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Master Thesis

**Numeral Classifiers and Plurals in Indonesian Nominal**

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## List of Abbreviations

Adj	Adjective
Arg	Argument
At	Atom
CL	Classifier
CLP	Classifier Phrase
D/DET	Determiner
Dem	Demonstrative
DNQ	DP Local Numeral Quantifier
DP	Determiner Phrase
FNQ	Floating Numeral Quantifier
FUT	Future
GEN	Genitive
LF	Logical Form
N	Noun
NOM	Nominative
NP	Noun Phrase
Num	Numeral
NumP	Numeral Phrase
PASS	Passive
Pred	Predicate
PRO	Pronoun
PROG	Progressive
Q	Quantifier
RC	Relative Clause
RED	Reduplication
SPEC	Specifier

## **Abstract**

Chierchia's (1998a, 1998b) theory of the Nominal Mapping Parameter classifies languages into three types on the basis of its bare nominal semantics. The claim is that all languages should belong to one of the three settings in the model. Chierchia suggests that the presence of classifiers is associated with the absence of a semantically active and obligatory plural morpheme in classifier languages (i.e. [+arg,-pred] languages). However, this seems not to be the case for Indonesian as a classifier language since its plural morphology is both syntactically and semantically active. We have found that Indonesian is a language which has a dual system, i.e. the one being a [+arg,-pred] language because of its classifier system and bare NP arguments, and the other being a [+arg, +pred] language with respect to its plural morphology.

**Keywords:**

Bare nouns, numeral, classifier, determiner, mass, count, plural.

## 1. Introduction

Chierchia's (1998a, 1998b) theory of the Nominal Mapping Parameter, (henceforth NMP) classifies languages into three types on the basis of the semantics of bare nominal. The first type is that of [+arg, -pred] languages. In these languages, bare nouns denote kinds of type < e > and kinds can always shift to mass noun denotation (Carlson 1977). This allows bare nouns to appear in an argument position; just like English where bare plural nouns denote kinds as well and can appear in argument positions. Consider examples (1) in Chinese and English for the use of bare nouns in argument positions. Both the bold-type nouns are kind – denoting, i.e. a kind of book.

(1). a. *Hufei mai **shu** qu le.*

Hufei buy book go SFP

‘Hufei went to buy a book/books.’ (Cheng and Sybesma, 1999)

b. Linguistics **books** are hard to read

Moreover, [+arg,-pred] languages are also characterized by the absence of plural morphology since all nouns are considered as mass nouns. There is no distinction between mass/count nouns since kinds can always shift all nouns to mass denotations. This being mass noun requires the use of classifiers (CL) together with numerals (Num) when we want to quantify a nominal phrase (NP). An example is given in (2) where the absence of a classifier is ruled out.

(2) *san \*(**ben**) shu*

three CL book

“three books” (literally 3 volume book) (Cheng and Sybesma, 1999)

The second type of languages according to Chierchia's NMP is languages which have the [-arg, + pred] setting for their NPs. Bare nouns in these languages denote predicates of type < e, t >. Unlike the first type, bare nouns are not allowed to appear in argument positions unless a category determiner (D) is present, as shown in French in (3) below where the missing D category leads to an ill-formed sentence.

(3). \**Enfants sont venus chez nous.*

‘Kids have come by us.’

(cf. Chierchia, 1998)

The third type of languages in Chierchia’s NMP is that of [+arg, +pred] languages. Bare nouns in these languages can denote either type <e> or <e, t>. Therefore, they can be mapped either to kinds (to yield mass and bare plurals) or to properties (to yield countable nouns). As a result, these languages allow mass (4a) and plural nouns (4b), but not singular noun (4c), to appear in argument positions.

(4). a. I love **ice cream**

b. **Children** need to better education

c. \*She has **book**

If all languages are supposed to be classified as one of those three types, as Chierchia claims, then Indonesian is expected to be of type 1, i.e. a [+arg,-pred] language (i.e. Chung, 2000, Simpson, 2005, Sato, 2009), because Indonesian allows bare nominals to occur in argument positions and has a number of classifiers in its nominal domain, as illustrated in (5) where the bare NP *buku* “book” can appear in an argument position, and the absence of a classifier *ekor* “tail” is ill-formed.

(5). a. *Saya membeli buku.*

I buy book

‘I bought a book/books’

b. *Budi memiliki se\*(ekor) sapi.*

Budi have Num CL cow

‘Budi has a cow’

However, sentence (6) below indicates that not only does Indonesian have classifiers in its nominal construction, but also expresses plurality by means of reduplication (RED), a condition which is supposed not to occur in Chierchia’s parameter setting.

- (6). *Ria Saptarika bersama sedikitnya 80 orang siswa siswi.*<sup>1</sup>  
Ria Saptarika together least Num CL student RED

“Ria Saptarika went together with at least 80 students”

Sentence (6) suggests that the noun *siswa* “a student” is pluralized via reduplication (RED) *siswa-siswi* yet the numeral ‘80’ and the classifier *orang* which means ‘person’ also occur. Chierchia’s NMP predicts that the presence of a classifier in [+arg, -pred] languages is associated with the absence of plural morphology. Therefore, sentences like (6) seem to show us evidence that it is a problem for Indonesian to fit in the model since Indonesian is a language which allows a numeral, a classifier and a plural morphology via reduplication, i.e. a common way for pluralizing Indonesian count nouns, among others. To be more precise, Chierchia’s theory predicts that no “classifier language”, i.e. [+arg, -pred] language, will have a semantically active, and obligatory plural morpheme because all nouns in such languages are mass nouns and mass nouns have already neutralized the singular/plural distinction. However, Indonesian seems to cast doubts on the theory.

If it is true that Indonesian is a classifier language yet has productive plural morphology and a mass/count distinction, then Indonesian does not seem to fit in the three models proposed by Chierchia. There are two assumptions, one may speculate, that could account for this; first, Indonesian could be a [+arg, -pred] language in Chierchia’s typology, perhaps like Japanese and Chinese, but its plural morpheme via reduplication seems to exclude Indonesian from such a setting. Second, Indonesian could be a language which has a dual system between, i.e. a [+arg, -pred] language in a sense that it a generalized classifier system on the one hand, and a [+arg, +pred] language, like English in a sense that it has a productive plural morphology on the other hand. This thesis attempts to provide arguments for the second proposal, i.e. Indonesian is a language which has a dual system in Chierchia’s sense.

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<sup>1</sup> taken from <http://www.riasaptarika.web.id/index.php/2008/09/20/ria-saptarika-bersama-sedikitnya-80-orang-siswa-siswi/>

However, the observation that Indonesian is a language which has both generalized classifier systems and obligatory plural morphology may not, in a straightforward way, falsify the prediction of Chierchia's theory. It is rather to provide a thorough analysis on the characteristics of Indonesian nominal, specifically on the behavior of numeral classifiers and plurals in modifying an NP which seems to be a problem for Chierchia's model. In order to resolve this, we will provide a comprehensive analysis of the syntax and semantics of Indonesian plural morphology. We will show that Indonesian reduplication to indicate plurality is actually productive, not just purely formal reduplication and further it also has a mass/count distinction. In the second section, the discussion will be devoted on Chierchia's Nominal Mapping Parameter. In the third section, we will provide a syntactic analysis of the Indonesian nominal. Particular attention is given to the discussion of bare NPs, numeral classifiers, and determiner-like elements. Section four discusses the syntax and semantics of Indonesian plural which suggests that plural formation is actually a productive process. Also in this section, we will show that the mass/count noun distinction in Indonesian is actually transparent. Section five recapitulates the discussions from the previous sections on Indonesian nominal with respect to Chierchia's NMP and then presents general remarks and proposals for further study.

## 2. Chierchia's Nominal Mapping Parameter

As introduced in the beginning of this thesis, Chierchia's (1998a and 1998b) describes noun denotations on the basis of the semantics of bare nominals. He explores the relation between numeral classifiers, the grammaticality of bare nouns appearing in argument positions, and the distinction between singular and plural morphology. He further proposed two core functions of nouns, that of providing a restrictor for a quantifier and that of being a predicate.<sup>2</sup> In this respect, languages are characterized as either argumental ([+arg]) or predicative ([+pred]) in view of the types of nominals they have. Argumental NPs are mapped onto their denotations as kinds while predicative NPs are mapped onto their denotations as properties. These type properties are universal and Chierchia claims that all languages have one or the other, or possibly both types of nouns.

NPs are defined as argumental or predicative in their nominal domain. In languages which have only argumental NPs, i.e. [+arg, -pred], nouns refer to kinds and hence are able to appear in argument positions without being necessary to have a D category just like proper names in English and many languages. Argument positions are the positions where an NP can receive its theta role. However, languages which only have predicative NPs require the presence of a determiner for nouns of type <e, t> to occur in argument positions. In other words, only DPs occur in argument positions in this class of language, whether the D head is overt or covert. This syntactical and morphological distribution of nominal constructions is argued as a property of every language, as Chierchia explicitly notes; "These options are presumably in some form or other in every language..." (1998a, 1998b: 352).

Chierchia proposes that the setting [ $\pm$ arg] and [ $\pm$ pred] constrain the way an NP is mapped onto its interpretations. The [+arg] setting, for instance, means that all NPs in the language can be placed in an argument position. Conversely, for a language which has the [-arg] setting, an NP cannot be placed in an argument position. This means that

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<sup>2</sup> Functioning as a restrictor for a quantifier is not at all the same as denoting a kind. Chierchia is treating mass nouns as kind denoting and a kind denoting noun is like a proper name (i.e. of type <e>). Being a restrictor of a quantifier requires being of type <e, t>, under the standard assumptions about the logical type of quantification and determiners, i.e. Generalized Quantifier Theory.

an NP which has, for instance, the [+arg, –pred] setting has the ability of the members of the category N (and their phrasal projections) to be mapped into arguments. What we have to assume with those settings, i.e. [±arg] and [±pred], is that the all possible combinations are only [+arg,-pred], [-arg,+pred], and [+arg,+pred]. The permutation of [–arg, –pred] setting is not attested. This permutation is ill formed since this means that an NP does not have any interpretation at all.<sup>3</sup> We will see what characteristics of languages with these settings are and explain them one by one in turn.

First, we will discuss languages in the [+arg, –pred] setting. In these languages, a singular NP can refer to a kind; it is the proper name of a given kind. If an NP refers to kinds, the NP is argumental. Since the NP is argumental, it can occur in argument positions freely without the presence of any determiner. In argumental languages ([+arg]), determiners will have to apply to kinds; but this can be obtained in a straightforward way by assuming that determiner meanings have predictable kind-taking variants. In other words, a D category in these languages is free to pick and choose the variant fitting the NP type (Chierchia, 1998a: 353). Languages belonging to this setting are, among others, Japanese and Chinese.

In addition, Chierchia further claims that NPs in these languages are all considered as mass nouns since a kind denoting (of type <e>), can always shift to mass denotation (also of type <e>). For example, the kind denoting NP in (7a) can alternatively have the mass reading in (7b).

(7) a. Furniture is expensive in the Netherlands.

b. There is a very little furniture in my room.

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<sup>3</sup> An adverb is neither as an argument getting a theta role nor a predicate giving one: *John ran quickly*, where *John* is an argument of type <e>, *ran* is a predicate of type <e,t> and *quickly* is generally analyzed as type <<e,t>, <e,t>>. In English, there are some nouns which appear to be functioning as adverbs, such as in [[Tomorrow]<sub>NP</sub> is Thursday]. The word “tomorrow” is clearly a noun in an argument position. However, “tomorrow” in [John will leave [tomorrow]] is still a noun yet functions as an adverb. In a certain circumstance, a noun like “tennis” in (i) is not referential, i.e. not an argument. Meanwhile, (ii) suggests that the noun “tennis” is an argument followed by a determiner, yet when this is applied to a context like (iii) the sentence is ungrammatical. (Bill Philip remarks)

(i) John plays tennis.

(ii) The tennis is played with 2 or 4 players.

(iii)\*John plays the tennis.

This entails that plural marking will be absent in [+arg,-pred] languages since the semantic distinction between singular and plural count nouns has been neutralized. A mass noun denotes a set of atomic individuals plus any and all plural individuals that can be generated from these atoms. For example, if there were three pieces of furniture in the universe, namely *a*, *b*, and *c*, then the extension of furniture would be (abstracting away from intensionality) the set {*a*,*b*,*c*, *a*+*b*, *a*+*c*, *b*+*c*, *a*+*b*+*c*}. In contrast, the extension of a singular count noun like *book*, for instance, would be just a set of atoms, i.e. {*a*,*b*,*c*} whereas the extension of pluralization of the noun *book*, [[*book*]+ *s*], would be {*a*+*b*, *a*+*c*, *b*+*c*, *a*+*b*+*c*}, i.e. without the atoms. Thus, in Chierchia's theory, a mass noun denotation is simply the union of a singular and plural count noun denotation.

Being a mass noun, a plural morpheme like English *-s* or Dutch *-s* or *-en* would have no semantic function in [+arg,-pred] languages. In other words, plural markings, if existed, would be semantically empty.<sup>4</sup> As noted in the introduction section, one of the characteristics of [+arg, -pred] languages is the necessity for a classifier to cooccur with a numeral in modifying an NP. Classifiers are needed for counting since to count something, we need to be precise about the atoms and classifiers can do that, e.g. "one piece of furniture", two pieces of furniture, etc. This condition is usually accompanied by the absence of plural morphology since all nouns are considered as mass nouns and it is indeed different from the Romance languages, on which Chierchia has based his analysis.

A numeral will have to be embedded with a classifier since it cannot quantify or modify a NP directly in a [+arg,-pred] language. So, in a language like Chinese, we will have to say something like (8), with the obligatory use of a classifier (CL).

