Refutation of Cantor's original continuum hypothesis via injection and binary trees

From: Pindsle, C. (2018). "The continuum hypothesis". vixra.org/pdf/1803.0088v1.pdf

Note: Because of no email contact disclosed at that venue, that author's name is likely a pseudonym.

> "[With representation using binary trees: the intention was] to prove the hypothesis in its original form as proposed by Georg Cantor in 1878: Any uncountable set of real numbers is equinumerous with ℝ. Since there is a bijection between the open interval (0,1) and the set of all the real numbers, there is a bijection between any subset of (0,1) and a subset of ℝ. Therefore it is sufficient to prove: Any uncountable subset of (0,1) is equinumerous with ℝ."
>
> $\phi : RJ \longmapsto RJT$ *is bijective:* It is injective because:
> $\phi(r1) = \phi(r2) \Rightarrow (\phi(r1) \succ \phi(r2)$ and $\phi(r2) \succ \phi(r1)) \Rightarrow (r1 \succ r2$ and $r2 \succ r1) \Rightarrow r1 = r2$ (3.5.1.)

Because the intention of the proof is to show $\phi(r1) = \phi(r2) \Rightarrow .... \Rightarrow r1 = r2$, we rewrite Eq. 3.5.1.

$$\phi(r1) = \phi(r2) \Rightarrow r1 = r2 \qquad (3.5.1.1)$$

We assume the apparatus and method of Meth8/VŁ4 with designated *proof* value `T`, and contradiction value `F`. The 16-valued result table is row-major and presented horizontally.

LET p q r: ϕ, lc_phi; r1; r2; & And; > Imply, ≻, ⇒; = Equivalent to.

((p&q)=(p&r))>(q=r) ; `TTFT FTTT TTFT FTTT` (3.5.1.2)

Eq. 3.5.1.2 as rendered is *not* tautologous. Hence, the hypothesis as Eq. 3.5.1.1 fails.

This is the briefest known such refutation of Cantor's continuum conjecture.

Remark: To coerce Eq. 3.5.1.2 into tautology, we weaken the argument by replacing the Equivalent connective with the Imply connective.

((p&q)>(p&r))>(q>r) ; `TTFT TTTT TTFT TTTT` (3.5.1.3)

Eq. 3.5.1.3 does come closer to tautology with two less contradiction `F` values, but to no avail.