Understanding cyclicity
Towards a theory of Djambarrpuyŋu temporal expression
Yale semantics RG   **21 February, 2019**

Among its aims, (the presently relevant component of) my dissertation seeks to understand:

- **The proper semantics for (*sc.* meaning contribution of) Yolŋu inflectional categories &**
- **How temporal relations are encoded and understood in Yolŋu.**

Background

- Yolŋu Matha is a language group (Pama-Nyungan) spoken in Northern Arnhem Land (the 'Top End' of Australia.)

- It is a Pama-Nyungan 'exclave' of sorts, surrounded by a number of genetically unrelated languages from a number of different families.

- Yolŋu languages are fusional (suffixing), predominantly dependent-marking, have a relatively free word order (w information structural implications).

- There is significant variation in strategies for encoding TAM(PE) information across thee languages, although this semantic work is (predominantly) carried out by some combination of • **verbal inflection**, • **auxiliaries & (uninflecting) particles** and pragmatic/discourse/lexical strategies.

- The data I'm examining in this presentation is from the Dhuwal(a) language (especially its *Djambarrpuyŋu* and *Gupapuyŋu* varieties.)

- This language has a number of verb classes (*sc.* conjugations). All verbs stems are taken to obligatorily inflect for exactly one of four 'inflectional categories'

- Here I label them **I, II, III, IV** — all data is appended to facilitate presentation.

The phenomenon

- TENSE is a grammatical category understood as encoding a relation between times:

    FUT $t_e \succ t_r$
    PRES $t_e = t_r$
    PST $t_e \prec t_r$

- For deictic theories of tense, t_r is identified as the time of speech (for matrix clauses, compare **Matrix clause rule** in Tonhauser 2011:270)

Metricality

- **Temporal remoteness** ("metrical/graded" tense) has received a number of treatments in the recent literature (e.g Bohnemeyer 2018, Cable 2013, Klecha and Bochnak 2016).

  - Grammaticalisation of finegrained markers of temporal location (Comrie 1983:84,Dahl 1983)
  - It is likely not a unified phenomenon semantically; authors show different ways in which their object languages encode temporal remoteness.
  - All provide evidence for an unmarked tense marker which is blocked in particular situations by MaxPresupp or similar principles.

- Djambarrpuyŋu does indeed seem to have a grammatical reflex for temporal remoteness (1-2)

The inventory in DJR

$$\left.\begin{array}{l}\text{Future}\\\text{Today}\end{array}\right\} \text{NONPAST}$$

$$\left.\begin{array}{l}\text{Today}\\\text{Recent}\\\text{Remote}\end{array}\right\} \text{PAST}$$

Cyclicity

- What are the forms associated with these five categories?

- **I** is obligatory in PRESENT (3a) **and** RECENT PAST 1a) contexts

- **III** is to refer to an earlier event on the day of speech (3b) as well as in the REMOTE PAST (1b).

  - Times compatible with **I** and **III** are **discontinuous**.
    Cyclic tense (Comrie 1983:88) has been reported only in languages spoken in this area of Arnhem Land.

Figure 1. Temporal expression in the Yolŋu Matha varieties of Central Arnhem, demonstrating two descriptive phenomena: (a) cyclicity — the interspersion/discontinuity of **I** and **III** forms and (b) metricality — the (subjective) division of the past domain between these two forms.
$\lfloor today)$ indicates the boundaries of the privileged interval *today*. $t*$ is utterance time
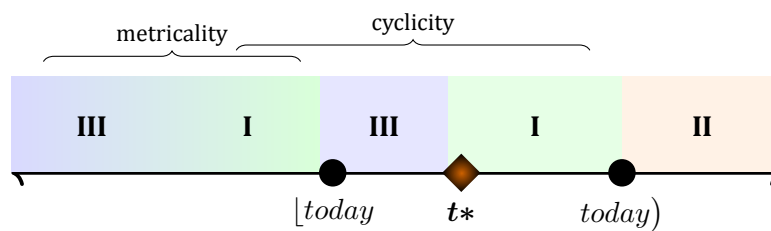
- Descriptions (particularly of the neighbouring 'Maningrida' lanugage family') have adopted a schema like the one in Table 1 (originally due to Glasgow (1964)).

