

# Mind, Matter and Language

Philosophy of Language

**Theory of Reference, Frege's Puzzle, Sense and Reference**



## Outline

### The Meaning of Proper Names Mill: Denotations and Connotations

Sense and Reference

Solving the Puzzles

Problems for Frege's Theory



## The Referential Theory of Meaning

- In the last couple of lectures, we considered **the referential theory of meaning** and established that it has a number of problems. We then considered some alternatives.
- In the following four lectures, we are going to consider in more detail the meaning of a particular class of expressions for which it is quite natural to assume that their meaning simply is their reference, namely proper names and definite descriptions.



## The Referential Theory of Meaning (cont.)

- Remember, on **the referential theory of meaning**, the meaning of an expression is simply its reference.
- For both proper names and definite descriptions, this looks like a quite plausible analysis.
  - $\llbracket \text{Bob Dylan} \rrbracket = \text{Bob Dylan}$
  - $\llbracket \text{Justin Bieber} \rrbracket = \text{Justin Bieber}$
  - $\llbracket \text{The president of the United States} \rrbracket = \text{Barack Obama}$
  - $\llbracket \text{The fastest 100m runner in the world} \rrbracket = \text{Usain Bolt}$
- However, even for these seemingly *referential* expressions (i.e. expressions whose sole function appears to be to *refer* to an individual, **the referential theory of meaning** is perhaps too simple.



## The Millian View

- According to Mill, there is an important difference in meaning between names and descriptions.
- Mill distinguished between two types of meaning:
  - **Denotation**: The object that an expression refers to.
  - **Connotation**: An attribute/property associated with a specific referent.
- For example...



## The Millian View (cont.)

- 'Barack Obama' **denotes** (refers to) Barack Obama but has no **connotation**.
- 'The president of the United States' **denotes** (refers to) Barack Obama and **connotes** the property of being the president of the United States.
- *Why* do proper names not connote?

*Proper names are not connotative: they denote the individuals who are called by them; but they do not indicate or imply any attributes as belonging to those individuals. When we name a child by the name Mary, or a dog by the name Caesar, these names are simply marks used to enable those individuals to be made subjects of discourse.*

*(Mill 1843: 40)*



## The Millian View (cont.)

- For example, consider the name 'Dartmouth'.
- This name refers to a city that sits at the mouth of the river Dart, but even if the river disappeared somehow, that would not entail that the name 'Dartmouth' now fails to refer to Dartmouth.



- In contrast, if the river *did* disappear, the expression 'the city that sits at the mouth of the river Dart' would in fact not denote Dartmouth.
- In other words, the connotation of an expression seems to play an important role in determining its denotation!

**In conclusion:** On both the Millian view and **the referential theory of meaning**, the meaning of a proper name is exhausted by its referent.





## The Millian View (cont.)

- **One worry about Mill's view:** It's not entirely clear on Mill's view what the nature of **denotation** and **connotation** is supposed to be.
- For example, does a description have two meanings? If so, which meaning would be relevant when determining the truth conditions of a sentence?



## Outline

The Meaning of Proper Names

Sense and Reference

Frege's Puzzle

Distinction Between Sense and Reference

Solving the Puzzles

Problems for Frege's Theory



## Frege's Puzzle

- Frege's Puzzle is a puzzle about the meaning of proper names.
- The puzzle puts considerable pressure on the thesis that the meaning of a name is exhausted by its referent. Consider the sentences below.
  - (1) Bob Dylan is Bob Dylan
  - (3)  $a = a$
  - (2) Bob Dylan is Robert Zimmerman
  - (4)  $a = b$
- Focus on (3) and (4).



## Frege's Puzzle (cont.)

- If the Millian view is correct, then (3) and (4) should have the same meaning.
  - (3)  $a = a$
  - (4)  $a = b$
- But (3) and (4) seem to differ in *cognitive value* (or the *thought* expressed).
- A further difference between these two sentences is that ...
  - (3) appears to be *a priori* knowable
  - (4) appears to only be knowable *a posteriori*.



