

Mental reference

It takes two to make a reference

David Lewis

Ivan Rygaev

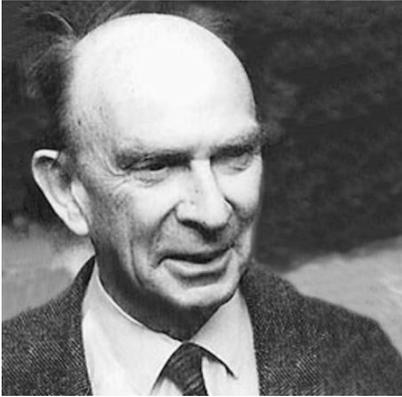
Laboratory of computational linguistics

Institute for information transmission problems RAS, Moscow

irygaev@gmail.com

Summer school on analytical philosophy of language and logic, Tomsk 2022

Language and logic

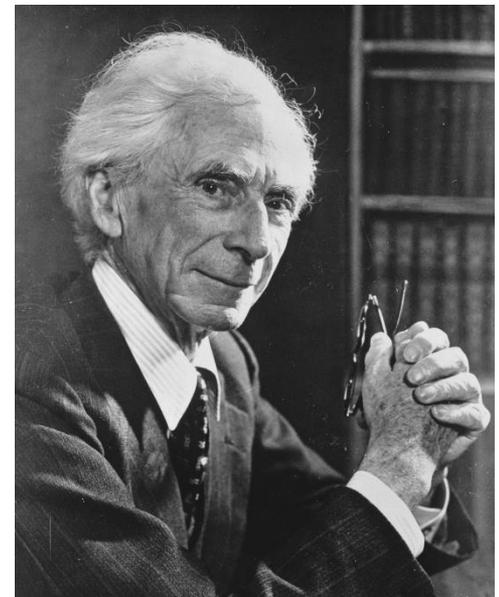


Strawson 1950:

“Neither Aristotelian nor Russellian rules give the exact logic of any expression of ordinary language; for ordinary language has no exact logic.”

Russell 1957:

“I may say, to begin with, that I am totally unable to see any validity whatever in any of Mr. Strawson’s arguments. ... I agree, however, with Mr. Strawson’s statement that ordinary language has no exact logic.”



Formal semantics



Montague 1968:

“I therefore sat down one day and proceeded to do something that I previously regarded, and continue to regard, as both rather easy and not very important – that is, to analyze ordinary language.”

- Ordinary language is interpreted as a formal one
 - Montague 1970 & 1973
 - Sentence meaning is its truth conditions
 - Communicative aspect of the sentence is ignored
 - Even pragmatists often ignore the hearer

Reference

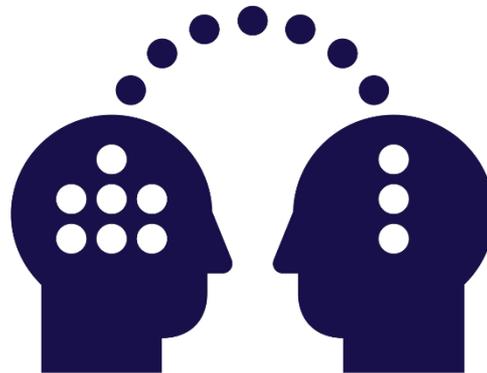
- Relation between a linguistic expression and an object of the real world (its referent)
- Referential expressions:
 - Proper names
 - Definite descriptions
 - Indexicals (personal and demonstrative pronouns)
- Questions:
 - Are there referential expressions and which ones?
 - How the relation is established between an expression and its referent? Is it the same mechanism or different?

Reference puzzles

- Proper names (Frege 1892)
 - Hesperus is Phosphorus
 - Sherlock Holmes lived on Baker Street
- Definite descriptions
 - The present king of France is bald (Russell 1905)
 - The man drinking martini is happy tonight (Donnellan 1966)
- Indexicals:
 - That is a picture of one of the greatest philosophers of the twentieth century (Kaplan 1978)

Communication

- Referential expressions
 - Which role do they play in communication?
- Communication is a primary and main function of language
 - Information transmission from the speaker to the hearer
 - Not the evaluation of the truth of the sentence