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<sup>4</sup> The idea that all nouns are mass like does not entail that no distinction resembling the mass/count distinction will be found in such languages (see, e.g., Cheng and Sybesma 1996). All human beings are aware that a mass noun like "water" denotes a substance, not an object and that a count noun such as "a rock" is an object, not a substance. It is not difficult to express this logical distinction in whatever language. The mass/count distinction found in grammar is a contrast in how a noun denotes things in the world. A count noun like "chair" denotes in precisely countable fashion as a set of objects that are "chairs". In addition, a mass noun like "furniture" also denotes a set of objects, some or all of which may be "chairs". The essential difference, according to Chierchia, is similar to the contrast in meaning in (i);

- (i) a. [there are two unicorns in the garden]  
b. [there are some unicorns in the garden]

- (8) a. *san \*(ge) ren*  
 three CL people  
 “three persons” (literally 3 person people)
- b. *san \*(zhi) bi*  
 three CL pen  
 “three pens” (literally 3 long-thing pen)
- c. *san \*(ben) shu*  
 three CL book  
 “three books” (literally 3 volume book) (cf. Cheng and Sybesma, 1999)

It is clear in (8) that one cannot say things like “three persons” in such a language. Instead, one must say “three human beings of people”, as (8a) suggests. This holds also for the nouns such as “pen” in (8b) and “book” in (8c). Even in non canonical positions such as when a numeral is not local to the NP with which it is construed, e.g. Japanese floated numeral quantifiers such as (9b), the presence of a classifier is still obligatory and has to follow the quantifier.

- (9) a. [*futa - ri- no moto-dookyusei*]-ga sengetsu kekkonshita. (NP-local)  
 2 - CL-GEN ex - classmate -NOM last month married  
 ‘Two ex-classmates got married last month (to each other/to two other people).’
- b. [*moto-dookyusei*]-ga sengetsu futa-ri Kekkonshta. (floated)  
 ex - classmate-NOM last month 2-CL married  
 ‘Two ex-classmates each got married last month (\*to each other/to two other people).’ (Cited from Kobuchi, 2007)

This is also the case for Indonesian where a classifier co-occurs with a numeral under certain circumstance (This will be discussed in section 3.2).<sup>5</sup> For instance, when we use

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<sup>5</sup> In Indonesian, classifiers can be optional when counting under some conditions. Similarly, in English, we have to say things like “two pieces of toast”. However, classifiers are sometimes obligatory when there is nothing being counted, as is true of Chinese.

the numeral *se-*, "one" in (10a), the classifier *buah*, "fruit", must also be realized overtly.<sup>6</sup> This holds also for the two other classifiers of Indonesian, such as *orang* "person" for personal nouns and *ekor* "tail" for animals, as illustrated in (10b) and (10c).

(10) a. *se-\*(buah) buku baru diatas meja*

one – CL book new on table

'a new book on the table'

b. *se-\*(orang) guru bahasa Inggris*

one - CL teacher language English

'an English teacher'

c. *se-\*(ekor) kucing hitam*

one – CL cat black

'a black cat'

Furthermore, another characteristic of [+arg, –pred] languages is that they allow a bare NP to occur in an argument position. Examples in Indonesian are given in (11). Bare NPs can occur in every argument position, i.e. as subject (11a), object (11b) or the object of preposition (11b).

(11) a. *Trotsky pernah meneriakan bahwa partai tidak bisah bersalah.*

Trotsky once yell.out that party not can wrong

"Trotsky once asserted loudly that the party could not be wrong."

(MacDonald (1976: 102), as cited in Chung (2000: 160))

b. *Saya pinjam mobil dari kantor.*

I borrow car from office

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<sup>6</sup> The numeral *se-* is conceivably believed as the reduced form of *satu* "one" ( i.e. Gil, 1994)

“I borrowed a car from the office.”  
(Wolff et al. (1992: 715), as cited in Chung (2000: 159))

Chierchia also claims that because all nouns in [+arg,-pred] languages are mass nouns; the morphological distinction between singular and plural is not possible since this distinction has been neutralized. An example is given in Japanese (12) where the noun in question is ambiguous with respect to number.

(12) *Otokonoko-ga asonde-iru*  
boy-NOM play-PROG

‘A boy is playing.’/‘Boys are playing.’  
(Nakanishi & Tomioka 2004, as cf. Dalrymple and Movu, 2009)

The lack of singular/plural morphology in classifier languages like Japanese is also noted in Greenberg (1972: 177) and Aikhenvald (2000), who propose that classifier languages generally do not have compulsory expression of nominal plurality. The absence of obligatory plural marking here is entailed in Chierchia’s theory which claims strictly that it is a general property of nouns in numeral classifier languages that they are uniformly mass nouns.<sup>7</sup>

What has been elaborated above suggests that in the first type of Chierchia’s typology where the NPs are argumental (+arg), it seems that in a very direct way, [+arg, –pred] languages have the following characteristics with respect to their semantic denotations; they have a generalized classifier system, allow bare NPs to appear in argument

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<sup>7</sup> Chierchia’s theory entails that an English plural could not have any semantic function in a classifier language; however, grammatical operations do not have to have a semantic function in order to be obligatory. There are plenty of obligatory aspects of grammar which have no semantic effect, e.g. subject-auxiliary inversion in WH questions. There is no semantic difference (i) and (ii), yet (ii) is ungrammatical because subject object inversion is obligatory.

- (i) What will he do?
- (ii) \*What he will do?

Moreover, Chierchia’s theory does not entail that no kind of obligatory pluralization can exist, only that no English-type pluralization.

positions, consider the extension of all nouns to be mass nouns, and also disallow plural morphology.

Now let's turn to predicative languages ([-arg, +pred]). How do things go in predicative languages? As mentioned before, the second type of languages in Chierchia's typology is that of languages which have the [-arg, +pred] setting. It is conceivable from the features in the bracket that a language of this sort has to put every noun to be a predicate. We understand that predicates cannot occur in argument positions. Therefore, a language of this kind rules out bare nominal in argument positions. Consider the examples in French as given in (13) below.

(13) a. \* *Enfants sont venus chez nous.*

'Kids have come by us.'

b. \* *J'ai mangé biscuits dans mon lait.*

'I ate cookies with my milk.' (Cited from Chierchia, 1998a, 1998b)

Examples (13a) and (13b) suggest that those two sentences are ruled out by the absence a determiner above the nominal phrase. The plural noun *enfants* "kids" in this language has to be realized together with the presence of a determiner. Otherwise, the sentence is ill-formed. This condition is what Chierchia actually expects that an NP in [-arg, +pred] languages cannot be made into an argument without projecting a D category.<sup>8</sup>

However, a D category in [-arg, +pred] languages does not necessarily have to be overtly realized. Instead, it can be phonologically null or covertly realized. This phonologically null structure needs to be licensed though, as for example by it being close to a suitable head (see, e.g., Rizzi 1997). An example of such a language is Italian where the counterpart of (13a) stays ungrammatical, but the counterpart of (13b) can be grammatical under some conditions which are not discussed here for space reasons.<sup>9</sup>

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<sup>8</sup> In fact, the [+pred] setting of Chierchia's model reduces to a requirement that D be phonetically spelled out in certain context, e.g. in a sentential construction, but maybe not for others. This is considered as a phonological claim. But I think this does not mitigate the fact that a category D is always realized.

<sup>9</sup> For further discussion on this case, see, e.g., Rizzi 1997.

Examples in Italian are given in (14a) and (14b) where the occurrence of bare NPs without the realization of a category D is ungrammatical.

(14) a. \**Bambini sono venuti da noi.*

‘Kids came by us.’

b. \**Ho preso biscotti con il mio latte.*

‘(I) had cookies with my milk.’ (cf. Chierchia, 1998a, 1998b)

Like French, sentences (14a) and (14b) are ruled out by the missing D category which turns the nouns into arguments. As the general properties of Italian, it has a null determiner that needs to be licensed by a lexical head, i.e. for instance, in an object position; the null D will be licensed by the verbal head, and thus there will be no bare argument in such a language. To summarize this second typology of Chierchia’s parameter settings, [-arg, +pred] languages will be characterized by either the ungrammaticality of bare nouns appearing in argument positions, or else, they could be grammatical, but if so they have a null D, hence are restricted by conditions governing phonologically null elements as one finds in Italian.<sup>10</sup>

The third typology of Chierchia’s NMP represents languages which have [+arg, +pred] setting in their nominal domain. Languages belonging to this type are English and most Germanic languages. The feature [+arg, +pred] in this model means that languages which belong to this category freely allow their NPs to choose to be either argumental [+arg] or predicative [+pred]. Chierchia suggests that if an NP in these languages chooses to be of type [+arg], it needs to be predicativized in order to have a mass denotation. Therefore, this makes an NP as a mass noun and has all the corresponding characteristics of a mass noun as illustrated in (15).

(15) a. I want to buy *ice cream*

b. *Water* is important for a human being.

c. She works for *money*

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<sup>10</sup> For further discussion on this case, see, e.g., Rizzi 1997.

On the other hand, if an NP chooses to be of type [+pred] (i.e., <e, t>), the NP has a set of atoms as its extension. As a result, the NP will be countable; a countable NP can be obtained via shifting the NP into the [+pred] option. As a result, plural marking will be able to apply to such a noun and hence plural morphology will be active. The singular/plural contrast will have to be overtly realized. This is consistent with the category–type assignment of such languages. In addition, its phrasal projections can also be shifted by the available type shifting operators, i.e. for instance, the feature of [+arg] require the noun to be predicativized (in Chierchia’s term) in order for such a noun to function as a quantifier restrictor which denotes a mass noun<sup>11</sup>. We will not discuss this topic any further here since it is not the focus of our thesis.

To summarize this third type, it is clear that [+arg,+pred] languages have a mass/count distinction. Furthermore, they allow mass nouns to occur freely as bare arguments without being necessary to project a D category. However, this does not happen in the case of singular count nouns. For plural count nouns, the NPs in these languages can turn into argumental type to yield kinds so that they will be able to occur as arguments.

In this section, we have discussed the clustering properties of Chierchia’s theory of the Nominal Mapping Parameter. He claims in a straightforward way that every language exhibits a setting of the parameter. For it to be a [+arg, –pred] language like Japanese or Chinese, it seems that the language should allow bare NPs to appear in argument positions, consider the extension of all nouns to be mass nouns, and disallow plural morphology. Moreover, they also have a generalized classifier system. For it to be a [-

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<sup>11</sup> As already discussed, the type shifting rule (from type <e> to type <e,t> and the vice versa) that makes English like languages [+arg,+pred] is (it seems) independent from the rules that turn a mass noun into a count noun (i) and a count noun into a mass noun (ii), and also independent from the rule that turns a mass noun into a kind denoting count noun (iii).

(i). I want to eat rabbit tonight. In fact, I’m really hungry so I think I could eat two rabbits.

(this is called *grinding*, i.e. the noun “rabbit” [+count] turns into [-count])

(ii). Waitress, I’d like two coffees.

(this is called *packaging*, i.e. the noun “coffee” [-count] turns into [+count])

(iii). The wine in French is not as good as people say. In fact, there are only two good French wines.

(kind of wine)

arg, +pred] language like French or Italian, the language should rule out bare nouns appearing in argument positions. And the last, for it to be a [+arg, +pred] language like English, the language could have a mass/count distinction, allow mass nouns to occur freely as bare arguments without being necessary to project a D category. Plural count nouns in these languages turn into argumental or predicative so that they can appear as bare plural arguments as well. For singular count nouns, however, they cannot appear in argument positions without a determiner. In the next section, we will see how Indonesian fits into Chierchia's model by investigating Indonesian nominal construction further.

### 3. Indonesian Nominal Construction

#### 3.1. Bare NPs in Indonesian

This part will elaborate on how Indonesian can be analyzed as a language of type [+arg, pred] in Chierchia's typology. First of all, as we noted in the introduction, Indonesian is a language that freely allows bare NPs to occur in an argument positions. Sentence (16), for instance, illustrates the use of the bare noun *presiden* in the subject position with definite (16a), indefinite (16b) and (16c) construal.

- (16) a. *Presiden saat itu membantah adanya keterkaitan aliran dana Century dengan kampanye Partai Demokrat dan pencalonan-nya sebagai Presiden.*<sup>12</sup>  
President when that MEN-deny exist-NYA correlation flow budget  
Century with campaign party Democratic and candidate- NYA  
as president.

‘At that time, the president denied that the Century Bail Out was correlated with his candidacy for the presidential election’

- b. *Presiden me-miliki kewenangan untuk memberikan abolisi.*  
Presiden MEN-have authority to MEN-give-KAN abolition

‘A president owns an authority to give abolition’

- c. *Presiden adalah pimpinan politik, bukan pimpinan akademik.*<sup>13</sup>  
presiden exist-LAH leader politic not leader academic

‘President is a political leader, not an academic leader’

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<sup>12</sup> This sentence is cited from “Kompas”, the largest Newspaper in Indonesia.  
<http://nasional.kompas.com/read/xml/2009/11/25/16174591/Wapres.Tepis.Tudingan.Dana.Bail.Out.Century.untuk.Parpol>

<sup>13</sup> This sentence was adopted from a newspaper.  
<http://www.tempointeraktif.com/hg/nasional/2007/03/15/brk,20070315-95624,id.html>

The bare noun *presiden* requires a definite construal (16a) since there is most likely only one president of Indonesia being referred to. It cannot mean any presidents in the world nor can it mean the president in a generic sense. Furthermore, it can also have an indefinite construal, as given (16b) and (16c) since it can mean any president and does not necessarily refer to one specific president.

The following sentences (17a) and (17b) illustrate the use of bare nouns in Indonesian to sit as the direct object or the object of a preposition. The noun *buku* “book” in sentence (17a) can have an indefinite meaning in number, be it singular or plural. Both interpretations are acceptable. This situation holds also for the noun ‘*kartu kredit*’ as the object of the preposition *dengan* with the indefinite interpretation as well. Sentence (17b), on the other hand, illustrates the bare noun *program pilihan* serving as the object of the preposition *dengan*, and can only be construed in a plural sense since this noun is bound strictly by the morpheme *-nya*<sup>14</sup> as the pronoun which refers to the noun *programs* in the plural interpretation and has also been quantified over by the numeral “15”.

(17) a. *Saya membeli buku dengan kartu kredit*

I buy book with card credit  
'I bought a book/books with a credit card.'

b. *Presiden menetapkan 15 diantara-nya disebut dengan Program Pilihan*

President stipulate Num between-PRO called-PASS with program chosen  
*yang wajib di-implementasi-kan dalam jangka waktu 100 hari pertama.*<sup>15</sup>  
RC obligatory DI-implement-KAN in duration time 100 day first.

