

# Temporal Reference in Pitjantjatjarra and Ngadju: An Analysis of Temporal Adverbs in Two Goldfields Languages

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## 1. Introduction

This paper examines how time is expressed in Pitjantjatjarra and Ngadju, two Pama-Nyungan languages of the Goldfields, by analyzing the meanings (semantics) of temporal adverbials in both languages. Though the two languages are geographically close and have some linguistic similarities, they differ crucially in terms of grammar, vocabulary, level of documentation, and speaker populations. The paper is organized as follows: §2 provides background on Pitjantjatjarra and Ngadju, §3 presents the orthography and methodology utilized in this paper, and §4 discusses the traditional Aboriginal conception of time. §5 introduces the concepts of tense and aspect, which distinguish how Pitjantjatjarra and Ngadju respectively mark time. §6 analyzes a set of temporal adverbials in Pitjantjatjarra, §7 does the same in Ngadju, and §8 examines how temporal adverbials are used in discourse/narrative contexts. I conclude in §9.

## 2. Language Background

Pitjantjatjarra is a language from the Wati/Western Desert language family and is the second most-spoken traditional Aboriginal language in Australia, with 3,049 recorded speakers as of 2020 (National Indigenous Languages Report, 2020). Pitjantjatjarra also has unbroken intergenerational transmission—children learning it as a first language—which is one of the most important metrics for gauging a language’s health. The traditional land of the Pitjantjatjarra people is the North-West corner of what is now South Australia, extending into what is now Western Australia and the Northern Territory. The language is well-documented, with a published dictionary and learner’s guide, as well as a range of publications on other aspects of the language (Bowe, 1990; Tabain & Butcher, 2014; etc).

The Ngadju language, traditionally spoken in the southern Goldfields, is a member of the Mirning language family. Like many other Aboriginal languages across Australia, Ngadju has suffered intense language loss since European invasion. The last fluent speakers passed away before the late 1980s (Les Schultz, P.C.) and only a small number of rememberers are alive today. Linguists at the Goldfields Aboriginal Language Center Aboriginal Corporation (GALCAC) are working to analyze and preserve existing records of the language, and there is a growing movement in the Ngadju community to revitalize the language. The primary record of Ngadju is a 1980 grammar by Carl Georg von Brandenstein (V.B.). The 1970 recordings on which the grammar is based are archived at GALCAC. There are a few supplementary sources and later recordings of partial speakers, but this additional data is not necessarily reliable. The lack of speakers and paucity of available Ngadju data makes in-depth linguistic analysis difficult, since the data in the corpus is often inconclusive and it is no longer possible to elicit new data.

### 3. Orthography, Phonology, and Methodology

The language data presented in this paper is written in Western Australian orthography, which expresses retroflex sounds as digraphs with *r* (*rt*, *rn*, *rl*) and distinguishes the retroflex rhotic *r* from the trilled/tapped rhotic *rr*, rather than the Southern Australian orthography which uses underlining to distinguish retroflex sounds. WA orthography is the GALCAC standard, and is intended to improve legibility for speakers. Glides are expressed overtly as *y* and *w*. The phonemic inventories of Pitjantjatjarra and Ngadju differ only in one sound: Pitjantjatjarra has a lamino-dental plosive written *tj*, while Ngadju<sup>1</sup> has a palatal plosive written *j*.

The Pitjantjatjarra data in this paper comes from three sources: Cliff Goddard's *Pitjantjatjara/Yankunytjatjara to English Dictionary* (revised 2020), Paul Eckert and Joyce Hudson's Pitjantjatjarra handbook *Wangka Wiru* (2010), and fieldwork conducted by GALCAC linguist Jackie Gorrington with speakers living in Irrunytju, a community in eastern WA near the tri-state border. Ngadju data comes from von Brandenstein's 1980 grammar, and GALCAC linguist Troy Reynold's transcriptions of the original 1970 recordings. All language data in this paper has been orthographically standardized for legibility, but no changes were made to the data itself.

The analysis presented in this paper is based completely on written corpus data. Without targeted elicitations with speakers to investigate the contexts in which a given word can be used, gaps and potential ambiguities in the data make it impossible to draw a complete semantic picture. Often, interpretations are based on glosses and translations made by linguists, and the speaker's exact meaning is unclear. The analysis below is a preliminary one, based on the available data. Where a lack of conclusive data has made an analysis speculative, this has been indicated. While fieldwork in Ngadju is no longer possible, this paper makes testable predictions for the semantics of Pitjantjatjarra temporal adverbials which I hope future field researchers will investigate further.

### 4. Time in Traditional Aboriginal Culture

Traditional Aboriginal conceptions of time are rooted in natural cycles rather than depending on precise measurements like in the Western system of hours, minutes, seconds, etc. In Pitjantjatjarra, as in many other Aboriginal languages, the day was divided up based on the passage of the sun through the sky—the words for 'day' and 'night', **tjirntu** and **munga**, also mean 'sun' and 'dark' respectively. The daily cycle in Pitjantjatjarra is illustrated in Figure 1. Seasonal changes were indicated by changes in food availability, plant and animal life, astronomical occurrences, and the climate. The traditional cycle of the Ngadju seasons is illustrated in Figure 2.

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<sup>1</sup> Phonetically, the name of the language is *Ngaju*, which is how the eponymous 1st person pronoun is written. For historical and cultural reasons, the name of the language is still written as *Ngadju*.

The differences between Western and Aboriginal conceptions of time can lead to challenges in translation and glossing. Non-Aboriginal linguists working on Aboriginal languages must take care to protect traditional knowledge and not overwrite it by forcing it into the framework of a language like English (Milonas, 2023).

The interdependence of time and nature in no way restricted traditional Aboriginal peoples from thinking and talking about the distant past and future. While surviving in the harsh Australian landscape certainly demanded focus on the immediate moment, the notion that Indigenous peoples traditionally lived only in the present with no conception of the future is a harmful myth with roots in 18th century European ideas of the “noble savage.” Numerous cultural practices required planning years into the future. For example, the Ngadju people conducted one kind of controlled burn roughly once every seven years—the time it takes for a spinifex bush to grow back completely (Les Schultz, P.C.).

