

The expression of exhaustivity and scalarity in Burmese¹

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1. Introducing *ma*

Colloquial Burmese has a particle *ma* which in some contexts expresses exhaustivity (1) and in some contexts expresses a scalar ('even'-like) meaning (2). Okell's 1969 reference grammar describes these two uses simply as "*hma_A*" 'even' and "*hma_B*" 'only' (pp. 284–286) but we argue that the use in (1) is a cleft.

(1) Exhaustive *ma* (cleft):

Aung-ga ye-ko-*ma* θau?-kε-dε.
Aung-NOM water-ACC-MA drink-PAST-REAL
'It's WATER that Aung drank.'

(2) Scalar *ma* ('even'-like):

Aung-ga ye-ko-*ma* mə-θau?-kε-dar.
Aung-NOM water-ACC-MA NEG-drink-PAST-DAR
≈ 'Aung didn't even drink WATER.'

We will show that the scalar use of *ma* (2) requires local negation and the -dar mood ending.

In addition, *ma* can form NPIs with *wh*-phrases:

(3) *Wh-ma* NPI:

ŋa bε-panθi-ko-*ma* mə-yu-kε-bu.
I which-apple-ACC-MA NEG-take-PAST- NEG
'I didn't take any apple(s).'

Preview:

- We propose a **unified semantics for *ma***
 - o *ma* is a not-at-issue **scalar exhaustive**, with semantics similar to Velleman et al 2012's proposal for *it*-clefts.
 - o *ma* references likelihood, but does not require the prejacent to be low or high on the scale, unlike *even*. The "scalar" reading comes about indirectly, when *ma* scopes under negation. Wide scope *ma* is always grammatical with cleft semantics.
- We propose that **sentence-final -dar** marks clauses as having a particular discourse status. This indirectly enforces *ma* taking scope under negation, as in (1), leading to the "scalar" reading of *ma*.

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2. Data

2.1. Background

Burmese (Tibeto-Burman) has many typological properties common to head-final languages: canonical SOV word order, pro-drop, scrambling, and *wh*-in-situ. One point which will be of interest is the mood suffix in the Burmese verbal complex:

(4) Verbal complex template:

(negation) – stem – (past/prog) – mood – (Q)

Mood suffixes include:

-de realis/nonfuture *-bu* negative *-dar* DAR (to be discussed below)
-mε irrealis/future

(5) Sentential negation *mə-* is incompatible with *-de/mε*, instead triggering *-bu*:

- a. Aung-ga ye-ko θauʔ-kε-dε.
Aung-NOM water-ACC drink-PAST-REAL
'Aung drank water.'
- b. Aung-ga ye-ko mə-θauʔ-kε-{bu/*dε}.
Aung-NOM water-ACC NEG-drink-PAST-NEG
'Aung didn't drink water.'

2.2. The two uses of *ma*

(6) Exhaustive *ma* (cleft):

- A: Aung-ga ye-dəməhouʔ-biya-ko θauʔ-kε-lar?
Aung-NOM water-or-beer-ACC drink-PAST-Q
'Did Aung drink water or beer?'
- B: Aung-ga ye-ko-*ma* θauʔ-kε-dε. (repeated from (1))
Aung-NOM Water-ACC-MA drink-PAST-REAL
'It's WATER that Aung drank.'
- # Aung-ga biya-ko-lε θauʔ-kε-dε.
Aung-NOM beer-ACC-also drink-PAST-REAL
'Aung also drank beer.'

(6B) expresses (a) that Aung drank water and (b) that Aung drank nothing else, disallowing the continuation that 'Aung also drank beer.'

(7) **Scalar *ma*:**

Context: There were many drinks offered at the party and out of all the drinks, it is expected that Aung will drink water; it is less likely or more noteworthy for Aung to drink beer.

- a. Aung-ga ye-ko-*ma* mə-θauʔ-kε-dar. (repeated from (2))
Aung-NOM water-ACC-MA NEG-drink-PAST-DAR
≈ ‘Aung didn’t even drink WATER.’
- b. #Aung-ga biya-ko-*ma* mə-θauʔ-kε-dar.
Aung-NOM beer-ACC-MA NEG-drink-PAST-DAR
Intended: ≈ # ‘Aung didn’t even drink BEER.’

The example in (7) is “scalar” in the sense that its grammatical/felicitous use is scale-sensitive: intuitively, *ma* cannot be used with a prejacent which is *less likely* compared to its alternatives. In such contexts, speakers often use English ‘even’ in translations of sentences with *ma*.

