In addressing the proper analysis of the morphosyntax of bare nominals, it is instructive to point out a conceptual problem with Chierchia's notion of "semantic parameter." The NMP is a statement that parametrizes the possible value of a bare nominal at the syntax-semantics interface. This idea does not seem to be groundable within the standard conception of the locus of parameters in the Principles-&-Parameters approach to language variation. The standard assumption within this approach is that that cross-linguistic variation is restricted to the properties of the lexicon (Chomsky 1995), or functional categories alone (Borer 1984 and Fukui 1986). A natural approach then should be sought in the variation of the morphosyntactic inventory/structure of such nominals across languages and show that the observed set of differences fall out from morphosyntactic variation alone.

4.1. The parametric morphosyntax of bare nominals

The core idea pursued below is that languages differ in terms of two parameters: a) the height of the functional structure that dominates bare nominals in each language and b) the possible set of number values in each language. The idea that the superstructure on top of nominals differs both across languages and within languages is not a new idea but instead has been pursued in recent work as in Grimshaw (1991), Massam (2001), Guilfoyle and Noonan (1992). The idea that there is a fundamental difference between languages with respect to the number values has also received

attention in the study of the nominal system of Malay and Indonesian by Carson (2000) and Chung (2000), respectively. The proposed analysis is summarized in Table 1.³

| Languages | Num Values | Nominal Syntax |
|----------------------------|---|----------------|
| Indonesian, Javanese | {neutral, plural} | NumP |
| Russian | {singular, plural} or {neutral, plural} | NumP |
| Chinese | {neutral, plural} | CIP |
| Chinese, Japanese, English | {neutral, plural} | QP |
| Italian, English | {singular, plural} or {neutral, plural} | DP |

Table 1: The parametric morphosyntax of bare nominals across languages

In terms of nominal syntax, languages differ in how height a bare nominal can grow in each language within the range set by Universal Grammar. Specifically, I assume the universal nominal functional structure: DP>QP>CIP>NumP>NP. Languages like Javanese, Indonesian, and Russian project up to the Num P (see section 4.3 for discussion of the Russian morphosyntax). Languages like Japanese allow their bare nominals to project up to QP. Languages like Italian always project up to the DP level. Some languages such as English and Chinese have two options depending on the nature of bare nominals, as we will see below.

In terms of the Number values, the possible values for the number slot in languages like Italian and English are significantly different from those for the same slot in languages like Indonesian, Javanese, and Japanese. In her extensive study of the number system in Malay, Carson (2000) argues that bare nouns in this language are neutral with respect to number unless reduplication tells us otherwise and that Malay chooses {neutral, plural} values for the Number head. Thus, a (unreduplicated) bare nominal can denote either a singular or plural instance of the entity denoted by that nominal whereas its reduplicated form specifically denotes more than one instance of the same entity. The same argument is independently made by Chung (2000: 165, 167) for Indonesian. There is evidence that Japanese and Javanese also select the {neutral, plural} values for the Num head as in Malay and Indonesian though the dominant process to specifically denote plurality seem to be different between Japanese (*tachi*-suffixation; see note 1) and Javanese (reduplication). Consider examples in (9a, b) from Javanese and (10a, b) from Japanese.

- (9) a. Jaran lagi mangan.
 horse Prog eat
 ‘A horse is eating./Horses are eating.’
 b. Jaran-jaran lagi mangan.
 horse-RED Prog eat
 ‘*A horse is eating.’/Horses are eating.’
- (10) a. Uma-ga hasitteiru.
 horse-Nom play
 ‘A horse is running./Horses are running.’
 b. Uma-tachi-ga hasitteiru.
 horse-PL-Nom run
 ‘*A horse is running./Horses are running.’

³ Many thanks to Heidi Harley (personal communication) for suggesting the idea of “growth of nouns” and Andrew Carnie (personal communication) for bringing my attention to the works cited here that propose essentially the same idea.

