Sentence Prosody: Intonation, Stress, and Phrasing
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Overview

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• Intonational Phrasing

Introduction

• Sentence prosody encompasses intonation, phrasal rhythmic patterning, and prosodic phrasing.
• Article examines the relations between these aspects of sentence prosody and the relation of sentence prosody to the meaning of the sentence.

• Main claims for English:
  • Distribution of pitch accents constrains focus structure of the sentence, which constrains possible meanings
  • Distribution of pitch accents constrains rhythmic stress patterns of the sentence
  • Intonation—not the phrasal stress pattern—mediates the meaning-sentence prosody relation

The Grammar of Intonation

• Presence of a pitch accent implies that the word is focused: different distributions of pitch accents imply different focus structures.
• A wh- expression focuses a constituent; an appropriate answer focuses the same constituent.
• Focus = “the focus of the sentence”; it introduces a set of alternatives into the discourse
• A constituent that answers a wh- question is F-marked.

• The central problem in the characterization of the prosody-focus relation is focus projection:
  • What principles govern the relation between pitch accent and F-marking?
The Grammar of Intonation

- Chomsky and Halle’s Nuclear Stress Rule (NSR):
  - Main stress = rightmost word-level stress of a phrase
  - Pitch accent is on main stress within F-marked constituent
  - \[\ldots \sigma_{\text{main stress}} \ldots \]_F \rightarrow \[\ldots \sigma_{\text{main stress}} \ldots \]_F
    \[\text{pitch accent}\]
  - NSR does not predict the correct location of pitch accent within a focused constituent.
  - Selkirk proposes argument-structure-based account of focus projection.

The Grammar of Intonation

- Basic Focus Rule:
  - An accented word is F-marked.

- Focus Projection:
  - (a) F-marking of the head of a phrase licenses the F-marking of the phrase.
  - (b) F-marking of an internal argument of the head licenses the F-marking of the head.
  - (c) F-marking of a constituent licenses F-marking of its trace.

- Focus of the sentence (FOC or Focus):
  - F-marked constituent not dominated by another F-marked constituent.

The Grammar of Intonation

Examples:

Mary bought a book about [BATS]_F.  (What did Mary buy a book about?)
Mary bought a book [about BATS]_F.  (What kind of book did Mary buy?)
Mary bought [a book about BATS]_F.  (What did Mary buy?)
Mary [bought a book about BATS]_F.  (What did Mary do?)
[Mary bought a book about BATS]_F.  (What’s been happening?)
The Grammar of Intonation

Examples following Selkirk:

Mary bought a book about $\text{FOC}[\text{BATS}]_F \text{FOC}$.

Mary bought a book $\text{FOC}[\text{about}]_F [\text{BATS}]_F \text{FOC}$.

Mary bought $\text{FOC}[\text{a [book]}_F [\text{about}]_F [\text{BATS}]_F \text{FOC}$.

Mary $\text{FOC}[\text{[bought]}_F [\text{a [book]}_F [\text{about}]_F [\text{BATS}]_F \text{FOC}$.

FOC[Mary [[bought]_F [a [book]_F [about]_F [BATS]_F]_F]_F]_FOC.

(by Focus Projection (a))

The Grammar of Intonation

• Selkirk’s theory differs from NSR in its ability to account for:
  • the relation between accent and the given-new structure of the sentence.
  • the lack of focus projection from accents in positions where main phrase stress would be predicted.
  • the projection of focus from accents in positions not defined as main phrase stress.

How to interpret Selkirk’s machinery:
• F-marked constituents which are not FOC are new.
• Constituents without F-marking are given.
• The FOC constituent is given or new.

Examples of new and given constituents:

What’s been happening?

FOC[Mary [[bought]_F [a [book]_F [about]_F [BATS]_F]_F]_F]_FOC.
→ Mary must be given

Who bought a book about bats?

FOC[[MARY]_F]_FOC bought a book about bats.
→ Mary can be given or new

What’s been happening?

FOC[[MARY]_F [[bought]_F [a [book]_F [about]_F [BATS]_F]_F]_F]_FOC.
→ Mary must be new
The Grammar of Intonation

The theory correctly predicts:

The “deaccenting” puzzle:
$\text{FOC}[[\text{MARY}]_F [\text{bought}]_F [a \text{ [BOOK]}_F [\text{about} \text{ [ [bats]]}]]]_F}_F \text{FOC}$.

Sentence focus with accented auxiliary:
$\text{FOC}[\text{Mary} [[\text{DID}]_F \text{[buy a book about bats]}]]_F \text{FOC}$.