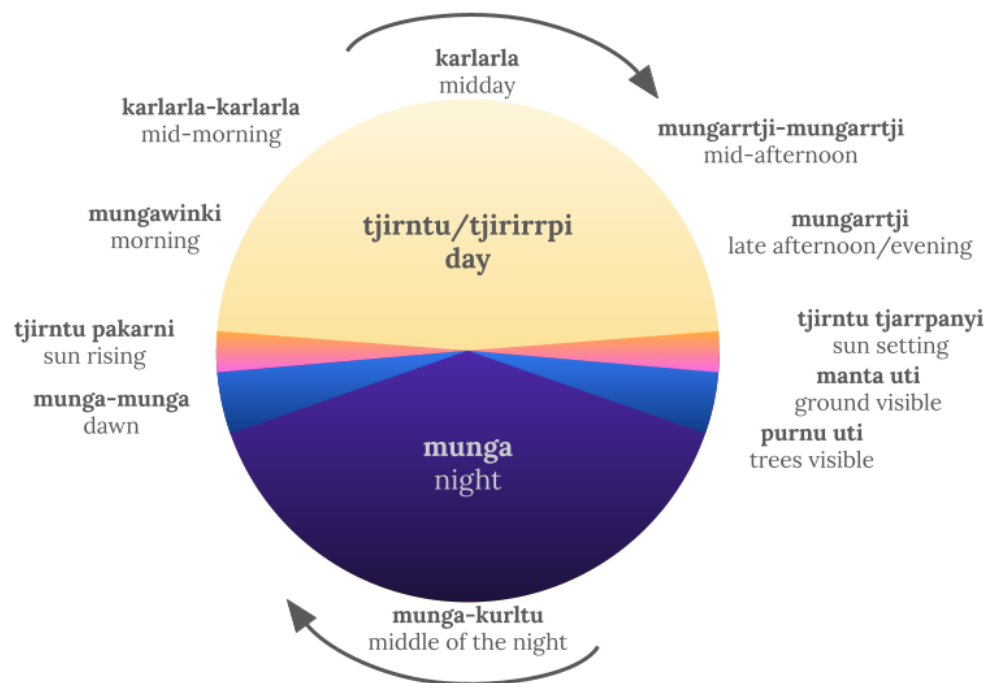


Fig. 1: Pitjantjatjarra Daily Cycle

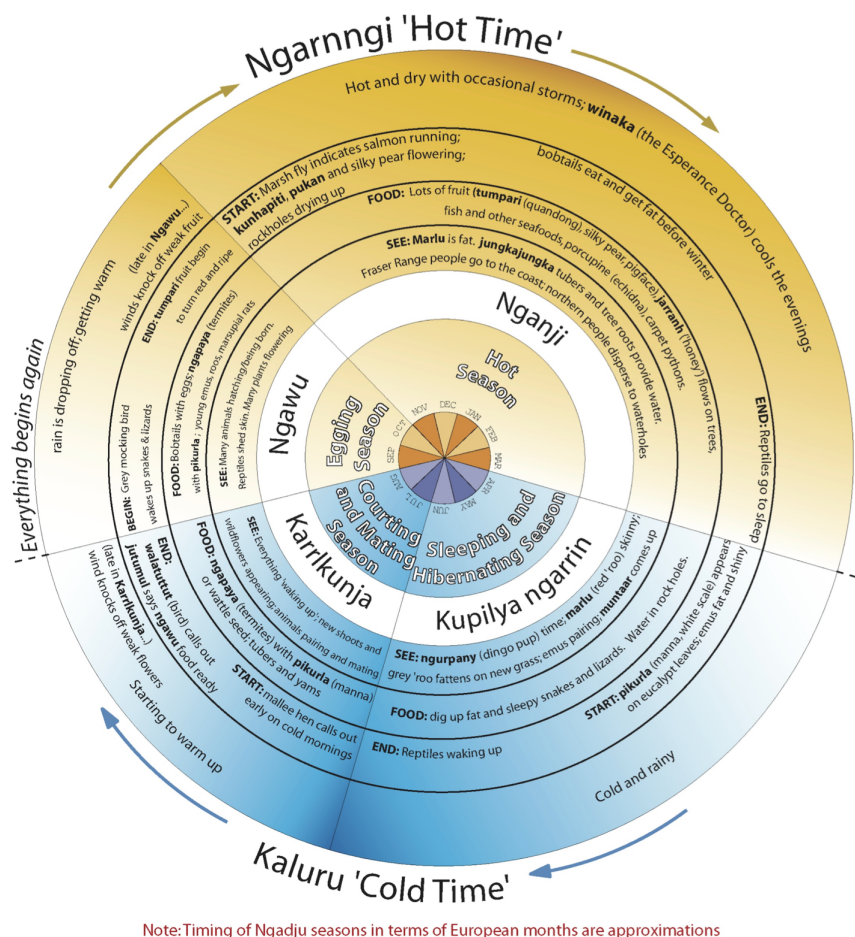


Fig. 1: Ngadju Seasonal Calendar (O'Connor & Prober, 2010)

Aboriginal languages also employ a range of different strategies for expressing time linguistically. The two languages discussed in this paper, **Pitjantjatjarra** and **Ngadju**, differ in how they mark time on verbs.

## 5. Background: Tense and Aspect

Across the world, languages have different strategies for expressing time. Often, temporal information is encoded in verbs. But there are different ways to situate a verb in time. When we're speaking, we communicate very complex temporal relationships between events without having to think about it. As English speakers know that a sentence such as, "It had rained so the ground was wet" is talking about a past event of the ground being wet which follows an even earlier event of raining. But actually working out the way languages refer to times is a difficult task.

Klein (1994), building on the work of Reichenbach (1947), gives us a vocabulary to talk about temporal reference by distinguishing three times which can serve as reference points:

**Utterance Time (UT):** time at which the speaker says the sentence

**Topic Time (TT):** time to which the speaker is referring

**Eventuality Time (ET):** time at which the event (or state) occurs.

Tense expresses the relation between Utterance Time and Topic Time: if TT comes before UT, the tense is past; if TT overlaps with UT, the tense is present; and if TT follows UT, the tense is future.

**Past Tense:** I walked.

**Present Tense:** I am walking.

**Future Tense:** I will walk.

English speakers are familiar with the three tenses above, but it is not uncommon for languages to distinguish fewer or more than three tenses. Some languages, such as Arabic, have two tenses: past and non-past, while other languages, such as Kota (Bantu; Gabon) or Sanumá (Yanomami; Brazil) distinguish multiple different pasts and futures depending on TT's remoteness from UT (Botne 2012).

Aspect, on the other hand, expresses the relation between Topic Time and Eventuality Time. If ET is included within TT, the aspect is perfective: the event is a single, completed action and the speaker is not interested in its internal structure. If TT is included within ET, the aspect is imperfective: the event is an ongoing action, and the speaker can talk about other things happening during or interrupting the event. There are also aspects that specify whether ET comes before TT, like the perfect (which is different from the perfective), or after it, like the prospective. The aspects from the first group can and do occur together with those from the second group. Importantly, each of these aspects can combine with any tense, which allows speakers to reference a very wide range of times.

