

# Philosophy 220

Predicates

# Advantages of SL:

- SL has decidable test procedures for concepts that we're interested in.
  - Procedures: truth-tables, truth-trees, derivations
  - Concepts: Entailment, Derivability, Validity, Consistency, etc.
- At least some of what we prove in SL carries over into English
- SL allows one to get familiar with the concepts above and the procedures above, which do not fundamentally change when we leave SL behind.

Grieve Briefly...



# The Limits of SL:

- I have referred to SL on occasion as a “pigeon” logic.
- By this, I mean that SL does not have a fine-grained fit to sentences in any natural language (e.g. English).
- It is easier to illustrate this lack of fit than to detail in the abstract the failings of SL.
- Consider the following arguments:

# From the text (p.278)

- English:
    - P1: None of David's friends supports any Republican.
    - P2: Sarah supports Breitlow, and Breitlow is a republican

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  - C: Sarah is no friend of David's
- SL:
    - P1: N
    - P2: S & B

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  - C:  $\sim F$
- The first line of a truth-table:

		P1		C	P2
B	F	N	S	$\sim F$	S & B
T	T	T	T	F	T

# The problem

- Notice that the argument on the preceding page looks as valid as anything in English, but comes out clearly invalid in SL.
- This is because SL is not fine-grained enough to match the syntax of English. Specifically, SL lacks the ability to distinguish subjects from predicates.

# Another example:

- English:
  - P1: Abe is taller than Bob
  - P2: Bob is taller than Cam

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  - C: Abe is taller than Cam
- SL:
  - P1: A
  - P2: B

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  - C: C
- The second line of a truth-table:

P1	P2	C
A	B	C
T	T	F

# The problem:

- Again, we see a clearly valid argument in English fail to be valid in SL because without predicates, SL cannot reflect relations (like the relation 'taller than').



# Introducing PL (Vocabulary):

- Singular Term: Any phrase that designates/denotes/refers to any one thing. Two kinds:
  - Proper names (things that get capitalized in English): Mary, Bob, Socrates, Virginia, the Eiffel Tower, etc.
  - Definite descriptions: the man in the yellow hat, the discoverer of radium, the second President of the United States, James's only brother, the tallest person in the room, etc.
  - Any of the above can be substituted with pronouns in English sentences (e.g. If Socrates is a man, then **he** is mortal.)
- Predicate: a string of English words with one or more holes or blanks such that when the blanks are filled by Singular Terms, a grammatical sentence in English results.
  - A predicate has  $n$  places, where  $n$  is the number of blanks in it.
  - E.g. '\_\_\_\_\_ is taller than \_\_\_\_\_' is a 2-place predicate.

# Truth of Singular Terms and Predicates

- One thing that PL shares with SL is that it is whole sentences that are true or false.
- A predicate is only truth-evaluable if it has all of its places filled in by singular terms to create a sentence
  - A sentence is true if it corresponds to what is the case.
  - A sentence is false if it does not correspond to what is the case.
- For example:
  - 'The Eiffel Tower is located in France' is a true sentence with a 2 place predicate and the pair {The Eiffel Tower, France}. Note that the sentence would not be true of the same 2-place predicate and the pair {France, The Eiffel Tower}