- Wilkinson (1991) and other Yolŋuists discuss but seem uncommitted to this style of analysis (they've treated it largely as a type of polysemy, *pers. comm.*)

		FRAME	
		today	**before today**
INFL	**I**	now	yesterday/recently
	III	earlier today	long ago

Table 1. A Glasgow (1964)-style analysis of **past-time restrictions** introduced by the verbal inflections, adapted for the Dhuwal(a) data. **I** and **III** inflections correspond to Eather's **contemporary** and **precontemporary** "tenses" ("precontemporary" is Eather's (2011:166) relabelling of Glasgow's "remote" tense.)

Can we get at this with a standard semantics? Only if we make this pretty *ad hoc* set of claims…

POTENTIAL PRESUPPOSITIONAL-INDEXICAL TREATMENT OF THE DJR PRIMARY INFLECTION (**I**)

$$\llbracket \mathbf{I} \rrbracket^{g,c} = \lambda t : \begin{cases} t \in today \leftrightarrow t \succcurlyeq t_0 & .t \\ t \notin today \leftrightarrow t \prec t_0 \wedge \mu(t, t_0) < s_c & .t \end{cases}$$

I is only defined if the context c provides a **either** a time t within the span of *today* that coincides with or follows speech time t_0 **or** it precedes *today* by some contextually-constrained period s.
If it is defined then $\llbracket \mathbf{I} \rrbracket = t$

A defense of this would require entail:

1. motivating the introduction of a privileged interval (and understanding the temporal span of) *today* into Yolŋu temporal ontology (requires additional empirical verification of the precise nature of *today* as a relevant interval);

2. motivating the joint grammaticalisation of these disjoint presuppositions (a defining characteristic of **'cyclicity'**); and

3. understanding whether and how a contextual standard is retrieved in order to predict in which past contexts the verb is inflected with **I** in lieu of **III** (a defining characteristic of **'metricality'**).

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\end{straw-man}
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- It may be the case that deploying an interval semantics gets us closer to an elegant solution…

Temporal adverbials & deixis

> In all Australian languages there is a single term for the temporal deictic centre, however its reference is always imprecise and it shows great polysemy depending on the contrastive context (ranging over 'now, today, nowadays (in contrast to the past')).
>
> (Austin 1998:147)

- Dhuwal(a) has a set of lexicalised temporal adverbials: *gäthur(a)* 'today', *yawungu/barpuru* 'yesterday', *goḏarr/boŋguŋ* 'tomorrow' etc.
  Per the Austin quote above, *barpuru* and *boŋguŋ* really seem to refer constrain temporal reference to RECENT PAST and NEAR FUTURE respectively. Examples in (4)

- Temporal frames can also be derived by ERG-inflection on nominals (5)

- Dhuwal(a) has an elaborated demonstrative system. Four stems participate in the paradigm and inflect as nominals:

- All four of these stems participate in spatial/personal demonstrations.
  Temporal deixis 'at this/that time' is normally lexicalised using the PROX or ENDO stem.

dhuwal(a)	PROX
dhuwali	MED
ŋunha	DIST
ŋunhi	ENDOPHORIC

- There are two demonstratives that target temporal frames:

  dhiyaŋ bala '(away from) this time'
  ŋuriŋi bala '(away from) that time'

  - *dhiyaŋu bala* is invariably given as the translation for 'now'
  - *dhiyaŋu bala* is also compatible with a 'nowadays' type reading.
  - The interval picked out by *dhiyaŋ bala* is compatible with non-present interpretations (e.g. 6)
  - They do (provisionally) seem to be constrained to *gäthur(a)* 'today'.

- This contrasts with **ŋuriŋi bala**, an expression that picks out some "other" (nonpresent) time (sc. some salient time in the past or future, *'at that time'...*)

- The vagueness built into these frame adverbials potentially provides a clue for how djr is organising temporal reference.

