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Nominal number morphology

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1 Introduction

The present chapter surveys some of the issues surrounding nominal number morphology. Nominal number morphology is defined here as marking of number oppositions on nominals including nouns and pronouns and on elements internal to the noun-phrase, including number morphology on determiners and modifiers.² (For a comparison of number in the nominal and in the verbal domain see ch XX on verbal plurality, for a discussion of semantic analyses of plural marking see ch XXX).

As shown in detail in [Corbett \(2000\)](#), the marking of number is remarkably varied cross-linguistically. Sections 2 and 3 focus on two major sources of variation: (i) the range of **number values** that may be marked for a single nominal, and (ii) the range of **nominals** that may be marked for each number marker.

Section 2 reviews the range of number values found in languages and the relation between nominal number markers on the one hand and associative plural markers, distributive and collective markers on the other hand.

Section 3 summarises some restrictions observed on the distribution of number markers. This includes limitations on the range of nominals that may be marked with different markers 3.1, mismatches between nominal number and number agreement marking 3.2, and distributional differences between syntactically inflectional

¹The support of the projects *Dépendances distributives : Pluralité nominale et verbale* and *Le marquage de la (co-)distributivité à travers les langues* (Fédération TUL CNRS FR 2559) is gratefully acknowledged. I am grateful to the project participants for many helpful discussions of event plurality, verbal plurality and distributivity markers. Thank you to Nisrine Al-Zahre, Matthew Baerman, Gilles Boyé, Grev Corbett, Jenny Doetjes, Viola Schmitt for discussion and comments on previous versions of this chapter. All errors are mine.

²This definition excludes on the one hand plural words and plural clitics discussed in [Dryer \(2005\)](#) and on the other hand number marking by agreement on the predicate. The latter is excluded here as agreement between argument and the predicate is more likely to show semantic agreement than agreement in the noun-phrase (see the Agreement Hierarchy [Corbett 2006](#), 207) and therefore the agreement on the predicate is less likely to reflect number values of the nominal argument. For a case study of a definite plural phrasal clitic in Haitian Creole, see ch XX.

and syntactically non-inflectional number markers 3.3.

Section 4 gives an overview of a range of morphological, syntactic and semantic sources of number-neutral reference.

2 Number values

Nouns may be marked for number or appear in forms that do not make reference to number (Corbett, 2000, 9). The following sections review the range of number values in number marking systems (section 2.1), and compares number values with distributive and collective markers (section 2.2) and associative plural markers (section 2.3). Section 2.4 summarises two analyses of implicational relationships between number values.

2.1 Systems of number values

Cross-linguistically, different ranges of nominal number values are attested. Apart from the common singular/ plural opposition on nouns as found in English or Spanish (1), systems of number values on nouns may mark an opposition between, singular, dual and plural (2) (see chapters XX and XX on dual in Slovenian and Arabic) and between singular, paucal and plural (3). In addition, some languages like Baiso ((3)) have a form for GENERAL NUMBER, that can be used to refer to one or more individuals indifferently (see Corbett (2000) for more examples and discussion, see section 4 for discussion of number-neutral reference).³

(1) (Spanish)

singular	plural
casa	casa-s
house	houses

³Abbreviations in the glosses: cited examples are given with the original gloss. ABS = absolutive, ACC = accusative, ANTIPASS = antipassive, ASSOC = associative, ANIM = animate, COM = comitative, COP = copula, DEC = declarative, DEF = definite, DEM = demonstrative, DIM = diminutive, EMPH = emphatic, ERG = ergative, F/FEM = feminine, GEN = genitive, HAB = habitual, M/MASC = masculine, NEG = negation, NOM = nominative, NEUT = neuter, NUM.LINK = numeral linker, PST = past, PRFV/PERFV = perfective, PL = plural, POSS = possessive, PRS = present, PRON = pronoun, Q/QU = question, RED/REDUPL = reduplication, SG=singular, TOP = topic marker

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(2) (Syrian Arabic)

singular	dual	plural
beet	beet-een	byuut
house.SG	house.DUAL	house.PL

(3) (Baiso)

singular	paucal	plural	(+ general number)
lubán-titi	luban-jaa	luban-jool	(+ lúban)
lion-SG	lion-PAUCAL	lion-PL	(+ lion(s))

(Corbett and Hayward 1987, 159-183 apud Corbett 2000, 11)

For pronouns, larger number systems including trials are attested. Pronouns distinguish between singular-dual-paucal-plural in Siar (4)-a; between singular, dual, trial, paucal and plural in Lihir (4)-b. and singular, dual, lesser paucal, greater paucal and plural in Susurunga (4)-c. Corbett (2000, 25).

- (4) a. Singular vs. dual vs. paucal vs. plural pronouns in Siar (Meso-Melanesian) (Palmer, 2012)

person	singular	dual	paucal	plural
1 exclusive	ya(u)	mara(u)	mato(l)	mèt
1 inclusive	–	dara(u)	dato(l)	dat
2	u	amra(u)	amto(l)	amat
3	i	dirau	diat	dit

- b. Independent pronouns in Lihir (Corbett, 2000, 25, Table 2.2.)

	SINGULAR	DUAL	TRIAL	PAUCAL	PLURAL
1 exclusive	yo	gel	getol	gehet	ge
1 inclusive	–	kito	kitol	kitahet	giet
2	wa	gol	gotol	gohet	go
3	e-	dul	dietol	diehet	die

The pronoun system of Susurunga in (5) includes an additional distinction between

lesser and greater paucals. The analysis of the further splits distinguishing LESSER and GREATER PLURALS, LESSER and GREATER PAUCALS (see (5)), and PLURALS and GLOBAL PLURALS as separate number values remains tentative (see the discussion in Corbett 2000, 30-35).

(5) Emphatic pronouns in Susurunga (Corbett, 2000, 27, Table 2.2. & p.29)

	SINGULAR	DUAL	LESSER PAUCAL	GREATER PAUCAL	PLURAL
1 exclusive	iau	giur	gimtul	gimhat	gim
1 inclusive	–	girar	gittul	gihat	git
2	íáu	gaur	gamtul	gamhat	gam
3	-i/on/ái	diar	ditul	dihat	di

As Corbett points out, while nominal number is interpreted on the DP, it need not be marked on the noun. Biak (Austronesian), for example, has no number markers on nouns; number is marked on personal pronouns (Heuvel, 2006, 66) and on the definite and demonstrative determiners (6)-a and verbs show number agreement in number (6)-b (Dalrymple and Mofu, 2013).