Q: When is *ma* interpreted as exhaustive vs scalar?

A: “Scalar” uses of *ma* require both local sentential negation *mə-* and the -dar mood morpheme.

Without the *-dar* mood ending, *ma* with sentential negation yields exhaustive *ma* scoping over negation. We return to the function of *-dar* in section 4.

(8) **Negation without *-dar*: exhaustive *ma* scoping over negation**

- Aung-ga ye-ko-*ma* mə-θauʔ-kε-bu.
Aung-NOM water-ACC-MA NEG-drink-PAST-NEG
‘It is WATER that Aung didn’t drink.’

Ma with non-local negation does not yield a scalar reading; instead, it is interpreted as an embedded exhaustive expression:

(9) ***ma* with non-local negation: embedded exhaustive *ma*, not scalar *ma***

- [Aung-ga ye-ko-*ma* θauʔ-kε-dε/dar-lo] Su-ga mə-pyɔ-kε-bu
Aung-NOM water-ACC-MA drink-PAST-REAL/DAR-C Su-NOM NEG-say-PAST-NEG
‘Su didn’t say that it is WATER that Aung drank.’
‘Su didn’t {even} say that Aung {even} drank WATER.’

Example (9) expresses (a) that Su didn’t say that Aung drank water, and (b) “Aung drank water” is a maximal answer to the question “What did Aung drink?”.

→ The interpretation of embedded exhaustive *ma* in (9) reflects a cleft-like semantics, rather than ‘only’-like semantics (Horn 1969 a.o.).

2.3. *Wh- ηa* NPIs

→ *Wh*-phrases with *- ηa* form NPIs: *bε (wh) – (NP) – ηa*

(10) ***Wh- ηa* is an NPI:**

- a. * ηa -ga **bε**-panθi-ko- ***ηa*** yu-kε-dε.
1-NOM which-apple-ACC-MA take-PAST-REALIS
- b. ηa -ga **bε**-panθi-ko- ***ηa*** **mə**-yu-kε-bu. (repeated from (3))
1-NOM which-apple-ACC-MA NEG-take-PAST-NEG
'I didn't take any apple(s).'

→ *Wh- ηa* requires a local negation. It is not generally licensed in downward-entailing environments.

(11) ***Wh- ηa* requires a local negation:**

- * [Aung-ga **bε**-panθi-ko- ***ηa*** yu-kε-dε-lo] Su-ga **mə**-pyɔ-kε-bu.
Aung-NOM which-apple-ACC-MA take-PAST-REALIS-C Su-NOM NEG-say-PAST-NEG
Intended: 'Su didn't say that Aung took any apples.'

(12) ***Wh- ηa* is not licensed in a conditional clause:**

- * [Aung-ga **bε**-panθi-ko- ***ηa*** sar-yin] θe-lai?-mε.
Aung-NOM which-apple-ACC-MA eat-if die-follow-IRR
Intended: 'If Aung eats any apple, he will die.'

(13) **But *wh- ηa* is grammatical in a conditional clause with local negation:**

- [Aung-ga **bε**-panθi-ko- ***ηa*** **mə**-sar-yin] θe-lai?-mε.
Aung-NOM which-apple-ACC-MA NEG-eat-if die-follow-IRR
'If Aung doesn't eat any apple, he will die.'

(14) ***Wh- ηa* is not licensed in polar questions:**

- * Aung-ga **bε**-panθi-ko- ***ηa*** sar-kε-lε?
Aung-NOM which-apple-ACC-MA eat-PAST-Q
Intended: 'Did Aung eat any apple?'

(15) ***Wh- ηa* is not licensed in *wh*-questions:**

- * bε-θu-ga **bε**-panθi-ko- ***ηa*** sar-kε-lar?
wh-3-NOM which-apple-ACC-MA eat-PAST-Q
Intended: 'Who has eaten any apple?'

3. Proposal

ηa cliticizes to the focused constituent (or focus-containing constituent), but takes propositional scope at LF within the same clause.² Let p be its complement with focus alternatives C . C includes conjunctive alternatives and is partially ordered by $<_{\text{likely}}$.

→ ηa introduces the presupposition that “no less likely alternatives are true.”

