“Cognitive Constraints on Information Flow”
By Chafe

Presenters: 蘇琬淇
潘鈺楨
What aspects of cognition are focused in this paper?

Contextual data vs. non-contextual data

Speaker’s meaning:
- Contextualized meaning with cognitive constraint
- Conventionalized meaning (semantic)

Information Flow
- General communicative needs (discourse motivation)
• What are exactly the cognitive constraint?

• What are the linguistic realizations of the cognitive constraint?
• Cognitive constraints are inherent determining factors on language use:

Cognition

\[\text{constraint 1, 2, 3…}\]

\[\text{structure 1, 2, 3…}\]

Language
Constraint 1

Cognition

<table>
<thead>
<tr>
<th>Constraint:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short-term memory</td>
</tr>
</tbody>
</table>

Language

<table>
<thead>
<tr>
<th>Structure:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intonation Unit</td>
</tr>
</tbody>
</table>
Intonation Units

• Active (focused) portion of knowledge →
short term memory (7 +/- 2)

• When a speaker is speaking, she verbalizes one piece of temporarily active information after another.

• An intonation unit is a sequence of words combined under a single, coherent intonation contour, usually preceded by a pause.
• Tape-record from an informal dinner party.
• …xxxx’, …xxxx’,…xxxx’, etc.
• Initial pauses has something to do with changes in the activation states of information in the speaker’s mind.
• Bring about the changes in the activation states of information in the hearer’s mind.
• Speaker: change change change  
             … xxxxx’, … xxxxx’, … xxxxx’
• Hearer:    change change change
Constraint 2

**Cognition**

- Constraint: Activation state of concepts
  - active
  - inactive
  - semi-active

**Language**

- Structure: linguistic constituents with grammatical cues
  - new (indefinite)
  - given (definite marking)

**Information Flow**
The Three Activation States

- Some of what is expressed in intonation units involves people’s ideas of object, event, and properties. concept

- A particular concept, at a particular time, may be in any one of three activation states: active, semi-active, and inactive.
The Three Activation States (cont.)

• **Active concept:** (1) currently lit up
  (2) in person’s focus

• **Semi-active concept:** (1) peripheral consciousness (2) background awareness, but not being directly focus on.

• **Inactive concept:** (1) currently in long-term memory (2) neither focally nor peripherally active.
Active Concepts (Given information)

- Those concepts are already active for the speaker, and the speaker judge to be active for the hearer as well.
- \( \ldots \text{xxxxx}', \)
  \Wedge

- Given concepts are spoken with attenuated pronunciation, and typically involves either pronominalization or omission form verbalization altogether.
Active concept (cont.)

• 2. ...I dó think that makes a different.. but,

• 4. ...where..everybody loved the instructor,
  5. ...a--nd..he was a ...real ..uh..old world...Swiss----...guy,
Active concept (cont.)

• Less straightforward instances:
  1. …It’s funny though,
     → pretend to be active.

  3. …Í can recall …uh--…a big undergraduate class that Í had.
     → contrastive; stressed
Semi-active Concepts
(Readable information)

Three types of change in activation states:

1. A change of a previously inactive concept to an active one. (activation of inactive)

2. A change of a previously semi-active concept to an active one. (activation of semi-active)

3. A change of a previously active concept to semi-active one. (deactivation of active)
Semi-active Concepts (cont.)

• As concepts become deactivated they don’t immediately become fully inactive, but remain in semi-state for some time.

5. ...a—and..he was a ...real..uh..óld world ...Swíss----guy,

34. ...l l guess that ís the..old world style,
Semi-active Concepts (cont.)

• Concepts which belongs to the set of expectation associated with schema:
  3. ...Í can recall...uh--....a big undergraduate class that Í had,

  4. ...where everybody lóved the instrúctor,
Inactive Concepts
(New Information)

• “Recall” of a concept from long-term memory; greater cost in cognitive effort.
• One evidence is the initial pause.
• A single intonation unit can convey no more than one previously inactive, new concept.
• One new concept at a time constraint.
  → the expression of a single focus.
I.