'The President stipulated fifteen of his programs as the chosen programs that should be implemented within his first 100 days of his tenure.'

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<sup>14</sup> See Dalan (2006)

<sup>15</sup> [http://www.indonesia.go.id/id/index.php?option=com\\_content&task=view&id=11219&Itemid=701](http://www.indonesia.go.id/id/index.php?option=com_content&task=view&id=11219&Itemid=701), the official website of the Indonesian Government.

We have seen in sentence (16) and (17), respectively, that bare nouns in Indonesian can occur freely in the subject, object and object of a position without the presence of any determiner. It, therefore, seems to be the case that Indonesian is a [+arg, -pred] language in Chierchia's sense. Furthermore, a bare NP can also have a generic interpretation that occurs in argument positions, i.e. subject, or object position (18a), and object of a preposition (18b).

(18) a. *Anjing suka tulang.*

Dog like bone

'Dogs like bones.' (Alwi, et.al., 2000)

b. *Orang bisa melakukan apa saja demi uang.*

People can do what only for money

'People can do anything for money'.

The noun *anjing*, 'dog' in (18a) can only be interpreted as any dog in the world. There is not even a single dog that is excluded in this interpretation. Similarly, the word *tulang* "bones" is also interpreted as any bones in the world, and does not have to refer to a specific kind of bones, or a group of bones. Sentence (18b) illustrates that the noun "money" refers to any money, i.e. suggesting that the bare NP has a generic meaning in the position of object of a preposition *demi* "for". These examples of the free occurrence of bare NPs in argument positions with a generic meaning indicate that Indonesian is again correctly categorized as a [+arg, -pred] language in Chierchia's typology as we have noted earlier.

A further point in our discussion of how the Indonesian data fits into the NMP theory is the necessity for bare NPs to take narrow scope. Chung (2000) argues that bare NPs in Indonesian seem to be scopeless, specifically when they are required to take narrow scope with respect to logical operators such as negation, the intensional operator, and the like. An example is given in (19) which the bare NP *buku* "book" as the direct object of the verb *membeli* "buy" has to take a narrow scope by the negation operator *tidak* "not".

(19) *Ali tidak jadi membeli buku.* (Indonesian)

Ali not finished buy book

‘Ali didn’t buy any book(s).’/\*‘There was a book that Ali didn’t buy.’

(cf. Chung, 2000)

Sentence (19) is clearly unambiguous since it only allows the narrow scope reading “*Ali didn’t buy any book*”. The presence of such a logical operator, i.e. *tidak* prevents a wide scope reading. Moreover, the idea that such a bare NP in an object position has to take a narrow scope is supported by the evidence from earlier literature, as given in (20). The bare NP in (20) is intended to have narrow scope with respect to the operator.

(20) *Ia tidak melihat perempuan.*

he not see woman

‘He saw no women’. (Purwo, 1989 as cited from Chung, 2000)

Why should such scope behavior be relevant here?<sup>16</sup> It is conceivable that scopelessness is one of the characteristics of bare plurals in English and it patterns like bare NP objects in Chinese. Chierchia shows that a bare plural in English can denote kinds and turn it to an argumental type. Therefore, it can occur in an argument position without any determiner. What we expect is that Indonesian bare NPs pattern like bare plurals in English (Chung, 2000), or bare NPs in Chinese, and if so Indonesian is a [+arg, -pred] language.

Along this section, we have seen how bare NPs in Indonesian serve as evidence that Indonesian is [+arg,-pred] language in Chierchia’s model, i.e. the grammaticality of

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<sup>16</sup> It looks as though the ability of an NP to have scope relations depends on it having some forms of phonetically realized determiner, regardless of its meaning. In Japanese, for instance, DPs with a covert head do not interact scopally, but if the head is overt, i.e. demonstratives, you suddenly get scope interactions. This is also the case in Indonesian as given in (i) in comparison to (ii). (Bill Phillip, personal communication)

(i). [Ali tidak jadi membeli [buku]]

(ii).[Ali tidak jadi membeli [buku itu]]

bare NPs occurring in arguments positions and the necessity of bare NP objects to take a narrow scope reading with respect to the presence of a logical operator. All the characteristics discussed above clearly suggest that Indonesian should belong to the [+arg,-pred] setting. This will further be confirmed in the next section when we discuss a typical characteristic of [+arg,-pred] languages, i.e. having a generalized classifier system.

### 3.2 Numeral Classifiers in Indonesian

Aikhenvald (2000) describes several criteria for identifying different types of classifiers; noun classifiers - a class of word appearing with nouns not necessarily followed by a numeral; possessive classifiers - marking the possessor for noun class to agree with the possessed noun; verbal classifiers - the one which goes with a verb to agree with a noun class. A numeral classifier itself appears in a construction where a numeral modifies a noun and is followed by a classifier. Languages which have such a classifier include Japanese, Chinese, and Indonesian, as well as most languages in the South East Asia region (Simpson, 2005).

For these languages, it is not possible for a numeral to modify its corresponding noun on its own. Rather, a classifier must be present in order to quantify or modify the noun in question. A numeral classifier is a functional category which is required to appear in those languages which, in Chierchia's typology, are classified as [+arg,-pred] languages. Consider examples in (21) and (22) below that illustrate the use of classifiers in Japanese and Chinese respectively, in comparison to the use of a classifier in English (23).

(21) *enpitsu ni – hon* (Japanese)  
pencil 2 – CL

'two pencils' (Matsumoto, 1993 as cf. Dalrymple and Movu, 2009)

(22) a. *san ge ren* (Chinese)  
three CL people

‘three persons’

b. *san wan tang* (Chinese)

three bowl soup

‘three bowls of soup’

(23) a. two **glasses** of water (English)

b. \*two water

The use of classifiers in (21), (22) and (23) offers an interesting point of discussion in the framework of Chierchia’s NMP model. NPs in Japanese as exemplified in (21) and NPs in Chinese as illustrated in (22) are considered mass nouns in that they require a measure phrase or classifier when they function as the domain of quantification of a numeral quantifier. That is precisely what Chierchia claims, namely that all nouns in a classifier language like Japanese or Chinese are mass nouns. This entails that the distinction between singular and plural morphology is not clearly made as what Japanese does, which is again illustrated in (24). However, in English, the situation is different. As (23) suggests, mass nouns require a measure phrase in order to be countable (*two glasses of water*) while the use of a numeral in counting a mass noun in an uninterrupted way without a classifier is ruled out.

(24) *Otokonoko-ga asonde-iru*

boy-NOM play-PROG

‘A boy is playing.’/‘Boys are playing.’

(Nakanishi & Tomioka 2004, as cf. Dalrymple and Movu, 2009 )

This unclear distinction between singular and plurality with bare nouns such as in Japanese (24) has actually been noted as well in Greenberg (1972: 177) and Aikhenvald (2000), who propose that numeral classifier languages generally do not have compulsory expression of nominal plurality. This leads to the neutralization of a singular-plural distinction of an NP. Plural morphemes will not be active. Therefore, all nouns are considered mass nouns. The absence of obligatory plural marking here is

entailed by Chierchia's theory which claims strictly that it is a general property of nouns in [+arg,-pred] languages that they are uniformly mass nouns.

### 3.2.1 Optionality and Obligatory Classifiers

How can Indonesian classifiers be optional at some cases and obligatory at others? Like Japanese or Chinese, Indonesian also requires a classifier to attach to a numeral in modifying an NP. Indonesian actually has many more classifiers than are commonly used in the Standard Indonesian.<sup>17</sup> Dardjowidjojo (1978: 64) and Alwi, et.al. (2000) claim that Indonesian has as many as sixty classifiers, but only three of them are in frequent use in the standard language. The three common classifiers are *orang* 'person' (used for counting people), *ekor* 'tail' (used for counting animals, birds, fish), and *buah* 'fruit' (used for counting all other objects). Consider the sentences in (25) below.

(25) a. *Namun sekitar lima (orang) siswi menangis histeris karena ketakutan*<sup>18</sup>

But about Num CL Students Fem cry loudly because fear

'Yet approximately 5 students cried loudly since they were frightened'

b. *Andy mem-beli lima (ekor) sapi*

Andy Men-buy Num CL cow

'Andy bought five cows'

c. *Saya akan mem-beri-kan lima (buah) buku kepada-nya.*

I FUT MEN-give-KAN Num CL book to-NYA(PRO)

'I will give him five books'

Sentences (25a-c) suggest the use of those three classifiers for different kinds of common nouns; *orang* for persons, *ekor* for animals and *buah* for all other common

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<sup>17</sup> The language which is normally used in formal settings

<sup>18</sup> Cited from <http://bandung.detik.com/read/2009/10/30/113829/1231674/486/takut-beneran-5-orang-siswi-sd-priangan-menangis-histeris>

nouns. The classifiers are in brackets because they are optional with numerals denoting numbers greater than one. This property is believed to be due to the influence from Javanese, which does not have a classifier system (Poedjosoerdarmo (1982: 84) and Chung (2000: 162-164)). This is further confirmed by Hopper's (1986), and Chung (2000: 164) who show statistical results of the occurrence of overt classifiers being more frequent in the past than they are today for the numeral *dua* "two" and higher as mentioned in the Hikayat Abdullah, an autobiography published in 1849.<sup>19</sup>

This distribution of classifiers does not only occur in the Standard Indonesian. In colloquial speech they are also optionally used with the numeral *dua* "two" or some number greater than two (Dardjowidjojo 1978: 64–65; Macdonald 1976: 82–83; Sneddon 1996: 134–135; Wolff et al. 1992b: 556 as cf. Chung, 2000). This fact is further taken as an indication that Indonesian undergoes gradual transition from a classifier language to a non-classifier language (Sato: 2009). However, until nowadays, it is still unclear how Javanese might have influenced the transition of Indonesian to become a non classifier language. This phenomenon was just taken as a consideration which suggests the optionality of classifiers to occur with numerals in Indonesian.

In a certain condition, the use of classifiers is obligatory especially when a numeral morpheme *se-*, which is believed to be a phonological reduction of the numeral *satu* "one", is present. It has to be followed by a classifier; either, *orang*, *ekor* or *buah* depending on the noun class it follows. This is further confirmed by Sneddon (1996: 135) who suggests that when such a classifier is absent, the use of *se-* becomes ungrammatical. In other words, a classifier is obligatory when the numeral *se-* 'one' is introduced. Consider examples in (26) below for the obligatory occurrence of classifiers in Indonesian.<sup>20</sup>

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<sup>19</sup> Cf. Chung (2000)

<sup>20</sup>The numeral *se-* 'one' can also occur in a construction which seems to have double numeral and classifier given in (i) and (l).

(i). *Kalau kehidupan sosial seseorang dilakukan penyadapan itu melanggar hukum.*<sup>20</sup>  
If life social SE-SE-CL do PASS wiretap that breach law  
"To wiretap a person's life is a breach of the law."

(26) a. *Sebentar kemudian datang se-\*(orang) bocah pekerja membawakan*  
 not.long later come one-CL boy worker take  
*dua buah topi bambu.*  
 two CL hat bamboo

‘In a moment a peddler boy came [and] took two bamboo hats.’  
 (Purwo 1989: 370 as cf. Chung, 2000)

b. *Saya memiliki se-\*(ekor) kucing.*  
 I have Num-CL cat

‘I have a cat.’

c. *Kisah se-\*(orang) nenek dan 3 buah kakao.*<sup>21</sup>  
 Story Num-CL grandma and Num CL cocoa

‘a story of a grandma and 3 cocoas’

In this section, we discussed numeral classifiers in Indonesian, in a sense that it can either be optional (25a-c) or obligatory (26a-c) under certain conditions. This clearly

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(ii) *Dia membutuhkan seorang teman untuk menemani-nya ke Jakarta.*  
 He need SE-CL colleague for accompany-HIM to Jakarta  
 ‘He needs a colleague to accompany him to go to Jakarta’

It is well known that in Indonesian the numeral *se-*, which is believed to be a phonological reduction of *satu* ‘one’ either has to be followed by a classifier unless it occurs in the fixed expression *s(u)atu*, in which case combines with the obsolete classifier *watu* ‘stone’ (Hopper 1986: 311). What happens in (i) is that *se-* is construed as ‘someone’, i.e. with an indefinite meaning. If we just use *seorang*, it has to be followed directly by an NP, as in (ii) suggests. The meaning of *seorang teman* in (ii) itself is indefinite, and it will become indefinite if the classifier *seseorang* replaces *seorang teman*. Sneddon (1996) confirms that a classifier in Indonesian always introduce an indefiniteness. It does not refer to a specific thing or things. However, Sneddon does not explain further on the occurrence of classifier *seorang* and prefixed by *se-*. I argue that the grammaticality if doubling occurrence of *se-* in *seseorang* is due to the fact the occurrence of *seorang* without an overt noun phrase is always out in Indonesian grammar, however when *seseorang* is introduced, then an occurrence of overt NP following it makes the construction out. The first *se-* behaves like a pronoun which rules out the use of proper names or common nouns.

<sup>21</sup> Taken from <http://suarapembaca.detik.com/read/2009/11/23/071956/1246608/471/kisah-seorang-nenek-dan-tiga-buah-kakao>

suggests that Indonesian is a classifier language in the sense in which Chierchia defines it, namely as a language which has a generalized classifier system. More precisely, in such a language when an NP combines with a numeral, a classifier must be syntactically present even though it need not be phonetically overt. In [+arg,-pred] languages, the presence of classifiers in such a language should be considered as a syntactical, not just a lexical realization like in English. In the following section, we will present a syntactic analysis of Indonesian numeral classifier.

