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Predicate markers in Daakie, an Austronesian language of Ambrym, Vanuatu: Realis and Irrealis

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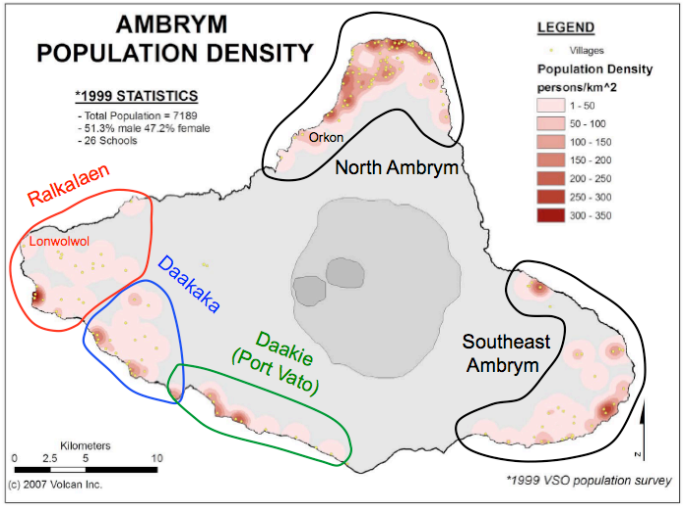
1. Background

Project *Languages of Southwest Ambrym,* VolkswagenStiftung, DoBeS (2009-2012).

The project targets three languages of Ambrym: Daakaka (cf. Kilu von Prince, this workshop), Daakie (previously known as "Port Vato", current talk), and Ralkalaen.

Michael Franjieh (SOAS) currently investigates North Ambrym. The four languages are closely related. Southeast Ambrym is relatively distinct, closely related to Paamese.

Previous description based on the related, but now moribund language Lonwolwol: Paton W.F. 1971 [1956]. *Ambrym (Lonwolwol) Grammar.* Canberra: ANU.



This presentation is based on ongoing field work on Daakie (2010, 4 months, 2011, 3 months). Except for phonology and morphology, little systematic elicitation was done; generalizations are based on transcribed recordings (> 3500 clauses so far).

Thanks to Kilu von Prince for very helpful discussion.

2. Basic Sentence Structure of Daakie

(1) (Subject) SM Verb (Object) (Adjuncts),
where SM: Subject+Modality marker.

(2) *temat ngyee la-m vehe ngye lan silii* Boa3.28
demon PL 3PL-RE carry PR.3SG LOC path
'The demons carried him to the path'

Current focus: The SM marker, which indicates phi-features of the subject (number/person) and modality (arguably, distinct from tense, to be discussed). In the example above, *la-* marks 3rd person plural, *-m* markes realis.

There are four numbers and four persons:

Person	Singular	Plural	Dual	Paucal	
1	*ngyo* *na-m*	*kemee* *keme-m*	*komoo* *komo-m*	*kememdyee* *kidye-m*	**Pronoun** **SM**
1+2		*et* *da-m*	*adoo* *do-m*	*adyee* *dye-m*	**Pronoun** **SM**
2	*ngyak* *ko-m*	*kimim* *ki-m*	*kamoo* *ka-m*	*kamdyee* *kamdye-m*	**Pronoun** **SM**
3	*ngye* *mwe, me, mwi, mi, mo, mu, (ma)*	*ngyee* *la-m*	*koloo* *kolo-m*	*kilyee, kiyee* *kiye-m*	**Pronoun** **SM**

There is no subject marker for 3rd person singular. The bare modality marker *m* is used with a vowel corresponding to the vowel of the following verb.

