

Bardi Temperature Terms

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1 Introduction

Here we present a sketch of how to talk about temperature in the Bardi language of North Western Australia. Bardi has just three terms which refer primarily to the temperature of an item; these terms also have secondary connotations of ripeness or freshness. Bardi conforms to the most part to the generalizations proposed by Plank (2003), even though the number of temperature terms is small; however, a few areas they differ, notably in etymological stability.

We present a brief overview of the language, local climate, and data sources in Section 1; in Section 2 we describe the lexicalization of temperature concepts. In Section 3 we present some comments on the grammar of temperature constructions, while Section 4 contains some additional comments on the semantics of temperature descriptions and their use in metaphor. Finally, in Section 5 we move to considering the etymological sources of temperature terms in Bardi and the Nyulnyulan family (to which Bardi belongs).

1.1 Background information about the language and people

Bardi is a non-Pama-Nyungan Australian Aboriginal language in the Nyulnyulan family. While the precolonial population was probably about 400 people, in the last ninety years that number has declined to fewer than five, as the community switches to English instead of Bardi. The language has traditionally been spoken at the tip of the Dampier Peninsula, in the Kimberley Region of northern Western Australia.

Bardi people are sea people; they were traditionally hunter-gatherers and fishers. These days many Bardi people live at One Arm Point and Lombadina Aboriginal communities (on the Dampier Peninsula), or in the neighboring towns of Derby and Broome.

1.2 Local Climate

Bardi is spoken in a sub-tropical climate, at a latitude of about 16.5°S. The area is semi-arid, with no surface water. (Water is obtained from soakages and underground springs.) The surrounding scrub-land allows for some game hunting, such as wallaby, but most hunting occurs at sea—many different species of fish, green sea turtle, and dugong make up major parts of the local diet, along with shellfish. The year is divided into six seasons of varying length, primarily based on whether the weather is dry or wet, and what foods are available. Average temperatures range throughout the year from a maximum of 28°C and a minimum of 15°C in July, the dry

season, to a maximum of 35°C and a minimum of 25°C in December, during the wet season. Average rainfall varies from 1.2 mm in August to 224.3 mm in January.¹

Housing typically consists of extended family houses made of concrete with several bedrooms off a central living space. Many of the modern houses at One Arm Point have air conditioning, although it is seldom used (and until recently, the generator power in the community could not handle the increased power load). Much living is done outside, especially at the beach—open bough shelters called *baali* are used for shade.

1.3 Technology related to temperature

Temperature is not the subject of much focus in Bardi culture. When discussed, it is related to function. For example, when putting a spear into a fire to straighten it, one might refer to the fact that the spear point will be very hot. But the heat is not the most important or salient factor here. Food and cooking are discussed in terms of other dimensions, such as whether food is ripe, fully cooked, or raw. There is little manipulation of the temperature of items outside of cooking or manufacture of items such as spears. That is, items are heated up, but they are left to cool naturally. Until recently, there was no way to get cool beyond sitting out of the sun or in a sea breeze, since Bardi country is fairly uniformly flat.

1.4 Morphosyntactic overview

Bardi is an ergative-absolutive language, in which the subjects of transitive verbs are differentiated from the subjects of intransitive verbs and the objects of transitive verbs. The ergative marking suffix *-nim* is attached to the subjects of transitive verbs to make this distinction, allowing flexibility in word order.² The language is morphosyntactically complex with extensive verbal marking (in addition to the case marking illustrated in (1) below). The morphology is partially agglutinative, but there are also numerous irregularities and complexity (see Bovern 2004b for further information).

- (1) *Miidabaawa-nim* *i-n-nya-n* *nid.*
Boy-ERG 3-TR-pick.up-CONT net
“The boy picked up the net.”

Bardi has subject-verb agreement for both person and number. These are prefixes which inflect according to a nominative/accusative pattern. That is, although the case marking is

¹ Source: Australian Bureau of Meteorology Records for Cygnet Bay (which is in Bardi country, about 6km from One Arm Point).

