

Non-morphological reduplication in Torau.

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1. Torau

- Member of the Northwest Solomonic (NWS) subgroup of Western Oceanic.
- One of three languages within the Mono-Uruavan subgroup of NWS.
- Spoken by about 1200 individuals in three villages on the east coast of Bougainville (Papua New Guinea).

2. Derivational and non-productive reduplication

- Reduplicant is idiosyncratically (C)V or (C)VCV,
- Lexical distribution is idiosyncratic or restricted.
- Functions are varied.

- Can derive VTR → VITR:

(1)a.	pima-ia	‘dam it’	→	pima~pima	‘make dams (itr)’	
	b.	mun-a	‘hide him/her/it’	→	mu~muni	‘hide (self); be hidden’
	c.	ato-a	‘talk to him/her’	→	ato~ato	‘talk (itr)’
	d.	atoka-ia	‘cook it’	→	a~atoka	‘cook (itr)’

- And/or give distributed reading (TR or ITR):

(2)a.	kosi-a	‘slice it’	→	kosi~kosi-a	‘slice it into pieces’	
	b.	koput-ia	‘cut it’	→	ko~koputu	‘cut into pieces’
	c.	sipo-a	‘pick it up’	→	si~sipo	‘pick up from all about’
	d.	abe	‘climb’	→	abe~abe	‘climb all about’
	e.	matate	‘emerge’	→	mata~matate	‘emerge from all directions’

- Pluralises certain human nouns (reduplicant (C)V):

(3)a. pa-dia	‘their father’	→	pa~pa-dia	‘their fathers’
b. nia-dia	‘their mother’	→	ni~nia-dia	‘their mothers’
c. atu-dia	‘their child’	→	a~atu-dia	‘their children’
d. baina	‘woman’	→	ba~baina	‘women’
e. alaa	‘man’	→	a~alaa	‘men’

- Various idiosyncratic derivations:

(4)a. ua	‘fruit (n)’	→	u~ua	‘bear fruit (v)’
b. kevara	‘k.o. palm’	→	keva~kevara-la	‘like a <i>kevara</i> (adj)’
c. sama	‘fish for tuna’	→	sama~sama	‘tuna rod’
d. kadeke	‘tell stories’	→	ka~kadeke	‘story’
e. onou	‘think’	→	ono~onou	‘thoughts’

3. Regular inflectional reduplication

- Henceforth here 'RED' = regular inflectional reduplication.

3.1 Functional characteristics

- Obligatory in exactly two constructions:
 - one IPFV construction;
 - one NEG construction.

Imperfective

- Imperfective is marked by an enclitic comprising one of two IPFV markers carrying subject-indexing.
- Inflectional reduplication occurs with some IPFV subtypes, but not with others.
- The distribution of RED in IPFV is complex. (See Palmer 2007)

- Broadly, RED does not occur with ‘unmarked’ IPFV subtypes:
 - progressive aspect (stative, experienter and psych verbs);
 - persistive aspect (activity, achievement and accomplishment verbs).
- RED does occur with all other IPFV subtypes:
 - habitual aspect;
 - progressive inchoative/inceptive aspect;
 - progressive aspect (with activity, achievement and accomplishment verbs)

(5)a. pita ma-to geesi=**sa**-la
Peter RL.3SGS-PST be.big=IPFV-3SGS
'Peter was big.'

b. pita ma-to **soo**≈sobii=**e**-la
Peter RL.3SGS-PST RED≈walk=IPFV-3SGS
'Peter was walking.'

(6)a. beesu=**sa**-gu to
be.hungry=IPFV-1SGS PRS
'I'm hungry.'

b. **bee**≈beesu=**sa**-gu
RED≈be.hungry=IPFV-1SGS
'I'm always hungry.'

Negation

- Negation is expressed in two ways.
- When pre-V modal/subject indexing particle (MOD/SBJ) is present, negation is marked by a suffix *-ka* on MOD/SBJ.
- Inflectional reduplication is obligatory.
- When MOD/SBJ is not present, NEG is an independent particle with the form *aka*.
- Inflectional reduplication cannot occur.

