Re: Cantor Confusion

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* *From*: mueckenh@xxxxxxxxxxxxxxxxx
* *Date*: 28 Mar 2007 10:58:46 −0700

On 26 Mrz., 16:58, "Dik T. Winter" <Dik.Win...@xxxxxx> wrote:

> In article <1174670803.869854.53...@xxxxxxxxxxxxxxxxxxxxxxxxxxxx>
> mueck...@xxxxxxxxxxxxxxxxx writes:
>
> > On 23 Mrz., 17:09, "Dik T. Winter" <Dik.Win...@xxxxxx> wrote:
> ...
> > > > You need not to start. Reverse all terms of the series simultaneously.
> > >
> > > Oh. How do I do that? What do I interchange the first one (1 with)?
> >
> > You are not so squeamish when exchanging every digit of Cantor's
> > diagonal.
>
> But that is not precisely the same. You want me to reverse a series that
> does not terminate. I ask you how I do that, and you refrain to answer.
>
> > Cantor, unless working every digit simultaneously, will never finish.
> > In fact we need not know how to proceed, but it is sufficient to know
> > hat the sum remains 2 what ever we do.
>
> No, the sum is undefined. If you think it is defined, *prove* it and
> *prove* that the sum is 2. What is the sum of the "sequence":
> "..., 1/4, 1/2, 1"?

Well, what is it? If any infinite series ever had a value, then the
sum of this sequence is 2.
Proof: Sum the first n terms from the right hand side and find that
the difference of their sum and 2 is not more than 1/2^(n−1). Further
find that the sum is always less than 2. Voila.

> > However, you may proceed as follows (but only after having read my
> > book): By transpositions (as we know them from Cantor's work) bring
> > the n−th term (with n = 2, 3, 4, ...) into the first position and
> > after that bring the n+1−th term into first position. If you are
> > really fast, then you reverse the whole sequence of terms (because you
> > can determine, for *every* term number n, the number of transpositions

> required to have it at the first position).

Yes, and when are we done?

When is Cantor done?

The problem with this is that there is a
dependency in the order of transpositions, so they can not be performed
simultaneously.

Cantor's work cannot be done simultaneously. You are in error. In
order to exchange a_n you have to find n. That is done by counting.
You cannot point to n unless you have pointed to n−1.

Ever tried to count the students attending a lesson or the peas in a
cup full of peas?

> > > > Yes, I do. What now? Every two paths separate from each other at
> > > > some specific node, through all nodes go uncountably any paths,
> > > > there is no level where all paths do separate.
> > >
> > > Because there is no "all paths".
> >
> > Pray, provide a proof (within set theory, where we are arguing).
>
> I am arguing within the tree. There is never an uncountable number of
> separated paths. You say all paths were uncountable and separable.
> Conclusion. there is no "all paths" within the tree.

You have to first *prove* your statement that there is not an uncountable
number of separated paths. Until now your proofs depend crucially on the
assertion that there is not an uncountable number of separated paths, and
so are circular.

Wrong. The proof depends on the fact that the set of nodes is
undisputedly countable and only nodes are points of separation. A very
simple logical conclusion, in principle.

> > > This
> > > > still does not say anything about the number of non−terminating paths.
> > >
> > > That is where we disagree. All paths belong to groups of paths. Even
> > > single paths belong to groups and are groups, if isolated.
> >
> > Yes, so what?

>
> Therefore, if they existed isolated and were so many as you say, they
> would populate a level with uncountably many nodes.

Why? Each two paths are isolated from each other (by your definition), so all paths are isolated from all other paths. *But* there is *no* level where a single path is isolated from all other paths.

There is no *finite* level where all paths are separated. But the tree is *infinite* and it contains all levels where something could happen. A path which is not separated form another one within the tree is never separated.

> > > I think we have cleared our positions sufficiently: We agree in: At no
> > > level in the tree more than countably many groups of paths (including
> > > single paths) can be distinguished. And outside of he tree there are
> > > no paths.
> > >
> > > You nevertheless believe in the uncountable while I do not.
> >
> > Well, within set theory it can be proven.
>
> Within the tree it can be disproven.

Until now you did not succeed, because your proofs either contain a denial of the axiom of infinity or other logical flaws.

Wrong.

> > But you do not believe in
> > set theory. On the other hand, you have *not* proven that set theory
> > is inconsistent. That you do not believe in the uncountable is *not*
> > an argument against set theory.
>
> That you do believe in set theory is not a crime. But that you do
> believe in uncountaly many separations without uncountably many
> separations, that is hard to believe.

I do not. You think I do, but that is due to a lack of logical reasoning.

The lack of logical reason is as follows. You say:
For every pair of path, there is a node, where they separate. There is no node where all have separated.
You should say, however:
For every pair of path, there is a node in finite distance from the root node, where they separate. There is no node in finite distance

from the root node where all have separated. And you should recognize
that the binary tree is infinite. Therefore, everything that happens
even *after* any finite distance from the root node, nevertheless
happens in the tree − unless it does not happen at all.

Regards, WM

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