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What's real, what's possible, what's now impossible, and what's simply false:

The modal system of Daakie (Ambrym, Vanuatu).

(With an appendix on the meaning of *óp*, with exercises!)

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1. Introduction

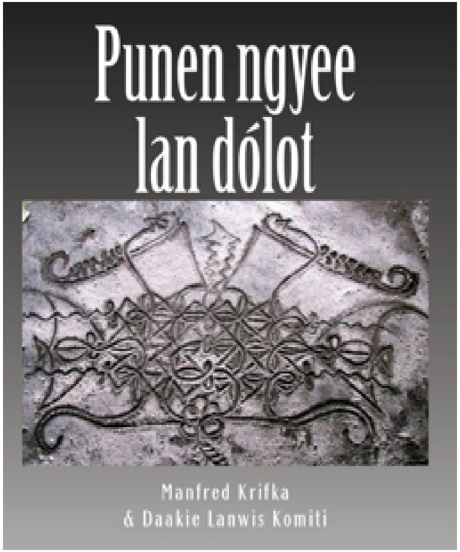
1.1 Basic information

The language Daakie

- a “Melanesian” language (Austronesian, Oceanic branch, Central/Eastern Oceanic, Southern Oceanic linkage, Nuclear Southern Oceanic linkage, central Vanuatu linkage), also known as “Port Vato” (the label in *Ethnologue*), the name of a village where it is spoken.
- spoken by about 1000 speakers in the South of the volcanic island of Ambrym; closely related to the neighbouring languages Daakaka, Dalkalaen, North Ambrym; more distantly related to Southwest Ambrym (settled by inhabitants of Paama).

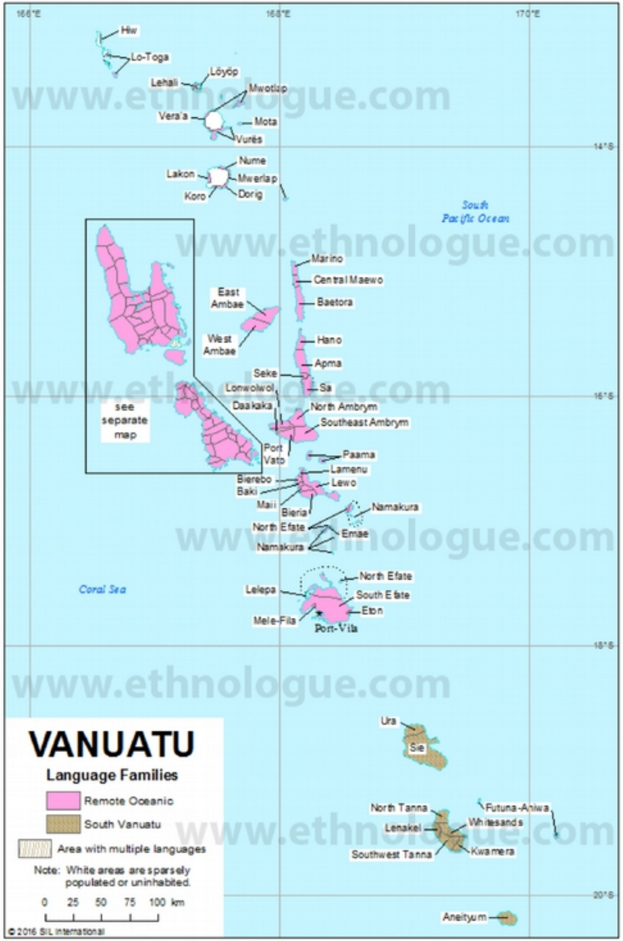
Background of the project (with Kilu von Prince):

- 2008 – 2013: VolkswagenStiftung DoBeS project on Languages of Southwest Ambrym, 9 months of field work, 8 hours transcriptions, written stories, translations
- 2016 – 2019: DFG, project on tense, aspect and modality in Melanesian languages

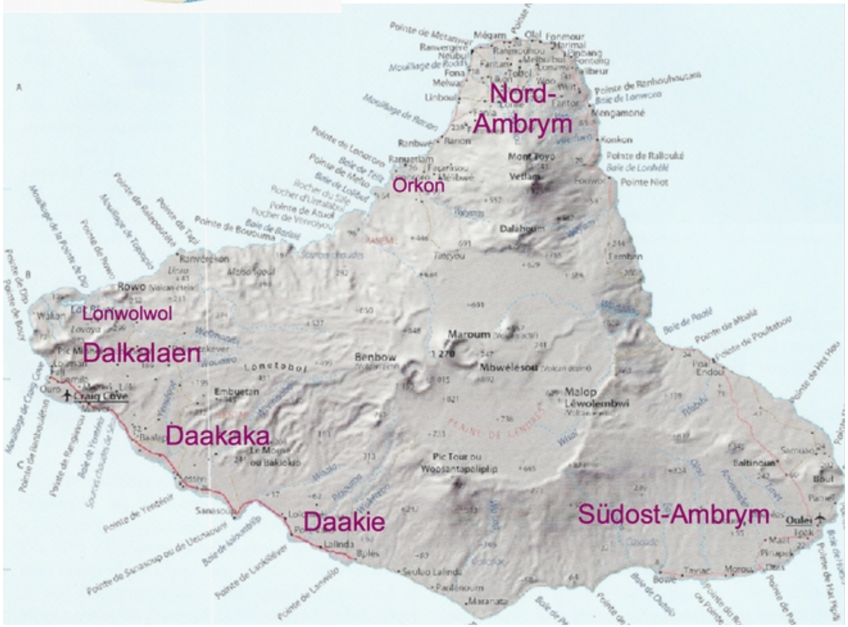


Previous work on West Ambrym languages:

- Paton, W. F. 1951 (1971). *Ambrym (Lonwolwol) Grammar.* Canberra: Australian National University.
- von Prince, Kilu. 2015. *A grammar of Daakaka*. Mouton Grammar Library 67. Berlin: Mouton de Gruyter.



290,000 inhabitants
about 130 languages,
Offcial languages:
– English
– French
– Bislama



Maurice Frater, *Midst of Volcanic Fires: An Account of Missionary Tours among the Volcanic Islands of the New Hebrides.* Boston: The Pilgrim Press, 1922.

One of the great difficulties connected with an evangelistic tour in the New Hebrides is the confused babel of tongues spoken by the natives. In the three islands we visited, with a population of eleven thousand, there are no fewer than ten dialects, with differences so great as to be unintelligible to the natives of the different districts. Teachers who accompanied me from one island to another, or even from the south to the north end of the same island, had to speak in English to make themselves understood.

1.2 Example sentence

Example sentence, for illustration of linguistic features, with rendering in Bislama.

(1)	*nare-doo*	*ki-yee*	***kye-m***	*loko*	*van*	*lon*	*too*	***kye-p***	*sogóó*	*a-yee*	*we*	*do*
	child-1+2.DU	DEF-3PC	**3PC-RE**	walk	go	in	garden	**3PC-POT**	take.TR	CL2-3PC	fruit.TR	lichi

‘Our children went to the garden to take their lichi fruits’ (elicited)
‘Pikinini blong tufala oli wokbaot gogo long garen blong tekem nandao blong olgeta’

- Exclusive / Inclusive distinction (1 vs. 1+2)
- Singular, Dual, Paucal, Plural (SI, DU, PC, PL)
- Subject agreement (person+number)
- Possessed nouns, possessive noun classes (e.g. CL2: edible, animals), cf. Franjieh 2012
- transitive nouns, e.g. *wee* ‘fruit’, *we* ‘fruit of’, *we do* ‘lichi fruits’, *we-re* ‘its fruits’
- verbs with numeral requirements of their arguments, e.g. *idi* ‘take one’, *sogóó* ‘take many’
- Reduplication to express pluractionality
- Serial verb construction, e.g. *loko van* ‘walk go’
- Categorial distinction between intransitive and transitive (TR) verbs (often marked by *-ne*)
- Modal marking, e.g. realis (RE), potentialis (POT) – this is the topic of this talk.

