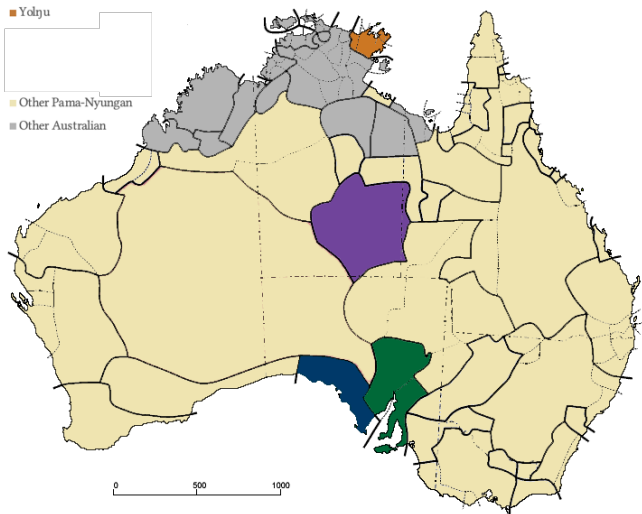


tense & mood
semantics of the Djambarrpuyŋu verbal paradigm

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TripleA8
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today

- ▶ Djambarrpuyŋu verbs inflect for one of four “categories”

‘EAT’	<i>luka</i>	<i>luki</i>	<i>lukan</i>	<i>lukanha</i>
‘GIVE’	<i>gurrupan</i>	<i>gurrupul</i>	<i>gurrupara</i>	<i>gurrupana</i>
‘SEE’	<i>nhäma</i>	<i>nhäŋu</i>	<i>nhäŋal</i>	<i>nhänha</i>
- ▶ These inflections encode TENSE and MOOD information
- ▶ existing descriptions eschew unified semantics for each category
 - ▶ understanding two phenomena — CYCLIC TENSE and NEGATIVE ASYMMETRY (w/r/t reality status marking) — permits for this

Roadmap

introduction

- modelling assumptions
- language background
- Wägilak
- Djambarrpuyŋu

cyclic tense

verbal mood & the negative asymmetry

- co-occurrence

the djambarrpuyŋu inflectional paradigm

appendices

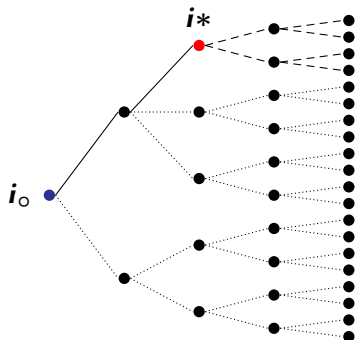
- Same-day future

Branching times

if the determinist sees Time as a line, the indeterminist sees it as a system of forking paths

Burgess '78

- ▶ Futurity as a modal concept (Abusch 1985, Kaufmann 2005, Giannakidou 2012...)
- ▶ Partially ordered set of indices (Thomason, Krifka, von Prince...)
- ▶ metaphysical assumption: given i , there is a single past (left-linearity) and multiple possible “branching” futures to the right

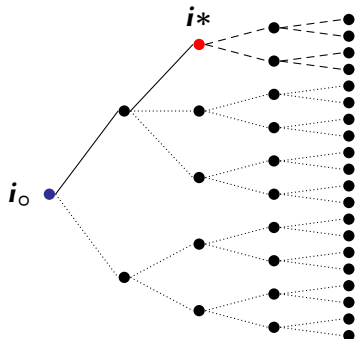


Branching times

if the determinist sees Time as a line, the indeterminist sees it as a system of forking paths

Burgess '78

- ▶ This tree represents metaphysical alternatives futures to i_0 $\cap \approx i_0$
- ▶ Relative to i^* , \prec partitions the tree into an ACTUAL, POTENTIAL and COUNTERFACTUAL domain