In (9a), the unreduplicated bare nominal *jaran* ‘horse’ can denote either singular or plural instances of the horse. Its reduplicated correspondent *jaran-jaran* specifically denotes plurality, as shown by the English translation given to the example in (9b). Exactly the same observation holds for Japanese examples as in (10a) and (10b), where the bare nominal *uma* ‘horse’ can be construed as singular or plural depending on contexts but must denote plurality once it is suffixed with *-tachi*. Examples as in (11a, b) from Javanese and (12a, b) from Japanese make the same point.

- (11) a. Callie lan Tisa kuwi kucing.
 Callie and Tisa Cop cat
 ‘Callie and Tisa are cats.’
 b. Callie kucing
 Callie cat
 ‘Callie is a cat.’
- (12) a. Callie to Tisa-wa neko-da.
 Callie and Tisa-Top cat-Cop
 ‘Callie and Tisa are cats.’
 b. Callie-wa neko-da.
 Callie-Top cat-Cop
 ‘Callie is a cat.’

The semantic contrast between (9a)/(10a) and (9b)/(10b) and the examples in (11-12), therefore, provide evidence that bare nominals in Javanese and Japanese are specified as {neutral, plural} for the Num head as in Malay and Indonesian. Based on these arguments, I assume in this paper that the following specification of the set of possible values for the Num head holds.

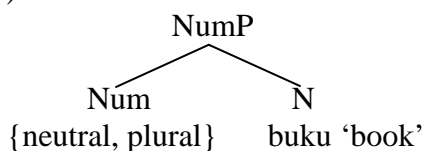
- (13) The possible values for the Num head
 a. Javanese, Japanese = {neutral, plural}
 b. Italian, English = {singular, plural} or {neutral, plural}

The number specifications shown in (13a, b) reveal an interesting implicational relationship, namely, that if a language can take {singular, plural} as a possible set of values for the Num head, it can also take {neutral, plural} as the alternative set. This observation may be related to the cross-linguistic fact that there is no language where all bare nouns are exclusively count nouns but there are languages such as Chinese, Japanese, and Javanese where all bare nouns are mass as proposed in Chierchia (1998a, b), a claim that is maintained in the present paper.

4.2. Deriving morphosyntax differences across languages

Consider first the nominal syntax of bare nouns in Javanese. We saw above that the following morphosyntactic characteristics holds in this language: i) it allows bare nominal arguments, ii) it lacks a generalized classifier system, iii) the extension of all nouns is mass, and iv) bare nominals must always take narrow scope with respect to negation. All these properties follow if bare nominals in Javanese project up to NumP with the set {neutral, plural}, as shown in (14).

- (14) The Nominal Structure of Bare Nouns in Indonesian and Javanese



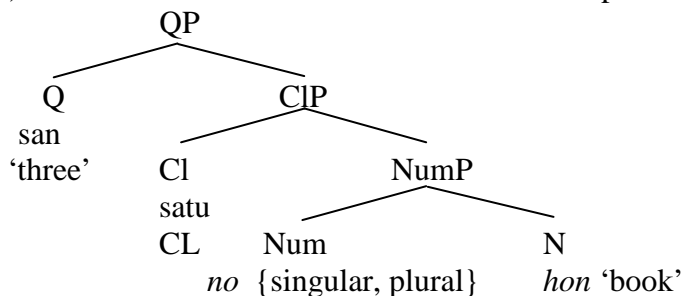
Javanese allows bare arguments because there is no DP. This language lacks a classifier system because bare nominals project up to NumP. Third, the extension of all nouns is mass for the following reason. If the Num value is specified as neutral, the denotation of the NumP is a kind because it does not differentiate between singular and plural instances of the NumP. If the Num value is plural, the denotation of the Num P is a bare plural, which is also a kind under Carlson's (1977) theory. Thus, whichever value the Num head selects yields a kind, hence mass interpretation to the NumP. Finally, the obligatory narrow scope reading of bare nouns with respect to negation follows from their kind-denoting requirement (or whatever principle blocks the wide scope reading of such nouns). In this way, the clustering of the morphosyntactic properties observed in Javanese, which were shown in section 3 to be unpredictable under the NMP, naturally follows from the interaction of the Num P structure with the {neutral, plural} set for the Num head.

