Irrealis or 1-place disjunction

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Colloquium
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Overview

• Preamble: Some concerns about data and definitions
• Relationship between disjunction and irrealis marking.
• Broader concerns about the distinction between one-place vs. two-place truth-functional operators
• Arguing that the traditional analysis of disjunction (and conjunction) are Eurocentric and in need of reconsideration. Recent typological work is exciting, but has not yet gone far enough...
Preamble: Database challenges

- Almost all detailed elicitation has been with European languages
- Other data often limited to almost incidental mention of the syntax of coordination in reference grammars.
  - Disjunction interpreted in other languages in terms of analyses of “Standard Average European” or “familiar” languages.
  - What if SAE languages represented a less typical pattern?
Preamble: What is disjunction?

• In “standard” logic: disjunction is

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• Also known as inclusive disjunction or and/or
Preamble: What else is disjunction?

• In “standard” logic: exclusive disjunction is

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• Also known as *either...or*. 
Preamble: And what else is disjunction after that?

• “Alternative constructions” (Haspelmath and others). “Forced choice constructions”, etc.

• Propose a logical supercategory of disjunction motivated by what we actually find in natural language:

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<tr>
<th>P</th>
<th>Q</th>
<th>“OR”</th>
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Preamble: Concerns with existing cross-linguistic analyses of disjunction

- Semantics vs. Pragmatics distinction
  - Well known. Large literature even just for disjunction.
  - If the semantic and pragmatic values of English *or* are still under strong debate, how can we determine the semantics of a form/construction from a reference grammar or simple questionnaire?

- Reliance on single written word rather than entire constructions
  - For example, Haspelmath’s (2007) claim that no language exemplifies exclusive disjunction appears to look only at individual morphemes not at constructions. (Cf. *either ... or* analogs in many languages)
  - Prosody is generally disregarded as outside semantic analysis.

- General search for the most abstract (purely logical) morphemes
  - Asking what does a language have most like English *and, or*, etc. rather than *furthermore, alternatively*, etc.
  - Why restrict surveys to dedicated disjunction markers?
  - Monosemy bias to analyses (Occam’s Razor fallacy)
Last Preamble: What is *irrealis*?

- Short answer: almost anything except simple indicative.
- Grammatical mood (influence of classical Eurolanguages). Indicative vs. subjunctive, hortative, etc... Irrealis as supercategory
- In languages without paradigmatically marked mood, single morphemes are often glossed as irrealis.
- In the coordination literature, irrealis often includes negation
  - Reasonable (1): negation markers can interact with these morpheme positions even though negation is considered polarity, not mood marking.
  - Reasonable (2): both negation and (other) irrealis markers are found in disjunction constructions
Inherent irrealis of disjunction - 1

• Disjunction increasingly analyzed as underlyingly about possibility
  – E.g. attempts to recast \( p \lor q \) as \( \Diamond p \land \Diamond q \) (Zimmermann 2000) (Geurts 2005)

• As scholars look increasingly outside Europe, they have noticed that disjunction constructions commonly have irrealis marking
  – “Constructions lacking a disjunctive connective require some overt ‘irreality’ marker (expressions encoding possibility, future, uncertainty, question, or similar notions)” (Mauri 2008:22)

• Contrast between Conjunction and Disjunction marking as largely between realis/irrealis. (Ohori 2004)
• My stronger reformulation: Conjunction is realis ("everything I state is true"). All other Truth-functional connectives (conditionals, biconditionals, inclusive disjunctions, exclusive disjunctions, NAND, etc.) are inherently irrealis.
  – This holds for any parallel of two-place logical operators within natural language
  – Inherently interacts with the notion of “truth” which has fallen into disfavor in logic, but remains popular in natural language discourse.
Inherent irrealis of disjunction-3

• In other words, it is not that a language will have either disjunction marking or will use irrealis marking,...
  – Rather, all disjunction marking is inherently irrealis.
  – This is true even in the indicative mood
    – *Ravi or Sita are coming to the store* does not imply, but rather asserts the uncertainty of each coming to the store.
    – Any distinction between construction types cross-linguistically is simply whether the form is a dedicated coordinator structurally (therefore disjunction) or whether it can also be used as a one place operator.
  – There is a natural tendency for one place operators to enter into two place constructions.
Historical sources