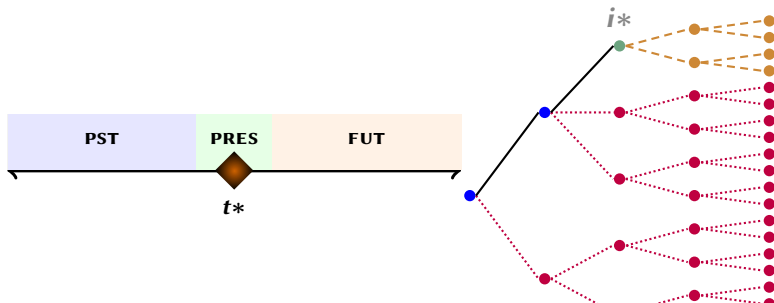
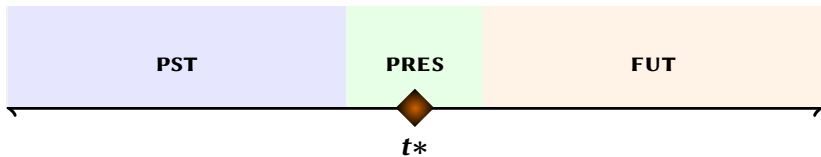


Inflection in Wägilak

- ▶ Heath (1980): Apparent 3-way tense distinction.

PAST, PRESENT, FUTURE

- ▶ Fourth inflection: PAST POTENTIAL



Djambarrpuyŋu

morphosemantics

- ▶ Four inflectional categories
- ▶ Two particular phenomena exhibited in (geographically Western varieties) include:
 - ▶ **Cyclic tense** (Comrie 1985)
 - ▶ **Negative asymmetry** (Miestamo 2005)
- ▶ Assigning metalinguistic labels to the Djambarrpuyŋu inflectional categories is non-obvious:
 - ▶ They will be numbered **I**, **II**, **III**, **IV** throughout

Djambarrpuyŋu

the past domain

1 *bäyŋu ŋarra ga nhäma mukulnha* [PRESENT]

NEX 1S IPFV.I see.I aunt-ACC

‘I see my aunt (right now).’

2 *bäyŋu ŋarra nhäŋal mukulnha gäthur* [TODAY PST]

NEX 1S see.III aunt-ACC today

‘I saw my aunt this morning.’

3 *bäyŋu ŋarra nhäma mukulnha barpuru* [REC PST]

NEX 1S see.I aunt-ACC yesterday

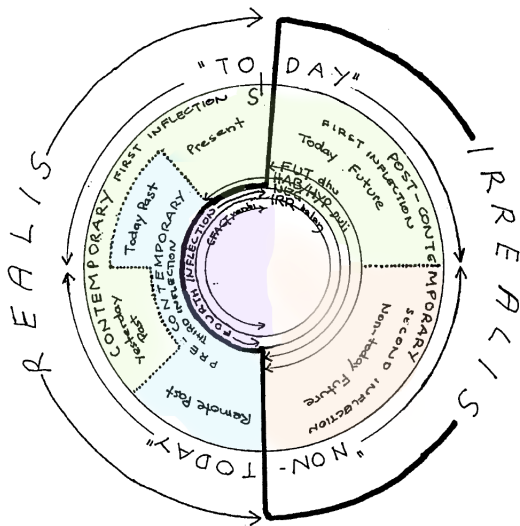
‘I saw my aunt yesterday.’

4 *bäyŋu ŋarra nhäŋal mukulnha (ŋunhi ŋarra yothu yän)* [RMT PST]

NEX 1S see.III aunt-ACC (today TEXT 1S kid

‘I saw my aunt (when I was little).’

Distribution



- I PAST, PRESENT, FUTURE
- II FUTURE, NONPAST, PAST, PRESENT
IRREALIS
NEGATIVE
- III PAST
- IV PAST IRREALIS, PAST HABITUAL, PAST NEGATIVE
- ★ here we go...

