

# Quantification in Warlpiri

Margit Bowler, UCLA

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**Abstract** In this chapter, I provide a descriptive overview of quantification in Warlpiri, a Pama-Nyungan language spoken by approximately 3,000 people in central Australia. Warlpiri's quantificational system is of particular interest due to the fact that a number of Warlpiri A-quantifiers are interpreted as taking nominal scope; that is, as D-quantifiers. Conversely, a number of Warlpiri D-quantifiers are interpreted as modifying the VP or event; that is, as A-quantifiers. I show that Warlpiri has a relatively large inventory of D-quantifiers, many of which are morphologically complex. This challenges standard assumptions of quantifiers as a typically monomorphemic lexical category, and sheds light on the relevant compositional properties of Warlpiri quantifiers.

## 1 Introduction and overview of Warlpiri

This chapter addresses quantification in Warlpiri, a Pama-Nyungan language spoken by approximately 3,000 people in central Australia.<sup>1</sup> Warlpiri displays several interesting linguistic properties, including a highly flexible word order, frequent use of discontinuous constituents, and pro-drop of pronominal arguments.

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<sup>1</sup>The data in this paper primarily comes from my own fieldwork on the Ngaliya (southern/central) dialect of Warlpiri in Yuendumu, NT, Australia (2012–2013). The data in this paper generally reflects the way Warlpiri is currently being spoken in Yuendumu, and may therefore differ from earlier accounts of the language as language change has occurred and contact with English speakers has increased. A secondary source of data for this paper is a 2000 draft of the Warlpiri Dictionary Project, compiled from data collected by Ken Hale, Robert Hoogenraad, Mary Laughren, David Nash, Jane Simpson, Paddy Patrick Jangala, and many others.

Warlpiri is a split-ergative language; its nominal case marking system is morphologically ergative, as shown in (1)–(3). As in many other languages, absolutive case marking in Warlpiri is phonologically null. I omit it from my examples for ease of presentation:

- (1) Jarntu ka            parnkami.  
 dog    AUX.PRES run.NPST  
 ‘The dog runs.’<sup>2</sup>
- (2) Wati-ngki jarntu pakarnu.  
 man-ERG dog    hit.PST  
 ‘The man hit the dog.’
- (3) Jarntu-ngku kurdu pungu.  
 dog-ERG    child bite.PST  
 ‘The dog bit the child.’

Warlpiri’s agreement system is generally accusative. Agreement markers in Warlpiri occur as enclitics on the second-position auxiliary:

- (4) Jarntu-patu ka=lu                            parnkami.  
 dog-several AUX.PRES=3PL.SUBJ run.NPST  
 ‘The dogs run.’
- (5) Jarntu-patu-rlu ka=lu=jana                            kurdu-kurdu  
 dog-several-ERG AUX.PRES=3PL.SUBJ=3PL.NSUBJ child-child  
 pinyi.  
 bite.PST  
 ‘The dogs bite the children.’

As there are only two slots for agreement on the Warlpiri auxiliary, the non-subject agreement enclitic can be construed with either an accusative or dative argument, if one is present. See Hale (1973) and Simpson (1991) for a more thorough treatment of this issue. As in many other languages, third person singular

<sup>2</sup>I use a Warlpiri orthography initially developed by missionaries and used by many other linguists working on Warlpiri. Abbreviations used in this paper include 1 ‘first person,’ 2 ‘second person,’ 3 ‘third person,’ ALL ‘allative,’ AUX ‘auxiliary,’ CARD ‘cardinality,’ COMP ‘complementizer,’ COP ‘copula,’ DAT ‘dative,’ DEM ‘demonstrative,’ DIM ‘diminutive,’ DIREC ‘directional,’ DU ‘dual,’ ELAT ‘elative,’ EMPH ‘emphatic,’ ERG ‘ergative,’ EXCL ‘exclusive,’ INCL ‘inclusive,’ IRR ‘irrealis,’ KIN.SUFFIX ‘kinship suffix,’ LOC ‘locative,’ NEG ‘negation,’ NOMIN ‘nominalizer,’ NPST ‘nonpast,’ NSUBJ ‘nonsubject,’ PART ‘particle,’ PL ‘plural,’ PRES ‘present,’ Q ‘interrogative particle,’ PST ‘past,’ SG ‘singular,’ SPEC ‘specific,’ SUBJ ‘subject,’ and TOP ‘topic.’



close to the verb root. On the other hand, Warlpiri D-quantifiers (and other nominals) host case marking, and can occur at any place within the clause. I also classify the set of bound quantificational nominal suffixes as D-quantifiers.

Warlpiri speakers today distinguish between *Warlpiri pirrjirdi* ‘strong Warlpiri,’ or the language as it is spoken by older speakers, and *Warlpiri rampaku* ‘light Warlpiri,’ or the language used by younger speakers.<sup>4</sup> One of the major linguistic generational differences involves the number of vocabulary words used by older Warlpiri speakers that are no longer used by younger speakers. Many of these words encode the names of plants, animals, and terminology regarding traditional ceremonies. However, there are also a number of quantificational terms which are used today primarily by older speakers and are not used (and sometimes even not understood) by younger speakers (see e.g., section 3.2.1 on *palju* ‘each’). This complicates a description of Warlpiri quantifiers, since many older quantificational terms are falling out of use with speakers today as they transition to a more frequent use of English. Bavin & Shopen (1985) describe how increased contact with English speakers has affected how Warlpiri is spoken in Yuendumu.

## 2 Generalized existential (intersective) quantifiers

Warlpiri has a number of generalized existential quantifiers. These intersective quantifiers quantify over the set denoted by the intersection of the sets denoted by the DP and the VP.

### 2.1 D-quantifiers

Warlpiri has a number of generalized existential D-quantifiers. These D-quantifiers represent the richest portion of Warlpiri’s quantificational inventory. Many of these D-quantifiers are morphosyntactically complex, which I address in section 5.1. I present the morphologically simple D-quantifiers below in order roughly from ‘no’ to ‘many.’ I present the existential value judgment D-quantifiers in subsection 2.1.2.

<sup>4</sup>Note that the use of the term *Warlpiri rampaku* ‘light Warlpiri’ in Yuendumu does not refer to the mixed language Light Warlpiri (called *Warlpiri rampaku* or *Lajamanu style*), which is spoken approximately 600 kilometers north of Yuendumu in Lajamanu. For an overview of Light Warlpiri, see O’Shannessy (2005).

Noun level negation (ie., *no dogs*) can be expressed using the negative nominal suffix *-wangu*:<sup>5</sup>

- (8) Yapa-wangu=lu           yanu-rnu.  
 person-NEG=3PL.SUBJ go.PST-DIREC  
 ‘No people came.’
- (9) Kurdu-wangu-rlu=lu       nyangu pangkarlangu.  
 child-NEG-ERG=3PL.SUBJ see.PST monster  
 ‘No children saw the monster.’
- (10) Ngaju=rna       nyangu wardapi-wangu.  
 1SG=1SG.SUBJ see.PST goanna-NEG  
 ‘I saw no goannas.’

