Conjunction and disjunction in a language without 'and'

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- Warlpiri (Pama-Nyungan) is spoken by approximately 3,000 people in central Australia.[1]
- Warlpiri has a single coordinator, *manu*, which occurs in coordination constructions of the form *P manu Q*:

(1) Cecilia **manu** Gloria=pala yanu tawunu-kurra.
Cecilia manu Gloria=3DU.SUBJ go.PST town-to
Cecilia and Gloria went to town.[2,3]

- When asked about possible Warlpiri translations for *or*, speakers explicitly state that 'or' is "not [their] language," and note that Warlpiri does not have an equivalent.
- This parallels another informal description given by Bain (2006: 11) regarding disjunction in Pitjantjatjara, a neighboring Pama-Nyungan language:

> "Problems with pure hypothesis are shown clearly in any discussion involving alternatives and possibilities. (...) The difficulty is exacerbated by the absence in Pitjantjatjara of terms with the meanings 'or,' 'either... or,' 'neither... nor;' thus it is difficult or impossible to present equally valid alternatives..."

- To circumvent the absence of 'or' in unembedded contexts, Warlpiri speakers instead use the expression 'maybe P, maybe Q' to express disjunction:

(2) Gloria **marda**, Cecilia **marda** yanu tawunu-kurra=ju.
Gloria maybe Cecilia maybe go.PST town-to=TOP
Gloria or Cecilia went to town.

[1]The data in this handout comes from my own fieldwork on the Ngaliya (southern/central) dialect of Warlpiri in Yuendumu, NT, Australia (July 2013 – September 2013).

[2]Abbreviations used in this handout include 1 'first person,' 2 'second person,' 3 'third person,' AUX 'auxiliary,' DAT 'dative,' DIREC 'directional,' DU 'dual,' ERG 'ergative,' EXCL 'exclusive,' FUT 'future,' INCL 'inclusive,' IRR 'irrealis,' LOC 'locative,' NEG 'negation,' NPST 'nonpast,' NSUBJ 'nonsubject,' PL 'plural,' PST 'past,' SG 'singular,' SUBJ 'subject.'

[3]I will simply gloss *manu* as 'manu' in this handout, since it has more than one interpretation.

1 Overview of the proposal

• The Warlpiri coordinator *manu* has a disjunctive denotation (∨) which is pragmatically strengthened to conjunction (&) using Fox's (2007) *Exh* operator.

• Warlpiri has no other coordinator; I propose that the language effectively lacks a coordinator with a conjunctive (&) denotation.

• In embedded contexts, *manu* sometimes is not strengthened to conjunction.[4]

• This strengthening proposal hinges on the absence of 'and' (&) from the set of Warlpiri scalar alternatives, cf. Singh, et al's (2013) proposal for English speaking children.

2 Warlpiri data

2.1 *P manu Q*

2.1.1 *P manu Q* in unembedded contexts

- ***P manu Q* is always interpreted conjunctively in unembedded contexts:**

(3) Cecilia **manu** Gloria=pala yanu tawunu-kurra. Jirrama=juku.
Cecilia manu Gloria=3DU.SUBJ go.PST town-to two=exactly
Cecilia and Gloria went to town. Exactly two did.[5]

(4) Jangala-rlu **manu** Jungarrayi-rli=pala luwarnu marlu. Jirrama=juku-rlu.
Jangala-ERG manu Jungarrayi-ERG=3DU.SUBJ shoot.PST kangaroo two=exactly-ERG
Jangala and Jungarrayi shot the kangaroo. Exactly two did.

(5) Ngapa ka wantimi **manu** warlpa ka wangkami.
water AUX fall.NPST manu wind AUX speak.NPST
Rain is falling and wind is blowing.

- Speakers are comfortable continuing these assertions with *jirrama=juku* 'exactly two,' showing that a conjunctive reading is available.

- *P manu Q* constructions are not acceptable in contexts in which the speaker does not know whether P or Q is true.

2.1.2 *P manu Q* under the scope of negation

- Sentential negation is expressed using a negative morpheme (*kula*) that combines and precedes the auxiliary; this *kula*-auxiliary complex can optionally occur clause-initially:

[4] In this presentation, I will mainly discuss this ambiguous interpretation of *manu* in the antecedent of conditionals. However, I also have data on variable strengthening of *manu* in Wh-questions and disjunctive polar questions.

[5] I assume, solely for the purposes of presentation, that all instances of apparent non-Boolean coordination have underlying ellipsis. This has no bearing on my theoretical discussion.