(Wilkinson 1991: 362)

Section 2

cyclic tense

Djambarrpuyŋu cyclic tense

- ▶ Tense morphology licensed by discontinuous intervals
- ▶ Reported in the languages of Maningrida



the existing account

- ▶ Existing treatments of Burarra-like temporal reference follow **Glasgow 1964**
- ▶ conspiracy of “reference frame” and CONTEMPORARY VS. REMOTE ‘tense’ marking

 $t_r \circ \text{today}$
 $t_r < \text{today}$


NONPAST

RECENT PAST

PAST

REMOTE PAST



FRAME OF REFERENCE FOR TWO BURARRA TENSES
Kathleen Glasgow

In the Burera language one suffix is used with verbs to indicate both present and recently. Another suffix is used to indicate both today past and long ago.¹ For example:

ngupa-*ng* 'I am eating' or 'I ate recently'
ngupa-*da* 'I ate today' or 'I ate long ago'

In order to discover a single meaning for *-ng* and a single meaning for *-da* we may consider them as occurring in two frames of reference: TODAY, and BEFORE TODAY.² This allows us to assign the meaning of 'contemporary' to *-ng*, and 'remote' to *-da*.

Adding the frames of reference to the above examples the following chart shows the meanings which result from frame of reference as well as form.

	TODAY	BEFORE TODAY
ngupa- <i>ng</i> 'contemporary'	I am eating	I ate recently
ngupa- <i>da</i> 'remote'	I ate today	I ate long ago

There are a number of allomorphs of these 'contemporary' and 'remote' suffixes, which may be the basis for determining subclasses of verbs, but the interaction of form and frame of reference upon meaning is the same.

¹ The double meaning of these suffixes was pointed out in Les Hiatt's material which he shared with us before we went to Maningrida in April of 1962. Les Hiatt spent two years with the Burera people, and is now with the Sydney University.

² I am grateful to Richard Pittman for applying the term 'frame of reference' to this feature of Burera.

theorising cyclicity

today i.e. more than a few days ago. The cyclicity thus arises from the combination of two oppositions, one an absolute cut-off point between today and earlier than today, the other between recent and remote within each of these two time frames. This kind of tense opposition does not fit well within most current conceptions of tense, although its existence must be acknowledged; at best, one could appeal to its rarity as an excuse for according it marginal status within the overall theory.

(Comrie '85:88)

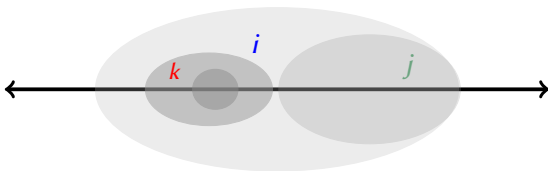
- ▶ “CYCLICITY” due to Comrie 1985
phenomenon emerges out of recapitulation of a similar
correspondence in form and function:
*the range of III precedes that of I in hodiernal and again in
prehodiernal contexts*

nonfinal instantiation

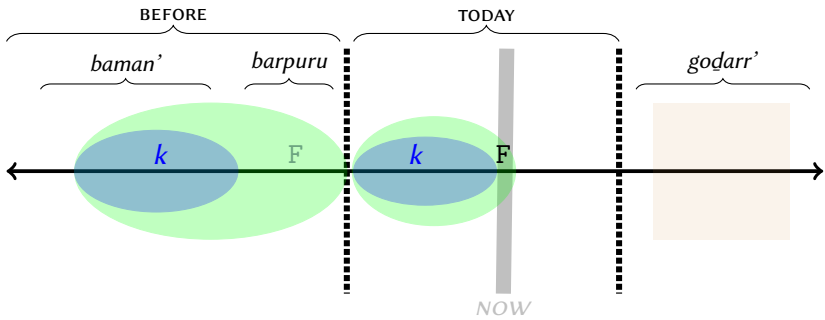
Condoravdi & Deo 2015 define a relation between intervals and predicates to capture the semantics of the Indo-Aryan PERFECT

Where $j \sqsubseteq_{\text{FINAL}} i$:

$$\text{NFINST}(P, i, j) \leftrightarrow \exists k(\text{INST}(P, k) \wedge k \sqsubseteq i \wedge k \prec j)$$