> The native languages are far ahead of the natives. Indeed, there is little resemblance between the people and the language they speak. When first the natives were brought within the ken of history, they were found to be savages of the lowest type, devoid of poetry and harmony; but the language they used bore the stamp of thought and development. The wonderful monoliths which stud certain South Sea Islands bear evidence of a truth familiar to every student of language that, in bygone days, the Pacific was peopled by a race far in advance of the present inhabitants. The savages of to-day are

1.3 The system of modal markers:

- Every finite clause has a modal marker
- Combination subject marker + modal marker,
  null subject marker with homorganic vowel / consonant for 3rd person singular
- Inventory of modality markers, illustrated with three forms:

Modality	3rd Plural	1+ 2nd Plural	∅ (3rd Singular)
Realis	*la-m*	*da-m*	*me, mwe, mwi, mu, ma, mo*
Potentialis	*la-p*	*da-p*	*be, bwe, bwi, bu, ba, bo*
Realis Negation	*la-re*	*da-re*	*tere*
N, dependent negation	*la-n*	*da-n*	*ne, ni, no*
Distal	*la-t*	*da-t*	*te, ti, to*

- Basic distinction: **Realis** vs. Irrealis (aka Actualis vs. **Potentialis**), *m* and *b* (*p* in codas)
- Temporal meaning: Nonpast vs. Future, but better characterized as Event having taking place vs. Event envisioned / imagined (cf. Lichtenberk 1983 on Manam, Roberts 1990 on Amele)
- For typological discussions and semantic correlations of the realis / irrealis distinction cf. J.R. Elliott 2002, de Haan 2012

2. The Uses of Realis and its Negation

2.1 Realis in non-embedded clauses

Ongoing events and states:

(2)	*Obwet*	*an*	*vu*	***mi***	*myuu*	***mo***	*do*
	taro	CL2-3S	introduced	RE	grow	RE	slow

‘The Fiji taro is growing slow’, speaker points at taro plant (Jemis2.054)

Past events and states:

(3)	*Meerin*	*na-**m***	*mee*	*o-ke-lé*	*na-**m***	*lehe*
	long.time.ago	1S-RE	come	LOC-CP-PROX	1S-RE	look

‘Long time ago I came, I looked’, narrative (Bong2.027)

Generic statements:

(4)	*ko-**m***	*ko-ot*	***mo**-nok*	*ko-**m***	*ta=kuu~kuu*	*yee*	***mwi***	*ti~tisii*
	2S-RE	clear-grounds	RE-finish	2S-RE	cut.out-REDUP	tree	RE	fall-REDUP

‘you clear the grounds, you cut out the trees, they fall down’ (Jemis2.008)
(Advice how to make a garden)

Fictional worlds:

(5)	***mwe***	*pwet*	***mwe***	*selaa*	*wili*	*tali*	*bye-n*
	RE	PROG	RE	put.on	skin-TR	body-TR	body-3S

‘He was putting (used to put) on the skin of the body of (another) man’ (Bong2.012)

2.2 Realis in embedded clauses

Complement of factive propositional attitude verbs, with complementizer *ke*

(6)	*kolo-m*	***lehe***	***ke***	*m-aloo*	*em*	***mwe***	*sanga*	*ten*
	3DU-RE	see	CP.RE	CL3-3DU	house	RE	bad	very

'The two **saw** that there house was very bad.' (Bong4.049)

(7)	*kolo-re*	***kiibele***	***ke***	*kolo-**m***	*du*	*taali*	*lii=byak*	*kiye*
	3DU-RE.NEG	know	CP.RE	3DU-RE	stay	other.TR	tree=nambanga	DEF.3SG

'The two did not **know** that the two were staying at the opposite sides of the nambanga tree' (Ilson3.005)

Reason clauses

(8)	*na-m*	*pwet*	*hospital*	***byen***	***ke***	*popat*	***mwe***	*te*	*ye-k*
	1SG-RE	stay	hospital	because	CP.RE	pig	RE	cut	leg-1SG

'I stayed in the hospital **because** the pig cut my leg.', personal story (Boa1.079)

Temporal clauses

(9)	***bili***	***ke***	***mwe***	*saakuu*	*wili*	*bye-n*	*ke*	*mwe*	*sanga*	*ye*
	time	CP.RE	RE	take.off	skin.TR	body-3SG	CP.RE	RE	bad	DEM
	me	*mee*	*me*	*timaleh*	*man*	*soo*	*mu*	*wuo*		
	RE	come	RE	child	male	IDEF	3SG	good		

'**When** he took off the skin of his body that was bad he became a good-looking young man.', narrative (Bong2.022-4)

2.3 Realis negation

Negation in realis contexts is expressed by its own modal marker *-re*, 3rd person singular *tere*).

(10)	*Lalinda*	*mane*	*Langievot*	*kolo-**re***	*wu~wuo*	*mane*	*koloo*
	Lalinda	with	Langievot	3DU-NEG	good	with	3DU

‘Lalinda and Langievot were **not** good to each other’, oral history (Andri.005)

Negation in embedded realis clause:

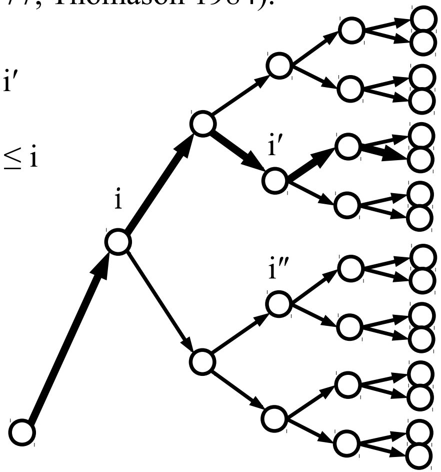
(11)	*Taata*	*a-bwe*	***kiibele***	*ke*	*ngyo*	*na-**re***	*Isao*
	Father	FUT-POT	know	CP.RE	1SG	1SG-NEG	Esau

‘Father will **know** that I am **not** Esau’, translation (OT.353)

3. Modeling realis and realis negation

3.1 Background assumptions

- Realis / Irrealis systems show an intertwining of modal and temporal reference
- Suggested here: A model of **branching time** (Dowty 1977, Thomason 1984).
  - a set I of **world-time indices**, e.g. i, i′
  - partially ordered by a **precedence** relation ≤, e.g. i ≤ i′
  - a linearly ordered subset of which is a **history**
    where i ~ i′: i, i′ share the same history, i.e. i ≤ i′ or i′ ≤ i
  - propositions are true/false at indices,
  - index c is the **context index**
    at which the sentence is uttered;
    sp(c), ad(c) are speaker, addressee of c



3.2 The Realis presupposition

The challenge:

- To give an interpretation of realis clauses compatible with their function as assertions of propositions that are true at the utterance index or at an index before,
- and their function as embedded clauses, where they indicate factivity (truth at utterance index or before)
- and the fact that negation is expressed as a modality on its own.

Proposed solution:

- **Realis** restricts a proposition φ to those indices where φ is in fact true at the utterance index or before -- it expresses a **factive presupposition**, the **realis presupposition.**
- If this restriction is not satisfied, the result is **undefinedness**.
- Nevertheless, realis-marked proposition can be **informative**;
  asserting them gives the information that they can be applied to the current situation
  (and hence the underlying proposition is true at the current or a past index).
- But a realis-marked proposition **cannot be negated** as this would result in undefinedness, hence negation must be expressed as a modality on its own
- **Realis negation** changes a proposition φ to ¬φ and restricts it to those indices where ¬φ holds – it expresses an **antifactive presupposition**.
- Consequently, multiple negation is impossible in Daakie.

Required: A semantic metalanguage that includes undefinedness, using Kleene’s weak trivalent logic.

3.3 Treatment of presuppositions in the semantic metalanguage

Undefinedness in the semantic metalanguage – not intended for pragmatic presuppositions.
Treatment of undefinedness by Kleene's weak trivalent logic (= internal Bochvar's logic)

(22) a. $:\Phi$ = true if Φ = true, else undefined, i.e. Φ is presupposed.
b. $!\Phi$ = true iff Φ = true, else false
c. $\neg\Phi$ = undefined iff Φ undefined, $[\Phi \wedge/\vee/\rightarrow/\leftrightarrow \Psi]$ undefined iff Φ or Ψ undefined.

(23) a. $\neg\neg\Phi = \Phi$ b. $[\Phi\vee\Psi] = \neg[\neg\Phi\wedge\neg\Psi]$ c. $[\Phi\rightarrow\Psi] = [\neg\Phi\vee\Psi]$ d. $[\Phi\leftrightarrow\Psi] = [\Phi\rightarrow\Psi]\wedge[\Psi\rightarrow\Phi]$

Notational conventions for presuppositions and restricted quantification:

(24) a. $\boldsymbol{:\pi}\ \Phi$ short for: $[\boldsymbol{:\pi} \wedge \Phi]$, a proposition Φ with presupposition π
b. $\lambda i\ \boldsymbol{:\pi}\ [\Phi] = \lambda i\ [\boldsymbol{:\pi} \wedge \Phi]$, corresponds to notation $\lambda i{:}\pi\ [\Phi]$ in Heim & Kratzer 1998

(25) a. $\forall x{:}\ \Phi(x)\ [\Psi(x)] = \bigwedge_{\Phi(a_i) = \text{true}} \Psi(a_i) = \forall x[!\Phi(x) \rightarrow \Psi(x)]$

b. $\exists x{:}\ \Phi(x)\ [\Psi(x)] = \bigvee_{\Phi(a_i) = \text{true}} \Psi(a_i) = \exists x[!\Phi(x) \wedge \Psi(x)]$

(26) a. $\neg\ \forall x{:}\ \Phi(x)\ [\Psi(x)] = \exists x{:}\ \Phi(x)\ \neg[\Psi(x)]$ b. $\neg\ \exists x{:}\ \Phi(x)\ [\Psi(x)] = \forall x{:}\ \Phi(x)\ \neg\ [\Psi(x)]$

Some rules for presupposition projection and cancellation:

