

languages (like fish, pigs, breadfruit, and canoes), although the lexical forms used in these counting systems are, in general, not shared with SES languages.²

41). Arosi (SES; Capell 1971:51–53) also counts some objects in fours. These examples show that specific counting has been documented across a wide geographical area. However, counting by tens is limited to languages that retain a general decimal system, such as the Oceanic languages of the Southeast Solomons.

3. SPECIFIC COUNTING IN SOUTHEAST SOLOMONIC LANGUAGES.³ The SES family is divided into two subgroups: Bughotu-Gela-Guadalcanal, and Longgu-Malaita-Makira (Lynch, Ross and Crowley 2002:110). Data for this paper come from:

Bughotu (Ivens 1933),
 Gela (Crowley 2002; Fox, Miller, and Pawley 2015; Miller 1974),
 Ghari ([Vaturanga]; Ivens 1934; Anon 2008),
 Lengo (Unger 2008 and field notes),
 Malango (Van Andel 2017), and
 Tolo (Crowley 1986)

for the Bughotu/Gela/Guadalcanal subgroup; and from:

Arosi (Capell 1971),
 Kwaio (Keesing 1975, 1985),
 Kwara'ae (Ivens 1931),
 Lau (Fox 1974),
 Longgu (Hill 2011 and field notes),
 Owa (Mellow 2014),
 Sa'a (Ivens 1918), and
 Toqabaqita (Lichtenberk 2008a, 2008b)

for the Longgu/Malaita/Makira group.

All of these languages show evidence of a specific counting system, although these systems may no longer be widely used. The lexemes referring to “ten-things” of one kind (for example, *vaga* ‘ten pigs’ in Longgu), are called “numerically specific nouns” by Lichtenberk (2008a) and this terminology is followed here. Numerically specific nouns are not always known by younger speakers (see, for example, Lichtenberk’s [2008a] report of Toqabaqita); however, fieldwork on Longgu (Hill) and Lengo (Unger) confirms awareness and use of a specific counting system by at least some members of the language communities. Some numerically specific nouns are widely used by young and old (for example, *ada* ‘ten coconuts’ for Longgu), while others are limited to specific villages or contexts. For example, *lama* ‘ten feasting bowls’ is widely used in the Longgu village of Nangali, where men still carve wooden feasting bowls, whereas it is not known in the Longgu village of Babasu, a village that has not maintained the tradition of carving.

The referents of these numerically specific nouns can be divided into two groups—things that are edible and things that are not. The edible group includes pigs, dogs, coconuts, fish, eels, birds, breadfruit, food parcels, crayfish/lobsters/prawns, eggs, possums, and turtles.⁴ Of these, the object counted by tens most frequently across the languages is

3. Abbreviations follow the Leipzig glossing rules. Additional abbreviations are: ASSOC, associative; CONJ, conjunction; INAN, inanimate; N.LOC, locative noun.

4. When fish are counted by tens, they are typically a specific variety of fish and not fish in general.

the coconut. Inedible referents include arrows, bamboo filled with food, banana shoots for planting, bowls or baskets (of food), canoes, garden rows, sago-palm fronds, and

4.1 SES NUMERALS. SES languages have retained the decimal system that has been reconstructed for Proto-Austronesian (Blust 2013:268–74). The numerals 1–10 reconstructed for POC (Lynch, Ross, and Crowley 2002) and the numerals 1–10 in a sample of SES languages are given in table 2.

These data demonstrate the conservative nature of SES languages. There are few lexical innovations in SES numerals, the Guadalcanal variants for ‘five’—*chehe* / *tsehe* / *tsege*, for Malango ([Van Andel 2017], Tolo (Crowley 1986), and Ghari (Anon. 2008)], respectively—being the only example of full replacement of a POC etymon in the available data.⁶

However, despite being conservative in terms of source, SES numerals are somewhat complex in terms of behavior. Lichtenberk’s statement that the “morphosyntactic category (of Toqabaqita numerals 1–10) is ambiguous” (2008a:292) is apt. The ambiguity of word class for numerals is the result of the different syntactic behavior of cardinals and ordinals.

