The status of degrees in Warlpiri

Margit Bowler, UCLA

Stanford Fieldwork Group: November 4, 2015
Stanford University
Roadmap

- Overview of Australian languages & my fieldwork site
- My methodologies for collecting degree data
  → Methodological issues
- Background on degrees and degree constructions
- Presentation of Warlpiri data
  → Degree data roughly following Beck, et al. (2009)
  → Potentially problematic morphemes/constructions
- What can this tell us about:
  → Degrees in Warlpiri? (They do not exist!)
- Wrap-up
250-300 languages were spoken when Australia was colonized in the late 1700s; ∼100 languages are spoken today (Dixon 2002) → Of these, only approximately 20 languages have a robust speaker population; Warlpiri has 3,000 speakers

Divided into Pama-Nyungan (90% of languages in Australia) versus non-Pama-Nyungan
Common features of Australian languages

- (Split-)ergativity
  \[\rightarrow\] Warlpiri has ergative case marking, roughly accusative agreement marking

- Highly flexible word order

- Extensive pro-drop

- Adjectives pattern morphosyntactically like nouns
  \[\rightarrow\] Host case marking, trigger agreement marking, and so on
Yuendumu, NT

- 300km northwest of Alice Springs, NT
- Population ~800, around 90% Aboriginal
- 95% of children at the Yuendumu school speak Warlpiri as a first language
- Languages spoken include Warlpiri, Pintupi/Luritja, Anmatyerre, Arrernte, Pitjantjatjara, among others
Long history of linguistic fieldwork in Yuendumu!

Bilingual Resources Development Unit (BRDU) was established at the Yuendumu school in 1974

Yuendumu school usually has a linguist or teacher-linguist position
My Warlpiri consultants

- ~5 consultants per field trip
- All 40-60 years old, speak Warlpiri with few English borrowings (Warlpiri pirrjirdi ‘strong Warlpiri’)
- All speak Warlpiri as a first language; prefer Warlpiri to English
My methodologies for eliciting degree constructions

- Almost-monolingual fieldwork, aside from target sentences
- Lots of “in situ” observation
- Elicitation of short texts
- Visual stimuli created using Pixton for Fun (pixton.com)
  → Used both stand-alone images and storyboards

Napaljarri is taller than Nakamarra.
Nakamarra is shorter than Napaljarri.
Jampijinpa is too tall to go in the cave.
Visual stimuli for eliciting degree constructions

Nakamarra has the most dogs. Nungarrayi has the fewest books. Wiyarrpa!
As I will show, Warlpiri appears to lack degrees as a primitive in its semantic ontology, however:

- **At what point does a linguist decide that a language lacks a construction/category?**
- Two different kinds of “lacking”:
  - A language appears to have X, but in fact it does not (a theoretical observation, e.g. Bowler (2014) on Warlpiri conjunction)
  - A language does not have evidence of X at all, either as a descriptive or theoretical notion
 Typically associated with:

→ Gradable adjectives: *tall, short, big, small*, etc.
→ The ability to specify degrees along a scale of tallness, shortness, etc. (*John is two centimeters taller than Mary, The cat is bigger than the dog*, etc.) (Cresswell 1976, Heim 2001)

(1) \([\text{tall}] = \lambda d.\lambda x. \ x \text{ is tall to degree } d\)

(2)
Several languages are argued to lack degrees: Motu (Beck, et al. 2009), Washo (Bochnak 2013), Fijian (Pearson 2009)

(3) \([\text{tall}]^c = \lambda x. \text{ x is tall in } c\)

(4) 

\[
\begin{array}{c}
\langle t \rangle \\
\text{John}\langle e \rangle & \text{(is)} & \text{tall}\langle e, t \rangle \\
\end{array}
\]
Beck, et al. (2009) degree questionnaire

