

Definite-like plurals

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Ver. 1: 20 August 2013; Ver. 2: 27 November 2013

Abstract Plurals in some languages (e.g. Japanese, Mandarin) are known to exhibit definite-like properties (e.g. Li 1999; Nakanishi and Tomioka 2004). This paper discusses where these properties come from and how they arise. By reporting similar definite-like properties in Malay, I show that plurals exhibiting definite-like properties is cross-linguistically a single phenomenon. I argue that the definite-like properties are due not just to definiteness but also to specificity and that definiteness/specificity arises indirectly, mediated by domain restriction agreement between Num and D, rather than directly, encoded in the plural morphology itself. I suggest that definite-like plurals are found in pure quantifier languages, but not in determiner quantifier languages (e.g. English), as domain restriction agreement involves Num in the former but Q in the latter. The paper also discusses two cases in which plurals do not appear to be definite-like: when they are modified and when they are used contrastively. I account for these seemingly non-specific plurals by claiming that both modification and contrast introduce a new situation variable that mediates between the situations of the DP and a higher predicate. The proposed analysis supports the view that argument nominals in article-less languages project DPs like those in article languages.

Keywords plurals · definiteness · specificity · Japanese · Malay · Mandarin

1 Introduction

Plurals in some languages, particularly classifier languages such as Japanese and Mandarin, are known to differ from more established plurals such as those in English. One of the differences between the two types of plurals is that those in the former languages show definite-like properties (e.g. Yang 1998; Li 1999; Kurafuji

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2004; Nakanishi and Tomioka 2004).¹ For example, plurals with *-men* in Mandarin cannot occur in existential constructions, as illustrated by the contrast in (1).²

- (1) a. You *ren* lai-le.
 have person come-ASP
 ‘There is somebody coming.’
 b. *You *ren-men* lai-le.
 have person-PL come-ASP
 For: ‘There are people coming.’

(Yang 1998:281)

The present paper is concerned with definite-like properties like this. It discusses where these properties come from and how they arise.

This paper is organized as follows. Section 2 reviews the definite-like properties pointed out in the literature and reports similar properties in Malay. In doing so, the section shows that plurals exhibiting definite-like properties cross-linguistically is a single phenomenon rather than a coincidence of more than one language happening to show similar properties.

Being a single phenomenon, the definite-like properties should be traced to the same source. In Section 3, I claim that the definite-like properties are due not just to definiteness as such but also to specificity, and propose a formal analysis of the definite-like properties of plurals that is applicable cross-linguistically. I argue, based on Persian data, that the definite-like properties arise because plural markers must be licensed by definite/specific determiners in D. In other words, they arise indirectly. Their immediate source is determiners, and syntactic licensing mediates between determiners and the plural morphology.

There are two cases in which plurals do not show definite-like properties and seem to be non-specific. Section 4 discusses these seemingly non-specific plurals. I account for them by claiming that modification and contrast both introduce a new situation variable that mediates between the situations of the DP and a higher predicate.

Section 5 elaborates on the syntactic licensing responsible for the definite-like properties of plurals. I capture the licensing of Num by D by means of agreement between the two heads with respect to number and domain restriction. The section proposes to link the presence/absence of definite-like plurals to different quantificational systems. It is claimed that plurals are definite-like in languages with pure quantifiers because in these languages domain restriction agreement involves Num, whereas plurals are not definite-like in languages with determiner quantifiers because domain restriction agreement occurs between Q and D, and does not involve Num.

¹ Other differences include restricted distributions (e.g. only animate nouns have plurals) and optionality. Chung (2000) shows that the former is a language-specific idiosyncrasy and is not a necessary correlate of a certain language type, specifically classifier languages. Nomoto (2013a,b) contends that the optionality of plural marking is only apparent due to the morphological distinctness of the number-neutral general number category in the basic number system. Therefore, these differences do not justify the view that the relevant plurals are not genuine and can be put aside in the discussion of number.

² Non-standard abbreviations used (those not included in the Leipzig Glossing Rules): ASP: aspect; MOD: modifier; PART: particle.

Section 6 concludes the paper with a discussion of implications of the paper for the structure of bare argument nominals and number features.

2 Definite-like properties of plurals

The definite-like properties of plurals have been reported in many languages. These languages include the Gbe languages Fongbe (Lefebvre and Brousseau 2004), Gen-Mina (Bole-Richard 1983) and Gungbe (Aboh 2004); Haitian Creole (Lefebvre 1998), Japanese (e.g. Kawasaki 1989; Kurafuji 2004; Nakanishi and Tomioka 2004), Korean (Kwon and Zribi-Hertz 2004), Kriyol (Guinea-Bissau Portuguese Creole) (Kihm 2007), Mandarin (e.g. Iljic 1994; Yang 1998; Li 1999), Papiamentu (Kester and Schmitt 2007) and Persian (Ghomeshi 2003). Among these, the most discussed are plurals with *-men* in Mandarin and plurals with *-tati* in Japanese.³ This section thus reviews the definite-like properties and the analyses of plurals in Mandarin and Japanese first, in Sections 2.1 and 2.2. It then reports that similar properties are also observed in Malay (Section 2.3). Finally, Section 2.4 discusses which of the proposed analyses is most promising as an account of a cross-linguistic phenomenon.

2.1 Mandarin: *-Men*

The definite-like properties of plurals with *-men* in Mandarin have been noted by a number of authors (e.g. Iljic 1994; Yang 1998; Li 1999; Rullmann and You 2006; Nakanishi and Tomioka 2004; Huang et al. 2009). *-Men* plurals pattern with definite plurals with *the* in English in their behaviours.

First, *-men* plurals cannot occur in existential/unaccusative sentences, as shown by the contrast between (2a) with a non-plural form and (2b) with a *-men* plural (repeated from (1) above).

- (2) a. You *ren* lai-le.
 have person come-ASP
 ‘There is somebody coming.’
 b. *You *ren-men* lai-le.
 have person-PL come-ASP
 For: ‘There are people coming.’

(Yang 1998:281)

Definite plurals in English cannot occur in this context either, as shown in (3b).

- (3) a. There are *people* coming.
 b. *There are *the people* coming.

These facts are due to the definiteness effect.

³ I assume that these morphemes are genuine plural markers, though some authors analyse them differently. See Li (1999) and Nomoto (2013a:Section 3.4.2.2) for justifications.

Second, *-men* plurals cannot serve as the internal argument of the relational possession construction, as in (4b). A non-plural form must be used to express Lisi's motherhood, as in (4a).

- (4) a. Lisi you *haizi*.
Lisi have child
'Lisi has a child/children. (= Lisi is a mother.)'
b. *Lisi you *haizi-men*.
Lisi have child
For: 'Lisi has children. (= Lisi is a mother.)'
(Nakanishi and Tomioka 2004:117)

Bare and definite plurals in English show a similar contrast. While *Mary has children* conveys Mary's motherhood, *Mary has the children* does not.

Third, *-men* plurals cannot be used as predicates. Only (5a) with a non-plural form, but not (5b) with a *-men* plural, can be used to describe the subjects' occupation.

- (5) a. Tamen shi *xuesheng*.
they be student
'They are students.'
b. *Tamen shi *xuesheng-men*.
they be student-PL
For: 'They are students.'
(Yang 1998:280)

The same contrast is found between bare and definite plurals in English, as in (6).

- (6) a. They are *students*.
b. *They are *the students*. (as a description about the subject's occupation)

Fourth, *-men* plurals are incompatible with characterizing generic sentences (henceforth 'generics').⁴ Only (7a) with a non-plural form, but not (7b) with a *-men* plural, is a generalization about citizens of Italy. (7b) translates as *The Italians are cheerful* in English, which can only be a generalization about a certain contextually anchored group of Italians, but not about Italians in general.

- (7) a. *Yidaliren* hen kailang.
Italian very cheerful
'Italians are cheerful.'
b. **Yidaliren-men* hen kailang.
Italian-PL very cheerful
For: 'Italians are cheerful.'

⁴ Yang (1998) presents incompatibility with kind-level predicates as evidence for the definite interpretation. However, a plural being unable to refer to kinds does not necessarily mean that it is definite, because cross-linguistic variations exist in definiteness marking in kind terms (Dayal 2004b). Definite plurals can refer to kinds in some languages, including French and Italian, though they do not in English.

Lastly, while non-plural forms are scopally ambiguous with respect to intensional verbs as in (8a), *-men* plurals obligatorily take wide scope as in (8b).

- (8) a. Na jia yiyuan zhengzai zhao *hushi*.
 that CLF hospital currently look.for nurse
 (i) $\sqrt{\text{look.for} > \text{nurse(s)}}$
 ‘That hospital is looking for a nurse/nurses (to hire).’
 (ii) $? \text{nurse(s)} > \text{look.for}$
 ‘There is a nurse/are nurses that hospital is looking for.’
- b. Na jia yiyuan zhengzai zhao *hushi-men*.
 that CLF hospital currently look.for nurse-PL
 (i) $* \text{look.for} > \text{nurses}$
 ‘That hospital is looking for nurses (to hire).’
 (ii) $\sqrt{\text{nurses} > \text{look.for}}$
 ‘There is a group of nurses that hospital is looking for.’
 (Lan 2010:19)⁵

Again, *-men* plurals pattern with definite plurals in English.

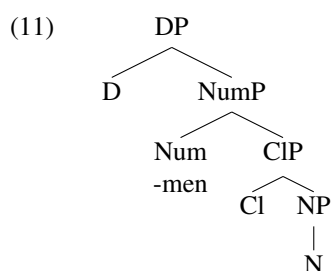
- (9) a. That hospital is looking for *nurses*.
 (i) $\sqrt{\text{look.for} > \text{nurse(s)}}$
 ‘That hospital is looking for nurses (to hire).’
 (ii) $* \text{nurse(s)} > \text{look.for}$
 ‘There are nurses that hospital is looking for.’
- b. That hospital is looking for *the nurses*.
 (i) $* \text{look.for} > \text{nurse(s)}$
 ‘That hospital is looking for nurses (to hire).’
 (ii) $\sqrt{\text{nurse(s)} > \text{look.for}}$
 ‘There are nurses that hospital is looking for.’

Researchers of Mandarin ascribe these definite-like properties to definiteness as such. Yang (1998:284) proposes a semantics of *-men* that encodes both plurality and definiteness, shown in (10), where ‘*’ is the plural operator (Link 1983) and ‘ σ ’ is adopted from Landman (1989) to represent the definite article.

$$(10) \quad \lambda P[\sigma x.*P(x)]$$

Li (1999) also treats *-men* plurals as definites, but the definite interpretation arises less directly. In her analysis, a definite interpretation is due to a [+Def] feature in D. The [+Def] in D is checked by N, which also has [+Def], by means of head movement. (11) shows the structure of noun phrases posited by Li. *-Men*—a plural feature, to be precise—is merged in Num and picked up by N on its way to D.

⁵ The judgements shown here are not Lan’s but my consultants’. Lan reports a bigger contrast between (8a-i) and (8a-ii), and a smaller contrast between (8b-i) and (8b-ii), i.e. (8a-i): $\sqrt{\text{ }}$; (8a-ii): ??; (8b-i): *?; (8b-ii): $\sqrt{\text{ }}$.