(6) a. definite determiner in Biak (Austronesian) (Dalrymple and Mofu, 2013, 45)

SINGULAR	DUAL	PAUCAL	PLURAL.ANIM	PLURAL.INANIM
i/ya	sui/suya	skoi/skoya	si/ sya	na

b. verbal agreement in Biak (type 1 consonantal stems)

(Dalrymple and Mofu, 2013, 43)

	SINGULAR	DUAL	PLURAL		
1INCL	-	ku-	ko-		
1EXCL	ya-	nu-	(i)nko-		
2	wa-	mu-	mko-		
	singular	dual	paucal	plural.anim	plural.inanim
3	i-	su-	sko-	si-/s-	na-/n-

Noun-phrases with different number values need not be uniform in their semantic and syntactic behaviour. As is well-known, in English, plural count nouns pattern with mass nouns in that they can be bare in argument position, while bare singular count nouns cannot (see [Carlson 1977](#) and many since). Biak illustrates a semantic asymmetry between its four number values marked on verbs. As [Dalrymple and Mofu \(2013\)](#) show, subjects of dual and paucal-marked verbs in Biak cannot be non-specific bare nouns (7) and are required to be interpreted either as definite with a definite determiner or as partitively specific indefinites with a numeral interpreted as part of a contextually given larger set (8). This contrasts with subjects of singular and plural marked verbs that allow unspecific uses with a bare noun subject (9).⁴

- (7) a. *ikak **su**-arek i (Biak)
 snake 3DUAL-bite PRON.3SG
 Not: '(Two) snakes bit him.' (D&M 2013 ex. 51)
- b. *ikak **sko**-arek i
 snake 3PAUCAL-bite PRON.3SG
 Not: '(Three/a few) snakes bit him.' (D&M 2013 ex. 53)
- (8) a. (i) ikak **suya su**-arek i (Biak)
 snake DEF.3DUAL 3DUAL-bite PRON.3SG
 The two snakes bit him. (definite) (D&M 2013 ex. 57)
- (ii) ikak ri **suru su**-arek i (Biak)
 snake NUM.LINK **two** 3DUAL-bite PRON.3SG
 Two of the snakes bit him. (partitively specific) (D&M 2013 ex. 55)
- b. (i) ikak **skoya sko**-arek i
 snake DEF.3PAUCAL 3PAUCAL-bite PRON.3SG
 The three snakes bit him. (definite) (D&M 2013 ex. 59)
- (ii) ikak ri **kyor sko**-arek i
 snake NUM.LINK **three** 3PAUCAL-bite PRON.3SG
 Three of the snakes bit him. (partitively specific) (D&M 2013 ex. 56)
- (9) a. Ikak (oso) darek i. (Biak)
 snake (one) 3SG-bite PRON.3SG
 A snake bit him. (D&M 2013 ex. 27)

⁴Notice that in this case the contrast concerns number values that are marked by agreement only: unlike pronouns, nouns do not mark number in Biak, and the contrast only concerns bare noun subjects.

- b. *Ikak sarek* i.
 snake 3PL.ANIM-bite PRON.3SG
 Snakes bit him.‘ [plural: at least four snakes] (D&M 2013 ex. 32)

In Biak bare nouns do not mark number and the effect with bare subjects arises from marking on the verb. In Arabic and Slovenian number is marked on the noun and differences in interpretation between the number values are also found with the dual interpreted as specific while singular and plural need not be (see ch XX on Dual in Arabic and XX on Dual in Slovenian respectively). Specificity effects are also reported for plural marked nouns with the Korean plural marker *-tul* (Song (1975); Kwon and Zribi-Hertz (2004)), Mandarin *-men* (see below) and Japanese *-tati* (see ch XX on Japanese *-tati*).

Apart from nominal number markers there are other nominal markers that imply a multiplicity of referents. The following sections summarise the evidence that distributive and collective markers (section 2.2) and associative plurals (section 2.3) should not be assimilated to the number values discussed in this section.

2.2 Number values vs. distributives/ collectives

Distributive and **collective** markers imply a multiplicity of referents, and in this respect one might be tempted to consider them as a type of non-singular number marker. There are several arguments, however, supporting the view that number markers have to be carefully distinguished from distributive and collective markers (Corbett, 2000, 111).

Unlike typical number markers, distributive and collective markers have additional semantic content. Distributive markers require distinctness among the members of the multiplicity (10-a) while collective markers indicate a group that is viewed as a cohesive whole (10-b) (Mithun 1999, 88, Corbett 2000, 118).⁵

- (10) a. Distributive suffix *-shòn:’a* in Mohawk (Iroquoian):

⁵As pointed out by Corbett (2000, 118), the term COLLECTIVE is also used in other contexts, e.g. with group nouns like *team, family, police force* see ch XX on collective nouns, or in uses where no number distinction is made for simple nouns designating possible aggregates such as *berry* or *bee*, see ch XX on singulatives.

otsikhe'ta'-**shòn:'a** 'various candies, assortment of different candies as found in a sweet shop' (Mithun, 1999, 88)

- b. Collective suffix *-áñhoh* in Sierra Popoluca (Mixe-Zoquean):
 tʌg-áñhoh 'many houses together, a village'
 (Corbett, 2000, 118, ex 24, from Elson 1960:219)

The distinctness expressed by distributive markers may be further differentiated semantically either in terms of spatio-temporal location or in terms of distinct types (Corbett 2000, 111-112, Mithun 1999, 88). Nominal distributive markers can be ambiguous between type diversity and spatial distribution, as noted by Boas (1911, 444) for Kwakiutl (Wakashan, Canada): *Reduplication of a noun expresses rather the occurrence of an object here and there, or of different kinds of a particular, than plural*. However, as Mithun (1999) shows, spatial distinctness and distinctness of type can also be grammaticalised separately. In Quileute, the distributive marker is limited to spatial distribution (11) while in Mohawk the distributive only expresses diversity of types (12) (for another example of a diversity-of-type plural marker see ch XX on Balinese, ex 20):

- (11) Additional semantics: distribution of entities over space (Quileute)

tukô·yo	'snow'	tutkô·yo	'snow here and there'
t'súwircił	'a boil'	t'suwe·wircił	'boils here and there'

(Mithun, 1999, 88, ex. 18)

- (12) Additional semantics: distribution of entities over types (Mohawk)

o-nén:ia'	'rock(s)'	o-nenia'- shon:'a	'various (types of) rocks'
NEUT-rock		NEUT-rock-DISTR	

(Mithun, 1999, 88, ex. 19)⁶

A second argument in favour of a distinction between distributive and collec-

⁶According to (Mithun, 1999, 88) "the distributive form *onenia'-shon:'a* 'various rocks' can only mean rocks of assorted types, usually different shapes, sizes and colours."

tive markers on the one hand and number markers on the other is provided by the fact that both types of marking may co-occur, supporting the view that they do not instantiate different values of the same category, (Corbett, 2000, 114-115).

(13) Distributive markers + number markers

- a. raksà:'a ratiksa'okòn:'a (Mohawk)
 ra-ksà:'-a **ra-ti-ksa'-okòn:-'a**
 MASC-child-DIM **PL-MASC-child-DISTRIBUTIVE-DIM**
 boy boys (Corbett, 2000, 114-, ex 20)
- b. λah-λaka'-meh (Eastern Huasteca Nahuatl)
 REDUPL-person-PL
 various people (Corbett, 2000, 115, ex 21)

Like distributive markers, collective markers co-occur with number markers as in the Yana (Hokan) example (14) (Corbett, 2000, 118). Note, however, that in some Native American Languages distributive and collective markers differ with respect to the size of group they allow: while distributives generally do not appear with just two entities, collective markers are often applied to groups of two entities (Mithun, 1999, 93).

(14) Collective markers + number markers : Yana collective suffix **-wi**

- a. with dual **-u:**
- dal dal-**u:-wi**
 'hand' 'two hands'
- b. with plural **-íi**
- madjau-́pa: mut'djau-**íi-wi**
 'chief' 'chiefs'
 (Corbett, 2000, 118, ex 26)

Furthermore, distributive markers may be clearly different from plural number markers with respect to the types of nouns they combine with. In Eastern Huasteca Nahuatl and Mohawk, distributives occur with nouns that cannot take number marking: inanimates in Eastern Huasteca Nahuatl and neuters in Mohawk (Corbett, 2000,

115).

- (15) a. onén:ia´ onenia'-**shon:'a** (Mohawk)
o-nenia´ o-nenia´-shon´a
NEUT-rock NEUT-rock-DISTRIBUTIVE
rock(s) 'various rocks' (neuter + distributive)
(Corbett, 2000, 114, ex 20)
- b. lah-lahpepečo´-lli (Eastern Huasteca Nahuatl)
REDUPL-wall (inanimate+distributive)
'walls here and there' (Corbett, 2000, 115, ex 21)

As distributive and collective markers imply reference to a plurality, these markers can be diachronically reanalysed as plural markers. This process is noted for Kwakiutl by Boas (1911, §13).

