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A post-suppositional account of associative plurals in Burmese

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introduction

Colloquial Burmese has two plural morphemes: the **general plural** *twé/dwé* and the **associative plural** *tó/dó*, which both introduce “multiplicity” (more than one) requirements (Zweig, 2009).

- (1) Sú=gá [DP s'ăya-**dwe**] (=go) twé-géh-deh.
Suu=NOM teacher-PL =ACC meet-PAST-NFUT

‘Suu met teachers.’

↪ Suu met at least two teachers.

- (2) Sú=gá [DP Hla Hla-**dó**] (=go) twé-géh-deh.
Suu=NOM Hla Hla-ASSOC =ACC meet-PAST-NFUT

‘Suu met Hla Hla and her associate(s).’

↪ Suu met Hlahla.

↪ Suu met at least one of Hla Hla’s associates.

The source of multiplicity inference in (1) and (2) may be different. In particular, notice that the entailments of (2) guarantees multiplicity.

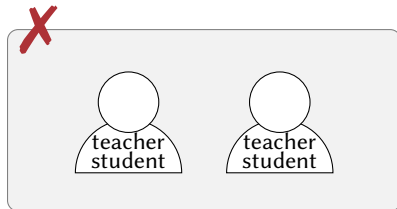
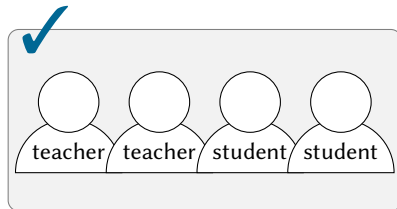
introduction

Consider the conjunction of *twe/dwe* plurals in (3).

(3) Conjunction of *twe/dwe* general plurals:

Sú=gá [DP s'ăya-dwe] (=néh) [DP caùndhà-dwe] twé-géh-deh.
Suu=NOM teacher-PL CONJ student-PL meet-PAST-NFUT
'Suu met teachers and students.'

As there's plural morphology on each conjunct, we expect them to each require at least two individuals. And that's right:

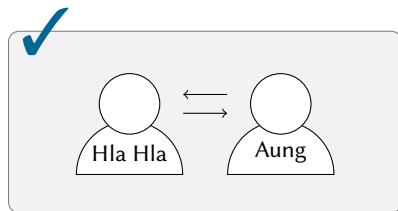
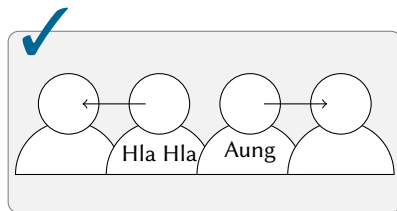


introduction

Today, I am interested in the precise semantics of Burmese associative plural *tó/dó*, particularly motivated by data like (4):

(4) Conjunction of *tó/dó* associative plurals:

Sú=gá [DP **Hla Hla-dó**] (=néh) [DP **Aun-dó**] twé-géh-deh.
Suu=NOM Hla Hla-ASSOC =CONJ Aung-ASSOC meet-PAST-NFUT
'Suu met Hla Hla (and associate(s)) and Aung (and associate(s)).'



introduction

Preview of proposal:

I claim that intuitively, Hla Hla and Aung can satisfy each other's *tó/dó* associative requirement because they are each other's associates.

Formally, I model *tó/dó*'s requirement that the referent contain an associate as a **post-supposition**:

(5) *Suu met Hla Hla-dó and Aung-dó.* =(4)

primary meaning: Suu met Hla Hla (and her associate(s)) and Aung (and his associate(s)).

post-suppositions: Suu met at least one of Hla Hla's associates.
Suu met at least one of Aung's associates.

outline

- **Burmese and its plural morphemes**
- **The semantics of associative plural *tó/dó***
- **Further details**
- **Conclusion**

Burmese and its plural morphemes

background

Burmese is a head-final language with default SOV word order and nominative-accusative case alignment. Case-drop is optional and not correlated with definiteness or animacy (Lim and Erlewine, to appear).