(27) a. $\neg\ \boldsymbol{:\pi}\ \Phi = \boldsymbol{:\pi}\ \neg\Phi$ b. $[\boldsymbol{:\pi}\ \Phi \wedge/\vee/\rightarrow/\leftrightarrow \boldsymbol{:\pi'}\ \Phi'] = \boldsymbol{:[\pi\wedge\pi']}\ [\Phi \wedge/\vee/\rightarrow/\leftrightarrow \Phi']$
c. $\boldsymbol{::\Phi} = \boldsymbol{:\Phi}$ d. $\boldsymbol{:\Phi}\ \Phi = {:}\Phi$ e. $\boldsymbol{:\Phi}\ \neg\Phi = \neg\ \boldsymbol{:\Phi}$ f. $\boldsymbol{:\neg\Phi}\ \Phi = \boldsymbol{:\ \neg\Phi}$ g. $\boldsymbol{:[\Phi\ \Psi]} = [\boldsymbol{:\Phi}\ \boldsymbol{:\Psi}]$
h. $!{:}\Phi = !\Phi$ i. $[\Phi \rightarrow \pi] \rightarrow\ !\boldsymbol{:\pi}\ \Phi = !\Phi$ j. $[\pi \rightarrow \Phi] \rightarrow [\boldsymbol{:\pi}\ \Phi = \boldsymbol{:\pi}]$
k. $\forall x{:}\ \Phi(x)\ [\boldsymbol{:\pi(x)}\ \Psi(x)] = \boldsymbol{:\forall x{:}\ \Phi(x)[\pi(x)]}\ \forall x{:}\ \Phi(x)\ [\Psi(x)]$
l. $\exists x{:}\ \Phi(x)\ [\boldsymbol{:\pi(x)}\ \Psi(x)] = \boldsymbol{:\forall x{:}\ \Phi(x)[\pi(x)]}\ \exists x{:}\ \Phi(x)\ [\Psi(x)]$

3.4 Interpretation levels and interpretation of basic propositions

Example clause:

(28) *Enet mo koliet.*
Enet RE sing
'Enet sang', 'Enet is singing'

Proposed syntactic analysis:

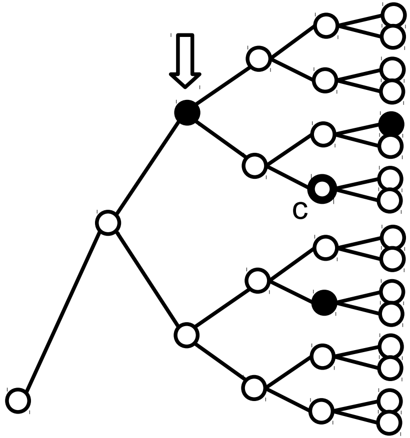
(29) [$_{\text{ForceP}}$ ASSERT [$_{\text{IP}}$ *Enet* $_1$[$_{\text{I}'}$ [$_{\text{I}^\text{o}}$ *mo*] [$_{\text{vP}}$ t_1 *koliet*]]]]

- IP has modal marker in I^o, agrees with subject
- We assume movement of subject from vP to IP
- Agreement can be expressed between SpecIP and I^o
- ASSERT: relates proposition to the context

Meanings are functions from utterance contexts c:

(30) a. ⟦[$_{\text{vP}}$ *Enet koliet*]⟧(c) = λi[Enet sings at i], = φ

b. ⟦[$_{\text{vP}}$ *ngyak koliet*]⟧(c) = λi[addressee(c) sings at i]



Meaning of [$_{\text{vP}}$ *Enet koliet*], = φ

Example for φ (see graphics):

– Assume utterance context c,
– assume φ is the set of indices marked by black dots.
– Notice that *Enet mo koliet* should be true, as there is a black dot that is preceding c

3.5 Interpretation of realis modality

Interpretation of realis clause, IP level:

(31) $[\![[_{IP}\ \textit{Enet}\ _1[_{I'}\ \textit{mo}\ [_{vP}\ t_1\ \textit{koliet}]]]]\!](c)$
$= [\![_1[_{I'}\ \textit{mo}\ [_{vP}\ t_1\ \textit{koliet}]]]\!](c)([\![\textit{Enet}]\!](c))$
$= \lambda x_1[\![[_{I'}\ \textit{mo}\ [_{vP}\ t_1\ \textit{koliet}]]]\!](c)(\text{Enet})$
$= \lambda x_1[\![\textit{mo}]\!](c)([\![[_{vP}\ t_1\ \textit{koliet}]]\!](c))(\text{Enet})$
$= \lambda x_1\ \text{RE}(c)(\lambda i[x_1 \text{ sings in } i])(\text{Enet})$

with RE $= \lambda c\lambda p\lambda i\ \mathbf{:\exists i'\leq c[p(i')]}\ \exists i'\leq i\ [p(i')]]$:
$= \lambda i\ \mathbf{:\exists i'\leq c[\text{Enet sings in } i']}\ \exists i':i'\leq i[\text{Enet sings in } i']]$
$= \lambda i\ \mathbf{:\exists i'\leq c[\varphi(i')]}\ \exists i'\leq i[\varphi(i')]]$

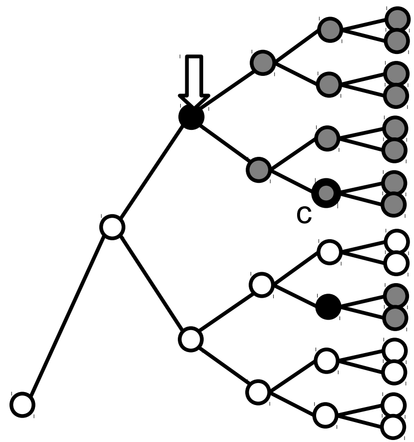
where **:boldfaced** parts are presupposed,
and $\exists i'\leq c[\varphi(i')]$ is the **realis presupposition**.

Example for RE(c)(φ), see graphics.

- Presupposition of (31) is satisfied at c, truthfully applies to all dark indices.
- notice that realis clause cannot truthfully be negated.

Suitable terminology (cf. Reichenbach 1947):

- c: **utterance** index
- i: **reference** index
- i′: **event** index (at which the elementary proposition is true)



Meaning of [$_{IP}$ *Enet mo koliet*]

3.6 Assertion of realis clauses

Assertion of a realis IP involves application of the IP to the utterance index,
thus identifying the reference index in the utterance indes.

Modeling in a theory of the change of a common ground C:

- C is a set of indices,
  the set of indices that interlocutors agree upon at the current state of conversation,
- each $c \in C$ is a possible candidate for the utterance index
  for utterance situations, all $c \in C$ determine the same speaker, addressee, etc.
- $!\,\Phi$ stands for: It is true that Φ (false if Φ is false or undefined).

(32) $[\![[_{\text{ForceP}}\ \text{ASSERT}\ [_{\text{IP}}\ \textit{Enet mo koliet}]]]\!](C)$
$= [\![\text{ASSERT}]\!](C)([\![[_{\text{IP}}\ \textit{Enet mo koliet}]]\!])$

with $[\![\text{ASSERT}]\!](C) = \lambda r\, \lambda c[C(c) \wedge !\ p(c)(c)]$
and $[\![[_{\text{IP}}\ \textit{Enet mo koliet}]]\!] = \lambda c \lambda i\ \mathbf{:\exists i' \leq c[\varphi(i')]}\ \exists i' \leq i[\varphi(i')]]$

$= \lambda c[C(c) \wedge !\ \mathbf{:\exists i' \leq c[\varphi(i')]}\ \exists i' \leq c[\varphi(i')]]$
$= \lambda c[C(c) \wedge \exists i' \leq c[\varphi(i')]]$

Notice: The resulting common ground is enriched, the assertion of a realis clause is **informative.**

3.7 Interpretation of realis negation

(33) *Enet tere koliet.*
Enet NEG sing
'Enet did not sing', 'Enet does not sing'

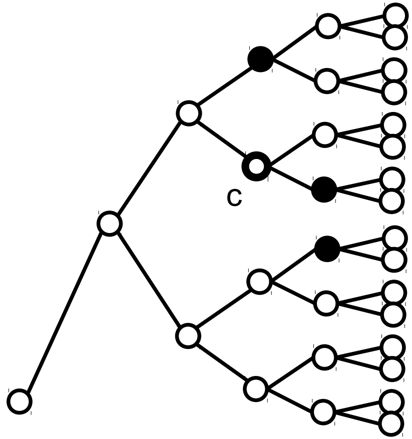
(34) $[\![[_{IP}\ \textit{Enet}\ [_{I'}\ \textit{tere}\ [_{vP}\ t_{\textit{Enet}}\ \textit{koliet}]]]]\!](c)$
$= [\![\textit{tere}]\!](c)([\![[_{vP}\ \textit{Enet koliet}]]\!](c))$
$= \text{RENEG}(c)(\varphi)$
$= \lambda i\ \mathbf{:\neg\exists i'\leq c[\varphi(i')]}\ \neg\exists i'\leq i[\varphi(i')]$

Realis negation expresses an **antifactive presupposition:**
the presupposition that φ is **not** true at or before c