(6) Kula=rna yanu tawunu-kurra.
NEG=1SG.SUBJ go.PST town-to
I didn't go to town.

- Speakers interpret *manu* under the scope of negation as disjunctive; following de Morgan's laws: $\neg(P \vee Q) = (\neg P \,\&\, \neg Q)$:

(7) Cecilia **manu** Gloria kula=pala yanu Lajamanu-kurra. Lawa.
Cecilia manu Gloria NEG=3DU.SUBJ go.PST Lajamanu-to nothing
Neither Cecilia nor Gloria have been to Lajamanu. Neither one.

(8) Kula=rna=ngku yinyi rampaku **manu** loli.
NEG=1SG.SUBJ=2SG.NSUBJ give.NPST biscuit manu lolly
I won't give you biscuits or lollies.

(9) Kula=rna yunparnu **manu** wurntija jalangu. Lawa.
NEG=1SG.SUBJ sing.PST manu dance.PST today nothing
I didn't sing or dance today. I did nothing.

- Speakers are comfortable continuing these assertions with *lawa* 'neither'/'nothing,' showing that they interpret these as a conjunction, rather than disjunction, of negated propositions.

- Additionally, speakers are not comfortable using *manu* under the scope of negation in a context in which they are uncertain about P or Q.

- Speakers reject the use of the *P marda, Q marda* construction under negation:

(10) *Kula=rna nyangu marlu-ku **marda**, wardapi-ki **marda**.
NEG=1SG.SUBJ see.PST kangaroo-DAT maybe goanna-DAT maybe
I didn't see a kangaroo or a goanna.

2.1.3 *P manu Q* in the antecedent of conditionals

- Conditionals in Warlpiri are expressed using the morpheme *kaji* 'IRR,' which precedes the auxiliary and can also occur clause-initially:

(11) Kaji=npa yani japi-kirra, kuyu=ju manta.
IRR=2SG.SUBJ go.NPST shop-to meat=TOP get.IMPER
If you go to the shop, get some meat.

- *Manu* can be interpreted either conjunctively or disjunctively in the antecedents of conditionals:

(12) Kaji=npa kuyu **manu** mangarri ngarni ngula kapu=npa
AUX.IRR=2SG.SUBJ meat manu food eat.NPST that AUX.FUT=2SG.SUBJ
pirrjirdi-jarrimi.
strong-become.NPST
If you eat meat and vegetables, you will become strong.

(13) Kaji=npa jarntu pakarni **manu** *window* luwarni, ngula=ju
AUX.IRR=2SG.SUBJ dog hit.NPST manu window shoot.NPST that=TOP
Nungarrayi-rli kapi=ngki jirna-wangu-mani.
Nungarrayi-ERG AUX.FUT=2SG.NSUBJ scold.NPST
If you hit the dog or break the window, then Nungarrayi will scold you.

- I follow von Fintel (1999) in assuming that conditionals create Strawson-downward entailing (SDE) environments and crucially not downward-entailing (DE) environments.[6]
- This is consistent with the lack of entailment in (14) below:

(14) a. If I strike this match, it will light.
b. $\not\Longrightarrow$ If I dip this match into water and strike it, it will light. (von Fintel 1999: 33)

2.2 *P marda, Q marda*

- The Warlpiri modal *marda* can combine with a single proposition to express epistemic possibility:

(15) Gloria marda yanu tawunu-kurra.
Gloria maybe go.PST town-to
Maybe Gloria went to town.

- **Warlpiri speakers express unembedded disjunctions through a conjunction of epistemic possibilities ('maybe P and maybe Q')** (cf. Zimmermann 2001).
- Similar disjunctive strategies are used in other languages, including Mangarayi (Australia), Wari' (Brazil), Hup (Brazil & Colombia), and so on (Mauri 2008, 2011).

2.2.1 *P marda, Q marda* in unembedded contexts

(16) Gloria **marda**, Cecilia **marda** yanu tawunu-kurra=ju.
Gloria maybe Cecilia maybe go.PST town-to=TOP
Gloria or Cecilia went to town.

(17) Ngaju=rna nyangu nantuwu **marda**, kawardawara **marda**.
1SG=1SG.SUBJ see.PST horse maybe camel maybe
I saw a horse or a camel.

(18) Kapi **marda** kurlarda kijirni **marda** kapi warlu yarrpirni.
AUX.FUT maybe spear throw.NPST maybe AUX.FUT fire start.fire.NPST
He will throw a spear or he will start a fire.

