Reduplicated Distributivity in Mandinka[1]

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Abstract. Reduplication is commonly exhibited by markers of distributivity. Although distributivity markers can either mark the key (as determiner *each* does, as in *each child saw a lion*) or the share (as with adnominal *each*, as in *the boys saw a lion each*), it has been conjectured that distributivity markers formed through reduplication are always markers of the share, rather than the key. Here we discuss a case that challenges but ultimately vindicates this conjecture. In Mandinka (spoken in Senegambia), reduplicating a nominal with interposition of the morpheme *-woo-* gives rise to a distributive reading. We investigated the semantics of the X-woo-X construction and found that it behaves as a key-marker, but also as a share-marker. We take these findings to support an analysis on which X-woo-X signals 'simultaneous distributivity', simultaneously marking both key and share.

Keywords: Reduplication, (simultaneous) distributivity, Mandinka, exhaustivity, share marker, key marker.

1 Introduction

1.1 Gil's conjecture

This paper discusses a reduplication-based strategy for marking distributivity in Mandinka, a Mande language spoken primarily in Senegal (and the first author's native language). Here are several examples of this construction, which we call 'X-woo-X':

(1) **Musu-woo-musu** ye kini taboo noo le [Mandinka]
woman-DIST-woman PRED rice cooking know PERF
'Each woman knows how to cook rice.'

(2) Fode ye siise-e **kili-woo-kili** samba le.
Fode PRED chicken egg-DIST-egg carry PERF
'Fode carried each chicken egg'

(3) Binta ye mangu saamu **kiliŋ-woo-kiliŋ** saŋ ne
Binta PRED mango pile one-DIST-one buy PERF
'Binta bought the mangoes one by one / each mango.'

Along with interpolation of the element *-woo-* (which is also used as the demonstrative 'this'), this construction involves reduplication, either of a noun, as in (1) or a numeral, as in (3). As shown by the gloss, X-woo-X can be translated as 'each X', and generally contributes universal force.

[1]We would like to thank the audience at TripleA 10 in Potsdam for excellent discussion, especially Jérémy Pasquereau, Jakob Maché and Malte Zimmermann.

It is not uncommon cross-linguistically that reduplication of nouns gives rise to an interpretation that is paraphrased with 'each' or 'every'. Moravcsik (1978) lists examples including the following (see paper for references):

(4) a. *ọ̀sọ̀ọ̀sẹ̀* 'every week' (cf. *ọ̀sẹ̀* 'week') [Yorùbá]
alalẹ́ 'every enemy' (cf. *alẹ́* 'enemy')
b. *araw*^{c}*áraw* 'every day' (cf. *araw* 'day') [Tagalog]
c. *renren* 'everybody' (cf. *ren* 'man') [Mandarin]

About these types of cases, Gil (1995, 335) writes, "Although at first blush reduplication appears to bear the denotation of distributive-key universal quantifier, closer inspection reveals subtle distinctions."

In his intriguing comment, Gil invokes the notion of 'distributive key'; let us unpack that before addressing Gil's view on reduplicated nouns. The notion of '(distributive) key' can be explained in contradistinction to the notion of 'share' using adnominal *each* in English, as in:

(5) The kids carried **five balloons** each.
key = the kids; share = five balloons

This sentence expresses a distributive relation where for each of the kids, there are five balloons. There is universal quantification over the kids, taking scope over existential quantification related to '5 balloons'. Generally, a distributive relation involves universal quantification taking scope over existential quantification, as schematized on the lefthand side in Figure 1. The 'key' is the set restricting the universal quantifier (or the noun phrase corresponding to it), and the 'share' is the set restricting the existential quantifier (or the corresponding noun phrase). Thus, in this example, *the kids* is the key and *five balloons* is the share.[2] To say that reduplicated nouns appear at first blush to be distributive-key universal quantifiers is to say that they appear at first blush to associate with the key in a distributive relation, bearing universal force.

The "subtle distinctions" that Gil alludes to have to do with event-key readings of distributivity markers. These can be illustrated with examples from Korean and Telugu. Korean *-ssik* behaves much like binominal *each*, attaching to the share in a distributive relation whose key is determined by a noun phrase found elsewhere in the sentence (Choe, 1987):

(6) ai-tul-i **phwungsen-hana-ssik**-ul sa-ess-ta [Korean]
child-PL-NOM balloon-one-SSIK-ACC bought
'The children bought a balloon each.'

Unlike English *each*, however, Korean *-ssik* has so-called 'event key' readings where there is no nominal in the sentence that serves as the key, and the set universally quantified over appears to be a set of events described by the verb (Choe, 1987, 52):

(7) na-nun **phwung-hana-ssik**-ul sa-ess-ta [Korean]
I-TOP balloon-one-SSIK-ACC bought
'I bought one balloon each time'

[2] A helpful mnemonic for remembering which is the share and which is the key is the template 'SHARE per KEY' (Gil, 2013) – in this case, there are five balloons per kid.

