Re: Cantor and the binary tree

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- *From*: Virgil <ITSnetNOTcom#virgil@xxxxxxxxxxx>
- *Date*: Wed, 25 May 2005 11:12:24 −0600

In article <1117021786.466427.39100@xxxxxxxxxxxxxxxxxxxxxxxxxxxxx>,
mueckenh@xxxxxxxxxxxxxxxx wrote:

> Martin Shobe 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.
> >
> > Sure thing. The error is that "It is simply impossible to assume that
> > one of these numbers becomes uncountably infinite while the other
> > remains countably infinite" does not follow from the previous
> > statements in your proof.
>
> Then point out, please, which step is wrong.
>
> 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.
>
> The relationships between nodes and paths
> > you supplied require that the tree be finite.
>
> If you assert that, you should give a number n as an upper bound. Would
> you assert that
> 0.
> 1
> 1
> 1
> ...
>
> must be finite?
>

> Would you assert that
> 0.
> 0 1
> 0 1
> 0 1
> ...
>
> must be finite?
>
> Which branching must terminate the tree? How many nodes are admitted?
>
> Attempting to use those
> > relationships on infinite trees (without first proving that the
> > relationships hold) is simply a fallicy.
>
> To prove that a branching is a node is easy, because it is defined so.
> More is not necessary.
>
> 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:* Martin Shobe
  - ***Re: Cantor and the binary tree***
    - *From:* mueckenh

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