

Class 2 - The Fregean Revolution (or, the introduction continues)

I. Frege's revolution

I am trying to build a bridge between old views about language and the twentieth-century language revolution.

We talked briefly about Kant's idealism, and its distinction between the noumenal and phenomenal worlds.

Hegel's idealism, and his coherence theory of truth, is an example of the nineteenth century's turn inwards, away from the external world.

But, idealism is false.

Thus, instead of taking words to stand for our ideas, we could take them to stand directly for objects in the world.

This was Frege's counsel, in the introduction to his *Grundlagen*, against psychologism.

Frege urges philosophers to get out of our minds, and back into the external world.

The second principle he presents in the *Grundlagen* has come to be called the context principle.

The idea here is that the basic unit of meaning is not the single term, but the sentence.

'Theaetetus' itself doesn't have any meaning, independently of how we use that term in an assertion.

We will see this principle, a bit, in Quine's work.

Quine traces the origins of our language use from the time we were children.

The baby's 'Mama' is best taken as an assertion, 'There is my mother', rather than as a mere label.

Frege's argument, in the *Grundlagen*, is that if we take terms, like 'two', as labels, outside of an assertion, we end up looking for the referents of such terms.

Since there are no twos in the world, we end up thinking that 'two' refers to my idea of a two.

Similarly, we end up believing that the referents of my terms are ideas, and we are back with Berkeley, Hume, and Kant stuck in our phenomenal worlds.

Frege's context principle seems to conflict with Martinich's claim that (human) languages are essentially compositional.

Compositionality requires that the meanings of the whole are constructed out of the meanings of the parts, and that the truth of the whole depends on the truth of the parts.

The context principle demands that the meanings of the parts are somehow dependent on the meanings of the whole.

I see a paper topic here.

There's a paper by Oystein Linnebo on the website which attempts to resolve the tension.

In the *Grundlagen*, we see one of Frege's many influential strokes, the dissolution of the link that the moderns made between language and thought.

All of Frege's work starts with his interest in the philosophy of mathematics, but his influence extends into almost every area of contemporary philosophy, outside of value theory: logic, mathematics, language, science, mind, metaphysics, epistemology.

Frege's project in philosophy of mathematics, which came to be known as logicism, was to reduce all of mathematics to logic.

In the 19<sup>th</sup> century, mathematics had a series of crises in its foundations (e.g. non-Euclidean geometry,

Cantor's transfinite numbers, infinitesimals in the calculus).  
Frege attempted to rigidify, to regiment, the notion of a proof.  
In order to do so, he had to produce a formal language for such proofs.  
He called this language his *Begriffsschrift*, or concept-writing (handout).

Frege's formal language turned out to have a much broader application than just mathematics.  
In particular, Frege was able to refine the notion of logical truth, truths which depend merely on language.

If truth has something to do with language, and something to do with the world, it seems to follow, as Quine puts it, that some truths will depend on language alone: all bachelors are unmarried, if p then p, perhaps  $2+2=4$ .

Hume had called such truths relations of ideas, and declared that they follow from the principle of non-contradiction.

Kant, similarly, declared such truths a priori.

Frege provided a formal method for characterizing these truths.

Whether there are such truths, and whether there are meanings at all, is the subject of Quine's "Two Dogmas of Empiricism," on which we will spend a bit of time.

With Fregean formal logic came a neat solution to the 'nothing came down the road' puzzle.  
When we regiment that sentence into first-order logic, and interpret it, we find no commitment to a thing.

$$\sim(\exists x)Cx \quad \text{or} \quad (\forall x)\sim Cx$$

Fregean logic also led to an obvious explication of Kant's response to the ontological argument.

## II. Formal treatments of language: syntax, semantics, pragmatics

Once Frege introduced formal languages, it was a short step to the distinction between syntax, or the formal properties of those languages, and semantics, or the content of the language.

Linguists work almost exclusively on syntax, looking across languages.

The distinction that Plato makes between names and verbs, like the contemporary distinction between subjects and predicates, is a syntactic distinction.

Frege's *Begriffsschrift* presented a syntactic solution to the crises in nineteenth-century mathematics.  
In symbolic logic, we use rules of inference that are syntactically specified, making sure all gaps are filled.

In studying formal systems, there are several things you can do:

1. Construct a language
2. State some axioms, or basic principles, for a theory
3. Provide rules of inference, to derive other theorems
4. Interpret, or model, the theory

Consider the following formal system, found in *Gödel, Escher, Bach: An Eternal Golden Braid*, by Douglas Hofstadter.

We start by specifying the language.

The particles of the MU system are 'M', 'I', and 'U'.

In the MU system, any string of 'M's, 'I's, and 'U's is a string of the MU system.

So: MIU, UMI, and MMMUMUUUMUMMU are all strings.

Analogously, we can take the words of English to be the basic particles.

Then, only some strings, the grammatical sentences, will be formulas of the language.

So far, we have only specified the language.