- Base form: *mwe* (*mw*: laviovelar, only in front of *e/i*). Examples: *mwe sengane* 'give', *mwe tangale* 'reach', *mwe ret* 'hot', *mwe deme* 'think', *mwe le* 'be married', *mwe kie* 'say'
- If the following verb stem has an initial labial (non-velarized) consonant, velarization is lost: *me.* Examples: *me páne* 'to roast', *me ba* 'plant', *me mee* 'to come', *me van* 'go', but: *mwe pwet* 'stay', *mwe mwetmwet* 'short'
- If the stem of the following verb is high (i, u, o – with e, it stays e) or contains the glide /j/, we find a homorganic vowel: *m(w)i, mu, mo, m(w)e* (recall that velarized *mw* only occurs before i and e). Examples: *mwi tili* 'poke', *mwi kii* 'dig', *mi pii* 'cough', *mi bii* 'together', *mi mihmih* 'wet', *mi yah* 'strong', *mi myuu* 'grow', *mwi idi* 'take', *mo longane* [loŋane] 'hear', *mu tuluh* 'slippery', *mu lupwet* [lypwet] 'hide', *mu wuo* 'good' but *mwe don* [dœn] 'bend', *mwe notnot* [nœtnœt] 'think';
- If the stem of the following verb is low (a) and the initial consonant is not labial, then we optionally have *ma* with some speakers. Examples: *ma tangale* 'reach', *ma ka* 'fly', *ma ane* 'eat', but not **ma pan* 'fork', **ma mán* 'laugh'.

3. The Realis/Irrealis distinction

3.1 The basics

In addition to the realis marker *mw*, there is an irrealis marker. As bare marker in the 3rd person singular it is realized as *bwe, bwi, be, bi, bo, bu, (ba)*, hence underlying form *bw-*. As suffix to the subject marker it is realized as *-p* due to final devoicing. Examples:

(3) *mo longbini ka be van lan vele kekeli* PSak2.10
3SG.RE want that 3SG.IR go LOC island small
'He wanted to go to a small island.',
lit. 'He wanted that he goes to a small island'

(4) *na-p idi ok masolo* Aila2.024
1SG-IR take POSS.FOOD.1SG fish
'I will take my fish.', 'I promise to take my fish.'

(5) *la-m kie ka da-p van tyenem* Bong1.046
3PL-RE say COMP 12PL-IR go home
'They said, let's go home.'

Remark on realization of *dap* in (5): In front of verbs with labial onsets, the modality suffix tends to be not realized [davan], hence obliterating the *dam van / dap van* distinction.

The examples show three typical uses of the irrealis:

- In clauses in the scope of certain propositional attitude verbs; here: wishes
- In commissive clauses.
- In jussive clauses (note that even though (5) is embedded, it is direct speech; while direct speech is frequently used in stories, indirect speech is possible too.)

These uses make it implausible to assume that *mw* and *bw* are tense markers.

We will look at the Realis/Irrealis distinction more closely.

3.2 Uses of Realis

3.2.1 In main clauses

Past time reference, real world:

(6) *meerin na-m mee oke-le na-m lehe* Bong2.027
long.time 1SG-RE come LOC-PROX 1SG-RE look
'long time ago, I came here, I looked.'

Present time reference, real world (notice resultative serial verb construction):

(7) *obwer anvu mi myuu mo do* Jemis2.054
taro introduced 3SG.RE grow 3SG.R slow
'This Fiji taro is growing slow.'

Past time reference, fictional world (old man looking for a new skin):

(8) *me pwet me sela wilin talin bye-n* Bong2.012
3.RE PROG 3.RE put.on skin.TR body.TR body-3SG
'he was/is putting on the skin of his (= another man's) body'

Present time reference, specification of a rule:

(9) *ko-m koot mo-nok ko-m takukuu yee mwe titisii* Jemis2.008
2SG-RE weed 3SG.RE-end 2SG-RE cut.out tree 3SG.RE fall.down.DISTR
'after you cleared the grounds, you cut out the tree, it falls down '

Generic reference; description of how people plant certain things together

(10) *ngale obwet ten mu-syoo la-m ba mu du ne kon kinyee ye* Jemis2
after taroo true RE-some.PL 3PL-RE plant real stay TR corn DEM.PL DIST #022
'then they plant some island taro to stay with that corn.'

