Refutation of dyatic semantics on paraconsistent logic C_1

Abstract: From the example of applying dyatic semantics to paraconsistent logic C_1, four axioms are *not* tautologous, hence refuting that approach. Therefore paraconsistent logics are *non* tautologous fragments of the universal logic VŁ4.

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) N as non-contingency, Δ, ordinal 1;
(%z<#z) C as contingency, ∇, ordinal 2;
~(y < x) (x ≤ y), (x ⊆y); (A=B) (A~B); (B>A) (A⊢B); (B>A) (A⊨B).
Note for clarity, we usually distribute quantifiers onto each designated variable.

From: Caleiro, C.; Carnielli, W.; Coniglio, M.E.; Marcos, J. (2003).
Suszko's Thesis and dyadic semantics.
sqig.math.tecnico.ulisboa.pt/pub/CaleiroC/03-CCCM-dyadic1.pdf

Example 6.6 Consider the paraconsistent logic *C*1 ... . It is well-known for long that this logic has no genuinely finite-valued characterizing semantics, though it *can* be decided by quasi matrices ... . In fact, a dyadic semantics for *C*1 is prompt[l]y available ... . Just recall that $\alpha\circ$ abbreviates $\neg(\alpha \wedge \neg\alpha)$ in *C*1, and consider the following bivaluation axioms:

(6.6.1.1) $b(\neg\alpha) \geq -b(\alpha)$;

LET p, q, r, s: α, b, β , s; $0 - b = -b$.

~((((s@s)-q)&p)>(q&~p)) = (s=s) ; **F**T**FF** **F**T**FF** **F**T**FF** **F**T**FF** (6.6.1.2)

(6.6.5.1) $b(\alpha \Rightarrow \beta\ ) = -b(\alpha) \sqcup b(\beta)$;

(q&(p>r))=((((s@s)-q)&p)+(q&r)) ; T**FF**T T**F**TT T**FF**T T**F**TT (6.6.5.2)

(6.6.6.1) $b(\alpha\circ) = -b(\alpha) \sqcup -b(\neg\alpha)$;

(q&~(p&~p))=((((s@s)-q)&p)+(((s@s)-q)&~p)) ;
FFFF FFFF FFFF FFFF (6.6.6.2)

(6.6.7.1) $b((\alpha \otimes \beta)^{\circ}) \geq (-b(\alpha) \sqcup -b(\neg\alpha)) \sqcap (-b(\beta) \sqcup -b(\neg\beta))$, for $\otimes \in \{\wedge, \vee, \Rightarrow\}$.

~((((((s@s)-q)&p)+(((s@s)-q)&~p)) & ((((s@s)-q)&r)+(((s@s)-q)&~r))) >
(q&~((p*q)&~(p*q)))) = (s=s) ;
[Recall p*r abbreviates ~((p*r)&~(p*r)) where * is &,+,>]
TT**FF** TT**FF** TT**FF** TT**FF** (6.6.7.2)

The example axioms 6.6.1 and 6.6.5-6.6.7 as rendered are *not* tautologous. This refutes the conjecture that dyatic semantics apply to paraconsistent logic C_1. By extension, that approach is denied for paraconsistent logics.