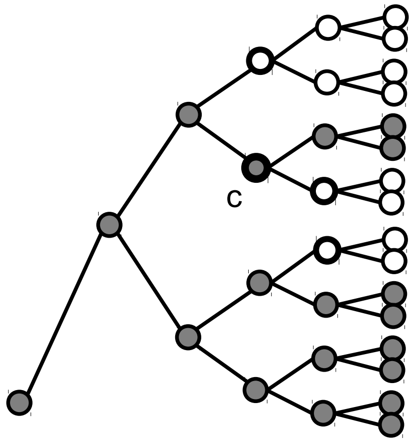
Interpretation under assertion:

(35) $[\![[_{ForceP}\ \text{ASSERT}\ [_{IP}\ \textit{Enet}\ [_{I'}\ \textit{tere}\ [_{vP}\ t_{\text{Enet}}\ \textit{koliet}]]]]]\!](C)$
$= [\![\text{ASSERT}]\!](C)([\![[_{IP}\ \textit{Enet}\ [_{I'}\ \textit{tere}\ [_{vP}\ t_{\textit{Enet}}\ \textit{koliet}]]]]\!])$
$= \lambda r\lambda c[C(c) \wedge !\ r(c)(c)]([\![[_{IP}\ \textit{Enet}\ [_{I'}\ \textit{tere}\ [_{vP}\ t_{\textit{Enet}}\ \textit{koliet}]]]]\!])$
$= \lambda c[C(c) \wedge !\ (34)(c)]$
$= \lambda c[C(c) \wedge !\ \mathbf{:\neg\exists i'\leq c[\varphi(i')]}\ \neg\exists i'\leq c[\varphi(i')]]$
$= \lambda c[C(c) \wedge \neg\exists i'\leq c[\varphi(i')]]$

- The assertion is informative, it restricts the common ground C
- Truth operator ! requires truth of the negated proposition.
- Negation of realis clause would result in empty common ground, as $!\ \mathbf{:\exists i'\leq c[\varphi(i')]}\ \neg\exists i'\leq c[\varphi(i')]$ is always false.



Meaning of $[_{vP}$ *Enet koliet*$]$, = φ



Meaning of $[_{IP}$ *Enet tere koliet*$]$

3.8 Interpretation of embedded realis clauses

Example clause:

(36) [$_{\text{IP}}$ *Lissing mwi* [$_{\text{vP}}$ t_{Lissing} [$_{\text{VP}}$ *kiibele* [$_{\text{CP}}$ *ke* [$_{\text{IP}}$ *Enet mo koliet*]]]]]
‘Lissing knows/knew that Enet is/was singing.’

Basic idea:

- *ke* is a modal operator with accessibility relation R,
  which is specified by embedding verb *kiibele* ‘know’ as epistemic
- Realis of embedded clause guarantees factivity, otherwise sentence necessarily false

Example derivation of embedded clause:

(37) $[\![[_{\text{CP}}\ \textit{ke}\ [_{\text{IP}}\ \textit{Enet mo koliet}]]]\!](c)$
$= [\![\textit{ke}]\!](c)([\![[_{\text{IP}}\ \textit{Enet mo koliet}]]\!](c))$

with $[\![\textit{ke}]\!](c) = \lambda p \lambda i \lambda R \forall i'' {:} R(i)(i'')[p(i'')]$,
$[\![[_{\text{IP}}\ \textit{Enet mo koliet}]]\!](c) = \lambda i\ \mathbf{:\exists i'{\leq}c[\varphi(i')]}\ \exists i'{\leq}i[\varphi(i')]$

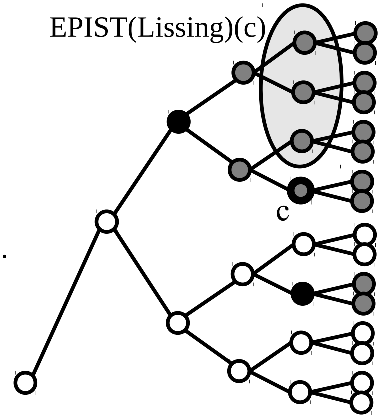
$= \lambda i\ \lambda R \forall i''{:}R(i)(i'')[\lambda i\ \mathbf{:\exists i'{\leq}c[\varphi(i')]}\ \exists i'{\leq}i[\varphi(i')](i'')]$
$= \lambda i\ \lambda R \forall i''{:}R(i)(i'')[\mathbf{:\exists i'{\leq}c[\varphi(i')]}\ \exists i'{\leq}i''[\varphi(i')]]$
$= \lambda i \lambda R\ [\mathbf{:\forall i''{:}\ R(i)(i'')\ \exists i'{\leq}c[\varphi(i')]}\ \forall i''{:}\ R(i)(i'')\ \exists i'{\leq}i''[\varphi(i')]]$

As $\exists i'{\leq}c[\varphi(i')]$ is independent of $R(i)(i'')$, it projects if $R(i)$ is not empty:

$= \lambda i\ \mathbf{:\exists i'{\leq}c[\varphi(i')]}\ \lambda R \forall i''{:}R(i)(i'')\ \exists i'{\leq}i''[\varphi(i')]]$

Notice: *ke* projects the presupposition that the complement clause is true.

Specification of modal relation by embedding verb:



(38) $[\![\textit{kiibele}]\!](c) \approx \text{EPIST}$
where EPIST(x)(i)(i′):
i′ is epistemically accessible from i for person x,
i.e. i′ is compatible with what x knows at i

For factive *kiibele*, i′ is also epistemically accessible to the speaker of c.

Example derivation:

(39) $[\![[_{\text{VP}}\ \textit{kiibele}\ [_{\text{CP}}\ \textit{ke Enet mo koliet}]]]\!](c)$
$= [\![\textit{kiibele}]\!](c)([\![[_{\text{CP}}\ \textit{ke Enet mo koliet}]]\!](c))$
$= \lambda \underline{R} \lambda i \lambda x[\underline{R}(i)(\text{EPIST}(x))]()$
$= \lambda i \lambda x[(i)(\text{EPIST}(x))$
$= \lambda i \lambda x[\mathbf{:\exists i' \leq c[\varphi(i')]}\ \forall i'':\text{EPIST}(x)(i)(i'')\ \exists i' \leq i''[\varphi(i')]]$

(40) $[\![[_{\text{vP}}\ \textit{Lissing}\ [_{\text{VP}}\ \textit{kiibele ke Enet mo koliet}]]]\!](c)$
$= \lambda i\ \mathbf{:\exists i' \leq c[\varphi(i')]}\ \forall i'':\text{EPIST}(\text{Lissing})(i)(i'')\ \exists i' \leq i''[\varphi(i')]]$

(41) $[\![[_{\text{IP}}\ \textit{Lissing}\ [\ \textit{mwe}\ [_{\text{vP}}\ t_{\text{Lissing}}\ \textit{kiibele ke Enet mo koliet}]]]]\!](c)$
$= \lambda i\ \mathbf{:\exists i' \leq c[(40)(i')]}\ \exists i' \leq i\ [(40)(i')]]$

(42) $[\![\text{ASSERT}]\!](C)((41))$
$= \lambda c[C(c) \wedge !\ (40)(c)]$
$= \lambda c[C(c) \wedge !\ \mathbf{\exists i' \leq c[(40)(i')]}\ \exists i' \leq c\ [(40)(i')]]$
$= \lambda c[C(c) \wedge !\ \mathbf{:\exists i' \leq c[\varphi(i')]}\ \forall i'':\text{EPIST}(\text{Lissing})(c)(i'')\ \exists i' \leq i''[\varphi(i')]]$

Presupposition of complement clause $\exists i' \leq c[\varphi(i')]$ is projected; factive interpretation.

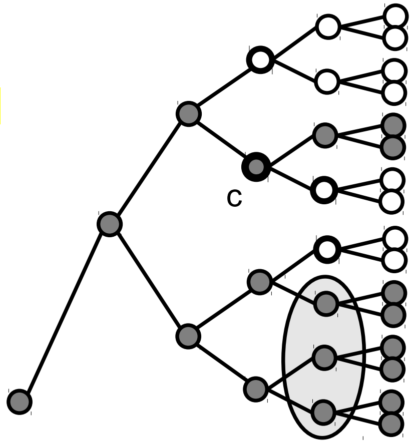
3.9 Interpretation of embedded realis negation clause

Example clause:

(43) [$_{IP}$ *Lissing mwi* [$_{vP}$ t$_{Lissing}$ [$_{VP}$ *kiibele* [$_{CP}$ *ke* [$_{IP}$ *Enet tere koliet*]]]]]
‘Lissing knows/knew that Enet is/was not singing.’

