

## Proof that Wittgenstein is correct about Gödel

When we sum up the results of Gödel's 1931 Incompleteness Theorem by formalizing Wittgenstein's verbal specification such that this formalization meets Gödel's own sufficiency requirement: "Every epistemological antinomy can likewise be used for a similar undecidability proof." then we can see that Gödel's famous logic sentence is only unprovable in PA because it is untrue in PA because it specifies the logical equivalence to self contradiction in PA.

### Wittgenstein's minimal essence of the 1931 Incompleteness Theorem sentence

"I have constructed a proposition (I will use 'P' to designate it) in Russell's symbolism, and by means of certain definitions and transformations it can be so interpreted that it says 'P is not provable in Russell's system'. (Wittgenstein 1956:50e)

Formalized by Olcott:  $P \leftrightarrow (RS \nvdash P)$

### Wittgenstein definitions of True() and False()

'True in Russell's system' means, as was said: proved in Russell's system; and 'false in Russell's system' means: the opposite has been proved in Russell's system.

(Wittgenstein 1956:51e) Formalized by Olcott as:

$\forall x (\text{True}(RS, x) := (RS \vdash x))$

$\forall x (\text{False}(RS, x) := (RS \vdash \neg x))$  // LHS := RHS means LHS is defined as the RHS.

Since the Wittgenstein-Olcott axiom schema define True(RS, x) as Provable(RS, x) then  $\neg\text{Provable}(RS, x)$  would be defined as  $\neg\text{True}(RS, x)$ . This means that the Wittgenstein-Olcott minimal essence of the 1931 Incompleteness Theorem <IS> The Liar Paradox.

### The Formalized Liar Paradox says that P is materially equivalent to Not True.

The truth table shows that this is self-contradictory.

$P \leftrightarrow \neg\text{True}(P)$	$P \leftrightarrow RS \nvdash P$
T F F	T F F
F F T	F F T

The truth table of minimal essence of the 1931 Incompleteness theorem is identical to the truth table of the Liar Paradox because the third columns of these truth tables are stipulated by the Wittgenstein-Olcott axiom schema to mean exactly the same thing.

The failure of logical equivalence shows that both P and  $\neg P$  are contradicted (false) (in the above formula) thus meeting the [epistemological antinomy] sufficiency condition that Gödel stipulated for proof equivalence:

"14 Every epistemological antinomy can likewise be used for a similar undecidability proof." (Gödel 1931:40)

The fact that self-contradictory sentences specified in the language of a formal system cannot be proven in that formal system does not make the formal system itself incomplete or inconsistent as long as unprovable (from axioms) is construed as untrue.

**To complete the Wittgenstein-Olcott refutation of Gödel we only must show that the Wittgenstein-Olcott formalized True/False axiom schemata are the way that truth really works.**

**At the most abstract level of analysis:**

*Conceptual Truth is ONLY semantic relations between concepts that can always be expressed as[1] syntactic relations between finite strings[2] thereby logically entailing that truth cannot possibly ever diverge from provability.*

[1] Forming a perfect isomorphism between semantic and syntactic relations

$\forall x (\text{True}(x) \cong \text{Provable}(x))$

[2] Such as words, word phrases or predicate logic expressions.

**Examples:**

"one" [is a] "Integer"

"cats" [are] "Animals"

"cats" [have] "legs"

"2 + 3" [equals] "5"

"A  $\wedge$  B" " $\leftrightarrow$ " "B  $\wedge$  A"

To make the above abstraction more concrete we focus on the single relation between concepts of [sound deduction] from the sound deductive inference model.

Sound deduction begins with stipulated truth, applies a sequence of truth preserving operations, thus necessarily ends up with truth.

**Truth ONLY comes from:**

(1) Stipulated truth (the definitions of the meaning of words)

(2) Applying a sequence of truth preserving operations to stipulated truth.

**Truth ALWAYS comes from:**

(1) Stipulated truth (the definitions of the meaning of words)

(2) Applying a sequence of truth preserving operations to stipulated truth.

When we construe a formal systems axioms to essentially be stipulated truth then this same formal systems theorems would also be true because they were derived by applying truth preserving operations to its axioms. Since this is the way that Truth really works we have proven that true can never diverge from provability.

Godel, Kurt 1931 On Formally Undecidable Propositions of Principia Mathematica And Related Systems I, page 40.

Wittgenstein, Ludwig 1956 Remarks on the Foundations of Mathematics Part I, Appendix I Paragraph 8, pages 50e-51e.

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