

Cross-linguistic variation in conjoined comparatives

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1. The puzzle

Warlpiri (Pama-Nyungan; Australia) and Washo (isolate; USA) both use **conjoined comparatives** as a primary comparative strategy (Bowler 2016; Bochnak 2013, 2015).

The denotations of property concept words in Warlpiri and Washo are the same, as are the truth conditions for their conjoined comparatives:

- (1) $\llbracket P_W \rrbracket^c = \lambda x. x \text{ is } P \text{ in } c$ $\langle e, t \rangle$
- (2) $\llbracket x \text{ is } P_W, y \text{ is } Q_W \rrbracket^c = 1 \text{ iff } x \text{ is } P \text{ in } c \wedge y \text{ is } Q \text{ in } c$

In **crisp judgment contexts**, Warlpiri and Washo conjoined comparatives differ in their acceptability:

- (3) Context: There are six trees; two of the trees differ only slightly in size.
Nyampu watiya wirijarlu, wita nyampu=ju.
this tree big small this=TOP
'This tree is big, this one is small.' Warlpiri
- (4) Context: There are two pinecones. One is slightly bigger than the other.
wí:di? behézij-a?-š lák'a? wí:di? t'-í:yel-i?
this small-DEP-SR one this NMLZ-big-ATTR
Intended: 'This one is small, this one is big.' Washo (Ryan Bochnak, p.c.)

Why are conjoined comparatives felicitous in crisp judgment contexts in Warlpiri?

Why are conjoined comparatives infelicitous in crisp judgment contexts in Washo?

What does the crisp judgment test tell us about the semantics of property concepts?

Roadmap:

- Background on conjoined comparatives and crisp judgments
- Crisp judgments with vague predicates
- Definite descriptions in Warlpiri
- Overview of variation in conjoined comparatives
- Conclusion

2. Background

- Stassen (1985, 2013); Ultan (1972): Languages vary in the morphosyntax that they use to express comparison.

(5) Mary is taller than Ruth.

- Hohaus and Bochnak (2020): Grammatical versus pragmatic comparatives.
- **Grammatical comparatives** contain comparative morphology explicitly encoding an ordering relation (e.g. English *-er*, Basque *-ago*, Hungarian *-bb*):

(6) Basque (isolate, Spain)

Jakes baino lodi-ago da
Jakes.NOM than fat-COMP he.is
'He is fatter than Jakes.'

(Stassen 1985, 61)

- **Pragmatic comparatives** are based on positive predictions; they lack uniquely comparative morphology, and the ordering relation is inferred.

Conjoined comparatives:

Two separate clauses with two predicates; one clause contains the compared item, while the other contains the standard.

(7) Amele (Trans-New Guinea, PNG)

jo i ben jo eu nag
house this big house that small
'This house is bigger than that house.'

Literally: 'This house is big, that house is small.' (Stassen 2013; Roberts 1987)

(8) Warekena (Arawakan, Brazil and Venezuela)

waſi ſutſi puatſi puapiami
jaguar big monkey thin
'The jaguar is bigger than the monkey.'

Literally: 'Jaguar is big, monkey is thin.' (Aikhenvald 1998, 244)

- Stassen (2013): "The Conjoined Comparative has a stronghold in Australia and New Guinea, and is also prominent in the Amazon basin."

2.1. Comparatives in crisp judgment contexts

- Positive predication are context sensitive, vague, and require that the individual “stand out” with respect to the contextual standard for the predicate (Graff 2000; Kennedy 2011).

(9) John is tall.

- $\llbracket \text{tall} \rrbracket = \lambda d \lambda x. \text{tall}(x, d)$
- $\llbracket \text{POS} \rrbracket^c = \lambda G_{\langle d, \langle e, t \rangle \rangle} \lambda x. \exists d [G(x, d) \wedge d >_! \text{standard}_{G, c}]$
- $\llbracket \text{John is POS tall} \rrbracket^c = 1 \text{ iff } \exists d [\text{tall}(\text{John}, d) \wedge d >_! \text{standard}_{\text{tall}, c}]$

- Conjoined comparatives are conjunctions of positive predication; as such, we expect a difference in acceptability between grammatical and conjoined comparatives in crisp judgment contexts (Kennedy 2007a).

