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Nominal, pronominal, and verbal number in Balinese

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Abstract: We examine the morphology, syntax, and semantics of number in Balinese. All Balinese pronouns are singular, and non-reduplicated common nouns have general number. Regular and associative plural constructions allow for expression of nominal plurality. Common nouns can also be reduplicated, which often (but not always) indicates plural meaning. In the verbal domain, reduplication generally marks pluractionality. We show that reduplication is a derivational process which can imply rather than encode plural meaning. We also explore parallels between nominal and verbal plurality, examining inclusive/exclusive plural readings in nominal and verbal domains, and associative pluractionality in the verbal domain.

Keywords: associative, Austronesian, Balinese, morphology, number, pluractionality, reduplication, semantics, syntax

1 Introduction

We explore the morphology, syntax, and semantics of pronominal, nominal, and verbal number in Balinese (Malayo-Polynesian, Austronesian; 3 million speakers). Balinese nouns have general number, referring to any number of individuals: reduplication expresses plurality in both the nominal and verbal domain, and there is an associative plural construction that also allows the expression of nominal plurality. The Balinese pronoun system is unusual in that all pronouns are singular, in violation of Greenberg's Universal 42; pronominal plurality is expressed via the associative plural construction. We

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demonstrate intriguing similarities between nominal and verbal number, including inclusive plural readings in certain contexts in both the nominal and the verbal domain, and associative plural readings for both plural nouns and plural verbs.

Our work is set against the following theoretical backdrop. In line with work by Wechsler & Zlatić (2003), Corbett (2006, 2012), Kibort (2010), and many others, we distinguish among MORPHOLOGICAL, SYNTACTIC, and SEMANTIC NUMBER. We assume that all languages permit reference to one, two, three, a few, or many individuals or events: this is SEMANTIC NUMBER. Nominal semantic number involves the number of individuals referred to by a nominal phrase, while verbal number, or PLURACTIONALITY, involves event plurality. The term "pluractionality" is sometimes used to refer specifically to iterative plural events involving the same participants. We use "pluractionality" and "verbal number" interchangeably, to refer either to plural events involving the same participant or to distributive plural events involving different participants.

Languages with MORPHOLOGICAL NUMBER exhibit regular morphological differences signalling number. Morphological number generally aligns with semantic number, and indeed, this is the identifying characteristic of morphological number: a particular form is classified as morphologically singular or plural if the form is usually or always used for semantically singular or plural reference.

Number distinctions can be morphologically expressed in different ways: not only by means of morphological distinctions on nouns or different pronominal forms, but also by means of agreement marking on verbs, determiners, or other categories. SYNTACTIC NUMBER is number as it is relevant to syntactic relations, manifested in grammatical agreement systems (Corbett 2000, 2012; Kibort 2010). Importantly, we assume that the relation between morphological and semantic number is lexically specified; we do not assume that morphological and semantic number must be mediated by syntactic number. In particular, languages can signal semantic number by morphological means while lacking syntactic number, since syntactic number is involved only in agreement relations.

This is the situation in Balinese, which lacks syntactic number agreement: the examples in (1) to (3) show that the verb does not vary with the person or semantic number of the subject. In (1), the subject is a singular pronoun or a singular proper name; the Balinese pronominal system is unusual in having only singular forms (Section 3). There are no plural pronouns in Balinese, and the only singular forms in the language, other than singular proper names, are the pronouns.

(1) *Cang/cai/ia/Nyoman ma-kaad.*
1SG/2SG/3SG/Nyoman MID-leave
'I/you/he/Nyoman left.'

In (2a), the subject *panak-ne* 'his child/children' has GENERAL NUMBER, referring to any number of children. In (2b), the reduplicated subject *cerik~cerike* 'children' is semantically plural (see Section 8). The verb (*ma-kaad*) does not vary with the number of the subject.

(2) a. *Panak-ne ma-kaad.*
child-3SG.POSS MID-leave
'His/her child/children left.'
b. *Cerik~cerik-e makejang ma-kaad.*
child-REDUP-DEF all MID-leave
'The children all left.'

Determiners also do not show agreement with the head noun. In (3a) *carang* 'branch' is not reduplicated and is modified by the numeral *abesik* 'one', and so is interpreted as semantically singular. In (3b), *carang~carang* is reduplicated and semantically plural. The same form of the demonstrative *nto* 'that/those' is used in both examples:

(3) a. *Entungang* [*carang tiying-e abesik nto*]$_{NP}$
throw.away branch bamboo-DEF one that
'Throw away just that (one) bamboo branch.'
b. *Tegul* [*carang~carang tiying-e nto*]$_{NP}$.
tie branch-REDUP bamboo-DEF that
'Tie up those bamboo branches.'

Thus, number in Balinese is MORPHOSEMANTIC (Kibort 2010; Corbett 2012): semantic number distinctions are signalled morphologically, but not manifested syntactically as agreement relations. As Kibort (2010: 81) observes, morphosemantic features are necessarily inherent features (Booij 1993, 1996; Corbett 2006), signalling referential semantic distinctions and "not dictated by syntax".

Event plurality is related to, and shows similar patterns as, nominal plurality, and is also coded by means of reduplication (Sections 13, 17, 18). Reduplicated verbs denoting activities express event plurality; this can involve either repeated events with the same participant (reading (i)), or multiple events each with a different participant (reading (ii)):

(4) *Anak-e ngling~ngling ditu.*
person-DEF AV.cry-REDUP there
(i) 'The person was/People were crying repeatedly there.'
(ii) 'The people cried there.'

Pluractionality can also be expressed via the derivational prefix *pa-*, which attaches to punctual intransitive verbs and creates a pluractional predicate denoting a complex event in which multiple participants participate simultaneously (Section 19):

(5) a. *Yeh pa-ketel uli langit gua-ne.*
water PLURACT-drop from ceiling cave-DEF
'Water dropped from the ceiling of the cave (i.e., from multiple sources simultaneously).'
b. *Taluh-e pa-keplug.*
egg-DEF PLURACT-explode
'The eggs exploded (simultaneously).'

On the basis of data involving nominal and verbal number in Balinese, we argue that reduplication as an expression of nominal and verbal plurality in Balinese is derivational, not inflectional, and that there is therefore no inflectional expression of number in Balinese (Section 16). We also explore commonalities between nominal and verbal pluralities in two areas. First, we observe the existence of inclusive plural readings in both nominal and verbal domains: these are readings in which a morphologically plural form refers to any number of individuals, including one (Section 20). A standard example from English is given in (6), where *children* refers to more than one child in (6a) (exclusive plural), but to one or more children in (6b) since the speaker did not see even one child (inclusive plural).

(6) a. *I saw children (in the park).*
b. *I didn't see children (in the park).*

Second, we observe the existence of associative plural readings in the verbal domain, analogous to readings for the associative plural construction for nominals (Section 21).

2 Overview of Balinese grammar

As a prelude to our discussion of Balinese number, we provide a brief overview of the aspects of Balinese grammar that are relevant to our

discussion. For a thorough exposition, see Artawa (1994), Clynes (1995), and Arka (2003).

We describe the Lowland Balinese (Plain Balinese or Bali Dataran) dialect of Balinese in this article, and we use the term (Modern) Balinese for this dialect except when we are discussing differences among modern Balinese dialects. Word order in Balinese is generally SVO. Like many Austronesian languages, it is noted for its complex voice system (Arka 2003): verbs are morphologically marked for Agentive Voice (7a), Undergoer Voice (7b), Passive Voice (7c), or Middle Voice (7d):

(7) a. Agentive Voice (AV): *N-* e.g., *niman* < N-diman [AV-kiss]
b. Undergoer Voice (UV): *Ø-* e.g., *diman* < Ø-diman [UV-kiss]
c. Passive Voice (PASS): *-a/ka-* e.g., *dimana* < diman-a [kiss-PASS]
d. Middle Voice (MID): *ma-* e.g., *madiman* < ma-diman [MID-kiss]

Example (8a) is in Agentive Voice, and the subject is the 1st person singular pronoun *tiang*. Example (8b) is in Undergoer Voice, and the subject is *bawi-ne* 'the pig(s)'.

(8) a. *Tiang numbas bawi-ne punika.*
1SG AV.buy pig-DEF that
'I bought the pig(s).'
b. *Bawi-ne punika tumbas tiang.*
pig-DEF that UV.buy 1SG
'I bought the pig(s).'

The two formally identical suffixes *-ang* and *-in* mark morphological causativization and applicativization. If the stem is an agentive intransitive verb, or a transitive verb with certain semantic properties compatible with the semantics of *-in* (locative/goal-related) or *-ang* (displaced theme/instrument/benefactive-related), then we have the applicative *-in/-ang*. If the stem is a patientive intransitive verb, then the derived *-in/-ang* is causative. The main difference between *-ang* and *-in*, especially clear in the applicative function, is that *-in* is associated with locative-related roles whereas *-ang* is associated with other roles; see Arka (2003: 184–203) for further details. Our discussion of Balinese number will include causative examples with the *-ang* suffix, as shown in (9):

(9) a. *Adin cai-ne sakit.*
younger.sibling 2SG-DEF ill
'Your younger sibling(s) is/are ill.'

b. *Cai nyakit-ang adin cai-ne.*
2SG AV.ill-CAUS younger.sibling 2SG-DEF
'You hurt your younger sibling(s).' (Agentive Voice)
c. *Adin cai-ne sakit-ang cai.*
younger.sibling 2SG-DEF UV.ill-CAUS 2SG
'You hurt your younger sibling(s).' (Undergoer Voice)

We will also discuss applicative constructions with both *-ang* and *-in*. The applicative suffix *-ang* adds a benefactive, recipient, or instrumental object, as shown in (10) and (11):

(10) a. *Ia meli nasi.*
3SG AV.buy rice
'(S)he bought rice.'
b. *Ia meli-ang Nyoman nasi.*
3SG AV.buy-APPL Nyoman rice
'(S)he bought Nyoman rice.'

(11) a. *Ia manteg anak-ne teken buku ento.*
3SG AV.throw child-3SG.POSS with book that
'(S)he threw the book(s) at his/her child.'
b. *Ia manteg-ang buku ento sig panak-ne.*
3SG AV.throw-APPL book that at child-3SG.POSS
'(S)he threw the book(s) at his/her child.'

The applicative suffix *-in* adds a source, goal, or locative object, as shown in (12) and (13):

(12) a. *Ia meli baas sig dagang-e ento.*
3SG AV.buy rice at trader-DEF that
'(S)he bought rice from the trader(s).'
b. *Ia meli-nin dagang-e ento baas.*
3SG AV.buy-APPL trader-DEF that rice
'(S)he bought rice from the trader(s).'

(13) a. *Ia mempen klambi-ne di tas-e.*
3SG AV.place shirt-3SG.POSS in bag-DEF
'(S)he placed his/her shirt(s) in the bag(s).'

b. *Ia* *mempen-in* *tas-e* *klambi.*
3SG AV.place-APPL bag-DEF shirt
'(S)he placed a shirt/shirts in the bag(s).'

3 The Balinese pronominal system

Balinese has a complicated pronominal system in which the use of different pronominal forms depends on the gender and social status of the speaker, addressee, and (for 3rd person forms) the individual referred to, as shown in Table 1. There are only low-caste forms of the 2nd person pronouns (*cai/ci* and *nyai/nyi*), distinguished by the gender of the addressee. The gap for non-low caste forms is filled by the use of caste titles such as *ratu* and *jero*, or family-order names such as *Wayan* (for the first-born) or *Ketut* (for the fourth-born). We do not discuss the social dimension of pronoun use here; for discussion and analysis, see Arka (2005), and for a comparative historical description, Clynes (1989). Our focus here is on the fact that all of the forms given in Table 1 allow only singular reference.

Table 1: Balinese pronominal system: semantically singular forms only.

		Social status of participants			
		Speaker	**Addressee**	**Non-participant**	**Gender**
1SG	*nira*	god			
	gelah	royal			
	titiang	–	highest caste		
	tiang	–	medium caste		
	icang	low caste	low caste		
	kai	–	non-human		
2SG	*cai/ci*		low caste		male
	nyai/nyi		low caste		female
3SG	*ia*		low caste	low caste	
	ipun		non-low caste	low caste	
	dane		medium caste	non-low caste	
	ida		high caste	–	

The lack of number distinctions in the Balinese pronominal system is typologically unexpected, and violates Greenberg's Universal 42 (Greenberg 1966: 96):

> All languages have pronominal categories involving at least three persons and two numbers.

It also runs counter to claims by Moravcsik (1978: 348) concerning number in pronouns and common nouns:

> The presence of plural in the nouns of a particular language always implies its presence in some pronoun.

We will see below that plural number for Balinese nouns is expressed by reduplication.

There are other pronominal systems which are known to violate Universal 42 in not having a singular/plural distinction in the pronominal system. For example, the Pirahã system does not distinguish singular from plural pronouns (Everett 1986: 280–283; Corbett 2000): 1st person *ti*, 2nd person *gíxai*, 3rd person *hiapióxio*. Crucially, however, Pirahã pronouns exhibit GENERAL NUMBER, and allow reference to any number of individuals; the Pirahã form *ti* translates as either 'I' or 'we'. This contrasts with Balinese pronouns, which are singular.

The lack of plural pronouns in Balinese is also surprising within the larger Austronesian family, in which at least a singular vs. plural distinction is generally found. Ross (2005) reconstructs a singular/plural system for Proto-Malayo-Polynesian, the ancestor of Balinese (Table 2). Kawi (Old Javanese) appears to be similar to Balinese in not having plural pronouns or nouns, but marking plurality by conjoining pronouns or by means of quantifiers such as 'many' and 'all' (Becker & Oka 1974: 232).[1] Unlike Balinese, Kawi retains Proto-Malayo-Polynesian plural forms like *kita* and *kami*, though they have shifted to become polite (singular) pronouns.

Table 2: Tentative reconstruction of Proto-Malayo-Polynesian nominative pronouns.

	SG	PL
1INCL	–	*kita, i-ta*
1EXCL	*aku*	*kami*
2	*(i)kahu*	*kamu, ka-ihu*
3	*iya*	*sida*

The conservative dialect of Sembiran Balinese contrasts with the Lowland Balinese variety described in this article in retaining the Austronesian singular

1 Corbett (1999, 2000) notes the unusual pronominal system in Kawi, but incorrectly conflates it with the Pirahã pattern: in fact, the Balinese/Kawi pattern (singular pronouns only) is different from the Pirahã pattern (pronouns with no singular vs. plural distinction).

Table 3: Pronominal system of Sembiran Balinese: semantically singular forms only.

	Free pronoun	Bound genitive pronoun
1SG	*aku, oke, kaka, icang*	*-ku*
2SG	*engko, cahi, nyahi*	*-mu*
3SG	*iya*	*-a*

forms *aku* (1st person) and *engko* (2nd person, < **(i)kahu*), co-existing with Lowland Balinese *cang*, as shown in Table 3.

