04 Mar 2025 - Language and Logic

→ Emphatic

→ Strong alternative usually precedes the weak alternative

→ Implicature: Emphatic < less emphatic/strong < weak(ened)

Not logical necessity

intonation

→ Command, consequence (command precedes)

Do you want to pack everything up, or (else) shall I show you the way?

slides

or else → exclusive interpretation
also
→ impose sequentiality

otherwise → not a disjunction
only used for paraphrasing

Non-commutativity of Or

① ⓐ Danny is laughing, or Danny appears to be laughing

strong: adequate evidence to conclude

weak

'Or' problems

① Exclusive or
inclusive interpretation

② Commutativity

(b) Danny appears to be laughing, or Danny is laughing

(a) and (b) intonation contour

(2) Danny ran to the store, or Danny jogged to the store (~)

(3) or rather ≈ sequentiality

Demand ~ Consequence

exclusive disjn + sequentiality

or else

Either the little child eats his lunch, or the mother complains to the neighbor

Causality

* State the evidence later, conclusion first using disjunction

They must have liked the house

Exclusive or Inclusive? ⟶ second statement (in negative form) should be false

??

Truth table — same as conjunction

P then Q — very different — Q then P

Non-propositions and a proposition combined by 'Or'

Move (not a sentence) or you'll die. → Conjunction (Marriage sentence)

Don't be too long (not a sentence) or you'll miss the bus.

∴ Not a sentence / proposition → truth value cannot be assigned. → Not truth-evaluable

→ Mention the implicit subject

- Does not always give you the right outcome

Proposition = meaning equivalent

Be here on time, or We'll leave without you

You be here on time

↓

Syntactically becomes wrong

✓ input(x) = 0

✗ x(input) = 0

Semantics ⟷ proposition ⟷ (8) syntax

You (will) be here on time

↳ Form cannot tell you what to insert } arbitrary

Propositions

Not Proposition (below propositions)

Not truth assignable

- Be here on time,
- Throw it off

Syntax wrong $\Longrightarrow$ semantics won't even be considered

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Note: exclusive interpretation

P'	then	Q	P' $\bar{\vee}$ Q
N		T	T
N		F	N or True

N: neutral, neither false or true

Another beer, or I'll leave

N Q

Two (or More) Non-propositions combined by 'Or'

→ Questions are not propositions

are sentences

↳ Do not commit anything

P'	(then)	Q'	P' $\bar{\vee}$ Q'
N		N	(N) → neither 0 nor 1

→ Either

these cases cannot be expressed through logic

or

these cases do not need a truth table.

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S ~ logical syntax (not grammatical)

I expect you to be good → logical version

S

→ may or may not be well-formed grammatically

On the natural logic of if

P → Q

P ~ antecedent

Q ~ consequent

If P, (then) Q

then ~ not necessary in human language

Logical Complications

Hidden Biconditional

If you go to Mass, you will find diamond

If you score high, you will get good grades

Even if you don't, you can still get good grade.

You may interpret $\begin{pmatrix} 1 & P \to Q \\ & Q \to P \end{pmatrix}$

$P \to Q$

Implicature $\neg P \to \neg Q$ $\rightsquigarrow$ not logically necessary (not an entailment)

$\rightsquigarrow$ very strong implicature

$P \rightarrow Q \equiv \neg P \vee Q$

either P is false or Q is true

Constraints on the hidden bi-conditional

If Ronny comes to the party, Joy will be happy.

Counterfactual Conditional

→ alternate reality physicists like

both counterfactual

- If Raja were happy, he would tell us.
  - were → to be ⇒ future
- If Raja had been happy, he would tell us.