Indicating a small amount (typically without any associated value judgment) is accomplished through the nominal suffixes *-patu* and *-wati*. These suffixes are very commonly used, since Warlpiri has no other nominal plural morphology.<sup>6</sup> In addition to expressing a small amount, the suffix *-patu* can also indicate set closure, a usage I address in section 3.1. The suffix *-wati* has the additional connotation of difference between the items. That is, (13) below could also be interpreted as meaning that cars of all different kinds went past:<sup>7</sup>

<sup>5</sup>The scope of *-wangu* ‘NEG’ is constrained to the nominal that it combines with. Warlpiri speakers express sentential negation with the morphemes *kula*, *nati* (< English *not*), and *nuu* (< English *no*):

- (1) Kula=lu       yapa   yanu-rnu.  
 NEG=3PL.SUBJ person go.PST-DIREC  
 ‘It’s not the case that the people came.’
- (2) Nu=lu=jarrangku           watiya-rla nyangu.  
 NEG=3PL.SUBJ=1DU.NSUBJ tree-LOC see.PST  
 ‘They didn’t see us two in the tree.’

These morphemes precede the second-position auxiliary and agreement enclitic(s). *Nati* and *nuu* differ from *kula* in several ways, including their ability to occur in negative imperatives. See Laughren (2002) for a discussion and analysis of Warlpiri sentential negation.

<sup>6</sup>A limited number of nouns can be reduplicated to express plurality, e.g., *kurdu-kurdu* (child-child) ‘children.’

<sup>7</sup>A 2000 draft of the Warlpiri Dictionary Project notes that *-wati* was a relatively new addition to the Warlpiri lexicon at the time and was not recorded prior to the 1970s; *-wati* now is used nearly as frequently as *-patu*.

- (11) Wati-patu-rlu ka=rlu=jana luwarni  
 man-several-ERG AUX.PRES=3PL.SUBJ=3PL.NSUBJ shoot.NPST  
 marlu.  
 kangaroo  
 ‘Several men shoot kangaroos.’
- (12) Karnta-ngku=jana yungu yungkurnu maliki-patu-ku.  
 woman-ERG=3PL.NSUBJ give.PST bone dog-several-DAT  
 ‘A woman gave bones to several dogs.’
- (13) Mutukayi-wati=li parnkaja.  
 car-several=3PL.SUBJ run.PST  
 ‘Several cars went (past).’

Another way to express a small amount (without value judgment) is the nominal *marnkurrpa* ‘several’/‘three.’ Before the Warlpiri counting system was developed, *marnkurrpa* simply meant ‘several.’ However, the quantifier is now also used to mean the numeral ‘three.’ (14) below is therefore ambiguous between ‘A few people went’ and ‘Three people went’:<sup>8</sup>

- (14) Yapa=lu yanu marnkurrpa.  
 person=3PL.SUBJ go.PST few  
 ‘A few people went.’

Warlpiri speakers use the nominal *panu* to express ‘many.’ This quantifier has a wide range of uses; speakers can combine *panu* with various augmentative morphology to express universal quantificational force (section 3.1), or value judgments like ‘too much’ (section 5.1.4). However, in the absence of augmentative morphology, *panu* can be used simply to express a large amount, without any associated value judgment:

- (15) Panu-ngku=lu karlaja yunkaranyi-ki.  
 many-ERG=3PL.SUBJ dig.PST honey.ant-DAT  
 ‘Many (people) dug for honey ants.’
- (16) Wati panu ka=lu ngunami warnpa.  
 man many AUX.PRES=3PL.SUBJ lay.NPST deep.sleep  
 ‘Many men sleep.’

<sup>8</sup>Disambiguating this sentence to mean ‘Three people went hunting’ can be accomplished by including the cardinality suffix *-pala* on *marnkurrpa* ‘three.’ I will describe this later in section 2.1.1.

- (17) Panu=lu            yanu-rnu        kurdu-ku-palangu  
 many=3PL.SUBJ go.PST-DIREC child-DAT-KIN.SUFFIX  
 ngati-nyanu-wati.  
 mother-KIN.SUFFIX-several  
 ‘Many children’s mothers came here.’

Finally, the quantifier *tarnnga* ‘(do) a lot’/‘always’ patterns morphologically like a D-quantifier in its ability to host case marking and other nominal morphology, as in (18).<sup>9</sup> However, *tarnnga* modifies the event denoted by the verb, making its semantic contribution like that of an A-quantifier.

Like *panu*, *tarnnga* can also be interpreted with either existential or universal quantificational force. This variation in force is shown in (19) and (20), respectively:

- (18) Tarnnga-ngku=lpa                      ngarnu.  
 a.lot/always-ERG=AUX.PROG consume.PST  
 ‘He kept on eating.’
- (19) Parnkami ka=npa                      tarnnga,    nyuntu=ju!  
 run.NPST AUX.PRES=2SG.SUBJ a.lot/always 2SG=TOP  
 ‘You run a lot!’
- (20) Tarnnga    ka=rna=rla                      wangka Warlpiri.  
 a.lot/always AUX.PRES=1PL.SUBJ=3DAT speak    Warlpiri  
 ‘I always speak Warlpiri to him/her.’

### 2.1.1 Cardinal D-quantifiers

Historically, Warlpiri’s counting system consisted of ‘none,’ ‘one,’ ‘two,’ ‘several,’ and ‘many.’ Warlpiri today has a fully productive counting system, likely due to long-term exposure to the English counting system in financial contexts and in classroom instruction. Many of the Warlpiri terms for numerals are based on objects which the written numerals resemble. For example, *wirlki* ‘seven’ is also the term used for a hook-shaped boomerang. (See Hale (1975) for an early discussion of the Warlpiri counting system.)

*Jirrama* ‘two’ is the only Warlpiri numeral with an associated nominal suffix *-jarra* ‘two’ (e.g., *jarntu-jarra* ‘two dogs’). The free numeral and nominal suffix can co-occur with one other, although it is not obligatory that they do so:

<sup>9</sup>Contemporary Ngaliya Warlpiri varies with respect to case marking on *tarnnga* ‘(do) a lot’/‘always.’ Note the contrast in ergative case marking on *tarnnga* between (18) and (38).





### 2.1.2 Value judgment D-quantifiers

Warlpiri speakers today primarily use monomorphemic value judgment quantifiers to express judgments lower than an expected amount, rather than judgments of abundance. Judgments of abundance are typically morphosyntactically complex; I will outline the use of these morphosyntactically complex expressions later in section 5.1.4.

The monomorphemic D-quantifiers *wirrkardu*, *yukanti*, and *ngarnturnpa* all refer to small proportions in comparison to an expected or ideal larger amount:

- (26) Ngaju=rna=jana                      panu=juku      karlaja. Napaljarri-rli  
 1SG=1SG.SUBJ=3PL.NSUBJ many=exactly dig.PST Napaljarri-ERG  
 karlaja wirrkardu.  
 dig.PST few  
 ‘I dug many (honey ants). Napaljarri dug few.’
- (27) Nangala-rlu=ju      karlaja yukanti-puka, panu-wangu.  
 Nangala-ERG=TOP dig.PST few-only      many-NEG  
 ‘Nangala dug only a few (honey ants), not many.’
- (28) Lawa, kula panu-nyayirni, ngarnturnpa=rna karlaja.  
 no      NEG many-AUG      few=1SG.SUBJ dig.PST  
 ‘No, not many, I dug (only) a few.’