- The inflections might be able receive a unified denotation that allows them to be indexed either EXO- or ENDOCENTRICALLY.
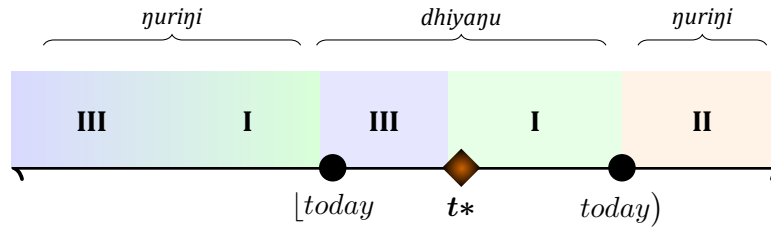

Figure 2. Interactions between temporal reference and temporal demonstratives (w/r/t) verbal inflection in Gupapuyŋu

Towards a theory of Dhuwal(a) temporal reference

- We're thinking that an elegant formalisation for cyclic tense may emerge out of interval semantics. The analysis would need to predict:

  - The exponence of **III** in REMOTE PAST and TODAY PAST situations;
  - The infelicity of **III** in *non-today* RECENT PAST situations

- Given that *dhiyaŋ bala*, our PROXIMAL TEMPORAL DEMONSTRATIVE appears to be capable of indexing any eventuality from sunrise on the day of utterance, there is an argument for 'day of utterance' as a privileged interval.

- **I** seems to be licensed when $t_e \in i$

- **III** seems to be licensed when $\exists j [j \sqsupseteq_{nf} i] \wedge t_e \in j \setminus i$

A potential formal account

- A formal tool for relating a reference interval to a related interval comes from Condoravdi and Deo (2014).
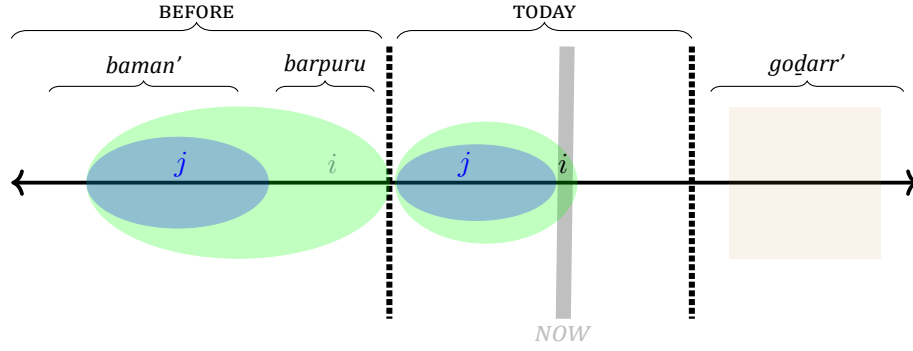
Figure 3. Appealing to 'nonfinal instantiation' to provide a unified entry for the temporal reference of **III**

- In order to capture the meaning component of the PERFECT aspect they define a relation NONFINAL INSTANTIATION that holds between a property and two intervals i, j:

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

such that this relation holds when we can find some interval k contained in j, **preceding** the reference interval i, in which P is instantiated.

- **A first tilt**

   – Adapting from a treament of the PERFECT in Condoravdi and Deo (2014):

$$[\![\textbf{III}]\!]^{g,c} = \lambda P \lambda i_c.\exists j \big[i_c \sqsubseteq_{\text{final}} j \wedge \text{NFINST}(P, j, i) \big]$$

   – Which may for current purposes be equivalent to a simpler denotation...(?)

$$[\![\textbf{III}]\!]^{g,c} = \lambda P \lambda j_c.\exists k \big[k \sqsubseteq_{\text{nonfinal}} j_c \wedge \text{INST}(P, k) \big]$$

- What this genre of analysis would buy us is a situation in which i is identified either as the time-of-speech (roughly **now**) or some constrained (recent) period *prior to the day-of-speech*.

- **III** is then licensed when the property which is denoted by the verb that it inflects is instantiated within j (a superinterval of i that shares its right boundary) but not in i itself.

