Refutation of projective determinancy via the ultrapower

Abstract: We evaluate the definition of ultrapower as a convention. The two states equated to 1 as designated *proof* value and as ordinal value are *not* tautologous. This refutes the ultrapower and hence colors the subsequent exposition to deny projective determinancy. Therefore the ultrapower and projective determinancy 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, Ø, 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.

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I. Extenders (pg 75), **Convention.**

Let D be a directed nonempty set of sets: if a, b ∈ D then there is a c ∈ D such that a ∪ b ⊆ c.

Suppose that Z is a set and $\langle \mu_a \mid a \in D \rangle$ is such that (75.1.1)

(1) each μ_a is a countably additive measure on ${}^aZ = \{f \mid f\colon a \to Z\}$;
(2) the μ_a are *compatible*: if a ⊆ b and $\mu_a(X) = 1$, then μ_b $(\{f \mid f \restriction a \in X\}) = 1$. (75.2.1)

We wish to define the *ultrapower* (of the universe V) *by* $\langle \mu_a \mid a \in D \rangle$. (This will really be a direct limit of ultrapowers rather than an ultrapower proper, but calling it an "ultrapower" is by now standard.)

Remark 75: We build the conjecture for ultrapower as Eqs. 75.1 implies 75.2. (75.3.0)
There are two states with 1 as T as tautology (the designated *proof* value) (75.3.1.1)

LET p, q, r, s, u, X:
a, b, D, f, μ, X;

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(((p<r)>(u&p))>(~(q<p)&(((u&p)&x)=(p=p))))>(((u&q)&((s<(p<x))>s))=(p=p)) ;
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T**F**T**F** TTTT T**F**T**F** TTTT(2), TTTT TTTT TTTT TTTT(2),
T**F**TT TTTT T**F**TT TTTT(2), T**F**T**F** T**F**T**F** T**F**TT T**F**TT(2) x 4 (75.3.1.2)

or 1 as ordinal one. (75.3.2.1)

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(((p<r)>(u&p))>(~(q<p)&(((u&p)&x)=(%p>#p))))>(((u&q)&((s<(p<x))>s))=
(%p>#p)) ;
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TCTC TTTT TCTC TTTT(2), TTTT TTTT TTTN TTTN(2),
TCTC TTTT TCTC TTTT(2), TCTC TCTC TCTT TCTT(2) x 4 (75.3.2.2)

Eqs. 75.3.1.2 and 3.2.2 as rendered are *not* tautologous. This refutes Eq. 75.1.1 $\langle \mu_a \mid a \in D \rangle$ as defining the ultrapower. What follows is the coloring and denial of the subsequent exposition.