## 2.2 Interrogative D-quantifiers

Warlpiri Wh-words undergo leftward Wh-movement to the beginning of the clause. Wh-questions are typically accompanied by rising clause-final question intonation. (See Legate (2011) for a more thorough discussion of Warlpiri Wh-questions.)

The Warlpiri interrogative D-quantifiers, like other Warlpiri Wh-words, all begin with either the palatal nasal *ny* or velar nasal *ng*. Warlpiri Wh-words overall display a wide range of interpretations; for instance, the Wh-word *nyarrpara* has a basic interpretation of ‘where,’ but can also be used to ask (at least) ‘how’ and ‘which.’ This variation also occurs with respect to the strategies used to express ‘which,’ discussed in section 2.2.2.

### 2.2.1 Cardinal interrogative D-quantifiers

Warlpiri possesses a unique Wh-word, *nyajangu*, used to express ‘how many.’ This Wh-word can occur in all syntactic positions. Like other Warlpiri Wh-words,



- (35) Nyajangu-rlu=lu kurdu-kurdu-rlu riirti-manu puuku?  
 how.many-ERG=3PL.SUBJ child-child-ERG read.PST book  
 a. ‘Which children read a book?’  
 b. ‘Which children read books?’
- (36) Ngana-ngku kurdu-ngku riirti-manu puuku?  
 who-ERG child-ERG read.PST book  
 a. ‘Which child read a book?’  
 b. ‘Which child read books?’

Warlpiri speakers generally report that when inquiring about a member of this set, it is easier to specify an individual within that set and then ask a polar question about the individual. For instance, given the Wh-question prompt ‘Which dog ran?’, my Warlpiri consultants prefer to ask instead, ‘Did the big dog run?’, ‘Did the black dog run?’, and so on.

### 2.3 A-quantifiers

The A-quantifier *warrarda* permits both an existential ‘often’ and a universal ‘always’ interpretation. This is akin to the use of ‘always’ in English, which can be interpreted as having either existential or universal quantificational force. This quantifier also has a value judgment reading ‘too often,’ shown in (39):

- (37) Warrarda ka=rna yani Yuelamu-kurra=ju.  
 always/often AUX.PRES=1SG.SUBJ go.NPST Yuelamu-ALL=TOP  
 ‘I go to Yuelamu often/all the time.’
- (38) Ngaju=rna warrarda ngarni kapi, kula  
 1SG=1SG.SUBJ always/often consume.NPST coffee NEG  
 ka=rna tarnnga ngarni warrarda.  
 AUX.PRES=1SG.SUBJ a.lot/always consume.NPST always/often  
 ‘I usually drink coffee, but not always.’
- (39) Jampijinpa=ju ka warrarda yani tawunu-kurra.  
 Jampijinpa=TOP AUX.PRES always/often go.NPST town-ALL  
 ‘Jampijinpa goes to town too often.’

Like other A-quantifiers, *warrarda* does not host case marking, suggesting that it is not an argument of the verb. However, its distribution within the clause is relatively free; speakers generally place it close to the verb, but not always. This

contrasts with the behavior of other quantificational preverbs, which are typically much more constrained in their distributions.

In contrast to *warrarda*, the preverb *puta* can only be interpreted with existential quantificational force and also must directly precede the verb root. Its quantificational usage arises in addition to its standard meaning, ‘try and fail,’ which is also always available in addition to its strictly quantificational interpretation.

When *puta* combines with a transitive, telic, durative predicate like *cook the meat* or *read the book*, a reading of partitive quantification over the predicate is also available. I refer to these transitive, telic, durative predicates as “incremental theme” predicates, following Dowty (1991). This quantification is especially apparent when the verb takes a mass noun as its object, as in (40). When *puta* combines with a predicate with a count object, as in (41), the only available quantificational reading is of quantification over a singular object. Partitive quantification over a plural object is not available, as in (41b). (These interpretations of *puta* parallel in many ways the interpretation of the quantificational preverb *muku* ‘all’/‘completely,’ described in section 3.2.):

- (40) Wati-ngki ka           puta           pajirni   marna.  
man-ERG AUX.PRES partially/try cut.NPST grass  
a. ‘The man cuts some of the grass.’  
b. ‘The man tries to cut the grass and fails.’  
c. \*‘The man cuts all of the grass.’
- (41) Yuwarli ka           puta           jankami.  
house AUX.PRES partially/try burn.NPST  
a. ‘The house is burning down a little bit.’  
b. \*‘Some of the houses are burning down.’  
c. \*‘All of the houses are burning down.’

The existential quantificational force of *puta* appears to give rise to a “not all” scalar implicature when it combines with incremental themes:<sup>10</sup>

- (42) Puta=ju                                   nganja!  
partially/try=1SG.NSUBJ drink.IMPER  
‘Don’t drink it all on me!’ (lit. ‘Drink some of it on me!’)

<sup>10</sup>I have a strong intuition that the scalar implicature exists based on how *puta* is used in conversation. However, I have not yet done tests to confirm its existence, e.g. seeing if the implicature can be cancelled (‘The man cut some of the grass... in fact, he cut all of it!’).

Finally, *puta*'s partitive quantificational usage is not available when it combines with a non-incremental theme predicate. The only available reading is 'try and fail':<sup>11</sup>

- (43) Wati-ngki puta            luwarnu marlu.  
 man-ERG partially/try shoot.PST kangaroo
- a. 'The man tried to shoot the kangaroo.'  
 (The man shot at the kangaroo and missed, or the man shot at the kangaroo and hit it, but it survived.)
- b. \*'The man shot some of the kangaroos.'

### 3 Generalized universal (co-intersective) quantifiers

Warlpiri has a small number of quantifiers which are compatible with a universal (co-intersective) reading. The majority of these quantifiers are also compatible with an existential (intersective) reading.

#### 3.1 D-quantifiers

Warlpiri does not have any monomorphemic, unambiguous, generalized universal D-quantifiers. The quantifier *panu* 'many' can also be interpreted as 'all,' although this is only one possible interpretation and generally arises when *panu* is accompanied by other morphology. (This reading of *panu* is also described in Bittner & Hale 1995.). I will detail this usage of *panu* more fully in section 5.1.

The nominal suffix *-patu* is typically used to indicate a small number of individuals, as described in section 2.1. However, this suffix also has an additional

<sup>11</sup>This use of *puta* is sometimes translated into English by Warlpiri consultants as 'almost,' despite the fact that it does not have the same interpretation as English *almost*. For instance, compare the interpretation of English *almost* in (1) to Warlpiri *puta* in (43):

- (1) John almost shot the kangaroo.  
 a. 'John shot at the kangaroo and missed.'  
 b. \*'John shot at the kangaroo and hit it, but it survived.'