## Frege's Puzzle (cont.)

- Of course, one might argue that the difference in cognitive value between (3) and (4) is irrelevant — at least as far as truth conditions are concerned.

(3)  $a = a$

(4)  $a = b$

- This argument is supported by the observation that co-referential names can be substituted *salva veritate* — substituted while preserving truth value.
- For example, if (5) is true, so is (6).
  - (5) Bob Dylan was born in Minnesota.
  - (6) Robert Zimmerman was born in Minnesota.
- If meaning is truth conditions, then since the truth conditions of (5) and (6) are identical, the names must have the same meaning.



## Frege's Puzzle (cont.)

- However, things are not quite this simple.

(3)  $a = a$

(4)  $a = b$

- Consider the so-called belief reports below.

(7) Frank believes that Bob Dylan was born in Minnesota.

(8) Frank believes that Robert Zimmerman was born in Minnesota.

- It is not clear that the names in (7) and (8) can be substituted while preserving the truth value. I.e. it seems perfectly reasonable to assume that (7) could be true while (8) is false — and vice versa.



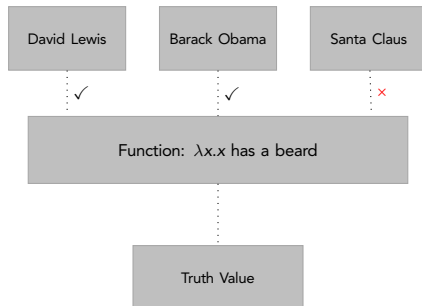
## Empty Names

- Another immediate problem for the Millian view of proper names are so-called **empty names**, e.g. 'Santa Claus' and 'Vulcan'.
- On the Millian view, sentences such as (9) and (10) below are predicted to be meaningless.
  - (9) Santa Claus has a beard.
  - (10) Vulcan is a planet.
- Why are these predicted to be meaningless? Because there is nothing in these sentences to predicate anything of.
- **NB!** There is an important difference between predicting that a sentence is *false* (which might be correct for (9) and (10) above), and predicting that a sentence is meaningless.



## Empty Names (cont.)

- In diagrammatic form:





## Sense and Reference

- Frege's solution is to distinguish between the **sense** and the **reference** of a term.
- On Frege's view, every (meaningful) expression has a sense, but not all expressions have reference.
- But what is sense and reference?



## Reference

- The **reference** of a name or a description is the object in the world that it refers to.
  - The reference of the name 'Barack Obama' is Barack Obama.
  - The reference of the description 'The president of the United States' is Barack Obama.
- Two different expressions can have the *same reference* – e.g.
  - 'Bob Dylan' and 'Robert Zimmerman'
  - 'The author of *Grundgesetze*' and 'The inventor of modern logic'
- And some expressions have *no reference*.
  - e.g. 'Santa Claus'.



## Sense

- The **sense** of a term is, roughly speaking, its *descriptive content*.
- Another way to think about it might be as a *mode of presentation*—a descriptive way of thinking about a specific object.
- A sense is always public—generally shared by a language community.
- The sense of a term uniquely *determine* its reference.



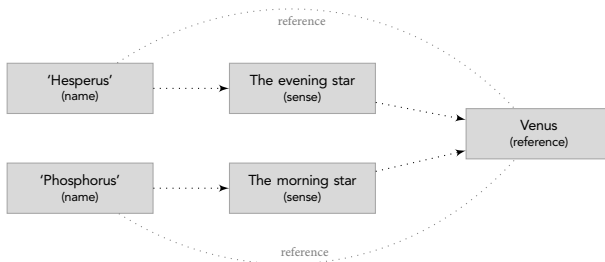
## Sense (cont.)