- *P marda, Q marda* constructions are not interpreted the same as English disjunctive *P or Q* utterances: for instance, they are not subject to Hurford's constraint, and the set of disjuncts is not interpreted as exhaustive (see Zimmermann 2001).
- This is relevant to my later proposal that *P marda, Q marda* is an "elsewhere" strategy to express disjunction in Warlpiri.

[6] Informally, Q Strawson-entails P iff Q together with the presuppositions of P entail P.

2.3 Descriptive summary and toolkit

- A + indicates that the construction is attested in the given environment; – indicates that it is not attested:

Context	***P manu Q***	***P marda, Q marda***
Unembedded environments	+ (only conjunction)	+
Under the scope of negation	+ (only disjunction)	–
Antecedents of conditionals	+	–

Table 1: Distribution of P manu Q *and* P marda, Q marda.

- Note that the distribution of *P marda, Q marda* is relatively limited compared to the distribution of *P manu Q*.

- To account for the data in Table 1, I propose that Warlpiri speakers have the following lexical toolkit to express conjunction and disjunction:

(19) $[\![\text{manu}]\!]^w = [\![\text{or}_{English}]\!]^w = \lambda t_1 \in D_t . \lambda t_2 \in D_t . t_1 = 1 \vee t_2 = 1$

(20) $[\![\text{marda}]\!]^w = [\![\text{maybe}_{English}]\!]^w = \lambda q \in D_{<s,t>} . \exists w' \in \text{Epistemic}_w : q(w') = 1$

(21) Warlpiri has no coordinator equivalent to $[\![\text{and}_{English}]\!]^w$.
$(\lambda t_1 \in D_t . \lambda t_2 \in D_t . t_1 = 1 \ \& \ t_2 = 1)$

- **That is, *manu* has the same denotation as English *or*, *marda* has the same denotation as English *maybe*, and Warlpiri has no coordinator with a denotation equivalent to English *and*.**

3 Theoretical discussion

3.1 Strengthening of *P manu Q*

- I am assuming Fox's (2007) exhaustification operator, *Exh*, which he uses to derive well-known Gricean implicatures. *Exh* application is motivated by the removal of ignorance inferences.
  - Since this operator is located within the syntax, it can be applied recursively.
  - Again, since it is a syntactic operator, *Exh* can be inserted at different locations within the tree.

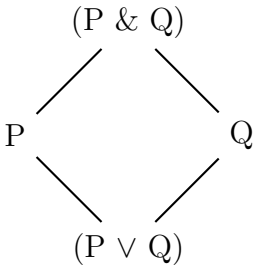
- **Basic idea behind the use of *Exh*: Exhaustification negates as many of the scalar alternatives to the prejacent as possible, and combines them with the prejacent to yield a strengthened interpretation.**
  - Used to obtain an exclusive interpretation of English *P or Q*:
    $((P \vee Q) \ \& \ \neg(P \ \& \ Q))$, where $(P \ \& \ Q)$ is a scalar alternative to $(P \vee Q)$.
  - Fox (2007) uses recursive application of *Exh* to account for the conjunctive interpretation of *or* under deontic possibility modality (*You may have cake or ice cream*).

- Strengthening disjunctive *manu* (P ∨ Q) to conjunction (P & Q) hinges on the scalar alternatives available for *manu* ({P, Q, (P ∨ Q)}).

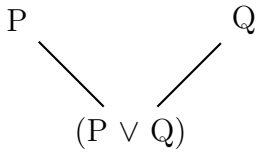
3.1.1 Alternatives to *P manu Q*

I assume that the individual disjuncts {P, Q} are themselves included on the scale of disjunction, following other authors (e.g. Sauerland 2004).

(22) Alternatives to English *P or Q*:
{P, Q, (P ∨ Q), (P & Q)}



(23) Alternatives to Warlpiri *P manu Q*:
{P, Q, (P ∨ Q)}



- The Warlpiri alternatives in (23) are the same as those for English-speaking children proposed by Singh, et al (2013).
- **Singh, et al propose that these alternatives fall out from the inability of children to access the lexicon when generating scalar alternatives, whereas I crucially claim that they fall out from a complete lack of a conjunctive coordinator (&) in Warlpiri.**
- When *Exh* is recursively applied to the alternatives in (23), the result is conjunction:
((P ∨ Q) & ¬(¬P & Q) & ¬(P & ¬Q)) = (P & Q).
- Use of *Exh* allows me to derive {(¬P & Q), (P & ¬Q)} as part of the strengthened meaning of *P manu Q* without positing them as belonging to the set of alternatives.