- (16) Reduplication of a noun expresses rather the occurrence of an object here and there, or of different kinds of a particular object, than plurality. It is therefore rather a distributive than a true plural. It seems that this form is gradually assuming a purely plural significance. In many cases in which it is thus applied in my texts, the older generation criticises its use as inaccurate. Only in the case of human beings is reduplication applied both as a plural and as a distributive (Boas, 1911, §13).

Boas's description suggests that for nouns designating humans the reduplication allows a plural and a distributive reading for the reduplicated form, even in the conservative variety of Kwakiutl.

The data discussed here show that distributive and collective markers are in principle orthogonal to the number system. However, as grammaticalisation of distributive and collective markers as plural markers is attested (Boas 1911, Jensen 1952, Biermann 1982, 236), the precise relationship between distributive and collective markers and the number system has to be examined for each language.

2.3 Number values vs. associatives

Another class of markers that imply a multiplicity of entities are associative plurals. Associative plurals are plurals that designate the group associated with the head noun. This construction is limited to head nouns with a human referent, and typically the associative marker combines with definites (Moravcsik, 2003, 472).⁷

- (17) a. Péter-**ék** (Hungarian, Finno-Ugric)
 Peter-ASSOC.PL
 Peter and his family of friends or associates (Moravcsik, 2003, 469, ex 1b)
- b. apá-m-**ék**
 father-POSS1PL-ASSOC.PL
 my father and his group
- c. a tanító-**ék**
 DEF teacher-ASSOC.PL
 the teacher and his group (Corbett, 2000, 102, exs. (i), (iii))

Note that the semantics of associative markers is clearly different from nominal number markers: associatives designate a group associated with the head-noun as in (17), while nominal number markers designate a number of referents that fulfill the same description corresponding to the head noun as in the Hungarian definite plural *a tanító-k* 'the teachers' (compare the Central Alaskan Yup'ik example (20-a)).

Associative plurals are commonly marked by affixes on the DP that contain a plural marker or by juxtaposition with a plural pronoun (Moravcsik, 2003, 470). The first type is illustrated with associative *-ék* in Hungarian (17) containing the plural suffix *-k*, while (18) is an example of the pronominal associative marking:

⁷There are exceptions to this. Corbett and Mithun (1996) show that in Central Pomo the associative marker can combine with an indefinite pronoun used as an interrogative:

- (i) bá' =toya=wa mída nap^hó-w? (Central Pomo)
who=ASSOC=Q there sit.PL-PRFV
 Who [all] is there now? (Corbett, 2000, 106, ex. 11)

- (18) a. Pa-**hulle** 'Dad-them' (Afrikaans, Germanic)
Dad and his folks, Dad and another person (especially: Mum, Mum and Dad, my/our parents)
- b. de kinders-**hulle** 'the children-them'
the children plus or minus one or more people
(Den Besten, 1996, 14-15, ex 1 & 5)

Moravcsik proposes the preference order in (19) for the types of DP that associative markers combine with. According to this preference order, if a language allows associative marking for one type of DP on the scale, it will also allow associative marking on the definite DP types to its left on the scale (adapted from Moravcsik 2003, 472, G-1)

- (19) **Associative plurals: Preference order for definite DP types**
proper name > kin noun > title noun > other human noun
(Moravcsik, 2003, 472, G-1)

As with distributive and collective markers, there are several arguments against analysing associative plurals as a value of the general category number (Corbett, 2000, 101).

Firstly, associative plural marking is generally possible with proper names as in (17-a) / (20-a) for which number marking is untypical (Moravcsik, 2003, 472). Associative plural marking may even be limited to proper names exclusively as in Central Alaskan Yup'ik (Eskimo-Aleut) (Corbett and Mithun 1996, Corbett 2000, 107-8).⁸

Secondly, in Central Alaskan Yup'ik the associative is a separate morpheme that combines with dual -**k** and plural -**t** markers, supporting an analysis that treats associative marking and number marking as distinct categories (Corbett and Mithun 1996; Corbett 2000).

- (20) a. (i) cuna-nku-**k** (ii) cuna-nku-**t** (Central Alaskan Yup'ik)
Chuna-ASSOC-DUAL Chuna-ASSOC-PL
Chuna and his friend Chuna and his family/friends

⁸Corbett (2000, 108, FN 22) notes that the fact that the associative in Central Alaskan Yup'ik does not combine with kinship terms is possibly due to morphological factors as kinship terms are obligatorily possessed.

- b. (i) qaya-**k** (ii) qaya-**t**
 kayak-DUAL kayak-PL
 two kayaks three or more kayaks
 (Corbett, 2000, 108-109, ex 13/14, Table 4.4)

Thirdly, associatives appear on proper names in languages that do not allow plural marking on proper names (e.g. Kambaata, Treis 2014) or have no plural marking on nouns at all (e.g. Nêlêmwa Bril 2014).

- (21) a. Hamaam-e-'**ée** ám-at (Kambaata)
 H.-F.ACC-ASSOC.F.GEN mother-F.NOM
 Hamaame et al.'s mother (Treis, 2014, ex.41)
- b. Paava-**ma** (Nêlêmwa)
 Paava-ASSOC.PL
 Paava and others, Paava and the group (Bril, 2014, 173, ex 15)

As with distributive and collective markers, plausible cases of grammaticalisation of associative plural markers into nominal plural markers have been suggested (Creissels 2016, 38 for the diachronic origin of the plural noun-prefix *bo-* in Tswana (Southern Bantu), and Creissels 2017, 5 for the origin of plural marker *-lú ~ -lí* in Western and Southwestern Manding languages).

Consequently, while in principle associative markers are distinct from plural markers, only detailed analysis can establish whether in a particular language an associative marker has developed uses as a plural morpheme (see ch XX for the associative plural marker *-tati* in Japanese).

2.4 Implicational relationships between number values

Systems of number values are constrained by implicational relationships: not all combinations of number values are attested. Greenberg's universal 34 for example states that *No language has a trial number unless it has a dual. No language has a dual unless it has a plural* (Greenberg, 1963, 91). To account for these implicational restrictions on number systems, a Number Hierarchy as in (22) has been proposed.

- (22) Number hierarchy

singular > plural > dual > trial

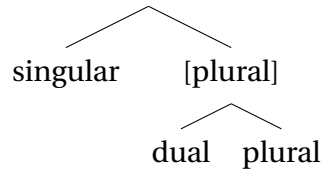
As Corbett points out, the hierarchy in (22) only includes determinate number values: However, number values can be determinate or indeterminate. In addition, certain number values can be optionally marked. As a consequence, a full account of implicational relationships between number values is bound to be more complex than (22) as it has to take indeterminate number values and patterns of optional number marking into account (Corbett, 2000, 39).

DETERMINATE number values are number values for which speakers agree on the contexts that the form can be used in. In Sanskrit, for example, the use of the dual was obligatory when referring to two objects (Corbett, 2000, 43, for discussion and references). Determinate number values are plural, dual and trial. For INDETERMINATE number values speakers do not necessarily agree on the choice of number value and the use of an indeterminate number value may vary according to the referent of the nominal predicate (elephants vs. ants for example). Indeterminate number values like PAUCAL, GREATER PAUCAL, GREATER PLURAL correspond to quantifiers like *a few, many, all* (Corbett, 2000, 40 for discussion and references).