- Crisp judgment contexts:**

Contexts in which the compared individuals differ only a very small amount with respect to the relevant property.

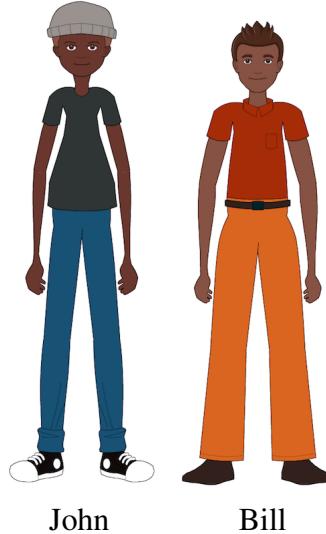


Figure 1¹

¹Images were made using Pixton: <https://www.pixton.com/>.

- Grammatical comparatives directly encode an ordering relation; they are felicitous in crisp judgment contexts because of the lack of positive semantics.

- (10) a. $\llbracket \text{-er} \rrbracket = \lambda P_{\langle d,t \rangle} \lambda Q_{\langle d,t \rangle} \cdot \max(Q) > \max(P)$
 b. $\llbracket \text{John is taller than Bill} \rrbracket = 1 \text{ iff } \max(\lambda d. \text{tall(John,d)}) > \max(\lambda d'. \text{tall(Bill,d')})$

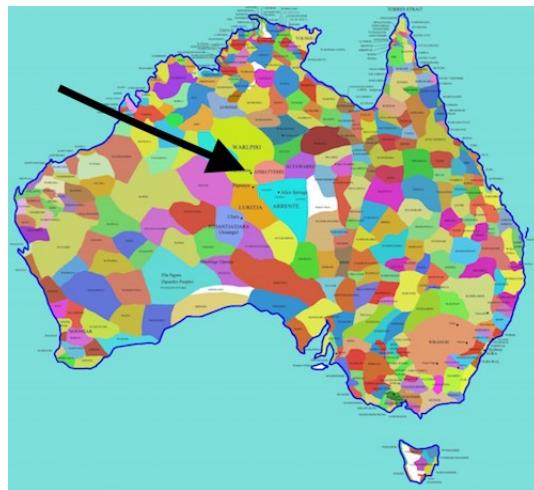
- Conjoined comparatives are conjunctions of positive predictions:

- (11) $\llbracket \text{John is POS tall, Bill is POS short} \rrbracket^c = 1 \text{ iff}$
 $\exists d[\text{tall(John,d)} \wedge d >_! \text{standard}_{\text{tall},c}] \wedge \exists d'[\text{short(Bill,d')} \wedge d' >_! \text{standard}_{\text{short},c}]$

- Positive predictions are subject to the Similarity Constraint (Klein 1980; Graff 2000; Kennedy 2011, 2):
 “When x and y differ only to a very small degree in the property that a vague predicate G is used to express, speakers are unable or unwilling to judge the proposition that x is G true and y is G false.”
- In a crisp judgment context, neither individual “stands out” enough to license the positive predictions; speakers should be unwilling to simultaneously accept the truth of both clauses.
- Speakers of conjoined comparative languages should not be able to use them to describe Figure 1.
- Bochnak (2013, 2015) uses unacceptability in crisp judgment contexts as a diagnostic of degreelessness in Washo: Only grammatical comparatives can encode an ordering relation $>$, which requires the ability to order on a degree scale.

3. Data

Warlpiri (Pama-Nyungan, Ngumpin-Yapa; Australia); 3000 speakers.