(7)a. **di-ka** **pee~peko=ia**
RL.3PLS-NEG RED~like=3SGO
'They don't like it.'

b. ***di-ka** peko=ia

c. **aka** peko=ia=sa-dia
NEG like=3SGO=IPFV-3PLS
'They aren't liking it.'

c. ***aka** **pee~peko=ia=sa-dia**

- MOD/SBJ is only omissible when IPFV enclitic is present, as IPFV also carries subject agreement.
- The *aka* particle negative construction therefore only occurs in the presence of IPFV.

(8)a. **aka** peko=ia=**sa-dia**
 NEG like=3SGO=IPFV-3PLS
 ‘They aren’t liking it.’

b. ***aka** peko=ia

c. ***aka** **pee**~peko=ia

3.2 Form of inflectional reduplication

- Reduplicant is M_NW_D .
- M_NW_D in Torau is a single bimoraic syllable (as in Ilokano (McCarthy & Prince 1995:333-334)).
- Torau reduplicant is therefore CVV .

- Only the initial CV of the base is copied.
- The V lengthens to satisfy the bimoraicity of the reduplicant vowel.

(9) a.	kàdek-ía	‘tell it’	→	kàa~kàdek-ía
b.	pimá-ia	‘dam it’	→	pìi~pimá-ia
c.	tégese	‘stand’	→	tèe~tégese
d.	lótu	‘pray’	→	lòo~lótu
e.	lukáutu	‘look for’	→	lùu~lukáutu

- When initial syllable of base is bimoraic, only the melody of the first mora is copied.
- That vowel then lengthens to satisfy reduplicant bimoraicity.

(10)a.	máusu	‘sleep’	→	màa~máusu	*mau~mausu
b.	láo	‘go’	→	làa~láo	*lao~lao
d.	káisi-a	‘take it’	→	kàa~káisi-a	*kai~kaisi-a
e.	kái-a	‘carry it’	→	kàa~kái-a	*kai~kai-a

- When initial syllable is onsetless, reduplicant vowel lengthening does not occur.

(11)a.	aló-a	‘do it’	→	à~aló-a	*aa~alo-a
b.	elóo	‘wait	→	è~elóo	*ee~eloo
c.	ipíiri	‘change’	→	ì~ipíiri	*ii~ipiiri
d.	ólabu	‘be afraid’	→	ò~olábu	
	*oo~olabu				
e.	uáka	‘work’	→	ù~uáka	*uu~uaka

4. Inflectional reduplicant as clitic

4.1 Domain of host

- RED does not attach to V but to a larger constituent: VP.
- When an adverb occurs between MOD/SBJ (in INFL) and V, ADV is reduplicated, not V.

- (12)a. di-ka **laa**≈lao
 RL.3PLS=NEG RED≈go
 ‘They didn’t go.’
- b. di-ka **maa**≈mala lao
 RL.3PLS=NEG RED≈a.little go
 ‘They didn’t go on a little way.’
- c. *di-ka mala **laa**≈lao
- d. di-ka **boo**≈boo lao
 RL.3PLS=NEG RED≈previously go
 ‘They haven’t gone yet.’
- e. *di-ka boo **laa**≈lao

- When multiple such adverbs occur the first is reduplicated.

(13)a. di-ka **boo**~boo mala lao
 3PLS=NEG RED~previously a.little go
 ‘They haven’t gone on a little way yet.’

b. *di-ka boo **maa**~mala lao

c. *di-ka boo mala **laa**~lao

4.2 Zwicky & Pullum's (1983) criteria

- (i) Clitics have a low degree of selection with respect to their hosts, affixes have a high degree of selection.
- Torau inflectional reduplication has a relatively high degree of selection (V, ADV), but not as high as standard verbal inflectional reduplication in other languages (V only).
 - The degree of selection pertains simply because only ADV may precede V within the VP, so only V and ADV may be VP-initial.

(ii) Syntactic rules of movement, deletion, etc target words, including affixed words, but do not target host+clitic as a unit.

- No syntactic rules in Torau target base plus RED.

(iii) Clitics cannot occur inside affixes. (Note, however, endoclitics).

- No affixation occurs outside RED in Torau.

