

## Succinct Refutation of Tarski Undefinability Theorem

Tarski proves that the Liar Paradox is true in his meta-theory and not provable in his theory. By creating three truth predicate axioms that Tarski presumed could not possibly exist I prove that the Liar Paradox is false in his theory with no need to reference any meta-theory.

The following refutation applies to the general result of the Undefinability Theorem that has been construed to apply far beyond any language of arithmetic.

The key aspect of my proof is that I provide axiom of Truth (3) that correctly decides that some expressions of language such as the formalized Liar Paradox are either ill-formed or false. We evaluate these as not true.

### Truth Predicate Axioms

(Tarski Notation, Conventional Notation and Simple English)

(1)  $x \in Tr \leftrightarrow x \in Pr$  //  $True(x) \leftrightarrow (\vdash x)$

A set of facts adds up to X being TRUE.

(2)  $\sim x \in Tr \leftrightarrow \sim x \in Pr$  //  $False(x) \leftrightarrow (\vdash \sim x)$

A set of facts adds up to X being FALSE.

(3)  $x \notin Tr \leftrightarrow x \notin Pr$  //  $\sim True(x) \leftrightarrow \sim(\vdash x)$

There is no set of facts that add up to X being TRUE.

### The general result of the Truth Predicate Axioms:

All formal systems having the above three Truth Predicate Axioms and a formal language capable of expressing these axioms would be incapable of specifying any undecidable sentences.

Anyone truly understanding the Tarski Undefinability proof would know that the whole proof would fail as soon as its third step would be proven false: **3)  $x \notin Pr \leftrightarrow x \in Tr$  // page 275**

### Applying this general result to the third step of the Tarski Undefinability proof:

We swap the LHS of this equation, matching the RHS of Truth Predicate Axiom(3) with the LHS of Truth Predicate Axiom(3) deriving:  $x \notin Tr \leftrightarrow x \in Tr$ , which is clearly false. Thus decidable.

### The Tarski Undefinability Proof

[http://liarparadox.org/Tarski\\_Proof\\_275\\_276.pdf](http://liarparadox.org/Tarski_Proof_275_276.pdf)

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