Re: Countable models of ZFC

Source: http://sci.tech−archive.net/Archive/sci.logic/2007−10/msg00192.html

---

- *From*: george <greeneg@xxxxxxxxxx>
- *Date*: Fri, 05 Oct 2007 09:07:12 −0700

On Oct 3, 8:35 pm, Rupert <rupertmccal...@xxxxxxxxx> wrote:

> For me, models are sets. I don't like talking about proper classes.
> When I say "M is a set", I don't mean it's a set living in some model,
> I just mean it's a set, period.

Where is Aatu when you NEED someone to talk about "babbling".
JEEZus.
This IS sci.logic, you know. If you are going to undertake a
first−order treatment of something then you WILL GET models,
unless you attempt a purely syntactic approach.

Your "set, period" is quite absolutely guaranteed to be isomorphic
to SOME set in SOME model in ANY case, so why QUIBBLE?
Why even CARE about whether your set is or isn't in a model?
That is like saying "When I say 'n is a number', I don't mean it's a
number
living in some model; I just mean it's a number, period." That is all
well and good, but the point is, THERE IS a standard model of PA and
your n IS in that model, so why are you getting so phobic about n's
(or M's) possibly living in a bad neighborhood? EVERYbody's got to be
SOMEwhere!

> Some people might want to use a theory which allows proper classes and
> then the universe counts as a model too.

The universe HAS to EXIST in ANY case.
It has to serve the ROLE of a model in the sense of being something
into which the language gets interpreted. If you want some sort of
"large final total" model then OF COURSE its domain WILL HAVE to be
a proper class, if the elements are sets. If you want to insist on
models
being sets then you have to concede that no model IS that big/total.

> Of course, this model is standard

How do you propose to PROVE that if it is not even a set and
you can't use set theory on it? Is the class theory of your choice
going
to be able to prove it? If so, WHAT IS THE DEFINITION (of standard,
as a [proper] class model? And why of SET Theory? Doesn't there
ALSO need to be a standard model of the outer CLASS theory?)

> (just as the standard kilogram weighs one kilogram).

Where is Aatu to talk about "babbling" when you need him?
Most of this stuff is not even REMOTELY like anything physical
and I daresay the actual standard is no longer done that way anyhow
(I think it is done by how much mass gets deposited as a result of
a known current running for a known time).

Obviously THERE CAN be non−standard universes.

> You have to be able to make sense of "x is a member of y" all by
> itself,

Not necessarily.

> not just "x is a member of y in such−and−such a model".

This is a completely false dichotomy; models BY DEFINITION
ANSWER all of those questions. However, to the extent that
models are normally constructed with functions, you are quite
right that some basic competence is necessary. The proper way
to address/attack that involves circularity in the foundational
definitions
(of things LIKE "first−order language", "model", etc.).

> There has to be such a notion available, or your semantics will never get
> off the ground.

FINALLY.
I fully concur.
But that doesn't mean you can justify your notion.
ESPECIALLY at first−order, where an ALTERNATIVE to
this circular morass is available, namely, given that there
is a completeness theorem, you just treat that theorem as

the sharp edge of Occam's Razor (in this case) and just shave
the WHOLE of first−order semantics with it. Who cares if your
semantics can't get off the ground? At first−order, you PROVABLY
DON'T NEED a semantics in the first place!
Everything that's decidable is decided the same way IN ALL models.
The only thing for which you might need a semantics therefore becomes
"final confirmation of" UNdecidability/independence results.
The obviously better way to get those is just to prove them in
a STRONGER theory. You don't have to CALL that "semantics"
or "model construction".

> > IF THAT model was nonstandard then merely restricting its membership
> > relation to some submodel IS NOT going to guarantee that that submodel
> > (in this case, (M,E)) is standard. SOME nonstandard models DO have
> > nonstandard submodels.

> If you're going to take the view that you can never understand any
> sentence unless you've specified what model it's relativized to,
> you're going to tie yourself in knots.

I'm not the one who stated a definition making an appeal to the
outer model. YOU said M was a set and YOU used "in" in addition
to "e" while DENYING that there were two relevant membership
relations.
What, you are going to promote the outer one to "metaphysical fact"
as opposed to just being a relation? IF you are going to do that then
you'd best at LEAST concede that M was a proper class. If it was a
set
then you can't avoid its being inside some model.

.