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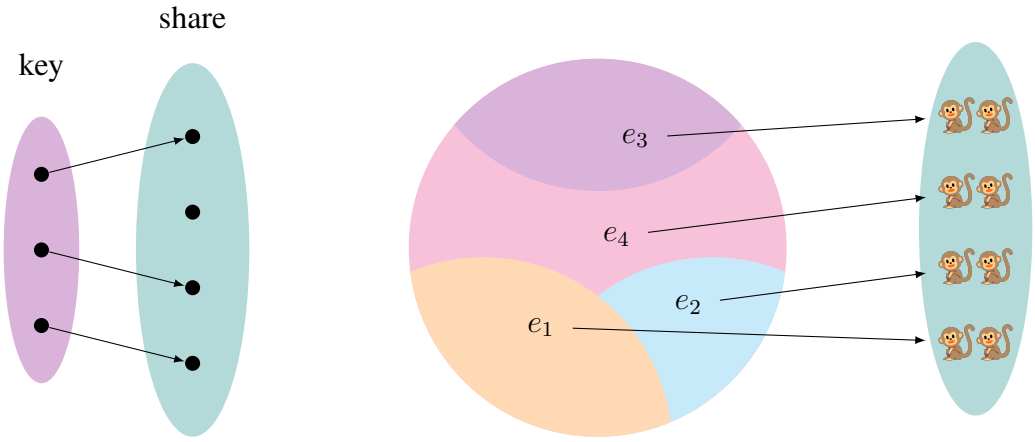

Figure 1: A distributive relation (left). Distributing 'two monkeys' over subevents (right).

Reduplicated numerals in Telugu also have event key readings, as Balusu (2006) points out. (8) is ambiguous between a participant key reading and two different types of event key readings.

(8) ii pilla-lu **renDu renDu kootu-lu-ni** cuus-ee-ru [Telugu]
these kid-PL 2 2 monkey-PL-ACC see-PAST-3PL
lit. 'These kids saw 2 2 monkeys'
... each saw 2 monkeys. Participant key
... saw 2 monkeys each time. Temporal key
... saw 2 monkeys in each location. Spatial key

The participant key reading can be paraphrased 'every kid saw two monkeys'. One of the event key readings is temporal and the other is spatial. On the 'temporal key' reading, the kids saw two monkeys at each time. On the spatial key reading, the kids saw two monkeys in each location.

With some uses of reduplicated numerals in Telugu, event key readings are the only sorts of readings available. In neither of the following examples is there a plural definite NP that would work as an indicator of what the participant key would be:

(9) Raamu **rendu renDu kooto-lu-ni** cuus-ee-Du [Telugu]
Ram 2 2 monkey-PL-ACC see-PAST-2PL
lit. 'Ram saw 2 2 monkeys ...'
... each time. Temporal key
... in each location. Spatial key

(10) **renDu renDu kootu-lu** egir-i-nyiyyi
2 2 monkey-PL jump-PAST-3PL
'2 monkeys jumped in each time/location'

In both of these cases, the reduplicated numeral is associated with the share in an event key distributive relation. Balusu envisions an analysis of event-key readings with an event that is divided up into sub-events, each of which is associated with a pair of monkeys. An example of such a

state of affairs is depicted in Figure 1 (right), where the circle represents an event and the various subregions of it represent sub-events of it.

Back to reduplicated *nouns*: Considering Hebrew examples like the following, Gil (1995) draws a parallel between reduplicated nouns and reduplicated numerals.

(11) a. haʔanašim saħvu mizvada **yom yom** [Hebrew]
the.man.PL.M carry.PAST.3PL suitcase day day

b. haʔanašim saħvu **mizvada mizvada**
the.man.PL.M carry.PAST.3PL suitcase suitcase

c. haʔanašim saħvu et ha-mizvadot **aħat aħat**
the.man.PL.M carry.PAST.3PL ACC the-suitcase.PL:F one.F one.F

d. haʔanašim saħvu et ha-mizvadot **šaloš šaloš**
the.man.PL.M carry.PAST.3PL ACC the-suitcase.PL:F three.F three.F

Examples (11a) and (11b) involve reduplicated nouns; (11c) and (11d) involve reduplicated numerals. Gil points out that (11b), with 'suitcase suitcase' is nearly synonymous with (11c), 'carried the suitcases one one'. He takes it to be uncontroversial that in (11c), the reduplicated numeral marks the share in an event key distributive relation. Based on the synonymy of (11b) and (11c), Gil suggests that (11c) is really a case of share marking; in other words, the reduplication is marking the share in an event key distributive relation. He wonders whether this pattern might be universal (p. 336):

> From an iconic perspective, it is of course more natural for reduplication to mark distributive shares than distributive keys; however, it is also natural for reduplication to express the notion of universal quantification. Whether there exist *bona fide* instances of reduplication with the interpretation of distributive key universal quantifier must remain open for the future investigation.

The idea that it is more natural for reduplication to mark distributive shares than distributive keys raises the question of whether their doing so is a linguistic universal. Let us define 'Gil's conjecture' as follows:

(12) **Gil's conjecture**: Distributivity markers that are reduplicated (numerals or nouns) always mark the share in a distributive relation.

Gil does not state this conjecture directly, but we are nevertheless naming it after him.

The work we are reporting on today provides some support for Gil's conjecture, albeit in a slightly nuanced way. Sometimes distributivity markers do double-duty, simultaneously marking keys and shares. This phenomenon is known as **simultaneous distributivity** (see Henderson 2019 on Comox-Sliammon and Kuhn & Aristodemo 2017 on French Sign Language). We argue that the Mandinka X-woo-X construction exhibits simultaneous distributivity in this sense, and is thus a hybrid between a share-marker and a key-marker. If so, then there *is* a "bona fide instance of a reduplicated distributivity marker that is interpreted as a distributive key universal quantifier", and yet Gil's conjecture may still be universal.