3.1.2 *Exh* application to English *P or Q*

- I assume the following basic denotation of *Exh*:

(24) ⟦Exh⟧(ALT)(P) = (P and for all innocently excludable (IE) Q ∈ ALT: ¬Q)[7]

(25) EXCL(ALT)(P) = {S ⊆ ALT: S ≠ ∅, and {¬Q: Q ∈ S} ∪ {P} is consistent}

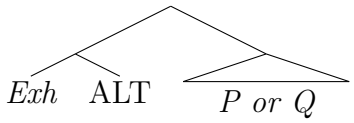
(26) **IE = ∩EXCL**$_{max}$

[7]More accurately:

(1) ⟦Exh⟧^{w}(ALT)(P) = 1 iff P(w) = 1 and for all innocently excludable (IE) Q in ALT: Q(w) = 0.

- *Exh* application yields the following tree:[8]

(27)



(28) $\text{ALT}_{(P \textit{ or } Q)} = \{\text{P}, \text{Q}, (\text{P} \vee \text{Q}), (\text{P} \,\&\, \text{Q})\}$

(29) $\text{EXCL}(\text{ALT})(\text{P} \vee \text{Q}) = \{\{\text{P}\}, \{\text{Q}\}, \{(\text{P} \,\&\, \text{Q})\}, \{\text{P}, (\text{P} \,\&\, \text{Q})\}, \{\text{Q}, (\text{P} \,\&\, \text{Q})\}\}$

(30) $\text{EXCL}_{max} = \{\{\text{P}, (\text{P} \,\&\, \text{Q})\}, \{\text{Q}, (\text{P} \,\&\, \text{Q}\}\}$

(31) $\text{IE} = \cap\text{EXCL}_{max} = \{(\text{P} \,\&\, \text{Q})\}$

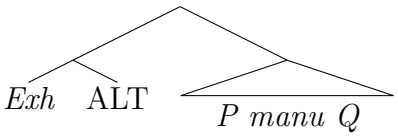
(32) $\mathbf{\text{Exh}(\text{ALT})(\text{P} \vee \text{Q}) = \underline{(\text{P} \vee \text{Q}) \,\&\, \neg(\text{P} \,\&\, \text{Q})}}$

- *Exh* application yields an exclusive interpretation of *P or Q*.

3.1.3 *Exh* application to *P manu Q*

- The first instance of *Exh* application yields the following tree:

(33)



(34) $\text{ALT}_{(P \textit{ manu } Q)} = \{\text{P}, \text{Q}, (\text{P} \vee \text{Q})\}$

(35) $\text{EXCL}(\text{ALT})(\text{P} \vee \text{Q}) = \{\{\text{P}\}, \{\text{Q}\}\}$

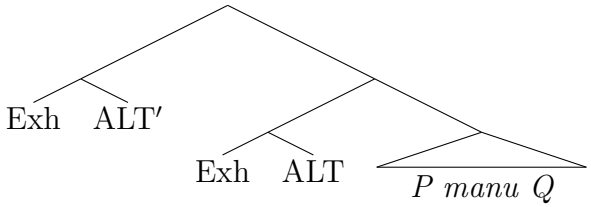
(36) $\text{EXCL}_{max} = \{\{\text{P}\}, \{\text{Q}\}\}$

(37) $\text{IE} = \cap\text{EXCL}_{max} = \varnothing$

(38) $\mathbf{\text{Exh}(\text{ALT})(\text{P} \vee \text{Q}) = \text{P} \vee \text{Q}}$

- Recursive *Exh* application yields the following tree:

(39)



- Evaluating ALT′:

(40) $\text{ALT}' = \{\text{Exh}(\text{ALT})(\text{P}), \text{Exh}(\text{ALT})(\text{Q}), \text{Exh}(\text{ALT})(\text{P} \vee \text{Q})\}$

(41) $\text{EXCL}(\text{ALT})(\text{P}) = \{\{\text{Q}\}\}$
$\text{IE} = \cap\text{EXCL}_{max} = \{\text{Q}\}$
$\text{Exh}(\text{ALT})(\text{P}) = \mathbf{(\text{P} \,\&\, \neg\text{Q})}$

[8] ALT is derived following an algorithm proposed by Katzir (2008) and Fox & Katzir (2011); *or* is replaced by its lexical alternatives (namely, *or* and *and*), and the node *P or/and Q* is replaced by the type-relevant nodes it dominates (namely, *P, Q, P and Q*, and *P or Q*).