• Many (e.g. Heine and Kuteva 2002, Mauri 2008) have noted that coordinating disjunction constructions typically derive from non-coordinating irrealis constructions.
• What identifies these lexical sources as irrealis instead of disjunction constructions is that they are also used non-disjunctively, i.e., as one place operators expressing “less than necessarily true”
Disjunction examples: Negative polarity

- Explicit negatives
  - Lai negative conditional (VanBik 2004:338):
    \[ \text{làwthlawpaa } ?a\text{-sií-làw}=lee \text{sayaàpaa doòr}=?a? \text{ ?àn-kal} \]
    farmer 3sG.SUBJ-be2-NEG=COND teacher market=Loc 3PL.SUBJ-go1
    'The farmer or the teacher went to the market.'
  - Tamil negative polarity existential copula
    ravi kaTaikkup poonaan allatu sita poonaal
    Ravi store-Dat go-Ps-3sm NegCop-Nom Sita go-Ps-3sf
    'Either Ravi went to the store or Sita went.'
Disjunction examples: possibility/doubt

• Dubitatives
  • Dyirbal (Dixon1972:363):
    \[
    \text{yaqa guya buran / gilabayqi mipa / yugur } \textit{yamba} / \text{yaygal yamba} / \\
    \text{“I saw a fish, what was it down there? -it might have been a} \\
    \text{barramundi, or it might have been a red bream”}
    \]
  • Tamil
    \[
    \text{Ravi vaaraanoo Sita vaaraaLoo.} \\
    \text{J. come-Ps-3sm-oo M. come-Ps-3sf-oo} \\
    \approx \text{“Maybe Ravi came or maybe Sita came.”}
    \]
Disjunction examples: Interrogatives

• Japanese
  1. Mary wa kita-ka? ‘Did Mary come?’
  2. Mary wa kita-ka Mary wa konakatta-ka? ‘Did Mary come (or) didn’t Mary come?’
  3. Ano gakusei ga kita-ka Mary ga kita-ka kare ga kita. ‘That student came, Mary came, or he came.’ (not a question)
  4. Ano gakusei ga kita-ka Mary ga kita-ka kare ga kita ka. ‘Did that student come, Mary come, or he come?’ (a question with scope over disjunction). (exx from Toyoshima 2013)
  5. Eega-to kaimono(-to) docchi-ga ii? ‘Which is good (for you), movie or shopping? (NB: -to is usually glossed as “and”, sometimes “and/or”. I.e., to (と) coordinates lists) (Ohori 2004)

• Thai
  1. "
  John COMMITATIVE Mary go see movie
     'John and Mary went to see a movie.'
  2. "
     you will choose do what between go see movie COMM go buy thing
     'Which would you like to do, go to see a movie or go shopping?'
Paradigmatic values

- The interpretation (or even semantics?) of a form may depend in large part on what alternative expressions are not selected.
- TFCs in, e.g., English, etc. are structurally a rather incoherent set with *and* vs. *or* being the only real alternative pairing.
  - *And/or* has become a lexical item in itself to indicate inclusive disjunction.
  - Similarly *iff* has become a (written) lexical item for biconditional (as opposed to *if*).
- In contrast, some languages have more explicit alternatives. Inclusive/exclusive, and/nand, biconditional/exclusive, simple/interrogative, etc.
## The Tamil system of “logical” connectives

<table>
<thead>
<tr>
<th>Form</th>
<th>Morphology</th>
<th>1 place function</th>
<th>2 place function</th>
</tr>
</thead>
<tbody>
<tr>
<td>p-oo</td>
<td>N-place clitic</td>
<td>◊</td>
<td>FTTT</td>
</tr>
<tr>
<td>p-um</td>
<td>N-Place clitic</td>
<td>“also”</td>
<td>TFFF</td>
</tr>
<tr>
<td>p-ee</td>
<td>One place clitic</td>
<td>Emphatic/□?</td>
<td>NA*</td>
</tr>
<tr>
<td>p-aa</td>
<td>N-place clitic</td>
<td>Interrogative</td>
<td>?TTF**</td>
</tr>
<tr>
<td>p <code>allatu</code> q</td>
<td>Verbal noun of archaic negative copula</td>
<td>NA</td>
<td>FTTF</td>
</tr>
<tr>
<td>p <code>aal</code> q</td>
<td>Non-finite verb + instrumental case</td>
<td>NA</td>
<td>TFFT</td>
</tr>
</tbody>
</table>

* Pragmatically odd. Like saying “it’s the one” about two things.