Cardinal numerals can form the predicate head, as in example (1). For example, Lengo cardinal numerals (with the exception of *sakai* ‘one’)⁷ are usually found as predicate head:

- (1) LENGO
E lima

- (8) LONGGU
 rua hobi lima lali
 two ten.feasting.bowls five feasting.bowls
 ‘twenty-five feasting bowls’
- (9) LENGU
 ghaivolo ruka
 ten.garden.rows two
 ‘twelve garden rows’
- (10) LENGU
 ruka pigu ruka
 two ten.shells two
 ‘twenty-two shells’
- (11) TOQABAQITA
 teqe kobi-qi malefo ma teqe malefo
 one tensome-ASSOC shell.money and one shell.money
 ‘eleven sets of shell-money’ (Lichtenberk 2008a:301)

Various historic and current analyses consider words like these to be nouns of some kind: Codrington (1885:147) discusses “nouns used in Fiji and in the Solomon Islands which express a definite number of certain things, generally in tens” under the heading “collective nouns”; Churchward (1941:66) calls Old Fijian words like the ones in SES languages “numeral nouns”; and Lichtenberk uses the term “(numerically-specific) quantifying nouns” for Toqabaqita correlates (2008a:292, 299). All of them tend toward a combined nominal/numeral notion. Other possible analyses are collective noun and classifier. These options will be considered in turn.

4.2.1 Numerically specific nouns as nouns. Numerically specific nouns are found as heads of noun phrases. Unlike cardinal numbers, numerically specific nouns do not form the head of a predicate; and unlike ordinal numbers, they have not undergone affixation to form another noun/numeral. Numerically specific nouns are typically heads of associative noun phrases. For example, in Lengo:

- (12) LENGU
 sakai na paga ni igha
 one ART ten.animals ASSOC fish
 ‘one “ten.animals” of fish’¹⁰
- (13) LENGU
 Na ghaivolo ni kobe ara tuanghai
 ART ten.garden.rows ASSOC row PL long
 ‘The group of ten garden rows is long.’

mane ni Mala ‘Malaitan man’ and *mane ni Gela* ‘Gela man’—it’s the kind of man that needs to be differentiated with the modifying phrase. Example (13) shows a less common associative phrase, where the entity referenced by the numerically specific noun is mentioned explicitly. This is not strictly necessary, but seems to add an emphatic sense.

While numerically specific nouns pattern with nouns syntactically, they are a particular kind of noun. Similar to the nouns ‘hundred’ and ‘thousand’, they denote a specific amount; and yet the nouns for ‘hundred’ and ‘thousand’ need the entity explicated:

- (14) LENGO
 e ruka thangavulu tolu na togha ni tinoni
 3SG two ten three ART thousand ASSOC people
 ‘twenty-three thousand people’

Numerically specific nouns do not need the entity explicated; they denote the entity themselves (see examples (6) and (9) above).

4.2.2 Collective noun. Syntactically and semantically, numerically specific nouns are similar to collective nouns. Syntactically, they are nouns; and semantically, they describe groups of things. However, there are enough differences—particularly semantically—that SES numerically specific nouns are not considered collective nouns.

While in many languages collective nouns are not specific as to kind (for example, English ‘group’ of people or buildings, etc.; or ‘bunch’ of keys or bananas, etc.), some do refer to just one kind of thing (for example, English ‘school’ of fish

h, while the referent of a collective
 ective is not. As Rijkhoff (2002:53)
 al discrete entities that are conceived
 ly dies, the others are still ‘family’,

g

s

¹² This limited window of applicability makes “collective noun” an unsuitable word class for SES numerically specific nouns.

It is worth pointing out that SES languages do have conventional collective nouns.¹³ For example, Lengo collectives include *iti* ‘bunch of bananas, no longer on the tree’ (cf. POC *qiti ‘bunch of bananas’), *ovo ligho* ‘swarm of insects’, *savu* ‘school of fish’, *uguugu* ‘group of people; flock of birds’, *vungu* ‘bunch of fruit, e.g., betelnut, lolo (rambutan), coconut (tied together with strips of still-connected husk), no longer on the tree’ (cf. POC *pu u ‘bunch, cluster [of grain, fruit, areca nuts, etc.]’ and *vuvungu* ‘bunch of fruit, e.g., banana, betel nut, coconut, cut nut, still on the tree’). These are collective nouns in the widely accepted sense, which is to say that they do not denote specific quantities. Remove a *vudi* ‘banana’ or two from an *iti* ‘bunch of bananas’ and you still have an *iti* (as long as there are two or more bananas left in the bunch). Numerically specific nouns are different from collective nouns of this nature.

