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.  

- Warlpiri has a single coordinator, manu, which occurs in coordination constructions of the form $P \text{manu} Q$:

$$(1) \quad \text{Cecilia manu Gloria=3DU.SUBJ go.PST town-to tawunu-kurra.}$$

Cecilia and Gloria went to town.  

- 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:

$$(2) \quad \text{Gloria marda, Cecilia marda yanu tawumu-kurra=ju.}$$

Gloria or Cecilia went to town.

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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).


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 (\(\lor\)) 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.\(^4\)

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:

Cecilia *manu* Gloria=3DU.SUBJ go.PST town-to two=exactly  
Cecilia and Gloria went to town. Exactly two did.\(^5\)

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: \( \neg(P \lor Q) = (\neg P \land \neg Q) \):

    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 *manda*, wardapi-ki *manda*.
    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-rl  kapi=ngk  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.  \(\not\Rightarrow\) If I dip this match into water and strike it, it will light.  (von Fintel 1999: 33)

2.2  \(P \text{ marda},  Q \text{ marda}\)

• 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  \(P \text{ marda},  Q \text{ marda}\) 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.

• \(P \text{ marda},  Q \text{ marda}\) 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 \(P \text{ marda},  Q \text{ marda}\) 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:

<table>
<thead>
<tr>
<th>Context</th>
<th>$P \text{ manu } Q$</th>
<th>$P \text{ marda, Q marda}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unembedded environments</td>
<td>+ (only conjunction)</td>
<td>+</td>
</tr>
<tr>
<td>Under the scope of negation</td>
<td>+ (only disjunction)</td>
<td>–</td>
</tr>
<tr>
<td>Antecedents of conditionals</td>
<td>+</td>
<td>–</td>
</tr>
</tbody>
</table>

*Table 1: Distribution of $P \text{ manu } Q$ and $P \text{ marda, Q marda}$.*

- Note that the distribution of $P \text{ marda, Q marda}$ is relatively limited compared to the distribution of $P \text{ manu } Q$.

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

\[
\begin{align*}
(19) \quad [\text{manu}]^w &= [\text{or}_\text{English}]^w = \lambda t_1 \in D_t, \lambda t_2 \in D_t, t_1 = 1 \lor t_2 = 1 \\
(20) \quad [\text{marda}]^w &= [\text{maybe}_\text{English}]^w = \lambda q \in D_{<s,t>}, \exists w' \in \text{Epistemic}_w : q(w') = 1 \\
(21) \quad \text{Warlpiri has no coordinator equivalent to } [\text{and}_\text{English}]^w. \\
&\quad (\lambda t_1 \in D_t, \lambda t_2 \in D_t, t_1 = 1 \& t_2 = 1)
\end{align*}
\]

- 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 $P \text{ manu } Q$

- 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 $Q$: 
    $$((P \lor Q) \& \neg (P \& Q)),$$ where $(P \& Q)$ is a scalar alternative to $(P \lor Q)$.
  - 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 \((P \lor Q)\) to conjunction \((P \land Q)\) hinges on the scalar alternatives available for manu \(\{P, Q, (P \lor Q)\}\).

### 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 \(Q\):
\[
\{P, Q, (P \lor Q), (P \land Q)\}
\]

(23) Alternatives to Warlpiri \(P\) manu \(Q\):
\[
\{P, Q, (P \lor Q)\}
\]

- 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:

\[
((P \lor Q) \land \neg(\neg P \land Q) \land \neg(P \land \neg Q)) = (P \land Q).
\]

- Use of \(Exh\) allows me to derive \(\{(\neg P \land Q), (P \land \neg Q)\}\) 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) \[\text{Exh}](ALT)(P) = (P \text{ and for all innocently excludable (IE) } Q \in ALT: \neg Q)^7\]

(25) \(\text{EXCL}(ALT)(P) = \{S \subseteq ALT: S \neq \emptyset, \text{ and } \{\neg Q: Q \in S\} \cup \{P\} \text{ is consistent}\}\)

(26) \(\text{IE} = \cap \text{EXCL}_{max}\)

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7 More accurately:

(1) \[\text{Exh}^w(ALT)(P) = 1 \text{ iff } P(w) = 1 \text{ and for all innocently excludable (IE) } Q \text{ in ALT: } Q(w) = 0.\]
• *Exh* application yields the following tree:

$$
\text{Exh} \quad \text{ALT} \quad P \text{ or } Q
$$

(27) 

(28) \(\text{ALT}(P \text{ or } Q) = \{P, Q, (P \lor Q), (P \land Q)\}\)

(29) \(\text{EXCL}(\text{ALT})(P \lor Q) = \{\{P\}, \{Q\}, \{(P \land Q)\}, \{P, (P \land Q)\}, \{Q, (P \land Q)\}\}\)

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

(31) \(\text{IE} = \cap \text{EXCL}_{\text{max}} = \{(P \land Q)\}\)

(32) \(\text{Exh}(\text{ALT})(P \lor Q) = (P \lor Q) \land \neg (P \land Q)\)

• *Exh* application yields an exclusive interpretation of \(P \text{ or } Q\).

