

Re: Cantor and the binary tree

Source: <http://sci.tech-archive.net/Archive/sci.math/2005-05/msg04895.html>

- *From:* Tony Orlow (aeo6) <aeo6@xxxxxxxxxxxx>
 - *Date:* Thu, 26 May 2005 09:59:54 -0400
-

Virgil said:

> In article <1117021029.341934.48040@xx>,
> mueckenh@xxxxxxxxxxxxxxxxxxxx wrote:
>
>> Virgil wrote:
>>> In article <1116958479.555107.284630@xx>,
>>> mueckenh@xxxxxxxxxxxxxxxxxxxx wrote:
>>>
>>>
>>>>
>>>>> .
>>>>>> 0 1
>>>>>> 0 1 0 1
>>>>>>

>>>> Any path is an infinite sequence of bits which by multiplying with 2^{-n}
>>>> and summing up establishes an infinite series representing a real
>>>> number. Every combination of countably many bits is realized by
>>>> definition.

>>>> But such an "infinite" binary tree is not a list, so this has nothing to
>>>> say about the validity of Cantor's theorem.

>>>> The tree is not a list. Therefore I choose it. Nevertheless it has to
>>>> say much about infinite sets and Cantor's theorem, namely that the set
>>>> of nodes and the set of paths are equivalent sets.

>>>> The set of leaf nodes and the set of finite or terminating paths are
>>>> equivalent, but infinite or non-terminating paths have no leaf nodes,
>>>> so that there is no equivalence.

>>>> The set of nodes is
>>>> countable and the set of paths is equivalent to the set of reals in
>>>> (0,1). That's quite a lot of information, isn't it?

>>>> GIGO!
>>>> WM's "proof" disproved"

Re: Cantor and the binary tree

- > 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.

Virgil, you're totally convoluted. Try to poke a hole in the argument I just posted regarding insertion of nodes in ANY tree. Sorry, the prior existence of leaf nodes is not a ruse that's available for you in this one.

—
Smiles,

Tony

• *Follow-Ups:*

◆ *Re: Cantor and the binary tree*

◇ *From:* Virgil

• *References:*

◆ *Cantor and the binary tree*

◇ *From:* mueckenh

Re: Cantor and the binary tree

- ◆ **Re: Cantor and the binary tree**
 - ◇ From: Dik T. Winter
- ◆ **Re: Cantor and the binary tree**
 - ◇ From: mueckenh
- ◆ **Re: Cantor and the binary tree**
 - ◇ From: Virgil
- ◆ **Re: Cantor and the binary tree**
 - ◇ From: mueckenh
- ◆ **Re: Cantor and the binary tree**
 - ◇ From: Virgil

- Prev by Date: **Re: Cantor and the binary tree**
- Next by Date: **Re: $cl(\bigcap_{1 \leq q \leq \infty} L^q) = L^p$**
- Previous by thread: **Re: Cantor and the binary tree**
- Next by thread: **Re: Cantor and the binary tree**
- Index(es):
 - ◆ **Date**
 - ◆ **Thread**