Philosophy 240: Symbolic Logic
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Truth and Liars Handout

I. Liars

1. This sentence is false.
2. 'This sentence is false' is false.
3. 'Yields falsehood when appended to its own quotation' yields falsehood when appended to its own quotation.

II. Grelling's paradox

Call a predicate heterological if it does not apply to itself.
'Monosyllabic' is heterological; 'polysyllabic' is not heterological.

4. 'Heterological' is heterological.

III. There are two popular solutions to semantic paradoxes

5. Introduce a third truth value for paradoxical sentences.
6. Banish semantic terms from formal languages.

IV. The strengthened liar.

7. This sentence is not true.

V. Truth

To say of what is that it is not, or of what is not that it is, is false, while to say of what is that it is, and of what is not that it is not, is true (Aristotle, *Metaphysics*, 1011b25).

The correspondence theory of truth:

Truth is a relation between words and worlds.
The truth of a sentence consists in its agreement with (or correspondence to) reality.

The coherence theories of truth:

The truth of a sentence consists in its consistency with other beliefs that we hold.

8. God is omniscient.

Deflationary (minimalist, redundancy) theories of truth:

There is no essence to truth, no single reduction of truth to a specific property.
Truth is just a device for simplifying long conjunctions.

9. Everything you said last night was true.

VI. The T-schema

10. p is true iff x

'p' is the name of any sentence.
x are the truth conditions of that sentence.

Some instances of the T-schema:

11. 'the cat is on the mat' is true iff the cat is on the mat.
12. '2+2=4' is true iff 2+2=4
13. 'Barack Obama is president' is true iff the husband of Michelle Obama and father of Sasha Obama and Malia Obama is head of the executive branch of the United States of America.
14. 'El gato está en el alfombrilla' is true iff the cat is on the mat.

VII. The return of the liar

15. 1 is true iff 1 is false.

16.	1. $Tp \equiv \sim Tp$	From the T-schema and the definition of P
	2. $(Tp \supset \sim Tp) \bullet (\sim Tp \supset Tp)$	1, Equiv
	3. $\sim Tp \supset Tp$	2, Com, Simp
	4. $Tp \vee Tp$	3, Impl, DN
	5. Tp	4, Taut
	6. $Tp \supset \sim Tp$	2, Simp
	7. $\sim Tp \vee \sim Tp$	6, Impl
	8. $\sim Tp$	7, Taut
	9. $Tp \bullet \sim Tp$	5, 8, Conj

Tilt!

VIII. Tarski's solution

Distinguish between an object language and a meta-language.
Rule sentence 1 out of the object language.
A language can not contain its own truth predicate.
The truth conditions for an object language are written in the metalanguage.

17. All consequences of true sentences are true.

It seems to me obvious that the only rational approach to [questions about the correct notion of truth] would be the following: We should reconcile ourselves with the fact that we are confronted, not with one concept, but with several different concepts which are denoted by one word; we should try to make these concepts as clear as possible (by means of definition, or of an axiomatic procedure, or in some other way); to avoid further confusions, we should agree to use different terms for different concepts; and then we may proceed to a quiet and systematic study of all concepts involved, which will exhibit their main properties and mutual relations (Tarski, "The Semantic Conception of Truth: and the Foundations of Semantics," p 355).

We may accept the semantic conception of truth without giving up any epistemological attitude we may have had; we may remain naive realists, critical realists or idealists, empiricists or metaphysicians - whatever we were before. The semantic conception is completely neutral toward all these issues (ibid, p 362).