An additional dimension of variation between number values is optionality: certain number values can be optionally marked. For instance, while the dual in Sanskrit was obligatory, dual in Slovenian is optional as two objects can be referred to by the plural form (see ch XX on the dual in Slovenian for details). However, when the dual form is used in Slovenian, speakers agree that the referent has cardinality two: the dual in Slovenian is a determinate number value that is optionally marked (Corbett, 2000, 43-44).

To account for optional number marking, Corbett proposes to replace the linear hierarchy in (22) by a structured sequence of binary choices (illustrated here by a dual, for details and other number values see Corbett 2000, 39-42). In this view, optionality of a number value is analysed as optionality of a binary distinction in the structure: speakers of a language with number values corresponding to the structure in (23) have the option of retreating from a complex system including singular - dual - plural to a simpler singular - plural system that ignores the binary choice subdividing plural values at the [plural] node (see Corbett 2000, 39-42).

(23)



(Corbett, 2000, 45, Fig. 2.9) (see file Corbett00Fig29.jpeg for exact layout)

Harbour (2014) proposes an analysis of implicational relationships between number values and indeterminate number values using structured bundles of up to three binary features, MINIMAL, ATOMIC and ADDITIVE. According to Harbour’s analysis, languages can differ (i) with respect to the range of features they activate, and (ii) with respect to the features that allow feature recursion. The possibility of feature recursion allows different values of the same feature to combine (for details see Harbour 2014).

Under Harbour’s analysis, a number system with a singular-plural contrast only activates the feature [+/- ATOMIC]. Systems with a dual additionally have access to the feature MINIMAL, with dual corresponding to the feature combination [+minimal – atomic] Harbour (2014, 212). In Harbour’s analysis, (Harbour, 2014, 213), languages with approximate numbers are characterised by the feature [+/- additive] with paucals specified as [+additive].

Trials and greater paucals are derived by feature recursion that allows structured feature combinations in which different values of a feature may combine at different levels of the structure. In this system, trials have the feature combination specified as (+minimal(–minimal (–atomic(P)))) and greater paucals the specification (–additive (+additive(P))) (Harbour, 2014, 213).

Harbour’s analysis derives implicational relationships between number values from the fact that richer featural systems have the features necessary to express the values of the smaller featural systems.

- (24)
- a. (+minimal (–atomic(P))) → (–atomic(P))
 dual → plural
 - b. (+minimal(–minimal (–atomic(P)))) → (+minimal (–atomic(P))
 trial → dual

- c. (-additive (+additive(P))) → (+additive(P))
greater paucal → paucal

The two proposals model the implicational relationships between number values along the Number Hierarchy in very different ways. While [Corbett \(2000\)](#) treats number values as primitives ordered as choices in a binary branching tree, Harbour's analysis decomposes all number values into structured combinations of three features.

3 Distribution of Number marking

The distribution of number marking adds further complications to the study of number markers. In many languages marking for number only affects part of the inventory of nouns. The subsets of nominals marked for number can be characterised in terms of the Animacy Hierarchy (section 3.1). Furthermore, number marking on nouns does not straightforwardly correspond to the values found in the elements marking agreement with these nouns (section 3.2). Finally, section (3.3) reviews distributional contrasts that have been attributed to the inflectional nature of number markers.

3.1 The range of nouns marked for number and the Animacy Hierarchy

As pointed out by [Smith-Stark \(1974\)](#) plurality marking may only apply to a subset of nominals. Smith-Stark shows that cross-linguistically, not all nominals are equally likely to be marked for number, with human nouns the most likely nouns to express number. Developing this idea, [Corbett \(2000, ch 3\)](#) shows in detail that the distribution of number marking across different noun types follows patterns that can be expressed in terms of the following the Animacy Hierarchy:

- (25) The Animacy Hierarchy ([Corbett, 2000](#), 56)
Speaker > addressee > 3rd person > kin > human > animate > inanimate

Corbett (2000) states the following generalisation concerning number marking:

- (26) The singular-plural distinction in a given language must affect a top segment of the Animacy Hierarchy. (Corbett, 2000, 56)

If a language marks number for one type of nominal on the Animacy Hierarchy it will also mark number on the types of nominals higher on the Hierarchy.

The Animacy Hierarchy is also reflected in the patterns of optionality for number marking: if number marking is optional for one type of nominal on the Animacy Hierarchy, it is at most optional for nouns lower on the Animacy Hierarchy. Inversely, if number marking is obligatory for one type of nominal on the Animacy Hierarchy, it will be obligatory for nouns higher on the Hierarchy.

Corbett (2000, 70) cites the example of Comanche as described by Charney (1993), where plural and dual marking is obligatory for nouns designating humans, optional for animates and rarely found for inanimates. Another case of differentiated number marking is provided by Central Pomo, where number marking is obligatory on pronouns referring to humans and optional for a subset of nouns designating humans (Corbett, 2000, 63).

Different number values in the same language need not affect the same range of nouns (Corbett, 2000, 111): in Slovenian, e.g. all nouns can take plural and dual (see ch XX on Slovenian for details), while in Maltese only 36 nouns take dual marking (Corbett, 2000, 96). As Corbett (2000:96) stresses, the nouns taking dual in Maltese do not conform to the Animacy Hierarchy as obligatory duals include the nouns for *jum/ jumejn* "day sg/dual" and *elf/ elfejn* "thousand sg/dual". Corbett (2000, 95-100) proposes to analyse cases like the Maltese dual as MINOR NUMBERS, defined as a number value that is marginal in a given language but attested independently as a fully fledged number value cross-linguistically. In particular, Corbett shows that marking by minor numbers is atypical in that its distribution may run counter to the Animacy Hierarchy.

3.2 Number and agreement mismatches

Agreement marking for number need not pattern with number marking on nouns (see Corbett 2000:70-73, 2006:172-174).

A language illustrating the dissociation between plural marking on nouns and number agreement patterns is Miya (West Chadic, Schuh 1989). In Miya nominal number marking is obligatory with higher animates (27)-a while it is optional with inanimates (27)-b. Agreement in number, however, patterns differently from number marking: it is obligatory for higher animates (like plural marking) (28)-a, and **impossible** with inanimates (28)-b.

(27) Number marking with numerals

a. **Obligatory** with higher animates

tèvam tsór vs. *'ám tsór (Miya)
 woman.PL two woman.SG two

b. **Optional** with inanimates

zèkiyáyàw vaatlə vs. zókiy vaatlə
 stone.PL five stone.SG five
 (Corbett, 2000, 72, ex 24,25)

(28) Number agreement with determiners

a. **Obligatory** with higher animates

níykin dzáfə (Miya)
 this.PL man.PL

b. **Impossible** with inanimates - gender marking only

(i) nákən	viyayúwawàw	(ii) tákən	tləkáyàw
this.SG.MASC	fireplace.PL	this.SG.FEM	calabash.PL
Masculine	noun	Feminine	noun

(Corbett, 2000, 73, ex 27,28)

A particularly systematic agreement mismatch between the nominal number values and verbal subject agreement is found in Baiso (for details see Corbett 2006, 172-174).

The mismatch between the number value marked on the nominal and the number value expressed by the agreement can be exploited to add a CONSTRUCTED NUMBER VALUE that does not have its own exponent (Corbett, 2000, 169). This is exemplified by the Hopi (Uto-Aztec) data from Hale (1997, 74), where combining a singular subject pronoun and with plural subject agreement on a verb gives rise to a dual subject interpretation (29-c).