Lowland Balinese, however, has a much more elaborate stock of 1st person pronouns indicating social status, as shown in (14). Like Lowland Balinese (and unlike Kawi), Sembiran Balinese lacks Austronesian plural forms such as *kita* and *kami*. It appears that the widespread use of the associative plural construction in combination with the use of polite plurals (and polite pronouns in general) has resulted in the demise of the plural forms. This is not unique to Balinese, as other languages such as Javanese and Acehnese have replaced most of the original pronouns in polite speech, and the Balinese system appears to have developed through relexification for reasons of politeness (Alexander Adelaar, personal communication). Balinese underwent intensive Malay and Javanese influence for more than a millennium. The Balinese form *(ti)tiang/cang* is very likely to have originated from a common source **ti (h)aŋ*, whose cognates are also found in Old Javanese and certain varieties of Malagasy (Adelaar & Kikusawa 2014).

4 The associative plural construction with pronouns

Pronominal plurality is expressed by the use of an "associative plural" syntactic construction. Formalizing previous insights, Kiparsky (2014) defines associative plurals as follows:

> Associative plurals apply to a DP denoting an individual to yield the individual that the original individual and the individuals related to it by some contextually salient relation.
>
> $\lambda x.x \oplus z$, for some $z \neq x$ and contextually salient R such that $R(x, z)$

It has been noted that 1st and 2nd person plural pronouns always have an associative plural meaning, referring to a group consisting of the speaker and

associated individuals (1st person plural) or to a group consisting of the addressee and associated individuals (2nd person plural) (Benveniste 1971; Zwicky 1977; Cysouw 2003). No known language has a 1st person plural pronoun that is used only when several people are saying the same thing at the same time (multiple speakers), or a 2nd person plural pronoun which is only used to refer to multiple addressees. It is not surprising, then, that the Balinese associative plural construction is used to express the associative plural meaning that is crosslinguistically associated with 1st and 2nd person plural pronouns.

The Modern Balinese associative plural construction involves the phrase *(ajak) makejang*. In this construction, *makejang* (glossed 'all') is a quantifier; *ajak*, which we gloss as 'with', is a form originating from a verb meaning 'invite'. We show in Sections 6 and 7 that proper names and animate definite noun phrases can also participate in the associative plural construction with *makejang*.

(14) a. *Cai (ajak) makejang*
2SG with all
'you (all); i.e., you with others/associates (all)'
b. *ia (ajak) makejang*
3SG with all
'they (all); i.e., (s)he with others/associates (all)'

The 1st person pronoun in the associative *(ajak) makejang* construction expresses an exclusive plural reading, as shown in (15).

(15) *icang (ajak) makejang*
1SG with all
'we (all); i.e., I with others/associates (all), excluding you'

The exclusive plural reading can also be paraphrased by a standard coordinate construction ('I and (s)he') as in (16a), and a paraphrase conveying an inclusive reading is achieved by a standard coordination construction containing the 1st and 2nd person pronouns, as in (16b). We discuss differences between the associative construction and standard coordination strategies in Section 7.3.

(16) a. *Icang ajak ia lakar kema.*
1SG and 3SG FUT go.there
'She and I will go there.'

b. *Icang ajak ci lakar kema.*
1SG and 2SG FUT go.there
'You and I will go there.'

As we discuss in Section 8, reduplication is a strategy for regular (not associative) plural formation for common nouns. This strategy is not available for pronouns; the examples in (17), with reduplicated pronouns, are unacceptable.

(17) a. **Ia~ia gede.*
3SG-REDUP big
[Intended meaning:] 'They are big.'
b. **Cang~cang gede.*
1SG-REDUP big
[Intended meaning:] 'We are big.'

Evidence from pluractional predicates (Sections 13 and 19) confirms our observation that Balinese pronouns do not have general number or plural reference. One type of pluractionality in Balinese is expressed as reduplication of the verbal or adjectival predicate. Reduplication marks the plurality of the state or event; for non-iterable events, reduplication indicates plurality of one or more of the arguments of the predicate, what we call "participant plurality" in Section 13. With a reduplicated predicate which requires a plural subject, as in (18) and (19), the associative plural construction is required:

(18) a. **Ia gede~gede.*
3SG big-REDUP
b. *Ia (ajak) makejang gede~gede.*
3SG with all big-REDUP
'They are (all) big.'

(19) a. *Ci belog sajan.*
2SG stupid very
'You (SG) are very stupid.'
b. **Ci belog~belog sajan.*
2SG stupid-REDUP very
c. *Ci ajak makejang belog~belog sajan.*
2SG with all stupid-REDUP very
'You (all, PL) are very stupid.'

5 Variation in the associative plural pronoun construction

When the *ajak makejang* phrase marking the associative plural construction immediately follows the pronoun, *ajak* is optional, as shown in (14). However, if *ajak makejang* is floated to another position and there is no other quantifier present, *ajak* is obligatory and cannot be omitted.[2]

(20) a. *Buin mani cai (ajak) makejang* with *teka nah*.
again tomorrow 2SG with all tomorrow 2SG come PART
'Tomorrow you (all) with others come again, okay?'
b. *Buin mani cai teka ajak/*Ø makejang nah*.
again tomorrow 2SG come with all PART
'Tomorrow you (all) with others come again, okay?'
c. *Ajak/*Ø makejang buin mani cai teka nah*.
With all again tomorrow 2SG come PART
'Tomorrow you (all) with others come again, okay?'

In the presence of numeral modification with *ajak, makejang* can float away (21); we discuss the general associative construction with numerals and quantifiers other than *makejang* in Section 7:

(21) a. [*Cang ajak lima makejang*] *ibi mlaib*
1SG with five all yesterday run
'All of us in a group of five ran away yesterday.'
b. [*Cang makejang ajak lima*] *ibi mlaib*
1SG all with five yesterday run
'All of us in a group of five ran away yesterday.'
c. [*Cang ajak lima*] *ibi makejang mlaib*
1SG with five yesterday all run
'All of us in a group of five ran away yesterday.'
d. [*Cang ajak lima*] *ibi mlaib makejang*
1SG with five yesterday run all
'All of us in a group of five ran away yesterday.'

We will see in subsequent sections that pronouns are unusual in allowing elision of *ajak* in the associative construction: *makejang* (without *ajak*) marks regular

2 Section 7.2 provides further discussion of quantifier float.

plurality and not associative plurality for common nouns, and the associative construction with common nouns and proper names requires the presence of *ajak* in Modern Balinese. In fact, for speakers of more conservative dialects of Balinese, *ajak* is still required in the associative construction with 1st and 2nd person pronouns, though not for 3rd person pronouns, even when *ajak makejang* immediately follows the pronoun (as observed by Ratih Oktarini, personal communication).

The optionality of *ajak* with *makejang* in Modern Balinese is intriguing, and raises a potential alternative analysis of Balinese pronominal plurality: that *makejang* has been grammaticalized as a pronominal plural marker, and thus that *icang makejang* and *cai makejang* are in fact morphologically complex 1st and 2nd person plural pronouns.[3] On this view, Balinese does not in fact violate Greenberg's Universal 42. This view gains plausibility from the observation that the grammaticalization of the quantifier 'all' as a plural marker has been reported in other languages (Heine & Kuteva 2002: 36).

However, we do not believe that this is the correct analysis for Modern Balinese, although the pronoun+*makejang* combination may be in the initial phase of grammaticalizing into a plural pronoun in some dialects. First, for speakers of conservative dialects, *ajak* is obligatory for 1st and 2nd person pronouns, meaning that in these dialects the grammaticalization process is not fully underway. Second, the pronoun+*ajak makejang* construction (with *ajak*) and the pronoun+*makejang* construction (without *ajak*) are syntactically complex, resembling the corresponding phrasal structures with common nouns and proper names, and this resemblance would remain unexplained if we treated associative plural structures with pronominal heads as grammaticalized plural pronouns. Third, *ajak makejang* can float away from the pronoun, and this is even possible for bare *makejang* if there is an additional *ajak*+quantifier phrase present (see (21)), meaning that if the pronoun+*(ajak) makejang* phrase is analysed as a grammaticalized personal pronoun, it would have to be treated as a periphrastic pronominal construction with the syntactic status of a (possibly discontinuous) phrase, a cross-linguistically unusual situation. In light of these observations, we stand by our claim that Balinese indeed provides counterevidence to Greenberg's Universal 42.

6 Proper nouns and associative plurality

Proper nouns can also participate in the associative plural construction with *ajak makejang*. With proper nouns, *ajak* is required irrespective of whether

3 We are grateful to an anonymous reviewer for raising this issue.

the *ajak makejang* phrase appears within its NP as in (22) or floats away as in (23).

(22) *Wayan ajak/*Ø makejang lakar kema.*
Wayan with all FUT go.there
'Wayan together with all of his associates will go there (all including Wayan will go there).'

(23) a. *Wayan lakar kema ajak/*Ø makejang.*
Wayan FUT go.there with all
'Wayan together with all of his associates will go there.'
b. *Ajak/*Ø makejang Wayan lakar kema.*
With all Wayan FUT go.there
'Wayan together with all of his associates will go there.'

Proper names cannot be reduplicated to indicate plurality; there is no sensible reading for (24), in which the proper name *Wayan* is reduplicated.

(24) **Wayan~Wayan lakar kema.*
Wayan~REDUP FUT go.there

7 The associative construction with other quantifiers

7.1 Quantifier with/without *ajak*

The associative plural construction *ajak makejang* is a particular instance of a more general associative construction with *ajak*, in which other quantifiers can be used, including *liu* 'many', *bedik* 'few', and numerals. In the general associative construction with a quantifier other than *makejang* modifying a pronoun, *ajak* is always required; recall that for at least some speakers, *ajak* is omissible immediately after a pronoun and before *makejang*.

(25) a. *icang ajak/*Ø liu*
1SG with many
'many of us'
b. *cai ajak/*Ø bedik*
2SG with few
'few of you'

c. *ia ajak/*Ø dadua*
3SG with two
'(s)he and another (person), they two' [Not: '(s)he and two others']

As with the associative plural *ajak makejang* construction, *ajak* is required in the general associative construction with a proper name (26).

(26) a. *Wayan ajak/*Ø liu ngalih Ketut.*
Wayan with many AV.look.for Ketut
'Many people including Wayan were looking for Ketut.'
b. *I Bapa ajak/*Ø telu ulung ditu.*
ART Father with three fall there
'Three people including Father fell off there.' [Not: 'Father with three other people fell off there.']

With common noun phrases, *ajak* is not required.

(27) a. *Nyaman~nyaman-ne (ajak) liu teka.*
relative-REDUP-3SG.POSS with many come
'Many of his/her relatives came.'
b. *Ada bojog (ajak) liu/dadua ditu.*
exist monkey with many/two there
'There are many/two monkeys there.'

However, there is a meaning difference associated with the presence or absence of *ajak*. With *ajak*, the examples in (27) have an associative reading, allowing reference to associated individuals not satisfying the description of the noun phrase. Without *ajak*, this is not possible. More accurate paraphrases of examples (27a) and (27b) with and without *ajak* are as follows:

(28) a. *Nyaman~nyaman-ne liu teka.*
relative-REDUP-3SG.POSS many come
'Many of his/her relatives came (and no other people).'
b. *Nyaman~nyaman-ne ajak liu teka.*
relative-REDUP-3SG.POSS with many come
'His/her relatives came with many other people, possibly including neighbours, friends, etc.'

(29) a. *Ada bojog liu/dadua ditu.*
exist monkey many/two there
'There are many/two monkeys there (and no other animals).'

b. *I Bojog ajak liu/dadua ditu*
ART monkey with many/two there
'The many/two individuals including the monkey were there.' [acceptable in a fairy tale about a monkey and other animals]

Ajak also requires an animate, typically human, participant, as we discuss below.

7.2 Quantifier float, the associative construction, and regular plural *makejang*

Arka (2003: 42–69) shows that *ajak*+quantifier can float from any term argument. All three arguments of the verb *baang* 'give' are terms; (30) shows that all three can launch a floated quantifier *ajak makejang/liu/dadua*:

(30) *Panak-ne baang tiang ia ibi ajak makejang/liu/dadua.*
child-3SG.POSS UV.give 1SG 3SG yesterday with all/many/two
(iii) (i) (ii)
(i) 'All/Many/Two of us gave him/her his/her child(ren) yesterday.'
(ii) 'I gave all of them/many of them/two of them their child(ren) yesterday.'
(iii) 'I gave him/her all/many/two of his/her children yesterday.'

Example (30) also shows that floated quantifiers, including not only associative plural *ajak makejang* but also *ajak liu* and *ajak dadua*, can be launched by pronouns and common noun phrases. Names can also launch floated quantifiers; in reading (i) of example (31), the floated quantifier is associated with Wayan, while in reading (ii) it is associated with the 1st person pronoun *cang*.

(31) *Wayan tepukin cang ibi ajak makejang/liu/dadua.*
Wayan UV.see 1SG yesterday with all/many/two
(i) (ii)
(i) 'I saw all/many/two of the people including Wayan.'
(ii) 'All of us/many of us/two of us saw Wayan.'

As discussed above, a floated quantifier in the associative plural construction requires *ajak* with pronouns (20) and names (23); *makejang* may appear without *ajak* only immediately following a pronoun, and is disallowed with proper names. In contrast, regular plural *makejang* can be floated from a common noun phrase:

(32) a. *Ia nyemak nyuh-e ibi makejang/liu/dadua*.
3SG AV.take coconut-DEF yesterday all/many/two
'S/he took all/many/two coconuts yesterday.'
b. *Makejang/liu/dadua ibi nyuh-e jemak=a*.
all/many/two yesterday coconut-DEF UV.take=3SG
'S/he took all/many/two coconuts yesterday.'
c. *Ibi nyuh-e jemak=a makejang/liu/dadua*.
Yesterday coconut-DEF UV.take=3SG all/many/two
'S/he took all/many/two coconuts yesterday.'

For detailed discussion of quantifier float, see Arka (2003).

7.3 Animacy and definiteness constraints in the associative construction

The associative construction *ajak*+numeral/quantifier is possible only for animate NPs, and *makejang* additionally imposes a definiteness constraint.

Example (33) illustrates the associative construction with the quantifiers *makejang, liu*, and *dedua*. The example has more than one interpretation because it contains two animate and definite NPs: the patient NP *gurune* 'the teacher' (reading (i)) and the unexpressed imperative agent 'you' (reading (ii)). In examples of this type, there is a tendency for *ajak* to modify the agentive participant. Thus, while both readings are possible in (33), reading (i) is more likely than reading (ii).

(33) *Alih guru-ne ajak makejang/liu/dedua ma!*
UV.find teacher-DEF and all/many/two PART
(i) 'All/Many/Two of you find the teacher(s)!'
(ii) 'You find all/many/two people including the teacher!'

The associative construction is impossible with an inanimate NP (even a definite inanimate). Example (34a) is unacceptable on the reading that *ajak makejang* pluralizes the patient NP *cangkire* 'the cup'. Pluralization without *ajak* must be used instead, as in (34b). Example (34c) shows that there is an acceptable analysis of the string in (34a) in which the agent of the imperative sentence is pluralized.

(34) a. **Jemak* [*cangkir-e ajak makejang*].
UV.take cup-DEF and all
[Intended meaning:] 'Take the cup(s) and associated items.'

b. *Jemak* [*cangkir-e makejang*].
UV.take cup-DEF all
'Take (all of) the cups.'
c. *Jemak* [*cangkir-e*] *ajak makejang*.
UV.take cup-DEF and all
'You all take the cup(s).'