I am walking. **Imperfective Aspect, Present Tense**

I was walking. **Imperfective Aspect, Past Tense**

I will be walking. **Imperfective Aspect, Future Tense**

I walked. **Perfective Aspect, Past Tense**

I have walked. **Perfect Aspect, Present Tense**

I have been walking. **Perfect Aspect, Imperfective Aspect, Present Tense**

I will have walked. **Perfect Aspect, Future Tense**

I had walked. **Perfect Aspect, Past Tense**

I had been walking. **Perfect Aspect, Imperfective Aspect, Past Tense**

I am going to walk. **Prospective Aspect, Present Tense**

I am going to be walking. **Prospective Aspect, Imperfective Aspect, Present Tense**

I was going to walk. **Prospective Aspect, Past Tense**

I was going to be walking. **Prospective Aspect, Imperfective Aspect, Past Tense**

Tense and aspect are often encoded alongside mood, which expresses speaker attitudes. For this reason, linguists typically refer to this kind of verbal marking as TAM (Tense-Aspect-Mood). Different languages encode TAM to different degrees. English marks Tense, Aspect, and Mood on its verbs, while languages such as Mandarin have been argued to be tenseless. Tenseless languages typically encode many aspectual distinctions and reference topic time via a combination of context and temporal adverbials.

One of the main differences between Pitjantjatjarra and Ngadju is that Pitjantjatjarra marks tense on its verbs while Ngadju is tenseless.

Pitjantjatjarra distinguishes a present, past, and future tense<sup>2</sup>. In the example below, the verb root **pung-**, meaning ‘to hit’, takes a different ending depending on whether the sentence is describing a present (1a), past (1b), or future action (1c).

### 1) Pitjantjatjarra

- |    |   |         |
|----|---|---------|
| a. | <b>Tjana ngiyari      <u>punganyi</u>.</b>                | PRESENT |
|    | 3PL    thorny.devil    hit+PRES                           |         |
|    | ‘They are hitting the thorny devil.’ (GALCAC, 2023)       |         |
| b. | <b>Marlanykirrangku pulanku      <u>pungu</u>.</b>        | PAST    |
|    | pair.of.brothers-ERG 3DU-RECIP    hit-PST                 |         |
|    | ‘A pair of brothers fought each other.’ (GALCAC, 2023)    |         |
| c. | <b>Tjingurula    kuka      <u>pungkuku</u>.</b>           | FUTURE  |
|    | maybe                    meat    hit-FUT                  |         |
|    | ‘Maybe we’ll get some game’ (Goddard & Defina, 2020: 159) |         |

However, in Ngadju, the verb **yankun** stays the same when describing an action in the present (2a), past (2b), and future (2c). This is a clear indication that Ngadju is a tenseless language. For a more in-depth analysis and explanation of the Ngadju aspect system, see Reynolds (2024).

### 2) Ngadju

- |    |  |         |
|----|--|---------|
| a. | <b>Ngaju yayi <u>yankun</u> yarna</b> don’t want to. | PRESENT |
|----|--|---------|

<sup>2</sup> Pitjantjatjarra also has a past imperfective and a habitual suffix, as well as a number of other verbal suffixes.



1SG now go-PFV NEG don't want to  
 'I am not going right now, I don't want to.' (Reynolds, 2024)

- b. **Nguntu kanka muju yankun.** PAST  
 1SG recent.past away go-PFV  
 'You went there recently.' (Reynolds, 2024)
- c. **Matayi yaparti yulu yankun.** FUTURE  
 3SG-SUBJ tomorrow here go-PFV  
 'It will come here tomorrow.' (Reynolds, 2024)

Even though the Ngadju sentences in (2) are not marked for tense, there is no doubt about what times they are referring to. This is due to the presence of the temporal adverbials **yayi**, **kanka**, and **yaparti**.

Besides marking TAM information directly on verbs, languages can refer to times via a set of words known as temporal adverbials. In English, these are words such as *before*, *after*, *later*, *yesterday*, *already*, and *soon*. Klein (1994) writes, "There are languages which lack grammatical categories to express time but there is no language without temporal adverbials" (143). 'Adverbials' is used as a general term to refer to a heterogenous class of words which express various temporal relations, though 'particle' may be a more accurate term in some cases. Temporal adverbials can encode various relations between UT, TT, and ET, and can be combined to reference very specific times. Both Pitjantjatjarra and Ngadju utilize various temporal adverbs in addition to their verbal systems.

## 6. Temporal Adverbials in Pitjantjatjarra

This paper's analysis of temporal adverbials in Pitjantjatjarra focuses on four words: **kuwarri**, **ngula**, **mungartu**, and **irriti**. Pitjantjatjarra has a large set of other time words — at least 30 distinct lexemes, not counting the numerous case-marked forms which take on a range of different meanings. The four adverbials discussed here were chosen for their frequency of use and their parallels to the Ngadju adverbials analyzed in §7, but reflect only a fraction of the complex Pitjantjatjarra temporal reference system.

### 6.1 Kuwarri 'now'

**Kuwarri**, often translated as 'now', situates a sentence as occurring in the speaker's present but extends somewhat into both the future and past. This can be seen by its occurrence with verbs in the past (3b) and future (3c) tenses in addition to the present (3a). It also occurs with the habitual (3d) and in verbless sentences (3e). Based on the available data, it seems that Kuwarri encodes a

relation to UT, but it is unclear whether it asserts that ET or TT is simultaneous with UT. Stojnica & Altshuler (2021) present an alternate analysis for the semantics of ‘now’, but at this time there is not enough evidence to determine whether this analysis applies to Pitjantjatjarra.

The exact time denoted by **kuwarri** is context-sensitive: it can also mean ‘today’ or ‘nowadays’ depending on the verbal tense and the discourse context. The time indicated by **kuwarri** can be made more precise via intensification with the ending **-rtu**, the proximal demonstrative **nyanga** ‘this’, the intensifier **alatjirtu** ‘just so, absolutely’, or the adverb **kutju** ‘one, only’ (Eckert & Hudson, 2010: 186). This is similar to ‘just now’ or ‘right now’ in English. The fact that **kuwarri**’s extension can be made more precise suggests indicates that its vagueness is a case of pragmatic slack or ‘loose talk’, shifting slightly depending on what is relevant for a given utterance (Lasersohn 1999).

