

## Re: abundance of irrationals!)

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*Source:* <http://sci.tech--archive.net/Archive/sci.math/2005-05/msg01846.html>

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- *From:* Tony Orlow (aeo6) <[aeo6@xxxxxxxxxxxx](mailto:aeo6@xxxxxxxxxxxx)>
  - *Date:* Tue, 10 May 2005 14:05:25 -0400
- 

Russell said:

> aeo6 Tony Orlow wrote:

>

> [snip]

>

>> Excuse me, but the nodes of an infinitely deep binary tree can

> obviously be

>> enumerated in a linear manner, corresponding to binary integers and

> thus to the

>> naturals.

>

> Yes.

>

> If you want to complain that it would require infinite digits for

>> most values,

>

> Huh? What does that even mean? What values are you

> talking about? And digits of what?

Duh. The digits of the binary number that represent each node on the tree, where each bit represents a right or left branch as a 0 or 1. Infinite strings of such digits represent elements infinitely far out on the branches. What did you think, when I referred to correspondence between the nodes of a binary tree and binary integers?

>

>> that's irrelevant. it's still an enumeration of the reals.

>

> No. The obvious linear enumeration of \*nodes\* is not an

> enumeration of the reals. For that, you need to enumerate

> the different paths. That's not merely a rearrangement of

> the enumeration of nodes; if you think it is, then please

> tell us how you associate each node with one and only one

> path. Can't be done.

Each bit enumerates a step in the choice of path. Think about it.

>

>> Enumeration is irrelevant to the level of infinity, except insofar as

> we must

>> rearrange the quantities in order to enumerate them linearly. Don't

> look in

>> your bag of axioms for proof of this. It's been conveniently

> excluded.  
>  
> Yes, it would be rather inconvenient to make that an axiom,  
> since it's inconsistent with the other axioms. I think you've  
> gotten stuck thinking about rearrangements that turn out not  
> to exist in fact.  
>  
>  
Think what you like.

—  
Smiles,

Tony  
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• *Follow-Ups:*

- ◆ **Re: abundance of irrationals!)**  
    ◇ *From:* Virgil
- ◆ **Re: abundance of irrationals!)**  
    ◇ *From:* Russell

• *References:*

- ◆ **Re: abundance of irrationals!)**  
    ◇ *From:* mueckenh
- ◆ **Re: abundance of irrationals!)**  
    ◇ *From:* Virgil
- ◆ **Re: abundance of irrationals!)**  
    ◇ *From:* mueckenh
- ◆ **Re: abundance of irrationals!)**  
    ◇ *From:* Randy Poe
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    ◇ *From:* Virgil
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    ◇ *From:* Randy Poe
- ◆ **Re: abundance of irrationals!)**  
    ◇ *From:* aeo6
- ◆ **Re: abundance of irrationals!)**  
    ◇ *From:* Russell

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