### 3.2.2. The Syntax of Numerals and Classifiers.

The discussion of this section is initially driven by the following question: Do numerals and classifiers realize a single, or rather two functional heads? Sato (2009) proposes that the Num head in Indonesian can host either the reduplicative null morpheme RED or CL. This suggests that RED and CL is in a complementary distribution, i.e. there is a competition between CL and RED in the Num head position. This confirms the idea that Numeral and Classifier should be regarded as a single head, yielding a NumP whose head can be filled in with a RED morpheme or a CL. However, Cheng & Sybesma (1999), and Kobuchi (2007) propose that classifiers are functional elements with the primary semantic function of individuating NPs. This indicates that the individuation function of a classifier is distinct from the number specification provided by a numeral. Therefore, a numeral and a classifier should be considered as two separate syntactic heads.

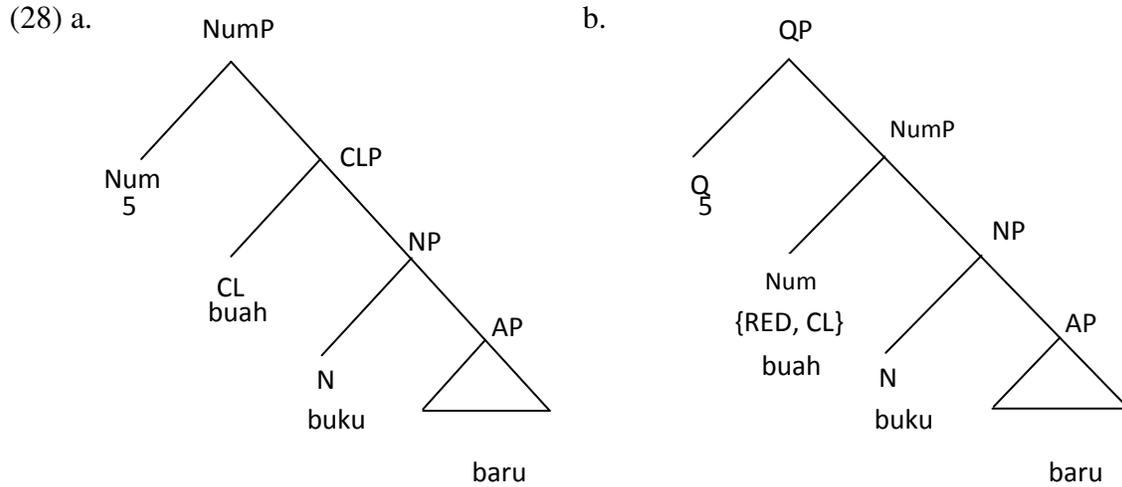
In Indonesian, it is also conceivable that numerals and classifiers can be constructed as separate lexemes while in other circumstances, they have to merge together to individuate the NP they follow. Further in this section, we will try to develop an alternative solution to account for this variation. Sentence (27) followed by its simplified structure in (28a) and (28b) provides an initial illustration of the issue the heads of the numeral and the classifier in Indonesian raise.

(27) [DP [NumP Num CL N Adj]]

5 *buah buku baru.*

5 CL book new

“ 5 new books”



The complementary distribution of classifiers and plurals proposed by Sato (2009), as illustrated in (28b), suggests that both classifier and plural reduplication are in the Num head position. This suggests that the Num head can be filled in by two possible heads, i.e RED head or CL head. T’sou (1976) proposes a similar analysis in which he suggests that the use of nominal classifiers and the use of plural morpheme are in complementary distribution. In other words, this view suggests that either a) a natural language has either nominal classifiers or plural morphemes, or b) if a natural language has both kinds of morphemes, then their use is in complementary distribution. T’sou further observes the incompatibility of an overt classifier to cooccur with reduplication since there will be a competition for the same Num head position between the classifier and the plural morpheme. Consider example in (29)

(29) (\**orang*) *siswa-siswa*

Cl student-Red

“students”

Sentence (29) indicates the ungrammaticality of a classifier co-occurring with plural morphology which is represented in the full reduplication of the stem word as argued by T’sou. However, sentence (30) below shows that a numeral, classifier and a plural morpheme can cooccur in a single uninterrupted construction and this seems to run counter the ungrammaticality of (29).

(30). *Ria Saptarika bersama sedikitnya 80 orang siswa siswi.*<sup>22</sup>

Ria Saptarika together least Num CL student RED

“Ria Saptarika went together with at least 80 students”

Sentence (30) is in fact fully grammatical and this casts doubt on T’sou’s claim that a classifier cannot cooccur with a plural morpheme in Indonesian. An additional problem for T’sou’s is the fact that classifiers in Indonesian can be optional or obligatory under certain conditions as discussed in section 3.3.1 above. Furthermore, based on the truth value judgment of some native speakers of Indonesian<sup>23</sup> judging the grammaticality of (30), the result shows that this construction is indeed grammatical, as was also argued by McDonald (1985) and Sneddon (1996). This view is further confirmed by an observation of languages such as Japanese and Chinese which considers numbers and classifiers as instantiations of distinct functional head positions, i.e. Num and CL (e.g., Pan 1990, Tang 1990 as cf. Sympson, 2000).

Contrastively, Kawashima (1993) and Muromatsu (1998) believe that numbers and classifiers constitute a single functional head which are commonly labeled as CL, Num, or Q(uantifier). This idea is supported by the fact that numerals and classifiers in many languages often occur in a single uninterrupted sequence (Gil, 1994, Greenberg, 1975). However, although numbers and classifiers are commonly constructed in a single uninterrupted sequence, this can also be accommodated if the head Num is analyzed as selecting the classifier phrase (CLP) as its complement without it being necessary for classifiers to be suffixed to numbers, as was also argued by Simpson (2005).

Such an analysis may also apply to the Indonesian classifier *sebuah*, which is always obligatory for *buah* to occur when the numeral *se-* is introduced. What occurs in this typical Indonesian classifier is that a numeral and a classifier have to be projected as two separate heads, as exemplified in (28a). The reason is for this analysis is that the classifier *se-* actually originates from the cardinal number *satu*, ‘one’ which is

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<sup>22</sup> taken from <http://www.riasaptarika.web.id/index.php/2008/09/20/ria-saptarika-bersama-sedikitnya-80-orang-siswa-siswi/>

<sup>23</sup> Thanks to Andro, Rahmat and Andi for the judgement of a sentence in (25).

illustrated in (31). Since this numeral undergoes a phonological reduction, then presence of the classifier *buah* ‘fruit’ has to be overtly realized.

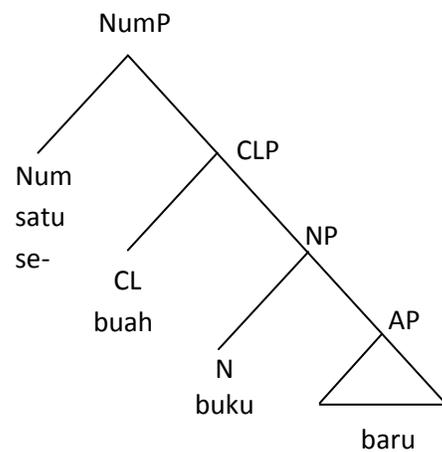
(31) a. [DP [NumP Num CL N Adj]]

Satu buah buku baru.

Num-CL book new

“A new book”

b.



The fact that the pattern of a numeral and a classifier exhibits phonologically one single unit in many languages and the form of a classifier which is sometimes as a kind of suffix attached to the numeral in individuating the NP can be explained if the phonological dependence of classifiers on numbers can be attributed to the classifiers becoming enclitics as they grammaticalize. This doesn't seem to rule out the possibility that classifiers might encliticize from a discrete head position (Simpson, 2005). Therefore, they do not have to be viewed as a single unit since each element exhibit its own function to individuate the NP it follows.

Moreover, classifiers in many languages of the Southeast Asia region are phonologically quite unreduced, so that they appear to be fully independent functional words rather than inflectional affixes. In Indonesian, the phonologically reduced numeral classifier only occurs when the cardinal number 'one' is used, but when numbers greater than one are introduced, then the classifier has to be treated as a single unit and is separated from the numeral.

It seems now to be clearer that two distinct morphemes in numeral – classifier sequences show that there are two projections of distinct head positions. This is further confirmed by a functional view which suggests that the primary semantic function of a classifier in a nominal projection is to individuate the nominal itself (Muromatsu (1998), Cheng and Sybesma (1999)). Therefore, it has to be viewed as having its own role in individuating the NP. The fact that it may also occur alone without a numeral which functions as another noun individuation can be taken as evidence that they are indeed two distinct elements. An example can be observed in a language such as Hmong as given in (32) where we can see that a classifier can occur alone in individuating an NP without any numeral.

(32) *Tus tsov tshaib tshaib plab.*

CL tiger hungry hungry stomach

‘The tiger is/was very hungry.’ (Hmong; Jaisser 1987 as cf. Simpson, 2000)

In addition, Simpson (2005) further suggests that numerals and classifier do not necessarily have to occur together. Such an occurrence can be found in languages such as Nung and Burmese. In these languages, it is optional for numbers that are multiples of ten to be followed by classifiers. Aikhenvald (2000) also suggests in Thai that classifiers do not occur with large numbers like 1000 unless individuation is implied. Hopper (1986) also points out a similar phenomenon in Malay, a language which is quite close to Indonesian, in which classifiers can be omitted with numerals just when approximate and vague numeral reference is made and there is no specific individuation (33).<sup>24</sup>

(33) *Adalah dua tiga pondok kechil- kechil bersama-sama dekat*

be 2 3 hut small small together near  
*rumah Temenggong.*<sup>25</sup>

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<sup>24</sup> An observation that seems related to this is Krifka’s event reading, *Four thousand different ships passed through the lock last year*. This special reading also seems to be available only with large cardinalities, i.e. when verification is virtually impossible.

<sup>25</sup> Cf. Simpson (2005) as also mentioned in Chung (2000).

house Temenggong

‘There were two or three small huts close together near Temenggong’s house.’

What we have discussed so far suggests that, following Simpson’s claim, numerals and classifiers do not occur together in a single-head position, but rather, there are two distinct positions projected by numbers and classifiers. So, what happens in the Num head and CL Head in Indonesian follows the idea that numerals and classifiers should also be viewed as two distinct functional heads. A more detailed explanation on the occurrence classifier can be found when we discuss the syntax of plural in section 4. In the following section, we will observe another element in the discussion of Indonesian nominal, i.e. determiner like elements.

### 3.3 Determiner-Like Elements.

MacDonald’s (1976: 85) observes that Indonesian is a language which lacks determiner articles. However, there are actually some elements, or commonly known as determiner like-elements, which behave in a similar way as the English definite article *the*. Those determiner-like elements are demonstratives *itu/ini* which means ‘that/this’, as well as the enclitic pronoun *-nya* which can be interpreted as *his, her, its, and their*, when they are combined with nouns. The use of a determiner-like element in Indonesian can yield definiteness in meaning just like what occurs in English when we use the article *the*. As a simple illustration, it is common in Indonesian to say something like *meja itu/ini* “the table” or *duit-nya* “his/her/that money” which both have a definite meaning. This section is devoted to the discussion of these determiner-like elements.

Let us start our discussion of Indonesian determiner-like elements with an examination of the demonstratives. As noted above, there are two kinds of demonstratives in Indonesian; *ini* (this/these) and *itu* (that, those). *Ini* (this, these) is used for a noun which is generally near to the speaker. *Itu* (that, those) is used for a noun which is generally far from the speaker. Unlike English, Indonesian demonstratives do not mark the number of the noun they modify, i.e. singular/plural/mass nouns, as (34), (35) and (36) show.

(34) *Buku ini/itu*  
book this/that  
'this/that/the book'

(35) *Buku-buku ini/itu*  
book RED These/those  
'these/those/the books'

(36) *Duit itu punya siapa?*  
Money that have who  
'Whom does the/that money belong to?'

Sentence (34) and (35) suggest that the two demonstratives can serve as a determiner category for singular and plural nouns via reduplication whereas sentence (36) shows the use of the demonstrative with a mass noun. In the following discussion, we will see how such determiner-like elements are instantiated in the Indonesian nominal structure. Now consider example (37) below.

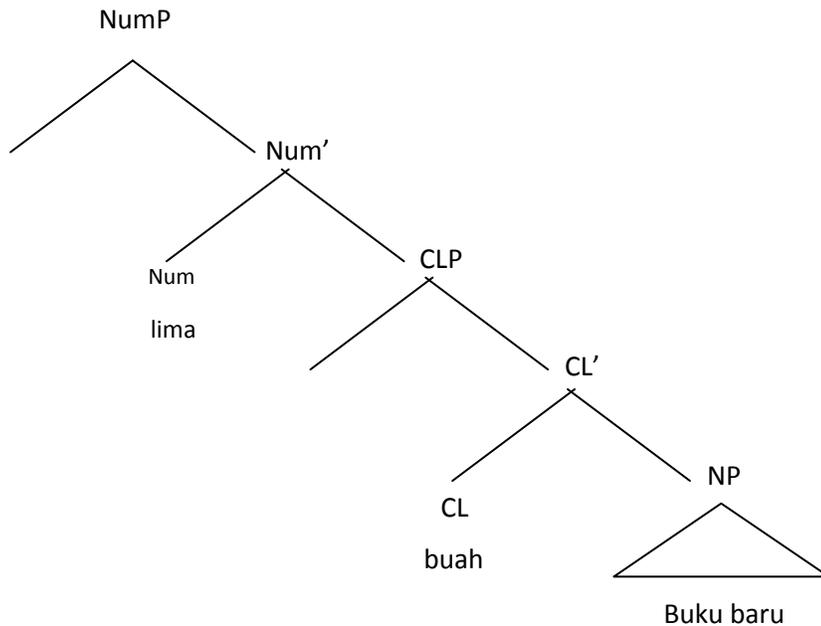
(37) [<sub>NumP</sub> Num CL N Adj]  
*lima buah buku baru*  
five CL book new  
"five new books"

Example (37) suggests that an NP *buku* is modified by the numeral *lima*, classifier *buah*, the adjective *baru*. It is always the case in the standard Indonesian that a numeral and a classifier have to be placed above the NP. Except, when the context used is in a market, or when sorting out something, or when we order drinks in a restaurant.<sup>26</sup> An adjective in Indonesian nominal is normally placed after a NP it modifies. The structure for (37) is given in (38).