Let us now turn to the nominal syntax of bare nouns in Japanese. Japanese has the following morphosyntactic characteristics; i) it allows bare arguments, ii) it has a generalized classifier system, iii) the extension of all nouns is mass, and iv) bare nouns take obligatory narrow scope with respect to negation. The first three properties were noted by Chierchia (1998a); the last property is illustrated in the contrast between (15a) and (15b). The bare noun *yogore* 'dirt' cannot take scope over the negative morpheme *nai* 'not,' as shown in (15a). The wide scope reading is expressed by the relative clause structure, as illustrated in (15b).

- (15) a. John-ga yuka-de yogore-o mituke-naka-tta (koto)
 John-Nom floor-Loc dirt-Acc find-Neg-Past (fact)
 '(The fact that) John did not find a spot/any spot/spots on the floor.'
 ⇒ Neg>indefinite (narrow scope): I did not see any spot on the floor.'
 * indefinite>Neg (wide scope): There is a spot that I failed to see on the floor.'
- b. John-ga yuka-de mituke-naka-tta yogore-ga aru (koto).
 John floor-Loc find-Neg-Past dirt-Nom exist fact
 '(The fact that) There is a spot that John did not find on the floor.'
 ⇒ * Neg>indefinite (narrow scope): I did not see any spot on the floor.'
 indefinite>Neg (wide scope): There is a spot that I failed to see on the floor.'

I propose that the nominal structure in this language is as shown in (16). Japanese bare nominals project up to QP with the Num specification being {neutral, plural} as in Javanese. I assume that what otherwise looks like a genitive case marker *no* in the expression *san satu-no hon* 'three-CL books' that intervenes between the classifier and the head noun is a linker that is inserted post-syntactically. This treatment seems appropriate given that there are no structurally characterizable conditions that govern the occurrence of this marker.

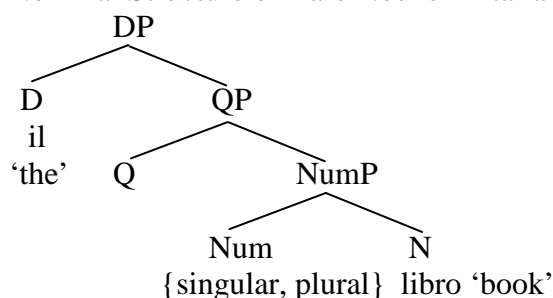
(16) The Nominal Structure of Bare Nouns in Japanese



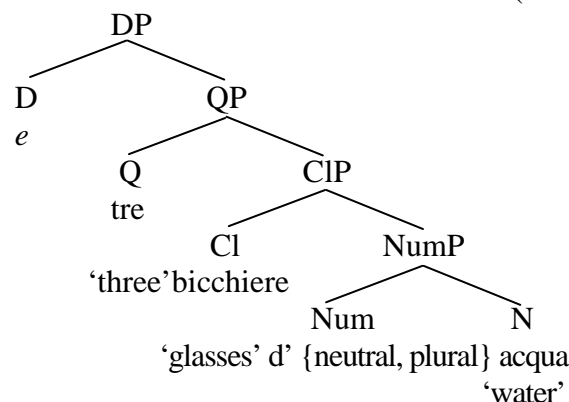
The above-noted morphosyntactic profile directly follows. First, Japanese allows bare nominals in any argument position because there is no DP projection in the structure in (16). Second, Japanese has a generalized classifier system due to the projection up to QP which dominates the CIP. Third, the extension of all nouns is mass for the same reason that the extension of all nouns is mass in Javanese: whichever value the Num head takes, the denotation of the NumP is a kind, which is mass. Finally, bare nominals in Japanese can only take narrow scope with respect to negation due to their kind-denoting requirement that blocks wide scope readings independently. Thus, the morphosyntactic profile of [+arg, -pred] languages like Japanese follows as an automatic consequence of the fact that Japanese nominals project only up to QP without the DP projection in tandem with the number specification as {singular, plural}.

