Re: infinity

Source: http://sci.tech−archive.net/Archive/sci.math/2005−09/msg02172.html

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- *From*: Tony Orlow (aeo6) <aeo6@xxxxxxxxxxx>
- *Date*: Fri, 9 Sep 2005 15:42:01 −0400

William Hughes said:
<snip>
> > > > No, I never claimed the sum of all finite naturals "exists".
> > >
> > > No I suppose you didn't. You have claimed that:
> > >
> > > a: the sum of a finite number of finite integers is finite.
> > >
> > > b: there are only a finite number of finite naturals.
> > >
> > > I concluded from this that you were claiming that the sum
> > > of all finite naturals exists. On the other hand I cannot see
> > > how you can believe a and b and not believe that the sum of all finite
> > > naturals exists.
> > Taking the sum of all finite naturals depends on identifying the last of them
> > and completing the sum, but we all know it is impossible to identify any
> > largest finite. The contradiction that is being pointed out now as proof that
> > the set of finite numbers is infinite derives from the contradiction inherent
> > in supposing any largest finite number. So, in this sense, neither the largest
> > finite nor the sum of all finites exist, even though we can say that
> > conceptually they are both finite numbers.
> >
> > Now, it has been shown that any initial segment of the naturals starting from 1
> > has as its largest member a number equal to the size of the set. The entire set
> > of finite naturals is the complete initial segment of the set of finite
> > naturals, and so this rule applies throughout it, as it is proven inductively.
> > So, while admitting that there is no largest finite, standard analysis
> > nevertheless defines one by declaring the size of the set of naturals, which
> > must be its largest member, to be aleph_0. Further, standard analysis declares
> > this set size to be infinite based on contradictions derived from the
> > supposition of a largest finite natural, and yet delares that all elements in
> > the set, which would include this supposed infinite set size, to be finite.
> >
> > >
> > > > >I proved that any
> > > > set of strings up to a given finite length is finite, and cannot be infinite
> > > > unless that length is allowed to be infinite. If all strings in your set are
> > > > finite, then the condition required for the infinite set is not met, and as
> > > > unbounded as your set may be, it is not infinite.

> > > >
> > >
> > > > The concept of summing all finite naturals rests on the concept of finding an
> > > > end to the set at which to close the summation.
> > >
> > > Maybe, but I am not making this argument. I am merely point out that
> > > you have claimed that you can sum all the finite naturals (more
> > > precisely
> > > that you claim both a and b). Why you believe a and b (whether because
> > > of some "end to the set" argument or for some other reason) is
> > > beside the point. The fact that you believea and b is not.
> > If the fact that I believe a and b is important, then you should be interested
> > in why I believe them.
>
>
> I may or may not be interested in why you believe them. This is
> not relevant. What is relevant is the fact that a and b imply
> that the sum of all finite numbers exists
b implies a, but knowing that a number is finite is not the same as ever being
able to pin it down. You cannot pin down the largest finite natural, but can
you deny that, if in concept it existed, that it would be, without a doubt,
finite? This is precisely the same situation with this sum.
>
> >I certainly don't think any sane person would argue
> > against a) anyway − it's obviously true.
>
> So you agree with a.
No, I am insane. What do you think?

Of course I agree with a. I brought up that point, remember? It's part of MY
argument. I agree with both a and b, but b does not imply that we can identify
this finite number, and a does not imply any such thing either.
>
>
> >So, the question is why I believe that
> > the set of finite naturals is a finite set. I think the contradiction I pointed
> > out above, between the infinity of aleph_0 as a set size and the required
> > finiteness of it as the largest finite number in the set, points out pretty
> > clearly that you have a problem here. If the elements are necessarily finite,
> > then the set cannot possibly have an infinite size, because the size is always
> > equal to an element in the set.
>
> So you agree with b.

Yes, as I have said.

>
>
> > >
> > > > So, your argument is a thinly
> > > > veiled largest−finite argument, no matter how you couch it.