2.2 Japanese: *-Tati*

Similar definite-like properties have been also reported for plurals with the suffix *-tati* in Japanese. Kurafuji (2004) and Nakanishi and Tomioka (2004) show that four of the five definite-like properties exhibited by *-men* plurals in Mandarin above are also found with *-tati* plurals in Japanese.

First, *-tati* plurals cannot serve as the internal argument of the relational possession construction. While (12a) with a non-plural form can express Mrs. Inoue's motherhood, (12b) with its *-tati* plural counterpart cannot. The latter can only mean that Mrs. Inoue has a contextually salient group of children, who do not necessarily have to be her own children.

- (12) a. Inoue-san-ni-wa *kodomo-ga* aru/iru.
 Inoue-Mrs.-DAT-TOP child-NOM exist
 'Mrs. Inoue has a child/children. (= Mrs. Inoue is a mother.)'
- b. *?Inoue-san-ni-wa *kodomo-tati-ga* aru/iru.
 Inoue-Mrs.-DAT-TOP child-PL-NOM exist
 For: 'Mrs. Inoue has children. (= Mrs. Inoue is a mother.)'
- (Nakanishi and Tomioka 2004:116)

Second, *-tati* plurals cannot be used as predicates. Non-plural forms are used instead.

- (13) Karera-wa *gakusei*(*-*tati*) da.
 they-TOP student-PL be
 'They are students.'

Third, *-tati* plurals are incompatible with generics. Only (14a) with a non-plural form is a generalization about citizens of Italy. (14b) with a *-tati* plural is only acceptable with the meaning 'Some group of Italians are cheerful'.

- (14) a. *Itariazin-wa* yooki-da.
 Italian-PL-TOP cheerful-COP
 'Italians are cheerful.'

- b. ???*Itariazin-tati-wa yooki-da.*
 Italian-PL-TOP cheerful-COP
 For: ‘Italians are cheerful.’

(Nakanishi and Tomioka 2004:114)

Fourth, *-tati* plurals obligatorily take wide scope with respect to intensional verbs as in (15b), unlike non-plural forms, which are scopally ambiguous, as shown in (15a).

- (15) a. Sono byooin-wa *kangohu-o sagasi-teiru.*
 that hospital-TOP nurse-ACC look.for-PROG
 (i) $\sqrt{\text{look.for}} > \text{nurse(s)}$
 ‘That hospital is looking for a nurse/nurses (to hire).’
 (ii) $\text{??nurse(s)} > \text{look.for}$
 ‘There is a nurse/are nurses that hospital is looking for.’
- b. Sono byooin-wa *kangohu-tati-o sagasi-teiru.*
 that hospital-TOP nurse-PL-ACC look.for-PROG
 (i) $*\text{?look.for} > \text{nurses}$
 ‘That hospital is looking for nurses (to hire).’
 (ii) $\sqrt{\text{nurses}} > \text{look.for}$
 ‘There is a group of nurses that hospital is looking for.’

(Nakanishi and Tomioka 2004:115)

Kurafuji (2004) regards these definite-like properties as resulting from definiteness as such and proposes a semantics of *-tati* that is essentially the same as the semantics of Mandarin *-men* proposed by Yang (1998), given in (10) above. However, he also notes a serious empirical problem for this analysis: there are cases in which *-tati* plurals are obviously indefinite. (16) is one such example.

- (16) Kooen-ni kodomo-tati-ga i-ta.
 park-LOC child-PL-NOM be-PST
 ‘There were children in the park.’

(Nakanishi and Tomioka 2004:120)

Incidentally, this example shows that *-tati* plurals can occur in existential sentences in Japanese, unlike *-men* plurals in Mandarin. This difference does not necessarily entail a difference in plurals between the two languages. It is independently known that existential sentences in Japanese are not subject to a definiteness restriction comparable to that on *there* sentences in English (Kishimoto 2000). The plural *kodomo-tati* ‘children’ in (16) can also be interpreted as definite in appropriate contexts. The purpose of (16) is to show that *-tati* plurals can be indefinite rather than to point out their occurrence in existential sentences.

One of the reviewers pointed out that the interpretation of the *-tati* plural *kanryoo-tati* ‘(the) bureaucrats’ in the second sentence of (17) below supports the definiteness approach. This is because this reviewer found *kanryoo-tati* as referring to all of the

five bureaucrats introduced in the first sentence, which, if true, indicates that *-tati* plurals entail maximality, a characteristic of definites as opposed to indefinites.

- (17) San nin-no daizin to go nin-no kanyoo-ga haitteki-ta.
 three CLF-LINK minister and five CLF-LINK bureaucrat-NOM come.in-PST
 Takashi-wa *kanryoo-tati*-o niramituke-ta.
 Takashi-TOP bureaucrat-PL-ACC glare.at-PST
 ‘Three ministers and five bureaucrats came in. Takashi glared at the bureaucrats/(?*)some of the bureaucrats.’

The few speakers I consulted agreed to the reviewer’s judgement for (17). However, they also noted that an indefinite reading was actually possible, though not very prominent. For instance, *kanryoo-tati* may refer only to a part of the bureaucrats who came into Takashi’s sight or who Takashi particularly hated. (17) can thus be felicitously followed by a sentence like (18).

- (18) Daga itumo sinsetuni sitekureru Ito dake-wa niramituke-nakat-ta.
 but always kind do.give Ito only-TOP glare.at-NEG-PST
 ‘But he didn’t glare at Ito, who had been always kind to him.’

Moreover, an indefinite reading becomes more readily available if the sentences are construed distributively instead of collectively, that is to say, there were multiple events in which a bureaucrat came in and Takashi glared at him/her, but not Takashi glared at the bureaucrats as a group after they all finished entering the room. These facts confirm that *-tati* plurals are not always definite.

In an effort to account for both definite and indefinite *-tati* plurals, Nakanishi and Tomioka (2004) argue that the definite-like properties are not due to definiteness but to a special characteristic of the semantics of *-tati*. Specifically, the extension of *X-tati* may contain exceptions, i.e. non-Xs. For example, *otokonoko-tati* [boy-PL] can mean either ‘boys’ (uniform reading) or ‘boys and some non-boys represented by the boys’ (non-uniform reading). Under Nakanishi and Tomioka’s analysis, the two readings are obtained as two possibilities for the same single denotation shown in (19). A uniform reading is obtained when the relevant plural individual happens to consist only of boys; otherwise, a non-uniform reading is obtained.⁶

- (19) $[[\text{otokonoko-tati}]] = \lambda Y_e. |Y| \geq 2 \wedge \text{boy}' \text{ represents } Y$
 ‘plural individuals represented by (those who have) the property of being boys’

Nakanishi and Tomioka account for the definite-like properties of *-tati* plurals as follows. To begin, *-tati* plurals cannot be the internal argument of the relational possession construction as in (12b) because a possessive sentence does not entail motherhood if the possession may contain non-child individuals. Next, *-tati* plurals are incompatible with generics as in (14b) because a generalization becomes less precise

⁶ Kaneko (2007) proposes a similar analysis based on the potentially non-uniform extensions of *-tati* plurals. He reinterprets the relation ‘represents’ in (19) in terms of the contextually determined saliency difference between X(s) and non-Xs. Kaneko attempts to account for the definite-like properties by means of this saliency condition lying behind the potentially non-uniform nature of *-tati* plurals.

if it allows exceptions. The obligatory wide scope of *-tati* plurals as shown in (15b) is explained as follows. In the narrow scope reading, the connection between the need and the people to be looked for becomes unreasonable if the latter may contain non-nurses, i.e. finding non-nurses could satisfy the need for nurses. Nakanishi and Tomioka (2004) do not discuss why *-tati* plurals cannot serve as predicate nominals as in (13).

Hosoi (2005), while basically adopting Nakanishi and Tomioka's (2004) analysis of *-tati* as an exception-allowing associativity marker, argues that the definite-like properties are in fact manifestations of specificity. According to his analysis, *otokonoko-tati* [boy-PL] has the denotation in (20), where the content of Q is determined by the context in situation s_1 and R is the denotation of the matrix predicate.

- (20) $\llbracket \text{otokonoko-tati} \rrbracket = \lambda R. \exists X \exists Y [\text{boy}'(s_1)(X) \wedge Q(s_1)(Y) \wedge X \subseteq Y \wedge |Y| \geq 2 \wedge R(s_2)(Y)]$
 'predicates in s_2 that hold with a plural individual consisting of boys potentially together with some non-boys whose property is determined by the context in situation s_1 '

What is crucial in (20) is that the matrix predicate (R) is within the scope of the existential, which forces a narrow scope interpretation of any scope-taking elements related to the matrix predicate. This explains the obligatory wide scope of *-tati* plurals as shown in (15b). Hosoi (2005) does not discuss why *-tati* plurals cannot serve as predicates as in (13). However, his semantics in (20) correctly predicts that they cannot do so due to type mismatch: *-tati* plurals are a function from predicates to propositions ($\langle \langle e, \langle s, t \rangle \rangle, t \rangle$), but not of the predicate type ($\langle e, t \rangle$). According to Hosoi (2005), *-tati* plurals cannot be the internal argument of the relational possession construction as in (12b) because possession verbs are individual-level predicates and individual-level predicates do not have an argument position for events/situations (Kratzer 1995). Notice that the matrix predicate R in (20) above has a situation variable (s_2). Although not discussed by Hosoi, *-tati* plurals are predicted to be incompatible with generics as in (14b), given the close connection between generics and individual-level predicates. Finally, Hosoi claims that an apparently non-specific reading, as is the case with (16), arises when the two situation variables happen to be identical ($s_1 = s_2$ in (20)).

The analysis of plurals that I will present below is similar to Hosoi's. It accepts the relevance of specificity and makes use of situation variables. However, my analysis differs from Hosoi's in two respects. First, it does not incorporate these aspects directly into the semantics of plural markers. Second, I do not exclude the relevance of definiteness.

2.3 Malay: Reduplication

Plurals in Malay, which are formed by reduplication and available for count nouns in general, exhibit the same definite-like properties as *-tati* plurals in Japanese do.⁷ To the best of my knowledge, this fact has never been reported in the literature.

First, like Japanese and Mandarin, plurals in Malay cannot serve as the internal argument of the relational possession construction. While (21a) with a non-plural form can express the subject's motherhood, (21b) with a plural cannot.

- (21) a. Dia ada *anak*.
 she have child
 'She has a child/children. (= She is a mother.)'
 b. *Dia ada *anak-anak*.
 she have child.PL
 For: 'She has children. (= She is a mother.)'

Second, while non-plural forms can be used as predicates, plurals cannot, as shown by the contrast in (22). Only (22a), but not (22b), describes the subject's occupation.

- (22) a. Mereka *pelajar*.
 they student
 'They are students.'
 b. *Mereka *pelajar-pelajar*.
 they student.PL
 For: 'They are students.'