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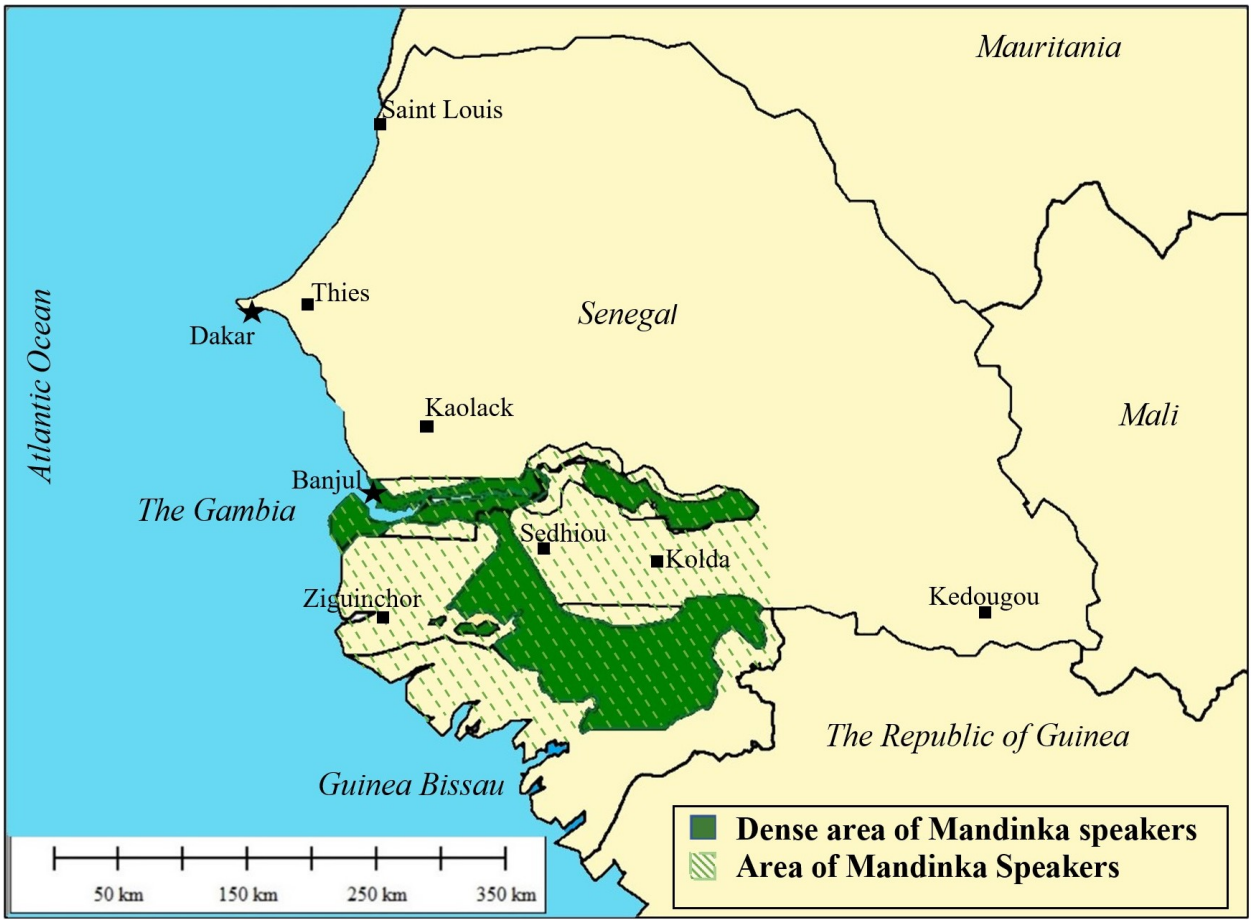


Figure 2: The distribution of Mandinka in Senegambia and its surrounding areas. Map created by Ousmane Cisse in 2022 using Global Mapper; data from The Joshua Project (2022), who credits the Bethany World Prayer Center.

1.2 Mandinka study: General methodology

We'll be focusing on Mandinka as spoken in Senegal, The Gambia, and Guinea Bissau. The number of speakers was estimated at less than 1 million in Senegal in 2017, but it is growing. Mandinka can broadly be classified as a Niger-Congo language, in the Mande subfamily. Alternative names include Mandingue, the local French name, and Socé, the local Wolof name.

For the current study, we collected data in two phases, each characterized by different participant groups and distinct interview methods. Phase I involves ten native speakers of Mandinka from Ziguinchor, comprising five men and five women, with an age range spanning from 20 to over 50 years. The interviews in Phase I were conducted via WhatsApp video conference calls, with participants grouped in pairs or trios. Group interviews open up the possibility that speakers will disagree, discuss their disagreements, and arrive at a consensus, thereby potentially giving an indication of how the observed variation could be weighted in favor of one option or another. Phase II used individual interviews through Zoom video calls, rather than group interviews, because the experimental design involved many variable combinations. We interviewed 12 different

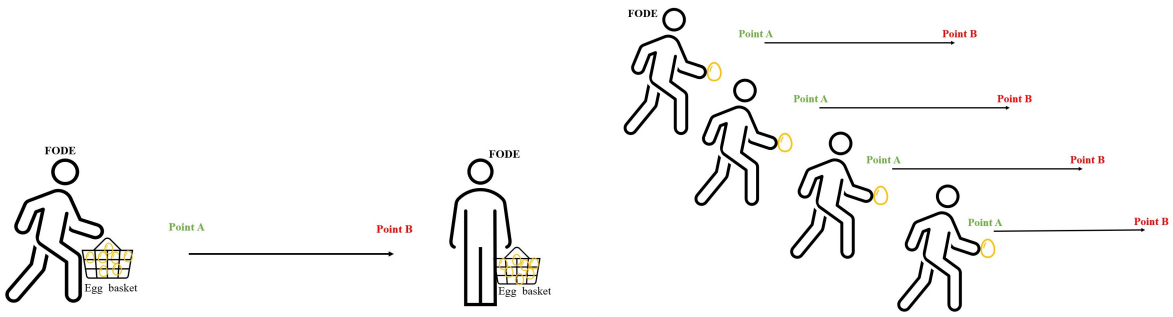


Figure 3: All-at-once scenario (left); one-by-one scenario (right)

native speakers of Mandinka (nine men and three women), also from Ziguinchor, in the same age range as in Phase I.