Note on methodology: All uncredited data come from original fieldwork with three native speakers of Burmese.

bare nouns

Nouns without quantifiers or plural marking denote **singular** referents (Lim and Erlewine, to appear; Erlewine and Lim, 2020).

- (6) *You and Maung Maung are at Hla Hla's house. She has **one dog**, who is playing with Maung Maung. You tell Hla Hla:*

K'wè=gá Maun Maun=go caiq-ne-deh.

dog=NOM Maung Maung=ACC like-PROG-NFUT

'The dog likes Maung Maung.' (Lim and Erlewine, to appear: 7)

Noun phrases that describe a plural referent must use a plural marker.

- (7) *You and Maung Maung are at Hla Hla's house. She has **four dogs** and all of them are playing with Maung Maung. You tell Hla Hla:*

K'wè-*(dwe)=gá Maun Maun=go caiq-ne-deh.

dog-*(PL)=NOM Maung Maung=ACC like-PROG-NFUT

'The dogs like Maung Maung.'

general plural

Twe/dwe is the general plural morpheme in colloquial Burmese.¹

- (8) Sú=gá s'ǎya-**dwe**=go twé-géh-deh.
Suu=NOM teacher-PL=ACC meet-PAST-NFUT
'Suu met teachers.'
↪ Suu met at least two teachers.

N-*twe/dwe* has a **multiplicity inference**. Its referent must be a sum of multiple N-atoms.

¹There is another general plural *myà* which is more common in formal and literary Burmese. I do not discuss *myà* today but see Soe (1999: 57ff), Jenny and Hnin Tun (2016) etc.

associative plural

Burmese also has an associative plural marker, *tó/dó*.

“...tó/dó indicates that the referent is accompanied by people belonging to him/her, without being of the same kind. These expressions contrast with s^həya-dwe ‘teachers’ (that is, all of the referents are teachers)...”
Jenny and Hnin Tun (2016: 130)

- (9) Sú=gá s’ăya-**dó**=go twé-géh-deh.
Suu=NOM teacher-ASSOC=ACC meet-PAST-NFUT
‘Suu met teachers.’ or
‘Suu met at least one teacher and their associate(s).’

Associative plurals are thus said to allow a *non-uniform* plural referent (den Besten, 1996; Moravcsik, 2003; Nakanishi and Tomioka, 2004; Smith, 2020).

associative plural

Crosslinguistically, a distinctive feature of associative plurals is its ability to take **proper names** as hosts. This is also possible with *tó/dó*.

(10) Sú=gá Hla Hla-**dó**=go twé-géh-deh.
Suu=NOM Hla Hla-ASSOC=ACC meet-PAST-NFUT

‘Suu met Hla Hla and her associate(s).’

↪ Suu met Hla Hla and at least one associate of Hla Hla’s.

Hla Hla-dó must refer to *Hla Hla* and at least one associate, e.g. family, friend, co-worker, etc.

Whereas the general plural has no animacy restriction on its nominal host, associative *tó/dó* is **restricted to animate nouns**: e.g., **pàndhì-dó*, ‘apple-ASSOC’.

summary

	<i>-twe/dwe</i>	<i>-tó/dó</i>
	-PL	-ASSOC
inanimate common nouns	✓	✗
animate common nouns	✓	✓
proper names	✗	✓

Note: For ease of comparison, most of the examples I show today have the relevant plural constructions in object position. In my MA thesis (New, 2020), I show that the same patterns hold in subject position.

semantics of *twe/dwe*

I claim that the semantics of the **general plural *twe/dwe*** follows what has been proposed for bare plurals in English and other languages (see e.g. Krifka 2004, Sauerland et al. 2005, Spector 2007, Zweig 2009).

Under these accounts, bare plurals are **number-neutral** and the multiplicity inference arises in many contexts as a **conversational implicature**.

semantics of *two/dwe*

Note that English bare plurals don't have a multiplicity inference in downward-entailing contexts:

- (11) a. Police officers didn't come yesterday.
 \leadsto Zero police officers came yesterday.
 $\not\leadsto$ Less than two police officers came yesterday.
- b. If police officers come, I'd be surprised.
 \leadsto If one or more police officers come, I'd be surprised.

semantics of *twe/dwe*

Just like English bare plurals, *twe/dwe* has **no multiplicity inference** under negation:

- (12) *Suu just returned from the mall. Suu's mother tells her that there was a crime at the mall. Suu says...*

Nga=gá yèh-**dwe** mǎ-twé-géh-bù.