Third, plurals are incompatible with generics, as in (23b). While (23a) with a non-plural form is a generalization about the characteristics of singers in general, (23b) with a plural can only be a description of a particular situation ('The singers are being cheerful now').⁸

- (23) a. *Penyanyi* ceria.
 singer cheerful
 'Singers are cheerful.'

⁷ Some authors are reluctant to regard reduplicated nouns in Malay (and the closely related language Indonesian) as plural forms. For instance, Mintz (2002:282) states that reduplicated nouns in Malay/Indonesian "indicate individuality or variety and not plurality." See Nomoto (2013a:Section 3.4.2.1) for arguments against such a view.

⁸ The contrast disappears if the overt copula *adalah* is used as in (i). It is unclear why the presence of *adalah* makes an otherwise episodic sentence generic.

- (i) a. *Penyanyi adalah ceria*.
 singer COP cheerful
 'Singers are cheerful.'
 b. *Penyanyi-penyanyi adalah ceria*.
 singer.PL COP cheerful
 'Singers are cheerful.'

- b. ??*Penyanyi-penyanyi* ceria.
 singer.PL cheerful
 For: ‘Singers are cheerful.’

Finally, plurals obligatorily take wide scope with respect to intensional verbs as in (24b), unlike non-plural forms, which are scopally ambiguous, as shown in (24a).

- (24) a. Hospital itu sedang mencari *jururawat*.
 hospital that PROG look.for nurse
 (i) $\sqrt{\text{look.for}} > \text{nurse(s)}$
 ‘That hospital is looking for a nurse/nurses (to hire).’
 (ii) $\text{??nurse(s)} > \text{look.for}$
 ‘There is a nurse/are nurses that hospital is looking for.’
- b. (??)Hospital itu sedang mencari *jururawat-jururawat*.
 hospital that PROG look.for nurse.PL
 (i) $*\text{?look.for} > \text{nurses}$
 ‘That hospital is looking for nurses (to hire).’
 (ii) $\text{?nurses} > \text{look.for}$
 ‘There is a group of nurses that hospital is looking for.’

(24b) is not totally acceptable even in the wide-scope reading for an independent reason (indicated by “??” in the parenthesis” in the parenthesis): plurals in Malay normally sound incomplete in the direct object position, unless they are modified or used contrastively.⁹ I will discuss the effects of modifiers and contrast in Section 4 below.

Recall that Mandarin and Japanese differ in one of the definite-like properties, i.e. whether plurals can occur in existential/unaccusative constructions. *-Men* plurals in Mandarin cannot (cf. (2)) whereas *-tati* plurals in Japanese can (cf. (16)). Plurals in Malay pattern with the latter. They can occur in existential/unaccusative sentences, as in (25).

- (25) Ada *burung-burung* di atas pokok.
 be bird.PL at on tree
 ‘There are birds on the tree.’

No account has been proposed for these properties, as they have never been reported in the literature.

2.4 A comparison of previous analyses

This section has presented definite-like properties of plurals in Mandarin, Japanese and Malay. The properties common to all three languages are summarized in (26).

- (26) Cross-linguistically common definite-like properties of plurals
 a. Cannot serve as the internal argument of the relational possession construction.

⁹ Kester and Schmitt (2007) report a similar fact in Papiamentu.

- b. Cannot serve as predicate nominals.
- c. Incompatible with generics.
- d. Obligatory wide scope.

In addition, *-men* plurals in Mandarin are subject to an additional restriction, i.e. they cannot occur in existential/unaccusative sentences.

Three types of analyses of the definite-like properties have been proposed in the literature. They differ in the factor to which the definite-like properties are ascribed: definiteness (Yang 1998; Li 1999; Kurafuji 2004), potentially non-uniform reference (Nakanishi and Tomioka 2004; Kaneko 2007) or specificity (Hosoi 2005). Since similar definite-like properties are also found in other languages, as stated at the outset of this section, it is plausible to think that the recurrent properties in (26) are rooted in the same factor, and are not mere coincidences of separate language-specific phenomena. Of course, individual languages may impose further restrictions on their plurals, as Mandarin indeed does. What the present paper intends to do is to distinguish the core properties of plurals that are common across languages from language-specific ones, and propose an account for the former.

The first and second of the three analyses are not cross-linguistically viable. Let us first consider the second analysis. This analysis seeks the source of the definite-like properties in potentially non-uniform extensions. The analysis is only valid for languages like Japanese, whose plural markers are (identical in form to) associativity markers, but not for languages in which this coincidence does not happen generally, such as Malay and Mandarin. Reduplicated nouns in Malay never include in their extensions any elements that are not in the denotation of the head noun. Neither common nouns nor proper names are reduplicated to mean ‘X and X’s associates’. The suffix *-men* in Mandarin is known to have an associative use like *-tati* in Japanese. However, the use is limited to cases in which the head noun is a pronoun. *-Men* plurals never refer to non-uniform pluralities when the head noun is a common noun. Moreover, Li (1999) points out that for many speakers the non-uniform reading is unavailable when the head noun is a proper name.

The definiteness-based analysis, on the other hand, does not work for Japanese and Malay. We have seen an example of a *-tati* plural in Japanese occurring in an existential sentence with an indefinite interpretation (cf. (16)). Plurals can occur in existential sentences and receive an indefinite interpretation in Malay too. Unlike Japanese, but like Mandarin, existential sentences in Malay are subject to a sort of definiteness restriction. Definite noun phrases are disallowed after existential/unaccusative verbs in affirmative sentences without any context, as in (27) (Nomoto 2009).¹⁰

- (27) Ada dua naskhah majalah (*itu) di atas meja.
 be two CLF magazine that at on table
 ‘There are (*the) two magazines on the table.’

¹⁰ They are acceptable with certain context, indicating that the definiteness restriction in Malay is semantic/pragmatic in nature. See Nomoto (2013a) for details.

The sentence in (25) above can be used out of the blue, without any contextual support. Hence, the plural form *burung-burung* ‘birds’ in (25) is indefinite. The definiteness-based analysis is therefore not adequate for Japanese and Malay.

As a matter of fact, the definiteness-based analysis is also problematic for Mandarin. It has been noted that noun phrases suffixed by *-men* in Mandarin are obligatorily definite and cannot be interpreted as indefinite. However, this generalization is in fact too strong. Indeed *-men* usually does not occur with indefinites, but indefinites with *-men* are not totally disallowed, as demonstrated by Yorifuji (1976) and Lan (2010).¹¹ One of Yorifuji’s examples is given in (28). The sentence was taken from a children’s story collection *You Miao Ji*. It occurs as the first sentence of a story, and hence no referent has yet been established, ruling out the possibility of interpreting *haizi-men* ‘children’ as definite.

- (28) Xiao he liushui hua hua xiang, xiang *haizi-men* zai gechang.
 small river flowing.water rush rush sound like child-PL PROG sing
 ‘Rushing creek water sounds like children singing a song.’

(Yorifuji 1976:86)

(29) is another example showing that forms with *-men* can be indefinite. According to my consultants, *xuesheng-men* ‘students’ is ambiguous between definite and indefinite interpretations, with the indefinite interpretation more salient.

- (29) Xianzai yanzou de yuedui shi you *xuesheng-men* zucheng de.
 now play MOD band is of student-PL compose PART
 ‘The band now playing is made up of (the) students.’

Having ruled out the first and second analyses, the only candidate left for a cross-linguistically viable analysis of the core definite-like properties in (26) is the third analysis, which identifies the definite-like properties as manifestations of specificity. Given that plurals are more amenable to a definite interpretation than a specific indefinite interpretation, I do not think that specificity is the only source of the definite-like properties. Instead, I argue that both definiteness and specificity are responsible for them, with the former more prominent than the latter. The problem of the definiteness-only approach is the presence of obviously indefinite instances. The approach has no problem with accounting for the definite-like properties. What remains to be done then is to show that the same set of definite-like properties can also be accounted for by specificity. The next section will do this.

¹¹ It is unfortunate that Yorifuji (1976) has been misrepresented in the literature on Mandarin. For example, Ilic (1994:94) writes: “Next, as Rygaloff and Yorifuji notably point out, *N-men* always refers to the definite.” Yorifuji’s work should be reevaluated as one of the earliest attempts to challenge the traditional view that noun phrases with *-men* are always definite.

3 Specificity as a core of plurals

3.1 Specificity

This section demonstrates that the definite-like properties of plurals arise from specificity as well as definiteness. I assume the theory of specificity as ‘referential anchoring’ along the line of Fodor and Sag (1982), Kratzer (1998) and von Heusinger (2002). (See von Heusinger (2011) for other theories of specificity.) Under this theory, “the referent of the specific expression is linked by a contextually salient function to the referent of another expression” (von Heusinger 2002:45), where the anchor (= perspective, parameter) of the function is normally the speaker, but it can also be other attitude holders (von Heusinger 2011:1048). By using a specific expression, the speaker asserts the existence of such a function, whose content is unfamiliar to the hearer. In other words, the speaker, but not the hearer, knows the way to pick out the referent of an indefinite. The speaker of (29), for instance, can pick out the relevant students forming the band if s/he is requested to do so, regardless of whether s/he knows their identity.¹² The referent is said to be “in the speaker’s mind” if the speaker also knows the exact definition of the function. However, not knowing it does not necessarily prevent him/her from using a specific expression, as demonstrated by the use of *a certain* in (30). In such cases, the referent is not “in the speaker’s mind,” but there is a natural and informative function from the speaker to the referent (von Heusinger 2011:1048).

- (30) a. The teacher gave every child a certain task to work on during the afternoon.
 b. Each reporter was assigned to a certain politician by the editor of the paper.

(von Heusinger 2011:1048)

As a formal device to implement the conception of specificity as ‘referential anchoring’, von Heusinger employs parameterized choice functions. A parameterized choice function CH_x applied to the parameter/anchor x creates a choice function, which is a type-shifting function that selects one element from the (non-empty) set denoted by its argument (Kratzer 1998). The noun phrase *a book* in its specific reading is represented as $CH_{\text{speaker}}(\textit{book})$, for example. Since the parameters of choice functions are not directly relevant to the discussion, I will omit them below for simplicity.

Specificity and definiteness are conceptually similar. Indeed, typical definites are specific. von Heusinger (2011) points out that the two notions are also similar formally. CH associated with specific indefinites and the ι -operator responsible for definiteness are both property-to-argument type-shifters. Furthermore, they both reduce the set of potential referents of a nominal. ι differs from CH in that the

¹² The specificity is less obvious in (28) due to the modal context introduced by *xiang* ‘like’. Nonetheless, *haizi-men* ‘children’ here is specific, as it only refers to those children whose singing sounds similar to the sound of rushing creek water to the speaker (but not necessarily also to the hearer), and cannot be just any children. I thank Zhiguo Xie for pointing out the relevance of modality here.

method/function to reduce the set is also known to the hearer. Therefore, ι can be regarded as a hearer-known variant of CH.

In what follows, I show that the four cross-linguistically common definite-like properties follow naturally from the notion of specificity articulated above (Section 3.2) and that definiteness/specificity is encoded not by the plural marker as an additional meaning but separately by a distinct morpheme (Section 3.3).