- (iv) Affixed words are more likely to have idiosyncratic forms than host+clitic.
- (v) Affixed words are more likely to have idiosyncratic semantics than host+clitic.
- The formal and functional characteristics of words displaying RED in Torau is entirely consistent.

(vi) Affixed words are more likely to have accidental or paradigmatic gaps than host+clitic.

- RED in Torau does not appear to satisfy this criterion in one context.
- RED is blocked when the stem carries derivational or idiosyncratic reduplication.

(14)a. di pima=ia
3PLS dam=3SGO
'They dammed it.'

b. di-ka pii~pima=ia
3PLS=NEG RED~dam=3SGO
'They haven't dammed it.'

(15)a. di pima~pima
3PLS RD~dam
'They made dams.'

b. di-ka pima~pima
3PLS=NEG RD~dam
'They haven't made dams.'

c. *di-ka pii~pima~pima

- This is the only context where NEG inflection on MOD/SBJ is not accompanied by RED.
- It's a problem: Clitics have no opportunity to selectively refuse to appear since they have no access to the internal morphology of the host.
(Anderson 2005:34, Halpern 1998:106)
- Phonological constraints may prevent multiple reduplications of a base.
- This remains to be accounted for.

4.3 Interim conclusion

- Despite derivational reduplication blocking RED, I conclude that RED is a clitic not an affix for three reasons.
- The domain of RED is VP not V.
- RED has functional scope over the verb, whether it attaches to V or a preceding ADV.
- Affixes are selected by their host, clitics are independent of their base.

Torau RED is not selected by the verb but by forms elsewhere in the clause (NEG or IPFV).

- Torau RED is a clitic with the following parameters (Anderson 2005:82).
- It is located:
 - within the domain of VP;
 - by reference to the first syntactic daughter constituent of that domain; and
 - preceding that anchor point.

- Torau therefore resembles Chamorro (Chung 2003:579-580), where RED targets the leftmost PRWD in the VP. Except:
- in Chamorro it also marks other predicate phrase types – it is not known whether this is also true of Torau; and
- in Chamorro RED targets the CV of the primary stressed syllable in the base, while Torau RED targets the CV of the initial syllable of the base, whether stressed or not.

5. Phonological and morphosyntactic clitics

5.1 Anderson's typology

- Anderson's (2005) typology of Phonological Clitics and Morphosyntactic (a.k.a. Special) Clitics.
- Phonological Clitics are defined by their prosodically deficient nature. They are not PRWD so do not project stress.
- Morphosyntactic Clitics are defined by their 'special' syntax.
- These two dimensions are orthogonal.

- Any form may have one of logically four possible statuses on the basis of these two dimensions.
3. Phonological but not Morphosyntactic Clitic.
(Zwicky's Simple Clitic)
 5. Morphosyntactic but not Phonological Clitic.
(a Special Clitic not present in Zwicky's typology)
 3. Morphosyntactic and Phonological Clitic.
(Zwicky's Special Clitic)
 4. Not a Phonological or Morphosyntactic Clitic.
(not a Clitic)

- The syntax of Torau RED does not correspond to that of any free form, therefore Torau RED qualifies as a Special Clitic.
- Which type of Special Clitic is Torau RED in my set of logical possibilities: type 2 or type 3?
- i.e. is Torau RED prosodically deficient, or does it form a PRWD?

5.2 Torau and Diyari

- In Torau $RED=MNW_D$.
- As a general principle, MNW_D reduplicative template consists of a single binary foot, usually corresponding to the smallest possible word in the language. (McCarthy & Prince 1998:286)
- This applies to Torau, where $RED=\sigma_{\mu\mu}$, and $\sigma_{\mu\mu}$ is also the size of the minimum word (as in Ilokano).

(16)	a.	túu	‘sit’
	b.	síi	‘sting’
	c.	lása	‘chief’

- According to McCarthy & Prince (1998), templates like M_{NWD} need not be specified.
- All that needs specifying in the case of any M_{NWD} reduplicant is that R_{ED} is P_{RWD} . (McCarthy & Prince 1998:302)
- This requires a constraint $R_{ED}=S_{TEM}$, which in turn invokes an more general constraint $S_{TEM}=P_{RWD}$. (Kager 1999:220)

- McCarthy & Prince regard RED=STEM as a stipulation in the lexicon applying to a reduplicative morpheme. (1998:299,302)
- An alternative view would be that RED=STEM is a universal constraint that is undominated in languages where the reduplicant is a prosodic word.
- (It's not clear which view Kager (1999:220) takes.)