2 One-by-one effect

We will be establishing two generalizations about the semantics of X-woo-X constructions, starting with the **one-by-one effect**. Suppose that in the X-woo-X construction, X is the distributive share. Then, the sentence involves an event key. Hence there are multiple subevents of the one being described, one per instance of X. Based on this, we predict that X-woo-X should be more felicitous as a way of describing scenarios where the X's are affected one by one, rather than all at once.

With Phase I participants, we collected acceptability judgments relative to the two displays shown in Figure 3. On the lefthand panel of Figure 3, Fode is carrying his eggs all at once from Point A to Point B. We label this the **all-at-once scenario**. On the righthand panel, he takes them one by one. We label this the **one-by-one scenario**.

Relative to these two scenarios, we asked for acceptability judgments on three sentences, one with X-woo-X, one with a definite plural [DEF PL], and one with 'all' [ALL]:

(13) Fode ye siise-e **kili-woo-kili** samba le.
Fode PRED chicken egg-DIST-egg carry PERF
'Fode carried each chicken egg' [X-woo-X]

(14) Fode ye siise-e **kil-o-lu** samba le.
Fode PRED chicken egg-DEF-PL carry PERF
'Fode carried the chicken eggs' [DEF PL]

(15) Fode ye siise-e **kil-o-lu** **bee** samba le.
Fode PRED chicken egg-DEF-PL all carry PERF
'Fode carried all the chicken eggs' [ALL]

Hence all of the sentences involved some way or another of expressing a universal generalization. Participants were asked for acceptability judgements on all three sentences relative to each scenario. We also asked participants which sentence was best given the all-at-once scenario, and which sentence was best given the one-by-one scenario.

	All-at-once scenario	One-by-one scenario
Ex. (13) [X-woo-X]	Infelicitous (unless different kinds)	Good; best choice for scenario
Ex. (14) [DEF PL]	Good	Infelicitous
Ex. (15) [ALL]	Good; best choice for scenario	Infelicitous

Table 1: Acceptability judgments on three sentences relative to one-by-one vs. all-at-once scenarios (Phase I participants)

The participants agreed that the sentences with the definite plural and universal quantifier were acceptable in the all-at-once context but not in the one-by-one scenario. Conversely, the X-woo-X construction was mostly considered unacceptable with the all-at-once scenario. However, one participant raised the point that the sentence could be acceptable if different kinds of eggs are involved. This insight was collectively acknowledged and accepted by all participants.

Furthermore, the participants unanimously concurred that, with the all-at-once scenario, the sentence with the universal quantifier was the most preferred one, although the other sentences were also acceptable. For the one-by-one scenario, we found that the X-woo-X construction was the best way of describing it.

Furthermore, with Phase II participants, we asked for an explanation of the difference in meaning between X-woo-X and sentences involving *bee* 'all' with a definite plural, vis-a-vis two scenarios. The sentences were as follows:

(16) ŋa m baamaa la **kitaabu-woo-kitaabu** jindi duuma
1.SG my mother GEN book-DISTR-book carry down
'I carried down each one of my mother's books.'

(17) ŋa m baamaa la **kitaabo-o-lu** **bee** jindi duuma.
1.SG my mother GEN book-DET-PL all carry down
'I carried down all of my mother's books.'

Several of the participants explained the difference in terms of kiliŋ kiliŋ 'one one'. Here is what one of the participants said verbatim about the two sentences above, (18a) referring to the example (16) with the X-woo-X construction, and (18b) providing judgement about example (17).

(18) a. Ñiŋ fraaz foloo, i ye i **kiliŋ** **kiliŋ** jindi le,
this sentence first 2P.SG PRED 3P.PL one one carry-down PERF
'This one you carried them down one by one, ...'
b. ñiŋ do, i ye i **bee** le jindi ñoŋ na.
this some, 2P.SG PRED 3P.PL all FOC carry_down together OBL
'... this other one, you carried them down all together.'

These remarks further support the idea that 'X' in X-woo-X constructions is the share in an event-key distributive relation.

Overall, there is good evidence that X-woo-X signals the existence of multiple subevents. These findings support a view on which 'X' in an X-woo-X construction picks out the share in

an event-key distributive relation. If so, then Gil's conjecture is upheld in Mandinka; this nominal reduplication construction marks the share.

But if that is the case, then why is it translated as 'every'? In other words, why does the construction communicate exhaustivity with respect to the X's? In the next section, we will give evidence that exhaustivity is indeed part of the meaning of X-woo-X, and then develop a hybrid analysis on which X is simultaneously share and key.

3 Exhaustivity effect

To confirm that the X-woo-X construction conveys exhaustivity, we asked for truth value judgments relative to exhaustive and non-exhaustive displays, with X-woo-X in various grammatical positions. Our methodology was inspired by the work of Bosnić et al. (2022) on Serbian *po*, who collected truth value judgments on that distributivity marker relative to exhaustive and non-exhaustive displays.