² Examples are presented here in the Bardi practical orthography. Vowels have their IPA values, except that *oo* is used for both long and short /u/. The digraphs *rn*, *rd* and *rl* are retroflex; *ng* is the velar nasal; *k* is written after *n* to distinguish the sequence of apical nasal + velar stop from the velar nasal. *Ny*, *ly* and *j* are palatals. *Rr* is a trill, while *r* is a retroflex glide.

morphologically ergative, the agreement is not. There are object and oblique clitics which follow tense/aspect suffixes on the verb. This is illustrated in (2).

- (2) *Ngayoo-nim nga-n-arli-gal=irr aarli.*
1sg-ERG 1-TR-eat-REC.PST=3PL fish
"I ate the fish."

There are few exceptions to the regular agreement pattern illustrated in (2); the exceptions are relevant to the description of temperature, particularly personal feeling temperature. Although the temperature word receives the ergative marking in these contexts, verbal prefixal agreement is with the animate experiencer. This construction is also used for perception more generally, e.g. in being burnt or in feeling sick, or in cases where a very low animacy causer acts on a high-animacy experiencer.³ This is illustrated in (3). Note that Bardi has a distinct instrumental case, which cannot be used here in place of the ergative.

- (3) *Inkoorr-nim alig nga-n-d-an.*
cold-ERG feel.bad 1SG-TR-do/say-CONT.
"I feel cold."

Bardi has extensive complex predication (Bowern 2008c); this takes the form of an uninflecting coverb and an inflecting light verb. Example (3) above contains an example, where the coverb *alig* combines with the light verb *-joo- ~ -di-*. Complex predicates play a major role in verb expressions in the language in both token and type frequency, and they are important here because of their role in verbalizing adjectives, including those expressing temperature.

1.5 Methodology

The data used for this study were from elicitation of a temperature questionnaire (and further exploration) with two speakers (by Laura Kling), supplemented by corpus searches from earlier Bardi fieldnotes (recorded by Claire Bowern). The elicitation was a combination of the questions circulated in the position paper for this volume, further elicitation of examples of words used to translate 'hot' and 'cold', and direct translation of sentences which were constructed to test differences in meaning and possibility of application of temperature words to various contexts.

In addition to materials gathered in 2010, data for this paper also came from the pre-existing Bardi corpus. The corpus was compiled from several sources, including more than 100 hours of Bowern's recordings from 1999 to 2003. Recordings by Gedda Aklif from the 1990s were also included, as were texts from Toby Metcalfe's work in the 1970s (resulting in Metcalfe 1975) and texts dictated to Gerhardt Laves in the late 1920s (see Bowern 2003a). Work referenced

³ See Hosokawa (1996) for a discussion of this construction in the related language Yawuru, and McGregor (1996) for information in Nyulnyul (another Nyulnyulan language).

included stories and descriptions of items, as well as grammatical elicitation. The speakers who contributed to the corpus include Bessie Ejai and Jessie Sampi, as well as N. Isaac, T. Ejai, L. Stumpagee, D. Wiggan, J. Ejai, and K. Wiggan.

2 Lexicalization of temperature concepts

There is no name for the domain of temperature in Bardi. There are three main words for describing temperature in the language; these are *moola* 'hot' and *inkoorr* or *binyj(a)* 'cold'. The presence or absence of the final vowel is dialectal. Temperatures which are neither (too) hot nor (too) cold are described as *gorna* 'good'. Temperature words can be modified by *giija* and *ngarri* (both meaning 'very'; see below), which provides evidence for their status as a member of the word class of adjectives. There are no other separately lexicalized temperature grades in the language. All these words are monomorphemic.