3.2.2 In embedded clauses

Under factive propositional attitude verbs; use of complementizer *ke*:

(11) *mo-mele me kiibele ke vanten mu-syoo la-m du oki-ye* Jemis1
RE-this.way 3SG.RE know COMP man RE-some.PL 3PL-RE stay LOC-DIST #012
'This way, he knows that some men stay there.'

(12) *la-m tee-kiibele ke me leplap* Amos.013
3PL-RE look-know COMP 3SG-RE change.face
'They recognized that he had changed his face.'

(13) *mo longane ke timaleh kiye mwe pwet mo sóró* Jemis3.029
3SG.RE hear COMP child DEM 3SG.RE PROG 3SG.RE talk
'He heard that the children were talking.'

Example with negated propositional attitude verb:

(14) *byen tere kiibele ke me e naren* Abel2
from.TR 3SG.RE.NEG know COMP 3SG.RE COP child-3SG #037
'therefore she didn't know that it was her child.'

Under factive conjunctions:

(15) *na-m pwet em ne meseen byen ke popat me te ye-k* Boa1.079
1S-RE stay house TR sick-NOM because COMP pig 3SG.RE cut leg-1SG
'I stayed in the hospital because the pig bit my leg.'

(16) *bili ke mwe saaku wilin byen me mee timaleh man soo* Bong2
time COMP 3SG.RE take.off skin.TR body.3SG 3SG.RE come child male SG.IND #002
'When he took of his skin, a boy came.'

3.3 Uses of Irrealis

3.3.1 In main clauses

The use of irrealis in commissive and jussive clauses was illustrated in (4) and (5).

Another commissive clause; note irrealis marking on second predicate (event-descriptive serial verb) and the non-realis indefinite marker *desoo* (used also in negative contexts, i.e. contexts with limited life span of discourse referent).

(17) *na-p gone gyeh-en de-soo bwi yah* Boa1.089
1SG-IR do.TR work-NOM NRE-IDEF 3SG-IR strong
'I will do some strenuous work.'

Use in commands (imperatives):

(18) *ko-p sengane dere mee na-p ane* Boa2.076
2SG-IR give some.PART come 1SG-IR eat.TR
'Give me some of it so that I will eat.'

(19) *ki-p tee-ne mee na-m min na-p yah* Maeka1.162
2PL-IR look-TR come 1SG-RE drink.TR 1SG-IR strong
'You look and come, I drank it in order to be strong.'

3.3.2 Reference to future events

For future events, the irrealis subject marker is preceded by *a*:

(20) *vanten desoo a be mee bwi idi pija en dout* Jemis2.086
man some 3SG.IR come 3SG.IR take picture of.3SG probably
'Some man will come to take a picture of it (about a palm tree with five forks).'

This *a* has most likely evolved from a conjunction meaning 'and, but', as in the following example:

(21) *yaa me van mo-nok a vanten kevene la-m van tyenem mo-nok* Bong3
sun 3SG.RE go RE-end PART man every 3SG-RE go home RE-end 23
'The sun was down, and every man had gone home.'

One indication: particle *a* + immediately following future form *a-* do not cooccur.

Possible treatments of *a* + irrealis:

- *a* is a subordinizer that together with irrealis mood indicates reference to future events.
- *a* + irrealis marker evolved to a future marker, a subcase of irrealis.

Here: second option. More examples:

(22) *lisepsep ngyee a-la-p ane ngyo* Boa2.089
lisepsep PL FUT-3PL-IR eat.TR PRON.1SG
'The lisepseps will eat me!'

(23) *kolo-m du notnot ke teh a-bo soksilinee aloo li-vih ngyee* Paul2.015
2D-RE PROG think COMP sea FUT-3SG.IR carry.away POSS.2D tree-banana PL
'The two were thinking that the sea will carry away their banana trees.'

(24) *ko-p neknak a-na-p kie ne a-do-p kukuo ngi-ye* Aiben2.039
2SG-IR ready FUT-1SG.IR say TR FUT-12DU-IR race now-DIST
'Be ready, then I will tell you that the two of us will make a race.'