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<sup>26</sup> More on this phenomena can be found in, i.e. Simpson (2005)

- (38) [<sub>NumP</sub> Num CL N Adj]  
*lima buah buku baru*

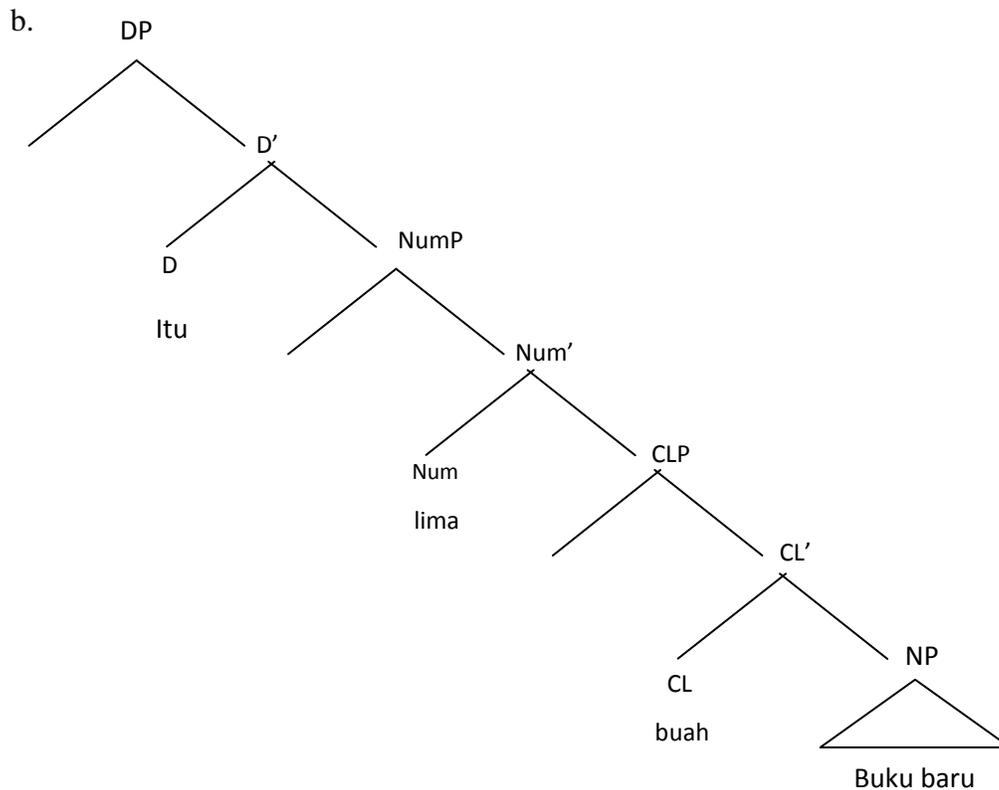


When an overt determiner, such as *itu* “that”, is present and combined with such an NumP construction to get a definite meaning, a DP can be projected on top of the NumP. The presence of the definite marker or the determiner-like element such as *itu* is construed almost in the same way as that of the definite article “the” in English. Such a demonstrative is regarded as a determiner and fills in the head position of the DP, hence yielding a construction such as in (39a) with its structure in (39b).

- (39). a. [<sub>DP</sub> D [<sub>NumP</sub> Num CL N Adj]]  
*Itu 5 buah buku baru.*

That Num CL book new

‘Those 5 new books’.



Although the construction in (39) is actually accepted in colloquial Indonesian, this construction is dispreferred in Standard Indonesian. This is further confirmed by MacDonald (1976, 89) who argues that the Indonesian demonstrative is always in the last position of all noun modifiers, so it serves to mark the right edge of the DP. Therefore, when an NP and its all modifiers are followed by a demonstrative, then the demonstrative should be placed at the right edge of the nominal construction.

We have seen that whenever a demonstrative *ini/itu* is present, it should be put at the final position of a nominal construction. However, the determiner *itu* is now in a D<sup>0</sup> (head) position and Indonesian is a head-initial language. What we have to do is that we have to assume that the whole NumP has to be moved leftward from the underlying structure to the specifier position of the DP yielding a construction such as in (40b) and its tree derivation in (40c). The reason for the movement is the necessity to fulfill the general headedness of Indonesian and its requirement to have a D - like element in the final position.<sup>27</sup> This movement yields a better DP construction *lima buah buku baru*

<sup>27</sup> Such a movement to SpecDP is only restricted to NPs containing APs whereas for NPs containing PPs, this movement is out, as given in (i).

*itu*, which is more preferred in Indonesian.

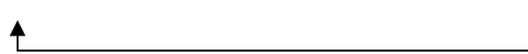
(40) a. [DP [NumP Num CL N Adj]<sub>i</sub> D t<sub>i</sub> ]

5 buah buku baru itu.  
 Num CL book new that

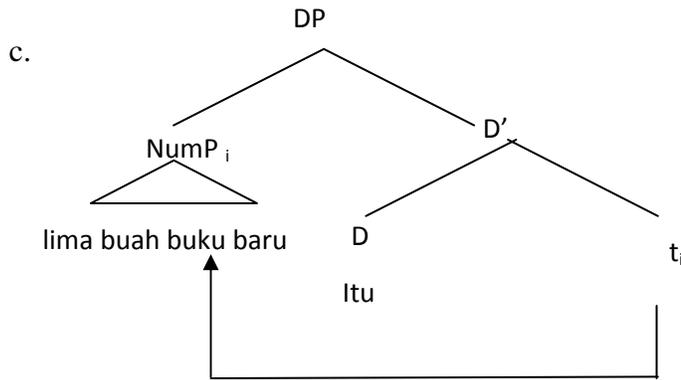
‘Those 5 new books’.

b. [DP [NumP lima buah buku baru ] itu [NumP ~~lima buah buku baru~~ ]

five new books that five new books



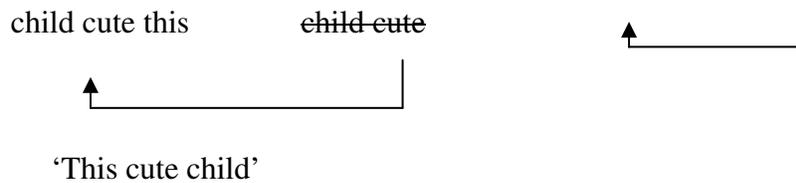
‘Those five new books’



The idea that such a determiner-like element occurs in the DP-final position as a result of a leftward movement of the whole NumP in Indonesian is also similar to other classifier languages in the Southeast Asia region, such as Thai and Vietnamese. An example of such a case is given in (41) for Thai (cf. Simpson, 2005).

(41). [DP [NP dek naa-rak] nii [NP ~~dek naa-rak~~ ] [DP [NP ]<sub>i</sub> Dem t<sub>i</sub> ]

- (i) ??buku di atas meja-nya  
 book loc above table-NYA  
 ‘the book on the table’ (cf. Dalan 2006)



All such languages exhibit a regular head-initial phrase, and yet all require the determiner to occur in a final position. Therefore, the condition for the regularity of general headedness in a language is met. This analysis, i.e. leftward movement to the specifier of DP when a category D is projected, also holds for the occurrence of the other D-like elements such as the enclitic pronoun *-nya*.

As noted before, another way to express definiteness in Indonesian is represented by the occurrence of the *-nya* suffix. As sentence (42a) and (42b) below indicate, the occurrence of *-nya* is required to introduce the definite meaning of *buku* “books” and *air*, “water”. The morpheme *-nya* in (42) can be actually replaced by the demonstratives like *ini* “this” or *itu* “that” indicating that both elements can function as a determiner. In their English counterparts as well, it is generally noted that the definite article “the” and the demonstratives like “this” and “that” can substitute each other in the definite phrases such as in “the book”, “this book” and “that book”.<sup>28</sup>

(42) a. *Kemarin Budi meminjam buku kamu. Sekarang buku\*(-nya) ada pada John*  
 yesterday Budi borrow book 2sg now book -NYA exist at John

‘Yesterday Budi borrowed the book of yours’. ‘Now, the book is with John’.

b. *John menyirami taman dengan air. Sekarang air\*(-nya) menggenangi taman itu.*

John pour garden with water now water-NYA whelm garden that

‘John poured water on the garden. Now the water floods the garden’

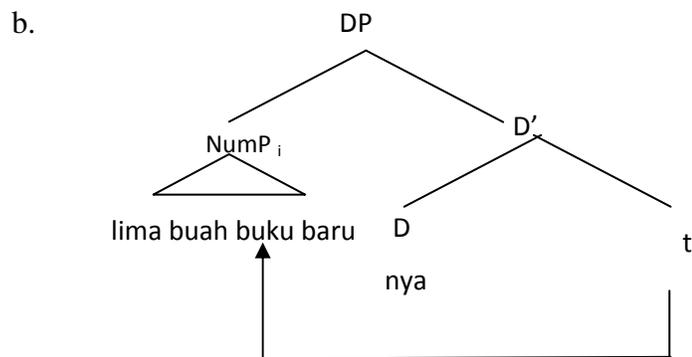
(cf. Dalan, 2006)

The obligatory presence of the *-nya* morpheme in a context such as (42a) or (42b)

<sup>28</sup> There is some other evidence that the *-nya* morpheme can serve as determiner-like elements that are not discussed here, such as, *-nya* attaching to proper name, and *wh-* expressions. Further on this variation can be found in Dalan (2006).

shows clearly that this enclitic morpheme has essentially the same function as the English definite article *the*, similar to the demonstrative *itu* and *ini*, as illustrated in (40). Consider sentence (43) below which is modified from (40). Here, the *-nya* morpheme functioning as a determiner-like element behaves in the same manner as the demonstrative *itu* as what (40) suggests.

- (43) a. [DP [NumP Num CL N Adj]<sub>i</sub> D t<sub>i</sub> ]  
           lima  buah  buku  baru  -NYA.  
           Num  CL   book  new  his/her  
           ‘his/her 5 new books’.



Sentences (43a) and (43b) indicate that *-nya* is in a  $D^0$  position. Similar to the demonstrative *itu* in (40), the whole NumP as a complement of the head D has to be moved leftward from the underlying structure to the specifier position of the DP yielding a construction such as in (43b) to fulfill the general headedness of Indonesian and its requirement to have a D- like element in the final position.<sup>29</sup> This yields a DP *lima buah buku baru-nya*, “his/her five new books” which is a grammatical construction in Indonesian.

To sum up, following Abney (1987) and Szabolcsi (1994), these determiner-like

<sup>29</sup> Such a movement to SpecDP is only restricted to NPs containing APs whereas for NPs containing PPs, this movement is out, as given in (i).

- (i) ??buku di atas meja-nya  
       book loc above table-NYA  
       ‘the book on the table’ (cf. Dalan 2006)

elements have to be viewed as representing a D-category projected above the associated nominal, in our case the NumP for the reasons we have mentioned above. We have seen that the determiner-like elements such as *ini/itu/-nya* occupy the D head position when they are present in a nominal construction. Our proposal that they have to be placed in the head position of a DP is confirmed by the fact that they can introduce definiteness of an NP. This suggests a regular head-initial phrase in Indonesian although those determiner-like elements have to occur in a final position when spelled out. The reason for all such a movement is just simply forced by the occurrence of the overt determiner-like elements in the D head position in order to preserve the consistency of the head-initial regularity and only one direction of selection is possible for each language.

In this section, we have indicated that Indonesian does not have a definite article like that of English one, but it has determiner-like elements which behave in the same way as English determiners. This also suggests that Indonesian is not a predicative language, but rather an argumental one, i.e. a [+arg,-pred] language. What becomes a problem now is that Chierchia hypothesis predicts that a classifier language ([+arg,-pred]) such as Indonesian will lack a semantically significant morphological contrast between singular and plural nouns. However, it is conceivable that Indonesian has many ways in expressing plural nouns, such as reduplication, the affix *pe-an*, and the use of a lexeme *para*, which seems to suggest that Indonesian plural morphemes is truly productive, not just a lexical realization like English. Why is it the case that Indonesian has a generalized classifier system yet at the same time allows plural modification through reduplication of its bare noun? In the following section, we will discuss the syntax and semantics of Indonesian plural formation.

## 4. Plurality in Indonesian

Plurality in Indonesian can be expressed in several ways. However, the most common way of pluralizing a noun is through reduplication.<sup>30</sup> This section attempts to provide a comprehensive syntactic and semantic analysis on Indonesian plural formation through reduplication. We will first examine optionality versus obligatoriness of nominal reduplication in Indonesian.

### 4.1 Optionality and Obligatory Nominal Reduplication

Like numeral classifiers, Indonesian reduplication can also be obligatory or optional under certain conditions. Examples of obligatory plural formation via reduplication are given in (44). Here, the subject NP has either a definite, indefinite or generic reading. The sentences in (44) also illustrate the full reduplication version of RED; the noun root is reduplicated without any morphological changes.<sup>31</sup>

- (44) a. *Anak – \*( anak ) senang belajar Matematika .*  
student RED like study Math.  
  
‘Children like studying Math.’

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<sup>30</sup> There are three ways to express plurality in Indonesian, i.e. Reduplication, the use of lexeme *para*, and the use of suffix *pe-an*. Reduplication in Indonesian nominal can be classified into three types, full reduplication, partial reduplication and imitative reduplication. Besides reduplication, plural can also be identified by the use of morpheme *para*, which is normally used for the plural of personal nouns [+human], such as *teacher, doctor, driver*, etc. Another way of expressing plural is identifiable by the use of affix *pe – an*. However, among the three ways of pluralizing count nouns, reduplication and the morpheme is the most productive one since it applies to most Indonesian count nouns. See Mc Donald (1976).

<sup>31</sup> In some cases, full nominal reduplication can alternatively also occur with the prefix *ber-*, as shown in (i). However, this prefix has semantic content. The presence of *ber-* causes the cardinality of the plurality to take as greater than 3.

- (i) *Siswa Pedalaman Mimika Libur Berbulan-bulan*  
Students primitive Mimika holiday BER-month-RED.  
“Primitive students from Mimika take holidays for many months”

b. *Anak \* (anak)-nya Pak Darto pintar pintar.*<sup>32</sup>

Child RED NYA Mr. Darto clever-clever.