- That situation applies to reduplication in Diyari.
- In Diyari:
 - the reduplicant and base each bears primary word stress; and
 - RED conforms to the vowel-final nature of prosodic words in Diyari.
- The reduplicant is therefore a free-standing PRWD. (McCarthy & Prince 1998:287,299; Kager 1999:219)

- McCarthy & Prince's discussion of Diyari is terminologically confusing: “the reduplicative prefix... is a free-standing prosodic word... [i]n effect, then, the prefix + base collocation... is a compound...” (1998:287)
- However, it is clear that Diyari RED is an independent prosodic word.
- In Anderson's terms it would be a Morphosyntactic (i.e. Special) Clitic, but not a Phonological Clitic, because it is not prosodically deficient.

- This is not true for Torau.
- Phonological evidence demonstrates that RED and its base are not separate prosodic words.
- This includes:
 - absence of reduplicant vowel lengthening with vowel-initial bases; and
 - stress shift.

(17) ólabu ‘be afraid’ → ò~olábu

- RED in Torau does form a single prosodic word with its base.

- So, although Torau RED is MNWD, it appears it is not also PRWD.
- This means that RED in Torau can't simply be specified as a stem.
- It is therefore not the case that all MNWD reduplicants are simply specified as STEM, as claimed by McCarthy & Prince (1998:302).
- If RED=STEM is a universal constraint, in Torau it must be dominated by other constraints that prevent it deciding the optimal candidate.
- Either way the MNWD template must be specified somewhere in Torau.

- However, Torau RED is always assigned stress.
- It always attracts stress because it has the structure of the minimum stress-bearing unit (M_NW_D).
- Lengthening of the copied vowel takes place to satisfy this, and does not occur when it is not required to do so (with vowel-initial bases).
- It is not a P_RW_D in its own right, so does not project stress, but it may carry stress by virtue of participating in the prosodic structure of the host.

5.3 RED as compound

- Alternatively, we could say that McCarthy & Prince are right, M_{NWD} reduplicants = P_{RWD} ,
- Torau RED is P_{RWD} , but is not assigned primary stress because it is in a morphological compound with its base.
- RED does project stress, but is always secondary stress because in Torau head foot aligns right, and the base to the right of RED always consists of at least one complete foot.

- If that is correct, Torau RED is not a Phonological Clitic by Anderson's definition because it is not prosodically deficient (it is PRWD).
- However, it is phonologically deficient in that it lacks melody.
- There are three possibilities. Torau RED is:
 - PRWD and a Phonological Clitic;
 - a Phonological Clitic but not PRWD;
 - PRWD but not a Phonological Clitic.

- Torau RED is PRWD and a Phonological Clitic.
- Implication:
Phonological Clitics must be phonologically deficient, but this need not be a prosodic deficiency – it could be a deficiency in other phonological ways.
- A Phonological Clitic attaches to a host because it cannot be uttered independently, either because it lacks prosodic structure or because it lacks melody (or, presumably, both).

- Phonological Clitic but not P_{RWD}.
- This is the analysis already presented.
- Implication:
It's not sufficient to specify S_{TEM} in the lexicon.
Torau R_{ED} must specify M_{NWD} template.
- This problem for OT which wants M_{NWD} shape to emerge from rankings of constraints, not stipulation.

- PRWD but not Phonological Clitic.
- Implication:
Torau RED is a clitic, not because it's phonologically deficient, but because it's a Morphosyntactic Clitic.
It's morphologically compounded to the base in the same way that independent roots compound.
- It seems counter-intuitive that a form with no melody is not phonologically dependent, but this is implicit in McCarthy & Prince's analysis of Diyari.

- It is hard to test this because Torau RED is always assigned stress but is never prosodically independent.
- It is impossible to tell from prosodic evidence whether RED always carries secondary stress because it is:
 - MNWD so attracts stress but not PRWD and does not project stress; or
 - PRWD projecting stress that always ends up as secondary stress because it compounds to form a single PRWD with its host.