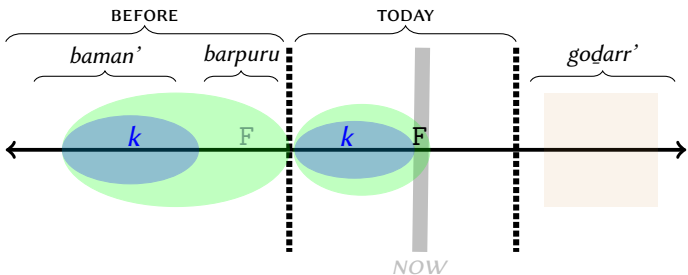


temporal frames



- ▶ Reference time i_c is associated with either a hodiernal or pre-hodiernal frame F_c
 - ▶ CONTEMPORARY eventualities are situated in **final subintervals of F**

precontemporaneity



$$\text{PRECONTEMP}_c(i) \triangleq i \sqsubseteq F_c \wedge i \prec j_F$$

- ▶ given a fixed context, PRECONTEMP establishes a partition over the NONFUT domain

deriving cyclic tense

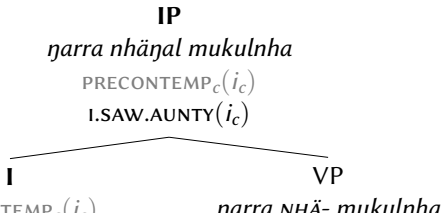
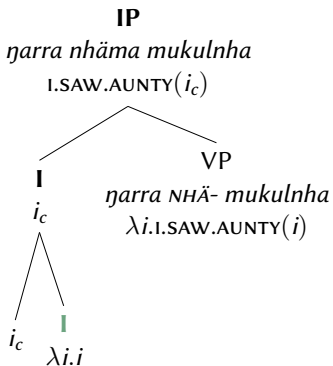
- ▶ Djambarrpuyngu inflections as **(partial) identity functions**

$$[[I]]^c = \lambda i.i$$

- ▶ That is, they impose presupposition/s on i_c

$$[[III]]^c = \lambda i: \text{PRECONTEMP}_c(i) . i$$

deriving cyclic tense



deriving cyclic tense

- ▶ I is analysed here as something of a neutral inflection
- ▶ In precontemporary predications, it is **blocked by III**
- ▶ That is, I carries an **antipresupposition** of precontemporaneity (cf. Heim's MAXIMIZE PRESUPPOSITION, Sauerland 2002 *et seq*)

explaining cyclic tense

- ▶ **A question of mode**
 - ▶ **discourse** likely to be concerned with a **PRESENT** v. **PAST** distinction (events overlapping with here-and-now)
 - ▶ **narrative** likely to be concerned with a **RECENT** v. **REMOTE** distinction (events completed prior to here-and-now)
- ▶ That is, the HODIERNAL frame is associated with conversational modes, the PREHODIERNAL frame is associated with narratives/storytelling
- ▶ *Cyclic tense* as a reflex of this mode distinction; categorialisation of reference frames.

explaining cyclic tense

12 Quoted dialogue in a narrative context inducing reference frame shift

nhan̄ju n̄āṅdi'mirriṅunyɔdja waŋa-na-na:
3S.S.DAT mother.KINPROP.PROM say-III-SEQ

“Go, *gāma'kama-na nhuma dhu girriṅy'tja mala, nhakuna*
bring.RED-I-SEQ 2p FUT thing.PROM PL like

munhdhurrnyɔdja ṅayi waku. Ga ṅunhi dhu yolthu warrpam'
gift.PROM 3S DA and TEXT FUT who.ERG all

gurrupan ṅunhi nhaku ṅarra ṅāṅ'thu-rruna, ga ṅuriṅiyi dhu
give.I TEXT what.DAT 1S ask-III and TEXT.ERG.ANA FUT

mārrama wakunhanyɔdja ṅarraku.”
get.I DA.ACC.PROM 1S.DAT

‘...then her mother said: “Okay, bring stuff, gifts for my daughter. And whoever brings everything that I asked for, that person gets my daughter.”’