4.2.3 Classifier. Various authors have analyzed numerically specific nouns as classifiers. Lynch, Ross, and Crowley (2002:73) propose numeral classifiers for POC, noting that “a scattering of Oceanic languages ... use a classifier with a numeral, while others have fossilized reflexes of classifiers,” though they add that “it is probable that classifiers were not bound forms, but nouns (as in Indonesian languages).” Among the languages they identify in this section are the Cristobal-Malaitan languages (Southeast Solomonic; Cristobal is another name for Makira). Referring to Toqabaqita data, Aikhenvald suggests that such words may be “fused numeral classifiers” (2003:113). In an extensive study of specific counting systems in Polynesian and Micronesian languages, Bender and Beller (2006:399) submit that these languages established “specific counting systems with numeral classifiers that define a higher counting unit,”¹⁴ and that, “this indicates that both the principle and its components may have existed in Proto-Oceanic.” Finally, the proposed connection between numeral classifiers and numerically specific nouns is hinted at in Blust’s comment that “in Oceanic languages numeral classifiers are sometimes based on multiples of ten” (2013:296).¹⁵

12. In Longgu, *moga* refers to ten sections of yam, or pana in a garden. *Aivolo* refers to ten rows.

These terms can only be used if a full ten sections or rows are present. The term *vaga* “ten pigs” can be used if there are ten or more pigs. Speakers said it could be used in response to a question such as “How many pigs did you kill?”: *Te vaga sara* “at least ten, ten or more pigs (lit: one ten-pig arrive)”.

13. As noted above, there are connections and overlaps between ways of counting (e.g., specific counting systems, classifiers, and collectives). For example, terms that refer to ten-specific things in one language (Longgu *lama* refers to ten feasting bowls) may refer to a collective, nonspecific thing or things in another (Lau *lama* refers to a flock of birds, or herd of pigs or pack of dogs).

14. Bender and Beller (2006b:399) expand on this, saying “a number system can be extended in at least two dimensions: classifiers can be added ‘in breadth’ in order to differentiate ways of counting for different objects; classifiers can be added at the end of a power series (‘in length’), thereby extending the range of counting. A large number of classifiers is the result of the first extension, and high numerals are the result of the second. Combining the two creates a third, and for our purpose the most interesting, variant: if classifiers are incorporated not on the basic, but on a higher level, a new series of counting for the respective objects is instantiated and extended, based on a higher counting unit (‘base extension’). This creates a specific counting system and enables an acceleration in counting.”

15. Unfortunately, Blust doesn’t mention ten-thing words in the ensuing discussion of the Oceanic languages (2013:299), but refers instead to collective nouns.

Since languages of the Malaita-Makira family do have numeral classifiers (Lynch, Ross, and Crowley 2002:73) while those of the Guadalcanal-Gela family do not, we turn to Lichtenberk's (2008a) analysis of the Malaita-Makiran language Toqabaqita to determine whether the "fused numeral classifier" analysis is suitable for SES numerically specific nouns.

In Toqabaqita, numeral classifiers are used with eligible nouns in the context of the cardinal numbers 1–10. However, classifiers do not cooccur with numerically specific nouns, as shown in the complex number construction in (15). Perhaps part of the motivation to analyze these words as classifiers stems from the fact that numerically specific nouns are found in the same position as classifiers in Toqabaqita: that is, (numeral) X (noun). There are three such constructions in (15):

- (15) TOQABAQITA
 [roo talanga qalo] [lima finite qalo] [kwalu fa qalo]
 two hundred taro five tensome taro eight CLF taro
 '258 taro corms' (Lichtenberk 2008a:293)

Aikhenvald (2003:116) acknowledges the difficulty of exactly this situation when she writes, "classifiers and quantifiers may be hard to distinguish if they occupy the same slot in a noun phrase." In (15), the classifier appears only in the context of the final instance of the enumerated entity *qalo*. The classifier *fa* categorizes the noun *qalo* 'taro' as something "relatively small and, loosely speaking, round" (Lichtenberk 2008a:267), but provides no information as to quantity; the information concerning quantity is provided by the numeral *kwalu* 'eight'. However, the classifier *fa* is not present in the first two phrases of example (15), and the numerals in the first two noun phrases—*roo* 'two' and *lima* 'five'—are multipliers for the numerically specific nouns *talanga* 'hundred' and *finita* 'tensome'.