(25) *mwe kie ka a-na-p ane ngyak nge-le* Boa2.114
3SG.RE say COMP FUT-1SG-IR eat.TR PRON.2S now-PROX
'He said, "I will eat you now!"'

3.3.3 In embedded clauses

Under non-factive embedded clauses; complementizer *ka*.

For wishes, see (3) and the following example:

(26) *na-m longbini ka na-p pune punen soo*
1SG-RE want COMP 1SG-IR tell story one
'I want to tell a story.'

For possibilities:

(27) *mwe páne basee kinyee-ye mwe neknak ka bu du ba ane* Boa3.
3SG-RE roast bird DEM.PL-DIST 3SG-RE ready COMP 3SG.IR stay.PL 3SG.IR eat.TR 39
'He roasted the birds and was ready so that he could eat them.'

(28) *kolo-m du tyenem tah-tone ka yaa be lotne saloo ot be goló* Paul2
2D-RE PROG home wait.TR COMP sun 3SG.IR heat.TR POSS.2D place 3SG.IR dry 7
'The two were waiting at home that the sun should warm up their place and make it dry.'

Indirect speech, for irrealis events.

(29) *Inet me kie ka be van*
Inet 3SG.RE say COMP 3SG.IR go
'Inet said that she would go.'

To know how (with *kiibele* 'know', contrast with (11), where complementizer is *ke*:

(30) *ngale la-m kiibele ka la-p kuo soo-soo*
then 3PL-RE know COMP 3PL-IR run one-REDUP
'Then they knew/were able to run away one by one.'

Temporal clauses in irrealis contexts, complementizer *ka*, contrast with (16):

(31) *mwe kiibele ka ba ane an vih ngyee bili ka la-p myen* Paul2
3SG.RE think COMP 3SG.IR eat.TR POSS.3SG banana PL time COMP 3PL-IR ripe 44
'He thought that he would eat his bananas when they are ripe.'

Protasis and apodosis of conditionals:

(32) *molo ka bo longane diliri gon munok,* Abel2.010
namalao COMP 3SG.IR feel egg.3S EMPH finish
'The namalao, when it feels its egg(s) finished,'

a be mee me pisih pán weren kege me pwet me tivin weren
DISC 3SIR come 3SG.RE lay.eggs under X.PLACE COMP.REL 3S.RE stay 3S.RE bury.TR X.PLACE
'then it comes and lays eggs under the place where it stays and buries them.'

3.3.4 In purposive clauses, serial verb construction, no complementizer

See (18), (19) and also:

(33) *la-m van la-p pungot* Bati
3PL-RE go 3PL-IR collect.shellfish #006
'They went to collect shellfish on the reef.'

4. Semantics of realis/irrealis distinction

4.1 The branching time model frame

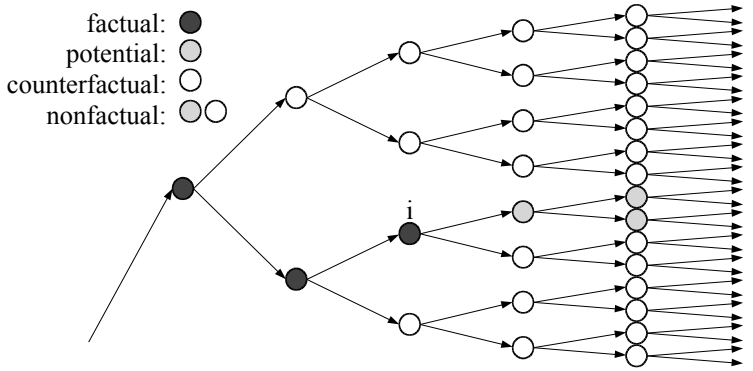
The modal interpretation of the *mw/bw* marker with its temporal impact can be expressed in a branching time model.

- Clauses are interpreted with respect to a world/time index i
  (utterance index, can be fictional or mythical, as in custom stories)
- the set of world/time indices is ordered by an ordering relation $\leqq$,
  this is a branching order that branches towards the future, reflecting the fact that the past is fixed, the future is open.