[Mätjarra [trans.], *Dhāwu mārrmawa ḍirramuwa*]

diachronic hypothesis

Cyclicity as the grammaticalisation of text type

The cyclic tense phenomena exhibited in Djambarrpuyŋu and related languages are a result of the reanalysis of PRESENT- and PAST-tense markers' apparently divergent usage in conversational versus narrative contexts

Section 3

verbal mood & the negative asymmetry

Negative asymmetry

II and IV as IRR

- ▶ II-marking is associated with *future orientation*
- ▶ co-occurs with a range of modal particles (esp. *dhu* ‘FUT’, *balan* ‘MOD’)

13 *Barpuru godarr ηarra dhu nhä-ηu* [FUTURE]
 funeral tomorrow 1S FUT see.II
 ‘I’ll see the funeral tomorrow’

14 *nhä-ηu nhanηu dhurrwara!* [IMPERATIVE]
 look.II 2S.DAT door
 ‘Look at her mouth!’

15 *ηayi bala balanηu bakthu-rru* [CIRC]
 3S MVTAWY MOD break.II
 ‘It [the recorder] might break.’

II and IV: basic distribution

▶ **IV**-marking for counterfactuals & past habits

16 *waṭuy balan̄u l̄uka-n̄ha chocolate* [CIRC]
dog.ERG MOD eat-IV chocolate

‘The dog may/must have eaten the chocolate.’

17 *ḡarra ḡuli baman’ lup̄lup̄thu-na dhiyal* [PST HAB]
1S HAB prior swim-IV PROX.LOC

‘I used to swim there.’

18 *n̄äthil ḡarra ḡuli balan̄ liya-ḡaman̄amayunmi-nya* [COND]
earlier 1sg MOD MOD head-make.I.REFL-IV

bala ḡarra balan̄ waṅa-n̄ha-n
then 1S MOD speak-IV-SEQ

‘Had I thought of it before, I would have spoken.’

(Wilk 91)

II and IV: basic distribution

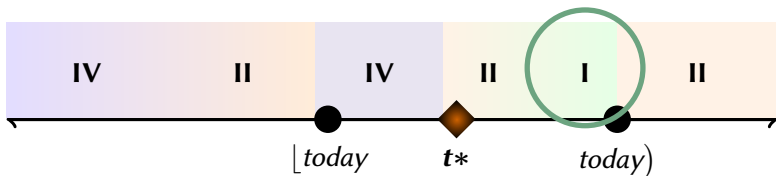
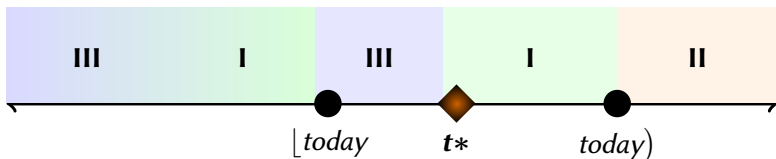
- ▶ Following Condoravdi (2002), the modal particles (*dhu*, *balan...*) are taken to uniformly displace the runtime of some eventuality forward (“future orientation”)
- ▶ So far, the distinction between **II** and **IV** appears to be one of PRESENT and PAST perspective respectively.

The negative asymmetry

The negative asymmetry

negation in the paradigm

- ▶ We've seen how the distribution of **I** and **III** is governed by a cyclic tense system
- ▶ There are a number of overt operators which constrain the distribution of **I** and (particularly) **III** as presented
- ▶ **I** and **III** are ungrammatical under negation



Asymmetric negation

Djambarrpuyŋu

13 *bäyŋu ŋarra ga nhäma mukulnha*

NEX 1S IPFV. I see. I aunt-ACC

‘I see my aunt (right now).’

[PRESENT]

14 *bäyŋu ŋarra nhäŋal mukulnha gäthur*

NEX 1S see. III aunt-ACC today

‘I saw my aunt this morning.’

[TODAY PST]

15 *bäyŋu ŋarra dhu nhäŋu mukulnha (goḍarr)*

NEX 1S FUT see. II aunt.ACC

‘I’ll see my aunt (tomorrow).’

[FUTURE]

16 *bäyŋu ŋarra nhäma mukulnha barpuru*

NEX 1S see. I aunt-ACC yesterday

‘I saw my aunt yesterday.’