It is a feature of Oceanic languages that the numbers 'hundred' and 'thousand' can be nouns: for example, Siar (Ross 2002:416), Gela (Miller 1974:205–6), and Lengo (example [14] above). This is also the case in Toqabaqita: "The terms for 'hundred', *talanga*, and 'thousand', *toqoni*, with or without the associative suffix, function as the heads of associative noun phrases. ... Their modifiers are noun phrases that designate the entities counted" (Lichtenberk 2008a:295). The decisive factor in deciding the status of words like *talanga* 'hundred' and *finita* 'tensome' is that they can be heads in associative noun phrases (Lichtenberk [2008a:292, 295, 299]); classifiers and cardinal numerals cannot. Additionally, while the general Toqabaqita words for 'ten' are legitimate contexts for the use of classifiers, numerically specific nouns—which also designate sets of ten—are not. These differences are simple, but fundamental; it means that the position in question—(numeral) X (noun)—is not reserved for classifiers.

In the Guadalcanal-Gela languages, which do not have classifiers, it is easier to make the case that numerically specific nouns are not classifiers. Syntactically, numerically specific nouns pattern like nouns in that they take articles.¹⁶ To repeat example (13), from Lengo:

16. As do terms for 'hundred' and 'thousand' (e.g., Lengo *e ruka thangavulu tolu na togha ni tinoni* (3SG two ten three art thousand assoc person) '23,000 people').

(16) LENGO

na ghaivolo ni kobe ara tuaghai

ART ten.garden.rows ASSOC row PL long

‘the ten.garden.rows of rows they are long’

The head noun, *ghaivolo* ‘ten.garden.rows’, is preceded by the article *na*. The second noun phrase, *ni kobe*, is in an associative—not a classified—relationship to the head noun.

While the SES lexemes that refer to sets of ten things share some of the syntactic characteristics of numerals and nouns, they comprise a unique word class distinct from classifiers—that of “numerically specific nouns.”

5. POTENTIAL SOURCES OF NUMERICALLY SPECIFIC NOUNS.

There is considerable overlap in the specific objects that are counted by tens in SES languages, reflecting their shared cultural experiences and shared language history. In some cases, the same referents are referred to with the same, or a cognate, form (for example, *ada* refers to ‘ten coconuts’ in a number of languages). In other cases, the same referents are counted by tens, but the lexemes used to refer to them differ. There are also referents found in just a few languages (for example, eggs, canoes, and garden rows are not widely represented across the languages). Of note are the forms that occur frequently across the languages, but which refer to different objects in different languages (for example, *lama* refers to ‘ten feasting bowls’ in Longgu; ‘ten food parcels’ in Kwaio; and ‘ten birds’ in Kwara’ae).¹⁷ These observations give rise to hypotheses about the relationships between forms and meanings, the source of the terms, and the reasons why some forms and meanings are shared, while other forms are scattered across languages without sharing the meanings. The data presented here are not exhaustive, but based on evidence from some of the forms and meanings we propose several possible sources for these forms.¹⁸ These are: (i) the numeral for ‘ten’; (ii) another numeral; and (iii) the name of an object.

- (i) The numeral for ‘ten’: Forms cognate or similar to the numeral ten (for example, *sangavulu*, *tangavulu*) refer to ‘ten strings of shell-money’ in a number of languages (Gela, Lau, Lengo, Longgu).
- (ii) Another numeral: The form *kobi/ghobi/hobi* refers to a range of referents (for example, ‘ten feasting bowls’ in Longgu; ‘ten wooden bowls’ in Lengo; ‘ten canoes’ in Gela; ‘ten strings of shell-money’ in Lau). Cognates of *kobi* are found for the numeral 100 in the eastern half of Choiseul and throughout Isabel. Some Isabel languages have *gobi* (for example, Kokota), others have *ghobi* (with velar fricative, for

Shared forms and meanings may be related in one of three possible ways: (i) shared

systems. In SES languages, specific counting is a shared linguistic practice that reflects shared cultural practices and contact between language groups. Specific counting also tells us something about cognition, and the relationship between culture and cognition (Beller and Bender 2008; Bender and Beller 2014).