I suspect that this difference in interpretation stems from the the fact that Warlpiri verbs like *pakarni* 'hit.NPST' and *luwarni* 'shoot.NPST' are also used to mean 'kill.' Under a reading in which these verbs are interpreted as 'kill,' the use of *puta* is felicitous even if the object has been hit or shot, as long as it survives.

usage of expressing set closure, regardless of the number of individuals in the set.<sup>12</sup> This is often observed in meetings in which Warlpiri speakers address the audience, regardless of size, as *yapa-patu* (person-PATU) ‘everyone’:

- (44) *Yapa-patu=ju, pina kulpaja=lu.*  
 person-PATU=TOP again return.PST=3PL.SUBJ  
 ‘The people, they went back.’  
 (suggests that all the people went back under the reading of *-patu* as set closure, regardless of set size)

### 3.2 A-quantifiers

One of the most interesting features of the Warlpiri quantificational system is the use of preverbal A-quantifiers such as *muku* ‘all’/‘completely’ to express quantification over nominal arguments of the verb. Although these quantifiers pattern morphologically like A-quantifiers, their semantic contribution is sometimes one of D-quantification. Similar quantifier behavior is also detailed in Evans’s (1995) description of A-quantification in Mayali (Arnhem, Australia).

The Warlpiri A-quantifier *muku* is the only morphologically simple A-quantifier used to express universal (co-intersective) force. This quantifier is relatively strictly constrained in its morphosyntactic distribution. Speakers strongly prefer that *muku* directly precede the verb root with which it combines, although they occasionally tolerate placing *muku* directly after the verb root.

Like *puta* ‘partially’/‘try and fail,’ the interpretation of *muku* hinges on the type of predicate it combines with. When *muku* combines with an incremental theme predicate with a singular object, it behaves like an A-quantifier and modifies the predicate. In these incremental theme constructions, consultants typically translate *muku* as ‘completely’:

- (45) *Karnta-ngku muku kirlka-manu kurdu.*  
 woman-ERG all/completely clean-do.PST child  
 a. ‘The woman completely washed the child.’  
 b. \*‘The woman partially washed the child.’

If the object of the incremental theme predicate is plural, then *muku* can be interpreted as if it were a D-quantifier modifying the absolutive object. Consultants typically translate these constructions into English using the D-quantifier ‘all.’

<sup>12</sup>I thank Mary Laughren for pointing this usage out to me.



- (50) Yuwarli=ji muku kampaja.  
house=TOP all/completely burn.PST  
a. ‘All the houses burned down.’  
b. ‘The house completely burned down.’  
c. \*‘Some of the houses burned down.’  
d. \*‘The house partially burned down.’
- (51) Karnta-ngku muku yirripuraja jukurrpa.  
woman-ERG all/completely tell.PST story  
a. ‘The woman told all the stories.’  
b. ‘The woman told the whole story.’  
c. \*‘The woman told some of the stories.’  
d. \*‘The woman told part of the story.’

A less common use of *muku* is to express universal quantification over a spatial domain. This use arises when the preverb combines with an iterable predicate (e.g., *bite*, *kick*) and an absolutive argument of sufficient size and “divisibility”:

- (52) Wati-ngki ka=lu muku luwarni marlu.  
man-ERG AUX.PRES=3PL.SUBJ all/completely shoot.NPST kangaroo  
a. ‘The men shoot the kangaroo all over.’  
b. ‘The men shoot all the kangaroos.’

### 3.2.1 Distributive universal A-quantifiers

Warlpiri has two distributive universal A-quantifiers, *jarnku* and *palju*. Today *jarnku* is used significantly more often than *palju*; middle-aged Warlpiri speakers in Yuendumu reported that they could understand *palju* but would not use it themselves, and most Warlpiri speakers under 25 in Yuendumu do not understand or use *palju*.

The distinction between *jarnku* and *palju* may in part also be dialectal. *Palju* may be used more frequently in Eastern Warlpiri, spoken in Lander River and Hansen River, whereas *jarnku* may be used more frequently by Ngaliya Warlpiri speakers in Yuendumu.<sup>15</sup> However, Ngaliya Warlpiri speakers nonetheless reported some slight differences in usage between the two quantifiers. *Jarnku* is frequently reduplicated, and tends to be used when talking about sets of plural

<sup>15</sup>I thank Mary Laughren for pointing out this dialectal fact to me.





- (60) Karnta-patu ka=lu palju palju yani yuwarli-kirra.  
 woman-several AUX.PRES=3PL.SUBJ each each go.NPST house-ALL  
 ‘The women come (from all different directions/at different times) to the house.’

A similar contrast is found for *jarnku*:

- (61) Jarnku yanta=lu wurnturu!  
 each go.IMPER=3PL.SUBJ far.away  
 ‘Everyone go look around!’  
 (The speaker assumes the addressees are at the same starting point.)
- (62) Jarnku jarnku yanta=lu wurnturu!  
 each each go.IMPER=3PL.SUBJ far.away  
 ‘Everyone look around!’  
 (The speaker assumes the addressees are each at a different starting point.)

Finally, these distributive universal quantifiers can co-occur with the collective universal quantifier *muku*, either preceding or following it. Speakers report no difference in meaning based on the presence or absence of *muku*:

- (63) a. Jarntu ka=lu muku palju warlulukanyi.  
 dog AUX.PRES=3PL.SUBJ all each howl.NPST  
 b. Jarntu ka=lu palju muku warlulukanyi  
 dog AUX.PRES=3PL.SUBJ each all howl.NPST  
 ‘Each dog is howling.’

## 4 Proportional quantification

Warlpiri does not have any A-quantifiers unambiguously used for proportional quantification. Speakers currently use only a single D-quantifier, *ngalyakari*, which could be argued to exhibit proportional quantificational strength. Speakers sometimes translate this quantifier as ‘half,’ although it can also be used to simply mean ‘a portion of’:

- (64) Nangala-rlu=jana ngarnu yakajirri ngalyakari.  
 Nangala-ERG=3PL.OBJ eat.PST bush.raisin half  
 ‘Nangala ate half of the bush raisins.’



Other complex existential D-quantifiers include *wita-wita-kari* (small-small-other) ‘a little bit,’ *rdilyki-kari* ‘broken-other,’ and *larra-kari* ‘split-other.’ The latter two quantifiers refer to part of a mass noun such as bread, tobacco, and so on. However, these quantifiers are now identified as “hard language” and consultants noted that these words are used very infrequently today.