Let us now consider the nominal syntax of bare nouns in Italian. Italian, being one of the examples of the [+arg, -pred] language under Chierchia's NMP, does not allow bare arguments. This property directly follows if nouns in Italian must always project up to DPs and hence instantiate the maximally complex nominal structure among languages of the world. We have also seen that Italian can take either {singular, plural} or {neutral, plural} for the Num value. The structure for Italian nominals, thus, will be as in (17) or (18), depending on whether the Num value is specified either as {singular, plural} or {neutral, plural}. Note that nominals in Italian project up to DP in both cases. I assume that *de* 'of' in (18) is inserted post-syntactically as a linker, like *no* in Japanese.

(17) The Nominal Structure of Bare Nouns in Italian (for count nouns)



(18) The Nominal Structure of Bare Nouns in Italian (for mass nouns)



One piece of evidence that Italian nominals always project up to DPs comes from the subject-object asymmetry in Italian noted by Chierchia (1998a: 356), who points out that bare nominal arguments are allowed in direct object positions in certain cases but never permitted in

subject positions, as illustrated by the contrast between (19a) and (19b). The same observation is also made by Longobardi 1994: 616, who points out the contrast between (20a) and (20b, c).

- (19) a. * *Bambini sono venuti da noi.* b. *Ho preso bicotti con il mio latte.*
 kids be come by us I-have taken cookie with the my milk
 ‘Kids came by us.’ ‘I ate cookies with my milk.’

(Chierchia 1998a: 356)

- (20) a. * *Acqua viene giù dalle colline.*
 water comes down from the hills
 ‘Water comes down from the hills.’
 b. *Viene giù acqua dalle colline.*
 comes down water from the hills
 ‘Down from the hills comes water.’
 c. *Ho preso acqua dalla sorgente.*
 I took water from the spring
 ‘I took water from the spring.’

(Longobardi 1994: 616)

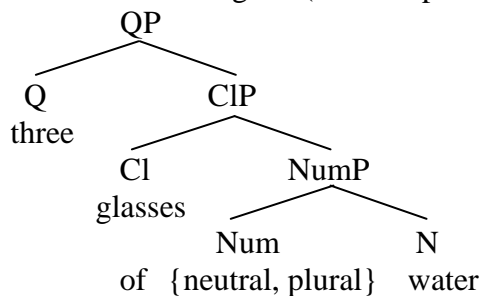
The subject-object asymmetry here follows if we assume, following Longobardi 1994, that Italian nouns always project up to a DP with an empty head. A standard assumption in the generative framework has been that empty heads must be properly licensed by appropriate heads (Rizzi 1990). Under this assumption, the null D head in (19b) that dominates the bare noun *bicotti* ‘cookie’ is correctly licensed by the verbal head *preso* ‘take’. This licensing option is unavailable for the empty D head that dominates *bambini* ‘kids’ in (19a) because it has no appropriate head to license the null D. The same story holds for the contrast between (20a) and (20b, c). Thus, the subject object asymmetry illustrated here provides support for the DP structure for Italian bare nominals.

Consider finally the syntax of bare nominals in English. We have seen in section 2 that, under Chierchia’s NMP, English belongs to the [+arg, +pred] language type. This means that this language behaves like Japanese and Chinese in that the extension of its bare plural and mass nouns is a kind (hence [+arg]) whereas behaving like Italian and French in that it prohibits count nouns from occurring without determiners (hence [+pred]). I propose that this dual behavior of English nouns follows if English can choose either the Japanese-type QP-structure or the Italian-type DP structure. Let us consider first the Japanese-type structure assigned to English when bare plurals and mass nouns are involved. In this case, English allows bare arguments, requires a classifier system, and does not have plural morphology, as shown in (21a-c), respectively. These properties mirror exactly those observed in Japanese.

- (21) a. I drank water.
 b. I drank three glasses of water.
 c. * I drank waters.