- Beck, et al. are interested in:
  1) the distribution of degree constructions cross-linguistically
  2) how degree constructions are realized across languages
- They propose:
  - Degree Semantics Parameter: A language {does/does not} have lexical items that introduce degree arguments
  - Degree Abstraction Parameter: A language {does/does not} have binding of degree variables
  - Degree Phrase Parameter: The degree argument position of a gradable predicate {may/may not} be overtly filled

- I administered their tests to Warlpiri as a first pass at degrees in Australian languages
Examples of degree constructions in English (following Beck, et al. 2009):

<table>
<thead>
<tr>
<th>Degree construction</th>
<th>English example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explicit comparatives</td>
<td>John is taller than Mary.</td>
</tr>
<tr>
<td>Differential comparatives</td>
<td>John is one year older than Mary.</td>
</tr>
<tr>
<td>Comparison with measure phrases</td>
<td>John is taller than one meter.</td>
</tr>
<tr>
<td>Subcomparatives</td>
<td>The drawer is wider than it is long.</td>
</tr>
<tr>
<td>Measure phrases, measure nouns</td>
<td>John is five feet tall.</td>
</tr>
<tr>
<td>Degree questions</td>
<td>How tall is John?</td>
</tr>
<tr>
<td>Superlatives</td>
<td>John is the tallest child.</td>
</tr>
<tr>
<td>Equatives</td>
<td>John is as tall as Mary.</td>
</tr>
</tbody>
</table>
Speakers can use **implicit comparison** (IC) as a comparative strategy:

(5) Nyirrpi=ji nguru yukanti. Yurntumu=ju
Nyirrpi=TOP country small Yuendumu=TOP
wirijarlu.
big
Prompt: ‘Nyirrpi is smaller than Yuendumu.’
Literally: ‘Nyirrpi is small. Yuendumu is big.’

(6) Japanangka-RLU ka marda-rni wirrkardu
Japanangka-ERG AUX have-NPST few
marlu=ju. Jangala-RLU ngula=ju ka marda-rni
kangaroo=TOP Jangala-ERG that=TOP AUX have-NPST
panu.
many
Prompt: ‘Japanangka has fewer kangaroos than Jangala.’
Literally: ‘Japanangka has few kangaroos. Jangala has
many.’
ICs can also involve stating that a predicate holds of one item, and that it does not hold of another:

(7) Napaljarri=ji kirrirdimpayi, Nakamarra lawa.
    Napaljarri=TOP tall Nakamarra no
    Prompt: ‘Napaljarri is taller than Nakamarra.’
    Literally: ‘Napaljarri is tall, Nakamarra is not.’

(8) Jupurrurla-rlu ka marda-rni yakajirri panu. Jangala
    Jupurrurla-ERG AUX have-NPST bush.raisin many Jangala
    lawa.
    no
    Prompt: ‘Jupurrurla has more bush raisins than Jangala.’
    Literally: ‘Jupurrurla has many bush raisins. Jangala does
    not.’

ICs are used in other degree-less languages like Motu and Fijian, and is typologically common overall (Stassen 1985).
Warlpiri speakers also can use the dative case marker as a comparative strategy:

(9) Napaljarri=ji ngula=ju kirrirdi=jiki,
Napaljarri=TOP that=TOP tall=still
Nakamarra-ku=ju.
Nakamarra-DAT=TOP
Prompt: ‘Napaljarri is taller than Nakamarra.’
Literally: ‘Napaljarri is tall for/to Nakamarra.’

→ Does not involve morphology that uniquely makes reference to degrees (like the English comparative suffix -er)
→ Narrowing of comparison class
Warlpiri does not have **differential comparative constructions** (‘John is one year older than Mary’):

(10) Japangardi=ji ka nyina kamparru-warnu
    Japangardi=TOP AUX sit in.front-LOC
    Jakamarra-ku=ju.
    Jakamarra-DAT=TOP
Prompt: ‘Japangardi is three years older than Jakamarra.’
Literally: ‘Japangardi is before Jakamarra.’
Warlpiri does not have standardized constructions to express *comparison with measure phrases*:

(11) Jakamarra=ju ngula=ju kirrirdimpayi.
    Jakamarra=TOP that=TOP tall
Prompt: ‘Jakamarra is taller than one meter.’
Literally: ‘Jakamarra is tall.’