Numeral modification with *ajak* is also impossible for inanimate NPs, as shown in (35a), where the numeral modifies the (animate and definite) agent only. Without *ajak*, as in (35b), the numeral may be interpreted as modifying *cangkir* 'cup'.

(35) a. *Jemak cangkir-e ajak dadua*.
UV.take cup-DEF with two
'You two, take the cup(s).' [Not: 'You take the two cups.']
b. *Jemak cangkir-e dadua*.
UV.take cup-DEF two
'Take the two cups.'

Makejang, with or without *ajak*, differs from other quantifiers in that it modifies only NPs that are definite. Example (36), with no definiteness marker on *guru* 'teacher', has only a reading where the agent of the imperative is pluralized, and lacks a reading on which the indefinite object 'teacher' is pluralized.

(36) *Ngalih guru ajak makejang ditu ma!*
AV.find teacher and all there PART
'All of you find a teacher/teachers there!' [Not: 'You find all people including a teacher there!']

The *ajak* associative construction with other quantifiers requires animacy, but does not impose a definiteness constraint. In existential structures with animate indefinite NPs, *ajak* is allowed (and is optional) with *liu* 'many' or numeral *dua* 'two', but *makejang* is disallowed. (For simplicity in (38), the associative plural meaning in relation to Nyoman, possible with *ajak* in both (38a) and (38b), is not shown.)

(37) *Ada bojog (ajak) liu/dadua/*makejang ditu*.
exist monkey with many/two/all there
'There are many/two/*all monkeys there.'

(38) a. *Nyoman ningalin* [*cangkir (*ajak) liu/dadua/*makejang*].
Nyoman AV.see cup with many/two/all
'Nyoman saw many/two/*all cups.'
b. *Nyoman ningalin* [*bojog (ajak) liu/dadua/*makejang*].
Nyoman AV.see monkey with many/two/all
'Nyoman saw many/two/*all monkeys.'

Inanimate indefinite NPs disallow both *ajak* and *makejang*, while allowing other quantifiers such as *liu* and *dadua*:

(39) *Ada piring (*ajak) liu/dadua/*makejang duur meja-ne*.
exist plate with many/two/all top.of table-DEF
'There are many/two/*all plates on the table(s).'

7.4 The associative construction and standard coordination

Although both constructions involve the form *ajak*, the general associative construction, illustrated in (40a), must be distinguished from standard coordination, illustrated in (40b).

(40) a. Associative construction:
Cai ajak makejang
2SG with all
'you (all); i.e., you with others/associates (all)'
b. Coordination:
*cai ajak/*Ø ia/Wayan*
2SG and 3SG/Wayan
'you and (s)he/Wayan'

We gloss *ajak* in coordination as 'and' to signal the standard coordination structure as opposed to the associative construction.

There are several differences between the associative construction and standard coordination. The first difference can be seen most clearly in the translation of the examples in (41).

(41) a. *ia ajak/*Ø dadua*
3SG with two
'(s)he and another (person), they two'
b. *I Bapa ajak/*Ø telu ulung ditu*.
ART Father with three fall there
'Three people including Father fell off there.'

c. *Ada bojog ajak dadua ditu.*
exist monkey with two there
'There are two monkeys there.'

In the associative construction, the referent of the head is a member of the group referenced in the *ajak* phrase; in (41b), *I Bapa* is a member of a group with three members. In contrast, the conjuncts in standard coordination, exemplified in (40b), are not in a coreferential or inclusory relationship. They refer to independent individuals or groups, and the referent of the coordinate structure is the group composed of all of the conjuncts.

The second difference between the associative construction and standard coordination is that standard coordination constructions can contain more than two conjuncts:

(42) *Wayan ajak Nyoman ajak ci*
Wayan and Nyoman and you
'Wayan and Nyoman and you'

In contrast, the associative construction contains only the head and the *ajak* phrase.

The third difference is that the associative construction is possible only for animates, as shown in Section 7.3. In contrast, ordinary coordination with *ajak* is possible for inanimates and/or indefinite NPs. The examples in (43) show that coordination of inanimates is possible, both for definites and indefinites:

(43) a. Coordination of definite inanimate NPs:
Jemak [*cangkir(-e) ajak sendok-e*] *ditu* ma!
UV.take cup(-DEF) and spoon-DEF there PART
'Take the cup(s) and the spoon(s) over there.'
b. Coordination of indefinite inanimate NPs:
Nyemak [*cangkir ajak sendok*] *ditu ma!*
AV.take cup and spoon there PART
'Take cups and spoons/a cup and a spoon there!'

Coordination of definite and indefinite animates is also possible:

(44) a. Coordination of definite animate NPs:
Alih [*guru(-ne) ajak murid-e*] *ditu ma!*
UV.find teacher(-DEF) and student-DEF there PART
'Find the teacher(s) and student(s) there.'

b. Coordination of indefinite animate NPs:
Ngalih [*guru ajak murid*] *ditu ma!*
AV.find teacher and student there PART
'Find a teacher and a student/teachers and students there.'

8 Common nouns and number

Non-reduplicated common nouns have GENERAL NUMBER, and can refer to any number of individuals. In (45), non-reduplicated *cicing* refers to any number of dogs:

(45) *Cicing-ne nto galak.*
dog-3SG.POSS DEF aggressive
'His/her dog(s) is/are aggressive.'

Besides the regular plural *makejang* construction, plural reference for common nouns can also be achieved through reduplication. In (46), reduplicated *cicing~cicing* refers to more than one dog:

(46) *Cicing~cicing-ne nto galak.*
dog-REDUP-3SG.POSS DEF aggressive
'His/her dogs are aggressive.' [Not: 'His/her dog is aggressive.']

Multiple plural marking strategies can co-occur, as in (47), with reduplication and *(ajak) makejang*. Multiple marking of plurality is pragmatically motivated, giving more emphasis to the plurality. Example (47c) involves partial reduplication, which gives rise to a 'different kinds of' reading, as we discuss in Section 11.

(47) a. *celeng~celeng-ne makejang*
pig-REDUP-3SG.POSS all
'every single one of his/her pigs'
b. *Nyaman~nyaman-ne (ajak) makejang/liu teka.*
relative-REDUP-3SG.POSS (with) all/many come
'All/many of his/her relatives came.'
c. *De~dar-an (*ajak) makejang/liu usak.*
PARTREDUP-eat-NMLZ with all/many rotten
'All/a lot of the food (of different kinds) is rotten.'

Mass nouns can also be reduplicated, with the meaning 'bits/portions/parts of specific X':

(48) *Alih madun~madun-ne!*
UV.search honey-REDUP-3SG.POSS
'Take its honey parts!' [Context: in search of honey from a beehive]

Mass nouns with definite marking can also appear with *makejang*, with or without reduplication. With a non-reduplicated noun and *makejang*, there is no partitioning of the mass noun into portions:

(49) a. *Lengis~lengis-ne (makejang) jemak.*
oil-REDUP-DEF all UV.take
'Take (all of) the oil portions.'
b. *Lengis-ne makejang ilang.*
oil-3SG.POSS all missing
'All of his/her petrol is gone/stolen.'

9 Nominal pluralization via modifier reduplication

Indirect pluralization of nominals can also be achieved by reduplicating a modifier of an NP. Consider (50), where *cenik* 'small', *tegeh* 'tall', and *gede* 'big' are all modifiers in their respective NPs. Individual-level reduplicated modifiers encode plural states, and so reduplicated modifiers mark the plurality of their respective noun heads, even though the nouns (e.g., *umah* 'house' and *anak* 'person') are unmarked.

(50) a. [*Umah-ne cenik~cenik nto*] *suba adep-a.*
house-3SG.POSS small-REDUP that PRF sell-PASS
'His/her small houses have been sold.'
b. *Tiang ningalin* [*anak gede~gede*].
1SG AV.see person big-REDUP
'I saw big people.'
c. *Tiang ngelah* [*punyan poh tegeh~tegeh*].
1SG AV.have tree mango tall-REDUP
'I have very tall mango trees.'

Pluralization by means of noun reduplication with or without modifier reduplication is possible, without a clear difference in meaning. However,

while all of the sentences in (51) mean the same thing, modifier reduplication in (51b) is the most natural way of expressing the intended meaning:

(51) a. *Ada botol~botol luung ilang.*
exist bottle-REDUP good missing
'There're good bottles missing.'
b. *Ada botol luung~luung ilang.*
exist bottle good-REDUP missing
'There're good bottles missing.'
c. *Ada botol~botol luung~luung ilang.*
Exist bottle-REDUP good-REDUP missing
'There're good bottles missing.'

Modification by an individual-level adjunct denoting an intrinsic or constant property of the entity, as in (50) and (51), unambiguously indicates nominal plurality. For a nominal modified by an episodic adjunct, explicit nominal pluralization can only be signalled by means of noun reduplication. This is exemplified in (52b, c) below, where reduplicating the noun head explicitly encodes nominal plurality. Modifier reduplication in (52a) only encodes temporal plurality (i.e., repeated events of flashing); the phrase *lampu kebyah~kebyah* has general number, and refers to one or more repeatedly flashing lamps.

(52) a. *Ada lampu kebyah~kebyah ditu.*
Exist lamp flash-REDUP there
'There was a flashing lamp/were flashing lamps there.'
b. *Ada lampu~lampu kebyah~kebyah ditu.*
exist lamp-REDUP flash-REDUP there
'There were flashing lamps there (each was flashing repeatedly).'
c. *Ada lampu~lampu ma-kebyah ditu.*
Exist lamp-REDUP MID-flash there
'There were flashing lamps there (each flashed once).'

Modifiers with pluractional *pa-* also encode nominal plurality, with or without a reduplicated noun:

(53) a. *Ada lampu(~lampu) pa-kebyah ditu.*
exit lamp(-REDUP) PLURACT-flash there
'There were lamps flashing there.'
b. *Tiang ningalin anak(~anak) baneh pa-jongkok ditu.*
1SG AV.see person(-REDUP) strange PLURACT-squat there
'I saw strangers squatting there.'

10 Reduplication and numeral modification

While expressing plurality, the plural meaning expressed by nominal reduplication is not simply 'more than one': it is typically associated with unspecified or relatively large plural. Numeral and quantifier modification of reduplicated nouns is permitted in Balinese provided that the modification is consistent with this meaning of reduplication, as seen in (54).

(54) a. *Muanin~muanin-e (ajak) satus kema.*
male-REDUP-DEF (with) 100 go.there
'One hundred males went there.'
b. *Ketut meli umah~umah lung satus/liu/bedik/?dadua.*
Ketut AV.buy house-REDUP good 100/many/few/two
'Ketut bought 100/many/few/?two good houses.'

As shown in (54b), numeral modification by a small number such as *dadua* 'two' may downgrade the acceptability of the sentence. Similarly, (55a) is preferred to (55b).[4]

(55) a. *Nyaman-ne (ajak) dadua teka.*
relative-3SG.POSS (with) two come
'His/her two relatives came.'
b. *?Nyaman~nyaman-ne (ajak) dadua teka.*
relative-REDUP-3SG.POSS (with) two come
'His/her two relatives came.'
c. *Nyaman~nyaman-ne (ajak) slae teka.*
relative-REDUP-3SG.POSS (with) 25 come
'His/her twenty-five relatives came.'

The collective prefix *maka-* can be used with a numeral to form a quantifier translatable as 'both'/'all N'. Singular and reduplicated nouns are unacceptable with the collective prefix+numeral *dadua* 'two':

(56) a. *?*Ketut maka-dadua teka.*
Ketut COLL-two come

4 With an intonational break after *nyaman~nyaman* 'relatives', there is an acceptable analysis of (61b) which involves partitive reference to two of the person's many relatives: *Nyaman~nyaman-ne, (ajak) dadua teka* 'Two of his/her many relatives came'.

b. *Ketut ajak Nyoman maka-dadua teka.*
Ketut with Nyoman COLL-two come
'Ketut and Nyoman both came.'
c. *Nyaman-ne maka-dadua teka.*
relative-3SG.POSS COLL-two come
'Both of his/her relatives came.'
d. *??Nyaman~nyaman-ne maka-dadua teka.*
relative-REDUP-3SG.POSS COLL-two come
[Intended meaning:] 'Both of his/her relatives came.'

With a large number such as *satus* '100', a reduplicated noun is acceptable:

(57) *Nyaman~nyaman-ne maka-satus teka.*
relative-REDUP-3SG.POSS COLL-100 come
'All of his/her 100 relatives came.'

We will see in Section 15 that numeral modification of reduplicated verbal predicates is also allowed in Balinese, though constraints on numeral modification are not the same for reduplicated verbs as for reduplicated nouns.

11 Full, partial, and foot reduplication and nominal plurality

So far, our discussion of reduplication marking plurality in common nouns and their modifiers has involved FULL REDUPLICATION, where the entire base morpheme is copied. In fact, there are three types of reduplication in Balinese (Clynes 1995: 149–175): full reduplication, PARTIAL REDUPLICATION (where part of the base morpheme, e.g., the CV material, is copied), and FOOT REDUPLICATION (where the stem and the initial material from the following suffix are copied).

As we have seen, plurality in common nouns is optionally encoded by full reduplication, often accompanied by the definite suffix *-e* or the possessive *-ne* as in (58).

(58) Full reduplication:
a. *umah* 'house' (N) *umah~umah* [house-FULLREDUP] 'houses'
b. *kedis* 'bird' (N) *kedis~kedis* [bird-FULLREDUP] 'birds'
c. *sebun* 'nest' (N) *sebun~sebun* [nest-FULLREDUP] 'nests'

d.	*don* 'leaf' (N)	*don~don-e* [leaf-FULLREDUP-DEF] 'the leaves'
e.	*carang* 'branch' (N)	*carang~carang-e* [branch-FULLREDUP-DEF] 'the branches'
f.	*kulit* 'skin' (N)	*kulit~kulit-ne* [skin-FULLREDUP-3SG.POSS] 'its/his/her/their skin parts'
g.	*batu* 'stone' (N)	*batun~batun-ne* [stone-FULLREDUP-3SG.POSS] 'its/their stone parts'

Some reduplicated nouns do not have non-reduplicated counterparts. For example, *cerik~cerik-e* [small-REDUP-DEF] 'children' is a semantically plural noun with no singular counterpart: there is no form **cerik-e* [small/child-DEF]. Singular 'child' is expressed by a phrase: *anak cerik* 'person small'.

Nominal plurality can also be encoded by partial or full reduplication of verbal roots with the *-an* nominalizer, as in (59). The derived nominals in (59) refer to a plurality of entities bearing the patient/theme role associated with the verbal root.