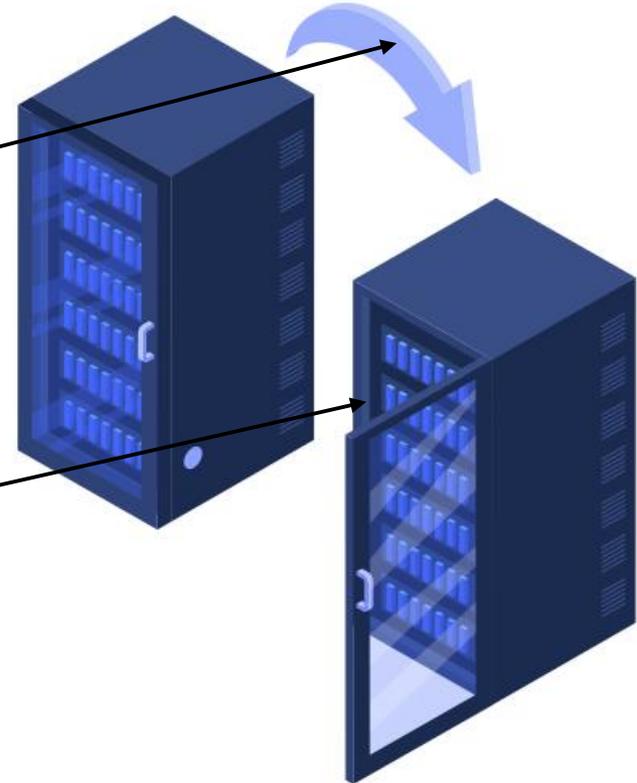
Information transmission

- New information should be linked to the old one:
Ivanov's salary is 50 000 rub.

```
update employees
set salary = 50000
where name = 'Ivanov'
[where id = 2837]
```

id	name	salary	...
...			
2837	Ivanov	50 000	...
...			

– Truth evaluation?



Linguistic communication

- Referential expression serves to find a mental representation of the object in the hearer's mind
 - Truth evaluation?

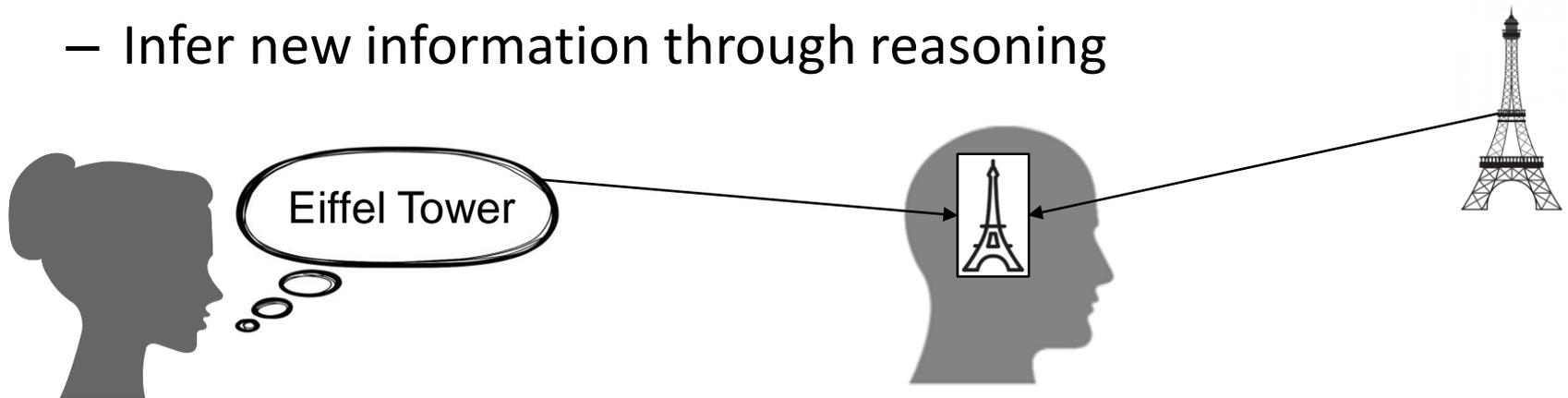


File Change Semantics

- File of cards metaphor:
 - “*B’s task is to construct and update a file which, at any point in the conversation, contains all the information that A has conveyed up to that point*” (Heim 1982:178)
- A card corresponds to a *discourse* referent
- The meaning of noun phrases is procedural
 - “*For every indefinite, start a new card; for every definite, update a suitable old card*” (Heim 1982:179)
- Sentence meaning is a context change potential
 - It the entire file, not a sentence, which has truth conditions

Mental referents

- Another (better) name for discourse referents:
 - “For example, I take it that the appearance of a goat changes the file” (Heim 1982:189)
- Activated (created, modified) when we:
 - Perceive objects with our senses
 - Perceive utterances of other people
 - Infer new information through reasoning