Warlpiri speakers also use *-kari* ‘other’ in combination with totally reduplicated temporal nouns to express quantificational concepts like ‘sometimes,’ ‘occasionally,’ ‘most/all of the time’ and so on. These morphologically complex D-quantifiers can occur at any point within the clause. These constructions can host case marking and are therefore classified as D-quantifiers, although their contribution to the clause is semantically more like A-quantification:

- (67) *jalangu-kari-jalangu-kari* (68) *parra-kari-parra-kari*  
 today-other-today-other day-other-day-other  
 ‘every so often’ ‘time to time’
- (69) *Yani=mayi=npa Yuendumu-kurra=ju jalangu-kari-jalangu-kari?*  
 go.NPST=Q=2SG.SUBJ Yuendumu-ALL=TOP today-other-today-other  
 ‘Do you go to Yuendumu every so often?’
- (70) *Nyiya-ku ka=lu pakarni ngaju-nyangu kurdu=juku*  
 what-DAT AUX.PRES=3PL.SUBJ hit.NPST 1SG-POSS child=exactly  
*tarnnga-kari-tarnnga-kari?*  
 a.lot/always-other-a.lot/always-other  
 ‘Why do they beat up just my child all/most of the time?’

### 5.1.2 Generalized universal (co-intersective) D-quantifiers

Ngaliya Warlpiri possesses two universal (co-intersective) D-quantifiers, *jintaku-marrarni* ‘all’ and *jintawarlayi* ‘all.’ These D-quantifiers are morphologically complex, though somewhat opaque. Both contain (at least) the numeral *jinta* ‘one’; *jintakumarrarni* may also include the dative suffix *-ku* ‘DAT.’

Like other D-quantifiers, *jintakumarrarni* ‘all’ and *jintawarlayi* ‘all’ host case marking and can occur as any argument of the verb. (Note the contrast between the universal D-quantifiers and the universal A-quantifier *muku* ‘all’/‘completely,’ which has a relatively restricted scope.) Like English *all*, they trigger plural agreement:



totypical.’ In combination with numerals, this gives rise to its ‘exactly’ reading, i.e., the prototypical meaning of *n*:

- (76) a. mirdi tala-nyayirni  
four dollar-AUG  
b. mirdi-nyayirni  
four-AUG  
‘exactly four (dollars)’

Speakers can also use the clitic =*juku* ‘exactly’/‘still’ to express ‘exactly *n*’:

- (77) a. mirdi tala=juku  
four dollar=exactly  
b. mirdi=juku  
four=exactly  
‘exactly four (dollars)’
- (78) Rdaka-pala=juku-ku=rna yanu Willowra-kurra.  
five-CARD=exactly-DAT=1SG.SUBJ go.PST Willowra-ALL  
‘I went to Willowra exactly five times.’

Cardinal quantifiers like ‘less than *n*’ and ‘more than *n*’ are typically expressed using the nominals *wita* ‘small’ and *wiri* ‘big,’ respectively:

- (79) Prompt: “Less than three dollars.”  
Wita-karrkarri, marnkurrpa tala.  
small-AUG three dollar  
‘Very small, three dollars.’

Finally, there is no unique quantificational expression used to express the cardinal quantificational concept ‘about *n*.’ Warlpiri speakers typically express this periphrastically, using *waja* ‘I reckon’ or some other marker of epistemic possibility:

nominals as in (1), and an intensification reading in combination with “adjectival” nominals as in (2):

- |  |  |
|--|--|
| (1) warna-nyayirni<br>snake-AUG<br>‘a real snake,’ i.e., very venomous | (2) wiri-nyayirni<br>big-AUG<br>‘very big’ |
|--|--|

See Bowler (2015) for a descriptive overview of the Warlpiri evaluative morphology system.

- (80) Prompt: “About four dollars.”
- a. mirdi tala waja  
four dollar I.reckon  
‘four dollars, I reckon’
  - b. mirdi tala marda  
four dollar maybe  
‘maybe four dollars’

#### 5.1.4 Value judgment cardinals

Warlpiri has no vocabulary that is currently used solely to express value judgments of cardinality. Value judgments of abundance are frequently expressed using the D-quantifier *panu* ‘many’/‘much’ in combination with other, usually augmentative, morphology, as in (81). Another strategy involves the use of the nominal *wiri* ‘big’ in combination with augmentative morphology, as in (82). Although these constructions express an excessive number, they do not necessarily convey the negative connotation associated with the English expression *too many*:

- (81) Yakajirri=npa                      ngarnu panu-nyayirni, yungu=npa  
bush.raisin=2SG.SUBJ eat.PST many-AUG      COMP=2SG.SUBJ  
murrumurru jarrija                      miyalu.  
sick                      become.PST stomach  
‘You ate too many bush raisins, you became sick.’
- (82) Wiri-jarlu tala, tala wiri-jarlu-nyayirni.  
big-AUG dollar dollar big-AUG-AUG  
‘Too much money, too much money.’

Several Warlpiri consultants also code-switched to English to express abundance, e.g., *too munga* ‘too dark,’ *too much munga* ‘too much darkness.’

Warlpiri speakers use the clitic =*juku* ‘exactly’/‘still’ to translate ‘enough.’ The most accurate gloss for these constructions may be ‘the exact amount needed’ (cf. the use of =*juku* in translating ‘exactly,’ as described in section 5.1.3), rather than ‘enough’:

- (83) Context: The first speaker asks the second speaker if they have enough money to buy bread.
- a. Nyampu=juku ka=npa    mardarni?  
this=exactly      AUX.PRES=2SG.SUBJ have.NPST  
‘Do you have enough?’

- b. Yuwa, nyampu=juku ka=rna                      mardarni.  
 yes this=exactly AUX.PRES=2SG.SUBJ have.NPST  
 ‘Yes, I have enough.’

### 5.1.5 Exception modifiers

Warlpiri does not have any quantificational expressions containing exception modifiers like ‘almost’ or ‘all but *n*.’ To translate English exception modifiers, Warlpiri speakers typically form periphrastic constructions using the D-quantifiers described in section 2.1. However, these periphrastic constructions are not clear equivalents of the exception sense:

- (84) Prompt: “Almost every child can read now.”

Wirrkardu-patu-rlu ka=lu                      kurdu-kurdu-rlu riirti-mani.  
 some-several-ERG AUX.PRES=3PL.SUBJ child-child-ERG read.NPST  
 ‘Some of the children can read.’

- (85) Prompt: “All but ten children went.”

Panu-jarlu=juku=lu                      yanu-rnu                      kurdu-kurdu.  
 many-AUG=exactly=3PL.SUBJ go.PST-DIREC child-child  
 Karlarla-pala-puka=lu                      nyinaja-rra.  
 ten-CARD-only=3PL.SUBJ sit.PST-DIREC  
 ‘All the children went. Only ten stayed.’

### 5.1.6 Boolean compounds

The D-quantifier *panu* ‘many’ can co-occur with one of the sentential negation morphemes *kula*, *nati*, or *nuu* ‘NEG’ to express Boolean compounds like ‘not all’ and ‘not many.’ In these constructions, negation is interpreted as taking scope above the quantifier:

- (86) Kula=lu                      yanu-rnu                      yapa panu-jarlu.  
 NEG=3PL.SUBJ go.PST-DIREC person many-AUG  
 ‘Not many people came.’ (lit. ‘It’s not the case that many people came.’)
- (87) Nati=li                      panu-ngku nyangu kurdu-kurdu-rlu pangkarlangu.  
 NEG=3PL.SUBJ many-ERG see.PST child-child-ERG monster  
 ‘Not all the children saw the monster.’  
 (lit. ‘It’s not the case that many children saw the monster.’)