3.2 Accounting for definite-like properties

Putting aside the issue of how specificity arises for the moment (see Section 3.3), an analysis that regards plurals as specific is able to account for their definite-like properties naturally. The relevant properties are repeated below for convenience.

- (26) Cross-linguistically common definite-like properties of plurals
- a. Cannot serve as the internal argument of the relational possession construction.
 - b. Cannot serve as predicate nominals.
 - c. Incompatible with generics.
 - d. Obligatory wide scope.

The accounts for (26b) and (26d) are basically along the line suggested in Section 2.2 above in relation to Hosoi's (2005) analysis of *-tati* plurals in Japanese. Plurals cannot serve as predicates due to type mismatch; under the 'referential anchoring' theory, specific expressions are individuals (type e), but not properties (type $\langle e, t \rangle$). Specific expressions are known to take the widest scope, as they are (similar to) indexicals, which only depend on the context of utterance and do not interact with intra-sentential operators (e.g. Fodor and Sag 1982; Kratzer 1998).¹³ This explains the fact that plurals obligatorily take wide scope over intensional verbs.

These two aspects also account for incompatibility with generics (26c). If a plural is of the individual type and its value is dependent on the context of utterance, the restrictor of a generic operator contains no variable ranging over different values. Hence, it cannot be interpreted quantificationally. As a consequence, a sentence containing it will not make a generalization about a class of plural entities that satisfy the characterization specified by the nominal. Such a sentence can only make a generalization over situations containing a particular plural entity. It may be helpful here to illustrate how these two kinds of generalizations arise using an English sentence. Generic sentences with 'a NP' in English have both interpretations, as 'a NP' can be interpreted either quantificationally or referentially (cf. Fodor and Sag 1982). The sentence in (31), for instance, has the two interpretations shown in (32).

- (31) A cat meows when it's hungry.

¹³ The following description by Iljic (1994:94–95) about *-men* in Mandarin corroborates the indexical nature of plurals: *-men* plurals refer to "a situationally anchored and defined group" and must be used in allocation. He compares *-men* plurals to personal pronouns: "*Péngyou-men!* 'My dear friends!' functions as a qualified *you*."

- (32) a. Quantificational interpretation = generalization about cats in general (non-specific)
 ‘Any cat meows when it is hungry.’
 $\text{GEN}_{x,s}[x \text{ is a cat} \wedge x \text{ is hungry in } s][x \text{ meows in } s]$
- b. Referential interpretation = generalization about a particular cat (specific)
 ‘A particular cat, say Quincy, meows when it is hungry.’
 $\text{GEN}_s[\text{CH}(\text{cat})_3 \text{ is hungry in } s][x_3 \text{ meows in } s]$
 (x_3 : a free variable referring to $\text{CH}(\text{cat})_3$)

In (32a), the variable x can range over different cats, enabling a generalization about cats in general. Conversely, in (32b), there is a particular cat determined by the context. In other words, it is fixed and cannot range over different cats. Hence, the sentence only describes a typical behaviour of this particular cat, with quantification occurring with the situation variable s . What I am claiming here is that plurals in languages such as Japanese, Malay and Mandarin do not show this kind of ambiguity, but instead only allow a referential interpretation as shown in (32b).

Finally, the reason why plurals cannot serve as the internal argument of the relational possession construction (26a) is type mismatch.¹⁴ Landman and Partee (1987) and Partee (1999) analyse a relational noun phrase in this construction as an unsaturated generalized quantifier and give *have* the semantics in (33). According to this analysis, *a child* in *Mary has a child* (conveying Mary’s motherhood) has the semantics in (34).

(33) $\llbracket \text{have} \rrbracket = \lambda R.R(\text{exist})$, where R is of type $\langle et, et \rangle$ and exist is $\lambda z.z = z$.

(34) $\llbracket \text{a child} \rrbracket = \lambda P\lambda y.\exists x[x \text{ is a child of } y \wedge P(x)]$
 ‘a function from predicates to individuals each of whom is a child of someone and satisfies the relevant predicate’

The possession verb requires an internal argument of type $\langle et, et \rangle$. If plurals denote individuals of type e , it is correctly predicted that they cannot occur as the internal argument of the construction.¹⁵

3.3 Independence of definiteness/specificity from plurality: Evidence from Persian

In the last section, I have shown that the definite-like properties of plurals follow naturally from specificity in addition to definiteness. In doing so, I put aside the is-

¹⁴ I thank one of the reviewers for suggesting the analysis presented here to me.

¹⁵ Hosoi (2005) accounts for (26a) by claiming that *-tati* plurals, according to his semantics of *-tati*, require a stage-level predicate with a situation argument, whereas possession verbs do not provide one because they are individual-level predicates. Examples like (i) invalidate his argument, however, as they show that *-tati* plurals are compatible with individual-level predicates.

(i) Kodomo-tati-wa kasikoi/ mozi-ga yomeru.
 child-PL-TOP intelligent letter-NOM can.read
 ‘(The) Children are intelligent/can read letters.’

sue of how the definiteness/specificity of plurals arises. Let us now discuss this issue. Two possibilities are conceivable: either the plural morphology also encodes definiteness/specificity or the two notions are encoded separately. In this section, I argue that the second possibility is more plausible, by bringing Persian into the discussion. The Persian data also sheds light on the general preference for a definite interpretation over an indefinite interpretation, which is particularly strong in Mandarin.

NPs with the plural marker *-hâ* in Persian are interpreted as definite, as in (35).

- (35) *Bačče-hâ-ye bâhuš unjâ bâzi mi-kard-an.*¹⁶
 child-PL-MOD clever there play DUR-do.PST-3PL
 ‘The clever children were playing there.’

(Ghomeshi 2003:60)

However, as Ghomeshi (2003) points out, the definite interpretation of plurals does not mean that the plural marker also encodes definiteness. She argues that the definite interpretation has to do with the syntactic licensing condition of the plural marker: the plural marker must be licensed either by the indefinite marker *-i* or a null definite marker. Plurals are interpreted as definite only if an overt marker of indefiniteness is absent, as in (35). The plural marker *-hâ* can co-occur with the indefinite marker *-i*, as in (36). In this case, plurals are interpreted as indefinite.

- (36) *Bačče-hâ-ye bâhuš-i unjâ bâzi mi-kard-an.*
 child-PL-MOD clever-INDF there play DUR-do.PST-3PL
 ‘Clever children were playing there.’

(Ghomeshi 2003:59)

In essence, the source of definiteness is not the plural marker but the definite determiner. Since the definite determiner is phonologically null, the plural marker appears as if it encoded definiteness by itself.

The exact function of the suffix *-i* has been a matter of debate in Persian linguistics, as it differs from that of the indefinite article *a* in English in some respects. However, it is safe to say that the core of its meaning lies in specificity. Ghomeshi (2003:61) asserts that “the presence of *-i* on a noun entails that the noun must be referential.” Specific expressions are prototypically referential. Thackston (1983) states that *-i* means ‘a certain, a particular’ thing or ‘one of a class’, the former of which is typically used to paraphrase the specific indefinite *a* in English.¹⁷ Moreover, in stories, a new referent is normally introduced by DPs with *-i* (Ghomeshi 2008). Nominal forms and interpretations for plural referents in Persian can be summarized as in (37).

¹⁶ I gloss the so-called ‘ezafe’ as MOD (modifier), as its basic function is to link a modifier and the noun modified by it. Ghomeshi’s examples represent the colloquial variety (p.c. Satoko Yoshie). However, the register difference does not affect my argument as it is mainly concerned with verbal forms.

¹⁷ The suffix *-i* can be translated as *no* or *any* in negative contexts (Ghomeshi 2003). Such translations may or may not deny the association between *-i* and specificity, as translations are no more than a hint in investigating meanings and are not always reliable evidence.

- (37) Nominal forms and interpretations for plural referents
- a. NP: Non-specific indefinite (number-neutral)
 - b. NP-*hâ-i*: Specific indefinite
 - c. NP-*hâ*: Definite

Crucially, not only ‘NP-*hâ*’ (definite) but also ‘NP-*hâ-i*’ (specific indefinite) cannot serve as predicate nominals as in (38), or take wide scope over intensional verbs as in (39).¹⁸

- (38) a. *Ânhâ dâneşju-and.*
they student-be.3PL
‘They are students.’
- b. **Ânhâ dâneşju-hâ-and.*
they student-PL-be.3PL
- c. **Ânhâ dâneşju-hâ-i-and.*
they student-PL-INDF-be.3PL
- (39) a. *Ân bimârestân donbâl-e parastâr mi-gard-ad.*
that hospital sequence nurse-MOD DUR-turn-3SG
(i) $\sqrt{\text{look.for}} > \text{nurse(s)}$
‘That hospital is looking for a nurse/nurses (to hire).’
(ii) $\sqrt{\text{nurse(s)}} > \text{look.for}$
‘There is a nurse/are nurses that hospital is looking for.’
- b. *Ân bimârestân donbâl-e parastâr-hâ-i mi-gard-ad.*
that hospital sequence-NOM nurse-PL-INDF DUR-turn-3SG
(i) * $\text{look.for} > \text{nurses}$
‘That hospital is looking for nurses (to hire).’
(ii) $\sqrt{\text{nurses}} > \text{look.for}$
‘There are nurses that hospital is looking for.’
- c. *Ân bimârestân donbâl-e parastâr-hâ mi-gard-ad.*
that hospital sequence-NOM nurse-PL DUR-turn-3SG
(i) * $\text{look.for} > \text{nurses}$
‘That hospital is looking for nurses (to hire).’
(ii) $\sqrt{\text{nurses}} > \text{look.for}$
‘There are nurses that hospital is looking for.’

These are two of the four cross-linguistically common definite-like properties of plurals discussed above, which I claim are manifestations of specificity (or definiteness). Hence, data like (38) and (39) confirms that *-i* is a specific indefinite marker.

In short, definiteness/specificity and plurality are expressed separately by distinct morphemes, i.e. a null determiner (definiteness), the suffixes *-i* (specificity) and *-hâ* (plurality). Given that the phenomenon of definite-like plurals is a cross-linguistically connected one, it is reasonable to think that a single mechanism is involved. Hence, I claim that the same is the case with definite-like plurals in languages such as Japanese, Malay and Mandarin. That is to say, they have a covert equivalent

¹⁸ According to Ghomeshi (2003), sentence (38b) is difficult, but not impossible, in an equative reading, where the plural noun phrase is construed specifically.

of Persian *-i*. This covert morpheme is responsible for specificity. As for definites, Japanese, Malay and Mandarin do not differ from Persian. The definite determiner is phonologically null. Ghomeshi (2003) proposes that the connection between definiteness/specificity and plurality is established syntactically: plural markers of these languages must be licensed by definite/specific determiners. I will discuss the specifics of the relevant syntactic licensing in Section 5, after dealing with two cases of seemingly non-specific plurals in the next section.

An anonymous reviewer doubted if definite-like plurals in Japanese, Malay and Mandarin were indeed comparable to a similar phenomenon in Persian. The reviewer's refutation is based on the fact that the suffix *-i* can occur with quantifiers, as in (40).