For this study, we distributed 6 different surveys evenly to 12 native speakers of Mandinka (the Phase II participants described above). Each survey contained two questions, one with an exhaustive display, and one with a non-exhaustive display. Both questions were about a sentence with X-woo-X in the same grammatical position (subject, object, or both). Order of exhaustive vs. non-exhaustive was counterbalanced, so that half of the participants saw the exhaustive display first, and then saw the non-exhaustive display, and the other half saw the displays in the opposite order. The study was thus a $3\times2\times2$ design, with grammatical position and order as between-participants factors, and exhaustive vs. non-exhaustive as a within-participants factor.

Exhaustivity in subject position. To test exhaustivity in subject position, we used the display in Figure 4, where every town has a doctor, but not every town has a nurse.

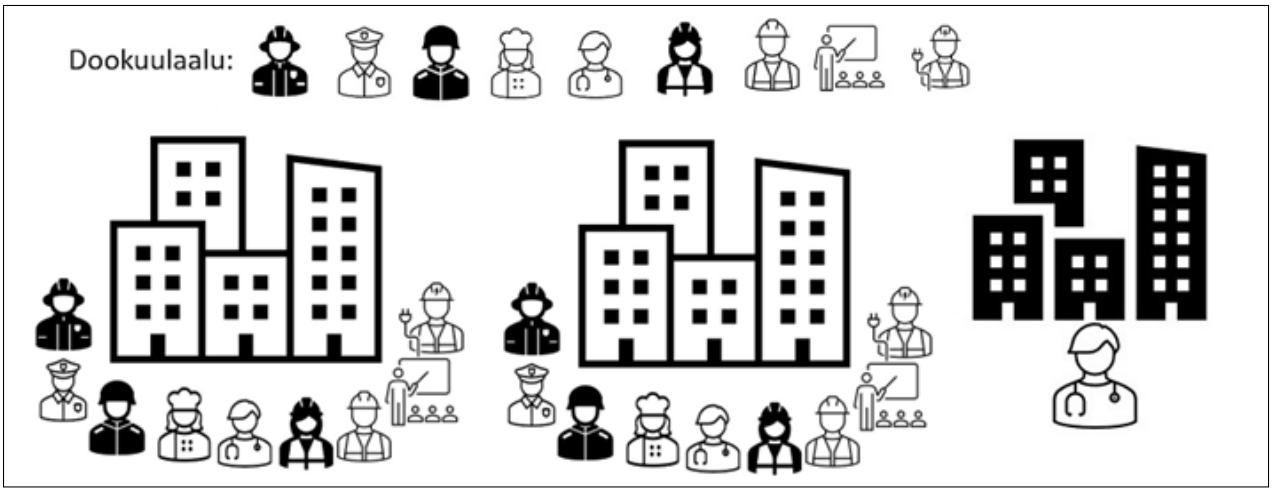


Figure 4: Display for testing exhaustivity in subject position (multiple towns, all having a doctor).

Participants were asked to judge the truth of the following sentences.

(19) **Saatee-woo-saatee** ye jararlaa soto le.
town-DIST-town PRED worker have PERF
'Each town has a doctor.'

(20) **Saatee-woo-saatee** ye karandirlaa soto le.
town-DIST-town PRED teacher have PERF
'Each town has a teacher.'

Participants were given three possible options as responses to choose from: (i) *Tonya loŋ* 'True'; (ii) *Tonya nteŋ* 'Not true'; and (iii) *A manke tonya ti, a manke fanya ti* 'Not true, not a lie'.

Relative to the display in Figure 4, 4/4 participants said that (19) was true, because indeed, every town has a doctor in the display. If we change the noun from 'doctor' to 'teacher', as in (20) then the sentence becomes false, because not every town has a teacher.

Exhaustivity in object position. To test exhaustivity in object position, we used the two displays shown in Figure 5. Relative to these two displays, participants were asked to judge the truth of the following sentence:

(21) Saate-e ye **dookuulaa-woo-dookulaa** soto le
town-DET PRED worker-DIST-worker have PERF
'The town has every (kind of) worker.'

Relative to the exhaustive display in Figure 5 (left), (21) was judged true by 4/4 participants, as the town does indeed have every type of worker. The same sentence is unanimously judged as false in the non-exhaustive display (right), where the town does not have every type of worker.

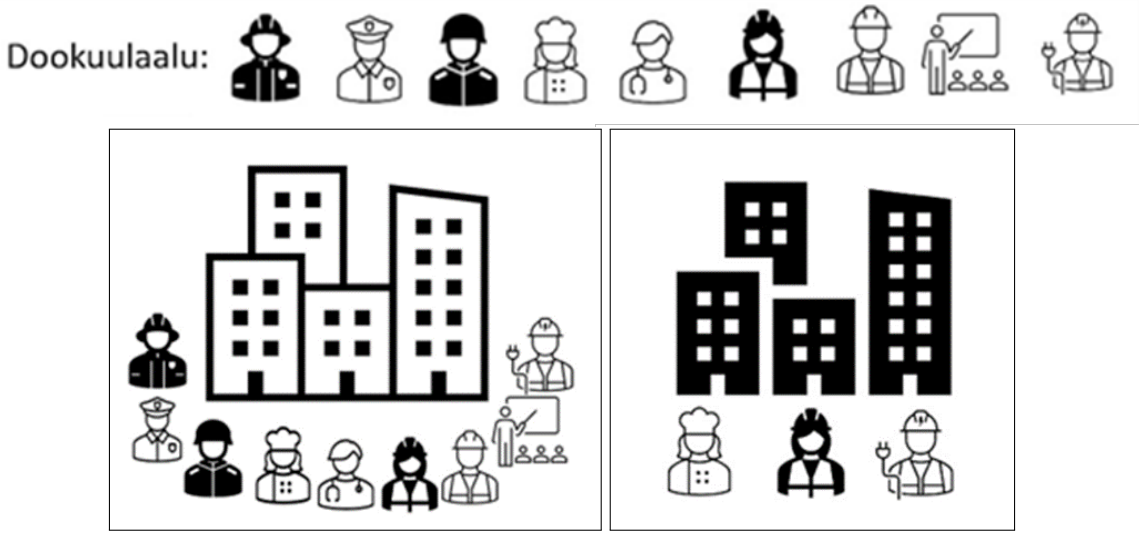


Figure 5: Displays for testing exhaustivity in object position. Left: Exhaustive display. Right: non-exhaustive display. Both images were shown individually on a slide, accompanied by the array of workers shown above.

