Re: What is the 1st order formal system known as PA?

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Rupert wrote:

> > Then we can take a definition of a certain kind of (algebraic or other)
> > structure, and "recast" it as axioms for a theory in a different
> > language from set theory but with all its predicates and operation
> > symbols definable in set theory.

> Well, sometimes you will be able to do that, sometimes you won't.

That's reasonable. I'm not asserting that it can be done in every
instance.

> > Then we can look at the models for
> > that theory to see how they fare for isomorphism and homomorphism. And
> > vice versa: For axiomatizations of certain theories in certain
> > languages, we can define their predicates and operation symbols in set
> > theory and "recast" the axioms as a definition of a certain kind of
> > structure.

> Yes, that's true.

> > Then we can look to see whether all structures so defined
> > are isomorphic.
> >
> > This is complicated by the fact that definitions that talk about
> > subsets have to be "recast" as axiom schemata,

> Well, as we've seen, that's not a fully satisfactory way of doing it,
> the models of your resulting theory won't be exactly the same thing as
> the structures you want to talk about.

Right. I'm just musing on whether we can generalize what would be a
sufficient condition for the models to turn out like the structures.

> > and conversely, axiom
> > schemata have to be "recast" as definitions that talk about subsets.

> Again, you can do this if you want to, but it will change the class of

> structures you are looking at.

Right. That was my original point (actually in the converse) in
observing that the structures might be isomorphic but the models not.
I'm just musing whether we can detect some patterns.

> > I'm just wondering what kind of generalizations we can make about this.
> > For example, if all the algebraic structures of a certain kind are
> > isomorphic, then what else is required to ensure that the theory of the
> > axioms (from "recasting" definitions into axioms) is categorical, or
> > categorical within cardinalities?

> It depends on what way of recasting definitions you have in mind. As
> we've seen, the ways of recasting definitions you tried definitely
> don't work.

They weren't intended to work in the sense of preserving isomorphism,
but rather just to see that indeed they don't preserve isomorphism;
then for me to see why they don't preserve; then to wonder what
generalizations might be made about this.

Thanks,

MoeBlee

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- ***References***:
  - ***What is the 1st order formal system known as PA?***
    - *From:* Nam Nguyen
  - ***Re: What is the 1st order formal system known as PA?***
    - *From:* David C . Ullrich
  - ***Re: What is the 1st order formal system known as PA?***
    - *From:* MoeBlee
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    - *From:* Rupert
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