(34) $\forall i, i' \in I[i \not\leqq i' \wedge i' \not\leqq i \rightarrow$ each pair of unrelated indices
$\exists i''[i'' \leqq i \wedge i'' \leqq i'] \wedge$ has a common predecessor
$\neg\exists i''[i \leqq i'' \wedge i \leqq i'']]$ but no common successor

At any index i the following sets of indices can be defined:
- $\{i' \mid i' \leqq i\}$, what has happened and is happening – the factual domain.
- $\{i' \mid i' \not\leqq i\}$, what has not happened and is not happening – the non-factual domain.
- $\{i' \mid i \leqq i'\}$, what could still happen – the potential domain.
- $\{i' \mid i' \not\leqq i \wedge i \not\leqq i'\}$, what could have happened – the counterfactual domain.

(35)



4.2 Interpretation format of sentences

Sentences are interpreted with respect to two indices:
- Context index: the index that is entertained as an option of the real world/time;
- Interpretation index: the index that is used to interpret the lexical constants.

(36) $\lambda i \lambda i'[...]$: Relation between context index i and interpretation index i′

The relation between these two indices is mediated by the modal markers.

Notational conventions:
- $[\![\ ]\!]$: interpretation function
- $\lambda i.---[...]$: function from i; defined if condition --- holds; value if defined: ...
- Φ: meta-variable for clauses
- RE, IR: Realis, irrealis operator

Example of a interpretation of a realis clause:

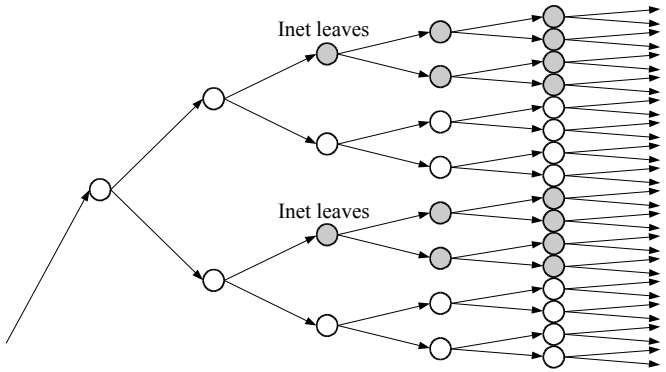
(37) $[\![$*Inet me van*$]\!]$
$= \lambda i \lambda i'.i' \leqq i$[Inet leaves at i′]

Existential closure over interpretation index:

(38) $\lambda i \exists i'.i' \leqq i$[Inet leaves at i′]

Goal of assertive communication is to restrict the candidates for the context word/time index.

(39) Candidates for context indices at which *Inet me van* is true:



Definition of factual etc. domain for sets of indices: ##

4.3 Interpretation of realis marker

- Realis mode restricts indices to those i′ such that i′ ≤ i.

(40) ⟦RE Φ⟧(i) = ⟦RE⟧(i)(⟦Φ⟧) with ⟦RE⟧ = λiλp∃i′[i′ ≤ i ∧ p(i′)]:
= ∃i′[i′ ≤ i ∧ ⟦Φ⟧(i′)]

- Use of irrealis, by **implicature**, is used for reference to indices i′ where i′ ≰ i.

(41) ⟦IR Φ⟧(i) = ⟦IR⟧(i)(⟦Φ⟧) with ⟦IR⟧ = λiλp∃i′[p(i′)]:
= ∃i′[⟦Φ⟧(i)],
by **implicature**: = ∃i′[(i′ ≰ i) ∧ ⟦Φ⟧(i′)]

This means that IR signals either i < i′ (future reference) or i ≰/≱ i′ (subjunctive and other modal reference), but it allows for i′ ≤ i, as we have i′ ≰ i just due to implicature.

