Re: Well Ordering the Reals

Source: http://sci.tech−archive.net/Archive/sci.math/2005−11/msg01490.html

- *From*: Tony Orlow <aeo6@xxxxxxxxxxx>

- *Date*: Thu, 10 Nov 2005 10:59:01 −0500

MoeBlee said:
> Tony Orlow wrote:
>
> > Actually, most of the standard axioms would get scrapped
>
> Then please say exactly what you would scrap in this list:
>
> classical first order logic
>
> identity theory
>
> extensionality
> separation schema
> power set
> union
> pairing
> infinity
>
> regularity
> choice
>
> replacement schema
I am not sure about that. I see a system where the real line and quantity form one kind of set and infinity, and discrete counting systems form another, as in standard set theory, but where N=S^L as a rule for symbolic systems is observed, and the inverse function rule is applied for quantitative sets. The power set relation is important, but given undue attention and importance. Anyway, I think what I envision is simply a different starting point.

>
> As I understand, you claim that set theory (presumably Z set theory) is
> inconsistent. So what is your derivation of a formula and its negation
> in classical first order logic with identity theory, extensionality,
> separation schema, power set, union, pairing, and infinity?
Actually, Ross is the one that always says that, so I'll defer that question to Ross. As far as I can tell, standard set theory has managed to achieve some kind of internal consistency, although its external consistency, or agreement with other methods, is severely lacking, which leads to its inapplicability to anything but itself.

>
> And what is your logistic system and axioms that you think provide a
> consistent basis for mathematics?
Well, I'll scrape together my notes and put up a web page for you to scoff at.
I am not going to try to list what I consider axioms right here.
>
> Your claimed proof of the well ordering of the reals cannot be
> evaluated as coherent mathematics since your idiosyncratic mathematical
> prose does not include specification or even a hint of a suggestion of
> what logistic system your purported proof is a proof in, nor what
> axioms it is a proof from, nor what your primitive terms are, nor what
> your definitions are from those primitive terms.
All probably true. I presented an interesting ordered set of reals, and started
this thread by asking why it might not be a well ordering. I think maybe I got
an answer, but it seems like the answe ris that one can never define any well
ordering on an uncountably infinite set, despite the fact that choice somehow
says it's always possible in theory. Did Godel show that only a random ordering
could be a well ordering for the reals? If so, that says something.
>
> Also, among your many misunderstandings is your claim that the diagonal
> proof of the uncountability of the reals is mistaken for assuming a
> square rather than a rectangle. One poster already pointed out a sense
> in which you are incorrect that there is a rectangle and not a square,
> but it should be mentioned that you are incorrect in an even more
> fundamental sense, which is that, in this context, talk of a square and
> a diagonal through it is merely an informal means of suggesting a
> visualization of a proof that formally does not concern geometric
> shapes in any way whatsoever. The dialogue you've conducted in these
> threads is tantamount to a demand that mathematics conform to your own
> personal visualizations and abstractions rather than to verifiable
> proof in rigorous logistic systems, and this intellectual egocentrism
> of yours is part of why you keep missing the benefits of the vast
> amount of months and months and thousands and thousands of posts worth
> of free instruction you've so foolishly thumbed your nose at.
Oh, I appreciate the participation of even the most hostile mathematicians
here. Do I need to agree with everything standard? I don't think so. The
conclusions of standard theory concerning infinities have always rubbed me the
wrong way, and I am far from alone. So, bouncing ideas around helps me focus on
exactly what the problems are and how to go about fixing them to the
satisfaction of intuitions around the world. You must admit that, as imbecilic
as you may think I am, plenty here have not only derived entertainment value
from my antics, but have expressed that it is a good exercise in teaching
technique. Interestingly, despite all the objections to my infinite naturals,
infinitesimals, and functions on N (or aleph_0), some participants in these
threads have found themselves using some of the ideas, before they realized
what they were doing.

As far as the grid being only an illustration, oftentimes a picture says in an
instant what takes a thousand words to explain. For binary strings of a given
length L, one can form 2^L of them (as per N=S^L), which is always more than L.
So, it is quite obvious that, if one were to have a complete list of all

strings of length L, every such string would be in the list, but the antidiagonal would lie below the diagonal in the list, which would only traverse the first L of 2^L strings. So, I don't think I have a misunderstanding of what's going on in Cantor's daigonal argument. Anyway, thanks for the kind words.
>
> MoeBlee
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Smiles,

Tony
http://www.people.cornell.edu/pages/aeo6/WellOrder/
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- ***Follow−Ups***:
  - ♦ ***Re: Well Ordering the Reals***
    - ◊ *From:* MoeBlee
  - ♦ ***Re: Well Ordering the Reals***
    - ◊ *From:* Ross A. Finlayson
  - ♦ ***Re: Well Ordering the Reals***
    - ◊ *From:* Virgil

- ***References***:
  - ♦ ***Re: Well Ordering the Reals***
    - ◊ *From:* Robert Low
  - ♦ ***Re: Well Ordering the Reals***
    - ◊ *From:* Tony Orlow
  - ♦ ***Re: Well Ordering the Reals***
    - ◊ *From:* Randy Poe
  - ♦ ***Re: Well Ordering the Reals***
    - ◊ *From:* Tony Orlow
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    - ◊ *From:* Randy Poe
  - ♦ ***Re: Well Ordering the Reals***
    - ◊ *From:* Tony Orlow

- Prev by Date: ***Re: Set Theory−Axiom of Congruence.***
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