A generalized form of the diagonal argument was used by Cantor to prove Cantor's theorem: for every set \( S \), the power set of \( S \)—that is, the set of all subsets of \( S \) (here written as \( P(S) \))—has a larger cardinality than \( S \) itself. This proof proceeds as follows: Let \( f \) be any function from \( S \) to \( P(S) \). It suffices to prove \( f \) cannot be surjective. That means that some member \( T \) of \( P(S) \), i.e. some subset of \( S \), is not in the image of \( f \). As a candidate consider the set:

\[
T = \{ s \in S: s \notin f(s) \}.
\]

For every \( s \) in \( S \), either \( s \) is in \( T \) or not. If \( s \) is in \( T \), then by definition of \( T \), \( s \) is not in \( f(s) \), so \( T \) is not equal to \( f(s) \).

On the other hand, if \( s \) is not in \( T \), then by definition of \( T \), \( s \) is in \( f(s) \), so again \( T \) is not equal to \( f(s) \) ...

We assume the apparatus of the Meth8 modal logic model checker implementing variant system VŁ4. Meth8 allows to mix four logical values with four analytical values. The designated proof value is T.

<table>
<thead>
<tr>
<th>Definition</th>
<th>Axiom</th>
<th>Symbol</th>
<th>Name</th>
<th>Meaning</th>
<th>2-tuple</th>
<th>Ordinal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>p=p</td>
<td>T</td>
<td>Tautology</td>
<td>proof</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>p@p</td>
<td>F</td>
<td>Contradiction</td>
<td>absurdum</td>
<td>00</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>%p&gt;#p</td>
<td>N</td>
<td>Non-contingency</td>
<td>truth</td>
<td>01</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>%p&lt;#p</td>
<td>C</td>
<td>Contingency</td>
<td>falsity</td>
<td>10</td>
<td>2</td>
</tr>
</tbody>
</table>

LET: ~ Not; + Or; & And; \ Not and; > Imply; < Not imply, \in; = Equivalent to;
@ Not equivalent to; # all, every; % some, each; pqrs fTSs; s\notin f(s) ~ (s>f(s))

Results are the repeating proof table(s) of 16-values in row major horizontally.

\[
q=((s<r)>(~(s<(p&s)))) ;
\]

\[
(q=((s<r)>(~(s<(p&s)))))((~(#s<r>)(~(s<(q)>(~(s>(p&s))))))>(q@(p&s))) ;
\]

Because Eqs. 1.2 and 2.2 result in the same consequent, they are rewritten to remove respective common terms and set as an equivalence according to Eqs. [1.1] and [2.1].

\[
( ~(#s<r>)(~(s>(p&s)))) = ( -(#s<r>)(~(s>(p&s)))) ;
\]

Eqs. 1.2 and 2.2 as rendered are not tautologous. Hence Cantor's diagonal argument is not supported.