Classifications of Propositional Operations

#86 of Gottschalk's Gestalts

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of the Organization & Exposition
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by Walter Gottschalk

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GG86-2

☐ let

$O \in PO$

then

• $O \in$ proper

$=_{df}$ O is not constant in any ind var

• $O \in$ improper

$=_{df}$ O is constant in some ind var

□ let

$O \in PO$

then

• $O \in$ positive

$=_{df}$ O equals T if all ind vars of O equal T

• $O \in$ negative

$=_{df}$ O equals F if all ind vars of O equal T

• $O \in$ copositive

$=_{df}$ O equals T if all ind vars of O equal F

• $O \in$ conegative

$=_{df}$ O equals F if all ind vars of O equal F

☐ let

$O \in PO$

then

• $O \in$ idempotent

$=_{df}$ O equals p if all ind vars of O equal p

• $O \in$ idemnegational

$=_{df}$ O equals $\neg p$ if all ind vars of O equal p

• $O \in$ idemtrue

$=_{df}$ O equals T if all ind vars of O equal p

• $O \in$ idemfalse

$=_{df}$ O equals F if all ind vars of O equal p

□ the sixteen BPOs are equally divided into positive and negative classes

Δ the eight positive BPOs

- $\vec{T}$ verum
- pr_1 first projection
- pr_2 second projection
- & conjunction
- $\vee$ disjunction
- $\Rightarrow$ implication
- $\Leftarrow$ conplication
- $\Leftrightarrow$ equivalence

Δ the eight negative BPOs

- $\vec{F}$ falsum
- $\overline{pr_1}$ negated first projection
- $\overline{pr_2}$ negated second projection
- $\uparrow$ negated conjunction
- $\downarrow$ negated disjunction
- $\not\Rightarrow$ negated implication
- $\not\Leftarrow$ negated conplication
- $\not\Leftrightarrow$ negated equivalence

□ the four junctions

Δ the two positive junctions

- & conjunction
- ∨ disjunction

Δ the two negative junctions

- ↑ negated conjunction
- ↓ negated disjunction

☐ the four plications

Δ the two positive plications

- $\Rightarrow$ implication
- $\Leftarrow$ conplication

Δ the two negative plications

- $\nRightarrow$ negated implication
- $\nLeftarrow$ negated conplication

☐ the two valences

Δ the positive valence

- ⇔ equivalence

Δ the negative valence

- ⇎ negated equivalence

☐ the six sagittas

Δ the three positive sagittas

- $\Rightarrow$ implication
- $\Leftarrow$ conplication
- $\Leftrightarrow$ equivalence

Δ the three negative sagittas

- $\nRightarrow$ negated implication
- $\nLeftarrow$ negated conplication
- $\nLeftrightarrow$ negated equivalence

□ a proper BPO is

• idempotent

iff

it is a positive junction

• idemnegational

iff

it is a negative junction

• idemtrue

iff

it is a positive sagitta

• idemfalse

iff

it is a negative sagitta

• commutative

iff

it is a junction or a valence

• associative

iff

it is a positive junction or a valence