Fodor (1994)

- Some ideas Fodor talks about will be discussed later in the course (concepts as definitions, compositionality, connectionism)

- Key idea (p109):

    The key role of concepts is inferential

    > E.g.: Rex barks because Rex is a dog and Dogs bark.

    - Only definitions have inferential properties

    - Concepts can't be definitional

    - So therefore concepts can't be inferential.

- Therefore: the modern understanding of concepts doesn't make sense.

Intentions and pragmatics

- Pragmatics refers to social factors affecting how language is used

- Paul Grice (~1960) argued that meaning depends on the speaker's intention in the context of a conversation

- Some of Grice's principles:

  - Be relevant

  - Be truthful

  - Add information

- *In France, the president is the most important voice in government.*

- *In 1800, the president was was only paid $25,000/year*

Compositionality

- So far we have talked only about individual words, but complex utterances or concepts also have meaning

- Compositionality refers to the way meanings of individual concepts combine to form meanings of complex concepts

- *Brown cow* should mean something that is a combination of the meaning of *brown* and the meaning of *cow*

- In Russell's theory of definite descriptions, compositionality works perfectly!

    - $BROWNCOW(x) \leftrightarrow BROWN(x) \wedge COW(x)$

    - $REDBALL(x) \leftrightarrow RED(x) \wedge BALL(x)$

    - *The boy goes to the movies* means [some combination of the meanings of *the, boy, goes, to, the,* and *movies*]

Compositionality in empiricism and rationalism

- Empiricists argue that concepts are complex combinations of primitive sensory experiences

    - We use internal mental processes to reason about them

    - But: can you interpret sense data without innate assumptions?

- Rationalists argue that concepts are complex combinations of primitive internal ideas

    - These internal ideas are critical to our interpretation of sense data

    - But: is it possible to know about the world without empirical observation?

Manifestations of compositionality

Compositionality requires:

- Complex utterances have meanings that are computable from the meanings of their constituents

- Concepts can combine freely (productivity)

  - If you can understand *John loves Mary* you can understand *Mary loves John*

- Concepts have systematic relations

  - DOG and MAMMAL are related in a way that is different from DOG and CAT

Are human concepts compositional?

- For some complex concepts, the combined concept does not seem to derive its properties only from the individual concepts

  - *pet fish*

  ... which have characteristics that neither *pets* nor *fish* usually have

- Other complex concepts combine in unpredictable ways

  - *brick house* [a house made of bricks] vs.

  - *rabbit house* [a house made of rabbits?]

Induction and deduction

- Deduction is reasoning that is logically certain

  The truth of the conclusion is guaranteed the truth of the premises

- Induction is reasoning that is not logically certain.

  The conclusion seems plausible or likely given the premises

Hume's problem: the puzzle of induction

David Hume

- Will the sun rise tomorrow?

  How do you know for **sure**?

- Hume: The belief that the sun will rise tomorrow is not logically certain; it is simply **likely** given our experience

  Induction of future beliefs from past experience is merely a "habit of reasoning"

- Any set of facts in the past is consistent with any set of facts in the future.

- Generalizations are not guaranteed to be valid.
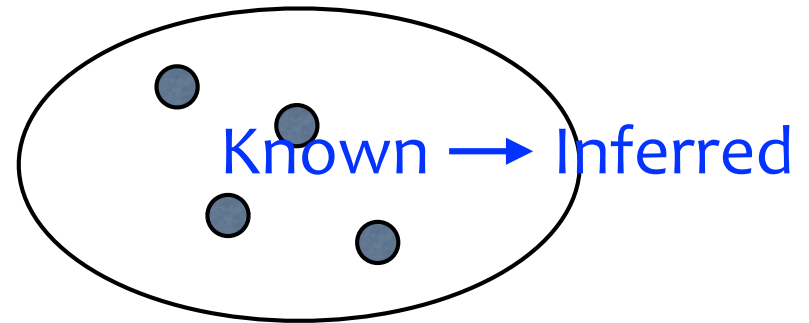
Deduction

General -> Specific

Inferred ← Known
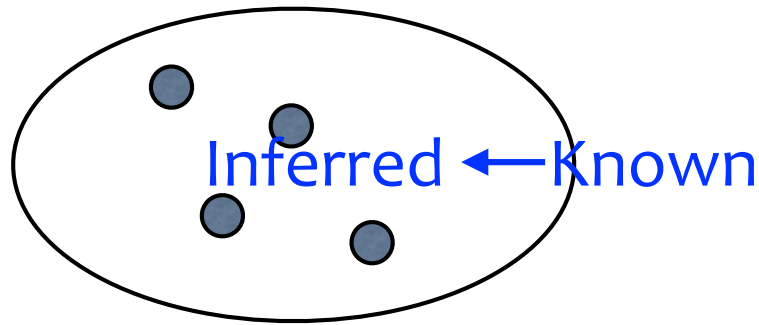
All men are mortal
Socrates is a man
-> Socrates is mortal

All ducks are green
Josephine is a duck
-> Josephine is green

Syllogisms

Induction

Specific -> General

Known → Inferred

Socrates is mortal
Hipparchus is mortal
-> All men are mortal?

It rained on Saturday
It rained on Sunday
-> It rains on weekends?

Abstraction/Generalization