(42) EXCL(ALT)(Q) = {{P}}
IE = ∩EXCL$_{max}$ = {P}
Exh(ALT)(Q) = **(Q & ¬P)**

(43) EXCL(ALT)(P ∨ Q) = {{P}, {Q}}
IE = ∩EXCL$_{max}$ = ∅
Exh(ALT)(P ∨ Q) = **(P ∨ Q)**

(44) ALT′ = {(P & ¬ Q), (Q & ¬P), (P ∨ Q)}

- Evaluating the full expression (Exh(ALT′)(Exh(ALT)(P ∨ Q))):

(45) Exh(ALT′)(Exh(ALT)(P ∨ Q)) *recall that (Exh(ALT)(P ∨ Q)) = (P ∨ Q)*

(46) EXCL′(ALT′)(Exh(ALT)(P ∨ Q)) = {{(P & ¬Q)}, {(Q & ¬P)}, {(P & ¬Q), (Q & ¬P)}}
EXCL′$_{max}$ = {{(P & ¬Q), (Q & ¬P)}}
IE′ = ∩EXCL′$_{max}$ = {(P & ¬Q), (Q & ¬P)}

(47) **Exh(ALT′)(Exh(ALT)(P ∨ Q)) =**
(P ∨ Q) & ¬(P & ¬Q) & ¬(Q & ¬P) = <u>(P & Q)</u>

- Assuming the set of alternatives {P, Q, (P ∨ Q)}, *Exh* application results in conjunction.
- This is how pragmatic strengthening to conjunction proceeds for Warlpiri *P manu Q*, cf. Singh, et al's (2013) analysis of English-speaking childrens' conjunctive interpretation of disjunction.
- Singh, et al propose that children **variably access the lexicon**; some children will include a conjunctive alternative (P & Q) before others. This accounts for the variable strengthening observed in their data.
- I propose that Warlpiri speakers entirely lack a conjunctive alternative (P & Q); **as predicted, strengthening *manu* to conjunction is categorical in unembedded environments in Warlpiri.**

3.2 Predictions for *Exh* application

- **I propose that *Exh* application is licit as long as the resulting expression is not weaker than the non-exhaustified expression.**
- ***Exh* application is obligatory if ignorance inferences regarding P, Q are removed from the matrix clause (and the output of *Exh* is stronger).**
- In the following trees, I will not include the second argument of *Exh* (namely, ALT) for simplicity.

3.2.1 Strengthening *P manu Q* in unembedded contexts

- *Exh* application proceeds as outlined in section 3.1.3; that is, disjunctive *manu* is strengthened to conjunction.
- (48)–(49) compare exhaustified and non-exhaustified Warlpiri *manu* and English *or* and *and*:

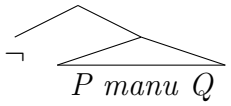
(48) Non-exhaustified constructions:
  a. *P *manu* $Q = \mathbf{P} \vee \mathbf{Q}$
  b. P *or* $Q = \mathbf{P} \vee \mathbf{Q}$
  c. P *and* $Q = \mathbf{P}$ **&** $\mathbf{Q}$

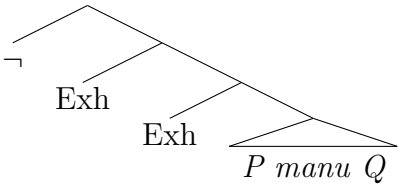
(49) Exhaustified constructions:
  a. Exh(Exh(P *manu* Q)) = **P & Q**
  b. Exh(P *or* Q) = (P $\vee$ Q) & $\neg$(P & Q)

- Non-exhaustified *manu* and *or* have the same interpretations.
- Exhaustified *manu* and non-exhaustified *and* have the same interpretations.
- In English, removal of all ignorance inferences associated with P *or* Q is not possible; strengthening is therefore not obligatory.
- **Since *Exh* application to *P manu Q* removes all ignorance inferences from the matrix clause, strengthening is obligatory in this context.**
- Since non-exhaustified *manu* (P $\vee$ Q) cannot be used to express disjunction in unembedded contexts, Warlpiri speakers use *P marda, Q marda* instead.