These Boolean compounds can also be expressed by using the negative nominal suffix *-wangu* to negate the D-quantifier directly:

- (88) Panu-wangu=lu      yanu-rnu.  
 many-NEG=3PL.SUBJ go.PST-DIREC  
 ‘Not many came.’

However, like expressions involving exception modifiers, Warlpiri speakers typically use periphrastic constructions to translate English prompts including Boolean compounds. Again, these periphrastic constructions frequently rely on the D-quantifier inventory presented in section 2.1:

- (89) Prompt: “Not all the children saw the monster.”  
 Ngalyakari-rli-puka=lu      nyangu.  
 some-ERG-only=3PL.SUBJ see.PST  
 ‘Only some of the children saw the monster.’

### 5.1.7 Partitive compounds

Warlpiri does not have unique morphologically marked partitive expressions akin to English *all of the dogs*, *none of the horses*, and so on. D-quantificational expressions are only expressed through secondary predication, and there is no morphologically marked distinction in Warlpiri between *some dogs* and *some of the dogs*.

However, D-quantificational expressions including the nominal suffix *-kari* ‘other’ could be argued to be instances of a partitive compound. This suffix also occurs in many non-quantificational contexts. The use of *-kari* indicates that of a set of individuals, only a subset of those individuals have the property denoted by the predicate, and presupposes that there are also individuals who do not have this property.

Unlike the English construction *Q of NP*, Warlpiri constructions involving *-kari* can only express existential quantificational strength (cf. English *some of NP*):

- (90) Nangala-rlu=jana      ngarnu yakajirri      panu-kari.  
 Nangala-ERG=3PL.NSUBJ eat.PST bush.raisin many-other  
 ‘Nangala ate some of the bush raisins.’

- (91) Jirrama-kari ka=pala                      wangkami Warlpiri manu English.  
two-other    AUX.PRES=3DU.SUBJ speak.NPST Warlpiri and    English  
'Two of them speak Warlpiri and English.'<sup>17</sup>

## 5.2 Complex A-quantifiers

Although the language has a large inventory of morphologically complex D-quantifiers, Warlpiri has a relatively limited number of morphologically complex A-quantifiers. The majority of these complex A-quantifiers are no longer in use. One such quantificational preverb is *warrukirdikirdi* 'all around'; this A-quantifier contains the preverb *warru* 'around'/'all over,' given in (93):

- (92) Watiya ka=lu                                  karrimi    warrukirdikirdi.  
tree    AUX.PRES=3PL.SUBJ stand.NPST all.around  
'There are trees all around.'
- (93) Warlawurru,            warru ka            paarr-pardi.  
wedge.tailed.eagle around AUX.PRES fly  
'The wedge-tailed eagle is flying around.'

## 6 Comparative quantifiers

Comparative quantificational expressions are expressed periphrastically in Warlpiri. Examples of these periphrastic strategies are shown in (94)–(95):

- (94) Prompt: 'More women than men work at the school.'  
Wati wirrkardu ka=lu                      warrki-jarri, manu karnta  
man few            AUX.PRES=3PL.SUBJ work.NPST and woman  
panu-jarlu ka=lu                      warrki-jarri.  
many-AUG AUX=3PL.SUBJ work.NPST  
'A few men work, and many women work (at the school).'
- (95) Prompt: 'I dug twice as many honey ants as Napaljarri.'  
Ngaju=rna=jana                      panu=juku    karlaja. Napaljarri-rli  
1SG=1SG.SUBJ=3PL.NSUBJ many=exactly dig.PST Napaljarri-ERG  
karlaja wirrkardu.  
dig.PST few

<sup>17</sup>See Bowler (2014) for an analysis of the Warlpiri coordinator *manu*, which I gloss here as 'and' for simplicity.

‘I dug many (honey ants). Napaljarri dug few.’

Periphrastic strategies arise when expressing comparison more generally in Warlpiri. Warlpiri speakers typically use implicit comparative constructions, as in (96) and (97). However, speakers can also use dative case marking to indicate a standard of comparison, as in (98):<sup>18</sup>

(96) Prompt: ‘Nyirrpi is smaller than Yuendumu.’

Nyirrpi=ji nguru yukanti. Yurntumu=ju wiri-jarlu.  
Nyirrpi=TOP country small Yuendumu=TOP big-AUG

‘Nyirrpi is small. Yuendumu is big.’

(97) Prompt: ‘Jupurrurla has more bush raisins than Jangala.’

Jupurrurla-rlu ka mardarni yakajirri panu. Jangala lawa.  
Jupurrurla-ERG AUX.PRES have.NPST bush.raisin many Jangala absence

‘Jupurrurla has many bush raisins. Jangala does not.’

(98) Wirriya=ju wiri=jiki mardakuja-ku=ju.

boy=TOP big=exactly girl-DAT=TOP

‘The boy is bigger than the girl.’

Superlative notions like ‘most’ and comparative notions like ‘more’ are frequently expressed using the enclitics =*juku* ‘exactly’/‘still’ and =*lku* ‘now.’

## 7 Type 2 quantifiers

Type 2 quantifiers express a property of binary relations. Warlpiri strategies to express a binary relationship of similarity between items include the nominal *jurrku* ‘same,’ nominal suffix *-piya* ‘like’/‘similar to,’ and enclitic =*yijala* ‘also’/‘similar to’:

(99) Ngaju=rna=jana jurrku karlaja Napaljarri-piya-rlu.  
1SG=1SG.SUBJ=3PL.NSUBJ same dig.PST Napaljarri-like-ERG  
‘I dug the same number (of honey ants) as Napaljarri.’

<sup>18</sup>In Bowler (to appear), I provide a descriptive overview of comparatives in Warlpiri and propose that the use of these implicit comparative constructions arises in part from a lack of degrees in Warlpiri’s semantic ontology.

Warlpiri speakers frequently use the morphologically complex nominal *yapa-kari* (person-other) ‘different’ to express difference between items. Although this nominal includes *yapa* ‘person,’ it can be used in relation to non-human and inanimate items as well as humans. (100) shows an example of *yapakari* ‘different’ hosting both ergative and absolutive case marking:

- (100) Yapa-kari-rli ka=lu yapa-kari ngarni  
 person-other-ERG AUX.PRES=3PL.SUBJ person-other consume.NPST  
 mangarri.  
 food  
 ‘Different (people) eat different foods.’

## 8 Distributive numerals and binominal *each*

Binominal *each* constructions are expressed using dative case marking on the numeral:

- (101) Prompt: “The children eat two sandwiches each.”  
 Jirrama-ku ka=lu ngarni, kuurlu-ngka=ju.  
 two-DAT AUX.PRES=3PL.SUBJ consume.NPST school-LOC=TOP  
 ‘They eat two each at school.’
- (102) Mangarri ka=lu ngarni, jirrama-ku,  
 food AUX.PRES=3PL.SUBJ consume.NPST two-DAT  
 kuurlu-ngka=ju, kurdu-kurdu-rlu.  
 school-LOC=TOP child-child-ERG  
 ‘They eat sandwiches, two each, at school, the children.’

