

Re: Well Ordering the Reals

Source: <http://sci.tech-archive.net/Archive/sci.math/2005-11/msg00167.html>

- *From:* Tony Orlow <aeo6@xxxxxxxxxxxx>
 - *Date:* Tue, 1 Nov 2005 16:27:41 -0500
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David Kastrup said:

> Tony Orlow <aeo6@xxxxxxxxxxxx> writes:

>

>> Daryl McCullough said:

>>> Tony Orlow says...

>>>

>>> >Oh come on. That set has one element, not an infinite number. Do

>>> >you know what "number of" means?

>>>

>>> Nobody knows what *you* mean by "number of elements". They know

>>> what people *normally* mean, but you have explicitly rejected that

>>> definition.

>>

>> You HAVE no definition for number of elements for infinite sets. You

>> have cardinality instead, which is not a particular number of

>> elements, but an equivalence class that ignores actual numbers.

>

> It is an equivalence class, period. Numbers are not relative for

> establishing order among sets. It turns out that they are a

> convenient help with finite sets, though.

Right, so cardinality \leftrightarrow number of elements = set size.

>

>> I don't reject bijections. I just consider them insufficient in

>> themselves to declare equal set size or number of elements.

>

> You came up with no sensible objection, though.

I certainly have. It violates basic properties of sets, such as removing elements implying smaller set size. That's a pretty basic flaw, the way I see it. I mean, you have a set of rationals dense in the reals, and a set of naturals sparse in the reals, and you equate them. I object to that.

>

>> It's a different animal.

>

> Different from what? You consider surjectability not a good measure

> of relative set size. But what you have come up as a substitute is

> mere handwaving and babbling. And however insufficient or

> dissatisfactory you may consider surjectability as a measure of set

> size, your handwaving and babbling is worth nothing at all.

Bull. I have offered the inverse function rule and $N+S^L$ to deal with

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quantitative and symbolic sets, respectively.

>

> There are no "actual numbers" describing the set size of the naturals.

That is true. There is no exact number. There is only the identity function between value and count which defines it. That is why it is the unit discrete infinity.

> You have to invent new numbers for that, and if you do that, you have

> to define the exact meaning of those inventions with regard to sets.

I already gave the above definition for N, and said it's not a number. When speaking of it as a number, it actually serves as a variable which can assume finite or infinite values.

>

>

—

Smiles,

Tony

<http://www.people.cornell.edu/pages/aeo6/WellOrder/>

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• *References:*

- ◆ ***Re: Well Ordering the Reals***
 ◇ *From: Daryl McCullough*
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