

## Refutation of the Newcomb paradox

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We assume the method and apparatus of Meth8/VL4 with  $\tau$  as the designated *proof* value,  $\text{F}$  as contradiction,  $\text{N}$  as truthity (non-contingency), and  $\text{C}$  as falsity (contingency). The 16-valued truth table fragment ) is row-major and horizontal.

LET  $p, q, r, s$ : A clear box; B opaque box; player; predictor;  
 & And; + Or; - Not Or; = Equivalent; > Imply, greater than; < Not Imply, less than;  
 % possibility, for one or some; # necessity, for all;  
 (%p>#p) truthity, content present; (%p<#p) = ((%p>#p)-(%p>#p)) falsity, content absent.

We ignore visibility states of boxes and hence dollar contents to test the logic.

From: [en.wikipedia.org/wiki/Newcomb%27s\\_paradox](http://en.wikipedia.org/wiki/Newcomb%27s_paradox)

Box A contents visible and always set at \$1,000.

Box B contents not visible and already set by the predictor:

If the predictor predicts the player takes both boxes A and B,  
 then box B contains nothing. (1.1)

$(s > (r > (p \& q))) > (q = (\%p < \#p))$ ; NNCC NNCC NNCC TTTC (1.2)

If the predictor predicts that the player takes only box B,  
 then box B contains \$1,000,000. (2.1)

$(s > (r > q)) > (q = (\%p > \#p))$ ; CCNN CCNN CCNN TTTN (2.2)

Eqs. 1.2 and 2.2 as rendered are *not* tautologous, but also are *not* contradictory. This means the Newcomb paradox is *not* a paradox.

We test the two decision paths of the game as an Or tautology.

Either Eq. 1.2 or Eq. 2.2 (3.1)

$((s > (r > (p \& q))) > (q = (\%p < \#p))) + ((s > (r > q)) > (q = (\%p > \#p)))$   
TTTT TTTT TTTT TTTT (3.2)

This means the states of Newcomb together are tautologous, a theorem, and *not* contradictory or a paradox.