[REC PST]

Negative asymmetry

In DJAMBARRPUYŊU

Negative REALIS and IRREALIS
predications are inflected
identically

INFLECTION	
-NEG	+NEG
I	II
III	IV

Recap

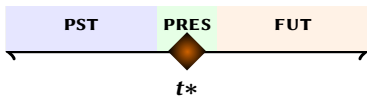
II and IV: co-occurrence

- ▶ II and IV co-occur with :
 - ▶ **future** marking
 - ▶ **modals** (nonepistemic)
 - ▶ **negation**
- ▶ Formal treatments of the future predict a range of modal uses of future morphemes
- ▶ Compare En. *will* 'FUT': *that'll be the postman*
 - ▶ (\forall -quantification over different “conversational bkgnds”)
- ▶ **Can all this data be unified?**

RECAP

THE PARADIGMS

Wägilak

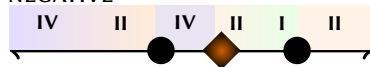


Western Dhuwal(a)

POSITIVE



NEGATIVE



Negation as a modal operator

- ▶ Building on a symbolic-logical tradition that conceives of negation as a modal operator

Negation as a (species of) alethic impossibility (cf Wansing 2001):

$$\mathcal{M}, w \models \sim A \iff \forall u. wCu \rightarrow \mathcal{M}, u \not\models A$$

- ▶ *yaka*, *bäyηu* ‘NEG’ can be understood as being of a natural class with the modal particles (2-place operators, following Kratzer a.o.)

$$\llbracket \text{NEG} \rrbracket = \lambda P_{\langle s, t \rangle} \lambda i. \nexists^i b [b \in \cap C(i) \wedge \text{AT}(P, i)]$$

Pred modifiers that asserts that there’s no *w*-compatible world, the pred is not instantiated

I.e., they effectively mark the counterfactual status of *P*

- ▶ Takeaways: we can conceive of NEG and the MPS as species of *nonveridical operators*.

Licensing II/IV

- ▶ This treatment allows us to posit a natural class with the other licensing environments for **II** and **IV**.
- ▶ In one way or another, WD modal particles signal the **objective nonveridicality** of prejacent

def $\exists w' [w' \in \mathbb{M} \wedge w' \in \neg p]$ (Giannakidou 2016a.o.)

- ▶ this *p* much means that **the truth of a given proposition can't be known/asserted** as a “settled” fact in a given situation
- ▶ Our semantics for negative and modal operators — those elements that co-occur with **II** and **IV** — all satisfy **nonveridicality** in some circumstantial modal base

II and IV as IRREALIS mood

- ▶ suggests a treatment of WD inflections as verbal mood
- ▶ super dissimilar to the IND-SBJV distinction in European
 - ▶ NOT licensed by subordinating preds
 - ▶ Also not licensed by **epistemic modals**
- ▶ Paradigm realises a systematic REALIS-IRREALIS distinction
 - ▶ this notion is both much-used and much-maligned in the typological literature
 - ▶ Krifka, von Prince *et al.* have formal proposals in N/C-vanuatuan langs
- ▶ For Palmer (2001), IRREALIS/SUBJUNCTIVE systems are distinguished on these syntactic grounds.
 - ▶ Both taken to signal “*non-assertion*” in some sense

IRREALIS

- ▶ The contribution of the irrealis-aligned inflections (II & IV): presupposition of **objective** (metaphysical) **nonveridicality**

$$\text{IRR}(i) \stackrel{\text{df}}{=} \exists b \in \cap \approx_{\epsilon(i)} \wedge \exists^b i' [i \preceq i' \wedge \neg P(i')]$$

- ▶ IRR guarantees that there is some **metaphysical alternative** to the (beginning of the) reference interval — $\epsilon(i)$ — posterior to which **the prejacent doesn't hold**
 - ▶ *i.e.* P is **not settled/determined** (see Kaufmann 2002, 2005)

how does this get us the negative asymmetry?