> > >
> > > My only claim is that we can use a and b because you have
> > > claimed them. I did not make any representation as to why
> > > you claimed them. Apparently you believe:
> > >
> > > a: the sum of a finite number of finite integers is finite.
> > Do you disagree with that statement? It's pretty trivially true.
> > >
> > > b: there are only a finite number of finite naturals.
> > This is almost the root problem here, though it rests on the problem of
> > misapplying inductive proof.
> > >
> > > c: a follows from the fact that there is an end to
> > > the set of numbers you have to sum
> > No, this is based on your shared belief, which I do not share, that a finite
> > ordered set must have a largest member and that not having a largest member
> > implies infinity. I make a distinction between "infinite" and "unbounded", as
> > Daryl noted. This assumption, or theorem from set theory, is why Virgil and
> > others keep accusing me of claiming there is a largest finite, which I have
> > repeatedly denied.
>
> How does this differ from the statement
> "the largest finite natural does not exist"?

It's an entirely different statement, that's how. Is that all you read in this
paragraph?

>
> >The disagreement is in whether this test is one of infinity,
> > or simply unboundedness.
>
>
> This is of course irrelevant. I made a guess as to why you believe a,
> but whether my guess is right or wrong the important fact is that
> you believe a.
Do you disagree with a? Does anyone here?

>
> > >
> > > d: there is no end the set of finite naturals so
> > > you cannot sum them
> > Correct.
>
> So you believe d.a and b imply that
> The sum of the finite naturals exists, but d says this sum does
> not exist.
>
>
> Unfortunately, a, b and d are not consistent.
No they are not. b implies a, but neither implies that this number exists in
the sense that it can be uniquely identified. It says that IF you could

idnetify a largest finite, THEN you could idnetify the sum of all finites, and
no matter what the last term is, if it';s finite and there are a finite number
of terms, the sum is finite. The set of finite naturals is unbounded, but
finite. Failure to make this distinction consistently is the root of your
problem here.
>
> > You cannot specify any sum of the finite naturals any more than you
> > can specify a largest one of them. However, you CAN prove inductively that the
> > largest finite
> >is the set size, though we cannot know what that number is, and
> > you CAN prove that the sum of any finite number of finite terms is finite.
>
>
>
> > Given that the set of finite naturals is necessarily finite, the sum of that
> > finite number of finite terms is finite, even though we can never specify it.
>
> How does this statement differ from "the sum of all finite naturals
> does exist but cannot be named"?
Not by much. Perhaps it was a misstatement to say it existed, since that
implies to some that it can be identified, but since I also said it can't be
named, I kind of covered that misunderstanding.
>
> > >
> > > Unfortunately, these do not form a consistent set. a and b imply that
> > > the sum of the finite naturals exists, but d says this sum does
> > > not exist.
> > I hope I have explained my thinking to your satisfaction
>
>
> No, you have still not explained why you believe a, b and d, even
> though these are not consistent. (It is the existence of the sum
> of the finite naturals which leads to a contradiction, not the name)
See above.
>
> − William Hughes
>
>

−−
Smiles,

Tony
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- ***Follow−Ups***:
    - ***Re: infinity***
        - *From:* Virgil
    - ***Re: infinity***

        - ◊ *From:* stephen
    - ***Re: infinity***
        - ◊ *From:* William Hughes

- ***References***:
    - ***Re: infinity***
        - ◊ *From:* William Hughes
    - ***Re: infinity***
        - ◊ *From:* aeo6
    - ***Re: infinity***
        - ◊ *From:* William Hughes
    - ***Re: infinity***
        - ◊ *From:* aeo6
    - ***Re: infinity***
        - ◊ *From:* William Hughes
    - ***Re: infinity***
        - ◊ *From:* aeo6
    - ***Re: infinity***
        - ◊ *From:* William Hughes
    - ***Re: infinity***
        - ◊ *From:* aeo6
    - ***Re: infinity***
        - ◊ *From:* William Hughes

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