- (40) a. har ketâb-i
 each book-INDF
 'each/every book'
 b. hič ketâb-i
 no book-INDF
 'no book'

(Ghomeshi 2003:64)

According to my analysis, definite-like plurals in the former languages are individuals of type *e*. Hence, if they contain a covert equivalent of Persian *-i*, the Persian phrase *ketâb-i* in (40) should also be of type *e*. However, this reasoning obviously runs counter to the classic analysis of quantifiers, i.e. that of Barwise and Cooper (1981), according to which quantifiers take an NP with a property meaning of type $\langle e, t \rangle$. The reviewer thus thinks that definite-like plurals in Japanese, Malay and Mandarin differ from plurals in Persian in terms of semantic type, and hence cannot be treated as sharing the same underlying mechanism.

In fact, definite-like plurals in Japanese, Malay and Mandarin do not differ from plurals in Persian in the relevant respect. The quantifiers 'all', 'most' and 'many' in the former languages, for example, can combine with plurals, as shown in (41), though it is more common that they occur with bare noun phrases.¹⁹

- (41) 'All/most/many students' in Japanese (a), Malay (b) and Mandarin (c)²⁰
- a. subete/hotondo/oozei-no gakusei-tati
 all/most/many-LINK student-PL
- b. semua/kebanyakan/ramai pelajar-pelajar
 all/most/many student.PL
- c. suoyou/daduoshu/henduo xuesheng-men
 all/most/many student-PL

Thus, data like (40) does not invalidate the parallelism I point out between definite-like plurals in Japanese, Malay and Mandarin and plurals in Persian, but instead cor-

¹⁹ I show examples with the quantifiers 'most' and 'many' as well as 'all', as some researchers (e.g. Brisson 2003) do not consider 'all' as a true quantifier.

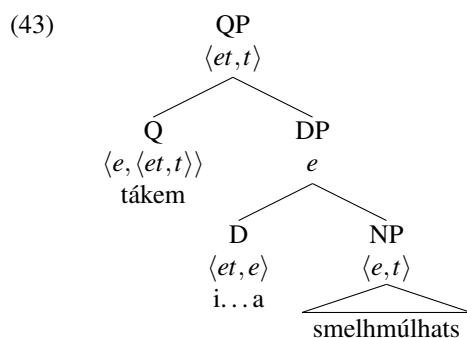
²⁰ These examples are not those of the partitive construction. The partitive construction employs the reverse word order ('noun phrase - quantifier') in Japanese and the prepositions *daripada* 'from' and *de* 'of' in Malay and Mandarin respectively.

roborates it. My analysis of plurals in these four languages as being of the individual type rather than of the property type may appear implausible under the classic analysis of generalized quantifiers. However, I would like to present it as support for an alternative analysis of generalized quantifiers proposed by Matthewson (2001, 2013), who argues that some generalized quantifiers are created not by a single determiner quantifier, but by two separate steps, i.e. domain restriction by the creation of a DP of type e , followed by quantification over parts of the plural individual denoted by the DP (cf. Giusti 1991). Matthewson (2001) implements domain restriction by means of choice function. Her evidence comes from St’át’imcets (Lillooet Salish). Quantifiers in this language always appear as sister to a full DP, as shown in (42).

- (42) a. Léxlex [tákem i smelhmúlhats-a].
 intelligent all DET.PL woman(PL)-DET
 ‘All (of the) women are intelligent.’
 b. *Léxlex [tákem smelhmúlhats].
 intelligent all woman(PL)
 ‘All women are intelligent.’

(Matthewson 2001:150)

The quantifier phrase in (42a) thus has the following syntactic structure:



The same hierarchical relation between Q and D applies to the quantified noun phrases in (40) and (41).²¹ In Section 5, I will suggest the possibility that having this kind of transparent QP structure—“transparent” in the sense that the domain restriction and quantification steps are morphologically separated completely—is a key to understanding why these languages have definite-like plurals while English and other European languages do not.

Before leaving this section, I would like to point to an implication of the Persian facts for the general preference for a definite interpretation over an indefinite one for plurals in languages such as Japanese, Malay and Mandarin. We have seen in Section 2 that although plurals in these languages are normally interpreted as definite, the indefinite interpretation is allowed to different degrees in different languages,

²¹ Incidentally, such a configuration has been proposed independently for Japanese (Kawashima 1998; Ogawa 2001) and Mandarin (Simpson 2002) based on distributional evidence.

with Mandarin representing the extreme case in which the indefinite interpretation is severely restricted.

We have seen that NPs with the plural marker *-hâ* in Persian are interpreted as definite only if the specific indefinite marker *-i* is absent. What this implies is that the definite interpretation arises as a default interpretation for plurals. I claim that the general preference for the definite interpretation in Japanese, Malay and Mandarin is basically the same phenomenon. One cannot state the interpretation of plurals in these languages as absolute rules as one can in Persian, because unlike Persian, these languages lack a dedicated specific indefinite marker; instead, indefiniteness conveyed either covertly or by words with other functions such as the numeral ‘one’ (unaccompanied by a demonstrative). This difference makes the plural morphology in these languages appear to be linked to definiteness more directly than that in Persian.

The definite interpretation is thus merely a default option and is not an unbreakable rule. An indefinite interpretation is possible insofar as the grammars of individual languages allow it. Consequently, cross-linguistic variation is expected as to how often the default definite interpretation option is chosen. The stronger the restriction against indefinites, the less likely plurals are to receive an indefinite interpretation. It is stronger in Mandarin than in Japanese and Malay, as the language generally prohibits indefinite noun phrases, including those with the plural marker *-men*, in the preverbal subject position (e.g. Huang et al. 2009). Lan (2010) points out this positional definiteness requirement as one of the factors that make *-men* plurals prone to be interpreted as definite.

Synthesizing insights from previous studies, Huang et al. (2009:322) propose the generalization that an indefinite NP in Mandarin can occur in a sentence expressing athetic judgement in the sense of Kuroda (1992). Athetic judgement is “a direct response to the perceptual cognition of an actual situation, a perceptual intake of information about an actual situation” (Kuroda 1992:22). It is “a simple recognition of the existence of an actual situation”, as opposed to a categorical judgement, which is “a double judgment insofar as it involves the cognitive act of apprehending something as substance and attributing to it a certain property perceived in a situation” (Kuroda 1992:23). For example, adding the existential verb *you* ‘to have’ makes an indefinite subject acceptable, as shown by the contrast between (44a) and (44b), because the verb changes the sentence from a simple description of someone else’s experience, which cannot be directly perceived, to a description of a directly perceived situation.

- (44) a. ??Yi ge ren kan-guo ta de dianying.
 one CLF person see-ASP he GEN movie
 ‘A person has seen his movie.’
 b. You yi ge ren kan-guo ta de dianying.
 exist one CLF person see-ASP he GEN movie
 ‘A person has seen his movie.’

(Huang et al. 2009:321)

In fact, *-men* plurals can be indefinite in the same context. *Haizi-men* ‘children’ in (45a) without *you* receives the default definite interpretation and refers to some group of children known to both the speaker and hearer (e.g. those present at the site,

currently talked about). (45b) with the same form, on the other hand, can be used when one suddenly hears a distant sound of children singing, without knowing who the singing children are.²²

- (45) a. Haizi-men zai chang ge.
 child-PL PROG sing song
 ‘The children are singing./*Some children are singing.’
 b. You haizi-men zai chang ge.
 exist child-PL PROG sing song
 ‘Some children are singing./*The children are singing’

4 Seemingly non-specific plurals

The last section showed that plurals exhibit definite-like properties because they are either definite or specific. However, there are at least two cases in which plurals do not appear to be neither definite nor specific: when they are modified and when they are used contrastively. This section deals with these cases. Section 4.1 shows that plurals in these cases do not exhibit the otherwise observed definite-like properties. Section 4.2 proposes a formal analysis of why plurals do not appear to be definite/specific in these cases.

4.1 No definite-like properties

Plurals that are modified or used contrastively do not exhibit the cross-linguistically common definite-like properties in (26), repeated below for convenience.

- (26) Cross-linguistically common definite-like properties of plurals
- a. Cannot serve as the internal argument of the relational possession construction.
 - b. Cannot serve as predicate nominals.
 - c. Incompatible with generics.
 - d. Obligatory wide scope.

This fact was first pointed out by Nakanishi and Tomioka (2004) for *-tati* plurals in Japanese.²³ I demonstrate the same point with Malay examples here. Refer to Nakanishi and Tomioka (2004), Kester and Schmitt (2007) and Nomoto (2013a) for examples in other languages.²⁴

Let us begin with modified plurals. First, modified plurals can occur as the internal argument of the relational possession construction. In the relevant examples in

²² The speaker, but not the hearer, can describe the children in other ways, though. For instance, *s/he* can infer their gender and age based on their voices. The indefinite *haizi-men* is thus specific.

²³ Nakanishi and Tomioka (2004) attempt to attribute this phenomenon also to the potential exceptions allowed by their semantics of *-tati*. Again, such an analysis is not cross-linguistically viable, as not all languages in which plurals show definite-like properties allow exceptions in the extensions of plurals.

²⁴ Nomoto (2013a) notes about Mandarin that although modifiers do improve the acceptability of indefinite plurals, the judgments are not always clear.

Section 2, I used the nouns meaning ‘child’ as instances of relational nouns to make a cross-linguistic comparison easy. However, as Nakanishi and Tomioka (2004) note, it is not always straightforward to distinguish between relational and non-relational readings of ‘child’ when modifiers are present. Thus, I use the noun *kerja* ‘work’ here instead, whose relational and non-relational readings are clearer to speakers. The word expresses (i) an employment relation, which can be paraphrased as ‘x works for/is employed by someone’ or simply ‘x has a job’, in addition to (ii) a non-relational meaning ‘x has something to work on’. (46a) with an unmodified plural does not convey the subject’s employed status. (46b) with a plural with one modifier has a non-relational reading, but a relational reading is difficult to obtain. However, if another modifier is added as in (46c), the plural noun phrase can now easily have a relational meaning.

- (46) a. (??)Dia ada *kerja-kerja*.²⁵(cf. (21b))
 3SG have work.PL
 (i) *‘S/he has jobs. (= S/he is employed.)’
 (ii) ‘S/he has things to do.’
- b. Dia ada *kerja-kerja* (i) *baik*/(ii) *penting*.
 3SG have work.PL good important
 (i) *?’S/he has good jobs. (= S/he is employed and the jobs are good.)’
 (ii) ‘S/he has important things to do.’
- c. Dia ada *kerja-kerja* (i) *baik yang besar gaji-nya*/(ii) *penting yang perlu di-selesaikan*.
 3SG have work.PL good REL big salary-3 important
 REL need PASS-finish
 (i) ‘S/he has good jobs that pay well. (= S/he is employed and the jobs are good and pay well.)’
 (ii) ‘S/he has important things that need to be finished.’

Second, while unmodified plurals cannot be used as predicates, modified plurals can, as shown by the contrast in (47).

- (47) a. *Mereka *pelajar-pelajar*. (= (22b))
 they student.PL
 For: ‘They are students.’
- b. Mereka *pelajar-pelajar cemerlang*.
 they student.PL excellent
 ‘They are excellent students.’

