Re: infinity

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- *From*: "Ross A. Finlayson" <raf@xxxxxxxxxxxxxxx>

- *Date*: 18 Oct 2005 19:16:18 −0700

Randy Poe wrote:
> Tony Orlow wrote:
> > Randy Poe said:
> > >
> > > Tony Orlow wrote:
> > > > Virgil said:
> > > > > Except that Card(P(N)) = Card(R) has been proved to hold outside of
> > > > > TOmatics.
> > > > Only according to axioms that basically state this fact with no justification.
> > >
> > > It's a theorem. That means it comes with a proof.
> > Based on axioms that don't come with a proof.
> > >
> > > > There is no justification for any such statement. If you disagree, please
> > > > explain exactly why this is so.
> > >
> > > 1. The meaning of "Card(A) = Card(B)" is defined as "there exists
> > > a bijection between A and B."
> > So Card(*N)=Card(P(*N)). Loverly!
>
> No, there is provably no bijection between A and P(A)
> for any set.
>
> The meaning of "Card(*N) = Card(P(*N))" would be "there exists
> a bijection between *N and P(*N)." Since there does not, you
> can not draw that conclusion.
>
> > > 2. A bijection between P(N) and R can be shown to exist.
> > Through the infinite binary strings, I know.
>
> Then why did you ask?
>
> > Of course, how do you know, as
> > Dave Tribble says, that there are enough bits in the elements of P(N) compared
> > to the other infinity of bits in the elements of R?
>
> No such vague statements as "other infinity of bits" are
> needed. Just consider bit strings consisting of one bit in each
> position n where n is a natural number.

>
> It is provable (not an axiom) that every real number in [0,1)
> corresponds to such a bit string, and every such bit string
> corresponds to a real number. There is a bijection between those
> PARTICULAR infinite bit strings and the numbers in [0,1).
>
> What do you think is missing there?
>
> > > 3. Therefore Card(P(N)) = Card(R)
> > Maybe as far as cardinality goes. in reality, the two sets are not of equal
> > size.
>
> Well "as far as cardinality goes" would be what we mean when we
> say the cardinalities are equal. Do you think that equal cardinality
> has to do with something else other than cardinality?
>
> > > In our axiomatic system, #1 is the meaning of "equal cardinality"
> > > and #2 is the proof.
> > The same objection
>
> What objection?
>
> > can be applied to the bijection between R and P(N) as
> > between *N and P(*N).
>
> There is a simple proof that any such bijection is impossible.
> That proof does not apply to R and P(N). Your "objection" is an
> objection on vague grounds to a wishy−washy statement that you
> might try to raise in your own parody of the proof, but is not
> an objection to a statement that occurs in the actual proof.
>
> − Randy

Hi,

In modern versions of Quine's NF, for New Foundations, there are,
between infinite sets and their very own powersets, and that so happens
in a variety of other non−regular and anti−regular theories.

You might have every bit string correspond to a real, all of them that
terminate with ones or zeros have dual representation.

In other bases besides binary, any rational number whose reduced form's
denominator has only factors of the radix has dual representation.

That same set of real numbers can be represented in base nine,
forty−seven, eight bazillion, and 2^n is less than 4^n.

There's a bijection between the bit strings and [0,1], and also between
them and [0,1/2], [0,1/4], etcetera, and [0,2], [0,4], etcetera, but
not without composition to [0, oo). That's talk about a necessary

implicit composition of functions between the semi−infinite bit string and the (half−open or closed) "interval" of all non−negative real numbers. Also it is to some extent about the leading zeros and the antidiagonal of any representation with leading zeros never being an element of that set.

There's a bijection between the bit strings and the powerset of naturals, the binary coded powerset of the natural integers.

That's the difficult one, it gets into dual and multiple representation of sets, and basically talk about Ord, the order type of ordinals U, the universal set of all sets, and that the order type of ordinals would be an ordinal and that the set of all sets would be its own powerset, and on Yggdrasil the eagle and the little hawk standing on it, where the dragon is zero, nibbling at the root, the three branches are space dimensions, and time is Ratatosk the remarkable squirrel, on the backs of ghost tee turtles.

The gets into the philosophical notions of things like Leibniz' monadology that are relevant and most explicit and known in Kant's Ding−an−Sich and the Hegelian Being and Nothing.

It's talk of an ur−element that is a set because of being an object in a theory where the mathematical objects are sets, and as there's only one proper class it subsumes both of the notions in type of being dually minimal and maximal.

Your theory with axioms is incomplete, says Goedel.

Ross

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- ***References***:
  - ***Re: infinity***
    - ◊ *From:* Daryl McCullough
  - ***Re: infinity***
    - ◊ *From:* Tony Orlow
  - ***Re: infinity***
    - ◊ *From:* David R Tribble
  - ***Re: infinity***
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  - ***Re: infinity***
    - ◊ *From:* Tony Orlow
  - ***Re: infinity***
    - ◊ *From:* Tony Orlow
  - ***Re: infinity***
    - ◊ *From:* Randy Poe
  - ***Re: infinity***

◊ *From:* Randy Poe

- Prev by Date: ***Re: RSA***
- Next by Date: ***Re: FACTORING BY GROUPING−please help***
- Previous by thread: ***Re: infinity***
- Next by thread: ***Re: infinity***
- Index(es):
    - ***Date***
    - ***Thread***