- An implication of this initial treatment would be that the temporal work that **III** is not really that of an absolute tense marker (taken by, e.g. Klein 2009 to be the relation of utterance time to a reference time. Here eventuality time is directly built in to the semantics.)

- It's likely possible to maintain a pronominal treatment of tense in the style of Partee (1973) (roughly, $[\![\text{PST}]\!] = \lambda t : t \prec \textbf{now}.t$), but how to do or what the implications are aren't immediately clear to me as I get this handout together.

- The temporal contribution of future-tense operator *dhu* might be simply analysed as placing a presupposition on the temporal location of i (or at least on the INST relation) such that $\tau(\varepsilon) \succ \text{NOW}$

   – This is likely to be truth-conditionally insufficient given that it says nothing about the modal (necessity) contribution of *dhu*.

A potential functional explanation

- The TODAY and NONTODAY frames in the descriptive lit correspond to two different discourse modes: *conversational* and *narrative* respectively.

- In *conversation*, where we might be less concerned with remote displacement, we might expect to be concerned with the immediate past as distinguished from the non-past. These presuppositions are grammaticalised as **III** (the Glaswegian "remote"/"precontemporary") and **I** (the Glaswegian "contemporary") respectively.

- Conversely, in *narration*, which concerns the past almost exclusively, a distinction between states-of-affairs that hold in (relative) here-and-now as against the remote past is (arguably) more relevant than past/nonpast.

Interactions with modality

- The picture becomes more complicated when we admit data describing **non-instantiated** events (which includes negated, modalised, and generic/habitual predications)

Figure 4. The effect of negation as a licensing condition for verbal inflections
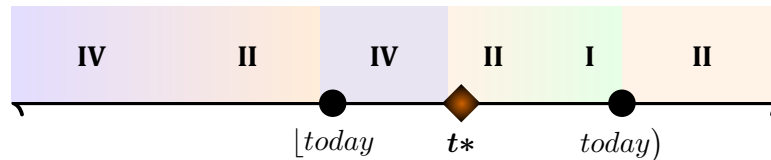
- The basic picture is given in 2:

POLARITY	
−NEG	+NEG
I	
II	II
III	
IV	IV

Table 2. Neutralisation of **I** and **III** inflections under negation.

- This provides support for the semanticisation of an INSTANTIATION relation in the verbal inflections

- I assume that it is not a coincidence that **II** is licensed in both FUTURE predications and the negations/modalisations of **I**-predications.

- Note, importantly, that today-nonpast utterances **still receive I**-marking. I expect that the analysis will build in something to do with perceptual access and/or a PLAN type operator. Things that are **currently not happening** can be thought of as perceptually-supportable facts of the world.

Appendices

Implications

- Independent support for interval-based logics of tense in NL (what's *now*?)
- Indexicality
- Gradability

An interval-based tense logic *per* Hamblin (1971) *& seq.*

- AXIOMS

    i. antisymmetry of $\mathcal{I} \times \prec$
    ii. transitivity of $\mathcal{I} \times \prec$
    iii. connexity of $\mathcal{I} \times \prec$
    iv. intersection
    v. join
    vi. divisibility (density of $\mathcal{I}$)
    vii. universe (infinity)

- Three-valued truth system: $p(i) = 1, p(i) = 0$ or p changes in i

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data

(1) **Temporal remoteness (past)**

   a. RECENT PAST with **I**

     *yo barpuru-ny   ŋarra **marrtji***(*-na) shop-lil*
     yes, yesterday-PROM 1s   fo-**I/*III**   shop-ALL

     'Yes, I went to the store yesterday.'

   b. REMOTE PAST with **III**

     *yo ŋarra marrtji-**na** ŋunhawala ŋäthil baman'*
     yes 1s   go-**III**   DIST.ALL   before long.ago

     'Yes, I went there long ago.'