- However, I reject the analysis that Torau RED + base is a morphological compound because RED:
 - may attach to ADV or V (and compounding does not simply involve expressing a feature morphologically, wherever it happens to land)
 - attaches to a phrasal constituent;
 - alternates with an independent PRWD (NEG).

5.4 Interim conclusion

- Assuming a compounding analysis is rejected, we are left with two possibilities.
- Torau RED is a Phonological Clitic and is MNWD, but not PRWD, in which case the specification STEM is not sufficient and the template MNWD does need to be specified.
- Torau RED is a Phonological Clitic and is PRWD, in which case a Phonological Clitic need not be prosodically deficient, but may be phonologically deficient in other ways.

6. Syntactic analysis

- The syntactic analysis of Torau RED depends in part on the analysis of negation.
- Recall NEG is marked by the inflectional suffix *-ka* on MOD/SBJ if one is present.
- If no MOD/SBJ is present, NEG is marked by a preverbal particle *aka*.

6.1 Analysis 1: *aka* is particle in INFL

- For negation the most appealing analysis would be to treat *aka* as filling the same syntactic slot as MOD/SBJ.
- MOD/SBJ is in INFL.
- When MOD/SBJ is present, NEG is marked there and the feature appears in INFL.
- When no modal marking or subject indexing is required, the feature NEG still appears in INFL, but as it has no host, it occurs in the free form *aka*.

- This analysis is very satisfying in terms of NEG and INFL, but it does not explain why RED does not occur with *aka*.
- If NEG is in INFL regardless of whether it is expressed in conjunction with modal and agreement features or not, what would block RED in only one of those contexts?
- It can't be due to functional incompatibility, as NEG and RED co-occur when MOD/SBJ is present.
- The complementarity of RED with freestanding *aka* NEG suggests they alternate in the same syntactic position.

6.2 Analysis 2: *aka* is clitic in INFL

- *Aka* is in INFL but is a proclitic preceding the first syntactic daughter of the host domain VP.
- RED is then blocked from appearing, as the proclitic position it takes is already occupied.
- But there is no reason why two clitics could not be stacked up at the left margin of the VP.
- Also RED would have to be the innermost of the two possible clitic positions, so should block the INFL clitic, not the other way around.

6.3 Analysis 3: *aka* and RED are heads

- MOD/SBJ occupies INFL, but *aka* does not.
- There are two RED morphemes – one expressing NEG, the other expressing ASP.
- *Aka* and REDNEG are heads projecting NEG_P.
- REDASP is a head projecting ASP_P.

- When MOD/SBJ occupies INFL, NEG is marked there with *-ka* and head of NEG^P is occupied by REDNEG.

(18) _{IP}[di-to-ka _{NEGP}[**soo**~_{VP}[sobii]]]
 3PLS-PST-NEG REDNEG~walk
 ‘They didn’t walk.’

- When no MOD/SBJ, INFL is empty and *aka* is head of NEG^P.

(19) _{IP}[∅_{NEGP}[**aka** _{VP}[sobii]]]
 NEG walk
 ‘They didn’t walk.’

- When RED occurs with IPFV with positive polarity, it is REDASP and is head of ASPP.

(20) IP_[ASPP][**soo**≈_{VP}[sobii=**sa**-dia]]
 REDASP≈walk=IPFV-3PLS
 ‘They are always walking.’

- Problem: When NEG and IPFV cooccur, there should be a NEG_P and an ASP_P.
- If MOD/SBJ is present marked with *-ka*, RED_{NEG} and RED_{ASP} should co-occur as head of NEG_P and ASP_P respectively, but this is ungrammatical.

(21)a. di-to-ka soo≈sobii=e-dia
 3PLS-PST-NEG RED≈walk=IPFV-3PLS
 ‘They weren’t walking.’

b. *_{IP}[di-to-ka NEG_P[soo≈_{ASP_P}[soo≈_{VP}[sobii=e-dia]]]]

- We must resort to some phonological constraints preventing multiple reduplications of a base.