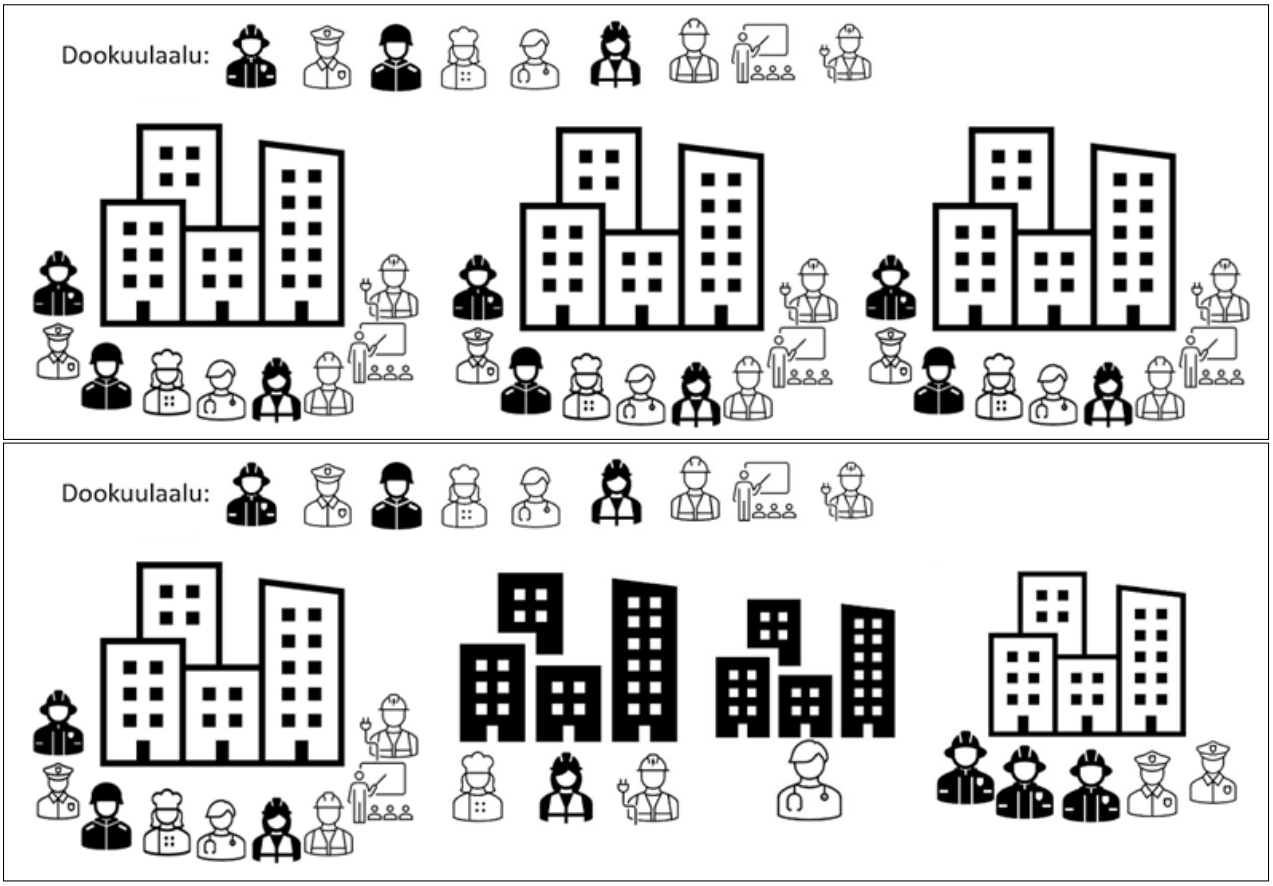


Figure 6: Displays for X-woo-X in both subject and object position. Above: Exhaustive. Below: Non-exhaustive.

Exhaustivity in both subject and object position. Finally, we collected judgments on a sentence with X-woo-X in both subject and object positions:

(22) **Saatee-woo-saatee** ye **dookuulaa-woo-dookulaa** soto le
town-DIST-town PRED worker-DIST-worker have PERF
'Every town has every (kind of) worker.'

We asked for truth value judgments on (22) relative to the two displays shown in Figure 6.

Example (22) was unanimously (4/4) judged true relative to the exhaustive display in Figure 6 because, indeed, each town has all the different types of workers. In the non-exhaustive display, where not every town has every type of worker, the same sentence is judged false.

Summary and discussion. The findings from the exhaustivity study are very clear and simple: When the display is exhaustive, the sentence is true; with a on-exhaustive display, the sentence is false. Hence X-woo-X is interpreted exhaustively with respect to X, at least in argument position.[3]

[3]There are adverbial uses of X-woo-X that do not appear to be exhaustive, as in *luŋ-oo-luŋ* 'every day' or *waati-woo-waati* 'every time'. Thanks to Jakob Mache for raising this point.

In this respect, the 'X' in 'X-woo-X' behaves like the key in a distributive relation than the share.