In addition to the adjectives *moola*, *inkoorr* and *binyj(a)*, there are also a few words for items which have special relevance to temperature. These include *rirrga* "hot coals," *ngalarn* "hot sand," and *laalboo* "hot rocks; earth oven". That is, these items have an inherently hot temperature, though they do not refer directly to temperature scales.

The seasons of the year (of which there are six in Bardi) are defined in part with respect to ambient temperature. *Barrgana*, for example, is the cold season, while *lalin* and *ngaladany* are hot times of the year. However, *lalin* is also defined with respect to the time of the year that sea turtles breed, and *ngaladany* is also the time of the year when there is no bush food. Other relevant factors are the prevailing wind directions, the height of the tides, and the availability of dugong and stingray. Thus ambient temperature is not the only criterion by which seasons are defined.

The same words are used for tactile, ambient, and personal-feeling temperature. The following sentences provide examples of each of the words, which are discussed in more detail in the following sections.⁴

- (4) a. ***Inkoorr*** *oola*.
 cold water
 "The water is cold."
- b. ***Moola-gija*** *gaarra niimana* *aarli* *i-ng-irr-jimbi-n-an*.
 hot-very sea many fish 3-PST-PL-die-CONT-REM.PST
 "The sea was so hot that many fish were dying."

⁴ In the elicitation of answers to the questionnaire, many of the temperature terms appear in initial (focus) position for discourse reasons. See further (For discussion of word order, see further Bowern 2008d).

- c. **Binyj** *oo-n-k-i-ya* *jan* *aarli*.
 Cold 3-TR-FUT-do/say-FUT 1SG.POSS fish
 "My fish will cool down."

2.1 Hot: *moola*

The word that is most often translated as 'warm' or 'hot' is *moola*. It also, however, has a number of related meanings in addition to temperature. It can also refer to cooked food (but not burnt food), or to ripe fruit. This lexicalization pattern is attested from some other Australian languages, where the same word means both 'cooked' and 'ripe'. The examples in (5) below illustrate *moola* in referring to ambient temperature, personal feeling, touch-temperature, and meanings in addition to temperature.

- (5) a. **Moola=gija** *booroo jarri barnka*.
 Hot=very place this outside.
 It's too warm outside.

- b. **Moola=gij** *jarri mayi*.
 Hot=very this food
 This food's too hot.

- (6) *Nganyji moola i-n-joo mayi?*
 INTERROG hot 3-tr-say/do food
 Is this food ripe?

- (7) *Gardin niimana Iwany i-rr-i-n. Oola=b*
 cave many Sunday.Island 3-PL-sit-CONT water=REL

i-n-ar-na-n=jard lool a-ng-arr-gardi-na-n ginyingg
 3-TR-poke-CONT-REM.PST=1PL.IO enter 1-PST-PL-enter-CONT-REM.PST 3SG

gardin-on a-ng-oorr-oo-loorroo-na-n=jard noorroo moola-ngan ma-yoo-n.
 cave-LOC 1-PST-PL-TR-light-CONT-REM.PST=1PL.IO fire warm-ALL GER-do-GER.
 "There are plenty of caves on Sunday Island. When it rained, we went inside a cave and lit a fire to get warm." (Bardi dictionary)

- (8) **Moola=min** *i-n-d-an ngalarn, ginyinggon nga-n-marra-n=irr niyalboon.*
 hot=WHEN 3-TR-do-CONT hot.sand then 1-TR-cook-CONT=3PL.DO bush.onions.
 "I'll cook the bush onions when the sand gets hot." (Bardi Dictionary)