(59) Partial or full reduplication and *-an* nominalization (verbal root):

a.	*daar* 'eat' (V)	*de~dar-an* (N) [PARTREDUP-eat-NMLZ] 'things of different sorts that are eaten'
b.	*plajah* 'learn' (V)	*pe~plajah-an* (N) [PARTREDUP-learn-NMLZ] 'different things that are learnt'
c.	*-igel* 'dance' (V)	*igel~igel-an* (N) [FULLREDUP-dance-NMLZ] 'different manners/ways of dancing'
d.	*-adep* 'sell' (V)	*adep~adep-an* (N) [FULLREDUP-sell-NMLZ] 'things sold'
e.	*njek* 'step (with feet)' (V)	*njek~njek-an* (N) [FULLREDUP-step-NMLZ] 'footprints'/ 'different ways of stepping'

Partial reduplication is also related to a 'kind' or 'type' plural meaning, which may or may not be also accompanied by *-an* as in (60). Thus, there is a contrast between *batu~batu-ne* 'the stones' (full reduplication: multiple stones of a similar type, as in (58g)) vs. *bebatuan* 'different kinds of stones' (60a).[5]

5 An anonymous reviewer points out that these readings for partially reduplicated nouns in Balinese resemble the readings which Newman (2000: 458) and Součková (2011) refer to as "pseudoplurals of diversity" in Hausa, also expressed via reduplication; Součková (2011: 13) gives the following triple: *mafařkii* 'dream'; *màfàřkai/mafařkookii* 'dreams'; *màfàřke-màfàřke* 'all kinds of dreams'.

(60) Partial reduplication, with/without *-an* (non-verbal root):
a. *batu* 'stone' (N) *be~batu-an* (N) 'different kinds of stone'
b. *gae* 'work' (N) *ge~gae-n* (N) 'different kinds of work'
c. *pineh* 'thought' (N) *pe~pineh* (N) 'different kinds of thought'

Foot reduplication copies the stem and some following material, e.g., the nasal ligature (LIG) as shown in (61), and also expresses plurality. It is morphophonologically motivated (Clynes 1995: 80), and can have a full reduplication counterpart with no difference in meaning; e.g., *oka~oka-n-ne* and *okan~oka-n-ne* both mean 'his/her children' (61b).

(61) Foot reduplication (examples from Clynes (1995: 159), glosses modified):

a.	*be-n-ne*	*ben~ben-ne*
	fish-LIG-3SG.POSS	fish.LIG-REDUP-3SG.POSS
	'his/her fish (SG or PL)'	'his/her fish (PL)'
b.	*oka-n-ne*	*okan~okan-ne*
	child-LIG-3SG.POSS	child.LIG-REDUP-3SG.POSS
	'his/her child/children'	'his/her children'
c.	*ng-liu-n-ang*	*ngliun~ngliun-ang*
	AV-many-LIG-CAUS	AV.many.LIG.REDUP-CAUS
	'multiply'	'increasingly multiply'

In Section 14 we explore these three types of reduplication in the verbal domain, and in Section 16 we provide evidence that Balinese nominal and verbal reduplication must be treated as derivational and not inflectional.

12 Interim summary: Nominal plurality

In sum, nominal pluralization in Balinese is achieved by means of two strategies, depending on the nominal types. The *(ajak) makejang*/numeral/quantifier associative construction is the only strategy applicable to pronouns (all of which are singular in Balinese) and proper names. Common nouns, which have general number in Balinese, are pluralized through direct noun or modifier reduplication. They can also participate in the associative construction with *ajak makejang*/numeral/quantifiers. There are some complications due to animacy and definiteness constraints: the presence of *ajak* requires animate NPs, and *makejang* additionally imposes a definiteness constraint.

Table 4: Nominal pluralization in Balinese.

	Noun or modifier reduplication	***makejang***	***ajak makejang***	***ajak* (numeral/ quantifier)**
Pronouns				
Proper names				
Animate definite nouns			associative plural	
Animate indefinite nouns				
Inanimate definite nouns		regular plural		
Inanimate indefinite nouns				
Mass nouns		(no plural meaning)		

A summary of possibilities for nominal plural expression is given in Table 4. The greyed-out areas represent unacceptable combinations.

We now turn to event plurality and its expression by verbal reduplication.

13 Event plurality: Distinguishing events

Pluractionality, or verbal number, involves specification of event plurality, usually by means of verbal marking (Cusic 1981; Lasersohn 1995; Wood 2007; Henderson 2012).

13.1 Pluractional semantics

According to Lasersohn's (1995: 256) classic definition, pluractionality involves a multiplicity of events which can be differentiated in terms of temporal, spatio-temporal, or participant multiplicity.

(62) $V\text{-}PA(X) \Leftrightarrow \forall e,e' \in X[P(e) \,\&\, \neg\, f(e) \circ f(e')] \,\&\, \mathbf{card}(X) \geq n$

According to this definition, verbs are predicates of events. *V-PA*, a verb meaning *P* with pluractional marking, holds of a set of events *X* with members *e*, *e′* if and only if:

(i) each event *e*, *e′* in *X* is a *P* event;
(ii) there is no *f*-type overlap between any two events in *X*, where *f* is defined as in (63); and
(iii) there are at least *n* events, where *n* is some contextually salient minimal number of events.

Lasersohn proposes that the identity of f distinguishes the members of the set of events X: members of the set of events can be distinguished by having different running times (temporal plurality), having different spatio-temporal traces (spatio-temporal plurality), or having different participants (participant plurality):

(63) a. Temporal plurality: f is τ, where $\tau(e)$ is the running time of e.
b. Spatio-temporal plurality: f is K, where $K(e)$ is the spatio-temporal trace of e.
c. Participant plurality: f is θ, where $\theta(e)$ is a selected thematic role of e.

We will also refer to participant plurality as indirect pluralization, as this happens not only with verbal predicates but also with nominal modifiers, as discussed in Section 9.

We will see that for Balinese partial verbal reduplication, members of the set of events X can also be distinguished by their manner. One way of making this explicit is by adopting Rett's (2013) proposal that a predicate is contextually associated with a manner via a relation $\mathbb{R}$ holding between an event e and a free manner variable m encoding a manner in which e is conducted.[6] As an example, Rett notes that in a context in which John is dancing both gracefully and barefoot, m ranges over the manners 'gracefully' and 'barefoot'.

We might then propose to interpret manner plurality as requiring each event in X to differ in some manner, with $f(e)$ defined as returning one of the manners of e as specified by $\mathbb{R}$. However, this condition is probably too weak. For example, consider a situation where the events in the set X consist of John dancing gracefully and barefoot; if we choose the manner 'gracefully' for the first event and 'barefoot' for the second event, the first and second events are incorrectly characterized as differing in manner.

We could instead define $f(e)$ as associating each event with the collection of its manners as specified by $\mathbb{R}$, and require non-overlap of the set of manners for each event in X. This condition is probably too strong, since it disallows any overlap in manner of the events in X. Consider the examples in (64). Example (64a) involves full reduplication, with all of the circling actions conducted in the same manner. Example (64b) involves partial (manner) reduplication, and requires only that at least two manners of circling are involved in the pluractional circling event. In other words, it is possible for half of the group of soldiers to conduct the action in one manner, and half in another manner.

6 We are grateful to an anonymous reviewer for helpful discussion of this point.

(64) a. *Tentara-ne ajak liu ma-lincer~lincer ditu.*
soldier-DEF with many MID-circle-REDUP there
'Many soldiers circled around there (all did the circling in the same manner).'
b. *Tentara-ne ajak liu ma-lincar~lincer ditu.*
soldier-DEF with many MID-circle-PARTREDUP there
'Many soldiers circled around there (one group did the circling in one manner, e.g., in one direction, and the other group in the opposite direction).'

We leave a complete formal definition of manner plurality for further research, since this will involve clarification of basic issues such as the status of manners as semantic objects as well as the identification of events as having the same or different manners; see Rett (2013) for relevant discussion.

13.2 Ergative patterning

Crosslinguistically, pluractionality is known to exhibit ergative patterning (Durie 1986), in that the target of participant pluractionality is S/P; Balinese conforms to this generalization. For example, the irreversible one-place state predicate *mati* 'dead' (65a) involves participant pluractionality for S (reading (i)). In the causative transitive counterpart (65b), participant pluractionality targets the P argument, which in this case is realized as subject (reading i).

(65) a. *Celeng-e mati~mati.*
pig-DEF dead-REDUP
(i) 'The pigs are dead.'
(ii) [Not: 'The pig is dead.']
b. *Celeng-e mati-ang~mati-ang cang.*
pig-DEF UV.dead-CAUS-REDUP 1SG
(i) 'I killed pigs.'
(ii) [Not: 'I killed a pig.']
(iii) [Not: 'I and my associate(s) killed the pig(s).']

In Section 17.7, we discuss pluractionality and the applicative construction, and we show that the target of participant pluractionality is the theme argument: the applied argument of an applied intransitive verb (66), and the base object (not the applied object) of an applied transitive verb (67).

(66) *Nyoman negak~negak-in jaran ditu.*
Nyoman AV.sit-REDUP-APPL horse there
(i) 'Nyoman was riding a horse there repeatedly.' [temporal plurality]
(ii) 'Nyoman was riding horses there.' [participant plurality]

(67) a. *Anak-e nto meli~meli celeng.*
person-DEF that AV.buy-REDUP pig
'That person bought pigs/#a pig.'
b. *Anak-e nto meli-ang~meli-ang tamu-ne celeng.*
person-DEF that AV.buy-REDUP-APPL guest-DEF pig
'That person bought pigs/#a pig for his guest(s).'

13.3 Pluractional distributivity

In the pluractional typology of Henderson (2012), Balinese partial and full verbal reduplication fall into the category of "pluractional distributivity", which has the following characteristics:

(i) aspectually unconstrained;
(ii) indicates either event plurality, or participant plurality for the internal argument;
(iii) does not refer to a single complex event, but to multiple events which might be separated in time and/or space.

Henderson also observes that in many languages, including Hungarian (Uralic) and Kaqchikel (Mayan), "dependent indefinites" are marked by reduplicated numeral modifiers, cannot appear on their own, and must be licensed; pluractional predicates are among their potential licensers. Balinese examples with reduplicated numerals are given in (68): it is worth noting that (68b), without verbal reduplication, is better than (68c). This means that pluractionality is not necessary to license numeral reduplication in Balinese.[7]

(68) a. *Sebilang anak teka nyemak poh telu~telu.*
Every person come AV.take mango three-REDUP
'Everyone who came took three mangoes each.'
b. *Ketut naar poh telu~telu.*
Ketut AV.eat mango three-REDUP
'Ketut ate three mangoes at a time on several occasions.'

7 We are grateful to an anonymous reviewer for helpful comments on this point.

c. *Ketut naar~naar poh telu~telu.*
Ketut AV.eat-REDUP mango three-REDUP
'Ketut ate three mangoes at a time on several occasions.' [=(68b)]
d. *Anake naar~naar poh telu~telu.*
person.DEF AV.eat-REDUP mango three-REDUP
'The people ate mangoes (each of them ate 3 mangoes each time).'

We do not have space for further discussion of Henderson's classification of pluractional predicates; for further discussion of pluractional distributivity, see Henderson (2012).

14 Types of verbal reduplication and event plurality

Verbal reduplication of different kinds (full, partial, and foot reduplication) expresses subtle variations in types of event plurality.

Full root verbal reduplication typically expresses rapid successive repetition with a relatively small time gap between events: the larger the morphological material involved in reduplication, the longer the temporal gap between plural events. For example, bound roots like *-byah* 'flash' (69a) and *-plug* 'explode' (69a) often come with a prefixal formative *k(e)-* expressing punctual spontaneous meaning, *-kebyah* 'flash' (69b) and *-keplug* 'explode' (70b) respectively. These stems are still bound, as they cannot stand by themselves without further morphological derivation, e.g., by means of reduplication (69c, 70c) or verbal affixation (69d, 70d). Full reduplication encodes temporal plurality (repeated events), whereas a verb with the middle prefix *ma-* but without a reduplicated root expresses temporal singularity (i.e., a single completive event at one temporal point).

(69) a. *-byah* 'flash' [bound verbal root]
b. *-ke-byah* [PUNC-flash] 'flash once'
c. *kebyah~kebyah* [FULLREDUP] 'X (singular or plural) flash repeatedly'
d. *ma-kebyah* [MID-flash] 'X (singular or plural) flash once'

(70) a. *-plug* 'explode' [bound verbal root]
b. *-ke-plug* [PUNC-explode] 'explode (once)'
c. *keplug~keplug* [FULLREDUP] 'X (singular or plural) produce explosion repeatedly'
d. *ma-keplug* [MID-explode] 'X (singular or plural) explode once'

Reduplication with additional affixed material correlates with plurality with longer interval pauses between events. Thus, we can have the following plural events with different degrees of pauses, from almost no pauses (71a, 72a), to brief pauses (71b, 72b), to relatively long ones (71c, 72c):

(71) Full reduplication:
- a. *keplug~keplug* 'successive explosions, almost no temporal gaps'
- b. *makeplug~keplug* 'successive explosions, with recognizable temporal gaps'
- c. *makeplug~makeplug* 'repetitive explosions, with long temporal gaps, possibly as long as a day or two'

Partial reduplication with vowel replacement adds manner plurality to temporal plurality. In contrast to (71), for example, we can have the following plural events associated with *keplug* 'explode':

(72) Partial reduplication:
- a. *keplag~keplug* 'successive explosions in different manners, almost no temporal gaps'
- b. *makeplag~keplug* 'successive explosions in different manners, with recognizable temporal gaps'
- c. *makeplag~makeplug* 'repetitive explosions in different manners, with long temporal gaps, possibly as long as a day or two'

As an alternative to the middle prefix *ma-* (which encodes completive meaning of a single (sub)event), we can have the spatial pluractional *pa-* (further discussed in Section 19), encoding plural events distributed across plural participants:

(73) Reduplication with pluractional *pa-*:
- a. *ma-ke-plug*
  MID-PUNC-explode
  'X (singular or plural) explode (once)'
- b. *pa-ke-plug*
  PLURACT-PUNC-explode
  'X (plural) explode more or less simultaneously'
- c. *pa-ke-plug~plug*
  PLURACT-PUNC-explode-FULLREDUP
  'X (plural) explode more or less simultaneously, each of X also repetitively exploding successively without clear pauses'

d. *pa-ke-plag~plug*
PLURACT-PUNC-PARTREDUP-explode
'X (plural) explode in different ways more or less simultaneously, each of X also repetitively exploding successively without clear pauses'
e. *pakeplug~pakeplug*
explode-FULLREDUP
'X (plural) repetitively explode more or less simultaneously, without recognized pauses'
f. *pakeplag~pakeplug*
PARTREDUP-explode
'X (plural) repetitively explode more or less simultaneously in different manners, without recognized pauses'

If the participant undergoes an irreversible change of state, then it is typically understood as plural:

(74) *Taluh-e/bal-e ma-keplag~keplug.*
egg-DEF/ball-DEF MID-PARTREDUP-explode
'The eggs/balls exploded in different manners.'

15 Pluractionality and numeral modification

As discussed in Section 10, reduplicated nouns typically express large plural, and numeral modification of reduplicated nouns is marginal or unacceptable with small numbers (but acceptable with large numbers). The situation is different in the verbal domain, however.

With certain predicates, participant plurality is completely natural for a small plural associated with the participant (75a, b). A repetition of two times is also acceptable (75c).

(75) a. *Umah-ne dadua nto cenik~cenik.*
house-3SG.POSS two that small-REDUP
'Both of his houses are small.'
b. *Nyuh-e (dadua) empug~empug=a.*
coconut two UV.smash-REDUP=3SG
'S/he smashed the (two) coconuts.'
c. *Nyoman nundik~nundik Ketut pendo.*
Nyoman AV.touch-REDUP Ketut twice
'Nyoman touched Ketut twice.'

