

# Reference and Sense

Ling324

Reading: *Meaning and Grammar*, pg. 62-68

## Substitutability

- (1)
  - a. Two expressions that entail each other have the same reference.
  - b. If we have an expression  $A$  containing an expression  $B$  and we replace  $B$  in  $A$  with an expression  $C$  that has the same reference as  $B$ , the reference of  $A$  does not change.
  
- (2)  $[[\text{John's boss}]]^M = [[\text{Mary's husband}]]^M$ 
  - a. The sister of John's boss got fired.
  - b. The sister of Mary's husband got fired.
  
- (3)  $[[\text{Jackie Chan is Chinese}]]^M = [[\text{Jackie Chan is a movie star}]]^M$ 
  - a. The truth value of 'Jackie Chan is Chinese' is true.
  - b. The truth value of 'Jackie Chan is a movie star' is true.

## Where Substitutability Fails

- Even though the sentences *Jackie Chan is Chinese* and *Jackie Chan is a movie star* have the same reference, i.e., they are both true, we have an intuition that they do not have the exact same meaning. They are describing different states of affairs.
- Although replacing an expression in a sentence with another expression that have the same reference may not change the truth value of the sentence, it may result in other aspects of meaning difference.
  - (4)  $\llbracket \text{the morning star} \rrbracket^M = \llbracket \text{the evening star} \rrbracket^M = \text{Venus}'$ 
    - a. The morning star is the morning star.
    - b. The morning star is the evening star.

## Where Substitutability Fails (cont.)

- Replacing an expression in a sentence with another expression that have the same reference may change the truth value of the sentence.

(5)  $[[\text{Smith}]]^M = [[\text{the president of the university}]]^M$

- a. John believes that Smith is the murderer.
- b. John believes that the president of the university is the murderer.

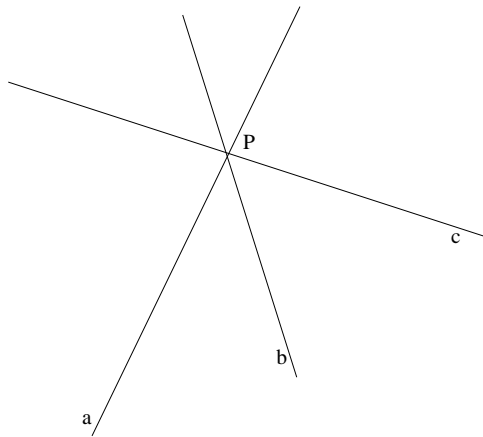
Moreover, verbs like *believe* is a relation between an individual expressed by the subject NP and a thought expressed by the complement clause, and not a relation between an individual and a truth value.

# Reference and Sense

- This all suggests that there must be something more to meaning of linguistic expressions than reference or denotation.
- Frege (1892) proposes that linguistic expressions have not only a REFERENCE but also a SENSE.

The reference of an expression is what it stands for on a given occasion of its use.

Its sense is the way in which the reference is presented.



- (6)
- a. the intersection of a and b
  - b. the intersection of a and c
  - c. the intersection of a, b and c

The expressions in (6a-c) all have the same reference: i.e., they all refer to the position marked with P. But they have difference senses.

## Reference and Sense (cont.)

- It is possible to know the sense of an expression without knowing what its reference is.
  - (7) the richest person in the world
  - (8) The richest person in the world is bald.
- An expression can have a sense without having a reference.
  - (9) the first man on Mars
  - (10) The first man on Mars is bald.
- A reference of an expression can vary from situation to situation, while the sense of the expression remains constant.
  - (11) the queen of England
  - (12) The queen of England is Elizabeth.
- Frege's reference/sense distinction is recast by Carnap (1947) as extension/intension distinction.

## Reference and Sense (cont.)

	Expression	Reference	Sense
Category	Referential NPs	Individuals	Individual concepts
Example	<i>the morning star</i>	Venus	The concept of the star that disappears last in the morning
	<i>the evening star</i>	Venus	The concept of the star that appears first in the evening
Category	VPs	Sets of individuals	Properties (Concepts)
Example	<i>is Chinese</i>	The set of Chinese	The property of being Chinese
Category	Ss	True or False	Propositions (Thoughts)
Example	<i>Jackie Chan is Chinese.</i>	True	The proposition that Jackie Chan is Chinese