Re: Transfinite Ordinal Multiplication

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- *From*: Stephen Montgomery−Smith <stephen@xxxxxxxxxxxxxxxx>

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zuhair wrote:

> Hi All
>
> I am reading Introduction to Mathematical Philosophy by Bertrand Russell.
>
> It says that Trasnfinite Ordinal multiplication is non commutative.
>
> 2*Omega is different from Omega * 2
>
> so 2+2+2+..... = Omega
>
> While Omega + Omega = 2.Omega>Omega
>
> I see this a little bit fabricated! or let's say fixed.
>
> Why?
>
> Because I can sum number 2 Omega of times and result in 2.Omega, and on the other hand
> I also can sum Omega twice to result in Omega.
>
> How?
>
> To ease visualization of these ordinal summations let us use the unary numeral system.
>
> Zero = =Empty raw of stars
> One = *
> Two = **
> Three = ***
> .
> .
> .
> n = ****...nth*
> .
> .
> .

.
.
Omega = *****.....

Now Omega + Omega = ****.... + ****.... = ****.... ****.... > ***.....
This is clear

While ** + ** + ** + ** +..... = ****..... = Omega this is also
clear.

But it seems as if there is something fishy out their!

I can visually sum ** Omega of times and obtain ****....*****.... and
not ***.... see below

* * this is the first double of
stars
I will add the next double also wide apart each to the right of the
star of the first double
as below:

** **

Also the third double can be added in a similar manner to get

*** ***

If I continue for that infinitely the result would be ****.....
*****.... = 2 Omega.

From the other hand, I can sum two Omegas to result in one
Omega as

below

For simplicity let us denote one of the Omegas as (*)(*)(*).....

Now ****..... + (*)(*)(*)..... = *(*)*(*)*(*)..... = Omega

This last summation can be called Inter−digital summation.

Also If we examine the example of adding the two stars Omega of times
to result in
2.Omega we see it is also a form of Inter−digital summation.

So It seems that there are two kinds of multiplication operator.

One is Inter−digital multiplication, and the other is extradigital
multiplcation.

Of coarse both are non−commutative and each one is the converse of the other.

Let (*) be int