1=NOM police-PL NEG-meet-PAST-NEG

'I didn't meet police officers.'

True if Suu met zero police officers.

False if Suu met one or more police officers.

semantics of *twe/dwe*

Likewise, *twe/dwe* has **no multiplicity inference** in a conditional clause:

- (13) [Sú=gá s'ăya-**dwe**=go twé-yin], Sú=gá pyaw-meh.
Suu=NOM teacher-PL=ACC meet-if Suu=NOM happy-FUT
↪ If Suu meets one or more teacher, Suu will be happy.

This supports the view that *twe/dwe* allows both atomic and plural referents, but in many cases gives an implicature that its referent is non-atomic, just like with English bare plurals.

The semantics of *tó/dó*

plural conjunction

Here I consider the interpretation of conjunctions of plurals.
Overt conjunction =*néh* is optional and often dropped.

- (14) Sú=gá s'ǎya-dwe (=néh) caúndhà-dwe=go twé-géh-deh.
Suu=NOM teacher-PL =CONJ student-PL=ACC meet-PAST-NFUT
'Suu met teachers and students.'

As we saw earlier, (14) is a natural utterance where Suu met two teachers and two students, with some expectation that those teachers and those students do not entirely overlap.

Conjunction is also possible with the associative plural *tó/dó*.

- (15) Sú=gá **Hla Hla-dó** (=néh) **Aun-dó**=go twé-géh-deh.
Suu=NOM Hla Hla-ASSOC =CONJ Aung-ASSOC=ACC meet-PAST-NFUT

‘Suu met Hla Hla (and her associate(s)) and Aung (and his associate(s)).’

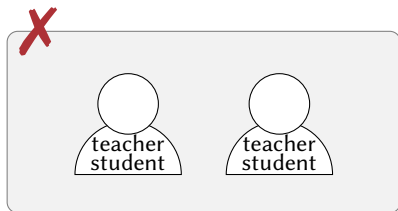
↪ Suu met at least two people (Hla Hla and Aung)

↯ Suu met any unnamed associates.

the crucial contrast

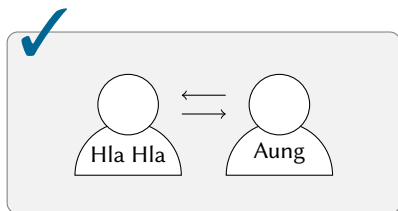
Teacher-PL student-PL is unnatural/odd for just two people.

teacher-dwe student-dwe:



Hla Hla-ASSOC Aung-ASSOC is natural for just two people, Hla Hla and Aung, if they are in a contextually salient social relationship. I call this the **internal plural reading**.

Hla Hla-dó Aung-dó:



proposal

- ▶ I propose that X -*tó/dó* denotes ‘at least X ’, with a post-suppositional check that its referent includes at least one associate of X .

Post-suppositions are tests on the output context evaluated **after** updating with the primary meaning of the sentence (Farkas 2002; Lauer 2009; Brasoveanu 2013 a.o.).

To illustrate, let’s look at an example from Brasoveanu and Szabolcsi 2013...

Brasoveanu and Szabolcsi 2013

Observation: The Japanese additive focus particle *mo* normally gives rise to an additive requirement similar to English *also/too* (16).

- (16) Taro-**mo** hashitta.
Taro-also ran
'Taro, too, ran away.'

However, (17) does not have a requirement that someone other than Taro and Hanako ran away.

- (17) Taro-**mo** Hanako-**mo** hashitta.
Taro-also Hanako-also ran
'Taro as well as Hanako ran away.'
(based on Brasoveanu and Szabolcsi 2013: 55)

Similar patterns have also been observed in Hungarian, Hebrew, Romanian, and Russian.