- Another problem: When NEG and IPFV co-occur, and there is no MOD/SBJ to host *-ka*, *aka* and REDASP should co-occur as head of NEG_P and ASP_P respectively, but this is also ungrammatical.

(22)a. IP_{[ASP_P[**soo**≈_{VP}[sobii=**sa**-dia]]]}

RED≈walk=IPFV-3PLS

‘They are always walking.’

b. **aka** sobii=**sa**-dia

NEG walk=IPFV-3PLS

‘They are not always walking.’

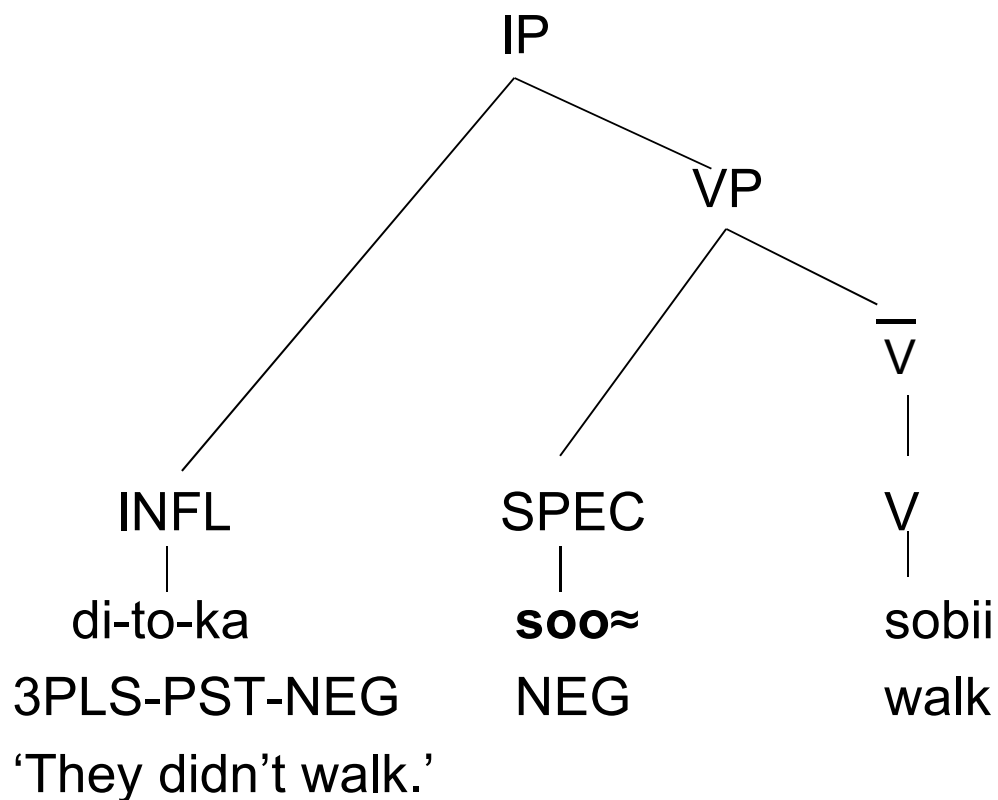
c. * IP_{[NEG_P[**aka** ASP_P[**soo**≈_{VP}[sobii=**sa**-dia]]]]]}

- Alternatively, *aka* and RED, either as two morphemes or perhaps as one, are heads of a single phrasal category.
- It's not clear what that would be.