(12) Nangala-rlu ka panu marda-rni maliki. Rdaka-pala Nangala-ERG AUX many have-NPST dog five-CARD maliki, lawa.
dog no
Prompt: ‘Nangala has more than five dogs.’
Literally: ‘Nangala has many dogs. Not five dogs.’
Warlpiri does not have subcomparative constructions:

(13) Kurlarda=ju kirrirdimpayi, kala kurdiji wantiki.
    spear=TOP long but shield wide
Prompt: ‘The spear is longer than the shield is wide.’
Literally: ‘The spear is long, but the shield is wide.’
Warlpiri does not have **measure nouns** to include in measure phrases:

(14) Ngaju-nyangu kaji-nyanu kirrirdimpayi, *5 feet tall.*
1SG-POSS son-POSS tall, 5 feet tall

**Prompt:** ‘My son is 5 feet tall.’
**Literally:** ‘My son is tall, 5 feet tall.’

Younger speakers frequently code-switch to English in these contexts
—→ Usually clause-peripheral, suggesting they are not occupying a degree slot
There is no dedicated construction used to ask degree questions.

Speakers instead use polar questions or non-degree Wh-questions:

(15) Tarnnga-mayi=npa nyina-ja?
    long.time-Q=2SG.SUBJ sit-PST
Prompt: ‘How long were you in WA?’
Literally: ‘Were you there a long time?’

(16) Nyiya-piya ka kaja-nyanu nyina-mi?
    what-similar.to AUX son-POSS sit-NPST
Prompt: ‘How old is your son?’
Literally: ‘What is your son like?’
Warlpiri has no dedicated superlative morphology:

(17) Jangala=ju wirijarlu-nyayirni.
    Jangala=TOP big-real
    Prompt: ‘Jangala is the biggest child.’
    Literally: ‘Jangala is really big.’

(18) Nakamarra-rlu ka marda-rni panu jarntu.
    Nakamarra-ERG AUX have-NPST many dog
    Prompt: ‘Nakamarra has the most dogs.’
    Literally: ‘Nakamarra has many dogs.’
Equatives can be expressed using the similative nominal suffix -piya ‘similar to’:

(19) Japaljarri=ji rdangkarlpa, Jakamarra-piya.
    Japaljarri=TOP short Jakamarra-similar.to
Prompt: ‘Japaljarri is as short as Jakamarra.’
Literally: ‘Japaljarri is short, like Jakamarra.’

→ -piya does not target the particular scale on which the compared individuals are similar (tallness, shortness, etc.)
## Interim summary of Warlpiri degree data

<table>
<thead>
<tr>
<th>Degree constructions</th>
<th>Available in Warlpiri?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explicit comparatives</td>
<td>no</td>
</tr>
<tr>
<td>Differential comparatives</td>
<td>no</td>
</tr>
<tr>
<td>Comparison with degrees</td>
<td>no</td>
</tr>
<tr>
<td>Degree questions</td>
<td>no</td>
</tr>
<tr>
<td>Measure phrases</td>
<td>no</td>
</tr>
<tr>
<td>Subcomparatives</td>
<td>no</td>
</tr>
<tr>
<td>Explicit equatives</td>
<td>no</td>
</tr>
<tr>
<td>Superlatives</td>
<td>no</td>
</tr>
</tbody>
</table>

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The status of degrees in Warlpiri
Evaluating Warlpiri with respect to Beck, et al. (2009)

<table>
<thead>
<tr>
<th>Degree parameter</th>
<th>Active in Warlpiri?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree Phrase Parameter</td>
<td>no</td>
</tr>
<tr>
<td>Degree Abstraction Parameter</td>
<td>no</td>
</tr>
<tr>
<td>Degree Semantics Parameter</td>
<td>no</td>
</tr>
</tbody>
</table>

Warlpiri has a negative setting for all degree parameters.