Third, while unmodified plurals are incompatible with generics, as in (48a), modified plurals occur naturally in generics, as in (48b).

²⁵ As noted in Section 2.3, plurals in Malay that are neither modified nor used contrastively normally sound incomplete in the direct object position. The sentence is thus degraded even on a non-relational reading.

- (48) a. ??*Penyanyi-penyanyi* ceria. (= (23b))
 singer.PL cheerful
 For: ‘Singers are cheerful.’
 b. *Penyanyi-penyanyi muda* ceria.
 singer.PL young cheerful
 ‘Young singers are cheerful.’

Finally, modified plurals can take either wide or narrow scope with respect to intensional verbs as in (49b), unlike unmodified plurals, for which only the wide scope reading is available as in (49a).

- (49) a. (??)Hospital itu sedang mencari *jururawat-jururawat*. (= (24b))
 hospital that PROG look.for nurse.PL
 (i) *?look.for > nurses
 ‘That hospital is looking for nurses (to hire).’
 (ii) ?nurses > look.for
 ‘There is a group of nurses that hospital is looking for.’
 b. Hospital itu sedang mencari *jururawat-jururawat yang biasa*
 hospital that PROG look.for nurse.PL REL used.to
menjaga kanak-kanak.
 take.care.of child
 (i) √look.for > nurses
 ‘That hospital is looking for nurses (to hire) who are used to
 dealing with children.’
 (ii) √nurses > look.for
 ‘There is a group of nurses who are used to dealing with chil-
 dren that hospital is looking for.’

Unlike modified plurals, it is not always obvious whether a plural is used contrastively, mainly for the following two reasons. First, the contrast set members that underlie the contrastive use do not have to be expressed overtly. Second, the notion of contrast is gradable in nature and has degrees; the sense of contrast is very weak at times. In the examples below, *dan bukannya ...* ‘but not ...’ or *manakala ...* ‘whereas ...’ is added to facilitate a contrastive reading.

The examples in (50a)–(50c) respectively illustrate that contrastive plurals can occur as the internal argument of the relational possession construction, can be used as predicates and can occur naturally in generics. Moreover, plurals used contrastively can take either wide or narrow scope with respect to intensional verbs, as shown in (50d). (50a) and (50d) sound unnatural for some speakers, presumably because of the general restriction against bare (i.e. unmodified) plurals in the direct object position.

- (50) a. %Dia ada *anak-anak*, dan bukannya *cucu-cucu*.
 she have child.PL and not grandchild.PL
 ‘She has children, but not grandchildren. (= She is a mother, but not
 a grandmother.)’

- b. Mereka *pelajar-pelajar*, dan bukannya guru-guru.
 they student.PL and not teacher.PL
 ‘They are students, but not teachers. (So, they need their parents’ consent.)’
- c. *Penyanyi-penyanyi* ceria manakala pelawak-pelawak kelakar.
 singer.PL cheerful whereas comedian.PL funny
 ‘Singers are cheerful whereas comedians are funny.’
- d. %Hospital itu sedang mencari *jururawat-jururawat*, dan bukannya
 hospital that PROG look.for nurse.PL and not
 kerani-kerani.
 clerk.PL
 (i) $\sqrt{\text{look.for}} > \text{nurses}$
 ‘That hospital is looking for nurses (to hire), but not clerks.’
 (ii) $\sqrt{\text{nurses}} > \text{look.for}$
 ‘There is a group of nurses that hospital is looking for, but not
 a group of clerks.’

Before proceeding, it must be noted that plurals that are modified or used contrastively, while they do not exhibit definite-like properties, sometimes do not sound totally non-specific to native speakers. This is in contrast to their non-plural counterparts, which are clearly non-specific. Modified and contrastive plurals seem to leave some tint of specific expressions. It would thus be accurate to say that modifiers and contrast make plurals “less specific” rather than “non-specific.”

4.2 Analysis

4.2.1 Wolter’s (2007) analysis of demonstrative phrases in English

The analysis that I propose for these seemingly non-specific plurals is a minimally modified version of the semantic analysis of demonstrative phrases proposed but rejected by Wolter (2007) in favour of a pragmatic analysis. It does not change the analysis of the definiteness/specificity of plurals by means of syntactic agreement proposed in Section 5 below. Instead, it adds another layer that obscures the specificity of the lower projection.

The basic idea of Wolter’s analysis is that a modifier provides a spatio-temporal/situation variable independent of that of the head noun (Dayal 2004a),²⁶ and this situation variable mediates between the situation of a higher predicate and that of the demonstrative phrase, whose situation variable is otherwise completely free. She assumes that a demonstrative determiner bears a numerical index that saturates the situation argument position of the nominal complement. This is captured by the lexical entry in (51).

²⁶ Dayal’s (2004a) original proposal is more restrictive. She contends that only postnominal modifiers (in English) introduce a new situation variable, based on Sadler and Arnold’s (1994) claim that postnominal modifiers are phrasal and have more structure than prenominal modifiers. My analysis is compatible with this more restricted view as well as the less restricted view adopted by Wolter (2007).

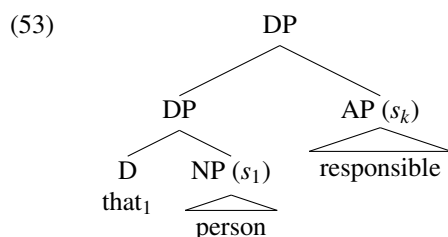
- (51) $\llbracket \text{that}_n \rrbracket : \lambda P_{\langle s, et \rangle} : P(s_n)$ is a singleton set and s_n is free.
If defined, denotes $\iota x.P(x)(s_n)$

(Wolter 2007:620)

The situation variable of a prenominal modifier is dependent on the index of the demonstrative, as in (52a), whereas that of a postnominal modifier is not, as in (52b).

- (52) a. $\llbracket \text{that}_1 \text{ responsible person} \rrbracket = \iota x.\text{person}(x)(s_1) \wedge \text{responsible}(x)(s_1)$
b. $\llbracket \text{that}_1 \text{ person responsible} \rrbracket = \iota x.\text{person}(x)(s_1) \wedge \text{responsible}(x)(s_k)$

The situation variable of a postnominal modifier is not saturated by the index of the demonstrative because postnominal modifiers are attached to DP and hence fall outside of the c-command domain of the demonstrative, as shown in (53).



As s_1 is free, with its value determined by the context, the entire noun phrase takes the widest scope in the case of (52a). By contrast, s_k in (52b), with a postnominal modifier, needs to be bound by some operator in the sentence. In other words, it interacts with operators above it. This explains why demonstrative phrases can have an opaque interpretation when they contain a postnominal modifier. In (54), the demonstrative phrase *that person responsible* can take narrow scope under *believes*. That is, the identity of the person at issue depends on John's belief world. This interpretation is impossible if the adjective *responsible* precedes the noun as in *that responsible person*.

- (54) John believes that that person responsible left.²⁷

(Wolter 2007:622)

In sentence (54), the situation variable introduced by *responsible* is bound by the modal operator associated with *believes*, as in (55).

- (55) $\lambda s[\forall s_2 \in \text{Dox}_j(s, s_2)[\text{left}(\iota x.\text{person}(x)(s_1) \wedge \text{responsible}(x)(s_2))(s_2)]]$

Consequently, the entire noun phrase refers to a unique person in some contextually salient situation (s_1) who is responsible in John's belief world (s_2). Demonstrative phrases with modifiers can be predicates as in (56) and other kinds of generic sentences if the operator binding the situation variable introduced by the modifier is a generic operator instead of a modal operator.

²⁷ Not all speakers judge this sentence as grammatical.

- (56) They are those acts [which keep one’s reputation bright without reference to a specific previous indebtedness to another person].

(R. Benedict, *The Chrysanthemum and the Sword*, cited in Kaneko (2007))

4.2.2 Modified plurals

Extending the analysis above to seemingly non-specific plurals is straightforward. These plurals differ from demonstrative phrases in English in the determiner involved. Let us consider sentence (57) with a modified plural as an example.

- (57) Ali dan Basri *pelajar-pelajar cemerlang*.
 Ali and Basri student.PL excellent
 ‘Ali and Basri are excellent students.’

One has only to substitute the indefinite counterpart of the demonstrative determiner in (51), i.e. a choice function with a numerical index. The relevant determiner has the denotation in (58).

- (58) $\llbracket \emptyset_{\text{indefinite}n} \rrbracket = \lambda P_{\langle s,et \rangle} : s_n \text{ is free. CH}(P)(s_n)$

The plural *pelajar-pelajar cemerlang* ‘excellent students’ in (57) has the structure in (59a), where the plural morphology in Num is licensed by $\emptyset_{\text{specific}1}$ in D, and is interpreted as in (59b).

- (59) a.
-
- b. $\text{CH}(\text{students}(s_1) \wedge \text{excellent}(s_j))$
 ‘certain students in s_1 picked out by a choice function who are excellent’ (\approx ‘those students who are excellent’)

While the situation argument of NP (i.e. s_i) is saturated by the numerical index of D (i.e. s_1), the situation argument of AP (i.e. s_j) is not, as it is outside of the c-command domain of D. Instead, it will be bound by existential closure.

What remains to be worked out is how to derive the meanings in (52b) and (59b) compositionally from the structures in (53) (reproduced below with a few minor notational changes) and (59a). For this purpose, I propose a variant of Bach and Cooper’s (1978) semantics for high-adjoined relative clauses, as shown in (60c). (60a)–(60d) show how the meaning of the demonstrative phrase *that person responsible* is compositionally derived.

- (60)
- ```

graph TD
 DP1 --> DP2
 DP1 --> AP
 DP2 --> D["that1"]
 DP2 --> NP
 AP --> responsible
 NP --> person

```
- a.  $\llbracket \text{DP2} \rrbracket = \iota x.\text{person}(x)(s_1)$  (presupposition:  $s_1$  is free)
- b.  $\llbracket \text{AP} \rrbracket = \lambda s \lambda y.\text{responsible}(y)(s_j)$
- c.  $\text{Bach-Cooper}'(\llbracket \text{DP2} \rrbracket) = \lambda R_{\langle s, et \rangle} \lambda s[\iota x.\text{person}(x)(s_1) \wedge R(x)(s_k)]$
- d.  $\llbracket \text{DP1} \rrbracket = \lambda s[\iota x.\text{person}(x)(s_1) \wedge \text{responsible}(x)(s_k)]$  ( $\approx$  (52b))

Let the situation arguments of the NP *person* and the AP *responsible* be  $s_i$  and  $s_j$  respectively.  $s_i$  is saturated by the numerical index of the demonstrative to give (60a). The semantic type of DP2 is thus  $e$ . Crucial in the derivation is the point at which the modifier AP is attached to DP2. Some sort of type-shifting is required to enable the relevant composition. Bach-Cooper' is responsible for this type-shifting.

Bach and Cooper (1978) propose a procedure that adds a property argument that is saturated by an adjoined relative clause, as in (61b). This operation enables one to obtain the meaning of NP2 in (61) compositionally, as shown in (61a)–(61d).