- An expression need not have just one sense, i.e. there are many ways to think about an object.
- For example, the name 'Barack Obama' might have *multiple senses*:
  - The president of United States
  - The president preceded by George W. Bush
  - The husband of Michelle Obama
- Moreover, an expression can have a sense even when having *no reference*. For example:
  - Santa Claus
  - The present king of France



## Hesperus and Phosphorus

- To illustrate, consider the names below.
  - Hesperus (the star visible in the evening)
  - Phosphorus (the star visible in the morning)



## Truth Conditions and Reference

- As regards truth conditional meaning, it is the name's reference (rather than its sense) that fixes truth conditions. For example:
  - 'Hesperus is a planet' is true iff Venus is a planet.
  - 'Phosphorus is a planet' is true iff Venus is a planet.
- However, what a name refers to depends on its sense. If the sense of 'Hesperus' is 'the evening star', then since that description picks out Venus, the reference of 'Hesperus' is Venus.
- In other words, the sense of a name plays a crucial, but indirect, role in determining truth conditions.



## Sentences and Truth Conditions

- As for sentences, as mentioned earlier, Frege maintained that their reference is a truth value. But what about the *sense* of a sentence?
  - The **sense of a sentence**, e.g. 'Hesperus is a planet' is a **thought**.
- In other words, a sentence has two possible referents (true, false) but a potentially infinite number of senses.
- And a single sentence can be used to express a number of distinct thoughts.



## Substitution of Sentences

- Given Frege's view, the substitution of co-referential names preserves truth values.
- Similarly, if a sentence  $S$  contains another sentence  $S'$  as a part, then if  $S'$  is substituted for another sentence with the same truth value, the truth value of the whole should be preserved. For example, consider (11a).

(11) a. Barack Obama is a man and Hilary Clinton is a woman.

- When one of the conjuncts of (11a) is substituted for a *co-referential* sentence, the truth value of the resulting complex sentence is not affected.

(11) b. Barack Obama is a man and Elizabeth Warren is a woman.





## Substitutions and Sense

- However, if any of the expressions in the sentence differ in sense, the sentences as a whole will differ in sense, i.e. in thoughts expressed.
- Hence, the sentences will express different thoughts.
- And, one might think that understanding the thought expressed by a sentence is what matters insofar as (a) **understanding meaning**, (b) **communicating**, and (c) **acquiring knowledge** is concerned.



## Outline

The Meaning of Proper Names

Sense and Reference

Solving the Puzzles

Frege's Puzzle

Empty Names

Belief Reports

Problems for Frege's Theory



## Solving Frege's Puzzle

- The solution to Frege's Puzzle?

*If now  $a = b$ , then indeed the Bedeutung [reference] of 'b' is the same as that of 'a', and hence the truth value of ' $a = b$ ' is the same as that of ' $a = a$ '. In spite of this, the sense of 'b' may differ from the sense of 'a', and thereby the thought expressed by ' $a = b$ ' will differ from that expressed by ' $a = a$ '. In that case the two sentences do not have the same cognitive value. If we understand by 'judgement' the advance from the thought to its truth value, as in the present paper, we can also say that the judgments are different.*

*(Frege 1892, 171)*



## Solving Frege's Puzzle (cont.)

- In short, the difference in cognitive value between ' $a = a$ ' and ' $a = b$ ' is explained by a *difference in senses*.
- Since the senses of  $a$  and  $b$  are different, these sentences express different thoughts (and hence differ in cognitive value).
- Moreover, since the sense of  $a$  is necessarily identical to the sense of itself, ' $a = a$ ' is **knowable a priori**.
- In contrast, since the sense of ' $b$ ' could potentially differ from the sense of ' $a$ ', ' $a = b$ ' is only **knowable a posteriori** (whether the senses of ' $a$ ' and ' $b$ ' determine the same referent is a contingent question).



## The Meaning of Empty Names

- As regards sentences containing empty names, Frege's theory predicts (correctly) that these are meaningful.

(12) Santa Claus has a beard.

- Since the name 'Santa Claus' has a sense, the whole sentence in (12) also has a sense — i.e. it expresses a thought (and so is meaningful).
- However, since 'Santa Claus' does not have a reference, the whole sentence also has no reference — i.e. it has no truth value (it is neither true nor false).



## Belief Reports

- But what about belief reports? How does Frege account for the difference in truth value between (7) and (8)?
  - (7) Frank believes that Bob Dylan was born in Minnesota.
  - (8) Frank believes that Robert Zimmerman was born in Minnesota.
- Here, Frege argues that so-called **attitude verbs** (words such as *believe*, *desire*, *hope*, *regret* ...) are special — in particular:
  - **Sentences and Attitude Verbs:**  
The reference of a sentence occurring in the scope of an attitude verb is not its truth value but rather its sense.



