

Re: "Godel got it all wrong"

Source: <http://sci.tech-archive.net/Archive/sci.logic/2006-09/msg00196.html>

- *From:* "Newberry" <newberry@xxxxxxxxxx>
 - *Date:* 7 Sep 2006 07:27:59 -0700
-

Peter_Smith wrote:

I can see how people can get confused about the supposed implications of Gödel's First Incompleteness Theorem. What fazes me is the seemingly perennial temptation to say that there is something wrong with the Theorem itself. (When I was editing one of the philosophy journals for twelve years, there'd be another "refutation" submitted every four or five months.) The really odd thing is that the Theorem is in fact **easy**.

Of course, if you want to prove it Gödel's way (and there's other ways to choose from), there's work to be done, proving that primitive recursive functions are representable in Peano Arithmetic (and it requires a pretty bit of trickery with beta-functions to do that). But once the spade-work is over, the Theorem is indeed easily demonstrated. Which is not to belittle Gödel's achievement of course. As Kreisel says in his memoir, it was in fact very important to Gödel that the theorem was straightforward, **almost** obvious once one had got one's head around the philosophical point that truth and provability in this or that formal system are different concepts.

So why, I wonder, do people still get a bee in their bonnet about this?! Very puzzling.

Of course the theorem is correct. What is incorrect is the system. People sometimes confuse the two. The result is counterintuitive. In particular obtaining a formula which is true but unprovable is as good as contradiction. (BTW, the fact that from $P \ \& \ \neg P$ everything follows is not the main reason why inconsistency is problematic.)

This result (that there are true but unprovable formulas) resulted in wild speculations how and why our brain can comprehend formulas to be true based on their meaning, but which no machine can prove. There are of course those who say that "Goedel's formula is true" is equivalent to "T is consistent", and that there is nothing to be puzzled about. But whether this attempt to rationalize the problem away is correct is questionable.

Re: "Godel got it all wrong"

As I said what is wrong is the system. A system where there are true but unprovable formulas is not acceptable (modulo " 'Goedel's formula is true' is equivalent to 'T is consistent' .") I am puzzled by the references to 'PA'. Shouldn't it be called 'PA in classical logic'? Since there is nothing wrong with Peano's axioms it is probably the logic that is wrong.

So to answer your question why people are puzzled by Goedel's theorem: they find true but underivable formulas counterintuitive. I might add that it is rather obvious why this is puzzling.

Re: "Godel got it all wrong"