- (61)  $[\text{NP2} [\text{NP1 every man}] [\text{S}' \text{who loves Mary}]]$
- a.  $\llbracket \text{NP1} \rrbracket = \lambda P.\forall x[\text{man}(x) \rightarrow P(x)]$
- b.  $\text{Bach-Cooper}(\llbracket \text{NP1} \rrbracket) = \lambda R \lambda P.\forall x[[\text{man}(x) \wedge R(x)] \rightarrow P(x)]$
- c.  $\llbracket \text{S}' \rrbracket = \lambda z.\text{love}(z, m)$
- d.  $\llbracket \text{NP2} \rrbracket = \lambda P.\forall x[[\text{man}(x) \wedge \text{love}(x, m)] \rightarrow P(x)]$

Bach-Cooper in (61b) shifts a generalized quantifier of type  $\langle et, t \rangle$  to a function type of  $\langle et, \langle et, t \rangle \rangle$ . Bach-Cooper' in (60c) also adds a property argument that is saturated by an adjoined modifier, and shifts  $\langle s, e \rangle$  (or  $e$  if the situation variable is free as in (60a)) to  $\langle \langle s, et \rangle, \langle s, e \rangle \rangle$ . Bach-Cooper' differs from Bach-Cooper in that the former can handle situation variables.<sup>28</sup>

#### 4.2.3 Contrastive plurals

My analysis for contrastive plurals is essentially the same as that for modified plurals above. Like modifiers, contrast introduces a new situation variable that is independent of the situation variable of the head noun. This new situation variable interacts with operators within the sentence, giving rise to characteristics of non-specific noun phrases.

The question, of course, is how contrast introduces a new situation variable. Contrast is a kind of focus. Hence, a contrastively used noun phrase involves the seman-

<sup>28</sup> Wolter (2007) proposes the extensional version of Bach-Cooper', i.e. a type-shifter from  $e$  to  $\langle et, e \rangle$ . The problem with her type-shifter is that it is indifferent to situation variables. As a consequence, the situation variable of the head noun is imposed on the modifier, and the important difference between pre- and postnominal modifiers as shown in (52), which she does acknowledge, is lost.

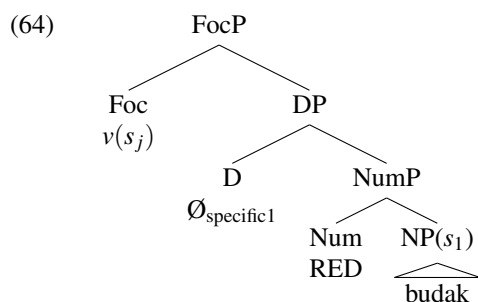
tics of focus. I adopt Rooth's (1992) theory of focus interpretation, which is accepted as the standard analysis of focus in formal semantics. Rooth proposes that focus introduces a free variable that can be anaphoric to a variety of pragmatic and semantic objects. The interpretation of this variable is pragmatically constrained by the set consisting of alternatives to the expression in focus. For example, in (62), where *American* is contrasted with *Canadian*, the focus operator adjoined to *American farmer* introduces a new free variable. The antecedent of this new variable is selected from the alternatives to *American farmer*, of which *Canadian farmer* is one.

(62) An [American]<sub>F</sub> farmer was talking to a [Canadian]<sub>F</sub> farmer ...

(Rooth 1992:80)

I claim that the free variable introduced by focus comes with a situation variable independent of the noun phrase that is brought into focus. I assume that a focus phrase (FocP) is projected in syntax when a noun phrase receives focus. The focus head, Foc, triggers focus semantics and phonology. The noun phrase *budak-budak* [kid.PL] 'children' in (63) thus has the structure shown in (64).

(63) *Budak-budak* selalu meniru orang dewasa.  
 kid.PL            always imitate person adult  
 'Children always imitate adults.'



Notice that the situation variable under Foc is not saturated by the indefinite determiner, unlike that of the NP. Hence, it can be bound by a generic operator in generic sentences such as (63). Consequently, the plural *budak-budak* behaves like a non-specific noun phrase.

## 5 The syntactic connection between plurality and definiteness/specificity

The discussion so far has revealed that plurals in languages such as Japanese, Malay and Mandarin are in principle definite or specific, with the two principled exceptions in the last section. I showed that these two cases do not dismiss the connection between plurality and definiteness/specificity. I followed Ghomeshi (2003) and claimed that the connection exists not because the plural marker also encodes definiteness/specificity, but because the plural marker must be licensed by a definite/specific determiner (Section 3). As Ghomeshi (2003) does not discuss the con-

crete details of the relevant licensing, I will do so in this section. Specifically, I propose that the relevant licensing is achieved by syntactic agreement between the plural marker in Num and the definite/specific determiner in D (Sections 5.1–5.2). The section also discusses why a similar agreement does not occur in languages such as English, that is to say, why plurals in these languages are not definite-like, unlike languages such as Japanese, Malay and Mandarin (Section 5.3).

### 5.1 Agree

Here, I adopt Chomsky’s (2000; 2001) theory of Agree. Agree occurs between two features. Two kinds of features are distinguished, i.e. those which are interpreted at LF and those which are not; both can, but need not, be reflected in the phonology. Interpretable (*i*) features have a value whereas uninterpretable (*u*) ones do not.<sup>29</sup> Uninterpretable features remaining at LF make a syntactic derivation crash, and must be deleted in the course of derivation. Agree is an operation that matches an uninterpretable feature with an interpretable feature with the same attribute and copies the value of the latter to the former. In the Agree operation, an uninterpretable/unvalued feature functions as a ‘probe’ and searches its c-command domain for the closest interpretable/valued feature (‘goal’). One of the important properties of Chomsky’s Agree is the requirement that both probe and goal be active by having an uninterpretable feature. This characteristic captures interdependency between two features, which explains licensing of one category by another, including the licensing of plural markers by definite/specific determiners.

As a concrete example of how Agree operates, let us consider  $\phi$ -feature agreement and its relationship to Case (e.g. *She plays the violin*). The choice here is intentional, as I will argue below that the relation between number and specificity is comparable to that between  $\phi$ -features and Case. In Chomsky (2000, 2001), Case is assigned as a side effect of  $\phi$ -feature agreement. However, I divert from Chomsky’s theory and follow Radford (2009:404), who posits uninterpretable valued Case features. In this approach, Case is assigned not as a side effect of  $\phi$ -feature agreement but by a distinct process of agreement, i.e. Case agreement.

The relevant probe and goal are T and D respectively. T has uninterpretable Case and  $\phi$ -features whereas D has an uninterpretable Case feature and interpretable  $\phi$ -features, as shown in (65a). The presence of the uninterpretable Case feature makes D active. The uninterpretable and unvalued  $\phi$ -features of T trigger Agree. They are assigned the values ‘3SgF’ by their interpretable counterpart in D, as shown in (65b). Concurrently the uninterpretable Case feature of D is assigned the value ‘Nom’ by (the Case feature of) T, as shown in (65c).<sup>30</sup>

<sup>29</sup> Pesetsky and Torrego (2007) and Radford (2009) reject this biconditional relationship between interpretability and valuation. The analysis of D-Num agreement proposed below does not hinge on whether the biconditional relationship is assumed.

<sup>30</sup> Nomoto (2013a) suggests that only the valuation component, but not the probing component, is involved here.

- (65)
- |    |                                               |  |                                 |                                                       |                              |
|----|-----------------------------------------------|--|---------------------------------|-------------------------------------------------------|------------------------------|
|    | T                                             |  | [ <sub>vP</sub> [ <sub>DP</sub> | D                                                     | ...] ...]                    |
| a. | $u[\text{CASE: Nom}], u[\phi: ]$              |  |                                 | $u[\text{CASE: }], i[\phi: 3\text{SgF}]$              |                              |
| b. | $u[\text{CASE: Nom}], u[\phi: \mathbf{3SgF}]$ |  |                                 | $u[\text{CASE: }], i[\phi: 3\text{SgF}]$              |                              |
|    |                                               |  |                                 |                                                       | ( $\phi$ -feature agreement) |
| c. | $u[\text{CASE: Nom}], u[\phi: 3\text{SgF}]$   |  |                                 | $u[\text{CASE: } \mathbf{Nom}], i[\phi: 3\text{SgF}]$ |                              |
|    |                                               |  |                                 |                                                       | (Case agreement)             |

## 5.2 D-Num agreement

Let us turn to the D-Num agreement responsible for the licensing of plural markers. (66) shows the structure of plurals I assume.

- (66)
- ```

      DP
     /  \
    D    NumP
  u[ NUM]  /  \
  i[ RES] Num  NP
           /  \
          i[ NUM]
          u[ RES]
  
```

Plural markers are merged in Num. The specificity of plurals is due to specific determiners in D (cf. Longobardi 1994, 2005). Two kinds of specific determiners can be distinguished, i.e. definite and indefinite. The definite specific determiner is interpreted as an ι -operator whereas the indefinite one is interpreted as a choice function (CH). As seen in Section 3.1, ι is a hearer-known variant of CH. Hence, it is reasonable to posit the two in the same position.

The lexicalization patterns of these specific determiners vary from language to language. As seen above, Persian realizes the specific determiner overtly as *-i*, while the definite specific determiner is phonologically null ($\emptyset_{\text{definite}}$).³¹ Neither definite nor specific determiners are overt in Japanese, Malay or Mandarin. I thus hypothesize that these languages have the null definite and specific determiners $\emptyset_{\text{definite}}$ and $\emptyset_{\text{specific}}$.

The features associated with definite/specific determiners in D include NUM(ber) and RES(triction). I posit a NUM feature in D because determiners inflect for number in many languages. The NUM feature in D is uninterpretable. Conversely, the RES feature in D is interpretable. The same two features are associated with the Num head. However, their interpretability is different in Num; NUM is interpretable whilst RES is uninterpretable. Support for positing a RES feature in Num comes from Weining Ah-mao. According to Gerner and Bisang (2010), plural markers in this language, which they refer to as ‘plural classifiers’, occur only with definite and specific indefinite noun phrases, as in (67). The definite (67a) and indefinite (67b) forms respectively reflect $u[\text{RES: } \iota]$ and $u[\text{RES: CH}]$.

³¹ Ghomeshi (2003:60) analyses *-i* as occupying Q rather than D by comparing *-i* to the quantifiers *some*, *any* and *no* in English. However, data like (40), where *-i* co-occurs with *har* ‘each’ and *hič* ‘no’ discontinuously (*har/hič* NP-*i*), suggests that *-i* cannot be Q on the reasonable assumption that it is *har* and *hič* that occupy Q in such examples.

- (67) a. pi⁵⁵ ti⁵⁵ nie⁵⁵ hi⁴⁴ zau⁵⁵.
 our PL.DEF tooth not good
 ‘Our teeth are not in a good state.’
 b. pi⁵⁵ di³⁴ nie⁵⁵ hi⁴⁴ zau⁵⁵.
 our PL.INDF tooth not good
 ‘Some of our teeth are not in a good state.’
 (Gerner and Bisang 2010:591)

The agreement proceeds as follows. The uninterpretable NUM feature of D triggers Agree, which matches the NUM features of D and Num. Consequently, it is assigned a value by the interpretable NUM feature of Num, as shown in (68b).³² This agreement is possible because Num is active, having an uninterpretable RES feature. Concurrently the uninterpretable RES feature of Num is assigned a value by its interpretable counterpart in D, as shown in (68c). This agreement can be referred to as ‘domain restriction agreement’.

