Re: Zuhair's set theory: Corrected

Source: http://sci.tech−archive.net/Archive/sci.logic/2007−11/msg00104.html

---

- *From*: Zaljohar@xxxxxxxxx

- *Date*: Sat, 03 Nov 2007 08:43:51 −0700

Hi all,

Zh is the set of all sentences entailed by (from classical FOL with identity) the following non logical axioms:

1) Axiom of sethood: AxEy: xey

2) Axiom of Extensionality: Az(zex<−>zey) −> x=y

3) Axiom of Transitive closure:

AxE!y (Am(mex−>mey) & y is transitive &

Am((mey & ~mex) −> Ez(zey & mez)) &

Ak((k subset_of y & Am((mek & ~mex) −> Ez(zek & mez)) & ~k=0) −> Em(mex & mek))).

Definition: y=Tc(x) <−> (Am(mex−>mey) & y is transitive &

Am((mey & ~mex) −> Ez(zey & mez)) &

Ak((k subset_of y & Am((mek & ~mex) −> Ez(zek & mez)) & ~k=0) −> Em(mex & mek))).

4) Axiom of Uniformity: Ax: ~xeTc(x)

5) Axiom schema of Comprehension: if Q is a formula in which x is not free, then all closures of

Ex(Ay(yex<−>Q(y)) <−> Ay(xeTc(y) −> ~Q(y))) are axioms.

/

Theory definition finished.

Theorems:

ExAy ~yex

Let Q<−> ~y=y

Then it is clear that Ay(xeTc(y) −> y=y) is a true statement.
Then according to comprehension Ay(yex<−>~yey) is true
Thus ExAy ~yex

From extensionality we prove that E!xAy ~yex

and we define this x as 0.

Now this thoery avoid Russell's paradox easily.

Let Q<−>~yey

Then Ay(xeTc(y)−>~yey) is always false according to this theory
and of course Ay(yex<−>~yey) is false from Russells paradox
Thus from comprehension we have Ex(False<−>False)
or simply Ex(true statement) which is true since we proved that 0 exist.

In a similar way Cantor's paradox is solved since if Q<−> y=y
we will have both statments Ay(yex<−>y=y) and Ay(xeTc(y)−>~y=y)
as false statements in this theory.

Regarding the set of all ordinals this will lead to Ay(yex<−> y is ordinal)
which is clearly false in this theory because it would be in itself
and thus contradicting its own definition, since ordinals are Regular
sets by their own definition, Accordingly by comprehension this leads
to falsifying the second statment that is Ay(xeTc(y)−>~ x is ordinal)
since x would be in itself and thus there is ordinal that contain it.

Axiom of pairing,union,power,separation schema, replacement schema
all can be proved in the same manner, Infinity also can be proved.

Zuhair

.