



Irrealis *or* 1-place disjunction

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Colloquium

18 October 2013



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

P	Q	V
T	T	T
F	T	T
T	F	T
F	F	F

- Also known as inclusive disjunction or and/or

Preamble: What else is disjunction?

- In “standard” logic: exclusive disjunction is

P	Q	V
T	T	F
F	T	T
T	F	T
F	F	F

- 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:

P	Q	“OR”
T	T	N/A
F	T	T
T	F	T
F	F	N/A



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 $p \vee q$ as $\diamond p \wedge \diamond q$ (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)

Inherent irrealis of disjunction - 2

- 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):

làwthlawpaa ?a-sií-làw=lee sayaàpaa doòr=?a? ?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):

yaqa guya buran / gilabayqi mipa / yugur yamba / yaygal yamba /

“I saw a fish, what was it down there? -it might have been a barramundi, or it might have been a red bream”

- Tamil

Ravi vaaraanoo Sita vaaraaLoo.

J. come-Ps-3sm-**oo** M. come-Ps-3sf-**oo**

≈ “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. *จ๊จน kàp mɛɛrîi paj duu n'anj.*
John COMMITATIVE Mary go see movie
'John and Mary went to see a movie.'
2. *Thəə cà? lyâk tham ʔaraj ráʔwàan paj duu n'anj kàp paj sýy kh'ɔɔŋ?*
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

Form	Morphology	1 place function	2 place function
<i>p-oo</i>	N-place clitic	◇	F T T T
<i>p-um</i>	N-Place clitic	“also”	T F F F
<i>p-ee</i>	One place clitic	Emphatic/□?	NA*
<i>p-aa</i>	N-place clitic	Interrogative	?TTF**
<i>p allatu q</i>	Verbal noun of archaic negative copula	NA	F T T F
<i>p-aal q</i>	Non-finite verb + instrumental case	NA	T F F T

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

** Not conventionalized and restricted to interrogative (Haspelmath 2007) disjunctions. Typically interpreted as F T T F.



One-place “connectives”: propositional logic

- Four possible Truth Functional one-place operators:

Negative

T	F
F	T

Always true


T	T
F	T

Always false

T	F
F	F


No change

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 retitile this talk:
 - “Tolkappiyam (a Tamil grammarian, ca. 2nd 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!

- Thanks for the fiscal and practical support of
 - The University of Oregon Provost Humanities Grant
 - The Swedish Collegium for Advanced Study
 - The European Institutes for Advanced Study (*EURIAS*) Fellowship Program
- Many students and colleagues (esp. Julia Trippe for helping with data collection not really reflected in this presentation)