2.2 Cold: *binyja* and *inkoorr*

Binyja and *inkoorr* both mean cold; however, there are differences in meaning, both sociolinguistic and aspectual. The terms are not ranked with respect to one another (that is, one is not 'colder' than the other). When asked about the meanings of the words directly, speakers described *binyja* as “old-fashioned sounding,” and “people don’t use that word nowadays.” However, after more discussion, it was clarified that *binyja* is used for things that were once warm(er) and have cooled down; *inkoorr*, on the other hand, can be used for both those situations and also situations where the item in question is cold in nature, or has always been cold. That is, *binyja* is used for items which have undergone a change in state, whereas *inkoorr* is used for items that are inherently cold, or where the process of cooling down is not relevant.⁵ In addition, *binyja* is often used for 'fresh' water, that is, water that is cold as it comes out of the spring. It is difficult to see here how there is an implied process of cooling down in this case. Examples are given below:

- (9) *Moola i-n-joo-gal nga-yard, joobool=jamb nga-n-joo-gal binyj=amb*
 hot 3-TR-do-REC.PST 1SG-body swim=THUS 1-TR-do-REC.PST cold-THUS

i-n-joo-n nga-yard
 3-TR-do-CONT 1SG.body.

"I was feeling hot, then I swam/bathed, now I feel cool." (LK-elicit)

- (10) *Gala binyj i-n-da-n ni-yarda.*
 well cold 3-TR-do-CONT 3SG-body.
 "He/she's getting cold."

- (11) *Binyj oo-n-k-i-ya jan aarli.*
 cold 3-TR-FUT-do-FUT 1SG.POSS fish
 "My fish will get cold."

- (12) *Inkoorr-nim/*binyja-nim alig nga-n-da-n.*
 cold-ERG/cold-ERG pain 1-TR-do-CONT
 "I'm feeling cold."

2.3 Neutral temperatures

Neutral temperatures can also be described using the adjective *gorna* 'good'; however, this is somewhat rare, probably because discussion of temperature itself is not very common unless the

⁵ Although it describes a change in state, *binyja* is itself an adjectival modifier. There are several other adjectives which are sensitive to inherent vs derived properties (e.g. 'dry' vs 'dried out' (*dalboon* vs *laalga*)).

temperature is a salient feature of the topic under discussion (in which case it's more likely to be 'hot' or 'cold').

- (13) *Gorna(-gij) nga-n-kal; Arra moola arra inkoorr.*
good-VERY 1-sit-REC.PST NEG hot NEG cold.
"It's good, it's not hot, not cold."

Thus in summary, we could define Bardi temperature as a three-way scale with *moola* at the hot end, *inkoorr* and *binyja* at the other, and *gorna* in the middle. The unmarked temperature terms (leaving out *gorna*, since its primary meaning does not refer to temperature) are all basic and occur in equipollent opposition.⁶ However, Bardi temperature terms are not solely concerned with temperature scales, since there are other meanings for the terms as well.

2.4 Domains of temperature description

There are some asymmetries in the description of temperature, and not all domains behave in the same way. This section describes some of these asymmetries. The word *inkoorr* is often used for personal feeling temperature, but *binyja* is not usually used for feelings. This is borne out both by corpus searches and by commentary by speakers, that sentences which ascribe *binyja* to a personal temperature sound incorrect. Note, however, that we do have examples in the corpus where *binyja* is used for the process involved in getting cold (see (10) above).

With regard to 'hot' and the use of *moola* with personal feeling temperatures, while such sentences are judged grammatical, Bowern observes that when Bardi people are talking about feeling hot, they tend not to use this word; rather they talk about the consequences of feeling overly hot, such as feeling *goojaj* 'weak' or 'tired, tired out'.

- (14) *Goojaj nga-n-j-ij, arra roowil nga-l-inya.*
weak 1-TR-do-MID.PERF NEG WALK 1SG-IRR-catch⁷
"I feel weak, I can't walk." (Bardi dictionary)

Touch-temperature is described with any of the three temperature terms, as detailed above. Ambient temperature can also be described using all three terms; examples for *inkoorr* and *binyja* are given in (15) below:

⁶ Note that Plank (2003) does not include systems like Bardi's where there are more than two basic terms but they differ not in scale but in aspect.