3.2.2 Strengthening *P manu Q* under negation

(50)





- (51)–(52) compare exhaustified and non-exhaustified Warlpiri *manu* and English *or* and *and* under negation:[9]

(51) Non-exhaustified constructions:
  a. $\neg(P$ *manu* $Q) = \neg$(P $\vee$ Q) = $\neg\mathbf{P}$ **&** $\neg\mathbf{Q}$
  b. $\neg(P$ *or* $Q) = \neg$(P $\vee$ Q) = $\neg\mathbf{P}$ **&** $\neg\mathbf{Q}$
  c. $\neg(P$ *and* $Q)= \neg$(P & Q) = $\neg$P $\vee$ $\neg$Q

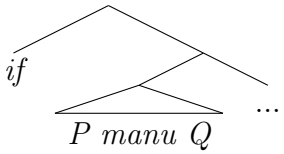
(52) Locally exhaustified constructions:
  a. *$\neg$(Exh(Exh(P *manu* Q))) = $\neg$(P & Q) = $\neg$P $\vee$ $\neg$Q
  b. *$\neg$(Exh(P *or* Q) = $\neg$((P $\vee$ Q) & $\neg$(P & Q))

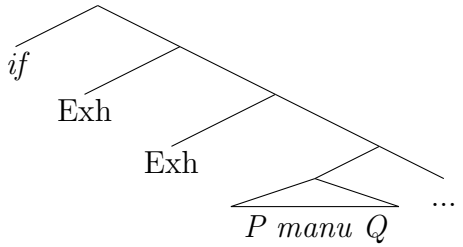
- Again, non-exhaustified *manu* and *or* have the same interpretations, and exhaustified *manu* and non-exhaustified *and* have the same interpretations.
- **Since non-exhaustified *manu* under negation ($\neg$P & $\neg$Q) is stronger than exhaustified *manu* under negation ($\neg$P $\vee$ $\neg$Q), only the non-exhaustified construction is licit.**

[9] Global *Exh* application is also available, in principle. When *Exh* applies globally in this context, the resulting interpretation is still a conjunction of negated propositions:
(1) Exh(Exh($\neg(P$ *manu* $Q)$)) = $\neg$(P $\vee$ Q) = $\neg$P & $\neg$Q

3.2.3 Strengthening *P manu Q* in antecedents of conditionals

(53)





- (54)–(55) compare exhaustified and non-exhaustified Warlpiri *manu* and English *or* and *and* in the antecedents of conditionals:

(54) Non-exhaustified constructions:
  a. *if* (*P manu Q*)(...) = ***if*** **(P ∨ Q)(...)**
  b. *if* (*P or Q*)(...) = ***if*** **(P ∨ Q)(...)**
  c. *if* (*P and Q*)(...) = ***if*** **(P & Q)(...)**

(55) Exhaustified constructions:
  a. *if* (Exh(Exh(*P manu Q*)))(...) = ***if*** **(P & Q)(...)**
  b. *if* (Exh(*P or Q*))(...) = *if* ((P ∨ Q) & ¬(P & Q))(...)

- Again, non-exhaustified *manu* and *or* have the same interpretations, and exhaustified *manu* and non-exhaustified *and* have the same interpretations.

- **Since there is no entailment relationship between exhaustified and non-exhaustified** *manu* **in this construction (assuming von Fintel's 1999 SDE proposal), both exhaustified and non-exhaustified readings are available.**[10]

3.3 Strengthening of *P marda, Q marda*

- The epistemic possibilities can be overtly conjoined using *manu* in *P marda manu Q marda* constructions:

(56) Kapu=rlipa=rla karlami ngarlkirdi-ki **marda**, **manu** yunkaranyi-ki
AUX.FUT=1PL.INCL=3DAT dig.NPST witchetty.grub-DAT maybe manu honey.ant-DAT
marda.
maybe
We will dig for witchetty grubs or for honey ants.

- I propose that in simplified *P marda, Q marda* constructions, a covert instance of *manu* is still present and conjoins the epistemic possibilities. (57)–(58) give the non-exhaustified and exhaustified interpretations:

[10]Global *Exh* application is also possible in principle, but it doesn't result in removal of the ignorance inferences regarding P, Q.

