

Re: induction vs Cantor

Source: <http://sci.tech-archive.net/Archive/sci.math/2004-12/2107.html>

From: Ron Sperber (ronsperber_at_optonline.net)

Date: 11/27/04

Date: Sat, 27 Nov 2004 00:45:50 -0500

Poker Joker wrote:

> "Ron Sperber" <ronsperber@optonline.net> wrote in message
> news:rZLpd.162\$lb6.14@fe08.lga...

>

>>Poker Joker wrote:

>>

>>>"Chairman of the David Hilbert Appreciation Society"

>>><mathgeekxxiii@hotmail.com> wrote in message

>>>news:8JqdnQxnYLCa6zrcRVn-3w@giganews.com...

>>>

>>>

>>>>Poker Joker wrote:

>>>>

>>>>

>>>>>Let L_1 be a list of reals that implies a mapping F_1

>>>>>between the naturals and reals.

>>>>

>>>>Ok

>>>>

>>>>

>>>>

>>>>>Let D_n be a Cantor anti-diagonal number that can be

>>>>>formed using the mapping F_n

>>>>

>>>>Ok

>>>>

>>>>

>>>>

>>>>>Let L_{n+1} be a list of reals by inserting D_n into L_n

>>>>>at row $2n$ and shifting down all the previous rows at $2n$

>>>>>and above. This process is clearly an inductive process

>>>>>that creates a new mapping for each natural number.

>>>>>(L_{n+1} could also be formed by prepending D_n to

>>>>> L_n .)

>>>>

>>>>>Right. You outline a process to create infinitely many L_n ,

>>>>>none of which contains all of the reals.

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>>>>
>>>>>All of the D_n can be found in "infinitely many" mappings
>>>>>between the naturals and the reals.
>>>>
>>>>>This part is a bit fuzzy. At this stage you don't have a proof
>>>>>that any one L_n contains all of the reals; which is what you
>>>>>would need to declare that Cantor made an error. That you are
>>>>>hand-waving about something included in "infinitely many" mappings
>>>>>is irrelevant since in no obvious way does such a thing relate
>>>>>to a list, or a bijection.
>>>>
>>>>
>>>>>This part is not fuzzy. For all $j > n$, D_n is in L_j .
>>>>>
>>>>>The union of all the L_n , (a countable set) contains all the D_n .
>>>>>
>>>>>
>>>>>So? I now can construct a NEW "antidiagonal". We have $U(L_n)$ is countable,
>>>>>so let $N \rightarrow U(L_n)$ by my bijection and I can find use the usual argument to
>>>>>find an element not in this list.
>>>>>
>>>>>
>>>>>When you say "SO?" that doesn't make the statement
>>>>>
>>>>>" The union of all the L_n , (a countable set) contains all the D_n ."
>>>>>
>>>>>untrue. There are no "OLD" "antidiagonals" and there are no "NEW"
>>>>>ones either. They all exist together and together they form a countable
>>>>>set.
>>>>>
>>>>>
>>>>>

No they don't. I just told you about an antidiagonal that has to exist. You made your collection of lists $\{L_n \mid n \text{ a natural number}\}$ and then took their union. You then claimed, correctly, that this union is countable. So now we take the antidiagonal of this list. It is not on the list by the same reasoning as before. You are either (a) someone who isn't quite clear on the definitions or (b) a crank and given your volume of postings defending your mistaken conclusions I'm starting to lean heavily towards (b)