3)

a. Present

**Tjuwa kuwarri arla ngaranyi.**

store now open stand-PRES

‘The store is open now.’ (Eckert & Hudson, 2010: 184)

b. Past

**Nyuntu kuwarri pitjangu?**

you now come-PST

‘Have you just now arrived?’ (Eckert & Hudson, 2010: 185)

c. Future

**Ngangkarli nyangangkulinya kuwarri puyilku.**

rain.cloud DEM-ERG-1DU-ACC now rain+FUT

‘This rain cloud will rain on us two any minute now.’ (GALCAC, 2023)

d. Habitual/Characteristic

**Ngayulu kuwarri purtu ankupai.**

1SG now unable go-CHAR

‘I can’t walk nowadays.’ (Eckert & Hudson, 2010: 185)

e. Verbless

**Wiya ngulaku wanti, kuwarri-rna paku purlka.**

NEG later-PURP leave.it now-1SG tired very.

‘No leave it till later, I’m very tired now.’ (Eckert & Hudson, 2010: 184)

## 6.2 Ngula ‘prospective aspect’

Ngula is often translated as ‘later.’ While it can be used to reference future events, as in (4a-b), it is not a marker of future tense because it occurs in past tense clauses (4c-d). Future tense and past tense are fundamentally incompatible: TT cannot be both before and after UT. Rather, **ngula** marks prospective aspect, which asserts that ET follows TT. In the present tense, where TT and UT overlap, prospective aspect is almost indistinguishable from future tense: it expresses that an event follows the current moment of speaking. However, with past tense, prospective aspect differs from future tense. Because aspect is relative to TT, prospective aspect can refer to an event that is in the speaker’s past as long as it comes later in time than the topic under discussion (TT). This is clear in (4d) below, where the time of the cup appearing (ET) is after the time of what was being discussed (TT) but both are in the past (before UT). This use of the past prospective is used to organize and progress a narrative through time, but the past prospective can also have a counterfactual reading, like in the English “I was going to go to the store (but I didn’t)”.

4)

a. Present

**Munu ngula ngayulu nyuntunya ngaparrtji yunganyi.**  
and(SS) later 1SG 2SG-ACC in.tun give-PRES

'And later I'll give you something in return' (Y) (Goddard & Defina, 2020: 115)

b. Future

**Ngayulu nyuntunya ngula kulilku.**  
1SG-NOM 2SG-ACC later think-FUT.

'I might think about you later (e.g. to repay a debt).' (Goddard & Defina, 2020: 58)

c. Past

**Nganarna nyangu ngula mula.**  
1PL- see-PST later truly

'We saw that much later' (Goddard & Defina, 2020: 115)"

NOTE: may be Yankunytjatjarra due to mula over mulapa

d. Past

**Ngula-ngula kutju utirringu panikina.**  
later+REDUP only appear-VERB-PST cup

'Only much later, the cup appeared.' (GALCAC, 2023)

### 6.3 Temporal Remoteness Markers (TRMs)

Temporal Remoteness Markers (TRMs) are morphemes which indicate time with more precision than just ‘past’ or ‘future’. Also called “graded tense” or “metrical tense,” these systems track how far in the past or future an event occurred, sometimes expressing up to 9 different gradations in the past and future. TRMs are common cross-linguistically (Klecha & Bochnak, 2016) but vary in the exact temporal relations they encode. TRMs in Gĩkũyũ (Bantu; Kenya) relate ET and UT (Cable 2013), while in Luganda (Bantu; Uganda), they relate UT and TT (Klecha & Bochnak 2016). Pitjantjatjarra and Ngadju each have two TRMs, which distinguish the recent and remote pasts.

#### 6.4 Mungartu ‘recent past’

**Mungartu** is used to refer to events that occurred anywhere from a few days to several months in the past. The boundary between **mungartu** ‘recent past’ and **irriti** ‘remote past’ is vague and shifts depending on context (Eckert & Hudson, 2010). Presumably the boundary between **mungartu** and **kuwarri** ‘now’, which extends some time into the past, is similarly vague.

Etymologically, **mungartu** appears to be related to **munga** ‘night, dark.’ This may reflect a cross-linguistically common pathway for the development of TRMs: a TRM in the Pano languages of the Amazon similarly developed from the Proto-Pano form \*yami ‘(at) night, dark’ (Valenzuela & Oliveira, 2022).

**Mungartu** only occurs with verbs in the past (5a) or past imperfective (5b), so seems to encode a precedence relation to UT. From the available data, it is not possible to conclusively determine whether **mungartu** asserts that TT precedes UT (like TRMs in Lunganda) or ET precedes UT (like TRMs in Gĩkũyũ). However, given that Pitjantjatjarra has a tense system which already encodes a relation between UT and TT, and redundancy would be highly unexpected, **mungartu** most likely asserts that ET precedes UT by a short time.

5)

a. Past

<b>Uwa,</b>	<b>ngayulu</b>	<b>nyarra</b>	<b>palu-la</b>	<b>nyangu</b>	<b>karlaya</b>
yes	1SG.NOM	DIST.DEM	DEM-LOC	see-PST	emu
<b>mankurrpa <u>mungartu</u>.</b>					
few/three		<u>recent</u>			

Yes, I saw three emus there a while ago. (Goddard & Defina, 2020: 137)

b. Past Imperfective

<b><u>Mungartu</u></b>	<b>amatala</b>	<b>football</b>	<b>carnival</b>	<b>ngarangi.</b>
recent.past	place.name-LOC	football	carnival	stand-PST.IPFV

'Some time ago there was a football carnival at Amata. (Goddard & Defina, 2020: 98)

### 6.5 Irriti ‘remote past’

**Irriti** is used to talk about “when old people were young” and to refer to events in **Tjukurrpa** (Eckert & Hudson, 2010: 187). As mentioned in the previous section, the boundaries between **irriti** and **mungartu** are vague and context-dependent. **Irriti** only occurs with the past (6a), past imperfective (6b), and habitual tenses (6c), which indicates that, like **mungartu**, it encodes a precedence relation to UT. As with **mungartu**, the most likely case is that **irriti** asserts that ET precedes UT by a long time, to avoid redundancy with the tense system.

6)

a. Past

**Nyara paluru irriti kuulanguru autaringu**

yonder 3SG remote school-ABL exit-PST

‘That fellow left school a long time ago.’ (Eckert & Hudson, 2010: 187)

b. Past Imperfective

**Tjana irriti nyinangi.**

3PL remote sit-PST.IPFV

‘They lived there a long time ago.’ (GALCAC, 2021)

c. Habitual/Characteristic

**Irriti mulapa kunyu tjamu kamingku, tjitji kutjarra**

**remote** truly EVID grandfather grandmother-ERG child two

**kanyilpayi kurta munu marlanypa.**

have-CHAR senior.brother and(SS) junior.brother.