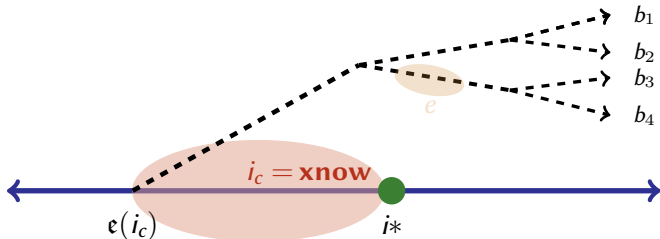
- ▶ There's a long tradition that emphasises asymmetries between positive and negative sentences
 - ▶ negative sentences are taken to be (pragmatically) marked
(Horn 2001 for an overview of the debate)
 - ▶ “negative sentences ‘suppose’ the corresponding affirmative”
 - ▶ *‘it’s my second time not coming to Singapore this year’*
(Jens Hopperdietzel 23 JUNE 2021)

negative as irrealis

bäyṅu ṅarra nhäṅu mukulnha dhiyaṅ bala

NEG 1S see.II aunt.ACC now

‘I don’t/can’t see aunty right now’



irrealis signals ‘non-assertion’

(Palmer 2001)

- ▶ in what sense is this true?
- ▶ modals and negatives invoke diverse metaphysical alternatives: histories at which their prejacent holds and at which it doesn't
- ▶ the irrealis domain (potential and counterfactual situations) is metaphysically unsettled → unknowable → unassertable simpliciter.

Section 4

the djambarrpuyŋu inflectional paradigm

Proposal for the WD paradigm

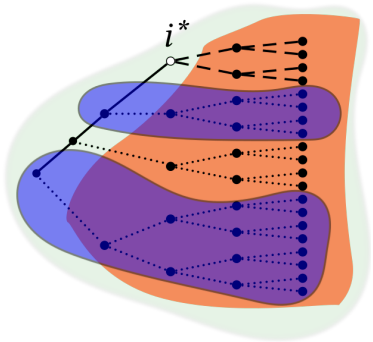
The paradigm encodes **tense** and **mood**.
It's organised around two semantic features:

- ▶ **NONVERIDICALITY**
satisfied when scoping over a nonveridical operator

$$\exists b \in \cap \approx_{\epsilon(i)} \wedge \exists b i' [i \preceq i' \wedge \neg P(i')]$$

- ▶ “PRECONTEMPORANEITY”

$$i \sqsubseteq F_c \wedge i \prec j_F$$



I II III IV

Proposal for the WD paradigm

$$[[I]]^c = \lambda i. i$$

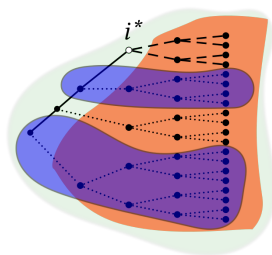
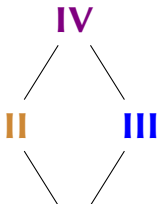
$$[[II]]^c = \lambda i: \text{IRR}(i) . i$$

$$[[III]]^c = \lambda i: \text{PRECONTEMP}(i) . i$$

$$[[IV]]^c = \lambda i: \text{PRECONTEMP}(i) \wedge \text{IRR}(i) . i$$

	-IRR	+IRR	MAXIMIZE
-PRECON	I	II	
+PRECON	III	IV	
	PRESUPPOSITION		

(Heim 1991, Sauerland 2002 a.o.)



CONCLUSIONS

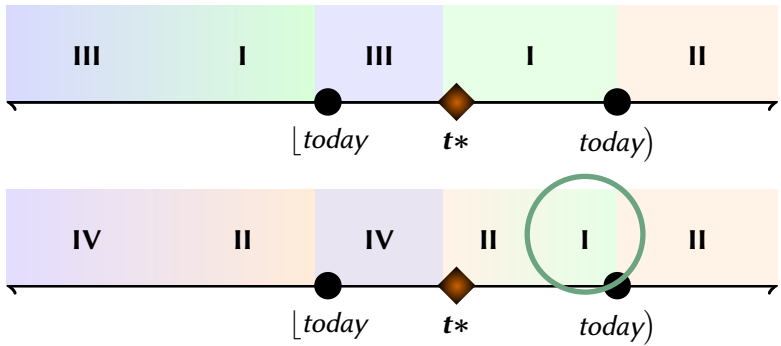
- ▶ Cyclic tense as a conventionalisation of mode/register distinctions
- ▶ Treatment of negative operators predicts their irrealis-licensing behaviour
- ▶ We've seen how the Djambarrpuyŋu inflectional paradigm encodes a presuppositional tense & mood distinction
 - ▶ inflections impose felicity conditions on reference indices
 - ▶ appeal to interaction of two properties— NONVERIDICALITY and PRECONTEMPORANEITY