‘Mr. Darto’s children are all clever’

c. *??Anak \*(anak) perlu men-dapat pendidikan yang layak.*

Child RED need MEN-get education C proper

‘Children need to get proper education’

In (44a), the common noun *anak*, “child/children” needs to be reduplicated for the sentence to be grammatical. However, the reduplication also gives the noun an indefinite interpretation. Alwi et.al. (2000) observes that in order to get an indefinite meaning, several nouns need to be reduplicated. In (44b), the reduplicated noun is suffixed by a determiner-like morpheme *-nya*. As discussed in section 3.3, *-nya* can function as a determiner when it attaches to a noun, either reduplicated or non-reduplicated one. However, *-nya* in (44b) functions as a possessive pronoun which is bound by the proper name *Pak Darto*. Sentence (44c) is a case where reduplication is obligatory in order to get a generic meaning. The reduplicated noun *anak anak* in (44c) implies that it has been universally understood that, ideally, children need to get better education, although not all children receive it.

When we examine RED in other argument positions besides the subject position, we still find the necessity to reduplicate a noun when the intended meaning is plural, as exemplified in (45) which also has an indefinite construal. Sentence (45a) suggests that in an object of a preposition, the reduplication of noun in such construction is necessary to have a plural meaning. If the noun is otherwise reduplicated, the meaning will be unclear. This holds also for sentence (45b) where such reduplication occurs in an object position. The intended interpretation is that *he* or *she* is willing to help any children from poor family, without being necessary to refer to specific children.

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<sup>32</sup> The phenomenon of reduplication in Indonesian does not only occur in nominal constructions, but it can also be found in adjectival, adverbial, or verbal constructions. For our paper, the discussion is specified on the occurrence of nominal reduplication.

(45) a. *Karto ingin menghabiskan waktu liburnya dengan anak \* (anak).*

Karto want spend time holiday-NYA with child RED

‘Karto wants to spend his holiday with his children’

(In this context, Karto has 4 children)

b. *Dia ingin membantu anak\* (anak) dari keluarga miskin .*

PRO want help child-RED from family poor

‘He/she wants to help children from the poor family.’

This is still the case when reduplication is used to pluralize a noun in the position of object or object of a preposition in order to get a generic meaning. Sentence (46) gives such an indication whence reduplication can occur as the direct object (46a), and the object of a preposition (46b).

(46) a. *Setiap orang tua menginginkan anak \*(anak) yang sukses.*

Each person old want child RED C success

‘Each parent wants to have successful children’

b. *Hukuman yang setimpal perlu diberikan kepada anak \*(anak)*

punishment C proper need PASS-give to child

*yang berbuat kesalahan.*

C do mistake

‘A proper punishment sometimes needs to be given to children who make a c. mistake.’

The sentences in (44), (45) and (46) show obligatory pluralization via reduplication can occur with nouns in the position of subject, object or the object of a preposition. We have also seen that such plural nouns can be interpreted as definite, indefinite or generic in meaning. This suggests that reduplicated nominals in Indonesian behave in the same way as bare plurals in English in a sense that they can occur as bare arguments<sup>33</sup>. Unlike

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<sup>33</sup> The only difference is that English bare plurals cannot have a definite reading

(44), (45) and (46) where the occurrence of plural is obligatory, sentence (47) below suggests that reduplication can also be optional in the subject position.

(47) a. *Siswa (siswa) di sekolah tingkat menengah akan mengadakan ujicoba ujian*  
students (RED) at school level medium will exist trial exam  
*Nasional minggu depan.*  
National week next

‘Students of secondary schools will have a rehearsal on the national exam.’

b. *Buku (buku) tentang sejarah Indonesia itu sudah di-baca*  
Book (RED) about history Indonesia that already PASS read  
*semua olehnya.*  
all by-NYA.

‘The books about Indonesian history have been all read by him/her.’

What is interesting in (47) is that reduplication is optional in a subject position when the reduplicated noun is modified by a prepositional phrase as what occurs in (47a) and (47b). The indefiniteness in (47a) is captured by the idea that the students are from the secondary level and it applies to any student of the secondary level. The level of indefiniteness here is actually still disputable, and some people consider such indefinite sentence as a weak indefiniteness since the indefiniteness of the students is restricted by the prepositional phrase which gives a ”narrower” scope of the interpretation. In the mean time, (47b) suggests that the optionality of reduplication can be considered as in a definite state since the NP *the books* which is referred to is bound by the prepositional phrase *about Indonesian history*, and the morpheme *-nya* which refers to *him/her*. Removing the reduplication will not lead to an ungrammatical sentence. In conclusion, the optionality of reduplication in such contexts suggests that it is restricted by a phrase modifying the reduplicated noun, and behaves in different ways when it serves as bare arguments as indicated in sentence (44) - (46) above. This could be further confirmed when the optionality of reduplication occurs in object positions (48a) and (48b), or the object of a preposition as (48c) illustrates.

(48) a. *Pak guru bertemu siswa (siswa) kelas enam di perpustakaan.*

Sir teacher meet student (RED) class six at library  
'The teacher met the students from grade six at the library.'

b. *Pemerintah akan membagikan buku (buku) mata pelajaran dengan gratis.*  
Government FUT distribute book (RED) eye subject with free.  
'The government will distribute module/hand books for free.'

c. *Pak gubernur akan memberikan hadiah bagi anak-(anak) yang berprestasi*  
Sir governor FUT give presents for child-RED C talented.  
'The governor will give presents for talented children'

Now let us examine the occurrence of reduplication with numeral classifiers. An example is given in (49).

(49) *Menurut Triningsih, saat itu ada tiga orang lelaki yang juga naik*  
According Triningsih, time that exist 3 CL men C also raise  
*dari sekitar ITC Roxy Mas.*<sup>34</sup>  
from around ITC Roxy Mas

'According to Triningsih, there were three men who also went up to ITC Roxy Mas'.

In (49), we see a numeral *three*, an optional classifier *orang*, and a reduplicated noun *lelaki*.<sup>35</sup> Both T'sou (1976) Sato (2009) believe that the use of classifiers and plural morphemes is in a complementary distribution, as discussed earlier. They argue that

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34 Cited from <http://www.kompas.com/index.php/read/xml/2008/04/25/09014756/perempuan.jadi.incaran.penodong>.

In some circumstances, the word *lelaki* can have either singular or generic meaning as given in (i) and (ii). We will skip this discussion for a space reason, but we assume that it is just a lexical realization.

- i. *Perusahaan itu mem-butuh-kan se-orang lelaki.*  
Company that MEN-need-KAN Num-CL man.  
'The company needs a man'
- ii. *Ketika bicara komitmen, lelaki dan perempuan kerap berseberangan.*  
When talk commitment men and women often crossed  
'When talking about commitment, men and women often dispute'

<sup>35</sup> McDonald (1976) suggests that the noun *lelaki* is a reduplicated noun, in which he calls it as a partial reduplication.

both classifier and reduplication are in the Num head position and suggest that the Num head can be filled in by two possible heads, i.e. RED head or CL head. This was illustrated in a construction such as (29), which is repeated in (50) below in comparison to the grammaticality of numeral, classifier, and plural morpheme in (51).

(50) (\**orang*) *siswa-siswa*

CI student-Red

“students”

(51). *Ria Saptarika bersama sedikitnya 80 (orang) siswa siswi.*

Ria Saptarika together least Num CL student RED

“Ria Saptarika went together with at least 80 students”

However, we have shown in (49), and earlier in (6), repeated in (51) below, that it is in principle possible for a classifier to cooccur with RED. The Indonesian plurality of count nouns as given in a number of examples above behaves in almost a similar way to that in English, in a sense that it is productive despite not necessarily being spelled out. In sum, like classifiers, Indonesian reduplication which indicates plurality of nouns can also be of two kinds, optional or obligatory under some circumstances as we have discussed so far in this section. In the following section, we will see whether the co-occurrence of a numeral, a classifier and reduplication is also syntactically grammatical.

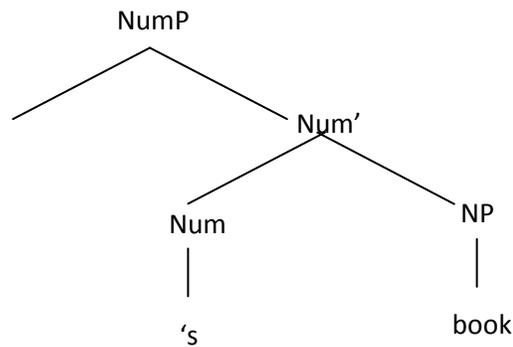
#### **4.2. The Syntactic Analysis of Nominal Reduplication**

In English, a plural morpheme such as *-s*, is traditionally recognized as a suffix that is attached to a count noun. Different from a classifier language like Chinese, the plural morpheme *-s* which is suffixed to the noun does not necessarily have to be associated with the definiteness of the plural nominal (Li, 1999). So, there is no reason for N in English to be raised to D to realize the plural morphology. In this section, we will discuss the syntactic analysis of nominal reduplication in Indonesian in comparison to English plural formation. Before we go further to the syntactic analysis, one thing to keep in mind is that when we are dealing with the plurality of a noun, we are dealing

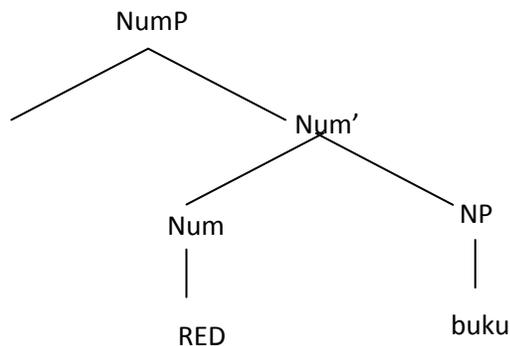
with the notion of quantity, which is usually expressed as Number and is based generated in the Num head.

Many people have argued that plural is analyzed as a functional syntactic category which projects its own functional phrase, i.e. a NumP, above the NP (i.e. Carstens (1991) and Ritter (1991, 1995)). This is illustrated in (52a) with the noun, *books* together with its counterpart in Indonesian, *buku*, in (52b).

(52) a.

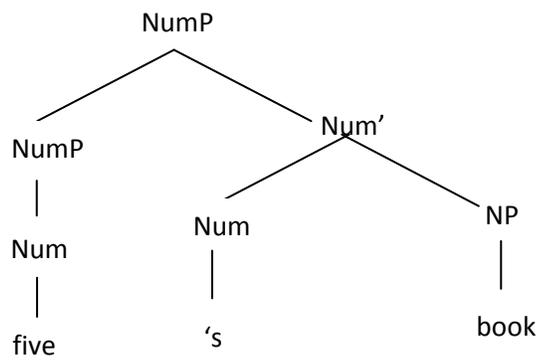


b.

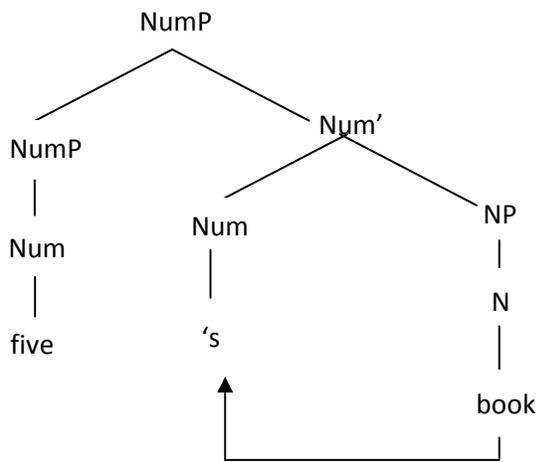


Now let us see what goes on when the pluralized noun is followed by a numeral, i.e. the structure of an expression like *five books* in English or *lima (buah) buku (buku)*, “five books” in Indonesian. If it is the head Num which indicates whether an NP is singular or plural i.e. where a plural morpheme is based generated, then the numeral *lima*, “five” cannot be generated in the Num head since this position is already filled in with a plural morpheme. One possible solution is to insert the numeral in the specifier (Spec) position of the number phrase (NumP) and fill the Num head itself with a plural morpheme, i.e. the quantity expression (*five/lima*) in a cardinal number in the specifier of NumP. So what we expect is that the plural morpheme serves as a functional category attached to the NP which still remains in the Num head position, as illustrated in (53a) for English and (53c) for Indonesian.

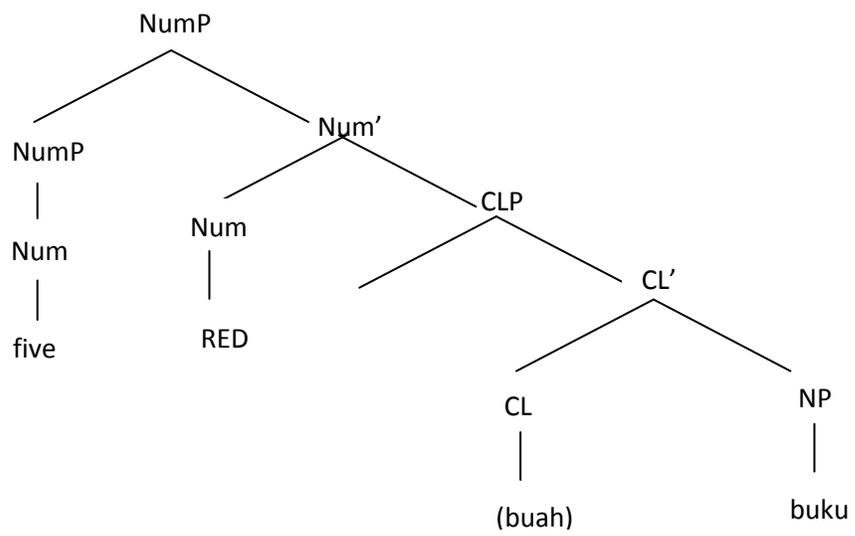
(49) a.



b.



