

Class 10: Communicating Agents

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June 17, 1999

Misc

- Midterms back to studio audience today
- Project 3
 - email Selim for code **if** you need it, his or — if need be — mine
 - let's take a look at Eliza now, through Ralph...
- Practice Final: I'm working on it, will certainly be up Friday 6/18

Overview of Class

- Humans distinguished by our use of language (chimps)
- No stimulation \rightarrow no (robust) language (Genie)
- Private languages and Diagrammatic Reasoning (the twins)
- Universal Grammar (examples; evidence)
- Key elements from the R&N text
- Problem 22.7
- The Symbol-Grounding Problem (robot nightmare version)

Do Apes Use Language?

- The chimps Lana, Washoe, etc. — their abilities
- A “problem-solving perspective”
 - Language is a problem-solving tool
 - What new problems can they now crack?

Argument 2

- (1) If Lana (etc.) uses a natural language, then the human scientists brought her to this state from one in which she *didn't* use a natural language.
 - (2) If x is brought to a state of using a natural language from a state of not using a natural language, then x is capable of solving problems which would have been unsolvable in x 's "pre-language" state.
 - (3) Lana (etc.) isn't capable of solving problems which would have been unsolvable in her "pre-language" state.
- ∴ (4) Lana (etc.) doesn't use a natural language.

- The Sad Case of Genie . . .
- The Amazing Case of the Twins . . .

Universal Grammar

- Your text: “local” grammar
- What about grammars that cut across all societies? Are there any?
- Yes, apparently
 - e.g., compound plural nouns. . .
 - Structure Dependence

- Structure Dependence (con.)
 - Crain & Nakayama (1986) had children learn Yes-No questions given data consistent with both hypotheses.
 - Children would convert *John saw a whale at the beach.* to *What did John see at the beach?* not *John did what see at the beach?*

Key Difficult Elements from R&N_{Ralph}

- Overview of Entire Process...
- The special DCG notation
 - experiments in OTTER...
- Semantics of “John loves Mary”:
 - What does our Eliza do?
 - And our text:

$(\lambda x \text{Loves}(x, \text{Mary}))(\text{John})$

– Recall

```
(defun make-fn2 (exp)
  (coerce '(lambda (n) ,exp) 'function))

? (funcall (make-fn2 '(+ n 1)) 7)
8
```

- But what happens with “Every agent smells a wumpus”? p. 675
- quasi-logical form ...

- Problem 22.7
 - Gr (A) doesn't work: no way for verb 'walked' followed by adverb 'slowly' and the PP 'to the supermarket'
 - see to-be-scanned sheets for parses under Gr (B) and Gr (C)

The Symbol-Grounding Problem

- And the Turing Test that ignores it *Brutus*