Re: FOL, ZFC, NGB and Prolog

Source: http://sci.tech−archive.net/Archive/sci.logic/2005−06/msg00209.html

- *From*: "Tom" <tkorna@xxxxx>
- *Date*: 13 Jun 2005 03:30:25 −0700

galathaea wrote:

galathaea
thank you very much indeed for writing
it is a great pity i understood only 5% of your kind post
it is a miracle i agree with 100% of it
as usual

> tom
>
> it is very difficult to discuss truth using godel as the source
>
> when he was younger
> he felt that all true things could be proven through mathematics
>
> he was confident
> like hilbert
> that the process of proof could comprehend all truth
>
> but in his attempts to prove this assertion
> he found flaws in this perception
> eventually
> after some careful study of the issues he had discovered
> he developed his famous incompleteness theorems
> in a completely finitary language
> excluding all direct reliance
> on the philosophically vague notion of truth
>
> tarski had a research programme
> where he was studying algebraic formalisations of truth
> by studying the algebraic nature of logic
> (it was really one of the big movements
> of the entire polish school
> which paralleled the algebraicisation
> of topology by classical constructivist henri poincare)
>
> one of the great accomplishes of tarski's programme
> was detailing the importance of satisfaction
> as one particularly relevant notion of truth

> to this whole discussion on computation
>
> computation theory required another algebraic process
> called lambda abstraction
> before it became a full enough description
> to comprehend functional application
>
> however tarski showed
> through what is essentially
> a term representation diagonalisation argument
> that there is no formula in a n−order term calculus
> that represents truth in that calculus
> (though perhaps some may represent (n−1)−order truth)
>
> this theorem is very general
> and applies to many nonboolean term calculi
> as well as classical models
>
> tarski learned of godel's work and commented
> godel learned of tarski's comments
>
> and godel began to believe that truth had been shown to be "unknowable"
> that this proved transcendental truth
> which later godel developed into mystical beliefs about his work
>
> during this time in his life
> godel felt that "truth as proof" was "already disproved"
>
> however that is not what tarski's programme had proved
> and later algebraic clarifications have been made
> on which notions of truth were addressed
> and how the guys over in recursive function theory
> (many, like markov, in the russian school also constructivists)
> were showing that they could explain what proofs were "really doing"
>
> they were showing how notions of truth in proof
> behaved like a certain computational structure
> which also had the same algebraic structure
> as that developed for a different constructivist school
> (heyting algebras)
> which were completely "knowable"
> (which is where curry−howard enters)
>
> all tarski had really done
> was detail a feature
> of the chain of meta and metameta...
>
> the reason i made my clarification
> (and i tried to make my wording clear)
> was that i thought earlier discussion
> could have given the impression that godel

> had only one opinion on truth
>
> he changed his mind throughout his life
> like all honorable people who seek to learn
>
> but i don't think it is really a "good idea"
> to follow godel's opinion on this topic
>
> instead
> i think it is best to stick with the algebra
> there is less controversy with algebra
>
> so i suggested starting with curry−howard
> which really is a good introduction to the connection
> of the algebraicisations
> of logic and computation
>
> it illustrates a nice relationship
> that brings another description of why
> constructive truth has temporal variation
>
> constructive computationalists are a small
> (but still sizable)
> community to this day
> (more popular perhaps in europe and asia than the americas)
>
> in the 60s and 70s
> particularly due to early work by f w lawvere
> metamathematics in the computational constructivist community
> was expressed in the language of category theory
> where translations of ZFC, NGB, and other foundations were begun
>
> categorial notions translate fairly directly
> to declarative computational languages
>
> i know it is not a simple web resource
> but you seem like you are genuinely interested
> in understanding a bit better the structure here
>
> and i don't really know to explain it briefly
>
> if you want to glean some information
> off of a computer language axiomatisation of mathematics
> i think you may have to have some background in the algebraics
>
> particularly since pattern matching is expressed in the same language
> for very much the same reasons
> which seemed to be one of the points of your questions
>
> now
> i wasn't disagreeing with anything that others have told you

> except that i don't place as much emphasis
> on godel's later opinions on truth
>
> i think some of his earlier work more correctly handled
> certain notions of truth
>
> but the others have
> as always
> given you valuable information
>
> but you had said at one point:
> P.S. All I need is a real mathie telling me that ZFCs, as all math,
> pattern matching. Oh, please. Nobody has EVER created a site, NOT even
> written a book that would make me answer the question in the
> affirmative : http://www.macrovu.com/CCTGeneralInfo.html And yet I DID!
> The assumption now in question is one I will NEVER be able to make by /
> after reading any book whatsoever or studying any site whatsoever.
>
> you won't find many willing to say that
> platonic truths exist
> in that there are propositions we can correctly axiomatise as true
> which we cannot axiomatise negated
> yet we cannot tell these from those statements
> that are truly independent (like the continuum hypothesis)
> inside formal proofs
>
> again this is
> (in my opinion)
> best formalised in category theory
> where cohen forcing and diagonalisation arguments
> are stated very naturally
>
> but since platonically true statements exist
> (one of which is the classical godel statement)
> mathematicians have less incentive to use
> only constructively valid statements
>
> even though most of the physically usable parts of mathematics
> are constructively valid
> mathematicians enjoy the freedom of discussing more ephemeral truths
>
> however, if you study categorial foundations of math
> in terms of computation theory
> you will find that there have indeed been many good books
> written about the topic
>
> pattern matching obeys much the same type of models
> when one is talking visual and topological pattern matching
> or computational argument pattern matching like in haskell
> or other functional programming languages
>

> its all related
>
>
> -=-
> galathaea: prankster, fablist, magician, liar

my lord
so much information
so little me

always with utmost respect

thank you
tom

.

- ***References***:
  - ***FOL, ZFC, NGB and Prolog***
    - ◊ *From:* Tom
  - ***Re: FOL, ZFC, NGB and Prolog***
    - ◊ *From:* Jim Spriggs
  - ***Re: FOL, ZFC, NGB and Prolog***
    - ◊ *From:* Tom
  - ***Re: FOL, ZFC, NGB and Prolog***
    - ◊ *From:* Jim Spriggs
  - ***Re: FOL, ZFC, NGB and Prolog***
    - ◊ *From:* Tom
  - ***Re: FOL, ZFC, NGB and Prolog***
    - ◊ *From:* Aatu Koskensilta
  - ***Re: FOL, ZFC, NGB and Prolog***
    - ◊ *From:* galathaea
  - ***Re: FOL, ZFC, NGB and Prolog***
    - ◊ *From:* Tom

- Prev by Date: ***Re: Derivations***
- Next by Date: ***Re: FOL, ZFC, NGB and Prolog***
- Previous by thread: ***Re: FOL, ZFC, NGB and Prolog***
- Next by thread: ***Re: FOL, ZFC, NGB and Prolog***
- Index(es):
  - ***Date***
  - ***Thread***