In contrast, other reduplicated predicates behave similarly to Balinese reduplicated nouns in allowing only modification by large numerals:

(76) a. *Ketut maling siap pang liu/pendo/cepok.*
Ketut AV.steal chicken time many/twice/once
'Ketut stole chickens many times/twice/once.'
b. *Ketut maling~maling siap pang liu/?pendo/*cepok.*
Ketut AV.steal-REDUP chicken time many/twice/once
'Ketut stole chickens many times/?twice/*once.'

(77) *Nyoman gelem~gelem pang liu/?pendo*
Nyoman ill-REDUP time many/two
'Nyoman is ill many times/?twice.'

Patterns of this type are unusual: it has been claimed that numeral modification of pluractional predicates is crosslinguistically unacceptable (Xrakovskij 1997). Equivalent structures appear to be unacceptable or dispreferred in many languages, including Chechen (Northeast Caucasian; Yu 2003), Hausa (Chodic, Afroasiatic; Součková 2011), and Ranmo (Papuan; Lee 2016) (as pointed out by an anonymous reviewer).

Lee (2016: 47) proposes to explain the essential properties of pluractional predicates as a combination of the two components in (78), expressed by separate morphemes in Ranmo:

(78) Pluractional predicates are those that contain:
a. A pluralizing component (PL) (which can correspond to a Plural Operator in the semantics and/or a [–b] (unbounded) feature in the syntax).
b. A degree component (DEG) (which is associated with a quantity scale).

Lee proposes that the degree component of pluractional meaning is similar to English *a lot*, accounting for the observation that pluractional predicates typically refer to a large number of events, and resist numeral modification. Balinese, however, provides evidence that these properties are only prototypically needed, and that pluractional predicates can exhibit only one of them. Thus, Balinese pluractionals often have both properties, but also allow the pluralizing/bounded event component (79a) without the degree/"a lot" component (79b). Numeral modification of pluractional predicates is therefore acceptable in Balinese.

We must still explain the difference between predicates allowing modification by small numerals (75) and those allowing only large numerals (76b, 77). In

fact, modification by a small number is only possible in the presence of an additional meaning component involving proximity in the temporal, spatial, or conceptual dimension. This is reflected in the elaborated translations of the examples in (75):

(79) a. *Umah-ne dadua nto cenik~cenik.*
house-3SG.POSS two that small-REDUP
'Both of his houses are small.' [The houses are typically understood as located close to each other.]
b. *Nyuh-e (dadua) empug~empug=a.*
coconut two UV.smash-REDUP=3SG
'S/he smashed the (two) coconuts.' [The smashing events are repeated one after the other immediately; the two events of smashing cannot be separated by a long break.]
c. *Nyoman nundik~nundik Ketut pendo.*
Nyoman AV.touch-REDUP Ketut twice
'Nyoman touched Ketut twice.' [The touching events are repeated one after the other immediately on one occasion; they cannot be associated with two different occasions, even on the same day.]

In contrast, the reduplicated predicates in (76b, 77) do not require temporal, spatial, or conceptual proximity relating the events involved. Instead, they are understood as cohesive in a different way: as habitual events, involving repetition with relatively long but regular breaks, not typically immediately one after the other. Repetitive habitual events do not allow small numeral modification such as *pendo* 'twice'. This is expected because such modification is semantically at odds with the habitual semantics, i.e., regular, often relatively long, breaks, without temporal endpoint. In (76b), *maling~maling* '(habitually) steal' has a habitual reading, and modification with *pendo* 'twice' is inconsistent with the large plural habitual meaning. Likewise, the reduplicated state predicate *gelem~gelem* 'be ill' in (77) is typically understood to have a habitual reading (i.e., a regular health problem), for which the reduplication is used.

16 Reduplication: Derivation or inflection?

In this section we present evidence that nominal and verbal reduplication is properly classified as derivational, not inflectional.

First, plural marking (by means of either partial or full reduplication) has a derivational function on a par with a derivational affix such as the middle *ma-* or applicative *-ang/-in* markers, creating a new verb or noun from a bound root. Crucially, in examples involving partial reduplication, the plural meaning is more than simply 'more than one/once'. For example, the partial reduplication of *batu* in combination with nominalizing *-an*, resulting in *bebatuan* (example 88a.iii), adds a 'kind of' meaning to the plural meaning, as seen from the gloss. The evidence is even clearer in the case of *pineh~pineh* (80b.ii) and *papineh* (80b.iii), because the root of these derived plural nouns is a bound morpheme. (80c) further shows that the verbal root *tanem* 'plant' can undergo full and partial reduplication with *-an*, but the different kinds of reduplications derive different meanings.

(80) Morphological pluralization in Balinese:

a.	i.	*batu*	(free) noun 'stone'
	ii.	*batu~batu* [stone-FULLREDUP]	(derived) noun 'stones'
	iii.	*be~batu-an* [PARTREDUP.stone-NMLZ]	(derived) noun 'different kinds of stones'
b.	i.	*-pineh*	bound (verbal?) root 'think'
	ii.	*pineh~pineh* [think-FULLREDUP]	derived noun 'thoughts/ *think'
	iii.	*pe~pineh* [PARTREDUP-think]	derived noun 'different kinds of thoughts'
	iv.	*ma-pineh* [MID-think]	derived verb 'think (intransitive)'
	v.	*pineh-ang* [thing-APPL]	derived verb 'think (transitive)'
c.	i.	*tanem*	(free) verb 'plant'
	ii.	*tanem-an*	derived noun 'planted tree'
	iii.	*tanem~tanem-an* [plant.FULLREDUP-NMLZ]	derived noun 'planted trees'
	iv.	*tetanem-an* [PARTREDUP.plant-NMLZ]	derived noun 'planted magic thing'

Further, consider the examples in (81), all derived from the verbal root *-tel* 'drip/drop': the different configurations of reduplications and other affixation in Balinese create subtle variations in plural/pluractional meaning. This, together with the categorial change involved, suggests that we are dealing with derivational processes here.

(81)

-tel	bound V root 'drip/drop (of liquid)'
-ketel	bound V stem 'drip/drop spontaneously (of liquid)'
ketel~ketel [*ketel*-FULLREDUP]	derived V (intransitive) 'drip/drop in the same manner (pluractional, multiple participants)'
ketal~ketel [PARTREDUP-*ketel*]	derived V (intransitive) 'drip/drop in different ways (pluractional, multiple manners)'
ketel-an [*ketel*-NMLZ]	derived N 'one or more drops of water'
ketel~ketel-an [*ketel*-FULLREDUP-NMLZ]	derived N 'drops of water'
ketal~ketel-an [PARTREDUP-*ketel*-NMLZ]	derived N 'drops of water of different kinds, big or small'
ma-ketel-an [MID-*ketel*-NMLZ]	derived V 'having one or more drops (of liquid)' (completive/non-durative)
ketel-ang [*ketel*-CAUS]	derived V (transitive) 'drop (liquid) in one or more drops'
ketel~ketel-ang [*ketel*-FULLREDUP-CAUS]	derived V (transitive) 'drop (liquid) in multiple drops in the same manner'
ketal~ketel-ang [PARTREDUP-*ketel*-CAUS]	derived V (transitive) 'drop (liquid) in multiple drops in different ways'
ketel-in [*ketel*-APPL]	derived V 'drop (of liquid) onto a location'
ketel~ketel-in [*ketel*-FULLREDUP-APPL]	derived V 'drop (of liquid) onto a location, multiple drops in the same way'
ketal~ketel-in [PARTREDUP-*ketel*-APPL]	derived V 'drop (of liquid) onto a location, multiple drops in different ways'
pa-ketel [PLURACT-*ketel*]	derived V 'drop from multiple sources simultaneously'
pa-ke-tel~tel [PLURACT-FULLREDUP.*ketel*]	derived V 'drop from multiple sources, simultaneously, each with multiple drops'

The following properties further support our claim that reduplication is derivational, not inflectional, in nature:

(i) Reduplication is not obligatorily used to express plural meaning. In fact, it would be unusual to use reduplication in certain contexts. It is more common to use the coordination construction rather than reduplication to convey nominal plurality.

(ii) Reduplication does not convey only plurality: it may (in combination with other affixes) have nothing to do with plurality, e.g., expressing an attenuating meaning: *putih~putih* [white-REDUP] 'whitish'; something fake: *bedil* 'gun' → *bedil~bedil-an* 'toy gun' (both unspecified for number); adverbial function with progressive-concessive meaning: *gelem* 'sick' → *gelem~gelem* 'while/despite being sick'.

(iii) Not all reduplicated forms have corresponding non-reduplicated roots with clear meaning (cf. Clynes (1995), e.g., there is no non-reduplicated root **kupu* related to *kupu~kupu* 'butterfly/butterflies'.

(iv) There are nouns with meaningless partial reduplications, e.g., the non-reduplicated form *lipi* and the partial reduplication *lalipi* share the meaning 'snake(s)', and both have general number. The plural of these nouns is not formed via reduplication but rather by quantifier modification:

(82) *(la)lipi-ne abesik/dadua/liu nto*
snake-DEF one/two/many that
'the one snake, the two/many snakes'

In sum, reduplication involves derivational processes encoding subtle meanings of complex entities or events of different kinds/types, which may imply rather than encode plural meaning.

17 Full verbal reduplication and predicate classes

Full verbal reduplication can target temporal and/or spatial domains, possibly entailing participant plurality at the same time, depending on predicate class. We begin with the simplest class, namely states, and its two subtypes: individual-level and stage-level predicates. We then go on to discuss reduplication with activities and telic events, applicatives, and psychological verbs.

17.1 Individual-level states

Reduplication of predicates expressing individual-level states like *gede* 'big' generally entails participant plurality. Thus, a singular proper name or a pronoun (necessarily singular, as discussed in Section 3) cannot be the subject of the reduplicated predicate *gede~gede* (83a). Because common nouns have general number and can refer to a plurality, a common noun like *celeng* 'pig' is acceptable (83c), as is a reduplicated common noun like *celeng~celeng* (83d).

(83) Participant plurality:
a. **Ia/Nyoman gede~gede.*
3SG/Nyoman big-REDUP
b. *Ia (ajak) makejang gede~gede.*
3SG with all big-REDUP
'They are (all) big.'
c. *Celeng-ne gede~gede.*
pig-3SG.POSS big-REDUP
'His/her pigs are big.' [Not: 'His/her pig is big.']
d. *Celeng~celeng-ne makejang gede~gede.*
pig-REDUP-3SG.POSS all big-REDUP
'All of his/her pigs are big.'

Note that verbal reduplication is not number agreement: participant plurality is just one among several ways of distinguishing members of a set of events of a pluractional verb.

Some individual-level adjectives like *putih* 'white' in (84) can participate in event plurality without entailing participant plurality, if a spatio-temporal plurality reading is possible. With these predicates, the participant must be understood as the location of the event plurality. Thus, one meaning of (84b) is 'Nyoman has white spots on his body'.[8] For a common noun subject as in (85), ambiguity arises.

(84) a. *Nyoman putih.*
Nyoman white
'Nyoman is white.'

8 The meaning 'whitish' in reading (ii) of (84b) and reading (iii) of (85) is an additional attenuating meaning associated with reduplication, mentioned in Section 16; we do not discuss this attenuating meaning in detail in this article.

b. *Nyoman putih~putih.*
Nyoman white-REDUP
(i) 'Nyoman's body/skin has white spots.' [Spatial plurality: 'Nyoman is white in various places.']
(ii) 'Nyoman is whitish (i.e., having pale skin).'

With a common noun subject, either spatio-temporal plurality or participant plurality is possible:

(85) *Panak-ne putih~putih.*
child-3SG.POSS white-REDUP
(i) 'His/her child's body has white spots.' [spatial plurality]
(ii) 'His/her children are white.' [participant plurality]
(iii) 'His/her child is whitish (i.e., having pale skin).'
[Not: 'His/her child is white.']

17.2 Stage-level states

Non-permanent states can involve temporal plurality. In (86a), *dogen* 'only' expresses emphasis.

(86) a. *Ketut gelem~gelem dogen.*
Ketut ill-REDUP only
'Ketut is VERY often sick.' [temporal plurality]
b. *TV-ne keras~keras sajan.*
TV-DEF loud-REDUP very
'The TV is often very loud.' [temporal plurality]

Reduplication in its adverbial function expresses progressive-concessive meaning rather than repetitive temporal plurality:

(87) *Gelem~gelem, Ketut ma-gae.*
ill-REDUP Ketut MID-work
'While/although (he is) sick, Ketut works.'

17.3 Activities

Verbs denoting activities can involve either participant or temporal plurality:

(88) *Anak-e ngling~ngling ditu.*
person-DEF AV.cry-REDUP there
(i) 'The person/People was/were crying repeatedly there.' [temporal plurality]
(ii) 'The people cried there.' [participant plurality]

(89) *Nyaman-ne negak~negak ditu.*
relative-3SG.POSS AV.sit-REDUP there
(i) 'His/her relative(s) repeatedly sat around there.' [temporal plurality]
(ii) 'His/her relatives were sitting there (at the same time).' [participant plurality]

17.4 Change-of-state events

The property *mati* 'dead/died' is naturally a one-off state of an animate being, and a plurality of deaths entails a plurality of individuals who died. Additionally, however, reduplicated *mati* can have an extended use to describe an inanimate property as being 'off', and can apply to a single inanimate individual. This is shown by the contrasting examples in (90):

(90) a. *Celeng-e mati~mati.*
pig.DEF dead-REDUP
'The pigs are dead.' [Not: 'The pig is (repeatedly) dead.']
b. *Montor-e mati~mati.*
car-DEF dead-REDUP
'The car is on and off, i.e., not functioning properly.'

Reduplicated predicates depicting change-of-state events entail participant plurality of the theme:

(91) a. *Buah poh-e suba nasak.*
Fruit mango-DEF PRF ripe
'The mango(s) are already ripe.'
b. *Buah poh-e suba nasak~nasak.*
fruit mango-DEF PRF ripe-REDUP
'The mangos/*mango are already ripe.'

(92) a. *Ia ngempug nyuh.*
3SG AV.smash coconut
'(S)he smashed a coconut/coconuts (to pieces).'

b. *Ia ngempug~ngempug nyuh.*
3SG AV.smash-REDUP coconut
'(S)he smashed coconuts/*a coconut (to pieces).' [Not: 'They smashed a coconut/coconuts (to pieces).']

Certain predicates can have more than one sense, e.g., *belah* 'break' or 'having a crack, as a sign of breaking' (i.e., the incipient state of breaking). In its non-reduplicated form (93a), only the first change-of-state meaning is available. In the reduplicated form (93b) both senses are available, which then gives rise to two kinds of meaning: distributive participant pluractionality (93b, reading (i)) or else spatial pluractionality (93b, reading (ii)).

