Refutation of the algorithm to generate preference profiles

Abstract: We evaluate six equations of the proposed algorithm to generate preference profiles. *None* is tautologous, hence refuting the proposal.

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). For results, 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 p, q, r, s: v, P_1, P_2, s;
~ 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; (z@z) **F** as contradiction, ∅, Null;
(%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: Alvira, R. (2018).
Transforming candidate and parties cardinal ratings into weak preference orderings.
XV Meeting Spanish social choice network [REES], Elche, Alicante, 11.17-18.
vixra.org/pdf/1901.0384v1.pdf ricardo.alvira@gmail.com

[I]f the average preference value of some party voters for another party P_1 is greater than for another party P_2, then every one and all of that party voters strictly prefer P_1 to P_2: (2.0)

$v[P_1]>v[P_2]\leftrightarrow P_1 \succ P_2$ (2.1.1)

((p&q)>(p&r))=(q>r) ; TT**F**T TT**F**T TT**F**T TT**F**T (2.1.2)

$v[P_1]=v[P_2]\leftrightarrow P_1 \sim P_2$ (2.2.1)

((p&q)=(p&r))=(q=r) ; TT**F**T **F**TTT TT**F**T **F**TTT (2.2.2)

$v[P_1]>v[P_2]\leftrightarrow P_1 \succ P_2 \lor v[P_1]=v[P_2]\leftrightarrow P_1 \sim P_2$ (2.3.1)

(((p&q)>(p&r))=(q>r)) + (((p&q)=(p&r))=(q=r)) ;
TT**F**T TTTT TT**F**T TTTT (2.3.2)

LET p, q, r, s: v, A, B, s.

Strict indifference:

$$v(A)-v(B)=0 \rightarrow A \sim B \quad (2.4.1)$$

(((p&q)-(p&r))=(s@s))>(q=r) ; TTT**F** T**F**TT TTT**F** T**F**TT (2.4.2)

Strict preference:

$$v(A)-v(B) \geq 1 \rightarrow A \succ B \quad (2.5.1)$$

~((%s>#s)>((p&q)-(p&r)))>(p>q) ; TTTT TCTT TTTT TCTT (2.5.2)

Partial indifference and partial preference:

$$1>v(A)-v(B)>0 \rightarrow (1-(v(A)-v(B)))(A \sim B) \wedge (v(A)-v(B))(A \succ B) \quad (2.6.1)$$

((((%s>#s)>((p&q)-(p&r)))>(s@s))>(((%s>#s)-((p&q)-(p&r)))&(q=r)))&
(((p&q)-(p&r))&(q&r)) ; **FFFF FF**T**F FFFF FF**T**F** (2.6.2)

Eqs. 2.1.2-2.6.2 as rendered are not tautologous. This refutes the proposed algorithm to generate preference profiles.