We can proceed to write a theory, in that language.

An axiom is a basic assumption of a theory.

A theorem is any string which is either an axiom, or follows from the axioms by using some combination of the rules of inference.

In the MIU system, we will only be interested in theorems, just as we might be interested only in the true sentences of English.

The MIU system takes only one axiom: MI.

This means that MI is our foundational truth.

We will take four rules of inference:

R1. If a string ends in I you can add U.

R2. From Mx, you can infer Mxx.

That is, you can repeat whatever follows an M.

R3. If III appears in that order, then you can replace the three Is with a U

R4. UU can be dropped from any theorem.

So, starting with MI, we can derive various theorems:

<u>Statement</u>	<u>Justification</u>
1. MI	Axiom
2. MIU	From Step 1 and R1
3. MII	1, R2
4. MIII	3, R2
5. MIU	4, R3
6. MUI	4, R3
7. MIIIIII	4, R2
8. MIUUI	7, R3
9. MII	8, R4

Try one: derive MIIII (five I's)

Here is a real challenge: Derive MU.

For help, see Hofstadter's book, pp 259-261.

Do not spend much time on this puzzle without consulting Hofstadter, who provides hints and a solution!

Notice that in the MU system, there is no indication what any of the theorems or strings mean.

The whole system is based on abstract, symbolic manipulation, according to specific, algorithms.

Natural language has syntactic elements.

The grammaticality of a sentence, for example, does not depend on the content of the terms, but on the categories to which the terms belong, and the rules for constructing sentences.

We will look briefly at Chomsky's revolutionary claim about grammaticality, that there is a universal grammar built in to the structure of our brains, at the end of the term.

We will spend more time on the ramification of Chomsky's view for the nature of language.

Philosophers of language are less interested in syntax than they are in semantics and pragmatics.

Semantics has to do with the interpretations of our language.

When we interpret statements of a formal language, as when we translate between logic and natural language, we are doing semantics.

*Jabberwocky*, for example, could be taken as devoid of content.

But, we impose some interpretations on the terms.

Martinich has an introduction to syntax and semantics in §VII - §VIII of the introduction, pp 7-18.

If you haven't taken symbolic logic, you should spend some time with it.

If you have taken symbolic logic, you should spend a bit of time with it, too, but it will be easier to do so.

Philosophers of language pursue, centrally, two kinds of theories: a semantic theory and a theory of truth.

A semantic theory may take different forms.

It should yield an infinite number of theorems of the following form:

'snow is white' means  $\Phi$

Actually, a semantic theory will be particular to a language, so we should have

'snow is white' means-in-English  $\Phi$

These theorems are theorems of a meta-language, in which the semantic theory for an object language is written.

In this case, the meta-language and the object language are identical.

So, let's consider a semantic theory for a separate language.

'la nieve es blanca' means-in-Spanish  $\Phi$

First of all, notice the scare-quotes on the left-side of the theorem.

These indicate that we are merely mentioning the sentence inside the scare quotes, rather than using it.

When the object language and the meta-language are different, it is easy to distinguish use and mention.

It is more difficult to distinguish them when the object language and meta-language are the same, so we use scare quotes, or any of a number of devices to display a term.

See Carroll, p3, for an example of a mention of the term 'glory'.

Also see Martinich, §III-V, for an extended discussion of the use/mention distinction, scare quotes, and corner quotes.

Corner quotes indicate that some of the quoted portion is to be taken exactly as it is, and some is to be changed.

It's a symbolic form of 'mutatis mutandis'.

Since I'm being pedantic, remember to be careful to distinguish inscriptions, terms, ideas, concepts, and objects.

An inscription is a token of a term, or word.

Words may be taken to stand for ideas in our minds.

Different people have their own ideas, but may share concepts.

Some concepts refer to or stand for objects.

So, the inscription 'Guernica' is an instance of the title (a term) of Picasso's painting.

When we see that inscription, we may have an idea of the painting in our minds.

Your idea and mine may match, in which case we share a concept.

That concept corresponds (or not), in some way, to the actual painting.

On the right side of each of the theorems are meanings.

What is a meaning?

We might take them to be mental objects.

But since different people have different minds, two people could never mean the same thing.

See Carroll, p 3, where Humpty Dumpty says that words mean just what he chooses them to mean.

What a person means when she asserts something also seems independent of the language she uses.

'snow is white' means the same thing as 'la nieve es blanca'.

We will talk about meanings, and propositions, next week, when we look at Frege's *The Thought*, which is an unfortunate title.

In addition to syntax and semantics (and truth), philosophers of language are interested in the difference between what is said and what is communicated.

The study of what gets communicated is called pragmatics.

Martinich mentions, in §II, the phenomenon of contrastive stress, which we see in Carroll: "I said you *looked* like an egg, Sir" (p 1).

Also see Carroll, p 2.

The most important paper on pragmatics is Grice's "Logic and Conversation" in Martinich, pp 171-181, which I have not assigned.