4 Analysis

We have seen that X-woo-X behaves partly like a share marker and partly like a key marker. In light of this, we propose a hybrid analysis. To build up to that, let us begin with a treatment of X-woo-X as a share-marker in an event-semantic framework, and let us concentrate on the simple example in (23).

(23) **Moo-woo-moo** naata le.
person-DIST-person come PERF
'Everybody came.'

On our share-marker analysis, this sentence describes an event that can be divided into subevents whose agent is a person, which are coming events. Formally, this can be represented as in (24): it's a property that holds of event e if e is a sum of person-coming events.

(24) $\lambda e\,.\,e \in {}^{*}\lambda e'[\mathsf{p}(\mathsf{ag}(e')) \wedge \mathsf{come}(e')]$

Based on this example, we can extrapolate a lexical entry for *-woo-* on which it takes a property P and a thematic role θ (such as 'agent') and an event description V (such as the property of being a 'coming' event) and gives back a property that holds of an event e if it is the sum of V-ing events whose θ-participant has property P.

(25) *-woo-* $\rightsquigarrow \lambda P \lambda\theta \lambda V \lambda e\,.\,e \in {}^{*}\lambda e'[P(\theta(e')) \wedge V(e')]$ [first attempt]

This analysis makes 'X' the share in an event-key distributive relation, and thus captures the one-by-one effects. But so far we have not introduced anything into the analysis that would guarantee exhaustivity. To do that, let us add the requirement that, for example (23), the agent of e is the sum of all the people. The event described in (23) will be an event that is a sum of person-coming events whose agent is the sum of all the people:

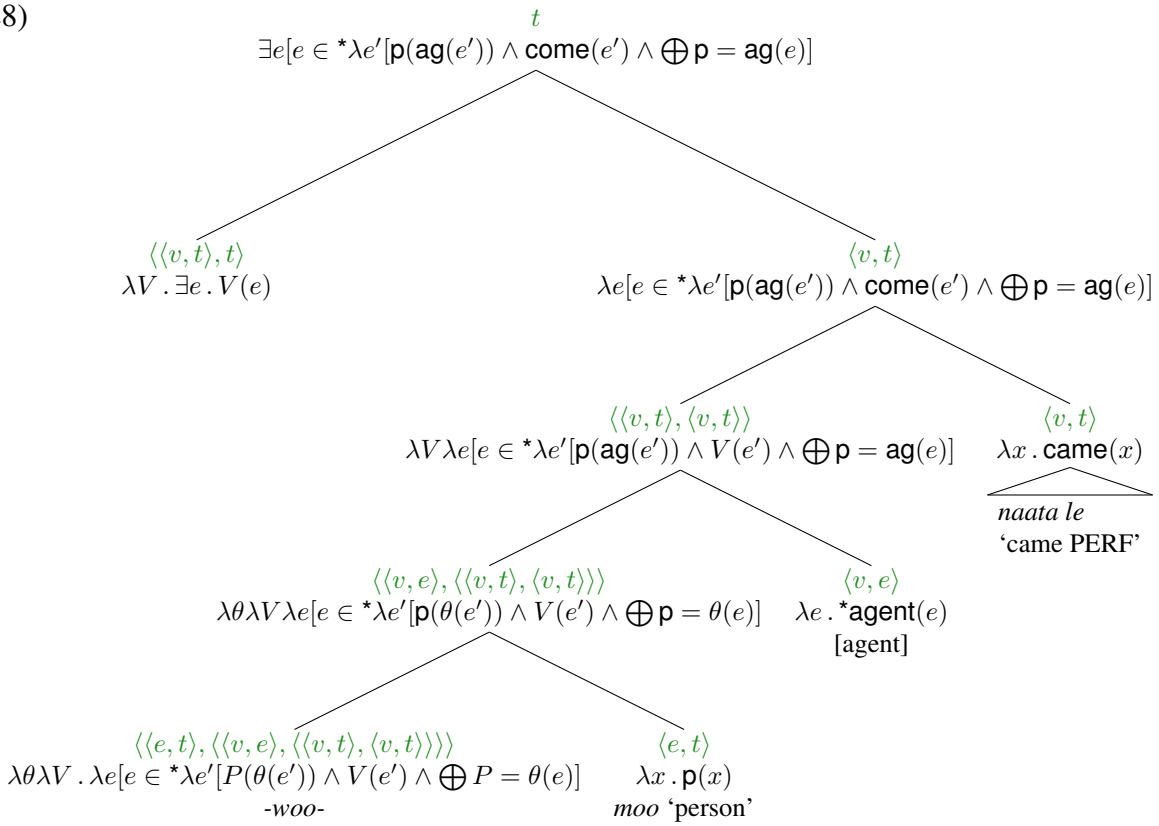
(26) $\lambda e[e \in {}^{*}\lambda e'[\mathsf{p}(\mathsf{ag}(e')) \wedge \mathsf{come}(e')] \wedge \oplus\mathsf{p} = \mathsf{ag}(e)]$

More generally, *-woo-* will require that the θ-participant of the macro-event e is the sum of all the Ps. We incorporate that into our lexical entry for *-woo-* by saying that the sum of the Ps is the θ-participant of e.

(27) *-woo-* $\rightsquigarrow \lambda P \lambda\theta \lambda V \lambda e[e \in *\lambda e'[P(\theta(e')) \wedge V(e')] \wedge \oplus P = \theta(e)]$ [final attempt]

Compositionally, the derivation proceeds as in (28): *-woo-* combines first with the noun *moo* 'person', then with the agent theta role, then with the verbal predicate. At the top, existential closure applies to form an expression of type t.