- (29) a. Pam wari (Hopi, Uto-Aztecan)
 that.SG run.PERFV.SG
 Singular subject: He/she ran.
- b. Puma yùutu
 that.PL run.PERFV.PL
 Plural subject: They (plural) ran.
- c. Puma wari (Hopi)
 that.PL run.PERFV.SG
 Dual subject: They (two) ran. (Hale 1997, 74, apud Corbett 2000)

As noted by Corbett (2000, 170), however, the possibility of having mismatching agreement does not imply that other number mismatches - even if they involve the same features - are permissible. In Zuni, for example, a plural first person pronoun with a singular verb gives rise to a first person dual (30-a), while a mismatch between a singular first person and a plural verb is simply ungrammatical (30-b).

- (30) a. hon ʔa:-kya (Zuni, isolate)
 1PL.NOM go-past
 we (two) went
- b. *hoʔ ʔa:w-a:-kya (Zuni)
 1SG.NOM PL-go-PAST
 (Corbett, 2000, 170, exs. 45/46, citing p.c. from Lynn Nichols)

A final example of a morpho-syntactic mismatch for plural marking is provided by AGREEMENT PLURALS. In agreement plurals the plural marking on the noun is a formal requirement on the complements of certain expressions without an implication of semantic plurality, as illustrated by (31)-b/c (Krifka, 1995, 2008):⁹

⁹(Krifka, 1995, 2008) calls these plurals *agreement plurals* and analyses the plural as agreement

- (31) a. three **apples**
b. zero **apples**
c. one point zero **apples** (Krifka, 2008, ex.55)

In addition to the morpho-syntactic mismatches between nominal number value and agreement discussed above, it is well-documented that agreement need not always be syntactic agreement but may reflect semantic agreement as in (32) (see chapter XX for details on semantic agreement with collective nouns), with agreement mismatches generally constrained by the Agreement Hierarchy (Corbett, 2006).¹⁰

- (32) **This** committee **have** decided. (British English)
DEM.SG have.PL

As the relationship between nominal number and agreement on predicates is not straightforward feature-matching, it is not trivially clear in how far number distinctions that are expressed exclusively by agreement on verbs as for determinerless nouns in Biak (see (6)) or in Marori (ch XX on Marori) have the same properties as number distinctions that are marked on nominals.

3.3 Inflectional number morphology

Syntactic and morphological studies use the term *inflectional number marking*. This is a source of confusion, as syntactic and morphological uses of the term *inflectional number marking* are not equivalent. In morphological studies *inflectional num-*

marking in these configurations.

¹⁰Corbett proposes the Agreement Hierarchy to account for the possible patterns of agreement mismatches found cross-linguistically:

- (i) a. The Agreement Hierarchy
attributive > predicative > relative pronoun > pronoun
b. For any controller that permits alternative agreements, as we move rightwards along the Agreement Hierarchy, the likelihood of agreement with greater semantic justification will increase monotonically (that is, with no intervening decrease). (Corbett, 2006, 207)

See (Corbett, 2006, 206-237) for detailed discussion.

ber marking is opposed to *derivational number marking*, while in syntactic studies *inflectional number marking* is opposed to *non-inflectional number marking* (see [Wiltschko 2008](#), ch XX on the Syntax of Number markers).

- (33) Two uses of the term INFLECTIONAL NUMBER MARKING
- a. morphology: inflectional number marking vs. **derivational** number marking
 - b. syntax: inflectional number marking vs. **non-inflectional** number marking (i.e. not reflected by syntactic agreement)

Therefore, the morphological and the syntactic uses of the term *inflectional number marking* have to be clearly distinguished.

3.3.1 Morphologically inflectional number morphology

Morphologically inflectional number marking is marked by inflectional morphology as opposed to marking by derivational morphology. The distinction between inflectional and derivational morphology is still a source of endless controversy (for discussion see [Beard 1998](#); [Stump 1998](#); [Corbett 1999](#)).

However, the distinction between inflectional and derivational plural marking has been invoked in morphological and syntactic studies of number, with divergent definitions of the term *inflectional*.

[Corbett \(2000, 126\)](#) examines morphological number marking in Qafar (Cushitic). In this language plural on pronouns and nouns marking humans is obligatory while for other animates and nouns lower on the Animacy Hierarchy plural marking is not, with the general number form of the noun being syncretic either with the plural or with the singular. As Corbett points out, "one view would be that number is derivational rather than inflectional which fits with other facts: people have to think what the plurals are; there are competing forms and speakers will disagree on whether a particular noun has a plural or not (Dick Hayward, personal communication, 1998:627)". In her analysis of nominal plural morphology in Somali [Lecarme \(2002\)](#) also arrives at the conclusion that nominal plural marking is derivational, pointing out that in Somali nouns can have a range of plural markers (34) and dif-

ferent plural markers can combine (see ch XX for a discussion of nominal number in Cushitic).

- (34) a. Several plural forms for one noun (Somali)

SINGULAR		PLURAL	
<i>díbi</i> (M)	'bull'	<i>dibí</i> (F)	'bulls'
		<i>dibi-yó</i> (F)	'bulls'
		<i>dibi-yaál</i> (F)	'bulls'

(Lecarme, 2002, 120, ex 12a)

- b. Plurals of plurals (Somali)

SINGULAR	SIMPLE PLURAL	PLURAL OF PLURAL	
<i>nín</i> (M) 'man'	<i>nim-án</i> (M) 'men'	<i>niman-yaál</i> (F)	'(groups of) men'
		<i>niman-yów</i> (M)	'(groups of) men'

(Lecarme, 2002, 121, ex 15a)

In morphological studies the main arguments in favour of a derivational status of nominal number morphology are: (i) variation in the choice of plural morphology, (ii) non-obligatoriness of plural morphology and (iii) iteration of plural morphology on a single stem.

3.3.2 Syntactically inflectional number

In syntactic studies inflectional number is understood as grammaticalised number marking on the noun that is active in the syntax by triggering agreement mechanisms. The fact that plural markers have semantic and syntactic properties that go beyond plurality have been used to argue against an analysis as syntactically inflectional number marking (see ch XX on Syntax of number marking for discussion). However, *syntactically non-inflectional* in this sense should not be equated with morphologically *derivational*, as a morphologically inflectional marker may have a semantic and syntactic profile distinct from grammaticalised plural markers as found in English or Spanish.

A precedent for a morphologically inflectional nominal marking that is not syn-

tactically represented (i.e. syntactically non-inflectional) is provided by diminutive formation. In Spanish for example diminutives are productively formed for nouns but DIMINUTIVE is not a syntactically inflectional category in Spanish as diminutive is not reflected in syntactic agreement.

A plural marker that has been argued to be a syntactically non-inflectional plural on the basis of its semantic properties is Mandarin Chinese *-men*.

While *-men* is treated as a plural suffix by some authors (Li and Thompson 1981, 40, Krifka 2008), others consider *-men* a collective suffix (Cheng and Sybesma 1999, 536-537, following Iljic 1994, and Lu 1947). Iljic (1994) adduces two arguments against an analysis of *-men* as a plural morpheme. Firstly, *-men* combines with nouns referring to humans and on pronouns, and in rare cases appears with proper names, with a semantic effect similar to an associative plural marker. Secondly, the nouns marked with *-men* only appear in a limited range of contexts: they "invariably [refer] to a situationally anchored and defined group" (Iljic 1994:94) and are excluded from generic and indefinite contexts.

Similarly, Song (1975) proposed that nouns marked with the suffix *-deul* in Korean are necessarily specific. In their study of the Korean *-deul* Kwon and Zribi-Hertz (2004, 154) add further semantic and syntactic diagnostics showing that the plural marker *-deul* induces a specific interpretation. They show that *deul*-marked nouns do not take narrow scope (35)-a, disallow bound readings under a quantified DP (35)-b and disallow use as number agreement (35)-c, three properties which they take to be diagnostics for syntactically inflectional plural marking (see ch XX Syntax of number markers for discussion).

