Noam Chomsky ’81: Binding Theory (w/in Government & Binding Theory)

Based on notion of c-command (Tanya Reinhart ’76):

- **b c-commands c** iff lowest sign \( a \) properly subsuming \( b \) subsumes \( c \).

\[
\begin{array}{c}
\text{V} \\
\text{N} & \text{V-aN} \\
\text{she} & \text{saw} & \text{Kim}
\end{array}
\]

The theory predicts:

- **Principle A:** a reflexive (‘herself’) must be ‘bound’ (i.e. have a c-commanding antecedent) in the same clause.
- **Principle B:** regular pronouns (‘her’) may not have a c-commanding antecedent within the same ‘local’ syntactic structure (clause).
- **Principle C:** referring expressions (proper nouns, e.g. ‘Pat’) cannot have a c-commanding antecedent.

(e.g. *‘Pati met Pati’s roommates at the restaurant.’)
Peter Gordon and Randall Hendrick ’97: Binding Theory is mostly ok

- **stimuli:** sentences:

<table>
<thead>
<tr>
<th>NP₁</th>
<th>NP₂</th>
<th>c-cmd</th>
<th>sentence</th>
<th>rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>name</td>
<td>name</td>
<td>N</td>
<td>Before Susan sang Susan stood up.</td>
<td>49</td>
</tr>
<tr>
<td>name</td>
<td>name</td>
<td>Y</td>
<td>Susan stood up before Susan sang.</td>
<td>.31</td>
</tr>
<tr>
<td>name</td>
<td>pron</td>
<td>N</td>
<td>Joan’s father respects her.</td>
<td>.94</td>
</tr>
<tr>
<td>pron</td>
<td>name</td>
<td>N</td>
<td>Her father respects Joan.</td>
<td>.33</td>
</tr>
<tr>
<td>name</td>
<td>name</td>
<td>N</td>
<td>Joan’s father respects Joan.</td>
<td>.62</td>
</tr>
<tr>
<td>pron</td>
<td>refl</td>
<td>N</td>
<td>Her father respects herself.</td>
<td>.04</td>
</tr>
<tr>
<td>name</td>
<td>refl</td>
<td>N</td>
<td>Joan’s father respects herself.</td>
<td>.06</td>
</tr>
<tr>
<td>name</td>
<td>pron</td>
<td>Y</td>
<td>Joan respects her.</td>
<td>.06</td>
</tr>
<tr>
<td>pron</td>
<td>name</td>
<td>Y</td>
<td>She respects Joan.</td>
<td>.12</td>
</tr>
<tr>
<td>name</td>
<td>refl</td>
<td>Y</td>
<td>Joan respects herself.</td>
<td>.94</td>
</tr>
</tbody>
</table>

- **measure:** acceptability judgements

- **results:** support for Principles A and B, but not C
Memory Focus Model

Garrod and Sanford ’97: resolving antecedents is a two-stage process.

- **bonding**: activate potential antecedents
- **binding**: evaluate for degree of fit

Involves two kinds of focus:

- **explicit**: activated
- **implicit**: recent or with known associations

Simon Garrod and Melody Terras ’00:

- **stimuli**: read sentences:
  
  (a) ‘The teacher wrote a letter with a pen/chalk.’
  (b) ‘The teacher wrote on the blackboard with a pen/chalk.’

  followed by: ‘The pen/chalk …’

- **measure**: eye tracking fixations and durations.
- **results**:
  
  first-pass times for ‘pen’ facilitated by typical ‘wrote.’
  second-pass, regression-path, but no first-pass inhibition for ‘blackboard.’
Barbara Grosz, Aravind Joshi, and Scott Weinstein ’95: Centering Theory

Comprehenders maintain state of ‘centers’ (activated discourse referents):

- **backward-looking center**: discourse referent focus/topic of sentence
- **forward-looking centers**: list of possible antecedent discourse referents
- **preferred (fwd) center**: subject $\prec$ dir. obj. $\prec$ indir. obj. $\prec$ oblique obj.

For each sentence, update the state...

1. **construct** forward-looking centers (assigned referents of all NPs)
2. **filter** backward-looking center to be referent of current pronoun (if any)
3. **classify** possible transitions between previous and current center state
   - **continue**: backward-looking center is unchanged, preferred
   - **retain**: backward-looking center is unchanged, not preferred
   - **smooth shift**: backward-looking changes, is preferred
   - **rough shift**: backward-looking changes, is not preferred
4. **select** highest-ranked transition (inertia for backward-looking center)
Stephani Foraker and Brian McElree ’07: speed-accuracy tradeoff experiment

**stimuli:** read sentences:

(A) ‘It was the ardent boyfriend who contemplated the engagement ring.’
(B) ‘What the ardent boyfriend contemplated was the engagement ring.’

followed by:

(1) (acceptable) ‘He stared.’
(2) (acceptable) ‘It sparkled.’
(3) (unacceptable) ‘It stared.’
(4) (unacceptable) ‘He sparkled.’

followed immediately by tone and 14 collections.

**measure:** accuracy of key-press at each collection.

**results:** accuracy effect for clefting (A/B), but no speed effect.

Not consistent with buffer memory for focus / backward-looking center.
Informational Load Hypothesis

Informational Load Hypothesis: anaphors give just enough information to cue.

Amit Almor ’99: anaphors read faster if appropriately related to antecedent:

- **stimuli:** sentences in self-paced reading:
  - ‘A professor and her student arranged transportation for their field trip.’
    - (a) (typ,in-focus) ‘What the student rented was the car.’
    - (b) (typ,no-focus) ‘It was the student that rented the car.’
    - (c) (atyp,in-focus) ‘What the student rented was the boat.’
    - (d) (atyp,no-focus) ‘It was the student that rented the boat.’
  - ‘The vehicle …’

- **measure:** reading times.

- **results:** anaphors read faster if less semantic distance to antecedent.
For next time...