‘Long ago, they say, (my) grandfather and grandmother used to have two children, a big brother and a younger one.’ (Goddard & Defina, 2020: 40)

### 6.6 Other Temporal Adverbials

As mentioned above, Pitjantjatjarra has many more words to refer to time that are not discussed in this paper. A number of them are included in the diagram in Fig. 1. Notably, the set of temporal adverbs in Pitjantjatjarra includes aspectual adverbs such as **ngarnmany(pa)** ‘already’ (7) and **piruku** ‘more, again’ (8) which may function similarly to the Ngadju adverbs discussed below. A full analysis of Pitjantjatjarra’s wide array of temporal markers is beyond the scope of this paper, but is a fruitful area for further research.

- 7) **Palu ngarnmanytju Tjirlpinya nyangu?**  
 of.course already-ERG elder-ABS see-PST

'Of course you've already seen the Old Bloke, haven't you?' (Goddard & Defina, 2020: 108)

- 8) **Yaalara-rna piruku pitjaku?**  
 when-1SG more come-FUT  
 'When shall I come again?' (Goddard & Defina, 2020: 152)

## 7. Ngadju Temporal Adverbials

The analysis presented for Ngadju focuses on seven words: **yayi**, **purta**, **kanka**, **karra**, **mawun**, **kumpa**, and **jila**. A number of other adverbs appear in von Brandenstein (1980), but there was not sufficient evidence to properly analyze them at this time. It is also likely that Ngadju had many more temporal adverbials that were not recorded and have since been lost.

As shown in §5, verbs in Ngadju are ambiguous between past and present time. Typically, this doesn't present an issue for communication. Context, either linguistic or situational, often makes clear what time is being referred to. If the time being referenced is not clear from context, speakers can add temporal adverbials to disambiguate and clarify what they mean. The two minimal pairs in (9) and (10), drawn from von Brandenstein's '80 Sentences', show clearly that temporal adverbials are optional: the translation for the versions with adverbials is exactly the same as that without.

- 9)
- a. **Ngajuwuja kuwanan**  
 1SG + DU listen + PFV  
 'We two heard it' ((Phyllis) Williams; VB, 1982: 12b)
  - b. **Ngajukuja kumpa kuwanan**  
 1SG + DU PRF listen + PFV  
 'We two heard it' (Peter Flynn; VB, 1982: 12a)
- 10)
- a. **Nguntungarri yirni patakin?**  
 2SG + PL word bite + SG\_IPFV  
 'Were you all singing a song?' (Peter Flynn; VB, 1982: 13a)
  - b. **Nguntungarri kumpa yirni pajakin?**

2SG + PL      PRF                      word   bite + SG\_IPFV  
 ‘Were you all recently singing a song?’ (Roy Nain; von Brandenstein, 1982: 13b)

Ngadju also makes use of a sequential subordinating suffix **-nta** to mark temporal ordering between two events. This is another strategy available to Ngadju speakers for expressing temporal relations, but is beyond the scope of this paper. See Van de Ven (2024) and Reynolds (2024) for more discussion of this suffix.

### 7.1 **Yayi** ‘now’

**Yayi** encodes a simultaneity relation with UT, which means it is not an aspectual marker (which would relate ET to TT). This can be seen by the fact that it only occurs with present-time utterances. It is not possible to determine from the available data whether **yayi** relates UT and TT or UT and ET. **Yayi** seems to function exactly like Pitjantjatjarra **kuwarri**, which is further supported by the borrowing of **kuwarri** into Ngadju, as seen in (11c).

The fact that **yayi** is not aspectual provides a possible explanation for the seemingly optional **-yi** ending which suffixes to the prospective aspect marker **purta** and the perfective aspect marker **kumpa**. If this is a shortened form of the present tense marker **yayi**, these combinations would express the present prospective and present perfect respectively.

11)

- a. **Yayi nyakinya kayanu nyinan.**  
 now    PROXIM+OBJ single                      sit+PFV  
 ‘Now I am the only one here.’ (Gerdie Newman, 1970)
  
- b. **Yayi kumpa ngaju junu ngaju purta wamurti kaning panarti**  
 now    PRF    1SG    talk    1SG    POST    camp+ALL    go+PFV                      DIST+ALL  
**yapurru mijalku.**  
 down                      water+DAT  
 ‘Now, like I said before, I will go soon to the camp down there for water.’ (Gerdie Newman, 1970)
  
- c. **Yayi ngaju kuwarri pala ngaju maya walyi tampiluwikin,**  
now    1SG    now                      not\_yet 1SG    language    bad    overdo+SG\_IPFV  
**nyumpa ngaju, mayaka wala junukin.**  
 useless                      1SG    language+LOC    not\_yet                      talk+SG\_IPFV  
 ‘Now I am just trying to say too much, but it is useless, and I am just talking.’ (Gerdie Newman, 1970)

## 7.2 **Purta** ‘prospective aspect’

**Purta** is typically translated as ‘later’, and often occurs in sentences with future time reference, like (12a). However, since **purta** is used in past time narratives, as seen in example (12b), it cannot be a future tense. Rather, it is a marker of prospective aspect which expresses that ET follows TT (though both can be in the speaker’s past—before UT). This accounts for its use translated as ‘then’ which progresses a story forward. The use of **purta** communicates that the event now being described followed the previous topic, and allows the listener to readjust to a new topic time. This is the same analysis given for Pitjantjatjarra **ngula**, and presents another parallelism between the two languages.

12)

- a. **Wilu nyinakurtartakin purta wilu kaaju kaning.**  
 summer sit+wait+SG\_IPFV PROS summer UNKNOWN go+PFV  
 Summer is waiting and later summer will come. (Gerdie Newman, 1970)
- b. **Purta wamu yankun nganala pampily kurpalyu ngayiyankun.**  
PROS camp go+PFV 1SG+LOC satisfied sleep lie+go+PFV  
Then we went to my camp and went to sleep happy. (Yaan (Peter Flynn), 1970)

Another point in favor of analyzing **purta** as a prospective aspect marker is its co-occurrence with **mawun**, the discontinuous past marker. Briefly, the discontinuous past expresses that an action occurred in the past and is no longer relevant, somewhat like the English ‘used to’ (see §7.5 for more information). When combined with prospective aspect, it expresses a strong counterfactual meaning: An action in the past was going to happen, but is no longer relevant (because it did not happen). This use of **purta mawun** is shown in (13) below.