Data in this handout was elicited using visual contexts, verbal contexts, and objects.
Worked with 7 speakers in Yuendumu in 2014, 2015, and 2019.

Bowler (2016):

- Warlpiri lacks degree morphology (equivalents of *-er, as, too*, measure phrases, etc.); comparatives are conjoined.

(12) Nyirripi=ji nguru yukanti. Yurntumu=ju wirijarlu.

Nyirripi=TOP country small Yuendumu=TOP big

Prompt: ‘Nyirripi is smaller than Yuendumu.’

Literally: ‘Nyirripi is a small place. Yuendumu is big.’

(13) Ngaju-nyangu kaji-nyanu wita.

1SG-POSS son-POSS small.

Prompt: ‘My son is 3 feet tall.’

Literally: ‘My son is short.’

(14) Kurlarda=mayi kirrirdimpayi?

spear=Q long

Prompt: ‘How long is the spear?’

Literally: ‘Is the spear long?’

- Like Washo, Warlpiri property concepts lack degree arguments; they are Kleinian vague predicates of type $\langle e, t \rangle$:

(15) $\llbracket P_W \rrbracket^c = \lambda x. x \text{ is } P \text{ in } c$ (Alternately: $\llbracket P_W \rrbracket^c = \lambda x. x \in P^{+,c}$)

- Follows degreeless proposals by Beck et al. (2009) for Motu (Austronesian; Papua New Guinea); Pearson (2010) for Fijian (Austronesian; Fiji) (but see Hanink 2019); and Bochnak (2013, 2015) for Washo.

- According to Beck et al. (2009)’s classification: Warlpiri has a negative setting of the Degree Semantics Parameter.

Kennedy (2007a): Conjoined comparatives should be infelicitous in crisp judgment contexts.

- Contrary to Kennedy (2007a)’s predictions, Warlpiri conjoined comparatives are produced and accepted in crisp judgment contexts.

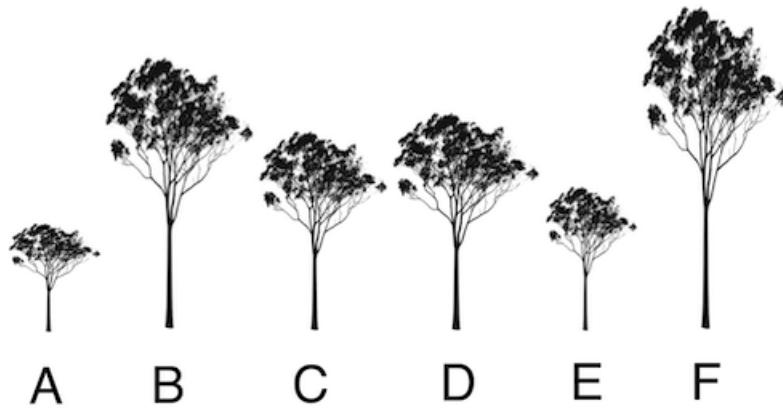


Figure 2

- (16) Context: There are six trees; two of the trees differ only slightly in size.
 Nyampu watiya wirjarlu, wita nyampu=ju.
 this tree big small this=TOP
 ‘This tree is big, this one is small.’
- (17) Context: There are six stones; two of the stones differ only slightly in width.
 Nyampu pirli wantiki, nyampu wuurnpa.
 this stone wide this narrow
 ‘This stone is wide, this one is narrow.’
- This contrasts with Washo; Washo speakers reject conjoined comparatives in crisp judgment contexts (Bochnak 2013, 2015):
- (18) Context: There are two pinecones. One is slightly bigger than the other.
 # wí:di? behézij-a?-š lák'a? wí:di? t'-í:yel-i?
 this small-DEP-SR one this NMLZ-big-ATTR
 Literally: ‘This one is small, this one is big.’ (Ryan Bochnak, p.c.)

Why are Warlpiri conjoined comparatives acceptable in crisp contexts, contrary to Kennedy (2007b)'s predictions?