** Not conventionalized and restricted to interrogative (Haspelmath 2007) disjunctions. Typically interpreted as FTTF.
One-place “connectives”: propositional logic

- Four possible Truth Functional one-place operators:
  - Negative
    - Truth Table:
      | T | F |
      | F | T |
  - Always true
    - Truth Table:
      | T | T |
      | F | T |
  - Always false
    - Truth Table:
      | T | F |
      | F | F |
  - No change
    - Truth Table:
      | T | T |
      | F | F |
Pseudo-one-place “connectives”: Natural language

• Many forms structurally attach to a single entity or proposition.

• Two types?
  – Simple Modifiers
    • E.g., modality marking, “maybe”, negatives, emphatics
    • These assert about the quality of the reference in and of itself
    • Perhaps used to elaborate w.r.t. hearer expectation.
  – Relationals
    • E.g., also, too, alternatively, ...
    • These “connect” to other (previous or implicit) entities or propositions
    • Many of these may occur as 2-place connectives. (idiosyncratically)
      E.g. English moreover, alternatively; Japanese mo, soretomo); ...
N-place connectives in natural language

• Many (most?) languages have conjunctive forms which can be structurally one/two/… place operators.
  – E.g., there is one form for both and & also

• Similarly, many (most?) languages have disjunctive forms which can be structurally one/two/… place operators.
  – E.g., there is one form for both or & maybe
  – The few surveys are biased toward European languages and report two-place connective constructions without regard to whether they occur in one-place constructions as well.
Analysis of disjunction to date

• Has started with the notion of a dedicated two-place connective (disjunction/alternation/etc.).
• Examined the meaning of this.
• Looked for what a language does when it lacks such a dedicated connective: irrealis/non-indicative modality (subjunctive/interrogative/dubitative/...).
• Suggest:
  – Exclude European languages from surveys
  – Use reference grammars only as suggestions to pursue forms.
  – Texts and open ended elicitation critical.
Eurobias in data collection

• “Either a connective coding the alternative relation or some overt irrealis marker is necessary to convey an alternative relation.” (or both) – Mauri 2008:177

• What gets counted in a survey?
  – What form is used in a translation instrument?
  – What are the semantics of the form?
  – Emphasis on single words rather than constructions and prosodic patterns.
And then...

- As mentioned, many languages have a one place “also” form. In some cases, it can be used as a coordinator form.
- Unsubstantiated claim: Most coordinator forms have the meaning conjunction + something else
  - (temporality, contrast, close relationship between p&q, etc.).
  - Occasional forms mean conjunction (TFFF) alone – though pragmatic interpretations abound.
- Many languages have a coordinator analyzed as conjunction plus temporal sequence.
  - Typically translated as “and then”.
  - Why not just translate as “then”?
  - Little difference between and then and then:
    - Ravi went to the market then went home.
    - Ravi went to the market and then went home.
  - In other words, and has no substantial contribution.
What does English *and* actually do?

• There is no logical difference between $p, q$ versus $p \text{ and } q$.
• Only really used to conjoin true statements (i.e. only concerned with one possible truth condition: T---)
• The same Pragmatic operations (presumption of sequence/causality/set membership/...) may also apply to concatenated propositions without *and*.
• At the level of sentence coordination, English *and* appears to be essentially a bearer of (often vital) intonation.
Closing joke...

• As homage to Gils (1991): “Aristotle goes to Arizona and finds a language without and”), discussion of the relationship between natural language and formal and mental logic, ....

• I would like to retitle this talk:
  – “Tolkappiyam (a Tamil grammarian, ca. 2\textsuperscript{nd} c. CE) goes to an island off the West coast of Eurasia and finds a language with a morpheme which means I’m still talking”
Thanks for your patience!

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• Many students and colleagues (esp. Julia Trippe for helping with data collection not really reflected in this presentation)