## Belief Reports (cont.)

- Frege writes,

*Let us compare, for instance, the two sentences 'Copernicus believed that the planetary orbits are circles' and 'Copernicus believed that the apparent motion of the Sun is produced by the real motion of the Earth'. [...] The main clause and the subordinate clause together have as their sense only a single thought, and the truth of the whole includes neither the truth nor the untruth of the subordinate clause. In such cases, it is not permissible to replace one expression in the subordinate clause by another having the same customary Bedeutung [reference], but only by one having the same indirect Bedeutung [sense].*

*(Frege 1892, 160)*



## Belief Reports (cont.)

- Frege's point is ...

(5) Bob Dylan was born in Minnesota.

(7) Frank believes that Bob Dylan was born in Minnesota.

... whether (5) is true or false is irrelevant as to whether (7) is true or false.

- So, one cannot simply substitute sentences in the complement of a belief clause as long as the sentences have the same truth value (same referent).
- What matters as regards the truth value of (7) is whether Frank is entertaining the *thought* ordinarily expressed by (5).
- Hence, when a sentence occurs embedded in the scope of 'believe' (or any other similar attitudinal verb), it expresses its (indirect) sense rather than its truth value.





## Belief Reports (cont.)

- Frege's proposed solution here is not without problems as it leads to a so-called **infinite hierarchy of senses**.
- Remember, when a sentence occurs in an embedded environment (e.g. as the complement of 'believe'), it expresses its (indirect) sense.
- However, this process is repeated when a complex sentence such as (7) is further embedded, e.g. (13).

(13) Mary believes that Frank believes that *Bob Dylan was born in Minnesota*.

The complement of (13) must now also express its indirect sense, but that means that everything in the italicized part above must express a doubly indirect senses.

- This process will, of course, repeat for further more complex sentences.



## Belief Reports (cont.)

- One advantage of Frege's view of belief reports is that it can explain how belief reports containing **empty names** can be true.
  - (13) Frank believes that Santa Claus is coming to town.
  - (14) Mary hopes that the present king of France is in town.
- If the contribution of complement clauses in attitude ascriptions are senses rather than truth values, we can now explain how e.g. (13) and (14) can be true (or false).
- This is a good result since it is perfectly possible for (13) or (14) to be true.



## Outline

The Meaning of Proper Names

Sense and Reference

Solving the Puzzles

Problems for Frege's Theory  
Truth Value Gaps



## Truth, Falsity and Empty Names

- While Frege's theory can explain why a sentence such as (12) is meaningful, as mentioned earlier, Frege's theory predicts that it has no truth value.
  - (12) Vulcan once played an important theoretical role in astronomy.
- This might seem like a bad prediction, since (12) might seem intuitively true.
- To make matters worse, Frege's theory also predicts that (15) below is neither true nor false.
  - (15) Vulcan does not exist.
- Yet, (15) seems clearly true.



## The Law of Excluded Middle

- Frege's theory also predicts that disjunctions such as (16) has no truth value.
  - (16) Either Vulcan is a planet or Vulcan is not a planet.
- This is a violation of **the law of excluded middle**—the logical law that states that all sentences are either true or false. This law is grounded in the intuitively plausible assumption that a sentence either describes the world correctly (truly) or incorrectly (falsely).
- Lastly, Frege's theory counterintuitively predicts that the sentences below also have no truth values.
  - (17) If there planet called 'Vulcan', then Vulcan explains the peculiarities of Mercury's orbit.
  - (18) Either there is no planet called 'Vulcan' or Vulcan explains the peculiarities of Mercury's orbit.



## Russell

- In light of the problems with Frege's theory, Bertrand Russell proposed an alternative analysis. This is known as **Russell's theory of descriptions** (which also extends to names).
- Russell's theory (presented in his paper 'On Denoting') is the topic of the next two lectures.