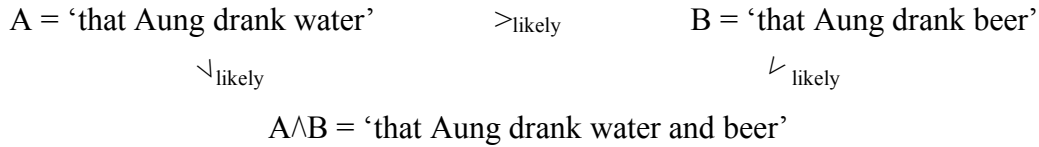
(16) **Presupposition of $\eta a_C(p)(w^*)$:**

$$\forall q \in C [(q <_{\text{likely}} p) \rightarrow \neg q(w^*)] \quad (\approx \text{MAX}_C(p)(w^*) \text{ from Velleman et al 2012})$$

This meaning (16) is also similar to the at-issue meaning proposed for *only* under so-called scalar analyses: see e.g. Klinedinst 2005, Beaver & Clark 2008 and Coppock & Beaver 2014’s MAX, Roberts 2011.

3.1. Wide-scope ηa yields cleft semantics (exhaustive ηa)

Consider a context with two atomic alternatives A and B and $A \wedge B$. Entailment gives us two orderings: $A \wedge B <_{\text{likely}} A$ and $A \wedge B <_{\text{likely}} B$. Suppose further that $A >_{\text{likely}} B$, but we will see that the relative likelihood of the prejacent is not important for deriving the exhaustive ηa use.



(17) LF: [MA [Aung WATER_F drank]] (example (1/6A))

assertion: A = ‘that Aung drank water’ presupposition (16): $\neg(A \wedge B) \wedge \neg B$

(18) LF: [MA [Aung BEER_F drank]] (example (1/6A))

assertion: B = ‘that Aung drank beer’ presupposition (16): $\neg(A \wedge B)$

In both cases, ηa ensures that the conjunctive alternative(s) are false, and therefore other alternatives (B in (17), A in (18)) are false.

→ ηa here contributes cleft (exhaustive) semantics as in Velleman et al 2012.

² This can be thought of as ηa moving from its pronounced position, in a clause-bound fashion, or as ηa agreeing with a covert MA on the clausal spine, with this dependency being clause-bound.

In a clause with a local negation, *ma* can take scope above negation, again yielding a cleft:

(19) ***ma* scoping above negation yields cleft semantics > NEG:**

LF: [MA [NEG [Aung WATER_F drank]]] (example (8))

$C = \{A, B, A \wedge B\}$, $A =$ ‘that Aung didn’t drink water’ and $B =$ ‘that Aung didn’t drink beer’

Entailment gives us two orderings: $A \wedge B <_{\text{likely}} A$ and $A \wedge B <_{\text{likely}} B$

assertion: $A =$ ‘that Aung didn’t drink water’ presupposition (16): $\neg(A \wedge B)$

3.2. *ma* under negation yields “scalar” *ma*

Again consider the following context, repeated from above:

A = ‘that Aung drank water’	$>_{\text{likely}}$	B = ‘that Aung drank beer’
\searrow_{likely}		\swarrow_{likely}
A \wedge B = ‘that Aung drank water and beer’		

(20) ***ma* under negation, with less likely atomic alternatives:**

LF: [NEG [MA [Aung WATER_F drank]]] (example (2/7a))

assertion: $\neg A$ presupposition (16): $\neg(A \wedge B) \wedge \neg B$

The use of *ma* with ‘water’ (20) is grammatical and requires that less likely alternative(s) (i.e. Aung drank beer) are false.

(21) ***ma* under negation, with no less likely atomic alternatives:**

LF: [NEG [MA [Aung BEER_F drank]]] (example (7b))

assertion: $\neg B$ presupposition (16): $\neg(A \wedge B)$

→ Notice that the presupposition of (21) is strictly weaker than the asserted content, therefore its use is ungrammatical, ruled out for example by Crnič’s (2011) Principle of Non-Vacuity.

(22) **The Principle of Non-Vacuity (Crnič 2011: 110):**

The meaning of a lexical item used in the discourse must affect the meaning of its host sentence (either its truth-conditions or its presuppositions).

ma under negation is ungrammatical if the prejacent is lowest on the scale of likelihood (as in (21)), but grammatical with more likely alternatives. This makes *ma* appear to be “scalar,” and explains the use of (scale-reversed) *even* in English translations of examples such as (2/7a) in (20).