(20) –DPP: No comparison with measure phrases

(21) –DAP: No subcomparatives

(22) –DSP: No explicit comparatives
Some words look like they could require degrees:

<table>
<thead>
<tr>
<th>Warlpiri</th>
<th>English gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>maya</td>
<td>‘continue,’ ‘again,’ ‘more’</td>
</tr>
<tr>
<td>-nyayirni</td>
<td>‘very,’ ‘real’</td>
</tr>
<tr>
<td>-karrikarri</td>
<td>‘a little bit,’ ‘somewhat’</td>
</tr>
<tr>
<td>-katu</td>
<td>‘only’ (?)</td>
</tr>
<tr>
<td>-ku</td>
<td>‘-DAT’</td>
</tr>
<tr>
<td>yarda</td>
<td>‘again,’ ‘more’</td>
</tr>
</tbody>
</table>

I will show that these can be explained without making reference to degrees.
-nyayirni ‘real,’ ‘prototypical’

- All nouns can host -nyayirni ‘real’/‘prototypical’:

  (23) wiri-nyayirni ‘very big’
  (24) wita-nyayirni ‘very small’
  (25) jukurrpa-nyayirni ‘true story’
  (26) jarntu-nyayirni ‘real dog’ (not a dingo)
  (27) nyuntu-nyayirni ‘only you (sg)’

- Patterns like Washo -šemu (Bochnak 2013)
- I follow Bochnak (2013) in assuming that this suffix indicates that the predicate holds across all contexts

  (28) \([-\text{nyayirni}]^c = \lambda P_c. \lambda x. \forall c' [c Rc' \rightarrow P(x) = 1 \text{ in } c']\]

- Resembles Lasersohn’s (1999) proposal for the meaning of perfectly
(29) wita-karrikarri ‘somewhat small’
Consultant’s gloss: ‘a little bit small’

(30) wiri-karrikarri ‘somewhat big’
Consultant’s gloss: ‘a little bit big’

(31) ?tija-karrikarri ‘somewhat like a teacher’

- *karrikarri* indicates category marginality
- That is, there exists a context $c'$ for which the predicate is false

(32) $\left[ -\text{karrikarri} \right]^c = \lambda P_c. \lambda x. \exists c' [cRc' & P(x) = 0 \text{ in } c']$
(33) Maya wangkaya! continue talk.IMPER
‘Keep on talking!’ or ‘Talk more!’
(Literally: ‘Continue talking!’)

(34) Maya-ngku kankarlu-manta. continue-ERG high-make.IMPER
‘Lift it up higher.’ (WDP)
(Literally: ‘Continue making it high.’)

I propose a denotation for *maya* that does not make reference to degrees (where $t^r = \text{reference time}$):

(35) $[[maya]] = \lambda P. \exists t' < t^r [P(t') = 1 \& \exists t''
\left[t' \sqsubset t'' \& t^r \sqsubset t'' \& P(t'') = 1\right]]$
(36) Nalija ka=rna=rla yarda yinyi tea AUX=1SG.SUBJ=3DAT again give.NPST Liddy-ki.
Liddy-DAT
‘I’m giving Liddy more tea.’
(Literally: ‘I’m giving Liddy tea again.’)

(37) Yarda yurrlparni ka=rnalu.
again scrape.NPST AUX=1PL.SUBJ.EXCL
‘We scrape it again.’/‘We scrape it more.’