4.3.1 A slightly different version: Realis/irrealis pick up index already introduced

Often, the interpretation index is anaphorically related to an index already introduced. Take (6). The temporal adverbial *meerin* introduces an index i′ that is long before the utterance index i, and the following clauses are interpreted with respect to i′. (We may call i′ the "event index" to distinguish it from the "utterance index" i). Notice that the contribution of realis, i′ ≤ i, is satisfied.

(42)	*meerin*	*na-m*	*mee*	*o-kele*	*na-m*	*lehe*
	long.time.before	1SG-RE	come	place-PROX	1SG-RE	look
	∃i′ [i′ << i	i′ ≤ i			i′ ≤ i	

It is plausible to assume that the meaning component i′ ≤ i of realis is **presupposed** – realis does not assert that the proposition it applies to is true in the real world, but rather can be applied only if the event index i′ is before or equal the utterance index i. If an event index i′ was not introduced explicitly before, then it can be **accommodated** – this is a common way to satisfy presuppositions. In a narrative, newly introduced event indices typically are located after the event index that was introduced immediately before (cf. modelling in Discourse Representation Theory: Kamp & Reyle 1993). Applied to our example:

(43)	*meerin*	*na-m*	*mee*	*okele*		*na-m*	*lehe*
	long.time.before	1SG-RE	come	here		1SG-RE	look
	∃i′ [i′ << i	i′ ≤ i			∃i″ [i′< i″ ≤ i	i″ ≤ i	

We find similar anaphoric chains in the irrealis case. See (28); I assume that the complementizer *ka* introduces a new index (see below for a refined analysis).

(44)	*kolo-m*	*tahto-ne*	*ka*	*yaa*	*be*	*lot-ne*	*saloo*	*ot*		*be*	*goló*
	2DU-R	wait-TR	COMP	sun	3SG.IR	heat-TR	2D.POSS	place		3S.IR	dry
	i′ ≤ i		[i″≰i		i″≰i				∃i‴[i″<i‴≰i	i‴ ≰ i	

4.4 Another proposal: RE / IR as expressing relations between indices

If realis/irrealis express presuppositions, this can be expressed in terms of restrictions between two indices, an **interpretation** and a **context** index.

4.4.1 First implementation

(45) i: context index, i′: interpretation index
λX.---X---[...X...]: function with domain restricted to ---X--- (presupposition)

(46) ⟦RE Φ⟧(i)(i′) = ⟦RE⟧(i)(i′)(⟦Φ⟧)
with ⟦RE⟧ = λiλi′λp.i′≤i[p(i′)], where i′≤i: presupposed
= i′≤i[⟦Φ⟧(i′)]

(47) ⟦IR Φ⟧(i)(i′) = ⟦IR⟧(i)(i′)(⟦Φ⟧)
with ⟦IR⟧ = λiλi′λp[p(i′)]
= ⟦Φ⟧(i′), with implicature: i′≰i

4.4.2 Implementation of Realis/Irrealis as predicate modifiers

Interpretation of realis / irrealis marker, π: predicate

(48) ⟦RE π⟧(i)(i′) = ⟦RE⟧(i)(i′)(⟦π⟧)
with ⟦RE⟧ = λiλi′λPλx.i′≤i[P(i′)(x)], where i′≤i: presupposition
= λx.i′≤i.[⟦π⟧(i′)(x)]

(49) ⟦IR π⟧(i)(i′) = ⟦IR⟧(i)(i′)(⟦π⟧)
with ⟦IR⟧ = λiλi′λPλx.[P(i′)(x)], no presupposition for indices
= λx.[⟦π⟧(i′)(x)]

Example interpretations: Realis

(50) ⟦*Inet* [*me van*]⟧
= ⟦*Inet* [RE *van*]⟧
= λiλi′[⟦RE⟧(i)(i′)(⟦*van*⟧)(⟦*Inet*⟧(i)(i′))] (type-driven interpretation rules)
with ⟦*Inet*⟧(i)(i′) = Inet, ⟦*van*⟧ = λiλx[x goes at i]:
= λiλi′.i′≤i[Inet goes at i′], where i′≤i: presupposition

(51) ⟦*meerin* [*Inet* [*me van*]]⟧
= ⟦*meerin*⟧(i)(⟦*Inet* [*me van*]⟧)
with ⟦*meerin*⟧ = λiλr∃i′[i′ << i ∧ r(i)(i′)]:
= λi∃i′[i′ << i ∧ Ines goes at i′] (as presupposition i′ ≤ i is satisfied).