Thus, I propose the nominal structure for bare plurals and mass nouns as shown in (22), which is the Japanese-type nominal structure; it projects up to QP with the Num value being chosen from the {neutral, plural} set. As in Italian *de* and *no* in Japanese, I assume that the preposition *of* is inserted post-syntactically between the classifier and the bare noun as in *three glasses of water*.

(22) The Nominal Structure in English (for bare plurals and mass nouns)



The three morphosyntactic properties of bare plurals and mass nouns in English noted above are derived automatically by virtue of the fact that English has the Japanese-type QP structure. The bare nominal argument option is possible because there is no DP on top of the QP. The Num specification shown in (22) requires that the denotation of the NumP be a kind. Thus, a certain set of classifier-like expressions such as *glass*, *cup*, and *piece* is required for nouns in the structure in (22) to set up an appropriate counting level for each noun, as in Japanese. There is no plural morphology observed in bare plurals or mass nouns because they are true in an undifferentiated manner of a singular or plural instance of the entity denoted by this type of noun. If English is like Japanese, the proposed analysis also leads to the prediction that bare plurals and mass nouns cannot take wide scope over negation due to their kind-denoting requirement. This prediction is indeed confirmed by examples like (4a), repeated here as (23a), and (23b).

(23) a. I didn't see spots on the floor.

⇒ Neg>Indefinite (narrow scope): I did not see any spot on the floor.

* Indefinite>Neg (wide scope): There is a spot that I failed to see on the floor.

b. I didn't see furniture in the room.

⇒ Neg>Indefinite (narrow scope): I did not see any piece of furniture in the room.

* Indefinite>Neg (wide scope): There is a piece of furniture that I failed to see in the room.

Consider now the structure for count nouns in English. When count nouns are involved, English does not allow bare nominal arguments (24a), lacks any classifier (24b), has plural morphology (24c), a cluster of properties that we have seen to characterize nominals in Italian.

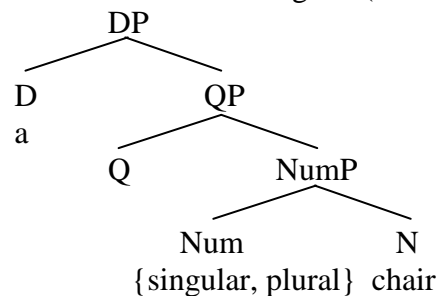
(24) a. I saw a cat.

b.* I saw a piece of cat.

c. I saw cats.

Thus, English takes the Italian-type nominal functional structure, as shown in (25). I assume that the indefinite article *a* is base-generated under the D head. Alternatively, *a* realizes the Q head (that is raised to the D head), since it denotes a singular instance of a discrete, countable entity; recall Chierchia's (1998b: 91, 92) observation noted in section 2; see also Longobardi (1994).

(25) The Nominal Structure in English (for count nouns)



The determiner-less bare option for count nouns is impossible for count nouns because the nominal structure projects up to the DP, as in (25). When the singular value is selected for the Num head, the denotation of the NumP is a singular instance of the chair, which is compatible with the function of the indefinite article *a*. When the plural value is selected, the denotation of the NumP is bare plural, which is a name of kind, as argued for in Carlson (1977) and Chierchia (1998a, b).