Projection of antifactive presupposition of realis negation:

(44) ⟦[$_{CP}$ *ke* [$_{IP}$ *Enet tere koliet*]]⟧(c)
= ⟦*ke*⟧(c)(⟦[$_{IP}$ *Enet tere koliet*]⟧(c))
= $\lambda p\lambda i\lambda R\forall i'':R(i)(i'')[p(i'')](\lambda i\ \mathbf{:\neg\exists i'\leq c[\varphi(i')]}\ \neg\exists i'\leq i[\varphi(i')])$
= $\lambda i\lambda R\forall i'':R(i)(i'')[\mathbf{:\neg\exists i'\leq c[\varphi(i')]}\ \neg\exists i'\leq i''[\varphi(i')]]$
= $\lambda i\lambda R\ \forall \mathbf{i'':R(i)(i'')\ \neg\exists i'\leq c[\varphi(i')]}\ \forall i'':R(i)(i'')\ \neg\exists i'\leq i[\varphi(i')]]$
as $\neg\exists i'\leq c[\varphi(i')]$ independent from $R(i)(i'')$:
= $\lambda i\lambda R\ \mathbf{:\neg\exists i'\leq c[\varphi(i')]}\ \forall i'':R(i)(i'')\ \neg\exists i'\leq i[\varphi(i')]]$



EPIST(Lissing)(c)

Embedding in matrix predicate, subject Lissing:

(45) ⟦[$_{vP}$ t$_{Lissing}$ [$_{VP}$ *kiibele ke Enet tere koliet*]]⟧(c)
= $\lambda i\ \mathbf{:\neg\exists i'\leq c[\varphi(i')]}\ \forall i'':\text{EPIST(Lissing)}(i)(i'')\ \neg\exists i'\leq i[\varphi(i')]]$

Expresses that

- Enet in fact did not sing (antifactive presupposition)
- all indices i″ that are epistemically accessible to Lissing exlude that Enet sings at or before i′

4. Potentialis

4.1 Potentialis in non-embedded clauses

Directive clauses

(12)

*Ka-**p***	*van*	*ka-**p***	*tapa=sene*	*lii=tuwuo*	*ko=rok*
2DU-PT	go	2DU-PT	clear.ground	tree=bushnut	PLACE=DIST

‘You two, go clear the grounds at the bushnut tree over there.’ command, (Jos1.026)

Hortative clauses:

(13)

La-m	*kie*	*ka,*	*da-**p***	*van*	*tyenem*
3PL-RE	say	CP.NR	1+2.PL-PT	go	home

‘They said, let’s go home’, trad. story (Bong1.046)

Commissive clauses:

(14)

*na-**p***	*senga-ne*	*suburu*	*mane*	*s-ok*	*tuutuu*	*man*
1SG-PT	give-TR	mat	to	CL1-1SG	grandparent	male

‘I will give (promise to give) the mat to my grandfather’, trad. story (Aiben7.023)

a + Potentialis in non-embedded clauses: Future

(15)

vanten	*de-soo*	***a-bwe***	*mee*	*bwi*	*idi*	*pija*	*en*	*toót*
person	IR-IDF	FT-PT	come	PT	take	picture	PART	probably

‘Some man or other will come and/to take a picture of it, probably.’
description of garden (Jemis2.086)

4.2 Potentialis in embedded clauses

Non-factive complement clauses, with non-realis complementizer *ka*

(16)	*na-m*	***longbini***	***ka***	*na-**p***	*pune*	*pun-en*	*soo*
	1SG-RE	**want**	CP.NR	1SG-PT	tell	tell-NOM	IDF

‘I want to tell a story’ traditional story (Andri2.002)

Non-factive temporal clauses:

(17)	*a-na-p*	*ane*	*sówe*	***bili***	***ka***	*ot*	***bi***	*mitmyet*	*?*
	FT-1SG-PT	eat	what	time	CP.NR	place	PT	dark	

‘What will I eat **when** it is dark?’, traditional story (JoeAlvi.028)

5. Modeling potentialis

5.1 Meaning of potentialis

- Potentialis expresses presupposition that the basic proposition can become true in the future of the reference index
- **It expresses the same information also as a presupposition, hence it cannot be negated.**

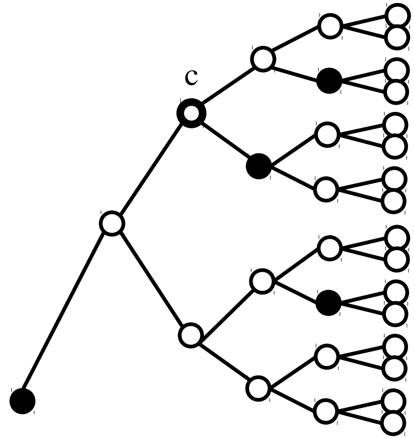
Derivation of meaning, with highlighted potentialis presupposition:

(46) $[\![[_{IP}\ \textit{Enet}\ [_{I'}\ \textit{bo}\ [_{vP}\ t_{\textit{Enet}}\ \textit{koliet}]]]]\!](c)$
$= [\![\textit{bo}]\!](c)([\![[_{vP}\ \textit{Enet koliet}]]\!](c))$
$= \mathrm{POT}(c)(\varphi)$,
with $\mathrm{POT} = \lambda c \lambda p \lambda i\ \mathbf{:\exists i'{>}i[p(i')]}\ \exists i'{>}i[p(i')]$
$= \lambda i\ \mathbf{:\exists i'{>}i[\varphi(i')]}\ \exists i'{>}i[\varphi(i')]$

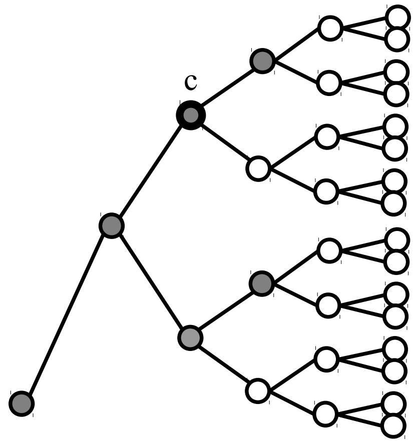
This meaning is too weak to be simply asserted:

(47) $[\![\mathrm{ASSERT}]\!](C)((46))$
$= \lambda c[C(c) \wedge \mathbf{:\exists i'{>}c[\varphi(i')]}\ \exists i'{>}c[\varphi(i')]]$
$= \lambda c[C(c) \wedge \exists i'{>}c[\varphi(i')]]$

- Asserts that φ is true in one of the future developments of c,
- i.e. that φ **may** become true “in principle”, irrespective of any particular modal accessibility relation.



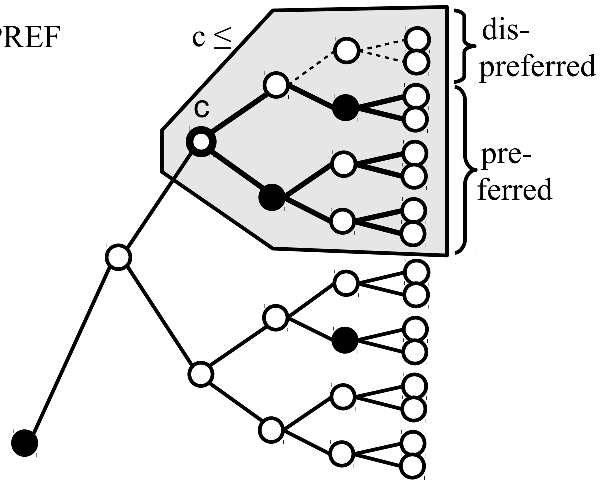
Meaning of $[\![[_{vP}\ \textit{Enet koliet}]]\!](c)$



Meaning of $[\![[_{IP}\ \textit{Enet bo koliet}]]\!](c)$

5.2 Interpretation of potentialis in directives, jussives and commissives

Such clauses are not assertions, but express a preference PREF



(48) $[_{\text{ForceP}}$ PREF $[_{\text{IP}}$ *Enet bo koliet*]]
‘Enet should sing.’

Interpretation:
Speaker prefers the future indices for which $[_{\text{IP}}$ *Enet bo koliet*] holds over their complement.

(49) $[\![[_{\text{ForceP}}$ PREF $[_{\text{IP}}$ *Enet bo koliet*]]$]\!]$(C)
= $[\![$PREF$]\!]$(C)($[\![[_{\text{IP}}$ *Enet bo koliet*]]$]\!]$)

with $[\![$PREF$]\!]$(C)
= λrλc[C(c)
∧ sp(c) prefers among the histories h with c∈h
those for which there is an i, i∈h, c≤i such that ! r(c)(i)]

= λc[C(c) ∧ sp(c) prefers among the histories h with c∈h
those for which there is an i, i∈h c≤i such that **! :∃i′>i[φ(i′)]** ∃i′>i[φ(i′)]]

= … such that ∃i′>i[φ(i′)]

For reasonable preferences, the proposition φ should not become true in all histories.