(93) a. *Cangkir-e belah.*
cup-DEF break
'The cup(s) broke.'
b. *Cangkir-e belah~belah.*
cup-DEF break-REDUP
(i) 'The cups broke.' [participant plurality]
(ii) 'The cup has (multiple) cracks.' [spatial plurality]

17.5 Reversible change-of-state events

If the change-of-state event is reversible, temporal plurality is possible:

(94) *Kaca jendela-ne blah~blah dogen.*
glass window-DEF break-REDUP only
'The glass of the window keeps breaking.' [Context: a special kind of glass which can be fixed and made to look okay]

Causatives that do not affect the integrity of participants, e.g., simply giving rise to a change of location, may or may not have an indirect plurality effect. This typically depends on the definiteness of the displaced participant. Indefinites typically receive only an indirect plural interpretation, while definites may or may not receive such an interpretation. Consider examples with an inanimate object: indefinite in (95a) and definite in (95b).

(95) a. *Nyoman nuun~nuun-ang batubata uli truk-e.*
Nyoman AV.go.down-REDUP-CAUS brick from truck-DEF
(i) 'Nyoman took/unloaded bricks from the truck (one or two at a time).'
(ii) #'Nyoman repeatedly unloaded a brick from the truck.'

b. *Nyoman nuun~nuun-ang batubata nto uli truk-e.*
Nyoman AV.go.down-REDUP-CAUS brick that from truck-DEF
(i) 'Nyoman took/unloaded the bricks from the truck (one or two at a time).'
(ii) 'Nyoman repeatedly unloaded the (same) brick(s) from the truck.' [Context: the brick(s) have been loaded back onto the truck by someone.]

The indefinite in (95a) tends to have the indirect plural effect (reading (i)) rather than the temporal plurality with singular object (reading (ii)). As seen from its translation, sentence (95b) is ambiguous, with a possibility to have a repetitive plural event involving the same patient participant (reading ii). This reading requires the assumption of a contextual background in which the brick(s) have been repeatedly reloaded onto the truck. This assumed context is available, while unusual, for a definite object. It is, however, unavailable with indefinites in (95a), with the result that the plural repetitive event applied to the same object is difficult to get, as indicated by the downgraded acceptability of reading (ii) of (95a).

The same patterns are observed with animate nouns, as shown in (96):

(96) a. *Nyoman nuun~nuun-ang sampi uli truk-e.*
Nyoman AV.go.down-REDUP-CAUS cow from truck-DEF
(i) 'Nyoman took/unloaded cows from the truck (one or two at a time).'
(ii) #'Nyoman repeatedly unloaded a cow from the truck.'
b. *Nyoman nuun~nuun-ang sampi nto uli truk-e.*
Nyoman AV.go.down-REDUP-CAUS cow that from truck-DEF
(i) 'Nyoman took/unloaded the cows from the truck (one or two at a time).'
(ii) 'Nyoman repeatedly unloaded the (same) cow(s) from the truck.'

17.6 Transitive/agentive telic events

Verbs expressing changes of states with (implied) agentive or self-instigated participants may or may not have an indirect plural effect. For example, the plural event denoted by *menek~menek* 'climb up' in (97) may involve plural participants. An interpretation is also possible involving repetitive (plural) actions done by the same single participant.

(97) *Ada bojong menek~menek ke duur tembok-e.*
exist monkey go.up-REDUP to top wall-DEF
(i) 'There are monkeys climbing up onto the wall.'
(ii) 'There is a monkey (i.e., the same monkey) often climbing up onto the wall.'

In the case of *ulung~ulung* 'fall' in (98), the subject *poh* 'mango' is inanimate, and understood as incapable of repeating the event by itself; hence an indirect plural reading is prominent.

(98) *Ada poh ulung~ulung ka duur raab-e.*
Exist mango fall-REDUP to top roof-DEF
(i) 'There are mangoes falling onto the roof.'
(ii) #'There is a mango repeatedly falling onto the roof.'

17.7 Applicatives and causatives

As shown in Section 2, applicatives in Balinese are marked by the same morphology as causatives, namely *-in/-ang*. In this section, we show that reduplicated applicatives/causatives give rise to temporal plurality or non-actor participant plurality. Non-actor participant plurality is typically entailed with the theme/patient when it is indefinite, even though the other (applied) roles may be also pluralized.

Example (99), repeating (66), shows a locative applicative *-in* with an intransitive base, with either temporal plurality (reading (i)) or participant plurality (reading (ii)):

(99) *Nyoman negak~negak-in jaran ditu.*
Nyoman AV.sit-REDUP-APPL horse there
(i) 'Nyoman was riding a horse there repeatedly.' [temporal plurality]
(ii) 'Nyoman was riding horses there.' [participant plurality]

Example (100) shows reduplication with the *-in* causative, giving rise only to participant plurality when the patient is indefinite (100a, reading i). Both temporal and participant plurality are possible with a definite patient (100b).

(100) a. *Ketut meneh~meneh-in sepeda.*
Ketut AV.good-REDUP-CAUS bike
(i) 'Ketut is fixing/regularly fixes bikes.' [participant plurality]
(ii) #'Ketut is fixing/regularly fixes a bike (i.e., the same bike).' [temporal plurality]

b. *Ketut meneh~meneh-in sepeda-ne.*
Ketut AV.good-REDUP-CAUS bike-3SG.POSS
(i) 'Ketut is fixing/regularly fixes his bikes.' [participant plurality]
(ii) 'Ketut regularly fixes his bike (i.e., the same bike).' [temporal plurality]

Example (101a) shows applicativization with a transitive base *tanem* 'plant' resulting in a ditransitive verb. In both (101a) and (101b), involving full reduplication, the indefinite theme ('sugarcane') is interpreted as plural (participant plurality), and the location ('field') can be interpreted as singular. The location ('field') can also be interpreted as plural (participant plurality), which (through world knowledge) forces 'sugarcane' to have a plural interpretation as well. With the non-reduplicated non-applicative verb (101c), both 'sugarcane' and 'field' have general number, and can be interpreted as referring to any number of individuals.

(101) a. *Cang nanem~nanem-in uma-ne tebu.*
1SG AV.plant-REDUP-APPL field-DEF sugar.cane
'I planted sugarcanes/#a sugarcane in the field(s).'
b. *Cang nanem~nanem tebu di uma.*
1SG AV.plant-REDUP sugar.cane LOC field
'I planted sugarcanes/#a sugarcane in the field(s).'
c. *Cang nanem tebu di uma.*
1SG AV.plant sugar.cane LOC field
'I planted sugarcanes/a sugarcane in the field(s).'

In (102), repeating (67), the target of the indirect plural effect for both the non-applicative (102a) and applied (102b) reduplicated verb is the indefinite displaced theme *celeng* 'pig(s)'. The benefactive argument *tamu-ne* 'the guest(s)' has general number, and can refer to any number of individuals.

(102) a. *Anak-e nto meli~meli celeng.*
person-DEF that AV.buy-REDUP pig
'That person bought pigs/#a pig.'
b. *Anak-e nto meli-ang~meli-ang tamu-ne celeng.*
person-DEF that AV.buy-APPL-REDUP guest-DEF pig
'That person bought pigs/#a pig for his guest(s).'

The examples in (103) involve the bound root *-entung* 'throw' with applicative marking. The non-reduplicated predicate (103a) refers to a single throwing event, and the general number noun *botol* 'bottle' (i.e., the theme) can refer to any number of

bottles: the event referred to involves throwing one or more bottles into a single hole in a single throwing event. In contrast, the reduplicated applicative predicate in (103b) necessarily refers to more than one throwing event involving more than one bottle (i.e., theme plurality). The locative ('hole') may or may not be plural.

(103) a. *De ngentung-ang botol ke bambang-e.*
NEG AV.throw-APPL bottle to hole-DEF
'Don't throw bottles into the hole(s)/a bottle into the hole.'
b. *De ngentung~ngentung-ang botol ke bambang-e.*
NEG AV.throw-REDUP-APPL bottle to hole-DEF
'Don't throw bottles into the hole(s)/#a bottle into the hole.'

Instrumental applicatives with *-ang* encode events involving motion of the instrument. Example (104a) can refer to one or more knocking, but (104b) is necessarily associated with multiple events of knocking, involving one or more nails (and one or more hammers).

(104) a. *Ketok paku-ne aji palu!*
knock nail-DEF with hammer
'Knock the nail(s) with a hammer/hammers.'
b. *Ketok~ketok-ang palu-ne sig paku-ne.*
knock-REDUP-APPL hammer-DEF LOC nail-DEF
'Knock the nail(s) with a hammer/hammers (repeatedly).'

With verbs such as *takon* 'ask', words said or questions asked count as displaced themes and receive an indirect plural interpretation when the verb is reduplicated. For example, the question asked in (105a) must be interpreted as plural, as shown in the translation, whereas the goal (i.e., the person asked) retains general number. If no plural event is intended, the non-reduplicated verb (105b) must be used. The same holds for the middle-marked intransitive *matakon* in (105c, d): the non-reduplicated verb refers either to a single event or a plural event (i.e., general number) whereas the reduplicated verb (105d) is explicitly pluractional, with an indirect plural interpretation for the understood theme.

(105) a. *Nyoman nakon~nakon-in anak baneh.*
Nyoman AV.ask-REDUP-APPL person strange
(i) 'Nyoman asked questions to a stranger/strangers.'
(ii) 'Nyoman repeatedly asked questions/a question (i.e., the same question(s)) to a stranger/strangers.'
(iii) [Not: 'Nyoman asked a question to a stranger/strangers once.']

b. *Nyoman nakon-in anak baneh.*
Nyoman AV.ask-APPL person strange
'Nyoman asked questions/a question to a stranger/strangers.'
c. *Nyoman ma-takon.*
Nyoman MID-ask.question
'Nyoman asked a question/questions.'
d. *Nyoman ma-takon~takon.*
Nyoman MID-ask.question-REDUP
(i) 'Nyoman (repeatedly) asked questions/the same question.'
(ii) [Not: 'Nyoman asked a question once.']

17.8 Psychological verbs

Psychological verbs such as *tawang* 'know', *demen* 'like', and *jejeh* 'afraid' express states of affairs within the participant's mind, and such states are difficult to individuate. It is, then, not surprising that these verbs do not typically undergo reduplication to express plural states, whether involving participant or temporal plurality; this is shown by the unacceptability of (106b).

(106) a. *Cang nawang turis.*
1SG know tourist
'I know what a tourist/tourists look(s) like.'
b. **Cang nawang~nawang turis.*
1SG know-REDUP tourist
[Intended meanings:] 'I/we know what tourists look like.'/'I repeatedly know a tourist/tourists.')

Derived applicative/causative psychological verbs are activity verbs which refer to events that may be individuated and therefore pluralized. Applicativization may give rise to a change in meaning, e.g., *demen* 'like', *demen-in* 'love X, make love (by sleeping) with X'. Indirect plurality applies to the patient participant, as expected, as seen in (107b) where the object must be plural. Even when the experiencer is indefinite, the reduplicated verb cannot typically be interpreted with indirect plural for the experiencer (107c). (The plural interpretation of *anak* 'person' in (107c.ii) is compatible with its general number.)

(107) a. *Nyoman nemen-in anak bajang.*
Nyoman AV.like-APPL person young
'Nyoman is in love with a young girl/young girls.'

b. *Nyoman nemen~nemen-in anak bajang.*
Nyoman AV.like-REDUP-APPL person young.girl
(i) 'Nyoman is in love with young girls/*a young girl.'
(ii) #'Nyoman is repeatedly in love with a girl.'
c. *Ada anak truna nemen~nemen-in anak bajang.*
exist person young.man AV.like-REDUP-APPL person young.girl
(i) 'There is a young man in love with young girls/#a young girl.'
(ii) 'There are young men, each in love with young girls/#the same young girl.'

18 Partial reduplication: Manner plurality

As noted in Section 13 above, pluractionality involving temporal, spatial, or participant multiplicity is well attested crosslinguistically. Balinese partial reduplication is unusual in involving event-internal "manner multiplicity".

Consider the examples in (108), involving reduplicated activity verbs. In (108a), the non-reduplicated verb *ngliling* 'roll' refers to a single event of rolling. In (108b), full reduplication involves temporal plurality with the same manner of rolling, as shown by the translation; the subject *batu* 'stones' has general number, and can refer to any number of stones. In (108c), partial reduplication involves temporal plurality, but with different manners of rolling.

(108) a. *Batu-ne ngliling ka tukad-e.*
stone-DEF AV.roll to river-DEF
'The stone(s) rolled (down) to the river (i.e., without a stop/a pause).'
b. *Batu-ne gliling~gliling ka tukad-e.*
stone-DEF roll-FULLREDUP to river-DEF
'The stone(s) rolled down to the river (with brief pauses during the rolling process; same manner of rolling down, i.e., in one direction).'
c. *Nyoman glilang~gliling karna sakit basang.*
Nyoman PARTREDUP-roll because ache stomach
'Nyoman rolled around in different ways due to stomach ache.'

Certain individual-level state predicates like *mengor* 'not straight' can undergo either full or partial reduplication, as seen in (109). Examples (110a, b) show the contrast in kinds of verbal plurality. As these examples show, the full reduplication of the individual stage predicate entails participant plurality (the manner plurality reading of (110) is unacceptable) whereas the partial (manner) reduplication does not (acceptable reading 110b.ii).

(109) a. *mengor* 'not properly positioned in a straight/proper way' (e.g., rows of bricks, walls, etc.)
b. *mengor~mengor* [FULLREDUP] 'X (plural) not straight'
c. *mengar~mengor* [PARTREDUP] 'X (singular or plural) not straight, randomly placed'

(110) a. *Tembok-ne mengor~mengor.*
wall-DEF FULLREDUP-not.straight
'The walls are all not well aligned, not straight.' [Not: 'The wall is not straight in an (ir)regular way.']
b. *Tembok-ne mengar~mengor.*
wall-DEF PARTREDUP-not.straight
(i) 'The walls are all not well aligned, not straight.'
(ii) 'The wall is not straight in an irregular way.'

19 Punctual pluractionality: *pa-*

Intransitive verbs typically depicting punctual events, often with a sudden burst of noise, can take the pluractional prefix *pa-*. This prefix encodes event plurality, with the events taking place almost simultaneously, as well as participant plurality. It is in opposition with the Middle Voice *ma-*, which encodes event singularity by default. This is exemplified in Table 5.

Table 5: Marking event singularity and event plurality with *ma-* and *pa-*.

Root	*ma-* 'SG event'	*pa-* 'PL event (around the same time)'
-keplug	*makeplug* 'explode once'	*pakeplug* 'X (PL) explode'
-kenyem	*makenyem* 'smile briefly'	*pakenyem* 'X (PL) smile briefly'
-glebug	*maglebug* 'fall off once'	*paglebug* 'X (PL) fall off'
-kebyar	*makebyar* 'flash once'	*pakebyar* 'X (PL) flash simultaneously'

The *ma-* verbs can take stem reduplication, but this encodes temporal pluractionality with the same participant. For example, with the root *-keplug*, we can have *makeplug* and *makeplug~keplug*, both of which can have a singular subject, as seen in (111):

(111) a. *Taluh-e besik nto ma-keplug.*
egg-DEF one that MID-explode
'That single egg exploded (once).'
b. *Taluh-e besik nto ma-keplug~keplug.*
egg-DEF one that MID-explode-REDUP
'That single egg was exploding (repetitive explosions without much pause between explosions).'

