Refutation of descriptive unions in descriptively near sets

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Abstract: We evaluate an intersection operator named descriptive union for descriptively near sets. A proof of seven properties contains two trivial tautologies and the rest as not tautologous. This refutes the descriptive intersection operator and descriptively near sets on which it is based. This also casts doubt on the derived slug of math and physics papers as spawned at arxiv, researchgate, and vixra.

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-true value 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, t, u, v, w, x, y, z:
lc_phi φ, uc_Phi Φ, A, B, lc_pi π, K, R^n, 2^K, x, y, (q&(r&s));
~ Not, ¬; + Or, ∨; - Not Or; & And, ∩; \ Not And;
> Imply, greater 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, ∅;
(%z<#z) C as contingency, Δ, ordinal 1;
(%z>#z) N as non-contingency, ∇, ordinal 2;
~( y < x) ( x ≤ y), ( x  y).

Descriptive unions: a fibre bundle characterization of the union of descriptively near sets.
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Definition 3: ... rΦ is the descriptive intersection. ...

Theorem 1. Let A,B ⊆ K be two subsets of a set K,φ : 2K → Rn be the probe function and π : Rn → 2K be a map such that π : x → {y ∈ K : φ(y) = x}. Then, A $r_Φ$ B has [the] following properties:

(1.0.1) (((r<u)&(s<u))>((p=(w>v))&(t=(v>w))))>(t=(x>((y<u>]=(p&y)=x)))))

(1.0.2)

Note: Eq. 1.0.2 as rendered serves as antecedent to the 1.1.2 consequents listed below.

1.10 A $r_Φ$ B = A $r_Φ$ B.

(1.1.1)

(((((r<u)&(s<u))>((p=(w>v))&(t=(v>w))))>(t=(x>((y<u>]=(p&y)=x)))))

(1.1.2)

TTTT TTTT TTTT TTTT(16)
Remark 1.1.2: Eq. 1.1.1 is trivial with this result to be expected.

1.20 \[ A = \emptyset \Rightarrow A \cap \varphi B = \{ x \in B : \varphi(x) = \varphi(\emptyset) \}. \] (1.2.1)

\[ (((((r<u)\&(s<u))>((p=(w>v))\&(t=(v>w))))>((t=(x>((y<u>\&(p\&y)=x)))))) \]
\[ >(z=(q\&(r\&s)))>((((r=(z@z))>z)=((x<s>=(p\&x)=(p\&(z@z))))) ; \]
\[ \text{TFFFF TTTTT TTTTT (8), TTTTT TTTTT TTTTT TTTTT (8)] (1.2.2) \]

1.30 \[ A = B \Rightarrow A \cap \varphi B = A. \] (1.3.1)

\[ (((((r<u)\&(s<u))>((p=(w>v))\&(t=(v>w))))>((t=(x>((y<u>\&(p\&y)=x)))))) \]
\[ >(z=(q\&(r\&s)))>((((r=s)>z)=r)) ; \]
\[ \text{TTTT TTTTT TTTTT TTTTT (4), FIFF TTTTT TTTTT TTTTT (4),} \]
\[ \text{FFFF TTTTT TTTTT TTTTT (4), TTTTT TTTTT TTTTT TTTTT (4)] (1.3.2) \]

Remark 1.4.2: Eq. 1.4.1 is trivial with this result to be expected.

1.50 \[ A \cap \varphi B \neq A \cap B. \] (1.5.1)

\[ (((((r<u)\&(s<u))>((p=(w>v))\&(t=(v>w))))>((t=(x>((y<u>\&(p\&y)=x)))))) \]
\[ >(z=(q\&(r\&s)))>\neg((r+s)<z) ; \]
\[ \text{TTTT TTTTT TTTTT TTTTT (16)] (1.5.2) \]

1.60 \[ (A \cap \varphi B = A \cap B) \iff \varphi \text{ is an injective function.} \] (1.6.1)

\[ (((((r<u)\&(s<u))>((p=(w>v))\&(t=(v>w))))>((t=(x>((y<u>\&(p\&y)=x)))))) \]
\[ >(z=(q\&(r\&s)))>((z=(r+s))=p) ; \]
\[ \text{TTTT TTTTT TTTTT TTTTT (4), TTTTT TTTTT TTTTT TTTTT (8),} \]
\[ \text{TTTT TTTTT TTTTT TTTTT (4)] (1.6.2) \]

1.70 \[ A \cap \varphi B \subseteq A \cup B. \] (1.7.1)

\[ (((((r<u)\&(s<u))>((p=(w>v))\&(t=(v>w))))>((t=(x>((y<u>\&(p\&y)=x)))))) \]
\[ >(z=(q\&(r\&s)))>((r+s)<z) ; \]
\[ \text{TTTT FFFF FFFF FFFF (43), TTTTT FFFF FFFF FFFF (16),} \]
\[ \text{TTTT FFFF FFFF FFFF (4), TTTTT FFFF FFFF FFFF (1),} \]
\[ \text{TTTT TTTTT TTTTT TTTTT (64)] (1.7.2) \]

A set intersection operator was proposed for descriptively near sets and named descriptive union. In the Theorem 1 proof seven properties are listed: two are trivial tautologies; and five as rendered are not tautologous. The refutes descriptive intersection operators and near sets on which it is based.