- 13) **Purta mawun ngaju marnu purlpakatalu ngawurrkin,**  
PROS DC.PST 1SG get rifle+COM+INS look\_for+SG\_IPFV  
**purnika ngaju karra mawun kuninya ngaju purlpa ngaju**  
 horse+LOC 1SG REM DC.PST DIST+OBJ 1SG rifle 1SG  
**marnukin.**  
 get+SG\_IPFV  
 ‘I was going to look for them and get them with a rifle. Long ago I used to on horseback, I used to get them with a rifle.’ (Gerdie Newman, 1970)  
 NOTE: The speaker is telling a story about hunting grey kangaroos, which are the referent of the demonstrative **kuninya**

## 7.3 **Kanka** ‘recent past’



Like Pitjantjatjarra **mungartu**, **kanka** is a temporal remoteness marker (TRM) which asserts that ET precedes UT by a short time. There is no evidence as to precisely how far back **kanka** extends, but it seems reasonable to assume that the boundary between Ngadju **kanka** ‘recent past’ and **karra** ‘remote past’ parallels that between Pitjantjatjarra **mungartu** ‘recent past’ and **irriti** ‘remote past,’ and is likewise vague and context-sensitive. **Kanka** often occurs with the perfective marker **kumpa** (14c). Under this analysis, there is no reason **kanka**, which relates ET to UT, and **mawun**, which relates TT to UT, could not co-occur, but this combination is not attested. This could simply be a gap in the data, but without fluent speakers, it is unfortunately not possible to test this.

14)

- a. **Ngaju maya junukin Ngadju mob own language**  
 1SG language talk+SG\_IPFV Ngadju mob own language  
**mataluwanya. Ngaju kunka nyinakuwanakin.**  
 3+PRON\_PL+GEN 1SG REC sit+listen+SG\_IPFV  
 ‘I am speaking the Ngadju mob’s own language. I was recently thinking about it.’  
 (Norman Wicker, 1970)
- b. **Nyakinya matayi kuninya kanka yuulu yankun parrunu**  
 this 3SG DIST-OBJ REC here go-PFV again  
**yayi yankunkin**  
 now go-CONT-IPFV  
 ‘This is the fellow who came here yesterday, and now keeps coming again’ (VB, 1980: 32)
- c. **Kumpa ngaju kanka mijalta yankun wangaralayi yamurti**  
PRF 1SG REC water+LOC go+PFV sea+LOC near  
**wangara ngalpa yaalykin.**  
 sea big roar+SG\_IPFV  
 ‘A while ago I went down close to the water where the sea was roaring.’ (Gerdie Newman, 1970)

#### 7.4 **Karra** ‘remote past’

**Karra** is a TRM typically translated as ‘long ago’ which functions like Pitjantjatjarra **irriti**. There are no cases of embedding which would conclusively reveal the relation encoded by Ngadju TRMs. However, the fact that **karra** often occurs with the tense marker **mawun** ‘discontinuous past’ (15) suggests that it does not relate TT to UT, which would be redundant.

- 15) **Karra mawun ngalpurru kaja ngalpurru paru yaanjan.**  
 REM DC.PST many child many just nothing  
 ‘A long time ago there used to be a lot of children, but not anymore.’ (Gerdie Newman, 1970)

The example in (16), in which four different temporal adverbials appear reveals a lot about each of them. The fact that **kumpa**, **karra**, and **mawun** all occur in the same clause suggests that they serve different purposes: the tense marker **mawun** asserts that TT precedes UT and the perfect aspect marker **kumpa** asserts that ET precedes TT, which leaves **karra** to assert that ET precedes UT by a long time. Combined, the three express a relation similar to that of the English pluperfect (‘had V-ed’).

- 16) **ngaju nguntunya yavi junukin kuninya kumpa junun karra**  
 1SG you-ABS now tell-IPFV what-ABS already tell-PFV REM  
mawun  
DC.PST  
 ‘I am telling you now what had been told a long time ago’ (VB, 1980:31)

This analysis also lines up with the analysis given for the Pitjantjatjarra temporal remoteness markers **mungartu** and **irriti**, which suggests a possible connection between the two languages which both lexicalize the same temporal relations. On this analysis, there is no reason **karra** and **purta** could not co-occur to mean something like “was going to long ago.” This combination does not occur in the Ngadju corpus, but this could be the result be a gap in the data.

### 7.5 Mawun ‘discontinuous past tense’

**Mawun** is a discontinuous past marker which often occurs with **karra** ‘remote past’ and occasionally with **purta** ‘prospective aspect’, though it can also occur by itself. As far as I can determine, the best English translation is ‘used to’.

- 17) **Karra mawun ngalpurru kaja ngalpurru paru yaanjan.**  
 REM DC.PST many child many just nothing  
 ‘A long time ago there used to be a lot of children, but not anymore.’ (Gerdie Newman, 1970)

The discontinuous past is a tense that encodes “past and not present” or “past with no present relevance” (Plungian & van der Auwera, 2006). It’s used to express that a past activity is no longer taking place (with imperfective aspect) or that the result of a past activity no longer holds in the present (with perfective aspect). It is attested cross-linguistically, but only in languages which, like Ngadju, do not have obligatory tense marking (unmarked verbs can receive either

past or present interpretation) (Plungian & van der Auwera 2006). In these languages, the discontinuous past tense is an optional tense marker. Cable (2015) provides a compelling analysis that it is precisely this optionality which gives rise to the ‘discontinuous’ interpretation: when a speaker expends the extra effort to use an optional past tense marker, it indicates that they do not want to be interpreted as expressing a present event, which communicates that the event in question must not have present relevance. Following Cable (2015), I analyze **mawun** as a “true” tense marker which asserts that TT precedes UT.<sup>3</sup>

Additional supporting evidence for the analysis of **mawun** as a discontinuous past marker comes from the Alaskan language Tlingit. Like Ngadju, Tlingit is tenseless and aspect marked. It has a discontinuous past marker *-in* (glossed as the “decessive”) which expresses that the verb it attaches to no longer applies when the sentence is spoken. The Ngadju example in (18) and the Tlingit example in (19) are nearly identical, and the situation they describe is strong evidence for a discontinuous past. ‘Little’ and ‘big’ (or ‘child’ and ‘adult’) are mutually exclusive: it is impossible for someone to be both at the same time. That means that the sentiment expressed in the first clause of both examples below must be completed by the time of the second clause—exactly what a discontinuous marker would indicate. The fact that the Ngadju adverb occurs in exactly the same situation as an established discontinuous past marker in another language suggests this analysis is on the right track.