Brasoveanu and Szabolcsi 2013

Proposal: The additive requirement of *mo* is post-suppositional. Taro and Hanako satisfy the requirements on each other's *mo*'s.

Following Kuhn (to appear), I underline post-suppositions in paraphrases:

(18) *Taro-mo ran away.* =(16)

Taro ran away. Someone other than Taro ran away.

Since the additive requirement is not satisfied by the primary meaning itself, it behaves as a (not-at-issue) requirement on the input context, leading to an apparent presupposition.

(19) *Taro-mo Hanako-mo ran away.* =(17)

Taro and Hanako ran away. Someone other than Taro ran away.
Someone other than Hanako ran away.

After updating with the primary meaning, the context necessarily satisfies the post-suppositions, regardless of the input context.

association sets

Formally, my proposal will refer to two notions of association sets, **ASSOC** and **ASET**, building on Smith (2020).

First, I define the notion ASSOC as a function from an individual to the set of individuals standing in a contextually salient relationship² to it.

(20) $\text{ASSOC}(x) = \{ y \mid \langle x, y \rangle \text{ is in a contextually salient social relationship} \}$

(21) $\text{ASSOC}(Hla\ Hla) = \{ Aung, Maun\ Maun \dots \}$

Note that $\text{ASSOC}(Hla\ Hla)$ excludes *Hla Hla* herself since one is not considered to be in a relationship with oneself.

²Examples of such relationships can be family members, friends, co-workers etc. (See Smith 2020).

association sets

Next, I introduce Smith 2020's notion of an “associate set” ASET.

For any z , $\text{ASET}(z)$ is the set containing z as well as sums of z with at least one individual from $\text{ASSOC}(z)$.

$$(22) \quad \text{ASET}(HlaHla) = \{ HlaHla, HlaHla \oplus Aung, HlaHla \oplus Maun \ Maun, \\ HlaHla \oplus Aung \oplus Maun \ Maun \dots \}$$

(23) *Hla Hla-dó came.*

primary meaning: $\exists x [x \in \text{ASET}(Hla\ Hla) \wedge \text{come}(x)]$

post-supposition: $\exists y [y \in \text{ASSOC}(Hla\ Hla) \wedge \text{come}(y)]$

paraphrase: Hla Hla (and associate(s)) came. At least one of Hla Hla's associates came.

The primary meaning here does not itself entail satisfaction of the post-supposition. Thus, together, they require that Hla Hla and at least one associate came.

(24) *Hla Hla-dó Aung-dó came.*

primary meaning: $\exists x [x \in \text{ASET}(Hla\ Hla) \oplus \text{ASET}(Aung) \wedge \text{come}(x)]$

post-suppositions: $\exists y [y \in \text{ASSOC}(Hla\ Hla) \wedge \text{come}(y)]$;
 $\exists z [z \in \text{ASSOC}(Aung) \wedge \text{come}(z)]$

paraphrase: Hla Hla (and associate(s)) and Aung (and associate(s))
came. At least one of Hla Hla's associates came.
At least one of Aung's associates came.

As long as Hla Hla and Aung are in a relevant social relationship, Aung can be the associate of Hla Hla satisfying the post-suppositional requirement of *Hla Hla-dó* and vice versa.

This is possible because the associative requirements are evaluated after we update with the primary meaning of the sentence.

a typology of post-suppositions

Charlow (2016) and Kuhn (to appear) propose a broader typology of post-suppositions that all share the characteristic of being **delayed**.

- Some lead to requirements that behave like **presuppositions**... (e.g. Haddock definites (Bumford, 2017), additive particles (Brasoveanu and Szabolcsi, 2013))
 - ... while others become part of the **at-issue meaning**. (e.g. modified numerals (Brasoveanu, 2013), “*same*” (Kuhn, 2017))
- ▶ I claim that the meaning of Burmese *tó/dó* belongs in the category of post-suppositions that contribute to the **at-issue meaning**.

tó/dó in conditionals

Consider the *tó/dó* plural in the conditional clause in (25). The post-suppositional requirement of *tó/dó* (and therefore its multiplicity inference) becomes part of the at-issue meaning of the conditional.