(2) **Temporal remoteness (future)**

   a. *yalala ŋarra dhu nhokal lakara-**m***
     later   1s   FUT 2s.OBL tell-**I**

     'Later (today) I'll tell you.'   (Wilkinson 1991:373)

   b. *Barpuru goḏarr   ŋarra dhu nhä(**-ŋu/*****-ma**)*
     funeral tomorrow 1s   FUT see(-**II**/*-**I**)

     'I'll see the funeral tomorrow'   [AW 20180730]

(3) **Cyclicity (the HODIERNAL "frame")**

   a. PRESENT with **I**

     *ŋarra ga   nhä-**ma** warrkun' (dhiyaŋ   bala)*
     1s   IPFV-**I** see.**I**   bird   ENDO.ERG MVTAWY

     'I'm looking at a bird (now)'

   b. TODAY PAST with **III**

     *ŋe gäthur ŋarra ŋanya nhä-**ŋal** (*nhäma) goḏarr   dhiyal*
     yes, today 1s   3s.ACC see-**III** (*see.**I**) morning PROX-LOC

     'Yes, I saw him here this morning'   (Wilkinson 1991)

(4) **Vagueness in the TFA domain**

   a. *ga (yawungu) ŋuriŋi-ny   **bala**   ga   dhuwal ḏumurru'-ŋu-y,*
     and (yesterday) **TEXD.ERG**-PROM MVTAWY IPFV.**I** PROX big-ŋu-ERG

     bäyŋu-n yolŋu walal wukirri waŋara-n ga   dhärra
     NEGQ-SEQ people 3p   school empty-SEQ IPFV.**I** stand.**I**

     'Last week there was nobody at school.'   (Wilkinson 1991:256)

   b. Compatibility of FUTURE **II** with *ŋuriŋi bala*

     *ga **ŋuriŋi-n**   **bala**   dhu boŋguŋ, bäyŋu-n goḻ,*
     and **TEXD.ERG**-SEQ MVTAWY FUT tomorrow NEGQ-SEQ school

     waŋara-n dhu gi   dhärri
     empty-SEQ FUT IPFV.**II** stand.**II**

     'And next (week), there'll be nobody at school, it'll be empty.'   (Wilkinson 1991:256)

c. *ḏirramu-wal yothu-wal bäpa-'mirriŋu-y*   *rrupiya* **barpuru** *djuy'yu-**n** märr*   **barpuru** *ga*
man-OBL   kid-OBL   father-KINPROP-ERG money yesterday send.**I**   somewhat yesterday and

    barpuru **buna**-*ny*   *dhiyal-nydja*
    yesterday arrive.**I**-PROM   PROX.ERG-PROM

'The father sent money to the boy recently and it arrived here yesterday'   (Wilkinson 1991:343)

(5) **Productive derivation of temporal frame from nominal**

bala   *ŋayi yaryu'~yaryu-n* **ḏaŋga-y** **wäŋa-y**
MVTAWY 3s   wade~RED-**I**   **fine-ERG** **place-ERG**

'Then he went along the water's edge (hunting) while it was fine out (not raining).'   (Wilkinson 1991:159)

(6) **Compatibility of *dhiyaŋ bala* with non-present reference**

a. **dhiyaŋ**   **bala**   *napurr bäpi nhä-ŋal gäthur*
    PROX.ERG MVTAWY 1p.EXCL snake see-**III**   today

'We saw a snake today'   (Wilkinson 1991:256)

b. **dhiyaŋ bala**   *walal dhu buna,*   *yalala*
    PROX.ERG MVTAWY 3p   FUT arrive.**I** later

'They're coming later today.'   (Wilkinson 1991:256)

(7) ***Ŋuriŋi bala* 'at (some other) time'**

Way, marŋgi nhe (ŋarra-kalaŋa-w bäpa-'mirriŋu-w-nydja   *[**ŋunhi** [ŋayi dhiŋga-**ma**-ny* **ŋuriŋi**   **bala**
hey know 2s   1s-OBL-DAT   father-KINPROP-DAT-PROM **TEXD** 3s   die-**I**-PROM   TEXD-ERG then

    dhuŋgara-y]])
    year-ERG

'Hey, did you know my father, who died last year?'   (Wilkinson 1991:343)