- Again, I propose a denotation for \textit{yarda} that does not make reference to degrees:

\[(\text{[yarda]} = \lambda P. \exists t' < t'' [P(t')=1 & \neg \exists t''] [t' \sqsubset t'' & t'' \sqsubset t' & P(t'')=1])\]
(39) Napaljarri=ji ngula=ju kirrirdi=jiki, 
Napaljarri=TOP that=TOP tall=still 
Nakamarra-ku=ju. 
Nakamarra-DAT=TOP 
Prompt: ‘Napaljarri is taller than Nakamarra.’ 
Literally: ‘Napaljarri is tall for/to Nakamarra.’

- Could alter the denotation of Warlpiri modifiers to include reference to a comparison class (following Klein 1980):

(40) \([kirrirdi] = \lambda x: x \in C. \, x \text{ counts as tall with respect to } C\)
-ku ‘-DAT’

-ku narrows the comparison class to the two arguments x and y:

\[
[-ku] = \lambda x. \lambda P. \lambda y. \text{y counts as P with respect to } \{x,y\}
\]

(41) Napaljarri=ji ngula=ju kirrirdi=jiki, Nakamarra-ku=ju.
Napaljarri=TOP that=TOP tall=still Nakamarra-DAT=TOP
Prompt: ‘Napaljarri is taller than Nakamarra.’
Literally: ‘Napaljarri is tall for/to Nakamarra.’
If we set aside the Klein (1980) proposal in (40) and assume an analysis following Kennedy (2009), more data appears problematic.

Kennedy (2009) predicts ICs should not be available in crisp judgement contexts.

$\rightarrow$ Positive (non-comparative) adjectives combine with an operator $pos$ that chooses a standard of comparison such that the objects ‘stand out’ in the utterance context.

(43) $\llbracket Deg pos \rrbracket <d, e, t> = \lambda g. \lambda x. g(x) > d_s$ (Kennedy 2007)
Warlpiri ICs are felicitous in crisp judgement contexts:

(44) Watakiyi nyampu=ju yukanti, nyampu=ju wirijarlu.
bush.orange this=TOP little this=TOP big
Prompt: ‘This bush orange is bigger than that one.’
Literally: ‘This bush orange is small, this one is big.’
(The bush oranges are almost the same size.)
Warlpiri ICs are felicitous when one predicate holds of both compared items:

(45) Melbourne=ju yukanti, Sydney=ji wiri-jarlu.
    Melbourne=TOP small     Sydney=TOP big
Prompt: ‘Melbourne is smaller than Sydney.’
Literally: ‘Melbourne is small, Sydney is big.’
(Both cities are large.)

This should also be bad by Kennedy (2009)
Similar to Pearson’s (2009) Fijian data
Since Warlpiri has no degree slot, *pos* cannot enter the derivation
Evaluating Warlpiri by Beck, et al. (2009)’s criteria suggests that it is a degree-less language like Motu, Fijian, Washo, etc.

Problematic examples can be explained without reference to degrees
• The degree data given in this talk:
  —→ Is provided consistently, by a number of different consultants
  —→ Occurs consistently also in informal, non-elicitation environments
  —→ Occurs consistently in written Warlpiri texts, including a 2000 draft of the Warlpiri Dictionary Project (collected by Ken Hale, Mary Laughren, Robert Hoogenraad, et al.)
  —→ Corresponds with speakers’ meta-linguistic observations about the differences between Warlpiri and English
After much scrutiny, I propose that Warlpiri has **no degrees** (by the Beck, et al. criteria)

Further questions:

- Beck, et al.’s questionnaire shows that Warlpiri lacks degrees in the nominal domain; however:
  - Does it necessarily lack degrees in the verbal domain (e.g. deadjectival verbs)? (inspired by Bochnak 2015)
  - What about times? (von Stechow 2007)

- Eventually raises the question: If there are degrees, why do they occur in so few contexts?

- Are there correlations between:
  - No degrees and no counting systems?
  - No degrees and cultures without a money economy?