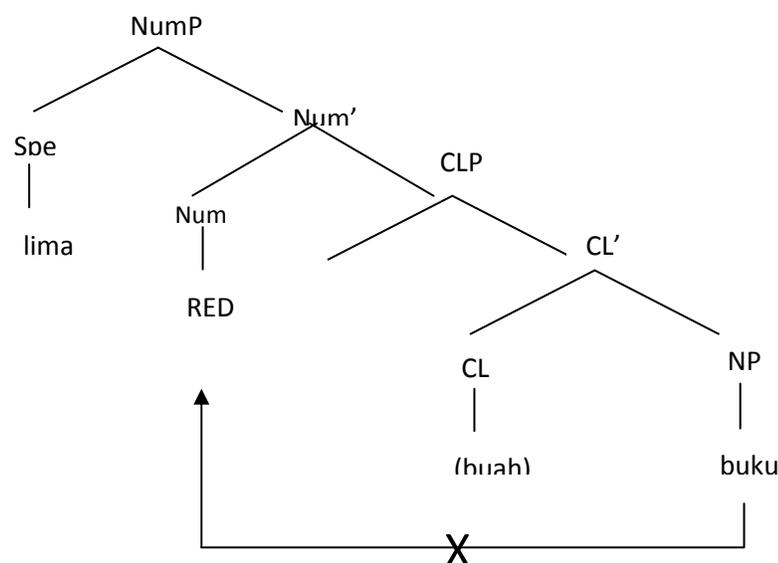
c.



It is conceivable in English that the plural morpheme 's is realized on a functional category of an NP and is based generated in the head Num as illustrated in (53a). If a cardinal number, for instance *five*, is present, then it has to be inserted in the specifier of the NumP. Then, the quantity expression in the Spec NumP has to agree with the NP it modifies, i.e. if the Spec Num is quantified as more than one, then the PL morpheme has to be realized to agree with. As a result, the noun *book* has to be raised to the Num head position in order to agree with the number feature in the specifier position via Spec-Head agreement in order for the noun to be realized as a plural noun. But what about in Indonesian?

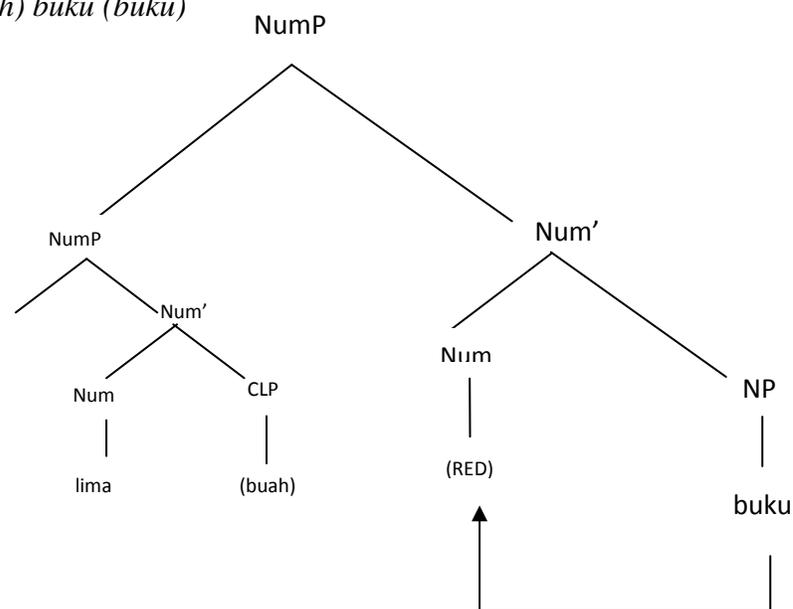
The Indonesian nominal structure in (53b) is unattested. Sentence (53) indicates that, being a classifier language, Indonesian has a number of classifiers which follow the numeral in quantifying a count noun. A classifier will project a classifier phrase which is normally placed below the number phrase (i.e. Simpson (2005), Li (1999)). Let us examine whether the plural analysis of English also applies to Indonesian. Assuming that there is an N to Num movement in a pluralized noun like English, so what we expect is that the NP *buku* moves up to attach to the Num head which is now filled with a RED morpheme as given in (54). However, this movement is constrained by a head movement constrained (HMC) since there is a possible CL head which intervenes the movement.

(54)



This condition is perhaps what Tsou’s (1976) and Sato (2009) believe to be one of the reasons for the ungrammaticality of a numeral classifier in Indonesian if it co-occurs with reduplication. However, we have suggested that both numeral classifiers and plurals can be obligatory and optional under certain conditions as discussed in earlier parts. By definition, we still have to assume that a classifier or a RED morpheme is always present, being overt in obligatory conditions, or being covert in optional conditions. Here is our proposal. Suppose that the RED morpheme in Indonesian is as productive as English -s, and the Indonesian classifier is always inherently associated with numerals (see section 3.2), i.e. classifiers are always present whenever numeral quantification applies (Aikhenvald, 2000). So we will get the syntactical reanalysis of (53b) given in (55).

(55). *lima (buah) buku (buku)*



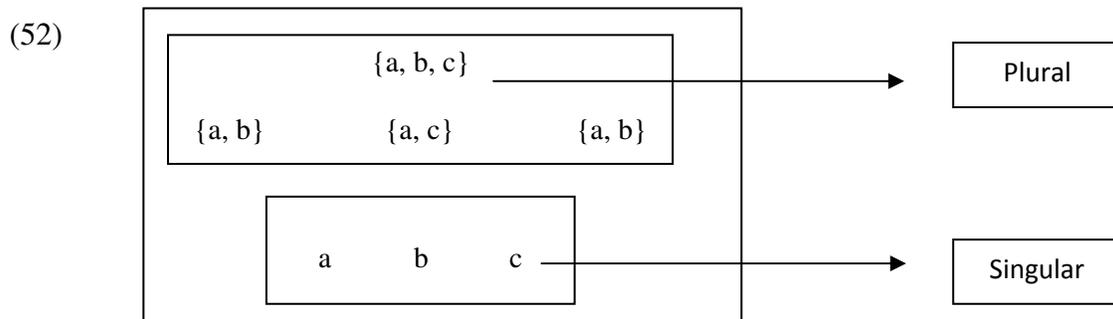
Similar to N to Num movement in English as illustrated in (53b), what happens in the structure of an expression like *lima (buah) buku (buku)*, “five books” is that the noun is quantified by a numeral *lima*, and as we can see that whenever quantification occurs, the classifier needs to be realized, either in an overt or covert way. This is due to the characteristic of a classifier in Indonesian which is inherently attached to a numeral. What we get is a smaller NumP *lima (buah)* which is inserted into the specifier of the bigger NumP. In this case, a classifier may or may not be overtly present in the smaller NumP. In other words, the quantity expression in the Spec NumP has to agree with the

NP it modifies, i.e. if the Spec Num is quantified as more than one, then the plural morpheme via reduplication has to be realized to agree with the specifier.

As a result, the noun *buku* has to be raised to the Num head position in order to agree with the number feature in the specifier position via Spec-Head agreements in order for the noun to be realized as a plural noun. This movement does not necessarily require the reduplication to be overtly present. Similar to the numeral classifier in Indonesian, the reduplication of a noun can be optionally or obligatorily present, depending on the noun it follows as discussed in the earlier part. Therefore, it seems that we have indicated syntactically the optionality and obligatory of classifiers and plurals in Indonesian nominal constructions. This suggests that Indonesian plural formation can be analyzed in an almost similar way to English plural syntax, in a sense that its plural morpheme is productive. In the following section, we present an account for the semantics of plural in Indonesian.

### 4.3. The Semantic Analysis of Nominal Reduplication.

Chierchia (1998a, 1998b) proposes that the domain of quantification is semantically represented as sets which form a complete atomic join semi lattice as illustrated in (52):



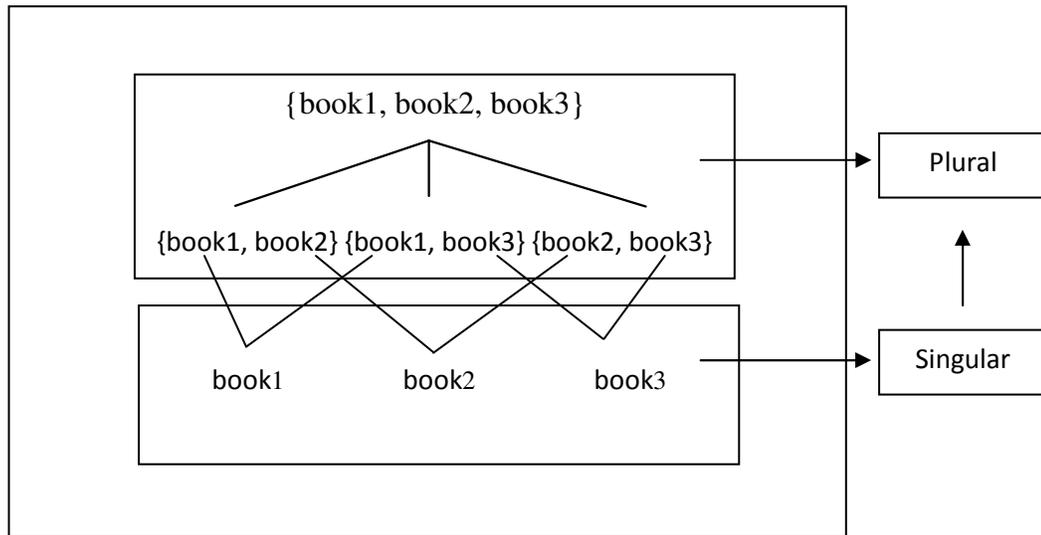
The singular count noun is represented as *a*, *b* or *c* which constitutes a single atomic individual. The plural individuals are defined as sets of atomic individual combinations (pluralisation) of the atomic individuals. Chierchia further assumes that pluralization can be obtained via the ‘ $\leq$ ’, or “subpart” relation, i.e. the atomic singular individual is a subpart of any plurality combination of the atomic individuals in the plural domain it belongs to. As for instance, suppose that *book1*, *book2* and *book3* are all the books in

the world; if we have the singular noun *book*, either *book1*, *book2* or *book3* will be true of it. The plural count noun *books* will be true of *book1*, *book2*, and *book3* and all the other possible groups such that each individual book is a subpart of them. In other words, pluralization is defined as a function that applies to sets of atoms which turns them into the corresponding sets of pluralities. Therefore, pluralization of nouns in English is obtained via PL operation which is defined in (56a) while the mapping of the atoms into sets of plural individual in the semi lattice form is visualized in (56) below.

(56) a. PL operation:

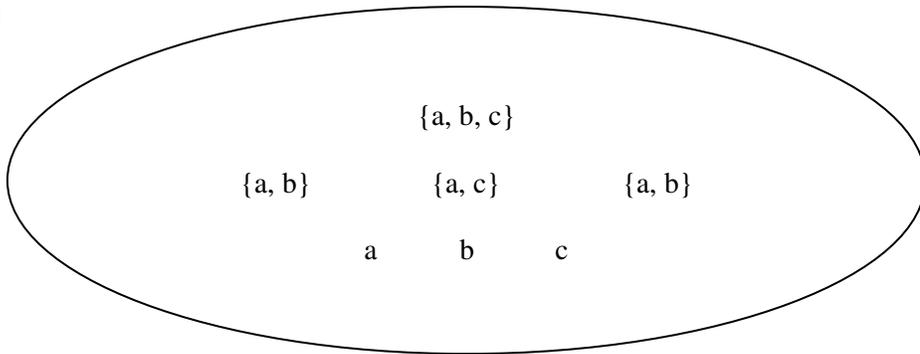
$$PL(B) = \lambda x [\neg B(x) \wedge \forall y[y \leq x \wedge At(y) \rightarrow B(y)]]$$

b.



In Chierchia's theory, mass nouns constitute all the atoms and the sets of plural individuals, i.e. they come out as lexemes which are already pluralized. Therefore, mass noun can also be defined as the neutralization of singular and plural distinctions. When a singular and plural distinction is neutralised, the denotation of mass nouns such as *furniture* will comprise all properties (sets) of singular and plural individuals, i.e. all the atoms and the sets of plural individual, as pictured in (57) below.

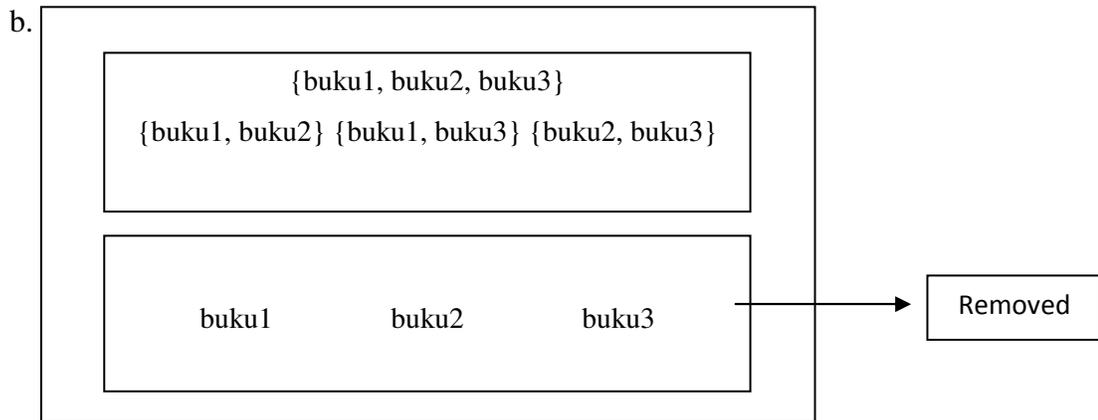
57)



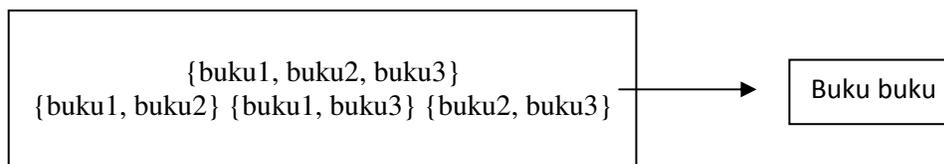
Now let us see whether Indonesian plural is still analyzable in a similar way as that of English one. In (58), the denotation of the singular count noun *buku*, “book” constitutes a set of individual books *buku1*, *buku2*, *buku3*. We propose that the denotation of plural *buku buku*, “books” is obtained via the operation PL (B) *buku* as given in (58a). Given that all nouns as mass nouns in Indonesian (as the primary characteristics of [+arg,-pred languages]), the denotation of plural nouns reduplication can be obtained by removing the individual atoms from the denotation mass nouns. This operation in a semi lattice form is pictured in (58b). This operation is different from that of English in a sense that English pluralization is obtained via shifting the individual atoms to the sets of pluralities whereas Indonesian pluralization is obtained by removing the individual atoms.