(see dissertation for intricacies & semantic composition)

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Appendix A The I same-day future



► Under negation, I occurs only in same-day future predications

17 (bäyṅu) ṅarra dhu ga ṅhāma mukulnha [SAME-DAY FUT]
 (NEG) 1S FUT IPFV.I see.I aunty.ACC

‘I’m (not) seeing my aunt (tonight).’

Appendix A The | same-day future

- ▶ A grammaticalised FUTURATE (Copley 2009)

$\text{PLAN}(d)(p)(w)(t)$

- ▶ ‘The speaker of a futurate has some high level of confidence that the future eventuality will happen’
- ▶ Copley’s conditional presupposition: *If p is planned, p will happen*
- ▶ In this case, the reality status of $\text{PLAN}(p)$ and $\text{PLAN}(\neg p)$ ought to be the same.

Appendix A

The I same-day future

- ▶ Conversely the neutralisation still happens in the present

7 *bäyŋu* *ŋarra ga* *nhäma* *mukulnha* [PRESENT]
 NEX 1S IPFV. I see. I aunt-ACC

‘I see my aunt (right now).’

- ▶ Negative present descriptions are still counterfactual
- ▶ Note that this is fine for the current analysis:
 I is maximally underspecified, and is outcompeted by the other inflections (MAXPRESUPP)

Appendix B

Epistemics and attitudes

- ▶ I'd pointed out that the semantics of higher predicate doesn't license IRR (*cf.* European SBJV)
- ▶ Similarly *mak* 'EPIST' doesn't
- ▶ Anchoring at C level (Krifka 2021)
 - ▶ identified w/ utterance parameters in matrix clauses
 - ▶ *mak* is taken to be a judgment modifier
 - ▶ embedding predicates are taken to shift evaluation index "away from speakers' commitment slate"

Appendix C

Directionality

- ▶ Yolŋu as a Pama-Nyungan “enclave” in the Arnhem Land
- ▶ Most other (nPN) Arnhem languages express NEG asymmetry
- ▶ Maningrida language family has cyclic tense
- ▶ Waters (1989) provides a number of other features shared between W Yolŋu and Arnhem languages
- ▶ Evidence of a Sprachbund
- ▶ Bower (2009) proposes a 6-way inflected Proto-Yolŋu paradigm. The West Arnhem Sprachbund features are not reconstructed.

Appendix D

Inflection in Wägilak

2 *godarr* *ɲarra* ***nhäɲu-'ma'*** *mukulnha* [FUTURE]
 tomorrow 1S see. II-NEG aunt.ACC

‘I will see my aunt tomorrow.’

3 ***nhäma-'ma'*** *rra* *yakuthi* *mukulnha* [PRESENT]
 see. I-NEG 1S now aunt.ACC

‘I’m (not) looking at my aunt currently.’

4 *gätha* *ɲarra* ***nhäwala-'ma'*** *mukulnha* [PAST]
 today 1S see. III-NEG aunt.ACC

‘I saw my aunt this morning.’

Appendix D

Inflection in Wägilak

- ▶ Closest related Yolŋu languages do not exhibit the asymmetry
- ▶ Inflections encode temporal information
- ▶ Imperatives formally identical to declaratives
- ▶ **II** and **V** also occur in conditionals (without modal particles)

5 *wäniya* *ŋay* *ŋunbalaya* *bulu*, *ŋayi* *guyupiya* [SBJV]
 go.V 3s that way again 3s die.V

‘If he had gone that way, he would’ve died’

6 *wäni* *ŋay* *ŋunbalaya* *bulu*, *ŋayi* *guyupi* [COND]
 go.II 3s that way again 3s die.II

‘If he had gone that way, he would’ve died’