How can we account for the difference in acceptability between Warlpiri and Washo?

4. Crisp judgments with vague predicates

Klein (1980):

- Gradable adjectives are vague predicates of type $\langle e, t \rangle$

- Interpreted relative to comparison classes of individuals supplied contextually
 - Denote partial functions from individuals to truth values
- (19) a. $\llbracket x \text{ is } P \rrbracket^c = 1$ iff $x \in P^+$ in c positive extension
 b. $\llbracket x \text{ is } P \rrbracket^c = 0$ iff $x \in P^-$ in c negative extension
 c. $\llbracket x \text{ is } P \rrbracket^c = \text{undefined}$ otherwise extension gap
- Informativity Constraint on vague predicates (Kennedy 2011, 4):
 “Both the positive and negative extension of a vague predicate [must] be non-empty (such predicates are not useful if there are not things that they are true of and things that they are false of).”

Deal and Hohaus (2019):

- Like Warlpiri, gradable property concepts in Nez Perce (Sahaptian; USA) are de-greeless and felicitous in comparatives in crisp judgment contexts:

- (20) $\llbracket kuhet \text{ 'tall}_{NP} \rrbracket^c = \lambda x. x \text{ counts as tall with respect to context } c$
- (21) Context: Drea is 5'8" (172.7cm). I am 5'7 3/4" (172.1cm), just a hair shorter.
 Drea hii-wes qetu kuhet 'iin-im-x.
 Drea.NOM 3SUBJ-be.PRES MORE tall 1SG-OBL-to
 ‘Drea is taller than me.’

- Deal and Hohaus (2019) propose a Kleinian semantics for *qetu* ‘more’ with existential quantification over contexts (type K): Nez Perce *qetu* comparatives are true as long as there exists a context in which the gradable predicate is true when applied to one individual and false when applied to the other.

- (22) $\llbracket qetu \text{ 'more}_{NP} \rrbracket = \lambda x \lambda P_{\langle K, \langle e, t \rangle \rangle} \lambda y. \exists C' [P(C')(x) = 0 \wedge P(C')(y) = 1]$
- Comparison follows from Consistency Constraints on gradable predicates (Klein 1980; Kennedy 2011):
 - If $G(x)$ is true in c and $G(y)$ is false in c , then x exceeds y relative to the scalar concept encoded by G
 - If $G(x)$ is true in c and $G(y)$ is false in c , then for any c' such that $G(y)$ is true in c' , $G(x)$ is also true in c'
 - Not an appealing solution for Warlpiri, since Warlpiri lacks any analog to Nez Perce *qetu*; ideally want a transparent mapping from morphosyntax to semantics.

Kennedy (2007b):

- Implicit comparatives are infelicitous in crisp judgment contexts.
- (23) This book is long compared to that book.
- a. ✓ Book 1 is 100 pages and book 2 is 50 pages.
 - b. # Book 1 is 100 pages and book 2 is 99 pages.
- Kennedy (2007b)'s claim: Klein (1980) erroneously predicts that they should be acceptable.
 - Kennedy treats *compared to* phrases as restricting the context to just the two compared items:
- (24) $\llbracket \text{This book is long compared to that book} \rrbracket^c$
 $= 1 \text{ in } c \text{ iff } \llbracket \text{This book is long} \rrbracket = 1 \text{ in every context } c' \text{ that is just like } c \text{ except that}$
 $\text{the domain of discourse includes just this book and that book}$
- Assuming the Informativity Constraint on vague predicates, if this book is long, that book must be not long:
- (25) This book is long compared to that book.
- | | |
|---|-------------------------------|
| a. Context: {this book, that book} | meaning of <i>compared to</i> |
| b. $\llbracket \text{This book is long} \rrbracket^c = 1 \text{ in } c$ | by Informativity |
| c. $\llbracket \text{That book is long} \rrbracket^c = 0 \text{ in } c$ | by Informativity |
- Taken together with Consistency Constraints, this predicts acceptability of (25) regardless of the difference in length between the two books.
 - Pearson (2010): Also manipulates the context to account for Fijian comparative data.

