

# Re: Simple yet Profound Metatheorem

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- *From:* "Charlie-Boo" <[chvol@xxxxxxx](mailto:chvol@xxxxxxx)>
  - *Date:* 19 Dec 2005 07:31:22 -0800
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David C. Ullrich wrote:

> On 16 Dec 2005 11:07:53 -0800, "Charlie-Boo" wrote:

> All you have to do is explain what your notation means.

[] means necessity. |- means provability. Since "There is an overwhelming diversity of systems of modal propositional logic. Their accounts of theorem differ from one another. [We can] take the box of modal logic to mean 'it is provable' rather than 'it is necessary'." (The Unprovability of Consistency, George Boolos) but |- always means provable, I use |- for provable rather than [].

>>> Or, in extremely bad notation:  $|- (|-Q == Q)$   
>>> (bad notation because the first |- means |-, while  
>>> the second |- refers to some encoding of provability)

>>And  $[] ( []Q == Q )$  ?

> Is it extremely bad notation? No.

Don't you see the parallel? If  $|- (|-Q == Q)$  is extremely bad notation because the first |- means |- while the second |- refers to some encoding of provability, then  $[] ( []Q == Q )$  is extremely bad notation because the first [] means |- while the second [] refers to some encoding of provability.

I'll have to break the bad news to Boolos, Kripke, Solovay et, al.

>>(  $P = |- Q$  ) => (  $P = |-P$  ) because P must be r.e.

> Uh, this is gibberish. A set of natural numbers is or is not  
> r.e. What the hell does it mean to say that a wff is r.e.?

Since the relation (over its free variables)  $|-Q$  is recursively enumerable for any Q, and  $P = |-Q$ , then relation P is recursively enumerable. (Wffs express relations.)

> "red herrings about syntax". Right.

## Re: Simple yet Profound Metatheorem

There's nothing more trivial than a purported syntax error, yet you use it to trump all other considerations and proof that the author doesn't know anything about the subject. And when you consider the fact that there is so little formal standardization in logic (there is no ANSI for mathematicians), it's silly to even claim that a certain syntax can't be used because it is not "standard".

I once surveyed about 20 proofs of the Recursion Theorem to determine the most common syntax used to express it. I couldn't. Every proof used a different syntax. Try it and you'll see. Even referring to "Godel's 1st. Incompleteness Theorem" is wrong, because there are two 1st. theorems in Godel's 1931 paper – based on soundness and based on  $w$ -consistency. (Someone once published a survey of syntaxes used in logic and the variations were enormous. Also note the Boolos quote above.)

A more productive attitude is "Let's represent . . . with the syntax . . . as that is probably more commonly used. Then . . ."

>> Thm.  $((\neg P) = (\neg Q)) \Rightarrow \neg(P=Q)$

> This is obviously false.

> If neither P nor Q is provable (so that

>  $((\neg P) = (\neg Q))$  is true) it certainly

> does not follow that  $P=Q$  is provable.

Let's suppose that P is " $1>2$ " and Q is " $2>3$ ". Then  $P=Q$  is  $(1>2)=(2>3)$  which IS provable.

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> David C. Ullrich

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◆ **Re: Simple yet Profound Metatheorem**

◇ From: David C . Ullrich

### • References:

◆ **Simple yet Profound Metatheorem**

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