Re: induction vs Cantor

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"J.E." <troubled6man@yahoo.com> wrote in message
news:39d6e584.0411271230.3f762cf3@posting.google.com...

<snipped>

> *If you take the union of all the L_n, then you get a countable set, so*
> *you can construct a NEW list L_{omega} that lists every element in L_1*
> *and all the D_n. But if you apply the diagonal arguement to L_{omega}*
> *then you get D_{omega} which isn't in the union, so it isn't in L_1 or*
> *any of the D_n. If you made a new list L_{omega+1} which had*
> *D_{omega} in it, then I could use the diagonal arguement again to get*
> *D_{omega+1}. The whole point is that for any list L_X, there is a*
> *real D_X that isn't on L_X. So you can make as many L's as you want,*
> *but there is always another D. It's like the proof of an infinite*
> *number of primes. One way to do it is to assume that there are a*
> *finite number p1 to pn then multiple them together and add one. This*
> *new number is not divisible by any of the others, and so it's a new*
> *prime. The diagonal arguement takes a countable number of things and*
> *produces "another one" not matter how many "countable" things there*
> *were.*

Yes, its like the primes. There are only countably many primes.

>> > *Have you followed through with your process a little*
>> > *bit with a particular L_0? All of the D_n's have the*
>> > *property that, if k > n, then the first (n/2)−1 digits*
>> > *of D_n match the first (n/2)−1 digits of D_k.*
>>
>> *No I haven't but I would have to add that there are*
>> *countably many ways of creating "anti−diagonal" numbers*
>> *so I'm not certain how you are doing that analysis.*
>
> *The thing is that there are as many ways to make anti−diagonal numbers*
> *as there are lists, because for every list there is another "new"*
> *antidiagonal number. So as in my example above if you union L_n*
> *together to get a "new" list (which we'll call L_{omega}, then there*
> *is a "new" anti−diagonal.*

All the descriptions of the methods for creating a number not in the list forms a countable set. You can call one of the lists "new" but it's just one list. We always have room for one more in our countable set.