- (35) a. N-*deul* takes wide scope only

Minna -neun chaeg -**deul** -eul ilgji -an -ass -da. (Korean)

Minna TOP book PL ACC read NEG PST DEC

‘Minna didn’t read some books.’

wide scope only: there are some books she did not read (Kwon and Zribi-Hertz, 2004, 147, ex 32)

- b. No bound reading of N-*deul* under a quantifier

i daehaggyo -ui gyosu -deul -eun jeonbu negtai deul -eul
DEM university GEN professor PL TOP all necktie PL ACC
mae -go dani -n -da.
tie COM walk around PRS DEC

lit. 'In this university, all professors walk around with several neckties tied (around their neck(s)).' = 'In this university, all professors wear several neckties.'

(Kwon and Zribi-Hertz, 2004, 148, ex 35)

- c. N-deul cannot function as plural agreement

i salam -deul -eun uisa (-*deul) i -da.
DEM person PL TOP doctor (PL) COP DEC
Lit. 'These people are doctor.'

(Kwon and Zribi-Hertz, 2004, 148, ex 36)

The plural markers in Korean and Mandarin discussed here induce a specific interpretation, be it as part of an established group (partitive specificity) or in terms of the ability to take narrow scope (scopal specificity). As these plural markers add syntactically relevant information associated with increased syntactic structure in other languages, they have been analysed as non-inflectional plurals in the syntactic literature (for other types of non-inflectional plurals see the discussion in ch XX Syntax of number markers).

Syntactically non-inflectional plurals are not necessarily *derivational* in the morphological sense. The term *inflectional* does not have the same definition in morphological and in syntactic studies and *morphologically inflectional* (contrasting with *derivational*) should be distinguished from *syntactically inflectional* (contrasting with *syntactically non-inflectional*).

3.4 Markedness of number values

As pointed out in Haspelmath (2006), the term MARKEDNESS is problematic as it is not uniformly defined in linguistics. Here I will address two types of markedness: semantic markedness and formal markedness.

- (36) a. Semantic markedness: markedness as specification for a semantic distinction
 ‘ In the English opposition dog/bitch, dog is the unmarked member because it can refer to male dogs or to dogs in general. ’
- b. Formal markedness: markedness as overt coding
 ‘ In English, the past tense is marked (by *-ed*) and the present tense is unmarked.’
- (Haspelmath, 2006, p. 26)

It is often assumed that singular is the morphologically unmarked value compared to the plural. Greenberg’s universal 35 states that morphological zero marking for singulars is found cross-linguistically while systematic morphological zero-marking for the plural (or the dual and the trial) is not found (Corbett, 2000, 151).

The arguments in favour of a morphologically unmarked singular are not uncontroversial, however (Corbett, 2000, 154). Nilo-Saharan languages, for example, typically have a system with three types of number marking (Dimmendaal, 2000): singulative marking (37)-a, plural marking (37)-b and REPLACEMENT MARKING with two suffixes for singular and plural (37)-c. In this type of system the singular or the plural, or neither may be the morphologically unmarked form, depending on the noun.

- (37) Number marking in Masalit (Dimmendaal, 2000, 216, Table 1)

MARKING	marked singular	unmarked	marked plural	translation
a. singulative marking	<i>barjaŋ-i</i> <i>anyin-gi</i>	<i>barjaŋ</i> (pl) <i>anyin</i> (pl)		shoe fly
b. plural marking		<i>mama</i> (sg) <i>daa</i> (sg)	<i>mama-ta</i> <i>daa-si</i>	maternal uncle mother
c. replacement marking	<i>mal-ko</i> <i>siren-di</i>		<i>mal-ta</i> <i>siren-i</i>	chattel cooking place

In the most striking instances of such a system, the morphological marker for the

singular for some nouns and for the plural for other nouns is the same, a phenomenon called INVERSE NUMBER (Corbett (2000, 159). (For details on inverse number marking and a case study of inverse number in Dagaare (Niger-Congo) see ch XX.)

With respect to mass-nouns neither singular nor plural marking can be argued to represent the default-agreement (and therefore arguably the agreement value compatible with the absence of morphological features). While in English mass nouns generally appear with morphologically singular agreement, in Nilotic mass nouns are morphologically marked as plurals (Dimmendaal 2000:229ff).

It is therefore not clear the singular is cross-linguistically formally or featurally unmarked.

McCawley (1968, 568) gives a number of reasons to doubt that singular is the semantically and syntactically unmarked form (in the sense of singular marking a semantically unmarked feature). McCawley points out that with antecedents like *who*, *nobody*, *anybody* the plural pronoun *they* is used as an anaphor in English. Furthermore, McCawley stresses that the plural form is used when it is not known whether the answer is singular or plural as in application form headings like *schools attended* and *children* (see section 4.3 for further examples of number-neutral uses of the plural forms of the noun).

These examples suggest that neither singular nor plural can be considered the morphologically, syntactically and semantically unmarked number value cross-linguistically. (See Haspelmath (2006) for a discussion of the fact that the different definitions of the term *unmarked* do not align cross-linguistically).

4 General number and number-neutral reference

In morphological studies, nominal forms that are in principle neutral between singular and plural reference are called GENERAL NUMBER forms (Corbett, 2000, 9-18, and see (3)).¹¹ The study of general number forms in the morphological paradigm

¹¹For languages that do not have number marking on the noun, the term GENERAL NUMBER is sometimes applied to the unique form for each noun. It is an open question whether there are empirical reasons to distinguish *absence of number marking* in a language from GENERAL NUMBER.

of nouns is complicated by the fact that number-neutral reference allowing singular as well as plural referents also systematically arises in certain syntactic and semantic contexts.

In what follows, I first summarise the restrictions on general number observed in the literature (section 4.1). Section 4.2 then examines noun incorporation and pseudo-incorporation, two well-studied types of morpho-syntactic constructions that give rise to number-neutral reference (section 4.2). Many of these studies analyse this as a property contributed by the noun reference (*number neutrality*).¹² Finally, section 4.3 briefly introduces the semantic contexts in which number-neutral reference has been observed for a subset of plural markers, generally studied under the heading of *inclusive plural readings*.

The following sections give a brief overview of the morphological, semantic and syntactic sources that give rise to number-neutral reference.

4.1 Morphological sources of number neutrality: General number

As Corbett (2000, 9-18) points out, languages may have a GENERAL NUMBER form in the nominal paradigm that expresses the meaning of a noun without reference to number.¹³

In rare cases, exemplified by Baiso, this form is distinct from the forms marking other number values (see (38)) (Corbett, 2000, 10-11).

(38) (= (3))

general	singular	paucal	plural	(Baiso)
lúban	lubán-titi	luban-jaa	luban-jool	
lion(s)	lion-SG	lion-PAUCAL	lion-PLURAL	

(Corbett and Hayward 1987, 159-183 apud Corbett 2000, 11, = (3))

In the more common case, however, the general number form is identical to the

¹²But see Dayal (2011) for an analysis of pseudo-incorporated singulars in Hindi as specified for number.

¹³This form is also called COMMON NUMBER FORM (Jespersen, 1924, 198) or TRANSDENOMINAL (Biermann, 1982).

