Re: Cantor and the binary tree

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- *From*: Virgil <ITSnetNOTcom#virgil@xxxxxxxxxxx>
- *Date*: Wed, 25 May 2005 11:10:30 −0600

In article <1117021311.707185.21420@xxxxxxxxxxxxxxxxxxxxxxxxxxxxx>,
mueckenh@xxxxxxxxxxxxxxxxx wrote:

> Virgil wrote:
>
> > > If you prefer "is", you may use it. That does not matter. It is
> > > obviously impossible that the set of paths is uncountable when the set
> > > of nodes is countable, because every pair of paths springs off from one
> > > node, while one path leads to that node. Try to find an error n the
> > > arguing, not in the result.
> >
> > For finite paths
>
> There are no finite paths in my tree. Terminating rationals are
> completed by strings of zeros. For that sake enough zeros are in the
> tree.
> >
> > The set of these unbounded paths can mapped bijectively to P(N), whereas
> > the set of nodes can be mapped bijectively to N.
>
> Consistency of set theory is questioned, hence I do not accept Cantor's
> proof as an argument.
>
> line number n
> 0 0.
> 1 0 1
> 2 0 1 0 1
> ... .
>
>
> 1) Each real number of (0,1) is given by a path stretching over
> infinitely many nodes (bits).
> 2) All nodes (bits) of the tree belong to a countable set.
> 3) A node can only exist within a path.
> 4) Any node increases the number of paths by 1 from 1 coming in, to 2
> going out. 2 − 1 = 1.
> 5) Any node increases the number of nodes by 1.
>
> Please point out which of these simple steps is (are) wrong.

>
> Regards, WM

WM's "proof" disproved"

WM conflates bounded paths, having terminal or leaf nodes with unbounded unending paths which have no terminal or leaf nodes, but contain infinitely many intermediate nodes.

1) Each number of (0,1) is given by an UNENDING path stretching over infinitely many nodes (bits).

2) All nodes (bits) of the tree belong to a countable set.

3) A node can only exist within a path.

4) Any node increases the number of ENDING paths, having terminal or leaf nodes, by 1 from 1 coming in, to 2> going out. 2 − 1 = 1.

5) Any node increases the number of nodes by 1, but have absolutely nothing to do with the number of unending paths.

All unending paths in an unending binary tree contain infinitely many nodes.

The number of leaf nodes exactly equals the number of ending or finite paths in any finite binary tree (in which all paths end).

Considering the binary tree whose root is "." and each branch is indicated by a "0" or a "1", each leaf node, and therefore each path, is represented by a terminating binary fraction , but each unending path is represented by a non−terminating binary fraction.

There are moreof the non−terminating than of the terminating.

So WM is wrong yet again.
.

- ***References***:
  - ***Cantor and the binary tree***
    - ◊ *From:* mueckenh
  - ***Re: Cantor and the binary tree***
    - ◊ *From:* Robert Kolker
  - ***Re: Cantor and the binary tree***
    - ◊ *From:* Robin Chapman
  - ***Re: Cantor and the binary tree***
    - ◊ *From:* mueckenh
  - ***Re: Cantor and the binary tree***

- ◊ *From:* Virgil
- ♦ ***Re: Cantor and the binary tree***
  - ◊ *From:* mueckenh

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