- (25) [Sú=gá **Hla Hla-dó**=go twé-**yin**], Sú=gá pyaw-meh.
Suu=NOM Hla Hla-ASSOC=ACC meet-if Suu=NOM happy-FUT
- ~> If Suu meets Hla Hla and her associate(s), Suu will be happy.
 - ~> If Suu only meets Hla Hla, Suu is **not** guaranteed to be happy.
 - ~> If Suu only meets Hla Hla's associate(s), Suu is **not** guaranteed to be happy.

Further details

timing of evaluation

Q: What is the timing of the evaluation of the post-suppositional meaning introduced by *tó/dó*?

A: I argue that the post-supposition has to be evaluated at the minimal clausal projection (ν P, TP) containing X-*tó/dó*. This must be so because there is no internal plural reading in the conjunction of ν Ps and TPs...

VP conjunction

No internal plural readings arise between plural DPs of different VP conjuncts (formally vP).

(26) VP conjunction with *pi*:³

Sú=gá [_{vP} Hla Hla-dó=go twé-*(**pi**)] [_{vP} Aun-dó=go
Suu=NOM Hla Hla-ASSOC=ACC meet-PI Aun-ASSOC=ACC
twé]-géh-deh.
meet-PAST-NFUT

‘Suu met Hla Hla and her associate(s) and met Aung and his associate(s).’

if Suu only met Hla Hla and Aung, even if they are a couple.

--> no internal plural reading

³See Soe 1999: 154 for discussion of VP conjunction with *pi*, which also has other functions.

TP conjunction

No internal plural readings arise between plural DPs of different TP conjuncts.

(27) *TP conjunction with deh or pi:*

[_{TP} Sú=gá Hla Hla-dó=go twé-géh-**deh/pi**] [_{TP} Sú=gá
Suu=NOM Hla Hla-ASSOC=ACC meet-PAST-NFUT/PI Suu=NOM
Aun-dó=go twé-géh-deh].
Aung-ASSOC=ACC meet-PAST-NFUT

‘Suu met Hla Hla and her associate(s) and Suu met Aung and his associate(s).’

if Suu only met Hla Hla and Aung, even if they are a couple.

--> no internal plural reading

DP conjunction

This contrasts with the availability of the internal plural reading with conjunction of DPs in the same vP, shown in (28), repeated from above.

- (28) Sú=gá [DP Hla Hla-dó] (=néh) [DP Aun-dó] twé-géh-deh.
Suu=NOM Hla Hla-ASSOC =CONJ Aung-ASSOC meet-PAST-NFUT

‘Suu met Hla Hla (and her associate(s)) and Aung (and his associate(s)).’

True if Suu only Hla Hla and Aung.

--> ✓ internal plural reading

timing of evaluation

I've shown that the internal plural reading is possible between two *X-tó/dó* phrases in DP conjunction but not in VP conjunction and TP conjunction.

- I propose that this must be because the post-supposition of *tó/dó* has to be evaluated at the minimal clausal projection (*vP/TP*).

Q: Could Burmese *tó/dó* in fact be an additive particle like Japanese *mo*?

Three data points show that *tó/dó* is a plural marker, rather than an additive particle:

- ① Plural subject agreement
- ② Collective predicates
- ③ Reciprocals

Evidence ❶: Plural subject agreement

Burmese has optional subject plural agreement *já* which agrees with *X-tó/dó*, indicating that its referent is plural.

- (29) S'ăya-**dó** la-géh-(**já**)-deh.
teacher-PL come-PAST-PL-NFUT
'Teachers came.'

This contrasts from the behaviour of a singular with additive *lèh*, which is the equivalent of Japanese additive *mo*:

- (30) a. Hla Hla=gá la-géh-deh...
Hla Hla=NOM come-PAST-NFUT
'Hla Hla came.'
- b. ... S'ăya=**lèh** la-géh-(***já**)-deh.
teacher-also come-PAST-PL-NFUT
'The teacher also came.'

Evidence ②: Collective predicates:

X-tó/dó can be the argument of a collective predicate but a singular with additive *lèh* cannot.