Puzzle 1

- Hesperus is Phosphorus
- Interpretation:
 - Find a mental referent named 'Hesperus'
 - Find a mental referent named 'Phosphorus'
 - Combine the two mental referents into one
- It is possible for mental referents that:
 - Several mental referents correspond to one real referent
 - One mental referent correspond to several real ones
 - Mental referent does not correspond to a real one
 - Including fictional characters

Puzzle 2

- Sherlock Holmes lived on Baker Street
- Interpretation:
 - Find a mental referent X named ‘Sherlock Holmes’
 - Find a mental referent Y named ‘Baker Street’
 - Add new information to them that X lived on Y
- Fictional characters:
 - We have mental representations for them
 - And referential expressions refer to those mental representations

Puzzle 3

- The present king of France is bald
- Interpretation:
 - Find a mental referent which stores that it is a present king of France
 - Add new information to it that he is bald
- Presupposition failure:
 - The second instruction cannot be performed since the first does not return any mental referent
 - An attempt to repair fails since accommodation will lead to a contradiction
 - Hence: *Wait a minute, which kind of France?*

Puzzle 4

- The man drinking martini is happy tonight
- Interpretation:
 - Find a mental referent which stores that it is a man drinking martini
 - Add new information to it that he is happy
- Truth is irrelevant for the success of communication:
 - What matters is the correspondence of the sentence to the hearer's beliefs, not to the real world
 - The hearer also believes that the man is drinking martini
 - Hence the communication goes without problems

Puzzle 5

- That is a picture of one of the greatest philosophers of the twentieth century
- Interpretation:
 - Find a mental referent which corresponds to the portrait on which the speaker is pointing
 - Add new information to it that he is one of the greatest philosophers of the twentieth century
- The truth cannot be evaluated without a hearer:
 - Some will understand the speaker's intentions, others won't
 - They will form different mental representations
 - With different truth conditions

Context

- Context is the mental state of the speaker and the hearer including:
 - The speaker's representation of the hearer's state
 - The hearer's representation of the speaker's state
- The speaker:
 - Chooses such an expression so the hearer could identify the mental referent correctly
- The hearer:
 - Reasons whom the speaker could mean in the current situation using such an expression

Mechanisms of reference

- All referential expressions serve to find a mental referent
- The difference is in the context of the search pattern:
 - Proper names contribute only the predicate $\text{name}(x, \text{'Name'})$ (Kneale 1966, Geurts 1997)
 - Pronouns – only gender, number, animacy or may be nothing
 - Demonstratives appeal to perception:
“look where the speaker is pointing and use perceptual information to find a mental referent”

Discourse Representation Theory

- Presupposition resolution (Van Der Sandt 1992) in DRT (Kamp 1981)
 - Referential expression produces a presupposition
 - First a preliminary DRS is build, where presuppositions are not resolved yet
 - That is, do not have they referents/antecedents
 - Presupposition resolution consists in finding antecedents (mental referents) for them
 - After the presuppositions are resolved we obtain a proper DRS, which represents a proposition, which can be evaluated for truth value

Conclusions

- If reference is a mental phenomenon then
 - Many reference puzzles are solved in very natural way or even dissolved (i.e. do not appear)
- Sentence is not a proposition
 - It is sequence of instructions to create a proposition in the hearer's mind
- Truth is irrelevant for the success of communication
 - What matters is the correspondence of the sentence to the hearer's beliefs, not to the real world

References

1. Donnellan, K. S. (1966). Reference and definite descriptions. *The philosophical review*, 75(3), 281-304.
2. Frege, G. (1892). Über sinn und bedeutung. *Zeitschrift für Philosophie und philosophische Kritik*, 100(1), 25-50.
3. Geurts, B. (1997). Good news about the description theory of names. *Journal of semantics*, 14(4), 319-348.
4. Heim, I. (1982). The semantics of definite and indefinite noun phrases.
5. Kamp, H. (1981). A theory of truth and semantic representation. *Methods in the Study of Language Representation*.

References

6. Kaplan, D. (1978). Dthat. In *Pragmatics* (pp. 221-243). Brill.
7. Kneale, W. (1966). Modality de dicto and de re. In *Studies in Logic and the Foundations of Mathematics* (Vol. 44, pp. 622-633). Elsevier.
8. Russell, B. (1905). On denoting. *Mind*, 14(56), 479-493.
9. Russell, B. (1957). Mr. Strawson on referring. *Mind*, 66(263), 385-389.
10. Strawson, P. F. (1950). On referring. *Mind*, 59(235), 320-344.
11. Van der Sandt, R. A. (1992). Presupposition projection as anaphora resolution. *Journal of semantics*, 9(4), 333-377.

Thank you!
Questions?