- (41) Dəgha vaze-ts (Western Armenian)
 boy.SG run-PST
 ‘One or more boys run.’ (Bale and Khanjian, 2014, 2, ex 3)
- (42) a. John-ə dəgha e (Western Armenian)
 John-DEF boy.SG is
 b. John-ə yev Brad-ə dəgha e
 John-DEF and Brad-DEF **boy.SG is**
 (Bale and Khanjian, 2014, 3, ex 4a/b)

Unlike bare singulars, however, definite-marked singulars in Western Armenian have a strictly singular meaning (43) (Bale and Khanjian, 2014, 6) and at the same time bare plurals have strictly plural but not necessarily specific meaning (44):

- (43) Dəgha-n vaze-ts (Western Armenian)
 boy.SG-DEF run-PST
 ‘The (single) boy runs.’ (cf. (41)) (Bale and Khanjian, 2014, 6, ex 11b)
- (44) a. Bezdig-ner uni-s? (Western Armenian)
 child-(PL) have-(2,SG)
 ‘Do you have (two or more) children?’
 b. Yete bezdig-ner uni-s, dun kena.
 if child-(PL) have-(2,SG), home go(2, SG)
 ‘If you have (two or more) children, then go home!’
 (Bale and Khanjian, 2009, ex. 21a/b)

For a detailed case study of bare singulars allowing number-neutral reference in Brazilian Portuguese see ch XX (this volume).

4.2 Syntactic sources of number neutrality: noun incorporation and pseudo-incorporation

Number-neutral interpretation can also arise from certain syntactic constructions in which the noun-phrase appears with syntactically reduced structure. Two families of such constructions are noun-incorporation and pseudo-incorporation-structures.

The term NOUN-INCORPORATION was coined for a word-formation process found

in Native American languages that compounds a noun and a verb (Mithun, 1984, 848).

- (45) a. t-in-č'ak-ø-ah č'e'. (Yucatec Maya)
 COMP-I-chop-it-PERF tree
 'I chopped a tree.' (non-incorporated object)
- b. č'ak-č'e'-n-ah-en.
 chop-tree-ANTIPASS-PERF-I(ABS)
 'I wood-chopped' = 'I chopped wood.' (incorporated object) (Mithun, 1984, 857, ex 47 from Bricker 1978)

Noun-incorporation is not a homogeneous phenomenon. Mithun (1984, 856) distinguishes four subtypes of noun-incorporation and shows that the four types are linked by an implicational hierarchy (Mithun 1984, 874, see Mithun 1984, 1986 for details).¹⁴ Mithun identifies the following typical properties that are shared across different noun-incorporation structures:

- (46) a. the N is not a syntactic argument of the verb
 (i) either the N+V complex is marked as intransitive
 (ii) or the N is doubled by a full argument (Mithun, 1984, 856)
- b. the incorporated noun is not marked for number, definiteness or case, in particular the incorporated noun is interpreted as number-neutral (Mithun, 1984, p. 890)
- c. the incorporated noun is bare (Mithun, 1984, 847)
- d. the incorporated noun is not available for discourse anaphora. (Mithun, 1984, 871)

Noun incorporation has attracted considerable interest in the literature since it is on the borderline between syntax and morphology. Whether noun-incorporation is analysed as a syntactic or a morphological process depends partly on the view of morphology adopted; for Mohawk, for example, Baker (1988) gives a syntactic

¹⁴"If a language contains productive Type IV NI, it also shows Type III. All languages with productive Type III also have Type II. Those with productive Type II also have Type I" Mithun (1984, 874). NI = noun incorporation

analysis of noun incorporation while [Mithun and Corbett \(1999\)](#) defend a morphological analysis.

Independently of the question whether the correct analysis for noun-incorporation is morphological or syntactic, [Massam \(2001\)](#) shows for Niuean that some of the properties of noun-incorporation constructions are found with a construction that allows a limited range of syntactic structure for the noun. Massam calls this construction PSEUDO-INCORPORATION. Like noun-incorporation, Niuean pseudo-incorporation yields an intransitive structure as evidenced by the absolutive marked subject (47)-a. Unlike noun-incorporation, however, the incorporating noun allows a restricted range of modifiers including adjectives (48), modifying nouns, infinitival relatives and PPs ([Massam, 2001](#), 161). Modification by case markers, articles and possessives (48) is excluded however (49).

- (47) a. Takafaga tūmau nī e ia e tau ika. (Niuean)
 hunt always EMPH ERG **he** ABS PL fish
- b. Takafaga ika tūmau nī a ia .
 hunt fish always EMPH ABS **he**
 He is always fishing. [Massam \(2001, 157, 5a/b\)](#)
- (48) a. Ne inu **kofe kono** a Mele. (Niuean)
 PST drink **coffee bitter** ABS Mele
 Mary drank bitter coffee. [Massam \(2001, 158, 6a\)](#)
- b. Ne fai fale **lanu moana** a ia.
 PST have house colour blue ABS he
 He had a blue house. [Massam \(2001, 159, ex. 6h\)](#)
- (49) a. Ne inue (*e) **kofe kono** a Mele. (Niuean)
 PST drink ABS **coffee bitter** ABS Mele
 Mary drank the bitter coffee. [Massam \(2001, 168,14c\)](#)
- b. Ne vali fale (***ha Mele**) a Sione.
 PST paint house GEN blue ABS Sione
 Sione paints [sic] Mele's house. [Massam \(2001, 159, ex. 6h\)](#)

As the data above show, the delimitation of noun-incorporation is not trivially clear and a range of constructions with partially overlapping properties have been studied as instances of noun incorporation (see [Mithun \(1984\)](#) for four types of noun-

incorporation) and pseudo-incorporation. However, reduced referentiality of the incorporated or pseudo-incorporated noun is a robust property across languages, with concomitant number-neutral interpretations (see [Borik and Gehrke \(2015\)](#) for an overview of both types of constructions).

In order to evaluate whether number-neutral interpretation is due to a morphological source with a syntactically independent noun phrase containing the general number form of a noun or due to a syntactic source with a (pseudo)-incorporated noun, it is necessary to distinguish incorporated from syntactically independent arguments. As [Mithun \(1984, 873\)](#) points out for Turkish, for example, bare singular objects may coalesce with their verbs with an effect very similar to (Type I) noun incorporation. The distinction between (pseudo-)incorporated and syntactically independent noun phrases requires detailed analysis, in particular in languages that do not have singular or plural indefinite articles allowing bare nouns either as singular indefinites or as plural indefinites (see [Dayal 2011, 2015](#) and ch XXX on Bare nouns for detailed discussion).

4.3 Semantic sources of number neutrality: inclusive plurals

A third source of number-neutral reference has been studied in the semantic literature. The semantics of plural marking on nouns has been central to studies in formal semantics (see ch XX for discussion). [Krifka \(1995, 2008\)](#) points out that plural marking on the noun does not necessarily correlate with semantic plurality and proposes that three kinds of plurals have to be distinguished: AGREEMENT PLURALS (see (31) above), STRONG PLURALS and WEAK PLURALS.¹⁵

The distinction between strong and weak plurals concerns possible reference to singularities: STRONG PLURALS exclude singular referents from their reference (see ex (52) below) while WEAK PLURALS allow singular referents and plural referents as in English (50) ([Krifka, 2008](#)). However, for weak plural markers the reading that includes singular as well as plural referents is not necessarily available in all con-

¹⁵Notice that in Balinese, plural interpretation on nouns induced by plural markings on the modifiers allow inclusive readings too, see ch 33 Arka & Dalrymple.

texts. For weak plurals, Krifka therefore draws a distinction between EXCLUSIVE and INCLUSIVE readings: EXCLUSIVE plural readings exclude reference to singularities while INCLUSIVE plural readings include reference to singularities and pluralities (see chapter XX Semantics of number for discussion of exclusive and inclusive plural readings).