The presence of a distributive universal preverb like *jarnku* ‘each’ or *palju* ‘each’ is not required in contemporary Ngaliya Warlpiri, although Mary Laughren notes that this previously would have been the case (p.c.).

## 9 Mass quantifiers and noun classifiers

Warlpiri does not have obligatory noun classifiers. However, some classifier-like expressions used to distinguish between a tree and its fruit or a tree and the animal associated with it:

- (103) watiya ngarkirdi  
tree witchetty.grub  
'witchetty tree'
- (104) pama ngarkirdi  
delicacy witchetty.grub  
'witchetty grub (as food)'

Other classifier terms are infrequently used and many are now considered “hard language.” These include *jirmilypa ngapa* (liquid.drop water) ‘drop of water’ and *panikini ngapa* (cup water) ‘cup of water,’ where *panikini* is a borrowing from English *pannikin*. Classifier constructions like these are instances of secondary predication of nominals, cf. Warlpiri “adjectival” constructions like *jarntu wiri* ‘big dog.’

## 10 Existential constructions

The nominal *palka* ‘presence’ is frequently used to express the existence or presence of an item or items. This nominal is likely related to *palka* ‘body’:

- (105) *Pies palka japu-ngka?*  
pies presence shop-LOC  
'Are there pies at the shop?'

This nominal is effectively the opposite of *lawa* ‘absence’/‘no,’ which can be used in negative existential constructions:

- (106) *Pies lawa=mayi?*  
pies absence=Q  
'Are there no pies?'

However, it is not immediately clear how to distinguish Warlpiri existential constructions (e.g., English *There are many dogs*) from instances of D-quantifier predicates (e.g., English *The dogs are many*). Consultants typically translate expressions including *palka* as English existential constructions, suggesting to me that these also function more like existential constructions in Warlpiri.<sup>19</sup> See section 12 for a discussion of Warlpiri copular constructions.

<sup>19</sup>Unlike English existential constructions, Warlpiri existential constructions permit proper names:

- (1) \*There is Napaljarri at the school.

An example of a D-quantifier occurring in a *palka* construction is given in (107); however, such expressions are infrequently used. See section 12 for examples of D-quantifiers as predicates:

- (107) Palka ka nguna juju panu=juku nyampu-rla  
 presence AUX.PRES lay powerful.object many=exactly this-LOC  
 yakuju-rla.  
 bag-LOC  
 ‘There are many powerful things in this bag.’

## 11 “Floating” quantifiers

The occurrence of “floating” quantifiers in Warlpiri is due to the availability of discontinuous constituents and the language’s highly flexible word order.

In general, the D-quantifiers described in sections 2.1 and 5.1 frequently separate from the noun they modify and occur separately within the clause as part of a discontinuous constituent. These quantifiers can effectively “float” to any position within the clause with no reported change in meaning.

The A-quantifiers described in sections 2.3 and 3.2 generally can not move from their position directly preceding the verb root, as in the case of *puta* ‘partially’/‘try and fail.’ If an A-quantifier “floats,” speakers typically only permit it to immediately follow the verb root, as in the case of *muku* ‘completely’/‘all.’ The main exception to this is *warrarda* ‘often’/‘always,’ which can occur at any point within the clause.

## 12 Bare quantifiers as arguments and predicates

D-quantifiers frequently occur as verbal arguments, typically in the context of narratives in which the referent for the quantified DP is previously established. These quantifiers can occur as any argument of the verb:

- 
- (2) Napaljarri palka kuurlu-rla.  
 Napaljarri presence school-LOC  
 ‘Napaljarri is at the school.’

- (108) Panu-ngku=lu            karlaja yunkaranyi-ki.  
 many-ERG=3PL.SUBJ dig.PST honey.ant-DAT  
 ‘Many (people) dug for honey ants.’
- (109) Panu-kari    ka=lu                    nyinami watiya-rla.  
 many-other AUX.PRES=3PL.SUBJ sit.NPST tree-LOC  
 ‘Some (of the birds) are sitting in the tree.’
- (110) Ngarnu=jana                    panu-jarlu=juku.  
 consume.PST=3PL.NSUBJ many-AUG=exactly  
 ‘He ate all (the bush apples).’
- (111) Marnkurrpa-rlu-puka=lu    nyangu ngapa.  
 three-ERG-only=3PL.SUBJ see.PST water  
 ‘Only three (people) saw the waterhole.’

D-quantifiers can also occur as predicates, though it is not immediately clear how to distinguish a predicative use of a quantifier from an existential construction. Consultants typically translate expressions including Warlpiri copular verbs like *nyinami* ‘sit.NPST’ and *ngunami* ‘lay.NPST’ into English as copular constructions; on the other hand, Warlpiri existential constructions typically include the nominal *palka* ‘existence,’ as discussed in section 10:

- (112) Panu ka=lu                    nyina kamina-kamina-manji.  
 many AUX.PRES=3PL.SUBJ sit    girl-girl-SPEC  
 ‘The girls are many.’
- (113) Rdaka-pala ka                    nguna japu-japu-wati.  
 five-CARD AUX.PRES lay    ball-ball-several  
 ‘The balls are five.’

### 13 Relations between lexical universal, existential, and interrogative pronouns

Warlpiri speakers form indefinite pronouns from Wh-words. Like in Wh-questions, speakers frequently include the interrogative enclitic =*mayi* ‘Q’ on the Wh-word. However, this is not obligatory. These utterances differ from Wh-questions in that the Wh-words do not need to occur sentence-initially, as in (114). They also differ with respect to their intonation, which is declarative rather than interrogative:

- (114) Nyangu=rna          ngana=mayi.  
 see.PST=1SG.SUBJ who=Q  
 ‘I saw someone.’
- (115) Nyiya-ngku=mayi pungu marlu.  
 what-ERG=Q          hit.PST kangaroo  
 ‘Something killed the kangaroo.’

Free choice indefinite pronouns like English *anywhere*, *anything*, and so on are expressed the same way in Warlpiri. These constructions also use Wh-words:

- (116) Nyinami=rli          nyarrpara-rla=mayi.  
 sit.NPST=1PL.INCL where-LOC=Q  
 ‘We will sit anywhere.’
- (117) Nyiya-mayi=nyanu manta.  
 what=Q=REFL          pick.IMPER  
 ‘Buy anything for yourself (that you want).’

Negative indefinite pronouns like *no one* are expressed through sentential negation of a clause including the indefinite pronoun:

- (118) Kula ngana-ngku nyangu pangkarlangu.  
 NEG who-ERG          see.PST monster  
 ‘No one saw the monster.’

The negative existential pronoun *never* is typically expressed through sentential negation, as in (119). *Nothing* can be expressed through the use of the nominals *lawa* or *walku* ‘absence’/‘no,’ as in (120):

- (119) Ngaju kula=rna          yani          japu-kurra.  
 1SG          NEG=1SG.SUBJ go.NPST shop-ALL  
 ‘I never go to the shop.’
- (120) Kapu=npa          lawa          nyanyi.  
 AUX.FUT=2SG.SUBJ absence see.NPST  
 ‘You won’t see anything.’ (lit. ‘You will see nothing.’)