⁷ This verb is in the irrealis because all negated verbs take obligatory irrealis morphology in this language. See further McGregor and Wagner (2006) for details of this construction in Nyulnyulan languages.

- b. *Moola=gija booroo jarri barnka.*
 hot=VERY place this outside
 "It's really hot outside; it's too warm outside."

There does not seem to be any distinction in predicative adjectives between types of temperature marking. For example, ambient temperature forms can be either used as a bare predicative adjective or as a preverb in a complex predicate construction (for which see below).

As implied by the translation in (17b), the intensifier =*gija* implies not only an intensive reading, but also one that is excessive in some way. *Inkoorr* 'cold' can also be used with *ngarri jina* (literally "much (is) its"), which is a way of quantifying nouns, as the example from the Laves texts in (18) shows:⁸

- (18) *Ngarri=jina inkoorr alamardan⁹ garda oo-l-ilg-a boordiji joorooro.*
 much=3SG.POSS cold southwards? still 3-IRR-blow-FUT big wind
 It was really cold [in the south?] and there was a strong wind blowing. (L158.016)

The terms can also be used as attributive adjectives, though impressionistically this use is rarer than the predicative one, or where the adjective is used in a complex predicate construction (described below). Example (19) shows *inkoorr* modifying *booroo* 'place'. Note that case is marked once per phrase, so the locative case on *inkoorr* has scope over both the adjective and the noun.

- (19) *Ginyinggon niyalboon nga-n-joola-n=irr barnbi*
 then bush.onions 1SG-TR-collect-CONT=3PL.DO there=REL

nga-n-ma-n=irr inkoorr-goon booroo.
 1SG-TR-put-CONT=3PL.DO cold-LOC place.
 "Then I collect all the bush onions and put them in a cold place." (Dictionary)

Further examples of *moola* and *inkoorr* as an attributive adjective are given below.

- (20) *Barda yardab i-ng-irr-i-n garrin-ngan moola-ngan gaara.*
 off crawl 3-PST-PL-do-CONT hill-ALL hot-ALL sand
 "They crawled off to the hill, to the hot sand." (AMB1.030)

⁸ It is sometimes difficult to tell the difference between nouns and adjectives in Bardi, though some tests do exist (see Bower 2004b:Ch 2 for details).

⁹ I am not sure what this word is, and it is not recognized by speakers; it could be *alang-madan* 'south-PERL'.

- (21) *Inkoorr ice a-na-ma=jan banigin jon-on.*
 cold ice 2SG.IMP-TR-put=1SG.IO cup 1SG.LOC
 "Put the cold ice in my cup for me."

Example (21) also shows that even inherent temperatures can be highlighted. The context of the statement was that the speaker wished to cool down the water in her glass. There is no such thing as 'warm ice,' but in this case the speaker was highlighting the temperature of the ice as a way of changing the ambient temperature of the water.

I have no examples of attributive adjectives with personal feeling temperature. Personal feeling temperature seems not to be translated with attributive adjectives, though this has yet been fully investigated. For example, attributive English adjectives were consistently translated with affected middle constructions, as given in (22) below:

- (22) *Miidabaawa inkoorr-nim alig i-n-j-ij noorroo-goon=jamb i-ni-n*
 boy cold-ERG feel.bad 3-TR-do-PERF fire-LOC=REL 3-sit-CONT

moola-ngan ma-yoo-n.
 warm-ALL GER-do-CONT.
 "The cold boy sat by the fire to get warm."

3.2 Temperature terms as nouns

Temperature terms can also appear as nominals. In (23), for example, the ergative-marked temperature terms are not subjects, but causers of the action of the verb (lying down inside and dying in (23a) and (23b) respectively). Adjectives in Bardi can frequently appear substantivized; this is an example.

