

Re: Cantor and the binary tree

Source: <http://sci.tech-archive.net/Archive/sci.math/2005-05/msg04544.html>

- *From:* Virgil <ITSnetNOTcom#virgil@xxxxxxxxxxx>
 - *Date:* Tue, 24 May 2005 16:40:23 -0600
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In article <1116959066.601645.283260@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>, mueckenh@xxxxxxxxxxxxxxxxxxx wrote:

> Robin Chapman wrote:
>
>
>>> of paths always equals that of the nodes + 1. It is simply
> impossible
>>> to assume that one of these numbers becomes uncountably infinite
> while
>>> the other remains countably infinite.
>>
>> "becomes"?
>
> 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 (having a root node and a leaf or terminal node) one is there can only be countably many, but it is those paths starting at the root which procede through infinitely many nodes in this infinite tree, and never have a terminal or leaf node, that are under consideration.

The set of these unbounded paths can mapped bijectively to $P(N)$, whereas the set of nodes can be mapped bijectively to N .

>
>> One can hardly imagine a simpler mathematical proof. Alas, it's still
>> beyond the limits of Chaps

As all such false proofs should be.

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- *Follow-Ups:*
 - ◆ **Re: Cantor and the binary tree**
◇ *From:* aeo6

Re: Cantor and the binary tree

- ◆ **Re: Cantor and the binary tree**
◇ *From:* mueckenh

• **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**