

## Refutation of Smarandache multi-space theory

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**Abstract:** The Smarandache multi-space theory (SMT) as based on a Latin square is a vector space (probabilistic) and not bivalent (exact). Therefore SMT is refuted in classical logic.

From: Mao, L.F. (2006). "Smarandache multi-space theory". fs.unm.edu/S-Multi-Space.pdf

We assert a Latin square  $L_1$  Table 1.3.1 is not bivalent (exact) but rather a vector space (probabilistic).

With row-major (r) and column-minor (c) we reproduce this artifact:

		c1:	c2:	c3:
		1	2	3
r2:	2	2	3	1

We convert the decimal ordinals to bivalent 2-tuples, with the left-most bit as most significant:

		c1:	c2:	c3:
		01	10	11
r2:	10	10	11	01

We perform binary operations, with r2 as antecedent and c1, c2, and c3 as respective consequents, and sequent outcome (q). We also designate bits in Latin as sinister (left) and *dexter* (right).

	<i>sd</i>		<i>sd</i>		<i>sd</i>
r2:	10	r2:	10	r2:	10
c1:	01	c2:	10	c3:	11
q1:	10	q2:	11	q3:	01

To be bivalent, i.e. compatible with classical logic, any like-sided equations produce identical results.

LET operator "?" serve as the connective in this horizontal presentation to save space

Example 1:

$$r2d \text{ ? } c1d \tag{1.1.1}$$

$$0 \text{ ? } 1 = 0 \tag{1.1.2}$$

$$r2d \text{ ? } c3d \tag{1.2.1}$$

$$0 \text{ ? } 1 = 1 \tag{1.2.2}$$

Eqs. 1.1.2 and 1.2.2 should be equivalent to be bivalent, but that is not the case.

Example 2:

$$r2s \text{ ? } c2s \tag{2.1.1}$$

$$1 \text{ ? } 1 = 1 \tag{2.1.2}$$

$$r2s \ ? \ c3s \tag{2.2.1}$$

$$1 \ ? \ 1 \ = 0 \tag{2.2.2}$$

Eqs. 2.1.2 and 2.2.2 should be equivalent to be bivalent, but that is not the case.

Because Examples 1 and 2 as rendered are *not* tautologous, the Smarandache multi-space theory (SMT) is refuted.