Example interpretation: Irrealis

(52) ⟦*Inet* [*be van*]⟧
= ⟦*Inet* [IR *van*]⟧
= λiλi′[Inet goes at i′], no presupposition for indices

As the irrealis does not anchor the index of interpretation, i′, to the index of utterance, i′, this would result in a highly under-informative statement. If existentially quantified, the resulting proposition would be true if at some index or other, Inet goes. Hence for any informative use, i′ has to be anchored in one way or other.

We will discuss propositional attitude predicates and the future interpretation as mechanisms that provide for such anchorings.

4.5 Propositional attitude verbs

4.5.1 Reminder of standard treatment of modal predicates

Modal statements are standardly interpreted as involving an "accessibility relation" R from one index (typically the index of utterance) to another index (the index of interpretation i).

(53) *John must have a car.*
∀i′∈R(i)[John has a car at i]; epistemic or deontic necessity
R(i): what is known in i or what is allowed in i .

(54) *John may have a car.*
∃i∈R(i)[John has a car at i]; epistemic or deontic possibility; R as above.

(55) *Mary thinks that John has a car*.
∀i′∈THINK(i)(m)[John has a car at i];
THINK(i)(m): indices that are compatible with what Mary thinks in i.

4.5.2 Proposal for irrealis propositional attitude verbs in Daakie

➢ The complementizer *ka* expresses a necessity modal, unspecified accessibility relation.

(56) ⟦*ka*⟧ = λiλi′λrλR∀i″∈R[r(i)(i″)]

➢ Propositional attitude verbs introduce accessibility relations:

(57) ⟦*longbini*⟧ = λiλi′λMλx∃R[want(i′)(R)(x) ∧ M(i)(i′)(R)]
where want(i′)(R)(x): x wants something in i′,
where R identifies the indices compatible with x's wishes in i′,
and M represents the contribution of the subcategorized sentence.

➢ Putting things together:

(58) ⟦[*Abel* [*mo* [*longbini* [*ka* [*Inet be van*]]]]]⟧

a. ⟦*ka* [*Inet be van*]⟧
= λiλi′[⟦*ka*⟧(i)(i′)(⟦*Inet be van*⟧]
= λiλi′λR∀i″∈R[*Inet goes at* i″]

b. ⟦*longbini* [*ka Inet be van*]⟧
= λiλi′[⟦*longbini*⟧(i)(i′)(⟦*ka* [*Inet be van*]⟧)]
= λiλi′λx∃R[want(i′)(R)(x) ∧ ∀i″∈R[*Inet goes at* ″]]

c. ⟦*me* [*longbini ka Inet be van*]⟧
= λiλi′[⟦RE⟧(i)(i′)(⟦*longbini ka Inet be van*]⟧)]
= λiλi′λx.i′≤i ∃R[want(i′)(R)(x) ∧ ∀i″∈R[*Inet goes at* ″]]

d. ⟦*Abel* [*me longbini ka Inet be van*]⟧
= λiλi′.i′≤i ∃R[want(i′)(R*)(Abel)* ∧ ∀i″∈R[*Inet goes at* ″]]

In words: Abel wanted something in the past of i which created an accessibility relation R such that at all indices in R, Inet goes.

Realis mood in the complement clause is excluded because it would restrict the indices of the accessibility relation to the indices that precede the index of utterance. This would presuppose the truth of the embedded clause.

4.5.3 Proposal for realis propositional attitude verbs

Turning to factive predicates like *kiibele* 'to know that' or *lehe* 'to see that' which require the complementizer *ke*.

(59) *Inet mwe lese ke popat mwe vangare ngyo*
Inet 3SG.IR look COMP pig 3SG.IR jump.TR PRON.1SG
'Inet saw that the pig jumped on me.'