(28)



To summarize: We propose that *-woo-* is a hybrid between a share marker and a key marker. This analysis captures both the one-by-one effect and the exhaustivity property. Insofar as our analysis makes X the share in an event-key distributive relation, we capture the one-by-one effect; but the analysis also encodes universal quantification over the X's, and in that respect X is like the key in a distributive relation.

This analysis implies that the Mandinka X-woo-X construction is an instance of 'simultaneous distributivity' as Henderson (2019) calls it, since it imposes constraints on both a nominal argument and an event key. Henderson cites another example of this from Mellesmoen's (2018) work on Comox Sliammon. As Henderson points out, the existence of this phenomenon "degrades the key-share relationship" (Henderson, 2019, 14).

It turns out that the proposed lexical entry is more or less identical to Champollion's (2016) analysis of determiner *each* and Kuhn & Aristodemo's (2017) analysis of EACH in French Sign Language. Unlike *every*, English *each* requires different subevents (Tunstall, 1998; Brasoveanu & Dotlačil, 2015; Thomas & Sudo, 2016). English *each* has been observed to be subject to an event differentiation requirement, which can be brought out using the continuation *...but not individually*:

(29) Jake photographed (every / #each) student in the class, but not individually.

We found a similar effect in Mandinka with X-woo-X:

(30) # Jake ye **dindiŋ-oo-dindiŋ** fotoo le, bari a **maŋ** a ke **kiliŋ kiliŋ**
Jake PRED kid-DIST-kid photog. PERF, but 3SG NEG 3SG DO one one
'Jake photographed each kid but not one by one.'

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Furthermore, unlike English *every*, English *each* is unaccetpable with *almost* (Farkas, 1997).

(31) Almost every / *each student left the room.

Our *each*-like treatment of X-woo-X predicts that it should be unacceptable with a translational equivalent of *almost*. That predication is borne out; we get similar effect with Mandinka X-woo-X:

(32) * Fode ye **pereske** siise-e **kili-woo-kili** samba le
Fode PRED almost chicken-DET egg-DIST-egg carry PERF
'*Fode carried almost each egg.'

These parallels suggest that our analysis is on the right track.

5 Conclusion and outlook

We have argued for and presented a hybrid analysis of the Mandinka X-woo-X construction, on which it simultaneously marks the key and the share in a distributive relation. Supporting evidence for this analysis has come from the one-by-one and exhaustivity effects that we have found, along with further parallels between X-woo-X and determiner *each* suggesting that both involve a subdivision of the event into subevents that uniquely correspond to instances of the associated noun.

One fact that remains unexplained is the 'different kinds effect' that we found in our investigation of the one-by-one effect. Recall from Section 2 that X-woo-X was judged acceptable in the all-at-once scenario as long as there were different kinds of eggs. We will not offer a full account of this observation here, but our tentative suggestion is that perhaps X-woo-X depends on an ordering on the set of X's, and that X-woo-X constructions involve a progression along that ordering (cf. Henderson 2013 on English *X by X* constructions). To complete the explanation, it would be necessary to assume further that types can be ordered, while individual eggs are not ordered as easily.

We leave it to future work to flesh out this idea, along with a number of other things to in the future. We mentioned in footnote 3 that adverbial uses of X-woo-X do not appear to carry an exhaustivity effect. Scope is another issue to investigate; X-woo-X appears to take wide scope relative to negation obligatorily. For example, the following sentence only has a $\forall > \neg$ reading, paraphrasable with *no* (as in *saw no animals*):

(33) Jato-o **maŋ daafeŋ-woo-daafeŋ** je bii.
lion-DET NEG animal-DIST-animal see today
'The lion saw no animals today.'

Another direction for future work is to look at similar constructions in other languages. There are other Mande language that have an X-woo-X construction. The following is an example from Dan-Gɛɛtaa (South Mande) (Vydrin, 2017):

(34) **Bɛ̰** **ő́ő́** **ɓɛ̰** ɣ́ dū, ā dɔ̀ à ɓa̰-'. (Dan-Gɛɛtaa)
human DIST human who comes I go 3SG beat-INF
'Whoever comes, I'll beat him/her.'

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X-woo-X exists in Jahanke and Bambara too (personal observation by first author). These languages are part of the Mande language family. Wolof, a non-related language but spoken in the area, is reported to have this construction as well (Tamba et al., 2012). Consider the following example.

(35) a. **Góór-óó-góór** ma giskó [Wolof]
man-oo-man 1SG see-3SG
'I saw every single man'

b. Dem-na-a **kër-óó-kër**
Go-FIN-1SG house-oo-house
'I went to every single house.'

Gilman (1986, 40) mentions a number of apparently related cases of nominal reduplication in African(-diasporic) languages, including *peni peni* 'a penny each' in Engenni, Kikongo *kimosi kimosi* 'one by one', *wan wan* 'one by one, one each' in Cameroonian Creole, *dosu dosu* 'two each' in Príncipe Creole and *dé dé* 'two by two' in Haitian Creole.[4]

Despite all the work that remains to be done, we have made some progress. Gil (1995) asked "whether there exist *bona fide* instances of reduplication with the interpretation of distributive-key universal quantifier", and in some sense, we have answered this question in the affirmative. That is, nominal reduplication in Mandinka does have the interpretation of distributive-key universal quantifier, although it is simultaneously a share-marker. On the other hand, Gil's conjecture remains a possibility: It could be that whenever a reduplication construction serves as a distributivity marker, it marks the share in a distributive relation. It remains to be seen whether there exist *bona fide* counterexamples to this generalization.

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[4]Thanks to Jakob Mache for pointing us to this source.

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