Applicability to Warlpiri data:

- Null hypothesis: Informativity Constraint and Consistency Constraints are active in Warlpiri.
 - The purpose of adjectives/property concepts is to contrast items (Sedivy et al. 1999); no evidence that Warlpiri speakers use property concepts for different communicative purposes than English speakers
 - Consistency Constraints reflect language-independent entailments of gradable predicates
- The following data suggests that the context is restricted in Warlpiri conjoined comparatives, like Kennedy (2007b)'s *compared to*-comparatives:

- (26) Context: Liddy and Judy are both short women (under 5 feet/152 cm).
 Liddy=ji kirrirdimpayi, Judy ngula=ju rdangkarlpa.
 Liddy=TOP tall Judy PRONOUN=TOP short
 Prompt: ‘Liddy is taller than Judy.’
 Literally: ‘Liddy is tall, Judy is short.’
- (27) Context: In 2014, Melbourne’s population is 4.5 million and Sydney’s population is 4.8 million (i.e., both are big cities).
 Melbourne=ju yukanti, Sydney=ji wirijarlu.
 Melbourne=TOP small Sydney=TOP big
 Prompt: ‘Melbourne is smaller than Sydney.’
 Literally: ‘Melbourne is small, Sydney is big.’ (Bowler 2016)
- If evaluated against broader comparison classes (all Warlpiri women; all cities in Australia), it should be infelicitous to state that Liddy is tall or Melbourne is small.
 - Kennedy (2007b)’s objection to Klein (1980) can explain why Warlpiri conjoined comparatives are acceptable in crisp judgment contexts.
 - Propose to derive Kennedy’s context restriction with reference to Warlpiri-specific properties.

5. Definite descriptions in Warlpiri

Definite DPs presuppose existence and uniqueness (Russell 1905; Kadmon 1990, a.o.).

- (28) I saw the bear at the zoo.
 ⇒ Presupposes that there is a unique bear at the zoo

Syrett et al. (2010, 2006):

- These presuppositions are active in interpreting definite descriptions with relative gradable adjectives.
- (29) Context: There are two blue rods of unequal lengths.
 Please give me the long rod.
 ⇒ Presupposes that there is a unique long rod in the context
- Syrett et al. 2010, 5: “Given that there are two salient rods in the context, the only way to satisfy these presuppositions is to make *long* true of one of them and false of the other one.”

- Syrett et al. (2010, 2006) show that speakers accept (29) as a request for the longer of the two rods, even if the rods are independently judged as long/not long; i.e., they shift their standards.

Definiteness in Warlpiri

Like most Australian languages (Dixon 2002):

- Warlpiri property concept words are nouns (Simpson 2005, a.o.).

- (30) Kapirdi wirijarlu.
older.sister big
'The older sister is big.' (Warlpiri Dictionary Project)
- (31) Napangardi wijipalka.
Napangardi thief
'Napangardi is a thief.'
- (32) Wirijarlu-nyayirni ngamirni-rli=ji palka-ma-nu.
big-INTENS uncle-ERG=TOP presence-do-PST
'Uncle found a really big one.' (Warlpiri Dictionary Project)

- Warlpiri lacks determiners.

- (33) Ngarrka ka=rna nya-nyi.
man AUX.PRES=1SUBJ see-NPST
a. 'I see the man.'
b. 'I see a man.' (Hale 1983, 31-32)

Bittner and Hale (1995):