We assume that *ke* expresses a presupposition that the interpretation index of the predicate satisfies the condition that it is realistic, i.e. equal or before now.

Proposal: *ke* requires the evaluation index to be realistic:

(60) ⟦*ke*⟧ = λiλi′λr.i≤i′[r(i)(i′)]

⟦*popat me vangare ngyo*⟧
= λiλi′.i′≤i[the pig jumped in i′ on speaker]

⟦*ke* [*popat me vangare ngyo*]⟧
= λi″.i″≤i.[the pig jumped in i″ on speaker]

⟦*lese*⟧ = λiλi′λrλx[x gets visual information in i′ of the proposition r(i)]

⟦*Inet mwe lese* [*ke popat me vangare ngyo*]⟧
= λiλi′.i′≤i[Inet gets visual information in i′ of the proposition:
λi′.i′≤i.[the pig jumped in i′ on speaker]

Sketch of proposal: Getting visual information of some proposition p presupposes that p is true. Hence instead of p, the "realis" part of p can be taken – the set of those indices i″ that are both in p and for which it holds that i″ ≤ i.

However, the realistic background of *ke* can be shifted, as in the following example:

(61) *Abel me kiibele ka Inet be lese ke popat mwe/*bwe vangare Sam*
Abel 3SG.RE think COMP Inet 3SG.IR see COMP pig 3SG.IR/RE jump.on Sam
'Abel thinks that Inet saw that the pig jumped on Sam.'

Still to be worked out!

4.6 Future interpretation of irrealis

Notice: Future interpretation is not compatible with realis interpretation, as in the future, the interpretation index follows the context index.

We can see the *a* marking of future as an element that restricts the range of irrealis indices further to future interpretations.

In a branching time model, future is a necessity operator, as it states that for every future continuation there is some index at which the sentence is true. This requires a "silent" modal operator that states that for every continuation (history) of the utterance index i, there is an i′ in that continuation such that the proposition is true at i′.

Worked-out proposal:

A **history** is defined as a maximal linear subset of the set of indices **I**:

(62) h is a history in I, h∈H(**I**), iff h ⊆ **I**, h is a linear order,
and there is no h′ with h ⊂ h′ with h′ ⊆ **I** that is a linear order.

Definition and use of future operator, an operator that can be accomodated:

(63) ⟦*a*⟧ = λiλr∀h∈H(**I**)[i ∈ h → ∃i′[i′ ∈ h ∧ r(i)(i′)]]

(64) ⟦*Inet a-be van*⟧
= ⟦*a* [*Inet be van*]⟧
= λi[⟦*a*⟧(i)(⟦*Inet be van*⟧)
= λi∀h∈H(**I**)[i∈h → ∃i′[i′∈h ∧ Inet goes at i′]]

This is true at i iff in all histories, there is an index i′ at which Inet goes. Notice that the future marker *a* could not be combined with realis modality.

5. Conclusion and Perspectives

Here: Preliminary proposal for the treatment of some instances of the realis/irrealis contrast.

To be worked out: purposive clauses, irrealis in serial verb constructions, apparent context shifts etc.

In addition, Daakie has a **negation** system which interacts with the realis/irrealis contrast:

Indeed, negation is not expressed orthogonal to the mood system, but it is a mood itself. There is a realis negation and an irrealis negation.

(65) a. Realis negation: *-ro, -re*, 3rd singular *tere*
b. Irrealis negation *-n*, 3rd singular *ne*

(66) *na-re lese ngyak*
1SG-RE.NG see 2SG
'I don't see you.'

(67) *saka ko-n kyet-bini ngyo*
COMP.NEG 2SG-IRRNEG bite.dead 1SG
'Please don't bite me dead.'

There is also a "distal" marker *t* that first looks like a true tense but turns out to be a modal marker as well – see Kilu von Prince for Daakie.

(68) *moron soo te pwet okele*
old.person one 3S.DIST stay LOC.DIST
'One old person lived / used to live there.'