Refutation of disturbance as a feature

Abstract: We evaluate four binary equations as *not* tautologous. The refutes the formal description of verifiability for disturbance as a feature.

We assume the method and apparatus of Meth8/VŁ4 with Tautology as the designated proof value, **F** as contradiction, N as truthity (non-contingency), and C as falsity (contingency). The 16-valued truth table is row-major and horizontal, or repeating fragments of 128-tables, sometimes with table counts, for more variables. (See ersatz-systems.com.)

LET ~ Not, ¬ ; + Or, ∨, ∪; - Not Or; & And, ∧, ∩; \ Not And;
> Imply, greater than, →, ↦, ≻, ⊃, ⊢, ⊨, ↠; < Not Imply, less than, ∈, ≺, ⊂, ⊬, ⊭, ↞;
= Equivalent, ≡, :=, ⟺, ↔, ≜; @ Not Equivalent, ≠;
% possibility, for one or some, ∃, ◊, M; # necessity, for every or all, ∀, □, L;
(z=z) T as tautology, ⊤, ordinal 3; (z@z) **F** as contradiction, ∅, Null, ⊥, zero;
(%z<#z) C as contingency, Δ, ordinal 1; (%z>#z) N as non-contingency, ∇, ordinal 2;
~(y < x) (x ≤ y), (x ⊆y); (A=B) (A~B).

From: Hansen, A.; Wolf, S. (2019). Disturbance: It's a feature, not a bug.
arxiv.org/pdf/1902.02088.pdf arne.hansen@usi.ch

III. Verifiability
C. Formal description
a. Binary questions

In the binary case, questions in Q can be regarded as statements that are either true or false. A statement can imply another,

(Q1,t)⇒(Q2,t) (0.1)

LET p, q, r, s: Q'2, Q1, Q2, t
(q&s)>(r&s) ; TTTT TTTT TT**FF** TTTT (0.2)

where "⇒" is the notion of implication in ordinary language.

Note that the ~-equivalence of questions is not equal to the bi-directional implication

(Q1,t)⇒(Q2,t)∧(Q1,t)⇐(Q2,t) (1.1.1)

Remark 1.1.1: The note above is not relevant to the argument as immediately following below. In fact, Eq. 1.1.1 is *not* tautologous for any order of operation as specified by nested parentheses.

If (Q1,t)⇒(Q2,t) and an inquiry yields (Q1,t), then it follows that (Q2,t). (2.1)

We write this as, If (((Q1,t)⇒(Q2,t)) implies (Q1,t)), then (Q2,t).

(((q&s)>(r&s))>(q&s))>(r&s) ;   `TTTT TTTT TT`**`FF`**` TTTT`   (2.2)

Remark 2.2: Eq. 2.2 produces the same truth table result as 0.2, both *not* tautologous.

If, then, one attempts to confirm (Q2,t), one inquires about a ≡-equivalent question Q′2≡Q2.   (3.1)

We write this as, If (Q′2≡Q), then ((((Q1,t)⇒(Q2,t)) implies (Q1,t)), then (Q2,t)).

(p=s)>((((q&p)>(r&p))>(q&p))>(r&p)) ;
`TTTT TTTT TTT`**`F`**` TTTT`   (3.2)

Remark 3.2: Eq. 3.1 apparently describes a test by induction. The result in 3.2 is to bring the truth table closer to a tautology with one value for **`F`** contradiction instead of two values for **`F`** in 2.2.

Eqs. 0.2-3.2 as rendered are *not* tautologous. The refutes the formal description of verifiability for disturbance as a feature.