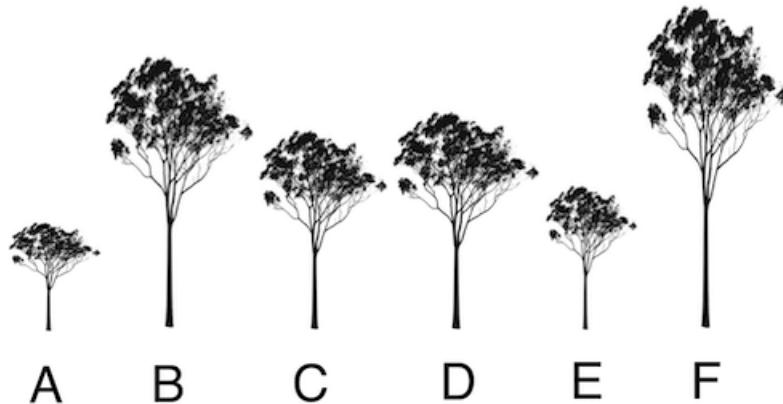
- Warlpiri nouns can be interpreted definitely, indefinitely, or predicatively.

- (34) Kurdu ka=rna nya-nyi.
child AUX.PRES=1SG see-NPST
a. 'I see a child.'
b. 'I see the child.'
c. 'I see him/her, who is a child.' (Bittner and Hale 1995, 18)

- Bittner and Hale (1995) assume Link (1983)'s type-shifting σ operator to derive definiteness; I'll use the iota operator, where $\iota x[P(x)]$ denotes the unique x such that $P(x)$.

- (35) a. $\llbracket \text{child} \rrbracket = \lambda x. \text{child}(x)$
 b. $\llbracket \text{the child} \rrbracket = \iota x[\text{child}(x)]$
- (36) a. $\llbracket \text{tall}_W \rrbracket^c = \lambda x. x \in \text{tall}^{+,c}$
 b. $\llbracket \text{the tall}_W \rrbracket^c = \iota x[x \in \text{tall}^{+,c}]$

As nouns, Warlpiri property concept words can be interpreted definitely in conjoined comparatives.



- (37) Context: There are six trees; two of the trees differ only slightly in size.

Nyampu watiya wirijarlu, wita nyampu=ju.

this tree big small this=TOP

'This tree is the big one, this one is the small one.'

- (38) $\llbracket (37) \rrbracket^c = 1$ iff $\text{this tree}_1 = \iota x[x \in \text{big}^{+,c}] \wedge \text{this tree}_2 = \iota y[y \in \text{small}^{+,c}]$

- Restated:
 - This tree₁ is the unique individual in the positive extension of *wirijarlu* 'big' in c
 - This tree₂ is the unique individual in the positive extension of *wita* 'small' in c
- The only two individuals in the extensions of 'big' and 'small' in c are this tree₁ and this tree₂.
 - ⇒ Accomplishes context restriction (§3; Kennedy 2007b) without explicitly manipulating the context parameter/variables, but instead appealing to Warlpiri-specific properties.
- Assuming Consistency Constraints, Warlpiri conjoined comparatives like (37) are predicted to be felicitous in crisp judgment contexts when the predicates are interpreted as definite descriptions.

- Explains acceptability in crisp judgment contexts while maintaining a degreeless analysis of Warlpiri, which accords with the morphosyntactic observations in Bowler (2016).

6. Cross-linguistic variation in conjoined comparatives

- Not much data available, but languages differ with respect to the availability of conjoined comparatives in crisp judgment contexts.
- Bochnak (2013, 2015): Like Warlpiri, Washo has conjoined comparatives and degreeless, vague property concepts, but Washo comparatives are unacceptable in crisp judgment contexts:

(39) Context: There are two pinecones. One is slightly bigger than the other.

wí:di? behézij-a?-š lák'a? wí:di? t'-í:yel-i?
this small-DEP-SR one this NMLZ-big-ATTR

Literally: ‘This one is small, this one is big.’ (Ryan Bochnak, p.c.)

- Bochnak (2013, 2015): Washo conjoined comparatives are conjunctions of positive predications; in crisp judgment contexts, neither individual “stands out” enough to license the positive predictions.