Given the semantics of *pa-* which requires participant plurality, it is a good diagnostic test for nominal plurality. In particular, it provides evidence that Balinese pronominals are semantically singular. Hence, it is expected that the *pa-* verb cannot take a bare pronoun subject, but requires the associative plural. Both expectations are confirmed.

(112) a. *Tiang ma-kenyem.*
1SG MID-smile.briefly
'I smiled (briefly).'
b. **Tiang pa-kenyem.*
1SG PLURACT-smile.briefly
[Intended meaning:] 'I smiled (briefly)/we smiled briefly.'
c. *Tiang ajak makejang pa-kenyem.*
1SG with all PLURACT-smile.briefly
'We all smiled (briefly, around the same time).'

20 Semantics of plurality: Inclusive readings

Much recent research on the semantics of plurality has focused on the analysis of so-called "weak" or "inclusive plural readings" (see Krifka 1989; Zweig 2008; Spector 2007; Farkas & de Swart 2010; Ivlieva 2013; and the references cited there), where the reference of a plural phrase in certain contexts includes single individuals. We show that inclusive readings are available for reduplicated nouns in Balinese in the same contexts as in languages like English, French, and Hungarian, whose nominal number systems are very different from Balinese. We also show that inclusive readings are available for Balinese pluractional verbal predicates in the same contexts, establishing (for the first time, we believe) a parallelism between nominal and verbal plurality with respect to the availability and distribution of such readings.

20.1 Inclusive/exclusive plurality

20.1.1 Setting the stage

It is often assumed that singular nouns refer to individuals, and plural nouns refer to groups consisting of more than one individual, in languages like English. Evidence for these assumptions comes from readings for singular and plural phrases in examples like (113):

(113) a. *I saw a dog in the kitchen.* [Singular: speaker saw one dog]
b. *I saw dogs in the kitchen.* [Plural: speaker saw more than one dog]

Correspondingly, non-reduplicated nouns in Balinese have general number and refer to any number of individuals, while reduplicated nouns in many contexts denote more than one individual:

(114) a. *Cicing-ne nto galak.*
dog-3SG.POSS DEF aggressive
'His/her dog(s) is/are aggressive.'
b. *Cicing~cicing-ne nto galak.*
dog-REDUP-3SG.POSS DEF aggressive
'His/her dogs are aggressive.' [Not: 'His/her dog is aggressive.']

Under the classic assumptions of Link (1983), these patterns seem to motivate an analysis of English and Balinese examples according to which the singular noun *dog* denotes individual dogs, the general number noun *cicing* 'dog(s)' denotes the individual sums of dogs, and the English plural noun *dogs* and the Balinese reduplicated noun *cicing~cicing* denotes the non-atomic sums of dogs:

(115) *dog:* *dog* (dog atoms)
cicing: **dog* (the individual sums of dogs, including atoms; Link 1983)
dogs, cicing~cicing: ^{C}*dog* (the non-atomic sums of dogs; Link 1983)

However, the availability of 'inclusive plural' readings in certain contexts is problematic for this view of the semantics of plural nouns.

20.1.2 Negation

In some contexts, including under negation, plural nouns in English refer not only to non-atomic sums, but to any number of individuals:

(116) *I didn't see dogs in the kitchen.* [Speaker did not see any dogs, not even one; not: speaker did not see more than one dog.]

Such readings have been referred to as 'inclusive plural' readings (Farkas & de Swart 2010), since the reference of the plural noun phrase includes single individuals (atoms), as opposed to the 'exclusive plural' readings in contexts like (113), where the plural noun phrase refers to more than one individual.

In similar contexts, reduplicated nouns in Balinese also exhibit inclusive plural readings. The reduplicated nouns in the non-negated examples in (117a, 118a) refer to more than one individual, but to any number of individuals in the negated examples in (117b, 118b):

(117) a. *Nyoman ningalin njek~njekan buron.*
Nyoman AV.see footprint-REDUP animal
'Nyoman saw animal footprints (more than one).'
b. *Nyoman sing ningalin njek~njekan buron.*
Nyoman NEG AV.see footprint-REDUP animal
'Nyoman didn't see even a single animal footprint.'

(118) a. *Nyuh nguda~nguda alap=a.*
coconut young-REDUP UV.pick.up=3SG
'S/he picked up young coconuts (more than one).'
b. *Sing ada nyuh nguda~nguda ditu.*
NEG exist coconut young-REDUP there
'There were no young coconuts, not even a single one, there.'

20.1.3 Questions

Polar questions also induce inclusive plural readings in English. The answer to the question in (119) is 'yes' if the addressee has seen even one dog:

(119) Q: *Did you see dogs in the kitchen?*
A: *Yes (*No), I saw one dog.*

Although reduplicated nouns in Balinese generally refer to a large number of individuals (Section 10), a question with a reduplicated noun can have a positive answer with reference to a single individual:[9]

9 Thanks to an anonymous reviewer for suggestions relevant to this section.

(120) Q: *Ci nepukin njek~njekan buron ditu?*
you see footprint-REDUP animal there
'Did you see animal footprints there?'
A: *Ae, abesik dogen.*
Yes one only
'Yes, only one (footprint).'

(121) Q: *Ada umah~umah luung ditu?*
exist house-REDUP good there
'Are there good houses there?'
A: *Ae, ada abesik.*
yes exist one
'Yes, there is one (good house).'

As noted in Section 9, nouns can be modified by pluractional predicates with *pa-*. Such modified nouns also have inclusive plural readings in questions:

(122) Q: *Apa ada anak pa-jongkok ditu?*
Q exist person PLURACT-squat there
'Are there people squatting there?'
A: *Ae, ada, aukud.*
yes exist one
'Yes, there is one.'

20.1.4 Downward-entailing environments

Inclusive plural readings are also found in other downward-entailing environments besides negation, such as the first argument of a quantifier like *every*.

(123) *Every customer wishing to purchase books should use the express lane.*
[Customers wishing to purchase one book should also use the express lane.]

Similarly, Balinese reduplicated nouns (124) or nominals with reduplicated modifiers (125) in downward-entailing environments have inclusive readings:

(124) *Sebilang punyan poh ane carang~carang-ne amah tetani*
every tree mango REL branch-REDUP-3SG.POSS UV.eat termite
lakar bah-a.
FUT cut.down-PASS
'Every mango tree whose branches are eaten by termites will be cut down.'
[Trees with one branch eaten by termites will also be cut down.]

(125) *Sebilang pangecer ane ngadep barang palsu~palsu lakar tangkep-a*.
every retailer REL AV.see goods fake-REDUP FUT arrest-PASS
'Every retailer who sells fake goods will be arrested.' [The retailer will be arrested even when s/he sells one fake item.]

20.2 Theoretical implications

Many analyses of the availability and distribution of inclusive plural readings in languages like English appeal to a pragmatic principle governing the use of singular vs. plural forms (Sauerland et al. 2005; Spector 2007; Zweig 2008): English *dog* refers to atoms (individual dogs), and *dogs* refers to any number of dogs (in Link's notation, **dog*). In positive contexts (*I saw a dog/dogs*) the use of the singular is more informative or cooperative when reference to a single individual is intended. When the plural is used, the addressee assumes that it was not possible to use the more informative singular form, and so intended reference is to more than one individual. In negative contexts (*I didn't see dogs*) the singular is weaker than the plural, and so it does not prevent the plural from ranging over atoms as well as non-atomic sums.

The availability of inclusive readings for Balinese reduplicated nouns presents a problem for this view (similar to the problems noted by Dalrymple & Mofu (2012) for Indonesian). In Balinese, the non-reduplicated general number form does not compete with the reduplicated plural form in the same way as the English singular form competes with the plural form: the non-reduplicated form has general number, and can be used for reference either to individuals or to sums. Number systems like Balinese and Indonesian, with OPTIONAL plural marking, are problematic for approaches that account for the distribution of inclusive and exclusive plural readings by pragmatic principles, relying on one form in the nominal paradigm contributing a stronger meaning which

blocks the use of the other, more general form. For further discussion of these issues, and an alternative proposal for the meaning of plural forms and the availability of inclusive/exclusive plural readings, see Dalrymple & Mofu (2012), Arka & Dalrymple (2016), and Dalrymple & Arka (2016).

20.3 Inclusive plurality and *makejang*

We have seen that plurality for nouns can also be expressed by the quantifier *makejang*. However, inclusive plural readings are not available for plurals with *makejang*. For example, the answer to the question in (126) cannot be 'yes' if only one pig was sold; this contrasts with available readings for similar examples (120) and (121) with reduplicated nouns:

(126) Q: *Makejang celeng-e adep-a?*
all pig-DEF sell-PASS
'Were all of the pigs sold?'
A: **Ae*, *abesik*.
yes one
A: *Aing*, *abesik*.
no one

Similarly, the plural phrase *nyuh-e makejang* 'all of the coconuts' does not have an inclusive plural reading in (127), unlike the examples with reduplicated nouns in (124) and (125):

(127) *Sabilang anak ane nyidaang ngaba nyuh-e makejang*
every person REL AV.manage AV.carry coconut-DEF all
lakar baang-a upah.
FUT UV.give-PASS prize
'Every person who manages to carry all of the coconuts will be given a prize.' [People who only carry one coconut won't get a prize.]

Recall from Section 7.3 that plural phrases with *makejang* are not only plural but also definite, with an exhaustive reading due to the presence of the quantifier *makejang*. It is well known that plural definites receive exhaustive readings under negation and in other downward entailing contexts (Fodor 1970). The corresponding English examples pattern similarly; cf. the translation of (127), and example (128):

(128) Q: *Did you see all of the dogs in the kitchen?*
A: *Yes, I saw them.*
A: *No/*Yes, I saw one dog.*

Under negation, the possible readings differ depending on the position of the quantifier *makejang*. When *makejang* precedes the negation, *makejang* takes wide scope:

(129) *Buku-ne makejang sing ulung.*
book-DEF all NEG fall
'All of the books didn't fall off, not even one.' [Not: 'Not all of the books fell off (but most did).']

When *makejang* floats to the right of the negation, either scope is possible:

(130) *Buku-ne sing ulung makejang.*
book-DEF NEG fall all
(i) 'Not all of the books fell off (but most did).'
(ii) 'All of the books didn't fall off, not even one.'

Thus, Balinese plurals with *makejang* behave differently from indefinite reduplicated plurals, and do not give rise to inclusive plural readings.

20.4 Inclusive plurality and *ajak makejang*

Inclusive plural readings are also unavailable for associative plurals with *ajak makejang*. The lack of inclusive readings in questions for associative plurals with pronouns, proper names, and common nouns is illustrated in (131) to (133):

(131) Q: *Cai ajak makejang kema?*
2SG with all go.there
'Did you all go there?'
A: **Ae*, *padidi.*
yes alone
[Intended meaning:] 'Yes, only me.'
A: *Sing*, *padidi.*
no alone
'No, only me.'

(132) Q: *Wayan ajak makejang gelem?*
Wayan with all ill
'Are Wayan and his family all sick?'
A: **Ae*, *Wayan gen*.
yes Wayan only
A: *Aing*, *Wayan gen*.
no Wayan only
'No, Wayan only.'

(133) Q: *Apa cucun-ne ajak makejang baang-a pipis?*
Q grandchild-3.POSS with all give-PASS money
'Were all of his grandchildren given money?'
A: **Ae*, *abesik*.
yes one
A: *Aing*, *abesik*.
no one
'No, only one.'

Like the *makejang* plural example in (127), and unlike the reduplicated examples in (124) and (125), there is no inclusive reading for the *ajak makejang* associative plural in a downward entailing environment such as the first argument of *every*, as shown in (134):

(134) *Sabilang anak muani ane nyidaang neka-ang Ketut/cang ajak makejang maan upah*.
every person male REL AV.manage AV.come.CAUS Ketut/1SG with all AV.receive prize
'Every man who manages to make Ketut/me and all of his/my family come will be given a prize.' [If he can only make Ketut/me come, he won't be given a prize.]

Similar to the examples with *makejang* and negation in (129) and (130), there are two readings for negated examples: when *makejang* precedes the negation, *makejang* takes wide scope; when *makejang* floats to the right of the negation, either scope is possible. Example (135) illustrates this for proper names, (136) for pronouns, and (137) for common nouns.

(135) a. *Wayan ajak makejang sing teka*.
Wayan with all NEG come
'Wayan and his family all didn't come (i.e., no one, not even Wayan came).'

b. *Wayan sing teka ajak makejang.*
Wayan NEG come with all
(i) 'Wayan and his family all didn't come (no one, not even Wayan).'
(ii) 'Not all of Wayan and his family came (but most of them came).'

(136) a. *Cang ajak makejang sing demen teken anak-e nto.*
1SG with all NEG happy with person-DEF that
'I and my family all don't like the person (i.e., no one, not even me).'
b. *Cang sing demen ajak makejang teken anak-e nto.*
1SG NEG happy with all with person-DEF that
(i) 'I and my family all don't like the person.'
(ii) 'Not all of my family and I like the person (one or two like him).'

(137) a. *Nyaman-ne ajak makejang sing teka.*
relative-3.POSS with all NEG come
'His/her relatives all didn't come (i.e., not even a single person).'
b. *Nyaman-ne sing teka ajak makejang.*
relative-3SG.POSS NEG come with all
(i) 'Not all of his relatives didn't come (e.g., most of them came, but not all).'
(ii) 'None of all of his relatives, not even one, came.'

We believe that the impossibility of inclusive plural readings with *ajak makejang* is due to definiteness, and is accounted for in the same way as for the *makejang* plural construction discussed in Section 20.3. Indeed, Kiparsky (2014) claims that crosslinguistically, associative plurals are always definite. Therefore, we speculate that this is not a quirk of this construction, and that no language allows inclusive plural readings with associative plurals.

20.5 Inclusive pluractionality

The examples we have examined so far have involved nominal plurality expressed as reduplication. The analogue in the verbal domain is "inclusive pluractionality": in the same environments in which we find inclusive readings for nominal plurals, do we find inclusive readings (allowing reference to only one simple event) for pluractional verbs? Henderson (2012: 27) speculates that inclusive readings for pluractional predicates are not possible, but we show in this section that inclusive pluractional readings are in fact well attested for Balinese as well as Yurok, an Algic language from California (Wood & Garrett 2002; Wood 2007).

Section 20.1.2 showed that plural nouns in English and reduplicated nouns in Balinese have an inclusive plural reading in the scope of negation. We first note an interpretive wrinkle, which we do not discuss further here: negation with verbal reduplication in Balinese has an additional modal meaning of 'unrealized expectation'. Importantly for the question of inclusive pluractionality, (138b), with a negated reduplicated predicate, is acceptable in reference to one pig; this contrasts with the non-negated example in (138a), which requires reference to more than one pig:[10]

(138) a. *Celeng-ne gede~gede.*
pig-3SG.POSS big-REDUP
'His/her pigs are big.' [Not: 'His/her pig is big.']
b. *Celeng-ne sing gede~gede.*
pig-DEF NEG big-REDUP
'The pig(s) is/are not big (but is/are expected to be big).'

