

# Mind, Matter, and Language

## Lecture 4: Frege on Sense and Reference

---

Wolfgang Schwarz

24 September 2019

University of Edinburgh

**This Friday (11:10): “How to read philosophy”**

<https://writingcentre.ppls.ed.ac.uk/philskills/>

# Review

---

- We can use sentences to share information.
- The information conventionally expressed by a sentence is somehow determined by the meaning of individual words and their arrangement in the sentence.
- What do 'Bob', 'strokes', 'the', and 'crocodile' mean, and how do these meanings combine to the information that Bob strokes the crocodile?

### The referential approach:

The meaning of an expression is something in the world to which the expression refers.

- 'Bob' refers to Bob.
- 'the capital of Germany' refers to Berlin.

## The referential approach:

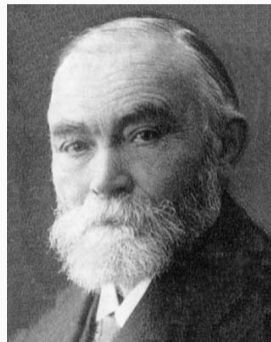
The meaning of an expression is something in the world to which the expression refers.

## Problems:

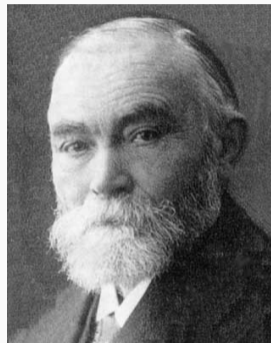
- What about names like 'Vulcan' and 'Santa Claus'?
- What does 'crocodile' refer to?
- What does 'the' refer to?
- How can things in the world be combined to give us the meaning of a sentence? A sentence isn't a list.

Frege:

- Every complex expression is composed of a **function** part and an **argument** part.
- 'the capital of' + 'Germany'
- The meaning of the complex expression is the **result of applying the function to the argument.**



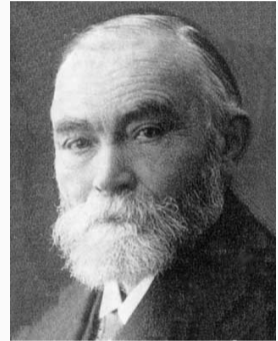
- 'the capital of' refers to a function from countries to cities.
- 'smokes' refers to a function from individuals to truth-values.
- 'somebody' refers to a function from functions from individuals to truth-values to truth-values.





*Never ask for the meaning of a word in isolation,  
but only in the context of a sentence.*

Frege, *Foundations of Arithmetic* (1884)



## The referential approach:

The meaning of an expression is something in the world to which the expression refers.

### Problems:

- What about names like 'Vulcan' and 'Santa Claus'?
- What does 'crocodile' refer to?
- What does 'the' refer to?
- How can things in the world be combined to give us the meaning of a sentence? A sentence isn't a list.

### Problems:

- What about names like 'Vulcan' and 'Santa Claus'?
- What does 'crocodile' refer to?

## Another problem

---

## Another problem

Identity statements are often informative.

- $e^{i\pi} + 1 = 0$
- Mary Ann Evans = George Elliot
- Hesperus = Phosphorus

If an identity statement is true, the two sides refer to the same thing.

If meaning is reference, then the two sides in a true identity statement have the same meaning.

But then the identity statement should be uninteresting and uninformative.

## Another problem

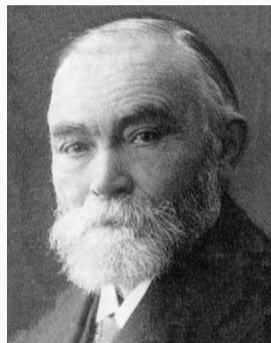
Frege's early response was meta-linguistic:

*What is expressed in the equation [...] is that the right-hand complex of signs has the same referent [Bedeutung] as the left-hand one.*

Frege, "Function and Concept" (1891)

A sentence of the form ' $A = B$ ' means that **the expressions** 'A' and 'B' co-refer.

It would be better to write ' $A \cdot B$ '.