- (23) a. *Jiiba jondol nga-n-joo boogoon inkoorr-nim.*
 here lie.curled.up 1-TR-do inside cold-ERG
 "I am lying down inside all curled up because it's cold."
- b. *Marlbarlboonjoon booroo aarli=gid i-ng-irr-jimbi-na-n moola-nim.*
 "drunk".fish.time time fish=THEN 3-PST-PL-die-CONT-REM.PST heat-ERG
 "At 'drunken fish time'¹⁰ the fish die from the heat."

3.3 Complex predication

Temperature terms can also appear in complex predicate constructions, as do other adjectives, where the adjective is a preverb and the light verb is *-ni-* 'sit, be', *-joo-* 'do' (here the complex

¹⁰ This refers to dead neap tide time at hot times of the year.

predicate means 'become'), or *-ma-* 'put', where the complex predicate is causative. Example (22), for example, the subordinate phrase *moolangan mayoon* is a complex predicate meaning 'become warm/hot'. A further example can be found in (24).

(24) *Moola=b i-rr-i-n goolb, a-rr-a-ma-n=kid=irr boogoon ginyinggi*
 hot=REL 3-PL-sit-CONT rock 1-PL-TR-put-CONT=THEN=3PLDO inside 3SG

noorrm=on.

blood.soup-LOC.

"When the rocks are hot, we put them in the *noorrm*."

Temperature terms participate in complex predicate constructions that are rare for adjectives. Complex predication in Bardi involves approximately 20 light verbs (Bower 2004b:Ch 9; Bower 2008c), but the possibilities of combination of preverb and light verb are complex. Temperature terms can combine with the light verb *-inya-* 'catch' and *-jiidi-* 'go', for example; this is one way of forming causative and anti-causative predicates.

4 Semantic Extensions and further lexical comments

Apart from the polysemy of temperature terms and their secondary connotations, the semantic extension of the Bardi temperature domain is limited, especially in the metaphorical domain. That is, Bardi temperature terms are not used in the sense of a 'hot topic', 'cold scent', or 'warm reception'. There is a single possible exception in the phrase *moolayi aamba* 'lively man, a man who is a really good dancer', which may be related etymologically (though not transparently synchronically) to *moola* 'hot'.

This semantic restriction is not because there are more general limits on metaphor; rather, it seems that temperature is simply not a very salient feature of items. There are examples of semantic extension and metaphorical uses of non-temperature words in Bardi, particularly in the realm of song poetry, so the lack of metaphor in the temperature domain is not directly related to more general poetic devices. Perhaps that is related to the general lack of manipulation of temperature, except in contexts where there is also the manipulation of other processes (such as in cooking, where heating up food is only one aspect of the activity; the cooking of it is presumably more important).

5 Etymology of temperature terms

There are about eight other languages in the Nyulnyulan family besides Bardi, and they are closely related. This section examines the etymology of temperature terms within in the family. Table 1 gives the temperature terms in the other languages of the family. Note that gaps in the cells for languages such as Jawi and Nimanburru do not mean that the language does not have a particular temperature term; rather, it means that no term was recorded. The languages are very

unevenly documented, ranging from copious sources in Bardi, Yawuru (Hosokawa 1991) and Nyikina (Stokes 1982) to a single wordlist of a few hundred items for Ngumbarl (Bowern 2010).

Language	Hot	Cold	Other terms, notes
Bardi	<i>moola</i>	<i>inkoorr, binyja</i>	
Jawi		<i>inkoorr, binyja</i>	
Nyulnyul	<i>barrbarr</i>	<i>binyj</i> ¹¹	<i>maal</i> (hot weather)
Nimanburru		<i>binyj</i>	
Jabirr-Jabirr		<i>jil</i>	
Ngumbarl		<i>binyja</i>	
Yawuru	<i>jinyirri, jangala, (jilajila)</i>	<i>karraly, jarljar</i> (weather), <i>binyja</i>	<i>karraly</i> is also in Karajarri; <i>jilajila</i> is a weather term.
Nyikina	<i>barrbarr, nundurr, judukurr</i>	<i>kamininy, kidily</i>	<i>kamininy</i> is also in Karajarri in meaning 'cold'; probably a season name in Nyikina
Warrwa	<i>jangkurru</i>		(hot weather)