• BeV+ Adj/PP/NP
  
  (1) was funny

• A copular phrase contains a stressed noun or adjective modifying a concept that is given.
  
  (5) was a real old world Swiss (guy)

II. An adverbial modifier of a preceding or following clause.

  (23) ze last time, ve were talking about…
III. Verb-object combination
   (30) would close his notes
   (2) make a difference. (Lexicalized)

IV. Preposition + noun
   (7) he left all of the sort of real contact with students up to his assistants.

V. (37) he was the most extreme example I ever had as a student.
Constraint 3

- Cognition
- Constraint:
  - Starting point
  - (easy → difficult; familiar → unfamiliar)
- Language
- Structure:
  - Given information
  - (Subject)
Starting Points and Added Information

• Choose some concept, typically some referent, as a starting point, and then add information about it.

• Subject-predicate structure.

• How do starting points and added information relate to the three states of activation?
Starting Points and Added Information (cont.)

• Light starting point constraint:
  (1) A starting point is usually a given referent.
  (2) Occasionally a starting point is an accessible referent.
  (3) A starting point is rarely a new referent, and then only the beginning of a major section of a discourse.
Constraint 4

Constraint: One new concept at a time

Structure: One new information in an intonation unit
Starting Points and Added Information (cont.)

• Heavy added information constraint:
  Added information typically contains one new concept, though it may also contain some accessible concepts, or even some given concepts.

• Added information need not contain a new concept if the intonation unit expresses a contrast, e.g., (3).
What intonation unit do
What is an intonation unit?

• An intonation unit is a sequence of words combined under a single, coherent intonation contour, usually preceded by a pause.

• An intonation unit may perform varied functions in furthering the flow of information into discourse.
• The most common type of intonation unit is the kind that exhibit the subject-predicate structure.

• The clause appears to be the prototypical intonation unit type, from which other types are derived.
Intonation types

- Clauses
- Pieces of clauses
- Orientations for clauses
- Clausal disfluencies
- Expressions of agreement or understanding
Pieces of clauses

• It may consist of only a subject, lacking a predicate.
• 16. and évery…évery lécture,
Orientations for clauses

• The information expressed in an intonation unit may provide a time, a location or an epistemic background for an adjacent clause.

• The forms may be prepositional phrase or adverbial construction.

• 11. ..precisely one minute after the hóur, (temporal)
Clausal disfluencies

- False starts: beginnings of clause structures that were then reformulated, interrupted, postponed, or abandoned.
- 33. ..And he was the (postponed to 37)
- Afterthoughts: material added after a premature closure of some kind:
  - 34. .. I I guess that ís the .. old world style,
  - (35. yéah.)
  - 36. …of lécturing.
Expressions of agreement or understanding

• They can be expressed either by the interlocutor or by the main speaker.

• 8. …Mhm,
• 35. Yéah.
Combine the intonation units

• Extended Clauses: “And”, “but”, and “so” appear to be the three most common connectives in spoken English.

• 9-12. …A—nd.. he would come into cláss,…a—t..uh– you know three or f.. précísely one minute after the hóur, or something like thát,

• 13-14. …a--nd he– wou—ld..imprédiately open his…
• Paragraphs:

(P.43)

1-7. …… (paragraph1) → background and summary

8. (…Mhm,) → change point for the semi-active state.

9-31. …… (paragraph2) → instantiation of the instructor’s classroom behavior.

32. (…Hm.) → change point for the semi-active state.

33-40. ……(paragraph3) → final evaluation
• Sentences: They are discourse units, with sentence-final falling pitch.

<table>
<thead>
<tr>
<th>Intonation unit</th>
<th>Discourse unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determined by [basic cognitive phenomena such as memory and consciousness]</td>
<td>Determined by [the speaker’s decisions as to how most effectively to present what he was saying (rhetorical control, independent of cognitive constraints)]</td>
</tr>
</tbody>
</table>
• The narrative: A coherent unit of discourse in itself.
• It was preceded and followed by contributions from other speakers.
• Speakers do not tell a single event, but an event type. (collection of moments)
  “my father used to …,”
  “I remember the time my father… ”