Bender and Beller (2006b) suggest that one important reason cultures may have adapted specific counting systems is to facilitate the collection and redistribution of resources at times of significant community events such as feasts or funerals, and so for this reason the counting units refer to valuable and available resources, such as coconuts and fish. This is true of the Southeast Solomons, as seen in table 1.

Moreover, objects that can be counted by tens are objects that are both valuable and are exchanged between language communities and/or are used as part of an exchange event (like a feast). Pigs, for example, are a valuable resource and, as Bennett (1987:11) notes, they were normally consumed only on festival or ritual occasions. Garden rows, counted by tens in a few languages, such as Longgu, are not exchanged but are an important part of the preparation stage of feasting. As one Longgu chief noted, feasting depends on the piggery and the garden (Hill, fieldnotes). In other words, a chief cannot hold a feast unless he has enough pigs and unless enough food is being grown in the garden.

ing pigs. He reports (Hogbin 1964:49) the arrival of Langalanga people in Longgu on Guadalcanal in 1933 as follows:

When one of their canoes reaches Longgu and has been properly beached, each member of the crew carries his belongings to the house of his partner, who immediately makes him welcome. He may at once present his host with such strings of discs as he has brought, or he may delay till just before departure. . . . After about a week the party fixes the day for the journey home. The hosts catch the pigs to be in readiness and bring in the vegetables from the gardens. The cargo is stowed, good-byes are said, and the canoes paddle away. It is difficult to say how many pigs are exported annually, but two or three fleets come across in every twelve-month period, and I have seen one fleet carry as many as twenty.

Hogbin describes the way Longgu people sometimes traveled to San Cristobal (Makira) and exchanged tobacco for porpoise teeth (1964:50), while trade also occurred between the people of the mountains and the coast of Guadalcanal with the hill people exchanging tobacco and dogs' teeth for discs (shell-money), porpoise teeth, and coconuts (as well as lime for betel nut and salt). On Guadalcanal, he says, "the Longgu thus become the distributors of dog's teeth, the Ruavatu of bowls, and the Berande of shields. In the same way the natives of Florida are the middlemen for the clamshell and turtle-shell ornaments manufactured on Ysabel Island to the north" (Hogbin 1964:50).

- (i) The man's relatives bring the woman to their village and in exchange give the woman's male relatives *tafili'ae* (shell-money).
- (ii) The man's relatives go to the woman's village and publicly hang up 8–10 strings of *tafili'ae*. The woman's father later shares them between his close relatives.
- (iii) A few months later the woman's parents send word that they intend to make a gift of food and pigs on a certain day. The man's parents collect a small amount of food and *tafili'ae*

pants. According to Codrington's account of counting yams in Sa'a, the extraction of ten was done quite literally: "At Saa [Sa'a] when yams are counted two men count out each five, making ten, and as each ten is made they shout out 'one,' 'two,' and so on. A man sits by, and when 'ten' is called making a hundred, he puts down a little yam for a tally." (Codrington 1969:353). Codrington's reference to tallying highlights that specific counting by tens formed part of a more complex system of counting large numbers.²¹

The study of specific counting systems in SES languages supports the arguments put forward by Bender and Beller (2006a,b), and Beller and Bender (2008) that these counting systems developed from the general counting system and were adapted to the cultural conditions of the areas in which they were used. Their primary use was to calculate large numbers, rather than count them, thus easing the cognitive load in languages that had no written numeration. In the Southeast Solomons, the objects that are counted in this way are more likely to have formed part of the preparation for the ritual or the gift of exchange, than to be objects that are received as part of a ritual. The objects counted by tens were both valuable to the community, but also available to them to share and to give.

7. CONCLUSION. When Hogbin (1939, 1964) and Ivens (1930) reported on the number of yams and pigs at a feast, or recorded bride-wealth in strings of shell-money, the numbers were likely to have been calculated using the specific counting system of the language, rather than the general decimal system. Interactions between language communities in the Southeast Solomons, centering around the exchange of shell-money and other valuable edible and nonedible objects, facilitated the maintenance of the specific

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