3.1.3 *Exh* application to \(P \text{ manu } Q\)

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

$$
\text{Exh} \quad \text{ALT} \quad P \text{ manu } Q
$$

(33)

(34) \(\text{ALT}(P \text{ manu } Q) = \{P, Q, (P \lor Q)\}\)

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

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

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

(38) \(\text{Exh}(\text{ALT})(P \lor Q) = P \lor Q\)

• Recursive *Exh* application yields the following tree:

$$
\text{Exh} \quad \text{ALT'} \quad \text{Exh} \quad \text{ALT} \quad P \text{ manu } Q
$$

(39)

• Evaluating ALT':

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

(41) \(\text{EXCL}(\text{ALT})(P) = \{\{Q\}\}\)

\(\text{IE} = \cap \text{EXCL}_{\text{max}} = \{Q\}\)

\(\text{Exh}(\text{ALT})(P) = (P \land \neg Q)\)

\(\text{ALT} \text{ is derived following an algorithm proposed by Katzir (2008) and Fox & Katzir (2011); or is replaced by its lexical alternatives (namely, or and and), and the node } P \text{ or/and } Q \text{ is replaced by the type-relevant nodes it dominates (namely, } P, Q, P \text{ and } Q, \text{ and } P \text{ or } Q).\)
(42) EXCL(ALT)(Q) = \{\{P\}\}
IE = \cap EXCL_{max} = \{P\}
Exh(ALT)(Q) = (Q & \neg P)

(43) EXCL(ALT)(P \lor Q) = \{\{P\}, \{Q\}\}
IE = \cap EXCL_{max} = \emptyset
Exh(ALT)(P \lor Q) = (P \lor Q)

(44) ALT' = \{(P \& \neg Q), (Q \& \neg P), (P \lor Q)\}

- Evaluating the full expression (Exh(ALT')(Exh(ALT)(P \lor Q))):

(45) Exh(ALT')(Exh(ALT)(P \lor Q)) \text{ recall that } (Exh(ALT)(P \lor Q)) = (P \lor Q)

(46) EXCL'(ALT')(Exh(ALT)(P \lor Q)) = \{\{(P \& \neg Q), (Q \& \neg P)\}, \{(P \& \neg Q), (Q \& \neg P)\}\}
EXCL'_{max} = \{\{(P \& \neg Q), (Q \& \neg P)\}\}
IE' = \cap EXCL'_{max} = \{(P \& \neg Q), (Q \& \neg P)\}

(47) Exh(ALT')(Exh(ALT)(P \lor Q)) =
(P \lor Q) & \neg (P \& \neg Q) & \neg (Q \& \neg P) = (P \& Q)

- Assuming the set of alternatives \{P, Q, (P \lor Q)\}, Exh application results in conjunction.


- Singh, et al propose that children \textbf{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. \(^*P\ manu\ Q = P \lor Q\)
   b. \(P\ or\ Q = P \lor Q\)
   c. \(P\ and\ Q = P \& Q\)

(49) Exhaustified constructions:
   a. \(\text{Exh}(\text{Exh}(P\ manu\ Q)) = P \& Q\)
   b. \(\text{Exh}(P\ or\ Q) = (P \lor Q) \& \neg(P \& Q)\)

- Non-exhaustified \textit{manu} and \textit{or} have the same interpretations.
- Exhaustified \textit{manu} and non-exhaustified \textit{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 \textit{Exh} application to \(P\ manu\ Q\) removes all ignorance inferences from the matrix clause, strengthening is obligatory in this context.
- Since non-exhaustified \textit{manu} \((P \lor Q)\) 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

\[
\begin{align*}
\text{(50)} & \quad \neg(P\ manu\ Q) \\
\text{(51)} & \quad \neg(\text{Exh}(\text{Exh}(P\ manu\ Q))) = \neg(P \& Q) = \neg P \& \neg Q \\
\text{(52)} & \quad \neg(\text{Exh}(P\ or\ Q)) = \neg((P \lor Q) \& \neg(P \& Q))
\end{align*}
\]

- (51)–(52) compare exhaustified and non-exhaustified Warlpiri \textit{manu} and English \textit{or} and \textit{and} under negation.\(^9\)