- | | | | | |
|------|--|--|-----|--------------------------------|
| (68) | D | [NumP | Num | ...] |
| a. | <i>u</i> [NUM:], <i>i</i> [RES: <i>l</i> /CH] | <i>i</i> [NUM: plural], <i>u</i> [RES:] | | |
| b. | <i>u</i> [NUM: plural], <i>i</i> [RES: <i>l</i> /CH] | <i>i</i> [NUM: plural], <i>u</i> [RES:] | | |
| | | | | (number agreement) |
| c. | <i>u</i> [NUM: plural], <i>i</i> [RES: <i>l</i> /CH] | <i>i</i> [NUM: plural], <i>u</i> [RES: <i>l</i> /CH] | | |
| | | | | (domain restriction agreement) |

Plurals are definite/specific because the uninterpretable RES feature of plural markers must be licensed, i.e. valued/checked, by definite/specific determiners with an interpretable RES feature through domain restriction agreement. Domain restriction agreement depends on number agreement, much like Case agreement depends on ϕ -feature agreement in (65). NUM and RES features are two interdependent features like ϕ - and CASE features are. Number agreement is possible because Num is active, having an uninterpretable RES feature. This agreement, made possible by the RES feature, in turn, brings about domain restriction agreement.

The analysis above predicts that singulars in languages with definite-like plurals are also definite-like, undergoing *l* or CH. The correctness of this prediction depends on the analysis of the number system of these languages. The languages with definite-like plurals that have been discussed above happen to be all classifier languages. I assume that singulars in classifier languages are nominal forms marked overtly by classifiers (‘CL NP’), but not unmarked forms (‘NP’) (Nomoto 2013a). The latter is associated with number-neutral properties whereas the former is exclusively associated with singular properties. The most convincing evidence for this analysis comes from the so-called ‘bare classifier’ construction, in which the ‘CL NP’ constituent occurs on its own without requiring other materials such as numerals (hence no semantic modification by these additional materials), as in (69a). The corresponding bare noun phrase in (69b) is number-neutral.

³² The specific feature representation associated with the plural number is orthogonal to the current discussion. In Nomoto (2012, 2013a), I propose two binary features to express four basic number categories, i.e. singular, plural, morphologically unmarked general and morphologically marked general.

- (69) Hmong
- a. *Tus yuam sij nyob qhov twg?*
CLF key stay where
'Where is the key?'
 - b. *Yuam sij nyob qhov twg?*
key stay where
'Where is/are the key/keys?'

The bare classifier construction has been noted to receive a definite interpretation (in the subject position) cross-linguistically (Cheng and Sybesma 2005; Simpson et al. 2011). It is not certain at this point, however, whether the bare classifier construction can also be interpreted as specific indefinite based on the studies currently available. It should be more difficult to figure out whether a specific indefinite interpretation exists for bare classifier constructions (singulars) than for plurals, as there is a common pattern associated with specific indefinites in classifier languages, i.e. the use of the numeral 'one'. Careful further research is required.

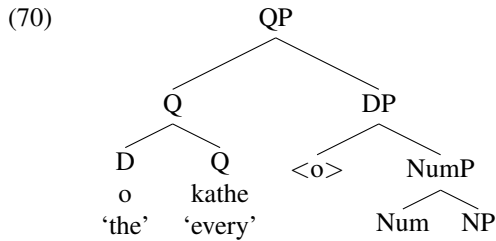
5.3 Languages without definite-like plurals

A naturally arising question is why plurals are definite-like in only some languages but not in others? Although the matter is not completely clear at the moment, I would like to suggest as an initial hypothesis that the presence/absence of definite-like plurals in a language has to do with its quantificational system.³³ The descriptive generalization is this: Languages with pure quantifiers have definite-like plurals whereas those with determiner quantifiers lack them. Recall that I analysed QPs in Japanese, Malay, Mandarin and Persian as instantiating the former system, in which a pure quantifier heads a QP taking a DP to its complement. Quantifiers in English and other European languages are usually regarded as determiner quantifiers, elements that take an NP to their complements like determiners. Determiner quantifiers either do not co-occur with pure determiners such as definite articles (e.g. English) or form a constituent with them (e.g. Basque, Greek) (Etxeberria and Giannakidou 2010). To the best of my knowledge, definite-like plurals have not been reported in languages with determiner quantifiers. Although the number of languages under consideration is quite small, I consider the correlation between the presence/absence of definite-like plurals and that of pure quantifiers as a non-trivial one.

The two quantificational systems differ in where domain restriction for quantification takes place: at the NP/NumP level in the pure quantifier system, or at the DP/QP level in the determiner quantifier system (see Etxeberria and Giannakidou 2010; Matthewson 2013 and the references cited therein). I follow Etxeberria and Giannakidou (2010) and assume that in the latter system, Q and D form a constituent (either within or after narrow syntax, depending on one's theory of head movement). I further assume that this complex head is realized either by a single lexical quantifier as in *every* in English or by a combination of Q and D as in *o kathe* [the every] in Greek. I claim that the dependence of Q on D like this in the determiner quantifier

³³ I am grateful to one of the reviewers for suggesting a possible relevance of the quantificational system.

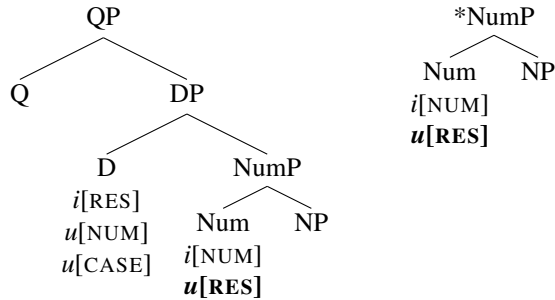
system indicates syntactic agreement between Q and D, which can induce a D-to-Q head movement to create a structure like (70).



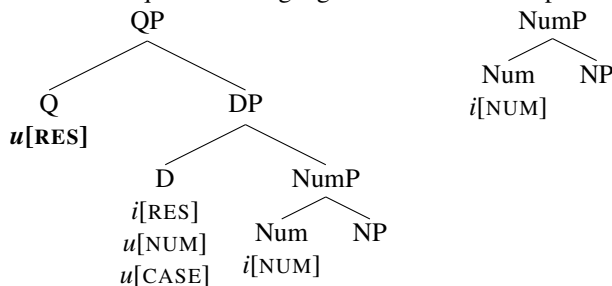
Since Q is dependent on D due to domain restriction, it is most plausible to think that the relevant agreement is domain restriction agreement. I thus posit an uninterpretable unvalued RES feature on Q, which triggers Agree and lets the value of the RES feature of D be copied onto Q.³⁴

Provided that domain restriction for quantification occurs once in a single quantified noun phrase, domain restriction agreement and its trigger $u[\text{RES}]$ should occur only once in a QP. This means that the difference between languages with and without definite-like plurals, which I suggest can be identified with that between pure quantifier and determiner quantifier languages, is a parametric difference with regard to the locus of $u[\text{RES}]$. Languages with definite-like plurals and pure quantifiers have it on Num whereas those without definite-like plurals and pure quantifiers have it on Q, as shown in (71).

- (71) a. Pure quantifier languages have definite-like plurals



- b. Determiner quantifier languages lack definite-like plurals



³⁴ D is active owing to an uninterpretable/unvalued CASE feature.

NumP can stand on its own only in (71b), but not in (71a), due to the presence of an uninterpretable/unvalued RES feature in the latter. Hence, number-marked nominals in pure quantifier languages must have a DP layer with an interpretable RES feature, which gives rise to definite-like plurals. Conversely, $u[\text{RES}]$ in (71b) can trigger a D-to-Q movement, resulting in the structure in (70). This head movement captures the determiner-like nature of quantifiers in languages without definite-like plurals.

A potential problem for the proposed hypothesis is that languages with definite-like plurals often appear to lack definite articles on a par with those in European languages, and hence it is not certain whether such languages indeed have the QP structure shown in (71a). However, the absence of overt definite articles may be taken as an indication of there being no special transformation that affects D. By contrast, the presence of overt articles can, but does not have to, be evidence for D-to-Q head movement in acquisition.

It is Matthewson (2001) who first advocated the QP structure in (71a) in the discussion of generalized quantifiers. She did so based on data from St'át'imcets. I adopted her idea and extended it to Japanese, Malay, Mandarin and Persian in Section 3.3. Now, the proposed hypothesis predicts that St'át'imcets also have definite-like plurals. Although no such report has been made so far, as far as the predicate nominal sentences in Matthewson (1998) are concerned, they involve number-neutral bare nominal forms instead of plurals, like Japanese, Malay, Mandarin and Persian. Needless to say, the hypothesis must be tested by further work on a wider range of languages including St'át'imcets.

6 Conclusion

This paper has made the following claims. First, the definite-like properties of plurals observed in languages such as Japanese, Mandarin and Malay are due not just to definiteness as such but also to specificity. Second, definite-like properties disappear when plurals are modified or used contrastively, because these two factors introduce a new situation variable that mediates between the situations of the DP and a higher predicate. Third, plurals are definite/specific not because the plural morphology encodes plurality and definiteness/specificity at the same time, but because the plural morphology must be licensed by a definite/specific determiner in D by means of syntactic agreement concerning domain restriction for quantification. Languages with and without definite-like plurals differ in the level at which domain restriction takes place: at the NumP/NP level or at the QP/DP level. Only in the former type languages must the plural morphology (Num) be licensed by D by means of domain restriction agreement. In the latter type, on the other hand, domain restriction agreement occurs between Q and D, and hence plurals will not be definite-like in the absence of these two categories.

This study has implications for the structure of bare argument nominals. According to the third conclusion above, number-marked nominals in languages with definite-like plurals such as Japanese and Malay necessarily project DP. D provides NPs/NumPs with a definite-like interpretation (as well as argument status). Projecting only NP or NumP cannot account for the definite-like interpretation. This paper thus

supports the view that argument nominals in article-less languages project DP like those in article languages, supporting Longobardi (1994, 2005) and Li (1999) rather than Chierchia (1998) and Bošković (2008).

Acknowledgements The research reported here was supported in part by the JSPS Grant-in-Aid for Young Scientists (B) (#23720199). Earlier versions of this paper were presented at the 20th Annual Meeting of the Austronesian Formal Linguistics Association (AFLA), Arlington, TX (May 2013). I would like to thank the audience at the meeting for questions and comments. I also thank Hooi Ling Soh and Brian Reese, who read earlier drafts of this paper carefully and helped me improve the paper. The following people helped me as language consultants: Bi Xi, Faridah Mohamed, Fatemeh Gharahkhani, Kartini Abd. Wahab, Maryam Ataski Golestan, Muhammad Idham bin Adli Musa, Pamela Peng and Shu Fan. All remaining errors are mine.

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