

Class 5 - Sense and Reference

I. Intensions, extensions, sense and reference

We discussed the similarities and differences between ‘creature with a heart’ and ‘creature with kidneys’. They have the same extension, while differing in intension.

The differences between extension and intension are, approximately, differences between the senses of the phrases and their references.

Frege’s central claim as the founder of twentieth-century philosophy of language is his claim that terms, both singular terms and whole propositions, have both sense and reference.

Frege presents three arguments that terms of our language have both sense and reference.

1. Identity statements
2. Failure of presupposition/ empty reference
3. Opaque contexts

II. Identity statements

‘Hesperus’ is the Greek name for the evening star.

‘Phosphorus’ is the Greek name for the morning star.

Compare:

3. Hesperus is Hesperus

with

4. Hesperus is Phosphorus.

3 seems uninformative, knowable a priori, an analytic truth of language or logic, and necessarily true.

4 seems informative and knowable only a posteriori, a synthetic, contingent, empirical truth.

Given that ‘Hesperus’ and ‘Phosphorus’ refer to the same thing, how can there be such a difference?

This question is called Frege’s puzzle, and Frege uses to motivate the distinction between sense and reference.

Frege’s solution to the puzzle is that names, in fact all singular terms, have both sense and reference.

The translation of Frege’s article that we are using is called ‘On Sense and Nominatum’, but it has also been translated as ‘On Sense and Meaning’, which is confusing, and ‘On Sense and Reference’, which is the most clear, if not the closest to the original German.

I will ignore the use of ‘nominatum’, and use the now-standard term ‘reference’, instead.

‘Hesperus’ and ‘Phosphorus’ have the same reference.

But, they have different senses.

A proper name...expresses its sense, and designates or signifies its nominatum (220).

References of names are the objects that those terms designate.

References of predicates are either taken to be properties (if one is an intensionalist) or sets of objects that fall under the concept expressed in the predicate (if one is an extensionalist).

So, the reference of 'is a kitten' will be either the property of being a kitten or just the set of kittens.

The sense of a name, and of a predicate, for Frege, is a more contentious question.

Different people will associate different senses with a given name or predicate.

That is, terms appear to each of us under a mode of presentation.

One option for Frege is that senses are conjunctive sets of properties.

So, the sense of 'Aristotle' could be, for example:

5. teacher of Alexander the Great, student of Plato, born in Stagira, author of *Posterior Analytics*

The problem with taking senses to be sets of properties is that it makes the sentence

6. Aristotle was a student of Plato

an analytic truth.

Consider a person x and the conjunctive set of properties that defines the sense of his name, p .

Then 'x is p' is analytic.

Whatever the faults of the Fregean analysis of sense, we know that the sense of a term is how we apprehend it.

The terms in identity statements 3 and 4 differ in their senses.

Thus, identity statements, Frege says, relate senses (which are linguistic) rather than objects/references, which are, generally, non-linguistic.

The senses of singular terms are among the intensions for which Frege argued in "The Thought".

Thus, when we ask for the meaning of a term, our question may be ambiguous between two interpretations.

We could be asking for the sense of the term.

We could be asking for the reference of the term.

III. Failure of presupposition

Consider

7. Santa Claus lives at the North Pole.

If the meaning of 'Santa Claus' were merely its reference, then 7 seems to be problematic.

Given compositionality, that the meaning of the whole proposition is composed of the meanings of its parts, 7 seems to be meaningless.

For, one of its parts is meaningless.

Locke avoids problems of empty reference by making 'Santa Claus' refer to my idea of Santa Claus.

He thus avoids ascribing meaningfulness to 7.

But, he makes 7 and

8. Russell Marcus lives at 23 Fountain Street

both refer to my ideas.

On the contrary, it seems that 8 is true, since it says something true about a real person.

And 7 is false, strictly speaking, because there is no person to whom it refers.

That is, both 7 and 8 refer to a person, not to an idea.

Frege's solution, to separate sense and reference, allow the compositionality of meaning even when some terms lack reference.

7 can be meaningful (i.e. have a sense) because 'Santa Claus' has sense, even though it lacks reference.

Similar analyses can be given for descriptions which pick out a unique individual.

9. The president of Hamilton College is on sabbatical.

With referring, or definite, descriptions, the claim that they have sense is most plausible.

On the other hand, as Mill pointed out, some terms really seem merely denotative, and to lack connotation.

Mill used the example of 'Dartmouth'.

We will return to the question of whether names have sense.

Independently of the sense/reference distinction, one might think that 7 entails or implies that there is a Santa Claus.

Frege argues that uses of such terms do not carry with them such a presumption.

Still, in a logically perfect language, there would be no terms with empty reference, p 224.

