

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 shall I
(else) show you the way?

slides
or else → exclusive interpretation
→ impose ^{also} sequentiality

otherwise → not a disjunction
only used for paraphrasing

Non-commutativity of Or

① ② Danny is laughing, or Danny appears
to be laughing

strong
adequate evidence
to conclude

weak

'Or' problems

- ① Exclusive or
inclusive
interpretation
- ② Commutativity

⑥ Danny appears to be laughing, or Danny is laughing

⑥ and ⑦
intonation
contour

② Danny ran to the store, or Danny jogged to the store

③ or rather \approx sequentiality

Demand ~ Consequence

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

exclusive disj + sequentiality
or else

Causality

* State the evidence later, conclusion first using disjunction

They must have liked the house

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

Truth table same as conjunction

P then Q

very different

Q then P

Non-propositions and a proposition combined by 'Or'

Move or you'll die.

not a sentence

Conjunction
(Marriage sentence)

Don't be too long or you'll miss the bus.

not a sentence

∴ Not a sentence / proposition

Not

truth value cannot
be assigned.
truth-evaluable

→ Mention the implicit subject

- Does not always give you the right outcome

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

Proposition =
meaning equivalent

You be here on time

↓
Syntactically becomes
wrong

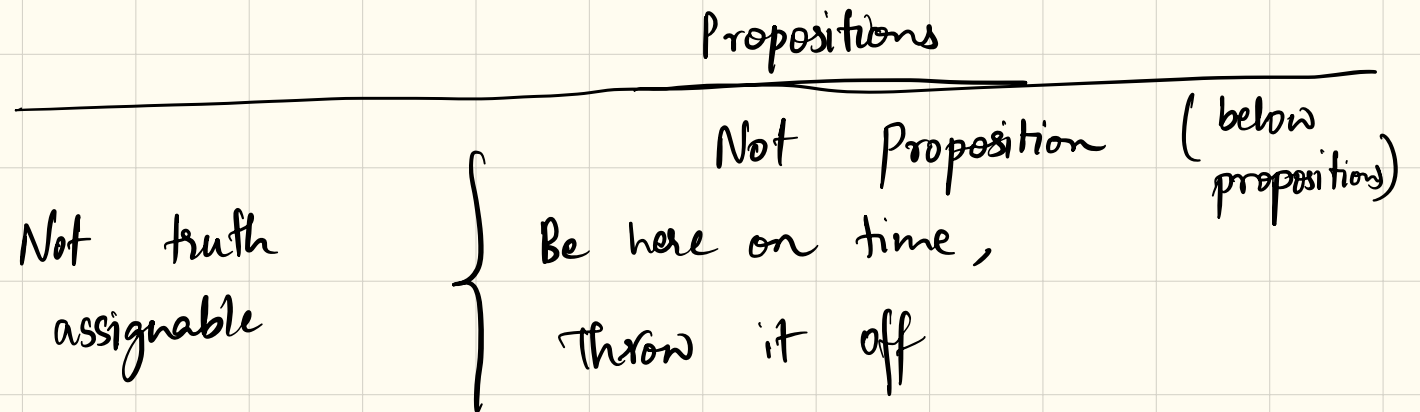
⊙ input(a) = 0

⊗ a(input) = 0

Semantics ↔ ^{proposition} (S) syntax

You (will) be here on time

↪ Form cannot tell you what to insert } arbitrary



Syntax wrong \Rightarrow semantics won't even be considered

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	$(N) \rightarrow$	neither 0 nor 1

\rightarrow Either
 these cases cannot be expressed through logic
 or
 these cases do not need a truth table.

07 Mar 2025

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

$P \rightarrow Q$
P ~ antecedent
Q ~ consequent

If P, (then) Q
not necessary in human language

Logical Complications

Hidden Biconditional

If you go to Mars, 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 $\left(\begin{array}{l} P \rightarrow Q \\ Q \rightarrow P \end{array} \right)$

$P \rightarrow Q$

Implicature

$\neg P \rightarrow \neg Q$



not logically necessary (not an entailment)



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

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

??
!