(40) $\llbracket(39)\rrbracket^c = 1$ iff this pinecone₁ counts as small in c \wedge this pinecone₂ counts as big in c

- Like Warlpiri, Washo lacks determiners (Hanink 2020).
- Unlike Warlpiri, property concepts in Washo are typically verbs, although they can undergo nominalization (Bochnak 2013).

(41) mé:hu ?il-káykay-i?-i
boy ATTR-tall-ATTR-IPFV
‘The boy is tall.’ (Bochnak 2013, 161)

(42) mé:hu de-?il-káykay-i? k'-é?-i
boy NMLZ-ATTR-tall-ATTR 3-COP-IPFV
‘The boy is tall.’ (Bochnak 2013, 162)

- As verbs, Washo property concepts cannot be interpreted definitely.
- My proposal predicts that Washo conjoined comparatives *could* be felicitous in crisp judgment contexts if both property concepts were nominalized and interpreted definitely.

Norm-relatedness of property concept words

- Independently, Bochnak (2013, 2015) describes Washo property concept words as “obligatorily norm-related”; the heights of the individuals in (43) are evaluated against a comparison class of all adults, and the conjoined comparison is therefore false.

- (43) Context: Comparing a man who is five feet tall and a woman who is four and a half feet tall (i.e., both clearly fall under the negative extension of *tall*):

#t’é:liwhu de-?il-káykay-i? k’-é?-i da?mō?mo?

man NMLZ-ATTR-tall-ATTR 3-COP-IPFV woman
de-?il-káykay-i?-e:s k’-e?-a?-š
NMLZ-ATTR-tall-ATTR-NEG 3-COP-AOR-SR

Literally: ‘The man is tall. The woman is not tall.’ (Bochnak 2015, 17)

- Analogous examples are felicitous in Warlpiri; (26): *Liddy is tall, Judy is short* is acceptable even though Liddy normally falls into the negative extension of *tall_{Warlpiri}*.
- Warlpiri-like data is also available in Samoan (Austronesian; Samoa; Marsack 1975) and Patpatar (Austronesian; Papua New Guinea; Peekel 1909):

- (44) Context: “To indicate that the 85,000 ton Queen Mary is bigger than the 45,000 ton Aquitania, a Samoan of the old school would say...”

Ua tele le Queen Mary, ua la’itiiti le Aquitania
is big the Queen Mary is small the Aquitania
‘The Queen Mary is bigger than the Aquitania.’

Literally: ‘The Queen Mary is big, the Aquitania is small.’ (Marsack 1975)

- Not all conjoined comparatives are alike; there is variation in context restriction, which can affect acceptability in crisp judgment contexts.

7. Conclusion

- Property concepts in Warlpiri and Washo have the same semantics; in both languages, they are Kleinian vague predicates.
- Warlpiri conjoined comparatives, unlike Washo, are felicitous in crisp judgment contexts, contrary to our understanding of positive vague predication (Graff 2000; Kennedy 2007b, 2011).
- Their acceptability is a result of:
 - Warlpiri property concept words are nouns
 - Phonologically null iota operator

⇒ Warlpiri conjoined comparatives presuppose that the positive and negative extensions of the vague predicates in a context contain only the two compared individuals.

- Conjoined comparatives in Warlpiri and Washo differ syntactically.
- Lesson for fieldworkers: Importance of looking at the broader grammar of the language, not just a single construction!

There is variation among the set of degreeless languages:

	Crisp contexts	Norm-related contexts	
Warlpiri	✓	✓	Bowler (2016)
Nez Perce	✓	✓	Deal and Hohaus (2019)
Washo	#	#	Bochnak (2013, 2015)
Motu	#	#	Beck et al. (2009); Villalta (2007)

- Even pragmatic comparatives can be felicitous in crisp judgment contexts.
- The availability of crisp judgments in a language is not necessarily a diagnostic of degreefulness.
- Instead, might hinge on:
 - Lexical category of property concepts
 - Availability of context restriction (e.g. ability to be interpreted definitely)

Thank you!

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