IV. Propositions

Before we get to the argument from opaque contexts, we should look at what Frege thinks the nature of a proposition is, given the sense/reference distinction.

We have already seen that propositions are senses of sentences.

'Marina is a kitten' means that (i.e. has the sense that) Marina is a kitten.

So, let's consider the proposition that Marina is a kitten.

We know from 'The Thought' that propositions are abstract, objective, mind- and language-independent entities that exist in a third ontological realm, neither private, nor physical.

We know from compositionality that propositions are structured entities built out of their parts.

The sentence 'Marina is a kitten' contains a subject, 'Marina', and a predicate, 'is a kitten'.

Let's consider the components of the corresponding proposition.

It could contain the sense of 'Marina', or the reference of 'Marina' (i.e. Marina herself), or something else.

Similarly, it could contain the sense of 'is a kitten', the reference of 'is a kitten' (i.e. the set of kittens), or something else.

If propositions contained the referents of the component terms, then 'the morning star is the evening star' would be the same proposition as 'the morning star is the morning star'.

Since we know that those two propositions have different senses, Frege concludes, the sense of the proposition must not merely include the referents of its components.

In fact, the proposition is composed of the sense of the subject, or the subject under a mode of presentation, and the sense of the predicate, or the property under a mode of presentation, p 218.

Recall the Lauben case from 'The Thought', especially the claim that Garner and Peter don't speak the same language, p 40.

Garner and Peter are referring to the same person, but under different modes of presentation. That is, they associate a different sense to the term 'Dr. Lauben', which has the same referent (nominatum).

Max was concerned with precisely this point in class.

Note the connection between sense and reference.

The sense of a proper name is grasped by everyone who knows the language or the totality of designations of which the proper name is a part; this, however, illuminates the nominatum, if there is any, in a very one-sided fashion. A complete knowledge of the nominatum would require that we could tell immediately in the case of any given sense whether it belongs to the nominatum. This we shall never be able to do (218).

If we knew everything about a referent, then any mode of presentation of that referent would be subsumed under the sense which we associate with that referent.

So, if I knew every fact about Barack Obama, then I could know anything you would say about him. In a logically perfect language, different senses for proper names would be avoided, p 228, fn 2.

Frege makes two presumptions here.

The first presumption is that the sense of a term determines its reference.

In fact, one way to specify the meaning of Fregean senses is via reference: the sense of an expression is that which determines its reference.

The second presumption is that my thoughts determine the sense of a sentence, what I mean.

The sense of a term is completely transparent to the speaker.

These presumptions will lead to trouble, later.

If 'Marina is a kitten' is true, then Marina instantiates the sense (or individual concept) of the subject part of the proposition, and the property of being a kitten is an instance of the sense of the predicate, of the concept of kittenhood.

Someone (e.g. Jared) might worry that Frege is multiplying entities beyond necessity.

Do we really need kittens, properties of being a kitten, and concepts of being a kitten?

Remember, senses are available to us; we can think about them (or apprehend them).

The property of being a kitten (or the set of kittens) is the referent of 'x is a kitten'.

But, we think about that property, or that set, only under a mode of presentation to us, i.e. its sense.

The multiplication of entities is exactly how we solved the identity and empty reference problems.

If both concepts (of Marina and of kittenhood) are instantiated, then the proposition that Marina is a kitten will be true or false depending on whether or not Marina is a kitten.

Otherwise, the proposition has no truth value.

Note, as Colin did in his paper and presentation, that in addition to sense and reference, terms also evoke images in the minds of people who use them, p 219.

The imagery, being private, is no part of the sense of the term.

Imagery is psychological, whereas both senses and references are objective.

V. Compositionality, sense and reference

So far, we have been considering the sense and reference of names and of descriptions which pick out individuals.

Names and definite descriptions are called singular terms.

I also mentioned the sense and reference of predicates, like 'is a kitten'.

These are all sub-sentential units.

We have been guided by a principle of compositionality: the sense of a whole expression is determined by the senses of its parts.

Some sentences are complex.

Consider:

10. The dog barks and the cat purrs.

By compositionality, the sense of the whole complex is determined by the senses of its parts, including the sense of 'and'.

But, the parts of 10 include:

10'. The dog barks

and

10". The cat purrs

10' and 10" are sentences themselves.

So, the meaning of 10 will be determined by the meanings of 10' and 10".

We have already seen that the proposition is the sense of the sentence.

We have also seen that senses of simple sentences are composed of senses of their sub-sentential parts.

Now, we see that the sense of a complex sentence can be composed of the senses of fully sentential parts.

If the principle of compositionality were to apply also to references, then the reference of a sentence would be determined by the references of its parts.