4.3. A parametric nominal syntax of bare nominals: New predictions

The proposed analysis makes several other predictions. I briefly mention four languages whose morphosyntactic profile is naturally predicted by the proposed parametric syntactic theory of nominal denotation; See Sato (forthcoming) for details. First, Wexler and Manzini (1987) propose the Subset Principle that one should start with the setting that rules out the most, so that children can revise his working hypothesis solely based on positive evidence alone. This idea has been further developed and applied to different range of constructions that arise at different stages of child language acquisition by Guilfoyle and Noonan (1992) under the *Structure Building Hypothesis*. Couched within the present analysis, this hypothesis means that children acquire nominal syntax in a “bottom-up” fashion. Then, we predict that early stages of all languages should look like Javanese, which has the simplest nominal syntax (NumP); see also Chierchia (1998a: 400) for a similar remark from his NMP. Examination of the so-called telegraphic speech shows that Child English indeed allows generalized bare arguments, exhibits plural morphology via inflection, and lacks a classifier system, a combination of properties that also holds for Javanese, as we have seen above. The second prediction of the proposed analysis concerns the nominal syntax in Slavic languages like Russian, which Chierchia (1998a, b) briefly mentions as a language of the [+arg, +pred] type on a par with English. The morphosyntactic profile of Russian is as follows i) bare nominals are permitted in argument positions, ii) a generalized classifier system is missing, and iii) bare nominals may take either wide or narrow scope with respect to negation. Under the proposed analysis, this morphosyntactic profile of Russian falls into place if bare nouns in this language project up to NumP, as in Javanese but with its possible set of the Num values being either {singular, plural} or {neutral, plural}, as in English and Italian. The availability of bare nominal arguments and the lack of a generalized classifier system results from the NumP nominal structure. The scope variability of bare nominals results when a noun is selected by the Num head with the singular specification, as in English and Italian count nouns. In this way, the proposed analysis can serve to classify languages like Russian in terms of the complexity of nominal projections and the possible number values. The third prediction concerns Chinese languages. I have provided evidence that the DP, QP, and NumP options are instantiated by Italian/English (for count nouns), Japanese/English (for bare plurals and mass nouns) and Javanese, respectively. The proposed analysis predicts that there are languages that instantiate the CIP option.

There may be conceptual reasons why languages of this type are not easy to find; classifiers have the function of individuation, which makes it possible to extract “discrete occurrences.” This individuation function may well naturally tie with numerals to produce expressions like *three cups of coffee*, thereby blocking the CIP option from being utilized across the board in natural language syntax. However, as we have seen above, English can choose one or the other structure depending on the nature of bare nouns involved. Therefore, the proposed analysis leads us to expect that some languages instantiate the CIP option in a restricted range of circumstances. Importantly, Cheng and Sybesma show that definite bare nominals in Mandarin and Cantonese project up to CIPs whereas indefinite bare nominals in these languages project up to Numeral P (QP under the proposed analysis). The definite interpretation is derived from the CIP structure under their assumption that N-to-Cl movement feeds the generation of the *t*-operator, which, according to Chierchia (1998: 359), “selects the greatest element from the extension of a predicate and constitutes typically the meaning of a definite article.”; see Cheng and Sybesma (1999: 524) for detailed discussion. The indefinite interpretation, on the other hand, is derived from the NumeralP/QP option since “the numeral apparently has the effect of undoing the definiteness.” (Cheng and Sybesma 1999: 524). The argument above therefore shows that Cantonese and Mandarin are candidates for the CIP languages. This analysis further allows us to correctly predict several other morphosyntactic properties of bare nominals in these two languages that are indeed borne out by Cheng and Sybesma’s findings. First, these two languages allow bare nominal arguments because these languages do not project up to DPs. Second, these languages have a generalized classifier system due to the projection up to CIPs or QPs that dominate them. Third, the fact that these languages do not have plural morphology is what is predicted if these languages choose the {neutral, plural} value for the Num head, an assumption that is supported by the finding in Cheng and Sybesma (1999: 519) that “Chinese bare nouns can be interpreted as both singular and plural.” Finally, bare nominals should not be able to take scope over negation, a prediction that is borne out by the obligatory narrow scope of bare nominals. Finally, as mentioned earlier, Schmitt and Munn (1999, 2002) show that Brazilian Portuguese provide a counterexample to Chierchia’s NMP. Importantly, they observe that bare singulars in this language must take narrow scope with respect to negation and underspecified for number, meaning that the Num value must be selected from {neutral, plural} set as in Javanese, Japanese, English (for bare plural and mass nouns), and Mandarin/Cantonese. Schmitt and Munn (1999, 2002) conclude that bare singulars in Brazilian Portuguese are DPs. Combining this conclusion with the above-noted observation on number, one can maintain that bare nominals in this language always project up to DP as in Italian and English with the Num head being specified for {neutral, plural} as in Javanese and Japanese. Schmitt and Munn point out many detailed interpretive subtleties involved in the use of bare singulars in Brazilian Portuguese as caused by the nature of predicates and episodic contexts so the situation is more complex than stated here. However, the fact that the core property of bare nominals in this language can be characterized in the manner suggested here does indicate that the proposed analysis is on the right track.