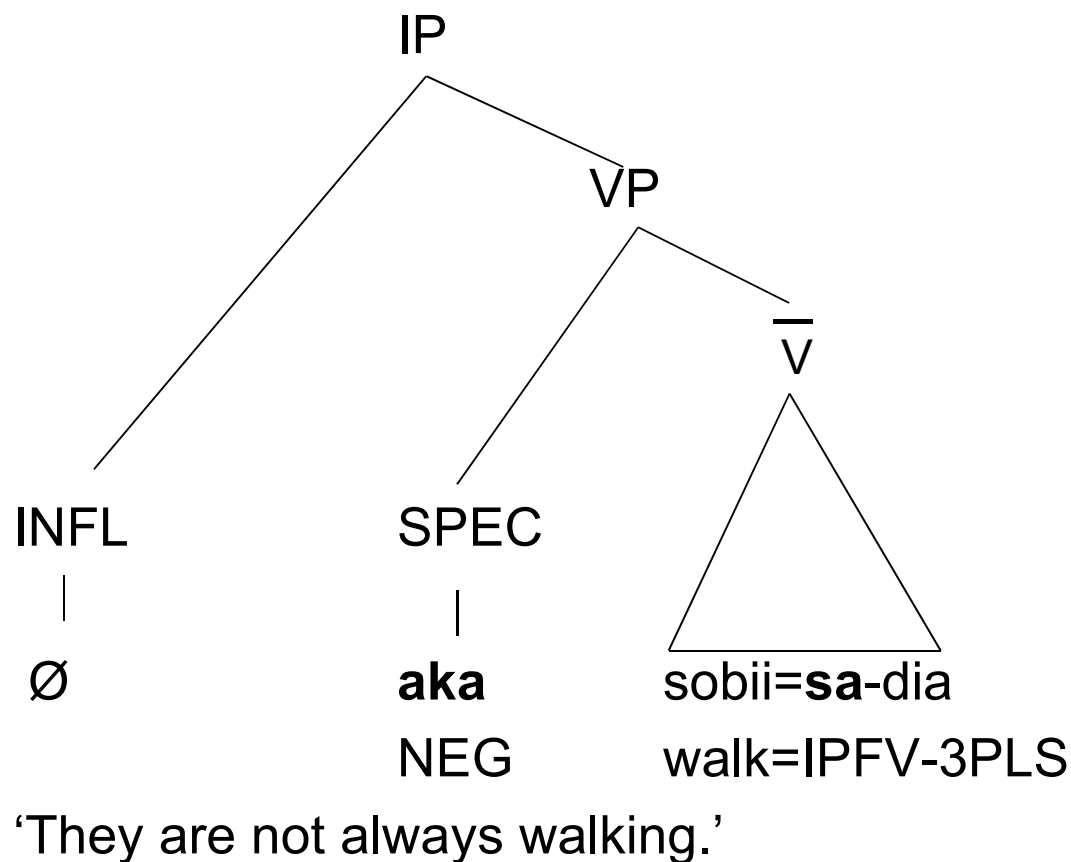
6.4 Analysis 4: *aka* and RED are in SPEC of VP

- MOD/SBJ occupies INFL.
- *Aka* does not occupy INFL.
- *Aka* and RED alternate in SPEC of VP.

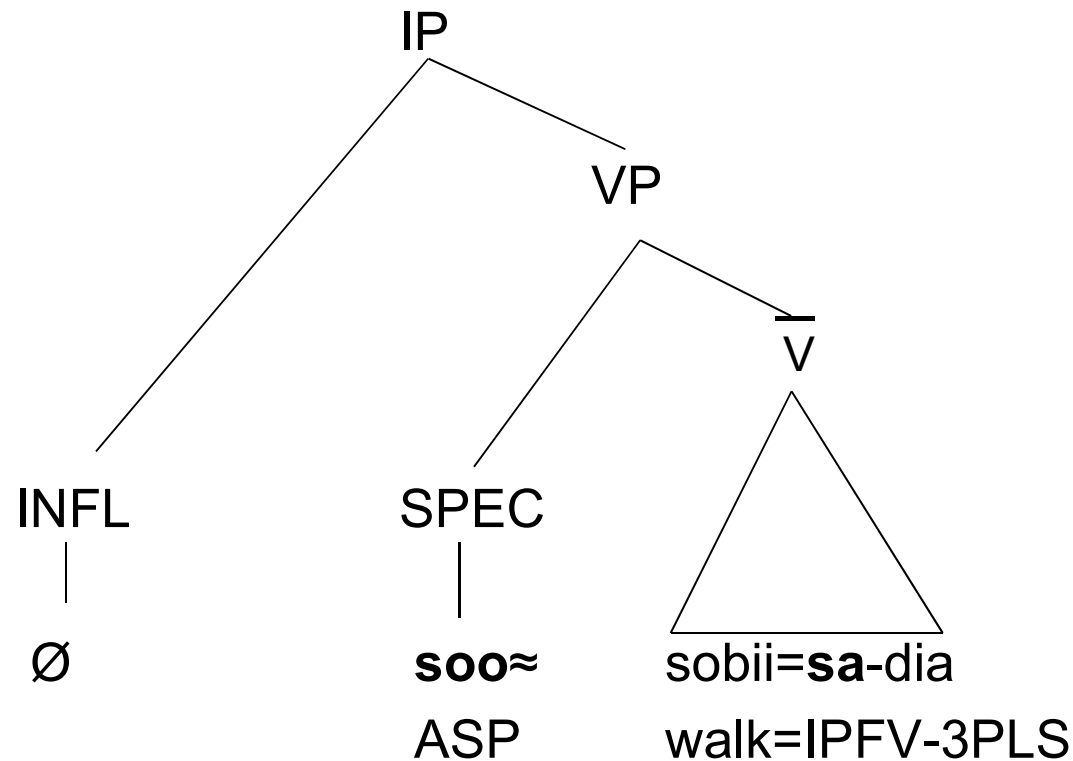
- When MOD/SBJ is present, it occupies INFL and NEG is marked with *-ka* in INFL. SPEC of VP is occupied by RED.