- As younger speakers are exposed to more English (a +DSP language), could this change the Warlpiri degree system?
Thank you to:

- Jessica Rett
- Yael Sharvit
- Cecilia Alfonso and Gloria Morales at the Warlukurlangu Artists Aboriginal Corporation
- Wendy Baarda

This research was funded by NSF GRFP number DGE-1144087.


Dixon, RMW. 1982. *Where have all the adjectives gone?* Berlin: de Gruyter.


Appendix: The status of adjectives in Warlpiri

- I propose that Warlpiri has no adjectives.
- Modification is accomplished through reduced relative clauses:

  (46) jarntu wiri
dog  big
‘big dog’
(Literally: ‘(a/the) dog (that is) big’)
(47) Mary is a beautiful dancer.
    ‘Mary is beautiful and Mary is a dancer.’

Intersective modification: (combines through PM)

(48)

(49) $[\text{beautiful}] = \lambda x. \ x \text{ is beautiful}$
(50) Mary is a beautiful dancer.  
    ‘Mary dances beautifully.’

Subsective modification proposals are more complex (modified denotation from Morzycki 2014):

(51) \[\text{[beautiful]} = \lambda P_{<d<e,t>} \lambda x. \text{beautiful-as}(P)(x)\]
    (where \text{beautiful-as} is defined such that its first argument (P) must hold of its second (x))

- I propose that Warlpiri has \textbf{no subsective modification}
(52) jarntu wiri
dog big
‘big dog’
(Literally: ‘(a/the) dog (that is) big’)

(53)

```
<e>  
   /\  
  <e,t> /  
    \   \  
      dog<e,t>  <e,t> 
                \  
                (that) 1  
                \  
                t1<e> (is) big<e,t> 
```
Warlpiri modifier inventory

- Warlpiri lacks subsective and non-intersective/non-subsective modifiers:

<table>
<thead>
<tr>
<th>Property</th>
<th>English examples</th>
<th>Warlpiri examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intersective</td>
<td>Canadian, two-legged</td>
<td>nyurru-wiyi-warnu ‘old,’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ngurrju ‘good’</td>
</tr>
<tr>
<td>Subsective</td>
<td>talented, lousy</td>
<td>?</td>
</tr>
<tr>
<td>Non-intersective &amp; non-subsective</td>
<td>alleged, probable, likely</td>
<td>?</td>
</tr>
<tr>
<td>Privative</td>
<td>fake, imaginary, pretend</td>
<td>manyumanyu ‘imaginary’</td>
</tr>
</tbody>
</table>

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(54) John is an old friend.
   a. John is old and John is a friend. \(\text{intersective}\)
   b. John has been a friend for a long time. \(\text{subsective}\)

(55) Japangardi=ji nyurruwiyi-warnu marlpa.
     Japangardi=TOP long.ago-since companion
     a. ‘Japangardi is old and Japangardi is a friend.’
        \(\text{intersective}\)
     b. *‘Japangardi has been a friend for a long time.’
        \(\text{subsective}\)
Warlpiri has no non-intersective and non-subsective adjectives (*alleged, probable, etc.*)

Follows from the relative clause story:

(56) *John is a thief who is alleged.

(57) *Bill is a president who is former.

Non-intersective and non-subsective adjectives must take a noun as an argument
The order of modifiers does not matter, contra Cinque 1994:

(58) rdaka-pala yalyuyalyu japujapu-wati
     five-CARD red ball-several
     ‘five red balls’
     (NUM COLOR N)

(59) jinta japujapu wita yalyuyalyu
     one ball small red
     ‘one small red ball’
     (NUM N SIZE COLOR)

OK if they are RCs:

(60) the house that is big that is red that is old

(61) the house that is old that is big that is red
Summary of relative clause proposal

This explains:

- Why subsective readings are not available
- Why non-intersective and non-subsective modifiers do not exist
- Why Warlpiri modifiers are not subject to Cinque’s generalizations about adjective order