3.3. *Wh-ma* NPIs

We follow Ramchand (1996) and Beck (2006) a.o. in taking *wh*-phrases to have no ordinary semantic value:

- (23) a. $[[\text{which apple}]]^o$ undefined
 b. $[[\text{which apple}]]^f = \{x : x \text{ is an apple}\}$
- (24) a. $[[\text{Aung which apple ate}]]^o$ undefined
 b. $[[\text{Aung which apple ate}]]^f = \{\text{that Aung ate } x : x \text{ is an apple}\}$

ma requires a defined ordinary (prejacent) value, so it cannot combine with $[[\text{Aung ate which apple}]]$ in (24). We adopt the null existential closure operator in (25):

- (25) **Existential operator as in Erlewine 2017:**³
 a. $[[\exists \alpha]]^o = \exists p [[\alpha]]^f . p$
 b. $[[\exists \alpha]]^f = [[\alpha]]^f$
- (26) a. $[[\exists [\text{Aung which apple ate}]]]^o = \text{that Aung ate some apple}$
 b. $[[\exists [\text{Aung which apple ate}]]]^f = \{\text{that Aung ate } x : x \text{ is an apple}\}$

Suppose the apples in the domain are 1, 2, and 3:

that Aung ate some apple >likely that Aung ate 1, that Aung ate 2, that Aung ate 3

(27) ***ma* on (26) yields a systematic contradiction:**

LF: $[\text{MA } [\exists [\text{Aung which apple ate}]]]$ (example (10a))

assertion: $1 \vee 2 \vee 3$ presupposition (16): $\neg 1 \wedge \neg 2 \wedge \neg 3$

→ This systematic contradiction is judged as ungrammaticality (e.g. Gajewski 2002, 2009).

(27) ***ma* under local negation makes the *wh*-NPI grammatical:**

LF: $[\text{NEG } [\text{MA } [\exists [\text{Aung which apple ate}]]]]$ (example (3/10b))

assertion: $\neg(1 \vee 2 \vee 3)$ presupposition (16): $\neg 1 \wedge \neg 2 \wedge \neg 3$

³ Existential operators over Rooth-Hamblin alternatives are also invoked by Kratzer & Shimoyama (2002), Biezma & Rawlins (2012), and Uegaki (2017). However, the operators proposed by these authors also redefines the focus-semantic value; Erlewine's (2017) formulation does not.

4. *-dar*

Recall that sentences with *ma* and sentential negation have two different meanings, which correlate with the choice of the final mood suffix on the verb:

- *-bu* (regular NEG) ending: exhaustive *ma* > NEG (8) LF in (19): MA > NEG
- *-dar* ending: scalar *ma* (2/7) LF in (20, 21): NEG > MA

The *-dar* ending is not limited to examples with *ma*. Kato (1998: 88–89) notes that utterances with *-dar* are similar to Japanese *-no-da* propositional clefts; Andrew Simpson (p.c.) notes that it is similar to Mandarin *shì...de* propositional clefts.

→ **We analyze *-dar* as a propositional cleft.** Sheil (2016) proposes that propositional clefts are utterances where a new “line of inquiry” is created, e.g. an implicit sister/sub-question to the immediate Question Under Discussion.

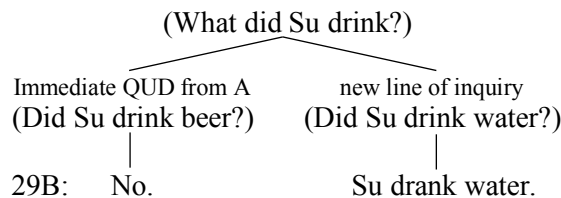
(28) ***-dar* is inappropriate for direct answers to questions:**

- A: What did Su drink?
 B: Su-ga biya-ko θau?-kε-**dε/*dar**.
 Su-NOM beer-ACC drink-PAST-REAL/DAR
 ‘Su drank beer.’

(29) ***-dar* is appropriate for corrections:**

- A: Su drank beer.
 B: mə-hou?-bu, Su-ga yε-ko θau?-kε-***dε/dar**.
 NEG-right-NEG Su-NOM water-ACC drink-PAST-REAL/DAR
 ‘No, Su drank water.’

Discussing propositional clefts in Scottish Gaelic, Sheil (2016) proposes that in examples such as (29), the propositional cleft in B addresses a question (“Did Su drink water?”) which is a sister question to the discourse’s immediate question “Did Su drink beer?” that A was congruent to.



How does the (non-)use of *-dar* correlate with the different uses of *ma*?

- **Scalar *ma*** is felicitous in cases where the immediate QUD is a super-question (e.g. “What did Aung drink?” or “Did Aung drink anything?”) or a sister question (e.g. “Did Aung drink beer?”). (2/7) answers a new “line of inquiry” (“Did Aung drink water?”), therefore *-dar* is used.
- **Exhaustive *ma* (a cleft)** resolves an existing QUD (Velleman et al 2012), therefore *-dar* is ungrammatical.

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