- When no MOD/SBJ, INFL is empty and NEG is expressed by *aka* in SPEC of VP.



- When RED occurs with IPFV in positive polarity, RED does not express NEG, but some category of ASP.
- SPEC of VP is still occupied by RED, but now expressing ASP.



‘They are always walking.’

- This means that RED indifferently expresses NEG and ASP.
- Or that there are two RED morphemes, one expressing NEG, the other ASP.
- These and *aka* are permitted in SPEC of VP.

- This is the least problematic syntactic analysis.
- But the Lexical Integrity problem remains.
- How do we account for derivational reduplication blocking RED?
- Why would derivational morphology prevent SPEC being filled?
- Again it would be necessary to resort a phonological constrain preventing multiple reduplications of a single base
 - even if the reduplicants have different forms.

7. Phrasal Morphology analysis

- Torau RED is a phrasal affix appearing as a result of a rule of modification operating on the phonological realization of the VP.
- It expresses NEG or certain categories of IPFV.
- *Aka* is a phrasal affix (as a Morphosyntactic but not Phonological Clitic) expressing NEG.

- NEG is a feature that is expressed at the left margin of the VP.
- When no MOD/SBJ particle is present, NEG is expressed by *aka* at that left margin.
- When MOD/SBJ is present, NEG is expressed by a modification of MOD/SBJ to inflect it for NEG, but the rule expressing NEG at the left margin of VP also applies, resulting in reduplication.
- This involves multiple exponents of NEG, but that is crosslinguistically well attested.

- The relevant categories of ASP are also expressed by RED at the left margin of the VP.
- This approach accounts easily for the lack of multiple RED when both NEG and the relevant categories of IPFV are to be expressed.
- The modification of the base by reduplication simultaneously expresses both features.

- It also promises a more straightforward account for why RED is blocked by derivational reduplication.
- RED and derivational reduplication involve different shaped reduplicants,
- but the phonological processes of reduplication involved are sufficiently similar to preclude them both applying.
- It should also be reasonably straightforward to explain why derivational reduplication applies “first” (not actually first in an ordering sense of course) and therefore blocks RED, not vice versa.

- However, treating RED as a phrasal affix does not account for the absence of RED expressing ASP when NEG is expressed by *aka*.
- Why should the introduction of an unrelated form expressing NEG block the normal expression of ASP by RED?

8. Conclusion

- Two analyses most successfully account for the data:
- A syntactic approach locating *aka* and RED in SPEC of VP.
- A phrasal morphology approach treating RED as a phrasal affix variously expressing NEG, ASP or both.
- Both analyses have weaknesses.

- The syntactic analysis cannot account for RED being blocked by word-internal derivational reduplication.
- Recourse would be required to some phonological constraints preventing multiple copying of a single base.
- The phrasal morphology analysis seems to have difficulty accounting for *aka* blocking IPFV RED.
- It's not clear to me where such an analysis could turn to account for this.
- For that reason the syntactic analysis is preferred.

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