- (31) Hla Hla-**dó**=gá càun-hma twé-meh.
Hla Hla-ASSOC=NOM school-LOC meet-FUT
'Hla Hla and her associate(s) will meet at school.'
- (32) a. Aun =néh Sú=gá càun-hma twé-meh...
Aung =CONJ Suu=NOM school-LOC meet-FUT
'Aung and Suu will meet at school.'
- b. ... * Hla Hla=gá=**lèh** càun-hma twé-meh.
Hla Hla=NOM-also school-LOC meet-FUT

Evidence ③: Reciprocals

X-tó/dó can be the antecedent of the reciprocal *c'injìn* but not *X-lèh*.

(33) Caùndhà-**dó**=gá c'injìn pyàw-ne-deh.
student-ASSOC=NOM RECIP talk-PROG-NFUT
'The students are talking to each other.'

(34) *Caùndhà=gá=**lèh** c'injìn pyàw-ne-deh.
student=NOM=also RECIP talk-PROG-NFUT

Note: The formulation of the post-supposition I proposed above will have to be modified slightly in order to make it work with collective predicates.

Concluding remarks

concluding remarks

A plural DP *X-tó/dó* has two components of at-issue meaning:

- **primary meaning** denotes ‘X and possibly associate(s) of X’
- **post-supposition** checks that the referent includes at least one associate of X

The motivation to delay the interpretation of *tó/dó* in such a way comes from what I call the **internal plural reading** of conjunctions of DPs formed with *tó/dó*.

Furthermore, I argued that the post-supposition has to be evaluated at the minimal clausal projection (*vP/TP*) containing *X-tó/dó*.

concluding remarks

Q: Are associative plurals across languages necessarily post-suppositional?

Perhaps not. Japanese associative plural *tachi* doesn't allow the internal plural reading.

(35) Taro-**tachi** to Hanako-**tachi** =ga kita.⁵
Taro-ASSOC and Hanako-ASSOC -NOM came

'Taro, Hanako, and their associates came.'

False if only Taro and Hanako came.

↪ Taro, Hanako, and some unnamed associate(s) came.

⁵I thank Michael Yoshitaka Erlewine, Minako Erlewine, Mie Hiramoto, Yosuke Sato, Kiyoko Mori, and Sakiko Hino for discussion of this example.

However, the internal plural reading is attested with the associative plural in *Inuktitut* (Yuan, 2017).

When it is not in a conjunction, the associative plural *kku* clearly requires other referents:

(36) a. Maanika-**kku**-k pisuk-tuuk.
Monica-ASSOC-DU.ABS walk-INTR.3D
‘Monica and one other are walking.’

b. Maanika-**kku**-t pisuk-tut.
Monica-ASSOC-PL.ABS walk-INTR.3P
‘Monica and others are walking.’

(Yuan, 2017: 2)

Interestingly, Yuan documents that the conjunction of *kku*-plurals with dual morphology specifically refers to just the two named individuals.

- (37) a. Maanika-**kku**-k Uruuti-**kku**-k
Monica-ASSOC-DU Ruth-ASSOC-DU
'Monica and Ruth.'
- b. Maanika-kku-t Uruuti-kku-t Suusa-kku-t
Monica-ASSOC-PL Ruth-ASSOC-PL Susan-ASSOC-PL
'Monica, Ruth, and Susan' (Yuan, 2017: 5)

Inuktitut thus appears to allow the internal plural reading available in Burmese but not in Japanese.

concluding remarks

Further detailed work on the interpretation of conjunctions of associative plurals, in different languages, will help us better understand the possible variation in the meaning of associative plurals and the grammar of post-suppositional meanings.

Cè-zù tin-ba-deh Thank you!

I am deeply grateful to Michael Yoshitaka Erlewine for extensive discussion of the data and analysis presented in this work. For helpful comments, I also thank Kenyon Branan, Mary Dalrymple, Chris Davis, Hadas Kotek, Shen Zheng, Ryan Walter Smith, and others in the NUS Syn/sem lab. I am also indebted to my Burmese informants Phyo Thi Han, Phyo Thura Htay, and Nyan Lin Htoo.

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