. Implication

↳ relationship between 2 propositions

1st antecedent

4 = consequent

If X then Y

If it rains, then we use an umbrella

If one ingests cyanide, one dies

Implications simply indicates if... then

Let's understand this with the truth table for implication.

E.g.: If one is a murderer, one is a criminal. If it is proven that a person is a murderer, it automatically implies that s/he is a criminal. Being a murderer implies being a criminal.

M = John is a murder; C = John is a criminal.

M → C = If John is a murderer, it implies that John is a criminal as well.

↳ Compound statement

Doesn't imply correlation! just co-occurence.

M	C	M→C	
1	1	1	John is a murderer, and he is criminal. Possible?
1	0	0	John is a murderer. But not a criminal. Possible?
0	1	1	**John is not a murderer. Yet a criminal. Possible?**
0	0	1	**John is not a murderer. And not a criminal. Possible?**

Look at the last two cases. If John is not a murder (column first), then it does not matter whether he is a criminal or not (second column), the implication shall always be true (third column). Because it is talking about a conditional, not a real situation.

Vacuous truths do not add any information/knowledge.

Vacuous = Without significance, without content.

This kind of truth has no significance or meaning.

It has no pragmatic value, because it adds nothing to your knowledge.

If a statement like, "A is B" and "A is not B" are both true, then you have learnt nothing about A and B.

It is just to rescue the square of opposition
(diagonal relationships only tho)

C Set A type & E type as true (for imaginary), as
A type & E type dont have existential import)
then I type & O type is false

this don't existential truth
this is vacuously true

Shorthand notation

Categorical proposition

In short:

S means the subject set, or class 'S'.
P means the predicate set, or class 'P'.
= 0 means 'does not exist', i.e. the membership is zero
=/= 0 means 'there exists', i.e. the membership is not zero
S' = Not S
P' = Not P

SP → class of things that belong to classes S & P

Eg: S → All Swiss individuals
P → all parachutists

This was symbolism for the classes. Now let's look at the symbolism for the categorical propositions which mention relationships between classes.

A-type = All S is P
Whatever is in S is also in P.
There is no S that is (not in P)
S that is (not in P) (does not exist)
.
.
.
SP' = 0

E^{type} = NO S is P
Class of members common between S & P is doesn't exist

SP = 0

I-type: Some S is P

↳ existence ⇒ $\neq 0$

Class of members common between S & P exists

$SP \neq = 0$

O type = Some S is not P

(There exists) S that is (not P)

$SP' \neq = 0$