#### 18) Ngadju

<b>Ngaju</b>	<b><u>mawun</u></b>	<b>kajaku</b>	<b>paaru ngaju</b>	<b>ngalpa</b>	<b>nyaki</b>
1SG	DC.PST	small+SBJ	just	1SG	big
<b>nyinajunukin</b>	<b>maya.</b>				
sit+talk+SG_IPFV	language				

‘I was little back then, but now I am an adult and just sit and say this.’ (Gerdie Newman, 1970)

#### 19) Tlingit (Na-Dene; Alaska)

Yéi xat gusagéink’in.	Yeedát	ku	yéi xat kuligéi.
IMPFV.1sgS.small.DEC	now	though	IMPFV.1sgS.big

‘I used to be small. Now, though, I’m big.’ (Cable, 2015)

As mentioned in §8.2, **mawun** also occurs with the prospective aspect marker **purta**, which expresses a counterfactual or unexpected meaning. The combination of the two expresses the order TT-ET-UT and indicates that the event in question did not come about. This combination is possible because **purta** marks aspect while **mawun** marks tense.

<sup>3</sup> As **mawun** is an adverbial rather than a verb ending, this does not make Ngadju a “tensed” language. It should still be considered tenseless in the relevant sense.

- 20) **Purta mawun ngaju marnu purlpakatalu ngawurrkin,**  
 PROS DC.PST 1SG get rifle+COM+INS look\_for+SG\_IPFV  
**purnika ngaju karra mawun kuninya ngaju purlpa ngaju**  
 horse+LOC 1SG REM DC.PST DIST+OBJ 1SG rifle 1SG  
**marnukin.**  
 get+SG\_IPFV  
 ‘I was going to look for and get them using a rifle. Long ago I used to on horseback, I used to get them with a rifle.’ (Gerdie Newman, 1970)  
 NOTE: The speaker is telling a story about hunting grey kangaroos, which are the referent of the demonstrative **kuninya**

## 7.6 Kumpa ‘perfect aspect’

**Kumpa** is a marker of the perfect aspect, which expresses that ET was before TT: the event was completed by the time being discussed. In English, the perfect is expressed as ‘has V-ed’, but a better translation for **kumpa** might be ‘already’, as in (21a). **Kumpa** occurs with **kanka**, **karra** and **mawun**, but not with **purta**. This is predicted because **purta** is an aspectual marker which expresses a contradictory relation. Perfect aspect specifies that ET is *before* TT while prospective aspect specifies that ET is *after* TT, and both cannot be true. In (21c), when **kumpa** occurs with **karra mawun**, it expresses a past perfective aspect, like the English pluperfect.

21)

- a. **Naani wanti kaja kumpa ngura matayi.**  
 sheep boy small PRF known 3+SG\_SBJ  
 ‘The little boy already knew about sheep.’ (Kupiny (Eileen Jacobs-Flynn), 1970)
- b. **Kumpa ngaju kanka mijalta yankun wangaralayi yamurti**  
 PRF 1SG REC water+LOC go+PFV sea+LOC near  
**wangara ngalpa yaalykin.**  
 sea big roar+SG\_IPFV  
 ‘A while ago I went down close to the water where the sea was roaring.’ (Gerdie Newman, 1970)
- c. **ngaju nguntunya yayi junukin kuninya kumpa junun karra**  
 1SG you-ABS now tell-IPFV what-ABS already tell-PFV REM  
**mawun**  
**DC.PST**  
 ‘I am telling you now what had been told a long time ago’ (VB, 1980:31)

### 7.7 Jila ‘desiderative mood’

**Jila** is glossed as ‘future’ by von Brandenstein, but it is the adverbial for which there is the least clear evidence. It often, but not always, occurs with **purta**. Co-occurrence suggests they are not remoteness markers, as it would be unexpected to see a near future and distant future marker used together (for the same reason **karra** ‘remote past’ and **kanka** ‘recent past’ do not co-occur). **Jila**’s occurrence in past-time narratives indicates that it is not semantically a future tense, which would be incompatible with the past tense. The future, by virtue of its unrealized nature, is often modal. Thus, what von Brandenstein glosses as a future marker may in fact be a marker of desiderative mood, which expresses the wishes or desires of the speaker. Its use and translations in the two sentences below certainly seem to support this analysis: the examples are drawn from a story narrating past events, which is incompatible with a future time reference, and are both directly expressing the speaker’s desires.

22)

- a. **purta ngaju taaju ngarrirti mantala jila nangun**  
 PROS 1SG morning lie-ALL late/tired DES look-PFV.  
**jila parrunu ngaju ujanu Kungunitnya parrunu jila nangu**  
DES again 1SG run-PFV place.name again DES look.  
 ‘After resting until morning rather late I would have wished to have another look again at Kungunitnya.’ (Roy Nain; VB, 1980: 64)  
 ‘Then I lay tired until the morning wanting to see it, wishing I could run again, wishing to see Kungunitnya again.’ (TFL)<sup>4</sup>
- b. ‘saddle’ **ngaju parrunu jila marnun parrunu munta**  
 saddle 1SG again DES get-PFV again DEM  
**murrnyarr mantanga(rr)alin bullock-a-la ngarrparr-pirri-n**  
 together meet-PL-REC-PFV bullock-EU-COM drive-TR-PFV  
**wamu-rti Nyanunpinya-ku yanku-pirri-n**  
 camp-ALL place.name-ADI go-TR-PFV  
 ‘Wishing to get my saddle back, we all went together, driving the bullocks to camp and coming to Nyanunpinya.’ (Roy Nain; VB, 1980: 64)

## 8. Temporal Adverbs in Discourse

Temporal adverbs play an important role in discourse: they organize a narrative, ordering different events with respect to each other and allowing an audience to follow along.

### 8.1 Ngadju

<sup>4</sup> Von Brandenstein does not translate the second half of this example. I have added my own translation below his.

In the Ngadju narratives recorded by von Brandenstein, temporal adverbs are used very frequently. The two excerpts below from a story told by Gerdie Newman in 1970 illustrate how these adverbials are used in discourse.

The excerpt in (23) illustrates how **kumpa kanka** and **karra mawun** are used to change temporal reference. The first sentence establishes a recent past time frame, then '**never karra mawun**' in (23c) refers to a time earlier than that when Gerdie had not yet seen a boat (similar to the English pluperfect, 'I had never seen'). Finally, in (23d), **yayi** returns the narrative to the speaker's present, expressing that at the time of speaking Gerdie sees big boats too much.