5.3 Interpretation of potentialis in embedded clauses

(50) $[_{IP}$ *Enet mwi* $[_{vP}$ t_{Enet} $[_{VP}$ *kiibele* $[_{CP}$ *ka* $[_{IP}$ *bo* $[t_{Enet}$ *koliet*$]]]]]]$
‘Enet is able to sing’, ‘Enet knows how to sing’

Non-realis complementizer *ka* expresses accessibility relation R:

(51) $[\![[_{CP}\ ka\ [_{IP}\ Enet\ bo\ koliet]]]\!](c)$
$= [\![ka]\!](c)([\![[_{IP}\ Enet\ bo\ koliet]]\!](c))$

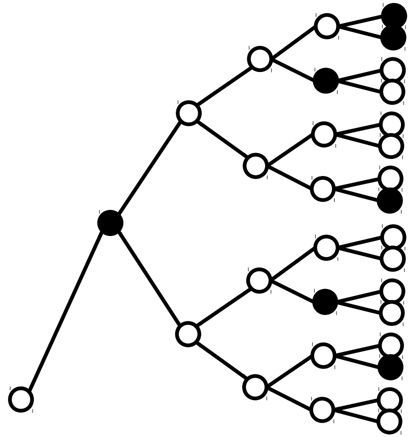
with $[\![ka]\!](c) = \lambda p \lambda i \lambda R \forall i'':R(i)(i'')[p(i'')]$
$[\![[_{IP}\ Enet\ bo\ koliet]]\!](c) = \lambda i\ \mathbf{:\exists i'{>}i[\varphi(i')]}\ \exists i'{>}i[\varphi(i')]$

$= \lambda i \lambda R \forall i'':R(i)(i'')[\lambda i\ \mathbf{:\exists i'{>}i[\varphi(i')]}\ \exists i'{>}i[\varphi(i')](i'')]$
$= \lambda i \lambda R\ \mathbf{:\forall i'':R(i)(i'')\ \exists i'{>}i''[\varphi(i')]}\ \forall i'':R(i)(i'')\ \exists i'{>}i''[\varphi(i')]$
$= \lambda i \lambda R\ \forall i'':R(i)(i'')\ \exists i'{>}i''[\varphi(i')]$

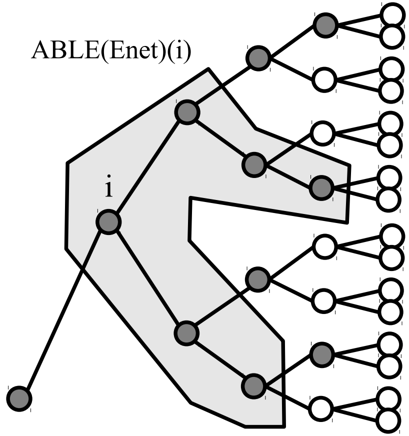
Accessibility relation: embedding predicate,
here *kiibele* as ability, ABLE, cf. *know that / how*

(52) $[\![[_{vP}\ t_{Enet}\ [_{VP}\ kiibele_{ep}\ ka\ bo\ t_{Enet}\ koliet]]]\!](c)$
$= \lambda i{:}\ \forall i'':ABLE(Enet)(i)(i'')\ \exists i'{>}i''[\varphi(i')]$

- ➢ for all i′ that are compatible with the abilities of Enet at i, Enet sings at at least one index after i′.
- ➢ can be asserted at common ground C, is informative



$[\![[_{vP}\ Enet\ koliet]]\!](c)$



$[\![[_{IP}\ Enet\ bo\ koliet]]\!](c)$
and a compatible ABLE(i)

5.4 Interpretation of future *a* + potentialis in non-embedded clauses

We assume that *a-* is related to complementizer, cf. Daakaka *ka,* with a modal meaning

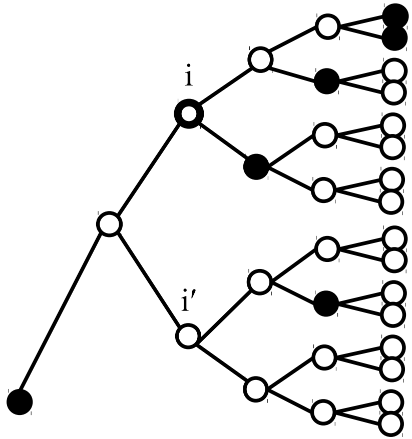
(53) a. *Enet a-bo koliet.*
b. $[_{\mathrm{CP}}$ *Enet* $[_{\mathrm{C'}}$ *a-* $[_{\mathrm{IP}}\ \mathrm{t}_{Enet}\ [_{\mathrm{I'}}$ *bo* $[_{\mathrm{vP}}\ \mathrm{t}_{Enet}$ *koliet*$]]]]]$

a- specifies a default accessibility relation FUT:

(54) $[\![[_{\mathrm{CP}}\ a\text{-}\ [_{\mathrm{IP}}\ Enet\ bo\ koliet]]]\!](c)$
$= [\![a\text{-}]\!](c)([\![[_{\mathrm{IP}}\ Enet\ bo\ koliet]]\!](c))$
$= \mathrm{FUT}(c)([\![[_{\mathrm{IP}}\ Enet\ bo\ koliet]]\!](c))$

with $\mathrm{FUT}(c)$
$= \lambda p \lambda i \forall i''' > i\ \exists i'': i''' \sim i'' \wedge i \leq i''\ [p(i'')]$
and $[\![[_{\mathrm{IP}}\ Enet\ bo\ koliet]]\!](c)$
$= \lambda i\ \mathbf{:\exists i' > i[\varphi(i')]}\ \exists i' > i[\varphi(i')]$

$= \lambda i\ \forall i''' > i\ \exists i'': i''' \sim i'' \wedge i \leq i''\ [\lambda i\ \mathbf{:\exists i' > i[\varphi(i')]}\ \exists i' > i[\varphi(i')](i'')]$
$= \lambda i\ \forall i''' > i\ \exists i'': i''' \sim i'' \wedge i \leq i''\ \ \mathbf{:\exists i' > i''[\varphi(i')]}\ \exists i' > i''[\varphi(i')]$
$= \lambda i \forall i''' > i\ \exists i'': i''' \sim i'' \wedge i \leq i''\ \exists i' > i''[\varphi(i')]]$



black dots: $[\![[_{\mathrm{vP}}\ Enet\ koliet]]\!](c)$,
it holds that $[\![[_{\mathrm{CP}}\ Enet\ abo\ koliet]]\!](c)(i)$,
but not that $[\![[_{\mathrm{CP}}\ Enet\ abo\ koliet]]\!](c)(i')$,
even though it does hold
that $[\![[_{\mathrm{IP}}\ Enet\ bo\ koliet]]\!](c)(i')$

- For all histories that go through i, φ is true at some point after i
- FUT may be further restricted to histories that are epistemically accessible for the speaker

5.5 Complementizers

Explanation of distribution of *ke* for realis, *ka* for others.

- Realis complementizer *ke* comes itself with a realis presupposition
- Rule of maximize presupposition prefers *ke* over *ka* if realis presupposition is satisfied.

(55) $[\![\textit{ke}]\!](c) = \lambda p\lambda i\ \mathbf{:\exists i''\leq c[p(i'')]}\ \lambda R\forall i'{:}R(i)(i'')\ [p(i'')]$

(56) $[\![[_{CP}\ \textit{ke}\ [_{IP}\ \textit{Enet mo koliet}]]]\!](c)$
$= [\![\textit{ke}]\!](c)([\![[_{IP}\ \textit{Enet mo koliet}]]\!](c))$
$= \lambda p\lambda i\ \mathbf{:\exists i''\leq c[p(i'')]}\ \lambda R\forall i'{:}R(i)(i'')\ \exists i''[p(i'')](\lambda i\ \mathbf{:\exists i'\leq c[\varphi(i')]}\ \exists i'\leq i[\varphi(i')])$
$= \lambda i\ \mathbf{:\exists i''\leq c\ :\exists i'\leq c[\varphi(i')]\ \exists i'\leq i''[\varphi(i')]}\ \lambda R\forall i'{:}R(i)(i'')\ \mathbf{:\exists i'\leq c[\varphi(i')]}\ \exists i'\leq i''[\varphi(i')]$
$= \lambda i\ \mathbf{:\exists i'\leq c[\varphi(i')]}\ \lambda R\ \mathbf{:\forall i'{:}R(i)(i')\ \exists i'\leq c[\varphi(i')]}\ \forall i'{:}R(i)(i')\ \exists i'\leq i''[\varphi(i')]$,
$= \lambda i\ \mathbf{:\exists i'\leq c[\varphi(i')]}\ \lambda R\ \forall i'{:}R(i)(i')\ \exists i'\leq i''[\varphi(i')]$

6. The N form

6.1 The use of the N form

In negated non-realis clauses: Complementizer *saka* (*sa* + non-realis complementizer *ka*)

(18)

sa=ka	***ne***	*lehe*	*ngyo*
CP.NEG	NRNEG	see	1SG

‘He will not find me.’ traditional story (Abel3.017)

(19)

sa=ka	*ko-**n***	*lehe*	*ngyo,*	***sa=ka***	*na-**n***	*lehe*	*ngyak*
CP.NEG	2SG-NRNEG	see	1SG	CP.NEG	1SG-NRNEG	see	2SG

‘Don’t look at me, I don’t look at you’,
‘You should not see mee, I should not see you.’, direct speech in story (Ib3.101)

(20)

sa=ka	*ki-**n***	*tua*	*kiye*
CP.NEG	2PL-NRNEG	stone.TR	3SG.PRX

‘Don’t throw stones on this.’ traditional story (Saki1.028)