The question is whether just as singular terms have sense and reference, so sentences will also have sense and reference.

You might believe that sentences have both sense and reference on the basis of an argument from symmetry.

The argument is that parts of simple sentences (singular terms) have both sense and reference, so parts of complex sentences (simple sentences) have both sense and reference.

On the other hand, perhaps a sentence has only a sense, and no reference, p 220.

Frege has two arguments for looking at the reference of a sentence.

The first argument is that our interest in language is subordinate to our interest in truth.

So, there has to be a role for truth value in analyzing a language.

So, we'll call the referents of sentences their truth values.

If the referents of sentences are their truth values, then all true sentences refer to the same thing, which Frege calls the True, p 221.

Similarly, all false sentences refer to the false.

Compositionality carries with it a commitment to Leibniz's law, substitutivity salva veritate.

Eadem sunt, quae sibi mutuo substitui possunt, salva veritate. (Those things are identical of which one can be substituted for the other without loss of truth.)

We use Leibniz's law in symbolic logic:

$$11. \quad \mathcal{F}a \\ a=b \quad / \quad \mathcal{F}b$$

Here is an instance of Leibniz's law:

$$12. \quad 2+2 = 4 \\ 4 = 9-5 \\ \text{Thus, } 2+2 = 9-5$$

Frege discusses cases of such substitutivity, p 226.
Substitutivity is just a basic principle of identity.

VI. Opaque contexts

We have come to Frege's third motivation for the sense-reference distinction.

Having all sentences refer to the True or the False is awkward, and arises mostly from the need to say something about the referents of sentences.

Still, there are considerations of indirect discourse that support Frege's system.

When words are used in the customary manner then what is talked about are their nominata. But it may happen that one wishes to speak about the words themselves or about their senses. (218)

In cases of indirect discourse, a term may be taken to refer to its own sense.

Consider:

13. Lois Lane believes that Superman can fly.

13 contains as a part the proposition that Superman can fly.

Given compositionality, the reference of the that-clause should be the True.

But, given compositionality, if 'Superman can fly' referred to the True, then we should be able to substitute any truth and retain the truth value of the whole.

What if we replace 'Superman can fly' in 7 with 'Russell is six feet tall'?

We've replaced a truth with a truth, but Lois Lane has no opinion on the matter.

Similarly, if we replace 'Superman' in 7 with 'Clark Kent', we get a shift in truth value.

Frege's conclusion, p 222-3, is that within such contexts, which are called opaque, the reference of a sentence is not its ordinary referent, but the sense of the sentence.

Opaque contexts are ones in which discourse is indirect.

That-clauses are thus names of things, of senses of the sentences that follow them.

The referents of the terms within that-clauses are similarly indirect.

13 says that Lois Lane believes some thing.

That thing is the name of a sense.

We can regiment beliefs, and other opaque constructions like wishes and denials, as relations between a cognizer and a proposition.

14. Bbs

Similarly, it is plausible to think

15. Aristotle believed that Phosphorus came out in the morning.

Since Hesperus is Phosphorus, Leibniz's law should allow us to conclude:

16. Aristotle believed that Hesperus came out in the morning.

But 16 is, presumably, false, since Aristotle did not know that Hesperus is Phosphorus.

Aristotle believed that Phosphorus came out in the morning only under a particular mode of presentation, the sense of the sentence.

Here is a problem for modes of presentation, from Stephen Schiffer:

The concept that was instantiated by Marina (in 'Marina is a kitten') included a mode of presentation.

This was important for Frege because it avoided the problems of cognitive content, the Superman-Clark Kent problem and the Aristotle-Hesperus-Phosphorus problem.

But if I say, 'Marina's owner believed that Marina is a kitten', I am making a presumably true statement, even though I have no access to the mode of presentation by which her owner knows that Marina is a kitten.

Lastly, here is a problem with Frege's analysis of opaque contexts, which comes from Bob Hale, *Abstract Objects*, p 30).

Consider:

"My copy of the *Grundlagen* was on my desk but I thought that it was in my bag."

Since the 'it' occurs in an opaque context, it should refer to its sense, not to its ordinary reference.

But it refers to the same thing that the term at the beginning of the sentence refers to.

That is, 'it' is just 'my copy of the *Grundlagen*'.

Russell will analyze away the problem of opaque contexts.

Quine solves Frege's problem with opaque contexts by refusing to substitute into opaque contexts.

VIII. Ways not to be Frege

Russell will attempt to solve the problems of opaque contexts by using analysis and a description theory. Philosophers of language who avoid senses are called extensionalists.

Extensionalists take the meanings of subjects to be just their referents, and the meanings of predicates to be the sets of objects of which those predicates hold.