5. Conclusions

In this paper, I have discussed the issue of syntax-semantics interface with reference to the denotation and morphosyntax of bare nominals in several languages. I have shown that Javanese do not fit into any one of the three language types predicted by Chierchia’s (1998a, b) NMP. Following the standard conception of the locus of parameters in the Principles-&-Parameters approach to language variation, I have proposed an alternative syntactic theory that derives different morphosyntactic profiles of bare

nominals in different languages from the relative complexity of nominal functional structures and the possible set of Num values that are available in each language. The proposed analysis serves to define the logical space within which the behavior of bare arguments may vary across languages and predicts a range of languages that have not received enough attention in the literature. Needless to say, a much larger-scale investigation of what type many other languages not discussed here belong to within the proposed analysis is an important task to undertake in future research.

References

- Bobaljik, Jonathan (1995). *Morphosyntax: The syntax of verbal inflection*. Ph.D.dissertation, MIT.
- Borer, Hagit (1984). *Parametric syntax*. Foris, Dordrecht.
- Carlson, Greg (1977). *Reference to kinds in English*. Ph.D. dissertation, University of Massachusetts, Amherst.
- Carson, Jana (2000). *The semantics of number in Malay noun phrases*. Master's thesis, University of Calgary.
- Cheng, Lisa and Rint Sybesma (1999). Bare and not-so-bare nouns and the structure of NP. *Linguistic Inquiry* 30: 509-542.
- Chierchia, Gennaro (1998a). Reference to kinds across languages. *Natural Language Semantics* 6: 339-405.
- Chierchia, Gennaro (1998b). Plurality of nouns and the notion of "semantic parameter." In Susan Rothstein (ed.), *Events and grammar*. Academic Publishers, Kluwer. 53-103.
- Chomsky, Noam (1995). *The minimalist program*. MIT Press, Cambridge, Mass.
- Chung, Sandra (2000). On reference to kinds in Indonesian. *Natural Language Semantics* 8: 157- 171.
- Fukui, Naoki (1986). *A theory of category projections and its applications*. Ph.D.dissertation, MIT
- Grimshaw, Jane (1991). Extended projections. Ms., Brandeis University.
- Guilfoyle, Eithne and Maire Noonan (1992). Functional categories and language acquisition. *Canadian Journal of Linguistics* 37: 241-272.
- Longobardi, Giuseppe (1994). Reference and proper names: A theory of N-movement in syntax and logical form. *Linguistic Inquiry* 25: 609-655.
- Massam, Diane (2001). Pseudo noun incorporation in Niuean. *Natural Language and Linguistic Theory* 19: 153-197.
- Rizzi, Luigi (1990). *Relativized minimality*. MIT Press, Cambridge, Mass.
- Sato, Yosuke (forthcoming). *Minimalist interfaces: Selected issues in Indonesian and Javanese*. Ph.D. dissertation, University of Arizona, Tucson.
- Schmitt, Cristina and Alan Munn (1999). Against the nominal mapping parameter: Bare nouns in Brazilian Portuguese. *Proceedings of the 29th Northeastern Linguistic Society*. 339-353.
- Schmitt, Cristina and Alan Munn (2002). The syntax and semantics of bare arguments in Brazilian Portuguese. *Linguistic Variation Yearbook* 2: 185-216.
- Wexler, Kenneth and Rita Manzini (1987). Parameters and learnability in binding theory. In Thomas Roeper and Edwin Williams (eds.), *Parameter setting*. Reidel, Dordrecht. 41-76.

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