(21)

sa=ka	*wel-em*	***ne***	*nek*	***ne***	*tiri*	*kingyee*	*ye*
CP.NEG	skin-2SG	NR.NEG	afraid	TR	something	3PC	DIST

‘Don’t be afraid of those things’, personal story (Abel3.154)

(22)

sa=ka	*ko-**n***	*lehe*	*lokuo*	*de-soo*
CP.NEG	2SG-NRNEG	see	leaf	NR-IDEF

‘You could not see any leaves’, description of volcano eruption (Aeven4.081)

In dependent clauses in negative contexts, including negation-implying verbs

(23)

*na-**re***	***kiibele***	*ka*	*na-**n***	*teli*
1SG-RENEG	know	CP.NR	1SG-NRNEG	walk

'I could not walk', personal story (Boa1.084)

(24)

a	***tere***	***longbini***	*ka*	***ne***	*kie*
and	RENEG	want	CP.NR	NRNEG	say.TR

'and she did not want to say it', traditional story (Bong1.041)

(25)

tere	***wese***	*ka*	***ne***	*poló*	*vyoh*
RENEG	can	CP.NR	NRNEG	climb	young.coconut

'he could not climb the young coconut', traditional story (Ib1.027)

wese only occurs in negated clauses

(26)

na-m	***not-selaane***	*ka*	***na-n***	*gove-ne*	*tiri*	*de-soo*
1SG-RE	think-wrongly	CP.NR	1SG-NRNEG	do-tr	something	NR-IDEF

'I was unable to do anything', personal story (Boa1.47)

6.2 Analysis of the N form

Basic idea: The N form is a potentialis with a **falsity presupposition,** hence it **must be negated.**

(57) $[\![[_{IP}\ \textit{Enet}\ [\textit{ne}\ [_{vP}\ t_{Enet}\ \textit{koliet}]]]]\!](c)$
$= N(\varphi)$
$= \lambda i\ \mathbf{:\neg\exists i''>i[\varphi(i'')]}\ \exists i''>i[\varphi(i'')]$

Analysis for negative root clause complementizer *saka* o.k. as this expresses negative modality:

(58) $[\![[_{CP}\ \textit{saka}\ [_{IP}\ \textit{Enet ne koliet}]]]\!](c)$
$= [\![\textit{saka}]\!](c)([\![[_{IP}\ \textit{Enet ne koliet}]]\!](c))$

with $[\![\textit{saka}]\!](c) = \lambda p\lambda i\forall i':R(i)(i')\ \neg p(i')$

$= \lambda p\lambda i\lambda R\forall i':R(i)(i')\ [\neg p(i')](\lambda i\ \mathbf{:\neg\exists i''>i[\varphi(i'')]}\ \exists i''>i[\varphi(i'')])$
$= \lambda i\lambda R\forall i':R(i)(i')[\mathbf{:\neg\exists i''>i'[\varphi(i'')]}\ \neg\exists i''>i'\ [\varphi(i'')]]$
$= \lambda i\lambda R\ \mathbf{:\forall i':R(i)(i')\ \neg\exists i''>i'[\varphi(i'')]}\ \forall i':R(i)(i')\ \neg\exists i''>i'[\varphi(i'')]$

Specification of R by an accessibility relation, e.g. PREF(sp(c)), and assertion:

(59) $= \lambda c[C(c) \wedge !\ (58)(c)(PREF(sp(c))]$
$= \lambda c[C(c) \wedge !\ \mathbf{:\forall i':PREF(sp(c))(c)(i')\ \neg\exists i''>i'[\varphi(i'')]}\ \forall i':PREF(sp(c))(c)(i')\ \neg\exists i''>i'[\varphi(i'')]$
$= \lambda c[C(c) \wedge\ \forall i':PREF(sp(c))(i)(i')\ \neg\exists i''>i'[\varphi(i'')]]$
i.e. at the indices i′ preferred by the speaker at c,
there is no index i″ after i′ at which Enet sings

Other accessibility relations, e.g. epistemic relation for predictions about the future.

6.3 The N form under negated matrix verbs

(60) *Enet tere kiibele* [$_{CP}$ *ka ne koliet*] 'Enet could not sing.'

(61) ⟦[$_{CP}$ *ka* [$_{IP}$ t_{Enet} *ne koliet*]]⟧(c) = ⟦*ka*⟧(c)(⟦t_{Enet} *ne koliet*⟧(c))
= $\lambda R\lambda i\ \forall i':R(i)(i')$ **$:\neg\exists i''>i'\varphi(i'')$** $\exists i''>i'\varphi(i'')$
= $\lambda R\lambda i$ **$:\forall i':R(i)(i')\ \neg\exists i''>i'\ \varphi(i'')$** $\forall i':R(i)(i')\ \exists i''>i'\ \varphi(i'')$, cf. (27)(k)

(62) ⟦[$_{vP}$ t_{Enet} *kiibele* [*ka* [t_{Enet} *ne koliet*]]]⟧(c)
= λi **$:\forall i':ABLE(Enet)(i)(i')\ \neg\exists i''>i'\ \varphi(i'')$** $\forall i':ABLE(Enet)(i)(i')\ \exists i''>i'\ \varphi(i'')$

(63) ⟦[$_{IP}$ *Enet* [*tere* [$_{vP}$ t_{Enet} *kiibele* [*ka* [t_{Enet} *ne koliet*]]]]]⟧(c)
= RENEG(c)(⟦[$_{vP}$ t_{Enet} *kiibele* [*ka* [t_{Enet} *ne koliet*]]]⟧(c))
= $\lambda p\lambda i\ \forall i'''\leq i\ [\ \neg p(i''')]$((62)), negated realis prespposititn of *tere* not indicated here
= λi **$:\forall i':ABLE(Enet)(i)(i')\ \neg\exists i''>i'\ \varphi(i'')$** $\neg\ \forall i':ABLE(Enet)(i)(i')\ \exists i''>i'\ \varphi(i'')$
= λi **$:\forall i':ABLE(Enet)(i)(i')\ \neg\exists i''>i'\ \varphi(i'')$** $\exists i':ABLE(Enet)(i)(i')\ \neg\exists i''>i'\ \varphi(i'')$, cf. (26)(a)

(64) ⟦ASSERT⟧(C)(⟦[$_{IP}$ *Enet* [*tere* [$_{vP}$ t_{Enet} *kiibele* [*ka* [t_{Enet} *ne koliet*]]]]]⟧)
= $\lambda c[C(c) \wedge !\ (63)(c)]$
= $\lambda c[C(c) \wedge !$ **$:\forall i':ABLE(Enet)(c)(i')\ \neg\exists i''>i'\ \varphi(i'')$** $\exists i':ABLE(Enet)(c)(i')\ \neg\exists i''>i'\ \varphi(i'')$
= under condition that ABLE(ENET)(c) is not empty, and following (27)(g,i):
$\lambda c[C(c) \wedge !\ \forall i':ABLE(Enet)(c)(i')\ \neg\exists i''>i'\ \varphi(i'')]$

- The common ground C is restricted to those indices for which it holds that for all indices accessible i′ as to the abilities of Enet at c, there is no following index at which Enet sings.
- Negation in the matrix clause is essential, otherwise conflict presupposition / content
- We arrive at the right universal reading due to projection (27)(k), elimination (27)(g, i).

6.4 The N form under negative-implying verbs

Example sentence:

(65) *Enet notselaane ka ne koliet.*
‘Enet was unable to sing’

Meaning of *notselaane* contains a negation:

(66) $[\![$*notselaane*$]\!]$(c) = $\lambda \underline{R} \lambda x \lambda i\ \neg\ [\underline{R}(i)(\text{ABLE}(x))]$

(67) $[\![[_{vP}\ t_{Enet}\ [$*notselaane* $[_{CP}$ *ka ne koliet*$]]]]\!]$(c)
= $\lambda \underline{R} \lambda i\ \neg\ [\underline{R}(i)(\text{ABLE}(\text{Enet}))]((61))$
= $\lambda i\ \neg\ \mathbf{:\forall i'{:}ABLE(Enet)(i)(i')\ \neg\exists i''{>}i'\ \varphi(i'')}\ \forall i'{:}\text{ABLE}(\text{Enet})(i)(i')\ \exists i''{>}i'\ \varphi(i'')$
= $\lambda i\ \mathbf{:\forall i'{:}ABLE(Enet)(i)(i')\ \neg\exists i''{>}i'\ \varphi(i'')}\ \exists i'{:}\text{ABLE}(\text{Enet})(i)(i')\ \neg\exists i''{>}i'\ \varphi(i'')$
= $\lambda i\ \mathbf{:\forall i'{:}ABLE(Enet)(i)(i')\ \neg\exists i''{>}i'\ \varphi(i'')}$

(68) $[\![$ASSERT$]\!]$(C)($[\![[_{vP}\ t_{Enet}\ [$*notselaane* $[_{CP}$ *ka ne koliet*$]]]]\!]$)
= $\lambda c[C(c) \wedge !\ (67)(c)]$
= $\lambda c[C(c) \wedge !\ \mathbf{:\forall i'{:}ABLE(Enet)(c)(i')\ \neg\exists i''{>}i'\ \varphi(i'')]}$

- The common ground is restricted to those indices c for which it is true that in the indices i′ compatible with the abilities of Enet in c, there is no index i″ after i such that Enet sings at i″.

