Re: Implementable Set Theory and Consistency of ZFC

Source: http://sci.tech−archive.net/Archive/sci.math/2007−10/msg04356.html

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- *From*: David C. Ullrich <ullrich@xxxxxxxxxxxxxxxxx>
- *Date*: Wed, 24 Oct 2007 08:06:21 −0500

On Wed, 24 Oct 2007 09:50:42 +0200, Han de Bruijn
<Han.deBruijn@xxxxxxxxxxxxxxx> wrote:

> MoeBlee wrote:
>
>> On Oct 23, 4:23 am, Han de Bruijn <Han.deBru...@xxxxxxxxxxxxxxx>
>> wrote:
>>
>>> 1. Extensionality 5. Specification X. Infinity
>>> 2. Empty set 6. Substitution
>>> 3. Pairing 7. Power Set
>>> 4. Union 8. Foundation
>>> 9. Choice
>>>
>>> And, as I've said, in this "model", only (1−4) are necessary as
>>> axioms,
>>> because (5−9) appear as theorems. And (X) is not part of the
>>> "model".
>>
>> I just saw Virgil's post, which made me realize I overlooked that you
>> said 5−9 are theorems of 1−4!
>>
>> You're wrong. None of 5−9 is derivable from all of 1−4.
>>
>> What you might mean is that in a certain model of 1−4, we have that
>> 5−9 are true in that model. But that does not ENTAIL that any of 5−9
>> are theorems of 1−4.
>
> You are wrong. Read the article.

Just for fun I downloaded it and looked at it.

The supposed proof of (5) is this:

"Theorem. The minimal element in a set, when implemented
as a natural array,
is always disjoint from the set.
Proof. This is a direct consequence of the above lemma:
the leftmost bit
position of an integer   0 has a numeric value which
is always less than the
numeric value of the integer itself.
This completes the proof, of the assertion that the axiom
of Foundation is just
a Theorem in our implementable set theory."

All that stuff about bit positions is specific to your
"model". Sure enough, exactly as Jesse conjectured,
it's _not_ a proof that 5 follows from 1−4 as you
insist, it's just a proof that 5 is true in your
"model".

At most it's a proof that 5 is true of the hereditarily
finite sets. That's not what you've been insisting
it is, in particular it is simply _not_ a proof that
5 follows from 1−4.

Which of course is not surprising, since 5 does not
follow from 1−4.

Han de Bruijn

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David C. Ullrich
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