Similarly, (139) is negated, and allows reference to any number of people:

(139) *Anak-e nto sing ngling~ngling ditu.*
person-DEF that NEG cry-REDUP there
'The person(s) is/are still not crying there (but is/are expected to be crying).'

The same pattern is found with pluractional *pa-*, but without the additional unrealized expectation meaning induced for negated reduplicated predicates. In the non-negated context in (140a), the general number noun *anak* 'person' refers to any number of people, and the entire sentence refers to a complex event involving a number of squatting individuals (participant plurality). In the negated context in (140b), an inclusive pluractional meaning emerges:

(140) a. *Ada anak pa-jongkok ditu.*
exist person PLURACT-squat there
'There were people squatting there.' [Not: 'There is one person squatting there.']

10 An anonymous reviewer suspects that the 'unrealized expectation' meaning is due to the "large-plural" property of reduplication and pragmatic considerations. However, we think that it is more likely to be associated with the temporal "proximity" and "manner" meanings of reduplication rather than the large plural meaning. That is, the negation conveys that an event has failed to happen at the moment of speaking which is somehow expected to happen by the speaker at any moment (immediately) on that particular occasion. The expectation that an event will happen immediately is essentially a manner meaning, consistent with the reduplication meanings in Balinese discussed in Sections 14 through 18.

b. *Sing ada anak pa-jongkok ditu.*
NEG exist person PLURACT-squat there
'There were no people squatting there (not even a single person).'

We note that inclusive pluractionality with negation is restricted in that placement of the negator affects the available readings. With reduplicated predicates, sentence-final negation does not give rise to either inclusive pluractionality or the modal meaning.

(141) *Ada ditu celeng gede~gede sing.*
exist there pig big-REDUP NEG
'There are pigs there which are not big.' [Not: 'There is a pig there which is not big.']

Two negators can appear, also with an ordinary negation reading and no additional modal meaning:

(142) a. *Ada ditu celeng sing gede~gede sing.*
exist there pig NEG big-REDUP NEG
'There are pigs there which are not big.' [Not: 'There is a pig there which is not big.']
b. *Ada murid ditu sing ngling~ngling sing.*
exist student there NEG AV.cry-REDUP NEG
'There are students there who are not crying.' [Not: 'There is a student there who is not crying.']
c. *Sing ujan~ujan sing jani.*
NEG rain-REDUP NEG now
'It does not (often) rain nowadays (possibly because it only rained once).'

With non-reduplicated predicates, there is no difference in meaning with negation in either position (or in both positions):

(143) a. *Celeng-ne sing gede sing.*
pig-DEF NEG big NEG
'The pig(s) is/are not big.'
b. *Celeng-ne gede sing.*
pig-DEF big NEG
'The pig(s) is/are not big.'
c. *Celeng-ne sing gede.*
pig-DEF NEG big
'The pig(s) is/are not big.'

We leave a full analysis of these patterns for future work.

Section 20.1.3 showed that plural nouns in English and reduplicated nouns in Balinese have inclusive plural readings in questions. Questions with pluractional predicates also exhibit inclusive pluractionality:

(144) Q: *Apa celeng-ne (suba) gede~gede?*
Q pig-DEF already big-REDUP
'Are the pigs (already) big?'
A: *Ae, suba; aukud.*
yes already one.CLF
'Yes, already one (pig is big).'

(145) Q: *Ada anak ngling~ngling ditu?*
exist person cry-REDUP there
(i) 'Are there people crying there?'
(ii) 'Is there a person repeatedly crying there?'
A: *Ae, ada, aukud.*
yes exist one.CLF
(i) 'Yes, there is one (person crying).'
(ii) 'Yes, (the person) cried once.'

(146) Q: *Apa Wayan ngetok~ngetok pintu-ne?*
Q Wayan AV.knock-REDUP door-DEF
'Did Wayan knock (repeatedly) at the door?'
A: *Ae, sakewala acepok dogen.*
yes but once only
'Yes, but only once.'

(147) Q: *Ada lampu pa-ke-byah~byah ditu?*
exist light PLURACT-PUNC-flash-REDUP there
'Are there lights flashing there?'
A: *Ada ma-ke-byah besik.*
exist MID-PUNC-flash one
'Yes, one (light) flashed (once).'

Section 20.1.4 showed that pluractional readings are found in downward entailing environments, including the first argument of a quantifier like *every*. Pluractional predicates also have inclusive pluractional readings in such environments:

(148) a. *Sebilang pangecer ane ngadep~ngadep barang palsu lakar*
every retailer REL AV.sell-REDUP goods fake FUT
tangkep-a
arrest-PASS
'Every retailer who sells fake goods will be arrested.' [A retailer will be arrested even when s/he sells fake goods once.]

b. *Sabilang taluh ane makeplug~keplug jemak-a*
every egg REL MID.explode-REDUP take-PASS
'Every egg which was exploding was taken away.' [Any egg that exploded once was taken away too.]

Inclusive pluractionality is not confined to Balinese. Wood & Garrett (2002) and Wood (2007) observe similar patterns for negated pluractionals in Yurok:

(149) *mos tegen*
NEG rain.ITR
'It never rains.' (Wood 2007: 187)

This example does not have an exclusive pluractional reading: in Woods's words, it does not have "the expected meaning based on the syntactic structure 'It doesn't rain repeatedly (though, for example, it might rain once or twice)'"; see Wood & Garrett (2002) for similar examples. Wood & Garrett analyse this as a special case of NEG-raising:

(150) Negated pluractionals according to Wood & Garrett (2002), Wood (2007):
$NEG(REPET(X)) \Rightarrow REPET(NEG(X))$

However, Wood & Garrett do not notice that this is a clear example of inclusive pluractionality, not a case of special or unexpected behaviour of negation. Compare the following Balinese examples:

(151) a. *Ujan jani.*
rain now
'It is raining now.'

b. *Ujan~ujan jani.*
rain-REDUP now
'It often rains nowadays.'

c. *Sing ujan~ujan.*
NEG rain-REDUP
'It has not rained even once (it is expected to rain already).'

21 Associative pluractionality

We have seen that Balinese has a nominal associative plural construction, marked by *ajak makejang*, which allows reference to a group of individuals that are associated by some pragmatically salient relation. The nominal phrase in (152a) refers to a group of individuals associated with the addressee, and the subject of (152b) refers to a group of individuals (who may or may not be monkeys) associated with a particular monkey:

(152) a. *cai (ajak) makejang*
2SG with all
'you (all); i.e., you with others/associates (all)'
b. *Bojog-e ajak makejang malaib.*
monkey-DEF with all AV.run
'The monkey and his associates all ran away.'

In the verbal domain, the analogue of nominal associative plurality, "associative pluractionality", can be achieved by reduplication of the verb root. The resulting predicate refers to a complex event with subevents that are associated by a pragmatically salient relation. However, associative pluractionality in Balinese is more restricted than associative plurality for nominals: it is not possible for all predicates, and is restricted to events which are conventionally related to one another.

For example, full reduplication of the root *jalan* 'walk' with *ma-* (153), *negak* [AV.sit] (154), and *pules* 'sleep' with locative *-an* (155) refers to a complex plural event typically associated with the activity denoted by the predicate. As seen from the free translation, *majalan~jalan*, for instance, means 'walking, together with conventionally related activities such as sightseeing, shopping and going to the cinema'.

(153) *I Bapa (ma-)jalan~jalan di/ke Jakarta.*
ART father (MID-)walk-REDUP to Jakarta
(i) 'Father walked around in/to Jakarta.'
(ii) 'Father went for a tour to Jakarta (i.e., not simply walking around but also doing related activities such as shopping and sightseeing).'

(154) *Negak~negak ba ditu.*
AV.sit-REDUP just there
'You just sit there (and relax, sleep, or watch TV, etc.).'

(155) *Nyoman pules~pules-an ditu.*
Nyoman sleep-REDUP-LOC there
'Nyoman relaxes there by sleeping and doing other relaxing activities.'

Partial reduplication can also have an associative pluractional reading in Balinese:

(156) *Nyoman ngadap~ngadep celeng.*
Nyoman AV.sell-PARTREDUP pig
(i) 'Nyoman sold pigs/*a pig'.
(ii) 'Nyoman trades pigs (not only selling pigs but also buying pigs to be sold again).'

Without reduplication, these predicates do not have an associative pluractional reading, even though they may refer to a complex plural event. Thus, the verb in (157a) simply means 'walk', as shown in the translation. (157b) can have a plural event interpretation due to the plural subject (made explicit by the presence of the plural marker *makejang*), but does not have an associative pluractional reading. Likewise, the non-reduplicated *ngadep* [AV.sell] (158) also means simply 'sell', not 'trade'.

(157) a. *I Bapa ma-jalan di/ke Jakarta.*
ART father MID-walk to Jakarta
'Father walked in/to Jakarta.' [Not: 'Father went for a tour to Jakarta.']
b. *Krama desa-ne makejang ma-jalan ke Jakarta.*
members village-DEF all MID-walk to Jakarta
'All members of the village walked to Jakarta.'

(158) *Nyoman ngadep celeng.*
Nyoman AV.sell pig
'Nyoman sold a pig/pigs.' [Not: 'Nyoman trades pigs.']

Reduplication with an associative pluractional meaning appears to be restricted to root reduplication without affixation. Except for the homorganic nasal prefix (AV) as in (156) and the locative suffix as in (155), verbal affixes cannot also be reduplicated while retaining the associative pluractional meaning. For example, full reduplication including the prefix *ma-* with *jalan* 'walk' does not give rise to an associative pluractional meaning: (159) simply refers to a plural repetitive event of walking.

(159) *I Bapa majalan~majalan ke/di Jakarta*
ART father MID.walk-REDUP to/in Jakarta
'Father walked around (repeatedly) in Jakarta.' [Not: 'Father went for a tour to/in Jakarta.']

Likewise, reduplicating the verb *tegak* 'sit' and *pules* 'sleep' with the applicative/causative does not give rise to associative pluractionality (cf. (154) and (155)):

(160) a. *Tegak~tegak-in bangku-ne!*
sit-REDUP-APPL bench-DEF
'Sit on the bench repeatedly!' [Not: 'Sit around and do other things on the bench!']
b. *Nyoman mules~mules-ang adin-ne ditu*
Nyoman AV.sleep-REDUP-CAUS younger.sibling-3SG.POSS there
'Nyoman made his sibling sleep there repeatedly.' [Not: 'Nyoman made his sibling sleep and do other things there repeatedly.']

It is also not possible for the pluractional *pa-* prefix to contribute an associative pluractional meaning:

(161) *Ada anak pa-tegak ditu.*
exist person PLURACT-sit there
'There are people (suddenly) sitting around there.' [Not: 'There are people (suddenly) sitting around and doing other things there.']

As mentioned above, besides being morphologically restricted, associative pluractionality is not fully productive, and refers only to conventionally related events. It cannot be used to refer to a collection of non-conventionally related events, even when that collection of events is salient in a particular context: for example, consider a context in which some individual is known to the speaker and addressee to have a compulsion to perform a particular unrelated series of actions in sequence, including touching his legs. In describing this series of events, we cannot reduplicate the verb 'touch':

(162) *Anak buduh nto nyemak~nyemak bais.*
person mad that AV.touch-REDUP leg
'The mad person touched his legs repeatedly.' [Not: 'The mad person performed a series of events which constitute his typical compulsive behaviour including touching his legs.']

22 Conclusion

We have explored the morphology, syntax, and semantics of number in nominal and verbal domains and their interactions in Balinese. Plurality across nominal and verbal domains can be expressed by the same morphological resource of reduplication. There are also constructional means for expressing both regular and associative nominal plurality.

Balinese pronouns are unusual in the expression of number distinctions: as in Pirahã, Balinese pronouns have no distinct plural forms but, unlike Pirahã, they are semantically singular. Balinese pronouns are like proper nouns in that pluralization cannot be achieved by means of reduplication, but analytically through the *ajak* phrase with associative plural meaning. In contrast, Balinese common nouns have general number: unmarked nouns can refer to any number of individuals. Plurality for common nouns can be expressed morphologically by reduplication and/or analytically with the regular plural *makejang* construction or the associative *ajak*+*makejang*/numeral/quantifier construction. These strategies are consistent with the typological profile of Balinese, where common nouns have general number and pronouns are only available in singular. We expect other languages with general number nouns to have number systems whereby plurality is achieved through similar morphosemantic means as Balinese, e.g., (direct/indirect) reduplication, phrasal modification, and verbal number; in fact, Indonesian is very similar to Balinese in these respects (Dalrymple & Mofu 2012). Even in a language with complex verbal morphology involving complex agreement, if the nouns have general number, we would expect number agreement to be morphosemantic in nature, rather than morphosyntactic as seen in English. Marori (Papuan) (Arka 2012a, b, 2017) is an example of this type of language. As in Balinese, nouns in Marori have general number. While the number system of this language is more complex than that in Balinese, similar analytical morphosemantic strategies to express plurality including associative plural are also observed in Marori; see Arka (2017) for details.

Reduplication also expresses plurality in the verbal domain, giving rise to temporal plurality (repeated events), spatio(-temporal) plurality (plural subevents of a single complex event, distinguished in spatio-temporal terms), participant plurality (plural subevents distinguished by their participants), or manner plurality (plural events distinguished by their manner). Unlike in the nominal domain, reduplication in the verbal domain can express an associative plural meaning, although this is restricted to root reduplication.

While expressing plurality, reduplication in Balinese is strictly speaking not an inflectional plural marker, as it is not always associated with plural meaning. Balinese reduplication is of different types (full and partial, with and without vowel replacement), associated with rich and subtle meaning differences which are the hallmarks of derivation: the plural meanings encompass more than the singular vs. non-singular dimension, e.g., as seen in readings involving manner plurality in partial reduplication in verbs, equivalent to the "different kinds" of entities encoded by partial reduplication in nouns.

We hope to have contributed to the descriptive and typological study of the expression of number in nominal and verbal domains crosslinguistically. Descriptively, this is the first in-depth investigation of the intricate morphosyntactic patterns of nominal and verbal plurality in Balinese and their associated semantic constraints. Typologically, the present study provides new evidence testing previous claims related to nominal and verbal number: in particular, the existence of languages with pronominal systems violating Greenberg's Universal 42, and the possibility of numeral modification of reduplicated nouns and pluractional predicates. We hope that our findings will provide a firm foundation for future work on the morphology, syntax, and semantics of number crosslinguistically.

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Abbreviations: 1/2/3 = 1st/2nd/3rd person; APPL = applicative; ART = article; AV = actor voice; CAUS = causative; CLF = classifier; COLL = collective; DEF = definite; EXCL = exclusive; FULLREDUP = full reduplication; FUT = future; INCL = inclusive; ITR = intransitive; LIG = nasal ligature; LOC = locative; MID = middle voice; NEG = negative; NMLZ = nominalization; PART = particle; PARTREDUP = partial reduplication; PASS = passive; PL = plural; PLURACT = pluractional; POSS = possessive; PRF = perfect; PUNC = punctual; Q = question; REDUP = reduplication; REL = relative marker; SG = singular; UV = undergoer voice.

Reduplicated sequences are explicitly glossed as REDUP, occasionally distinguishing full reduplication (FULLREDUP) from partial reduplication (PARTREDUP).

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