(57) Non-exhaustified constructions:[11]
  a. *P marda (manu) Q marda* = (◇P ∨ ◇Q)

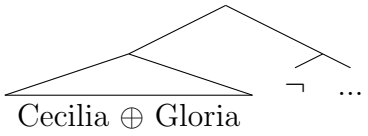
(58) Exhaustified constructions:[12]
  a. Exh(Exh(*P marda (manu) Q marda*)) = (◇P & ◇Q)

- The communicative effects of this construction are not the same as disjunction.
- **If *manu* is unavailable to express disjunction, Warlpiri speakers use *P marda, Q marda* as an "elsewhere" strategy.**

4 An alternative theory: what if *manu* has a conjunctive denotation and scopes above negation?

- Under this proposal, *manu* has a conjunctive denotation akin to English *and*.
- This straightforwardly accounts for the conjunctive interpretation of *manu* in unembedded contexts.
- In negated constructions, *manu* behaves like a PPI and takes scope above negation:[13]

(59)



- A PPI analysis has been proposed for disjunctive coordinators in Hungarian, Russian, and Japanese (e.g. Szabolsci & Haddican 2004):

(60) Nem látta Kati-t **vagy** Mari-t.
NEG see Kati-ACC or Mari-ACC
He didn't see Kati or Mari. (Szabolsci & Haddican 2004: 3)
*NEG > or: He didn't see Kati nor Mari.
√or > NEG: He didn't see both Kati and Mari.

4.1 Scope islands in Warlpiri

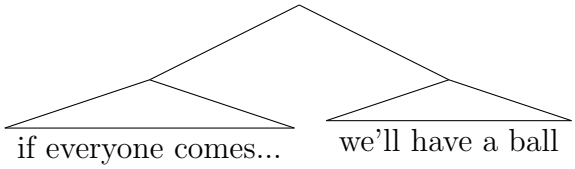
- Various syntactic constructions are argued to contain islands out of which movement is not possible, including the antecedents of conditionals:

[11] At present, I don't have any data to rule out the use of (57).

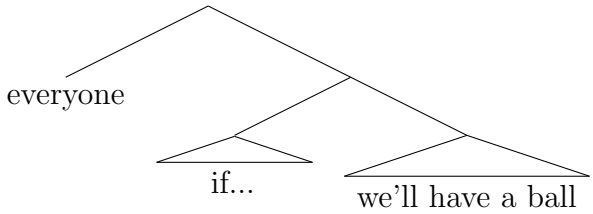
[12] I assume that epistemic necessity (□) is not an alternative to epistemic possibility (◇) in Warlpiri due to cultural/speech norms regarding the use of epistemic possibility modals, and to the fact that the implicature ¬□P does not appear to arise with the use of ◇P in Warlpiri.

[13] I assume here that *manu* denotes a plurality (following e.g. Link 1983); a distributivity operator distributes the property denoted by the negated predicate over the atomic parts of *Cecilia manu Gloria* (represented in the tree as (Cecilia ⊕ Gloria)).

(61) If everyone comes to the party, we'll have a ball.
(if > ∀: If every person comes to the party, we'll have a ball.)

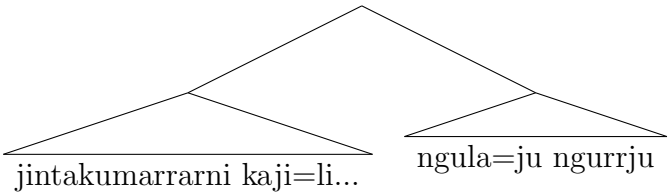


(62) If everyone comes to the party, we'll have a ball.
(*∀ > if: *Every person is such that if they come to the party, we'll have a ball; that is, if Bill comes to the party we'll have a ball, if Susan comes to the party we'll have a ball, and so on.)



- This same island property holds of the antecedents of conditionals in Warlpiri:

(63) Jintakumarrarni kaji=li yani-rni purlupa-kurra, ngula=ju ngurrju.
everyone IRR=3PL.SUBJ go.NPST-DIREC ceremony-to that=TOP good
If everyone comes to the ceremony, it will be good.
(if > ∀: If every person comes to the ceremony, it will be good.)



(64) Jintakumarrarni kaji=li yani-rni purlupa-kurra, ngula=ju ngurrju.
everyone IRR=3PL.SUBJ go.NPST-DIREC ceremony-to that=TOP good
If everyone comes to the ceremony, it will be good.
(*∀ > if: *Every person is such that if they come to the ceremony, it will be good; that is, if Nangala comes to the ceremony it will be good, if Napangardi comes to the ceremony it will be good, and so on.)

