“Linguistics as a Model for the Cognitive Approaches in Biblical Studies”?

2011: The interaction of three disciplines

Biblical studies

Linguistics

Cognitive studies

International SBL

2011

SBL Program

Unit

“Mind, Society, and Tradition”

This talk

“Linguistics as a Model for the Cognitive Approaches in Biblical Studies”

Tamás Biró: Linguistics as a Model for the Cognitive Approaches… 5/25

What Cognitive Science (CS) is and is not about?

- CS is not about ‘cognition’, in the traditional sense,
  - excluding perception, irrational emotions, behavior, society…
- CS is about ‘cognition’ in the following sense:
  - mental functions of the human brain/mind, which require
  - information processing ability in the brain/mind, hence:
    1) computational aspects of CS,
    2) biological, psychological, neurological aspects of CS.

The cognitive turn in linguistics (1)

- Language viewed as
  - a biological phenomenon,
  - a product of the human brain,
  - which develops in childhood,
  - and evolved as a mental capacity of Homo sapiens.

The cognitive turn in religious studies: An over-simplified history of Biblical studies

<table>
<thead>
<tr>
<th>Period</th>
<th>Linguistics is a tool to...</th>
<th>Language belongs to...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle Ages</td>
<td>“Philological” linguistics</td>
<td>...analyze (holy) texts, ...a text or author.</td>
</tr>
<tr>
<td>End 18th and 19th century</td>
<td>Historical linguistics</td>
<td>...the history of a nation, ...a nation or people.</td>
</tr>
<tr>
<td>1st half of 20th century</td>
<td>Structuralist linguistics</td>
<td>...studying human signs, ...a society.</td>
</tr>
<tr>
<td>2nd half of 20th century</td>
<td>Generative linguistics</td>
<td>...studying human brain, ...a brain or a species.</td>
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Tamás Biró: Linguistics as a Model for the Cognitive Approaches… 6/25

The cognitive turn in religious studies: An over-simplified history of Biblical studies

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<th>Period</th>
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<tbody>
<tr>
<td>Middle Ages</td>
<td>Theology</td>
<td>...religious practice, ...the believer.</td>
</tr>
<tr>
<td>End 19th and 20th century</td>
<td>Historical approach</td>
<td>...the history of a religion, ...a people or a religion.</td>
</tr>
<tr>
<td>2nd half of 20th century</td>
<td>Structuralist and social</td>
<td>...studying communities, ...a society.</td>
</tr>
<tr>
<td>1st half of 21st century</td>
<td>Cognitive approaches</td>
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Tamás Biró: Linguistics as a Model for the Cognitive Approaches… 7/25

The cognitive turn in linguistics (2): An over-simplified history of linguistics

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Tamás Biró: Linguistics as a Model for the Cognitive Approaches… 11/25
The cognitive turn in linguistics (3)

- Language produced by the human brain in vivo:
  - Psycholinguistics, neurolinguistics.
- Language produced by the computer in silico:
  - Computational linguistics, language technology.
- Language as such:
  - Theoretical linguistics: combine the best of pre-generative scholarly traditions with the best of cognitive science.

Parallels in the Cognitive Science of Religion

- Religion produced by the human brain in vivo:
  - Psychology and neurology of religion, experimental CSR.
- Religion produced by the computer in silico:
  - Comp models. “CSR technology” supports policy making.
- Religion as such:
  - Religious studies: combine the best of pre-cognitive scholarly traditions with the best of cognitive science.

The cognitive turn in linguistics (4)

- Adopting methodologies from cognitive sciences:
  - Biology-motivated research questions: brain imaging, evolutionary history of language, etc.
  - Formal models:
    - more precise formulations of the theories,
    - such that they can be implemented on computers, analyzed using mathematical tools, etc.

Parallels in the Cognitive Science of Religion

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Formal models in linguistics: Chomsky

- Structuralist concepts turned into formalism:
  - Phrases $\rightarrow$ phrase structure grammars, syntactic trees.
- (Binary) distinctive features:
  - Prague school (1930’s), Roman Jakobson:
    - For instance: voiced vs. unvoiced, nasal vs. non-nasal.
  - Rules in generative phonology (Chomsky & Halle 1968):
    - Word-final devoicing: $[+\text{voice}] \rightarrow [-\text{voiced}] / \_ \_ \_ #$
    - Nasal assimilation: $[+\text{nasal}] \rightarrow [\text{a place}] / \_ \_ \_ [\text{a place}]$

Formal models in linguistics: Chomsky

- German has word-final devoicing. English does not.
- What is different in the brain/mind of EN vs. DE speakers?
- Rules à la Chomsky & Halle (1968):
  - Phonology of German contains the rule
    $[+\text{voice}] \rightarrow [-\text{voiced}] / \_ \_ \_ #$
    - Applied to /hauz/, and get [haus]. Not applied to /hauz+er/.
  - Phonology of English does not contain this rule: [hauz].
- Model: different rules in different speakers’ brain/mind.
Formal models in linguistics: Smolensky

- German has word-final devoicing. English does not.
- What is different in the brain/mind of EN vs. DE speakers?
- Constraints à la Prince and Smolensky (1993/2004):
  - Input: /hauz/. Candidates: [haus] and [hauz].
  - Constraints: No_wordfinal_voiced; Faithful_to_input.
  - English $H_{EN}$: Faithful_to_input $\Rightarrow$ No_wordfinal_voiced $\Rightarrow$ [hauz].
  - German $H_{DE}$: No_wordfinal_voiced $\Rightarrow$ Faithful_to_input $\Rightarrow$ [haus].
- Model: different harmony in different speakers’ brain/mind.

The cognitive turn in linguistics: summary

- Why are grammars similar & different?
- Let us understand language in human mind/brain:
  - Bottom-up approach: psycho/neuro-linguistics.
  - Top-down approach: knowledge and methods accumulated by past generations of scholars, developed into formal, computable, but also neurologically plausible models.
- Thereby explain observed phenomena in phonology, morphology, syntax, semantics...

The cognitive turn in religious studies

- Why are religions similar & different?
- Let us understand religion in human mind/brain:
  - Bottom-up approach: psycho/neuro-study of religion.
  - Top-down approach: knowledge and methods accumulated by past generations of scholars, developed into formal, computable, but also neurologically plausible models.
- Thereby explain observed phenomena: Bible (its text, history, reception...); such a phenomenon!

The cognitive turn in Biblical studies

- Refer to motifs and topics popular in CS or CSR when reading the Bible, or studying its reception.
- View its author/redactor/copyist/translator/reader as a Homo sapiens with specific mental setup, as known from (or, at least, modeled by) CS and CSR.
- Use the Bible (its text, motifs, history, reception, etc.) as source of data falsifying/corroborating/improving theories in CS and CSR.

Thank you for your attention!