Typical contexts allowing inclusive readings of weak plurals are

- (50) a. Under negation
Lina didn't harvest tomatoes. / Lina harvested no tomatoes. (not even one) (Sauerland, 2003, ex 41b.)
- b. In questions
Q: Do you have children?
A: Yes, I have one child. / # No, I (only) have one child. (Krifka, 1989, p.85, 7a)
- c. If-when contexts
(i) If the UN envoy meets senior government officials on his latest visit to the region, he will be surprised. (Zweig, 2008, p. 22, ex 43)
(ii) When I see dogs, I get scared. (speaker gets scared when seeing a single dog)
- d. Modal environments
Sherlock Holmes should question local residents to find the thief.
(if the first local resident questioned proves to be the thief, SH need not question anyone else) (Zweig, 2008, 23, ex 49)

The contexts favouring inclusive readings of weak plurals are either irrealis (negation, yes-no questions, modals) or range over a plurality of events (when-clauses).¹⁶ The exact characterisation of the contexts in which inclusive plural readings are licensed is a matter of ongoing debate (see ch XX Semantics of number).

As pointed out by Farkas (2006), however, it is important to note that the con-

¹⁶In order to control for inclusive readings of weak plurals in the study of general number forms, examples referring to single realis events (e.g. marked in a perfective past) should be examined.

texts that allow inclusive plural readings like (51)-a do not completely neutralise plurality. If pluralities are pragmatically excluded as in (51)-b, the use of plurals in these contexts is infelicitous.

- (51) a. Does Sam have children?
b. Does Sam have #Roman noses/ a Roman nose?

Strong nominal plural markers like Mandarin Chinese *-men* systematically block a reading including atoms (singular referents) even in contexts that favour inclusive plural readings (see (44) for parallel examples with the Western Armenian plural marker).

- (52) a. Nǐ yǒu hái-zi / #hái-zi-**men** ma? (Mandarin)
you have child / child-PL QU
'Do you have children?'
b. Rúguǒ nǐ yǒu xiǎohái / #xiǎohái-**men** jiù qǐng dài tā lái
if you have little.child / little.child-PL then please bring 3SG to
party
party
'If you have children, then please bring them to the party.' (Krifka, 2008, ex.61/62)

Note that sentences involving the predicate *have* like (52) compound semantic and syntactic sources of number-neutrality, as *have* is a verb that is particularly prone to incorporation of its complement (Borthen 2003, for Norwegian, Dobrovie-Sorin et al. 2006; Espinal and McNally 2011, for Spanish).

4.4 Number neutrality and number values

Languages with more than two number values show that the possibility of number-neutral readings and of specificity restrictions may depend on the number value.

For Slovenian the following contrast provides evidence that dual-marked nouns differ from singular and plural nouns with respect to the interpretation of the number value: while singular and plural marking on nouns allows readings which dis-

tributes seats over bicycles, dual does not (see ch XX for details on the Slovenian dual).

- (53) a. oba bicikla imata **sedež** (Slovenian)
 both bicycles have **seat.SG**
 Both bicycles have a seat (1 seat per bicycle ok)
- b. Oba bicikla imata **sedeža**
 both bicycles have **seat.DUAL**
 Both bicycles have two seats (each bike has two seats)
- c. oba bicikla imata **sedeže**
 both bicycles have **seat.PL**
 Both bicycles have seats (1 seat per bicycle ok)
 (Franc Marusic & Rok Zaucer, p.c., see ch XX on Slovenian dual)

Similarly, in Syrian Arabic, in the contexts typical for inclusive plural readings, the dual is not neutralised to an inclusive dual corresponding to *two or one*, in contrast with the plural that allows a *one or more than one* reading (see ch XX on Dual in Arabic). The following example illustrates the contrast between plurals and duals in the antecedents of conditionals:

- (54) a. wa?t b-shouf kalb-een b-xaaf (SyrAr)
 when HAB-see.1sg dog.DUAL HAB-get scared.PERFV.1.sg
 When I see dog.DUAL, I get scared.
 (one dog does not get me scared) (no inclusive dual)
- b. wa?t b-shouf kilaban b-xaaf (SyrAr)
 when HAB-see.1sg dog.PL HAB-get scared.PERFV.1.sg
 'When I see dogs I get scared.' (even one dog gets me scared)
 (Nisrine Al-Zahre, p.c., see ex. 34 ch XX on Arabic dual)

More generally, in Syrian Arabic and in Slovenian duals do not allow neutralisation in the environments that allow inclusive plurals (see chapter XX on Arabic dual, ch XX on Slovenian dual).

As we have seen above, in Biak (Austronesian) different number values behave differently with respect to specificity (Dalrymple and Mofu, 2013). In Biak, nouns

are generally invariant. Number is marked within the noun phrase on determiners and demonstratives distinguishing singular, dual, paucal and plural and for subjects by subject-verb agreement (Dalrymple and Mofu, 2013, 46). Due to the existence of dual and paucal marking, the plural agreement with a bare subject in affirmative sentences implies that the referent of the subject must include at least four individuals (55)-b (Dalrymple and Mofu, 2013, 48)

- (55) a. ikak (oso) d-arek i (Biak)
 snake (one) 3SG-bite PRON.3SG
 A snake bit him. (Dalrymple and Mofu, 2013, 47, ex 27)
- b. Ikak s-arek i.
 snake 3PL.ANIM-bite PRON.3SG
 Snakes bit him. [plural: at least four snakes] (Dalrymple and Mofu, 2013, 47, ex 32)

Dalrymple and Mofu (2013, 49) show that despite the strengthened meaning of plural in (55)-b, plural marking on the verb with a bare subject NP allows number-neutral readings with negation (56)-a and in questions (56)-b:

- (56) a. Ikak s-arek i ba.
 snake 3PL.ANIM-bite PRON.3SG NEG
 Snakes did not bite him. [inclusive: no snakes bit him]
- b. Ikak s-arek i ke ?
 snake 3PL.ANIM-bite PRON.3SG Q
 Did snakes bite him?
 Inclusive interpretation of the plural:
 No. → No snakes bit him.
 Yes. → One or more snakes bit him.
 (Dalrymple and Mofu, 2013, 49, ex 45 & 47)

The data discussed in this section show that different number values may vary with respect to the possibility of inclusive readings and plurals that receive a semantically enriched meaning in affirmative contexts may still allow a number-neutral reading under negation and in other contexts associated with semantic number neutrality.

Sections 4.1, 4.2 and 4.3 show that there are morphological, syntactic and semantic sources of number-neutral reference. As number-neutral reference can have different sources, the study of general number forms of the noun has to control for the interference of semantic and syntactic factors.

5 Conclusion

Nominal number morphology has been studied in great detail in the literature, establishing the different ranges of number values found cross-linguistically and restrictions on the distribution of number marking across nouns and pronouns (see Corbett 2000).

However, the study of nominal number morphology is complicated by the intricate interactions of morphology with syntax and semantics. On the syntactic side, nominal number morphology interacts with definiteness marking and syntactic function (see e.g. limitations on bare subjects with dual and paucal subject agreement in Biak, lack of general number readings for noun-phrases with determiners Rullman and You 2006, for Mandarin).

On the semantic side, certain types of nominal number marking impose semantically specific readings on the nominals (see section 3.3.2) contrasting with other types of nominal number marking that allow inclusive plural readings in certain semantic contexts (section 4.3).

To further our understanding of different types of nominal number morphology, more research into the influence of semantics and syntax on the interpretation of number morphology in different languages has to be undertaken.

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