23)

- a. **Kumpa**      **ngaju kanka**   **mijalta**      **yankun wagaralayi**      **yamurti**  
     PRF          1SG    REC   water+LOC   go+PFV sea+LOC   near  
                  **wagara**      **ngalpa yaalykin.**  
                  sea              big      roar+SG\_IPFV  
                  'A while ago I went down close to the water where the sea was roaring.'
- b. **Ngaju kaparra**      **ngalpirringkayi**      **nangukin**      **kaparra**      **nyakinya**  
     1SG   bark+PL      big+PL+UNKNOWN      see+SG\_IPFV bark+PL  
                  PROXIM+OBJ **ngalpirringkayi**      **yamurti**      **yukanangukin.**  
                  big+PL+UNKNOWN near                   stand+see+SG\_IPFV  
                  'I was looking at the big boats, standing there looking at these big ones nearby.'
- c. **Ngaju never karra mawun**      **yumpulki**      **jajakin**  
     1SG   never   REM   DC.PST      UNKNOWN   UNKNOWN+SG\_IPFV  
                  **nangukin.**  
                  see+SG\_IPFV  
                  'I never used to see [UNKNOWN]'  
                  NOTE: translated as "I had never seen a big boat before" in von Brandenstein (1980: 45)
- d. **Yayi paarru**      **nyakinya**      **too much**      **nangukin,**      **everywhere**      **ngaju**  
     now   just                   PROXIM+OBJ too much      see+SG\_IPFV everywhere   1SG  
                  **nangukin**      **wartu-wartu ngalpa.**  
                  see+SG\_IPFV eye+eye      big  
                  'Now I just see them too much, I'm looking everywhere with my eyes wide open.'  
                  (Gerdie Newman, 1970)

In (24), Gerdie is describing how she left Ngadju country to go to Esperance, the "strange country by the sea" in Noongar country. The story is about past events, so unmarked clauses are interpreted as having past reference. In (24a), Gerdie describes how she left Ngadju country in the past and then **yayi** 'now' indicates that she is presently in Esperance, where the story was recorded. The next sentence is unmarked, and thus has past reference (though **jila** occurs as a

desiderative marker). In (24c), **karra** indicates a time prior to the unmarked past reference, and thus can be interpreted as Gerdie's explanation for why she wanted to visit Warnarntarra: she had previously heard about the penguins from a little boy.

24)

- a. **Wamu-wamungu yanarpunkin ngaju pana mataluwarti**  
 camp+camp+ABL no\_more+VERB+CONT+IPFV 1SG DIST 3+PRON\_PL+ALL  
**ngarntarti wamurti kaning ngarntaka wamu pani yapurru**  
 strange+ALL camp+ALL go+PFV strange+LOC camp DIST down  
**jurrka mijalta ngalpaka yayi.**  
 south water+LOC big+LOC now  
 'I was getting away from my own Country, and now I have come to their strange Country down here in the south by the sea.'

- b. **Ngaju wana naku all julayangarrinya nanjarr yapurru**  
 1SG OPT visit all penguin+PL+OBJ meat down  
**Warnarntarrala kuninyala iula ngarlkun yapurru**  
 Warnarntarra+LOC DIST+OBJ+LOC DES eat+PFV down  
**paninya.**  
 DIST+OBJ  
 'I wanted to visit all the penguins down south in Warnarntarra and eat the meat that is down there.'

- c. **Wanti kaja karra junukin nurrutan matayi ngarnka ngalpa**  
 boy small REM talk+SG\_IPFV UNKNOWN 3+SG\_SBJ cliff big  
**kunila ngaju nangukin.**  
 DIST+LOC 1SG see+SG\_IPFV  
 'Long ago a little boy was telling me that he saw them there on a big cliff..' (Gerdie Newman, 1970)

"I was getting away from my Country and came to their strange Country, now I am in their strange Country there in the south by the sea. I want to visit all the penguins and game down in Warnarntarra and will eat it down there. Long ago a little boy was telling me that he saw them there on a big cliff."

## 8.2 Pitjantjatjarra

Unlike with Ngadju, the Pitjantjatjarra sources which I had access to in researching for this paper only included single sentences rather than narratives or other discourse-length texts. This

presents a significant gap in the analysis. While we would expect a tenseless language like Ngadju to make more use of temporal adverbials than one that obligatorily marks tense like Pitjantjatjarra, at this time I do not have sufficient evidence to support that claim. The sentences below show that, like in Ngadju, combinations of temporal adverbials in Pitjantjatjarra are used to communicate a narrative progression through time.

- 25) **Wiya ngulaku wanti, kuwarri-rna paku purlka.**  
 NEG later-PURP leave.it now-I tired very.  
 'No leave it till later, I'm very tired now.' (Eckert & Hudson, 2010: 184)
- 26) **Mungangka ngayulu purtu kunkunarringi mununa**  
night+LOC 1SG+ERG couldn't sleep-VERB-PST CONJ+1SG  
**kuwarri ngayulu pakurringanyi.**  
now 1SG+ERG tired+VERB+PRES  
 'Last night I couldn't sleep and I am tired today.' (JG 2022)
- 27) **Parrpakara ngayunya kurrunpa ngurlutjingalpayi. Tjingururna**  
 fly+SER 1SG+ACC soul anxious+CAUS+CHAR Maybe+1SG  
**kuwarri pikatjarrarrangkunyitja wiya.**  
now sick+ASSC+VERB+NOM NEG  
 'Flying always makes me sick. I hope I don't get sick this time'. (JG 2022)

## 9. Conclusion

This paper has investigated the semantics of various temporal adverbs in the tense-marked language Pitjantjatjarra and the aspect-marked language Ngadju. It illustrates the complex systems in play in both of these languages, and reflects a diversity of linguistic strategies for expressing time within the Goldfields languages. Both languages have an adverb roughly meaning 'now' (**kuwarri/yayi**), a prospective aspect marker (**ngula/purta**), and a set of two temporal remoteness markers (**mungartu-irriti/kanka-karra**). Ngadju also has a discontinuous tense marker (**mawun**), a perfective aspect marker (**kumpa**) and a desiderative mood marker (**jila**).

Semantic analysis faces a challenge from limited data and a lack of speakers. As seen throughout this paper, there are elements of a word's meaning which are impossible to determine without working with a speaker and testing it in various contexts. Ngadju, which is now a sleeping/remembered language, faces particular challenges because it is no longer possible to conduct fieldwork.



Pitjantjatjarra's vibrant speaker community makes future semantic work much more possible. Future research could investigate the many temporal adverbs which were not discussed in this paper, and targeted semantic elicitation could answer unresolved questions about **kuwarri**, **mungartu**, and **irriti**. Additionally, future work could analyze a longer Pitjantjatjarra narrative to determine whether temporal adverbs serve the same discourse-organizing purpose they do in Ngadju. A statistical study of the occurrence of time adverbials in Pitjantjatjarra and in Ngadju could also answer the open question of whether an aspect-marked language needs to make more frequent use of temporal adverbs than a tense-marked language.

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