58). a. Plural (PL) operation in Indonesian

$$PL (B) = \lambda x [B(x) \wedge \neg At(y)]$$



c.



Similar to languages which have a semantically active, obligatory, plural morpheme, the extensions of count nouns in Indonesian constitute sets of atomic individuals; i.e. if all the books in the actual world were *buku1*, *buku2*, and *buku3*, the extension of the singular count noun *buku* in the actual world would be {*buku1*, *buku2*, *buku3*} whereas the extension of *buku buku*, a plural reduplication of *buku*, in the actual world would be {*buku1*, *buku2*, *buku3*}, {*buku1*, *buku2*}, {*buku1*, *buku3*}, and {*buku2*, *buku3*} (see 58c). Therefore, it is now clear that the extension of a plural count noun in Indonesian excludes the atomic individuals in the mass noun denotation (58b) resulting in the extension of the plural count noun (58c). This is what distinguishes the extension of plural count noun in Indonesian from that of English.

As for mass nouns, Chierchia proposes that the extension of a mass noun is a union of singular and plural term extensions, as mentioned earlier. It consists of a set of all the plural individuals generated by a set of atoms, including each individual atom as well, as visualized in (57) above. If *a*, *b*, and *c* were all the pieces of a mass noun *furniture* in the actual world, the extension of the mass noun *furniture* would be {*a* + *b* + *c*, *a* + *b*, *a* + *c*, *a* + *b*, and *a*, *b*, *c*} (see (56)). Chierchia (1998a: 347) further suggests that the extension of a mass noun like *water* is analogous to the one of nouns like *furniture*. The only difference is what counts as a minimal portion of water which is somewhat vague and may vary from context to context.<sup>36</sup>

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<sup>36</sup> This analysis is different from the standard Linkian analysis, which posits that there are no identifiable smallest portions of the substance in question in any context. Chierchia's analysis can be argued to conform closer with intuitions, since if the word *water* is used to talk about large bodies of water (e.g. water on Mars), drops of water would not be considered relevant minimal amounts, whereas if the topic of conversation were, say, the dryness of the surface of a DVD, a drop of water would most likely be taken as the relevant minimal amount. Moreover, Chierchia's analysis correctly predicts that there may be special contexts in which even microscopic amounts of water can actually be identified as atomic individuals, i.e. individual H<sub>2</sub>O molecules. Chierchia's analysis of mass nouns is described in greater detail in Chierchia (1996) (see also Gillon 1992). (see Chierchia 347)

As noted in the earlier parts, all nouns in numeral classifier languages are considered to be mass nouns. It results in the necessity for the use of numeral classifiers for numeral modification in individuating relevant parts of the mass nouns being counted since Indonesian is a classifier language like Chinese and Japanese. However, we have seen so far that Indonesian plural morphemes can be obligatory under some conditions we have mentioned earlier. If a plural morpheme is semantically active, the distinction between count/mass nouns will be transparent. By definition, Indonesian does have a mass/count distinction, like English as a [+arg,-pred] language. Now let us see whether this account is borne out.

As we have seen, English mass nouns like *furniture* do not discard the semantic mass/count distinction. This means that the operation of pluralisation can appeal to a well-defined set of atoms in the denotation of the nouns to which it applies. This is also the case in Indonesian, I propose, where the distinction of a mass/count count noun is also transparent. Indonesian mass nouns also have distinguishable atoms in their denotation. Let us try to examine this proposal with numerals and classifiers in Indonesian. Suppose that the semantic definition of the numeral *lima*, “five” is a function from a set P of atoms and sums onto that subset of P containing the sums of five object units/atoms as illustrated in (56) below (Krifka, 1995 and Wilhelm, 2008)

$$(59) \quad \lambda P \lambda x [P(x) \wedge CL(x) = 5]$$

Following Krifka and Wilhelm, the number of atom individuals is counted by a numeral classifier CL as the primary characteristic of [+arg,-pred] languages in Chierchia’s sense. Here, the function of CL does not create atoms, but instead accesses the atoms or minimal units in the noun’s denotation<sup>37</sup>. This seems to work well in Indonesian since the distinction between mass and count nouns is clear. In other words, a numeral is able to access atoms in a noun denotation for a count noun. So when we have a nominal phrase such as *lima buku*, where the use of classifier and plural reduplication is optional, the semantics for such a noun phrase is analysed as (57).

$$(60) \quad \lambda x [buku(x) \wedge CL(x) \wedge (x)= 5]$$

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<sup>37</sup> See Dalrymple and Mofu (2009)

The composition in (60) is defined as the plurality of the count noun *buku* such that it comprises 5 (pieces) of *buku*, and the individual *buku* is specified by an optional classifier. When a classifier is present, then the individuation portion by the noun denotation is accessed by the classifier being used. So the compositional semantics for a noun phrase such as *lima buah buku* is given in (61)

$$(61) \quad \lambda x [buku(x) \wedge buah(x) \wedge (x) = 5]$$

The composition in (61) is defined as the plurality operation constituted by the noun *buku* which comprise *lima buah buku*, “five (pieces) of books”, as specified by the classifier *buah*. In other words, the CL which counts the number of atoms in the sets of plurality functions as an individuation function for the denotation of the noun *buku*. Such compositional semantics occurs when a numeral classifier has to occur in a numeral modification.

We have noted in the previous section that, similar to classifiers, Indonesian reduplication can also be obligatory under certain conditions we have discussed in advance. And now we will see whether the plural reduplication is still semantically active. Here is our proposal. The semantics for a plural reduplication like *buku buku* in Indonesian is defined as (62) given the denotation of plurality in Indonesian is obtained via PL operation in (58a),  $PL(B) = \lambda x [B(x) \wedge \neg At(x)]$ .

$$(62) \text{ PL operation of } buku \text{ buku} \quad : \quad \lambda x [buku(x) \wedge \neg At(x)]$$

Therefore, the complete operation of numeral, classifier, and plural in Indonesian is given in (63a) and applies to a noun phrase *lima (buah) buku (buku)* in (63b).

$$(63) \text{ a. } \lambda x [buku(x) \wedge CL(x) \wedge \neg At(x) \wedge (x)=5]$$

$$\text{ b. } \lambda x [buku(x) \wedge buah(x) \wedge \neg At(x) \wedge (x)=5]$$

The compositional semantics in (63b) is defined as the plurality operation constituted by the noun *buku* which comprises five “pieces” of *buku*, and such that the individual *buku* is specified by the classifier *buah*, and the noun is pluralized. What occurs in Indonesian nominal constructions such as (63b) is that the denotation of the noun is accessed by the

numeral *lima* which has the classifier *buah* functioning as the individuation portion of the noun *buku* and the individual atoms of *buku* is removed.

So far, we have seen that Indonesian plurals can be analyzed in almost the same way as those of English, in a sense that they have both a mass/count distinction. Indonesian PL operation can be obtained by removing atomic individuals, while the English one requires the mapping of the atomic individuals in the sets of pluralities which consist of all the possible groups of each individual atom is a subpart of them. To be more precise, like English mass nouns, the semantic mass/count distinction in the domain of quantification in Indonesian is transparent and accessible since it has distinguishable atoms and sets of plural individuals in its denotation.

The conclusion is that, in some ways, Indonesian plural morphemes could be unanalyzable as that of English with respect to Chierchia's parameter. Chierchia claims that no classifier language (i.e. no [+arg, -pred] language) will have a semantically active, and obligatory plural morpheme because all nouns in such languages are mass nouns and mass nouns have already neutralized the singular/plural distinction. However, we have shown evidence both syntactic and semantic that Indonesian goes another way, running counter to Chierchia's generalization.

## 5. Conclusions and Implications

Throughout the previous discussions on the Indonesian nominal construction, we were driven by the way Indonesian nominal constructions fits into Chierchia's NMP. Particular attention was given to the fact that Indonesian is a language which has a generalized classifier system, a mass/count noun distinction, and productive plural morphology via reduplication, i.e. the conditions which are supposed not to occur in Chierchia's model. To verify this, we highlighted Chierchia's parameter setting in order to get a clear picture on how the mapping works. Subsequently, we analyzed the Indonesian nominal construction and tried to fit Indonesian in the model. We put great weight on the grammaticality of bare NPs in Indonesian in argument positions, and the status of classifiers in Indonesian. Along the discussion in those two sections, it became clear that Indonesian is a [+arg,-pred] language for reasons we have discussed. This was further borne out by the fact that Indonesian lacks determiners of the like English type.

However, when we discussed the syntax and semantics of Indonesian plurality via reduplication, we encountered the problem of how Indonesian fits into the model since its plural reduplication is indeed a productive process, not just formal plural reduplication. Furthermore, we observed that the Indonesian mass/count noun distinction is transparent since the PL operation is accessible via removing the individual atoms. All these conditions are ruled out in Chierchia's model. Therefore, the syntactic and semantic analyses on the Indonesian plurality appear to put Indonesian in another setting, i.e. perhaps like English ([+arg,+pred]) with respect to its plural reduplication status. What is actually going with the Indonesian nominal construction? Let us recapitulate what we have observed so far.

Chierchia's Nominal Mapping Parameter has important implications for the study of the noun phrase and its phrasal projections among languages of the world. It has a substantial impact on both the syntactic and morphological distribution of the nominal construction in a given language. This attracted attention to the semantic status of noun phrases in many languages. Assuming that each language has to be classified as one of settings in the model, Gennaro Chierchia claims that languages can principally be classified as follow:

1. For a language to be in the [+arg, –pred] setting, like Japanese or Chinese, it should allow bare NPs to appear in argument positions, consider the extension of all nouns to be mass nouns, and disallow plural morphology. Moreover, the language should also have a generalized classifier system.
2. For a language to be in the [-arg, +pred] setting, like French or Italian, the language should rule out bare nouns appearing in argument positions and the presence of a determiner is obligatory.
3. And the last, for a language to be in the [+arg, +pred] setting, like English, the language could have a mass/count distinction, allow mass nouns to occur freely as bare arguments without being necessary to project a D category. Plural count nouns can turn into argumental or predicative. Yet for singular count nouns, they cannot appear in argument positions without a determiner.

What needs to be further observed is that there are only three settings of the NMP and every language exhibits one of them. Nominal denotations in every language cannot escape from those three settings as for the settings have syntactic and morphological consequences as Chierchia says explicitly, “For example, a language with the plural-singular contrast and a generalized classifier system is certainly logically conceivable; it could, in principle, exist. The point of view we are adopting offers a seemingly principled way for ruling it out...” (Chierchia, 1998: 354).

However, what we have argued so far is that Indonesian does not fit in the model in a sense that its plural morphemes can, both syntactically and semantically, be as productive as those of English. This could suggest that Indonesian, perhaps, is a [+arg, +pred] language. However, this speculation is ruled out by the fact that Indonesian has a generalized classifier system and bare NP arguments whereas English does not have them, except for mass nouns and bare plurals with respect to the grammaticality of bare nouns appearing in argument positions. Therefore, the question now turns to whether Indonesian is indeed a classifier language.

To answer this question, in section 3, we elaborated on how Indonesian could have been classified as a [+arg, –pred] language in Chierchia’s parameter setting. This is due to the fact that Indonesian freely allows bare NPs to occur in argument positions, requires

numeral classifiers to occur under certain conditions, and has a narrow scope reading due to the presence of intentional operators, as also discussed by Chung (2000). All these characteristics indicate in a straightforward way that Indonesian is indeed a classifier language, i.e. [+arg,-pred] setting. If that is the case, the question again turns to whether Indonesian indeed has mass/count distinctions as well as a productive plural morphology.

To address this problem, we examined how Indonesian plural RED can be analyzed in the same way as English in section 4. We started the analysis by suggesting that Indonesian plural can be optionally or obligatorily present under certain conditions we discussed in section 4. In other words, whether or not the plural RED is spelled out, we still have to assume that a classifier or a reduplication morpheme is always present, being overt in obligatory conditions, or being covert in optional conditions.

Moreover, similarly to English, Indonesian nominals also have a mass/count distinction in their denotation. Consequently, plural morphemes will be activated. The Indonesian PL operation can be obtained by removing the atomic individuals, while the English one requires the mapping of the atomic individuals in the sets of pluralities which consist of all the possible groups of each individual atom is a subpart of them. This indicates that the semantic mass/count distinction in the domain of quantification in Indonesian is transparent and accessible since it has distinguishable atoms and sets of plural individuals in its denotation. We arrived at the conclusion that, in some respects, Indonesian plural morphemes are not analyzable as those of English with respect to Chierchia's parameter.

Chierchia claims that no classifier language (i.e. no [+arg, -pred] language) will have a semantically active, and obligatory plural morpheme because all nouns in such languages are mass nouns and mass nouns have already neutralized the singular/plural distinction. However, we have provided evidence both syntactically and semantically that Indonesian requires another way to accommodate Chierchia's generalization if it holds. *Prima facie* Indonesian provides evidence against the model. An alternative position would be that Indonesian is a language with a dual system, i.e. the one being a [+arg, -pred] language in a sense that it has a generalized classifier system and bare NP

arguments for it to be a classifier language like Japanese and Chinese, and the other being a [+arg, +pred] language with respect to its plural morphology for it to be an “English-like language.” However, now the question is whether Chierchia’s theory allows languages to have a dual system. This raises further questions about intralinguistic variation, and the coexistence of systems within one language. Further research on the nominal mapping across languages may unfold the “mystery” of a noun denotation with respect to its argumenthood. What we did so far just focused on one aspect of plurality in Indonesian, i.e. reduplication. Future research on other aspects of plurality in Indonesian would give a better picture on the behavior of Indonesian plurality in its interfaces.

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