## Another problem

Against the meta-linguistic solution:

- Identity statements are not about words. 'Hesperus = Phosphorus' expresses an astronomical discovery.
- The problem is not just about identity:
- 'Hesperus is the same size as Phosphorus'.
- 'Hesperus is visible whenever Phosphorus is visible'.

### The identity problem, generalized:

- Replacing co-referring expressions can turn uninformative statements into informative statements.
- 'Hesperus = Hesperus' vs. 'Hesperus = Phosphorus'
- 'Hesperus is the same size as Hesperus' vs. 'Hesperus is the same size as Phosphorus'
- Whether a statement is informative is a matter of its meaning.
- So meaning is not (just) reference.

**Yet another problem**

---



## Yet another problem

- (1) Hammurabi knew that Hesperus is visible whenever Hesperus is visible.
- (2) Hammurabi knew that Hesperus is visible whenever Phosphorus is visible.

Let's assume that (1) is true but (2) is false.

If one sentence is true and another is false, they don't have the same meaning.

But (1) and (2) only differ by replacing co-referring expressions.

### The attitude problem:

- When we talk about what people know or believe or want, replacing co-referring expressions can change the truth-value of a sentence.
- Whether a statement is true is a matter of its meaning.
- So meaning is not (just) reference.

**One more problem**

---

### The Principle of Compositionality

The meaning of a complex expression is determined by the meaning and arrangement of its parts.

This entails that **the meaning of a sentence remains the same if one of its parts is replaced by an expression with the same meaning.**

Suppose we replace in a sentence ‘...A ...’ the part ‘A’ by ‘B’, which has the same meaning. The result ‘... B ...’ is composed in the same way as ‘...A ...’ out of expressions with the same meaning.

### The “slingshot argument”:

1. Let  $P$  and  $Q$  be arbitrary sentences with the same truth-value.
2. Assumption: Logically equivalent sentences have the same meaning.
3. So  $P$  has the same meaning as ‘the truth-value of  $P$  is True’.
4. And  $Q$  has the same meaning as ‘the truth-value of  $Q$  is True’.
5. By assumption, ‘the truth-value of  $P$ ’ and ‘the truth-value of  $Q$ ’ co-refer.
6. If meaning is reference, ‘the truth-value of  $P$ ’ and ‘the truth-value of  $Q$ ’ have the same meaning.
7. By Compositionality, ‘the truth-value of  $P$  is True’ has the same meaning as ‘the truth-value of  $Q$  is True’.
8. By (3), (4), and (7),  $P$  and  $Q$  have the same meaning.

## One more problem

By the slingshot argument, all true sentences have the same meaning, and all false sentences have the same meaning.

- 'Grass is green', 'Glasgow is in Scotland', ...
- 'Grass is purple', 'cows like cake', ...

Frege: A sentence refers to its truth-value.

### The truth-value problem:

- On the referential approach, it looks like sentences refer to truth-values.
- We can hardly explain communication through language if we assume that the meaning of a sentence is (just) a truth-value.
- We wanted **truth-conditions**, not **truth-values**!
  - 'وَعَثَ رَمْلٌ سَيَّارٌ' is true iff quicksand is present.
  - 'وَعَثَ رَمْلٌ سَيَّارٌ' is false.

## Summary

---



### Problems for the referential approach:

- What about names like 'Vulcan' and 'Santa Claus'?
- ~~What does 'crocodile' refer to?~~
- ~~What does 'the' refer to?~~
- ~~How can things in the world be combined to give us the meaning of a sentence? A sentence isn't a list.~~
- The identity problem: replacing co-referring expressions can turn uninformative statements into informative statements.
- The attitude problem: replacing co-referring expressions can affect the truth-value of a statement.
- The truth-value problem: not all true sentences have the same meaning.

**Sense**

---

Frege's answer: there is another kind of meaning apart from reference.

*Now it is plausible to connect with a sign not only the designated object, which may be called the **reference** of the sign, but also the **sense** of the sign, in which is contained the manner and context of presentation.*

Frege, "On Sense and Reference" (1892)