- **Since the antecedents of conditionals are scope islands in Warlpiri, this suggests that *manu* cannot undergo movement out of them.**

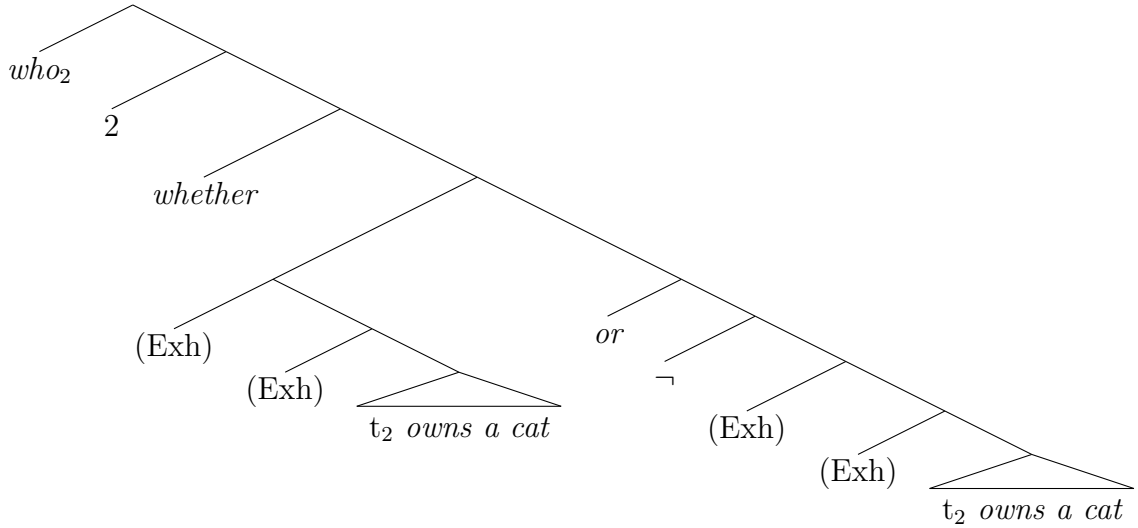
- Furthermore, a disjunctive interpretation of *manu* is also possible in this environment (12)–(13).

4.2 Wh-questions and *manu*

- In section 3.2, I argued that *Exh* application is licit as long as the resulting expression is not weaker than the non-exhaustified expression.

- This predicts that *Exh* application should be optional in e.g. questions, which do not enter into clear entailment relationships. *Manu* is therefore predicted to be ambiguous.
- The availability of a conjunctive reading of *manu* in e.g. Wh-questions is predicted by Guerzoni & Sharvit's (2013) proposal that Wh-questions include covert negation, which is motivated by their ability to license NPIs (e.g. *Who has any money?*):

(65) Who owns a cat?



- This predicted ambiguity is observed in my data on Warlpiri Wh-questions:

(66) Ngana-ngku ka mardarni ngaya **manu** jarntu?
who-ERG AUX have.NPST cat manu dog?
1) Who has a cat or a dog?
2) Who has a cat and a dog?

- It is hard to see how this ambiguity can be accounted for assuming the conjunctive analysis of *manu*.

5 Conclusion

- **The Warlpiri coordinator *manu* has an underlying disjunctive denotation ($\vee$).**
- The scale of alternatives for *P manu Q* are $\{P, Q, (P \vee Q)\}$, which falls out from an absence of a conjunctive coordinator (&).
- Recursive *Exh* application to an unembedded *P manu Q* assertion yields conjunction $((P \vee Q) \;\&\; \neg(\neg P \;\&\; Q) \;\&\; \neg(P \;\&\; \neg Q) = (P \;\&\; Q))$.
- Pragmatic constraints determine whether strengthening takes place.
- This can account for ambiguity in some embedded contexts such as the antecedents of conditionals, and the lack of ambiguity in unembedded and negated contexts.

5.1 Further consequences

- My proposal also predicts that *manu* should have an unambiguous conjunctive interpretation when embedded under verbs like *know*.
- This is supported by my preliminary data on *milya-pinyi* 'know':

(67) Nangala-rlu milya-pinyi Cecilia **manu** Gloria ka=pala yani tawunu-kurra.
Nangala-ERG know.NPST Cecilia manu Gloria AUX=3DU.SUBJ go.NPST town-to
Nangala knows that Cecilia and Gloria are going to town.

(68) Milya-pinyi ka=rna puurlu-rla **marda**, kuurlu-rla **marda**.
know.NPST AUX=1SG.SUBJ pool-LOC maybe school-LOC maybe
I know he's at the pool or at the school.

- Future fieldwork may reveal similar coordination systems in other languages.

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