## 14 Scope ambiguities

A Warlpiri clause can include (at least) two quantified arguments. These can consist of two D-quantifiers, as in (121)–(122). These can also include a combination of D-quantifiers and A-quantifiers, as in (123):



- (121) Jarntu jintakumarrarni-rli=lu=jana wajili-pungu wawirri-wati.  
 dog all-ERG=3PL.SUBJ=3PL.OBJ catch.PST kangaroo-several  
 ‘All the dogs caught several kangaroos.’
- (122) Jarntu-patu-rlu=lu=jana wajili-pungu wawirri-wati.  
 dog-several-ERG=3PL.SUBJ=3PL.OBJ catch.PST kangaroo-several  
 ‘Several dogs caught several kangaroos.’
- (123) Karnta-patu-rlu ka=lu=rla muku yinyi  
 woman-several-ERG AUX=3PL.SUBJ=3DAT all/completely give.NPST  
 yungkurnu maliki-ki.  
 bone dog-DAT  
 ‘Several women are giving all the bones to the dog.’

Speakers generally concluded that scope ambiguities are available in Warlpiri. These were most apparent in constructions involving locative case-marked nominals, which do not trigger agreement marking. These ambiguities arise particularly in constructions in which the locative nominal could be interpreted as either singular or plural (*watiya* ‘tree,’ in (124)):

- (124) Watiya-rla ka=lu muku nyinami jurlpu.  
 tree-LOC AUX=3PL.SUBJ all/completely sit.NPST bird
- a. ‘All the birds sit on (the same) tree.’  
 i.e., one tree is such that all the birds sit on it
- b. ‘All the birds sit on (potentially different) trees.’  
 i.e., all the birds are such that they sit on a tree/trees

(124) can be disambiguated by the addition of other quantifiers as well as information regarding the number of the locative case-marked nominal:

- (125) Watiya-rla jinta-ngka ka=lu muku nyinami  
 tree-LOC one-LOC AUX.PRES=3PL.SUBJ all/completely sit.NPST  
 jurlpu.  
 bird  
 ‘All the birds sit on one tree.’

- (126) Watiya-kari-watiya-kari-rla ka=lu                      jurlpu jarnku-jarnku  
 tree-other-tree-other-LOC AUX.PRES=3PL.SUBJ bird each-each  
 nyina.  
 sit  
 ‘Each bird sits on a different tree.’<sup>20</sup>

Despite the fact that the quantification of multiple arguments within a clause is readily available in Warlpiri, I was unable to elicit other reliable scope judgments regarding the possibility of unambiguous utterances, or preferences for any particular scope relations. Many constructions that exhibit scope ambiguities in languages with agreement for only one verbal argument (e.g., English) are unambiguous in Warlpiri if the number of both arguments is clearly indicated, either through overt agreement marking or plural nominal morphology.

## 15 One to one dependency

One to one dependency constructions are available in Warlpiri, although my Warlpiri consultants did not use any overt quantifiers when expressing them:

- (127) Kuja ka                      jirmilypa wanti ngapa, ngula ka                      pardimi  
 when AUX.PRES liquid.drop fall water that AUX.PRES grow.NPST  
 watiya.  
 tree  
 ‘When a drop of water falls, a tree grows.’

## 16 Rate phrases

Rate phrases spanning a number of days can be expressed using *warrarda* ‘often’/‘always’:

<sup>20</sup>I thank Mary Laughren for suggesting these examples. I note also that speakers can use the preverb *muku* ‘completely’/‘all,’ rather than *jarnku(jarnku)* ‘each,’ in (126). However, this does not enforce a strictly distributive reading.

(128) Prompt: “I eat three bush bananas a day.”

Marnkurrpa yuparli ka=rna warrarda ngarni  
 three bush.banana AUX.PRES=1SG.SUBJ always/often consume  
 parra-kari-parra-kari-rli.  
 day-other-day-other-ERG.NPST

‘I eat three bush bananas every day.’

To express rate phrases like *two at a time*, *one by one*, and so on, speakers can use the nominal suffix *-kari* in combination with the relevant numeral. These numeral expressions are then often reduplicated or repeated multiple times for emphasis:

(129) Ngayi=lpa=lu yanu-rnu jirrama-kari manu jirrama-kari  
 just=AUX.PROG=3PL.SUBJ go.PST-direc two-other and two-other  
 manu jirrama-kari manu jirrama-kari, panu-nyayirni, yurturlu.  
 and two-other and two-other many-AUG many  
 ‘They would just come two at a time, very many, a large number.’

(130) Wati-ngki panu-ngku jinta-kari-jinta-kari-rli  
 man-ERG many-ERG one-other-one-other-ERG  
 ka=lu=jana yuwarli warru-ngarntirni.  
 AUX.PRES=3PL.SUBJ=3PL.NSUBJ house around-build.NPST  
 ‘Many men go around around building houses one by one.’

## 17 Conclusion and remaining spot checks

Warlpiri has monomorphemic terms for ‘all’/‘completely’ (*muku*), ‘one’ (*jinta*), and ‘many’ (*panu*). Warlpiri A-quantifiers tend to be morphologically simple, whereas the language’s D-quantifiers tend to be morphologically complex. For instance, the language has no monomorphemic D-quantificational term for ‘all’; *jintakumarrarni* ‘all’ is morphologically complex, as is *panu-nyayirni*, *panu-jarlu* (many-AUG), and so on. Many of the language’s existential D-quantifiers feature the nominal suffix *-kari* ‘other,’ which effectively expresses partitivity.

Warlpiri makes a lexical distinction between the distributive and collective universal A-quantifiers, *jarnku/palju* ‘each’ and *muku* ‘all’/‘completely.’ There are no Warlpiri D-quantifiers with distributive universal meanings akin to *jarnku/palju* ‘each.’ Some Warlpiri nominals convey either spatial or temporal distributivity,

e.g., *jintakari-jintakari* ‘one by one’. However, these nominals do not also have strictly universal quantificational force akin to *muku* ‘all’/‘completely.’

Warlpiri has two enclitics used to express ‘only,’ =*mipa* and =*puka*. Speakers do not report any differences in meaning associated with these enclitics:

- (131) Cecilia=*puka* yanu tawunu-kurra. Jinta=*mipa*.  
 Cecilia=only go.PST town-ALL one=only  
 ‘Only Cecilia went to town. Only one (person).’
- (132) Rdaka-pala kurdu-kurdu=*mipa*=lu yanu-rnu.  
 five-CARD child-child=only=3PL.SUBJ go.PST-DIREC  
 ‘Only five children came (to school).’
- (133) Napangardi-rli yunparnu=*mipa*, kula wirntija.  
 Napangardi-ERG sing.PST=only NEG dance.PST  
 ‘Napangardi only sang, she didn’t dance.’

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