Table 1: Temperature terms in Nyulnyulan languages

As can be seen from the data in Table 1, there are many temperature terms represented in the family. The only reconstructible term is **binyja* 'cold', which is found in all Western Nyulnyulan languages but Jabirr-Jabirr, and Yawuru in the Eastern branch of the family. It is not known whether *binyj(a)* in the languages other than Bardi has the same aspectual restrictions that the term has in Bardi. Jabirr-Jabirr's term, *jil* 'cold', could be cognate with Yawuru's *jilajila*, except that the words are opposite in meaning.

The Bardi word for 'hot', *moola*, is possibly a loan in the language; as noted above, it has associations of 'ripeness' and 'cookedness' in the language, and words which are likely to be related to *moola* appear in various Kimberley languages in this meaning. For example, the Bunuba word *mulha* means 'cooked meat'. Nyulnyul's word for hot, *barrbarr*, means 'shining' or 'reflective' in Bardi, and 'shining' of the sun in Yawuru; it is reconstructible in this meaning to Proto-Nyulnyulan. Thus *barrbarr* in Nyulnyul and Nyikina is likely an example of semantic shift, from 'blazing sun' to 'hot' (perhaps originally particularly associated with ambient temperature).

The other Nyulnyul temperature word, *maal*, means 'hot weather'. It has been difficult to determine from the dictionaries and word lists for the other Nyulnyulan languages which of the terms are season names referring to hot times of the year, and which are temperature terms associated with ambient temperature. In Bardi these terms do not overlap, and some terms, such

¹¹ Both the Nyulnyul and Nimanburru words for cold are recorded from sources which do not adequately distinguish place of articulation in nasal clusters. I assume that the forms are *binyj* (not *binj*) on the basis of Bardi.

as *jangkurru* in Warrwa, are ambient temperature only (according to the sources). Others are less clear; Nyikina *kamininy* is probably a season name, though it is also found in a neighboring Pama-Nyungan language (Karajarri) in the meaning 'cold'. Yawuru has several terms; *jilajila* 'hot' and *jarljar* 'cold' appear to refer specifically to weather; the extent of reference to the other terms is not known.

Thus apart from **binyj* 'cold' and **barrbarr* 'shining' (> 'hot' in Nyulnyul and Nyikina), no temperature terms are reconstructible. The Nyulnyulan family thus differs provides a counterexample to Plank's (2003) statement that basic temperature terms are universally diachronically stable. The languages show many different unique terms without etymology. Some are borrowed between neighboring languages, although the direction of borrowing cannot be stated with certainty.¹² The other Nyulnyulan languages appear to show domain specification in temperature – that is, a distinct weather term. Other languages in the family also appear to have more temperature terms than Bardi does.

6 Conclusions

Bardi has just three terms related to temperature, and two of them have secondary meanings related to 'freshness' and 'ripeness'. The terms are primarily adjectives, and may refer to all domains of temperature. There are also some derived nominal uses, and they participate in complex predicate constructions. Temperature terms are not used metaphorically in the language. Temperature terms in Nyulnyulan languages are diachronically unstable and unreconstructible. There is some evidence of semantic change (from 'shining, blazing' to 'hot'). For the most part, Bardi's temperature terms conform to Plank's (2003) proposed universals with the sphere of temperature, though differences in etymological stability and semantic range show us that further investigation in Australia and among other languages with small temperature systems would likely be very fruitful.

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¹² Since Australian languages have been claimed to show heavy borrowing, even in basic vocabulary, one might wish to discount the borrowability of temperature terms specifically. However, as I have shown (Bowern 2011), Australian languages mostly do not borrow in basic vocabulary much more frequently than languages elsewhere in the world.

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