(51) Non-exhaustified constructions:
   a. \(\neg(P\ manu\ Q) = \neg(P \lor Q) = \neg P \& \neg Q\)
   b. \(\neg(P\ or\ Q) = \neg(P \lor Q) = \neg P \& \neg Q\)
   c. \(\neg(P\ and\ Q) = \neg(P \& Q) = \neg P \lor \neg Q\)

(52) Locally exhaustified constructions:
   a. \(^*\neg(\text{Exh}(\text{Exh}(P\ manu\ Q))) = \neg(P \& Q) = \neg P \lor \neg Q\)
   b. \(^*\neg(\text{Exh}(P\ or\ Q)) = \neg((P \lor Q) \& \neg(P \& Q))\)

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

\(^9\)Global \textit{Exh} application is also available, in principle. When \textit{Exh} applies globally in this context, the resulting interpretation is still a conjunction of negated propositions:

\[
\text{(1)} \quad \text{Exh}(\text{Exh}(\neg(P\ manu\ Q))) = \neg(P \lor Q) = \neg P \& \neg Q
\]
3.2.3 Strengthening \( P \text{ manu } Q \) in antecedents of conditionals

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

\begin{align*}
(54) \text{ Non-exhaustified constructions:} \\
\text{a. } & \text{if } (P \text{ manu } Q)(...) = \text{if } (P \lor Q)(...) \\
\text{b. } & \text{if } (P \text{ or } Q)(...) = \text{if } (P \lor Q)(...) \\
\text{c. } & \text{if } (P \text{ and } Q)(...) = \text{if } (P \land Q)(...) \\
(55) \text{ Exhaustified constructions:} \\
\text{a. } & \text{if } (\text{Exh}(\text{Exh}(P \text{ manu } Q)))(...) = \text{if } (P \land Q)(...) \\
\text{b. } & \text{if } (\text{Exh}(P \text{ or } Q))(...) = \text{if } ((P \lor Q) \land \neg(P \land Q))(...)
\end{align*}

- Again, non-exhaustified \( \text{manu} \) and \( or \) have the same interpretations, and exhaustified \( \text{manu} \) and non-exhaustified \( and \) have the same interpretations.

- Since there is no entailment relationship between exhaustified and non-exhaustified \( \text{manu} \) in this construction (assuming von Fintel’s 1999 SDE proposal), both exhaustified and non-exhaustified readings are available.\(^{10}\)

3.3 Strengthening of \( P \text{ marda, Q marda} \)

- The epistemic possibilities can be overtly conjoined using \( \text{manu} \) in \( P \text{ marda manu Q marda} \) constructions:

\begin{align*}
(56) \text{ Kapu=rlip=rla karlam ngarkirdi-ki marda, manu yunkaranyi-ki} \\
\text{aux.fut=1pl.incl=3dat dig.npst witchetty.grub-dat maybe manu honey.ant-dat marda.} \\
\text{maybe} \\
\text{We will dig for witchetty grubs or for honey ants.}
\end{align*}

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

\(^{10}\)Global \( \text{Exh} \) application is also possible in principle, but it doesn’t result in removal of the ignorance inferences regarding \( P, Q \).
Non-exhaustified constructions:¹¹
1. \( P \text{ marda (manu)} Q \text{ marda} = (\Diamond P \lor \Diamond Q) \)

Exhaustified constructions:¹²
1. \( \text{Exh}(\text{Exh}(P \text{ marda (manu)} Q \text{ marda})) = (\Diamond P \land \Diamond Q) \)

- The communicative effects of this construction are not the same as disjunction.
- If manu is unavailable to express disjunction, Warlpiri speakers use \( P \text{ marda}, Q \text{ marda} \) 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

\[
Cecilia \oplus \text{ Gloria} \quad \neg 
\]

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

\[
\text{Nem látta Kati-t \quad vagy \quad Mari-t.} \\
\text{NEG see \quad Kati-ACC or \quad Mari-ACC} \\
\text{He didn’t see Kati or Mari.} \\
\quad \neg \text{NEG > or: He didn’t see Kati nor Mari.} \\
\quad \sqrt{\text{or > NEG: He didn’t see both Kati and Mari.}} \\
\text{(Szabolsci & Haddican 2004: 3)}
\]

### 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:

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

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

¹³I 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 \(\oplus\) 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?

```
  who_2
     2
    whether
     /
    (Exh) (Exh)
    /
   t_2 owns a cat or
   (Exh) ¬
   (Exh) t_2 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 (∨).

• The scale of alternatives for P manu Q are {P, Q, (P ∨ Q)}, which falls out from an absence of a conjunctive coordinator (∧).

• Recursive Exh application to an unembedded P manu Q assertion yields conjunction ((P ∨ Q) & ¬(¬P & Q) & ¬(P & ¬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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