7. The Distal form

7.1 The Distal in root clauses and adjunct clauses

Temporal scene setters in discourse, typically to a past event

(27) ***meerin*** *témat* *la-**t*** *pwee*
long.ago zombies 3PL-DST be.many
'Long ago, there were many zombies.' traditional story (Boa3.025)

Temporal scene setter within a sentence in adjunct clauses.

(28) *yaa* ***te*** *van* ***te*** *pwet* ***ti*** *piipili* *mwe* *kuoli-mee* *tyenem*
sun DST go DST PROG DST red RE return-come home
'**When** the sun became red (in the evining), he went home' (Ilson2.021)

7.2 The Distal in complement clauses

The distal occurs in complement clauses embedded by propositional attitude verbs when it is entailed that they are in fact **false**.

(29) *temát* *ngyee* *mon* *la-m* *deme* *ka* ***te*** *met* *byen* *bo-n* *mwe* *sek.*
zombie 3PL too 3PL-RE think CP.NR DST dead because smell-3SG RE stink
'The zombies too thought that he was dead because he (his smell) was stinking.'
traditional story, in fact he was not dead (Saelas.026)

7.3 Interpretation of the distal form

Basic idea:

- The distal is used if no grammatical relation to the utterance index is expressed.
- This allows the use of the distal to set a new temporal anchor (scene setter)
- As it neither comes with a realis restriction nor with a potentialis restriction, it is the only form that is compatible with propositional attitudes with false content.
- If the conditions of the realis, negated irrealis, potentialis are met, they have to be used ("maximize presupposition", cf. Heim 1991.
- Distal in propositional attitude contexts conversationally implicates that the content of the attitude is false.

Interpretation proposed here:

(69) $[\![[_{IP}$ *Enet te koliet*$]]\!](c) = \lambda i : \mathbf{i{\neq}c}\ [\varphi(i)]$

- Event index is different from reference index (and utterance index)
- Cannot be directly asserted (applied to c)

7.4 Distal in complement clauses

Use in embedded clauses:

(70) *Lissing mwe deme ka Enet te koliet*.
'Lissing thinks/was thinking that Enet is singing/was singing/will be singing' (?)

(71) $[\![[_{CP}\ \textit{ka}\ [_{IP}\ \textit{Enet te koliet}]]]\!](c)$
$= [\![\textit{ka}]\!](c)([\![\textit{Enet te koliet}]\!](c))$
$= \lambda p \lambda R \lambda i\ \forall i'{:}R(i)(i')\ [p(i')]\ (\lambda i\ \mathbf{:i{\neq}c}\ [\varphi(i)])$
$= \lambda R \lambda i\ \forall i'{:}R(i)(i')\ \mathbf{:i'{\neq}c}\ \varphi(i')$
$= \lambda R \lambda i\ \mathbf{:\forall i'{:}R(i)(i')\ :i'{\neq}c}\ \forall i'{:}R(i)(i')\ \varphi(i')$, cf. (27)(k)

(72) $[\![[_{vP}\ \textit{Lissing mwe deme}\ [_{CP}\ \textit{ka}\ [_{IP}\ \textit{Enet te koliet}]]]]\!](c)$
$= \lambda i\ \exists i''{\leq}i\ \mathbf{:\forall i'{:}EPIST(Lissing)(i'')(i')\ :i'{\neq}c}\ \forall i'{:}EPIST(Lissing)(i'')(i')\ \varphi(i')$
without realis presupposition, to keep things simple.

- It is expressed that at all indices i′ that are accessible according to Lissing's believe at i″, Enet is singing (co-temporal interpretation).
- It is expressed that the utterance context c is not epistemically accessible to Lissing at i″, i.e. that she has at least one objectively false belief, due to distal presupposition i′≠c
- Nothing is indicated as to whether Lissing's belief of φ is true or false.
- But realis marking on the embedded clause would indicate that it is in fact true.
- Hence, in typical contexts, speaker can be taken to know whether the embedded clause is true; if speaker avoids realis marking, this implicates that the embedded clause is NOT true.

8. Conditional clauses (a Teaser)

Potentialis conditional assumes that the condition may happen (cf. indicative conditional)

(30) *silii bu wuo a-ki-p loko*
road IR good FUT-2PL-POT walk
'If the road is good, you guys (will) go.' (trad. story, Aiben5.044)

Distal in protasis indicates that the condition is not necessarily supposed to happen

(31) *dye-**p** pun van, ka ko-**t** longane daa de-soo **to** minyeh,*
1+2PC-POT tell.stories continue CP.NR 2SG-DST hear words NR-IDEF DST different
***a**-ko-**p** kóókóógóló m-adyee em*
FUT-2SG-POT shut CL3-1+2PC house
'Let's say things, in case you hear some different words, then you should shut our houses (e.g. not accept these words as true)', funeral speech (5Days.110)

Distal in protasis and future + distal in apodosis: counterfactuals

(32) *Ko-**p** pyak ne tiri koloo lé, vih mane óó.*
2SG-POT choose TR something 3DU DIST banana with coconut
*Ko-**t** pyak soro ka tu wuo, **a**-ko-**p** idi popat.*
2SG-DST choose reach CP.NR DST good FUT-2SG-POT take pig
'Choose one of these two things, a banana or a coconut.
In case you choose good, then you will take (win) a pig.' (elicited)

(33) *Hap mát! Ka ko-**t** pyak ne vih, **a**-ko-**t** idi popat!*
Damn! CP.NR 2SG-DST choose TR banana FUT-2SG-DST take pig
'Damn! If you had chosen the banana, you would have won the pig!' (elicited)

9. Summing up

- We have seen the essential distribution of the five modal markers of Daakie,
  Realis, Realis Negation, Potentialis, the N form (dependent negation), Distal
- As underlying structure we assumed a combination of tense and modality (branching time)
- Realis comes with a factive presupposition,
- Realis negation comes with a negated factive presupposition,
- Potentialis comes with a presupposition that the proposition may become true in the future,
- the N form comes with the presupposition that the proposition is false (!),
  hence it can only be used under a higher scope negation.

  n.b.: This explanation offers a new perspective on negative concord in other languages.
- The distal just comes with a presupposition that its index is different from the utterance context.
- Complementizers *ke / ka* analyzed as strong modals,
  modal accessibility relation supplied by embedding predicates or the context.

10. Exercises!

From the Daakie dictionary (to appear soon...)

ooui! call. ooui. *loud call used to indicate one's presence, e.g. when working in the garden or when approaching a house, also when making a phone call.*

op [ɔp] n. faeawood. *firewood.* **sok op** faeawud blong mi *my firewood*

óp [op, oup] n. les blong wan man we i aot i go silip long wan narafela vilij. *feeling of missing someone that has left.* **Filip me van, mo gone óp** Filip i go, i mekem les blong hem *Filip is out, we miss him* → **paóp**.

óp interj. hop! *interjection of surprise.*

paóp v. les blong strenja we i silip long vilij. *to be missed, said of visitors that have left.* **telyet woroló kolom van, kolom paóp** tufala strenja i go, oli les long tufala *the two visitors have left, they are missed now* → **óp**.

Exercises!

‘When Britain leaves Europe, it will create a feeling of missing it.’

‘If Britain leaves Europe, it would create a feeling of missing it.

‘Had Britain left Europe, it would have created a feeling of missing it.’

Exercises!

Ot inglis ***be*** *lingi ot yurop,* ***a-be*** *gone óp.*
place Britain POT leave place Europe, FUT-POT make ÓP
‘When / if Britain leaves Europe, it will create a feeling of missing it.’

Ot inglis ***te*** *lingi ot yurop,* ***a-be*** *gone óp.*
place Britain DIST leave place Europe, FUT-POT make ÓP
‘When / if Britain leaves Europe, it will create a feeling of missing it.’

Ot inglis ***ka*** ***te*** *lingi ot yurop,* ***a-te*** *gone óp.*
place Britain COMP.NREL DIST leave place Europe, FUT-DIST make ÓP
‘Had Britain left Europe, it would have created a feeling of missing it.’

More Exercises!

Frans, saka ko-n van, a-ko-p paóp!
Frans, NEG.COMP 2SG-N go FUT-2SG-POT be.missed.
'Frans, geh nicht, du wirst fehlen!'

Frans, ko-p kuoli=mee teteh, ko-m paóp.
Frans, 2SG-POT return=come again 2SG-RE be.missed.
'Frans, komm zurück, du fehlst!'

Frans, ko-t paóp, a-kidye-p deng=deng ten gon!
Frans, 2SG-DIST be.missed, FUT-1.PC.EXCL-RE cry=REDUP very FOC
'Frans, wenn du fehlen würdest, dann würden wir sehr weinen!'

Frans, kidye-re longane ka ko-n van.
Frans, 1.PC.EXCL-RNEG want COMP 2SG-N go
'Frans, wir wollen nicht, dass du gehst.'