Adjunct phrases in post-head position don’t project:
He only smoked $\text{FOC}[[\text{in the TENT}]]_F \text{FOC}$.
*He only $\text{FOC}[[\text{smoked in the TENT}]]_F \text{FOC}$.
He only $\text{FOC}[[\text{SMOKED in the TENT}]]_F \text{FOC}$.
cf. He only $\text{FOC}[[\text{looked at the GARDEN}]]_F \text{FOC}$. (post verbal PP is argument)

Sentence focus for event reading vs. generic reading:
Event reading: subject raised from deep structure position within VP
$\text{FOC}[[\text{TRESpassers will be prosecuted}]]_F \text{FOC}$
Generic reading: surface subject controls VP-internal PRO
$\text{FOC}[[\text{TRESpassers will be PROsecuted}]]_F \text{FOC}$

Intonational Phrasing

• Phrasing, but not metrical information, is important for a fuller understanding of the relation between sentence prosody, meaning and discourse.

• Phrasing is related to notions of Topic and Focus.

• Examples:
  (a) $\text{ip}(\text{Three mathematicians in ten})_p \text{ip}(\text{derive a lemma})_p$.
  (a) $\ast \text{ip}(\text{Three mathematicians})_p \text{ip}(\text{in ten derive a lemma})_p$.
  (a) $\text{ip}(\text{Three mathematicians})_p \text{ip}(\text{intend to rival Emma})_p$. 


Introduction

- Radical Focus-To-Accent view:
  - Bolinger: there is no focus projection beyond the word the pitch accent is placed on.

- Restricted focus projection:
  - Schmerling / Fuchs / Gussenhoven / Ladd / Baart: arguments *can* project focus to adjacent predicates

- Extended focus projection:
  - Schmerling / Selkirk / Steedman: allows for focus to project upward to larger constituents and ultimately to the sentence

Introduction

- Gussenhoven’s objections to Selkirk:
  - Extended view of focus projection leads to the presence of old information inside the focus constituent. This leads to too much machinery since both focus projection rules and interpretation rules are needed.
  - Restricted view of focus projection is conceptually simpler.
  - Extended view of focus projection faces empirical difficulties.
Restricted View of Focus Projection

• Sentence Accent Assignment Rule (SAAR):
  - Every focused argument (A), modifier (M), and predicate (P) is accented, with the exception of a predicate that is adjacent to one of its arguments.
  - Accents are abstract placeholders, marking locations that will be filled with a pitch accent if they survive the actions of various deletion rules.

Deletion rules (focus projection rules):
- Deaccent every A, P, and M outside the focus constituent.
- Deaccent a focused P that is adjacent—disregarding any intervening nonfocused A or M—to an accented A.

Prefocal pitch accents:
- Assign pitch accents to the constituents before the nuclear pitch accent. (Optional)

Obligatory Prenuclear Pitch Accents

• Gussenhoven disagrees with the belief that a full-focus version of a sentence is always equivalent to a narrow focus version with the focus on the last pitch accented word.
• Instead he suggests:
  (a) What’s John tickling Mary with?
     John’s tickling Mary with a FEATHER.
  (b) What’s going on?
     *John’s tickling Mary with a FEATHER.
  (c) What’s John tickling Mary with?
     JOHN’s tickling MARY with a FEATHER.
  (d) What’s going on?
     JOHN’s tickling MARY with a FEATHER.

Extended Focus Projection

• Objection to Selkirk’s’s assumption that FOC should be a constituent:

Example:
- What did she do with the book?
  [She [[sent]₁ a book [to [MARY]₁ [F₁]]₁]₁]₁ FOC.

Following to Selkirk, we get:
- Focus: She sent a book to Mary.
- New: sent a book to Mary, sent, to Mary, Mary
- Given: She, a book
- Given or New: She sent a book to Mary
Extended Focus Projection

Other counterexamples:

  Selkirk’s theory suggests that the VP sent a book to Mary can be interpreted as new. But the context: “What did she do?” is inappropriate.

- What happened?
  (b) MARY bought a book about bats.
  Selkirk’s theory does not explain why (b) is not a possible reply to “What happened?” Why would (a) have a trace and not (b)?

The Restricted View: Discontinuous Focus

Gussenhoven’s account of previous example:


- By focus projection rules, either (to) Mary or sent to Mary is [+focus]

- Example shows that focus can be discontinuous.

- The notion of discontinuous focus should be distinguished from the notion of multiple foci.

The Restricted View: Discontinuous Focus

Minimal pair of discontinuous focus / multiple foci:

- Was hat das Kind erlebt?
  KARL hat dem Kind einen FÜLLER geschenkt.
  [Karl…einen Füller geschenkt]Foc

- Wer hat was hinsichtlich des Kindes getan?
  KARL hat dem Kind einen FÜLLER geschenkt.
  (FOC here not Selkirk’s FOC)

The Restricted View: Discontinuous Focus

- In restricted focus projection theories, the need for a separate set of focus interpretation rules never arises.

- Focus projection principles should in themselves suffice to identify the focused (new) status of the constituents in a sentence.

- Restricted Focus Projection:
  Pitch Accent distribution ↔ Focus distribution

- Extended Focus Projection:
  Pitch Accent distribution ↔ Focus distribution ↔ Focus interpretation
Two Arguments for Extended Focus Projection Refuted

- Selkirk’s example of sentence focus with accented auxiliary:
  \[ FOC([Mary \ [[\text{DID}_F \ [buy \ a \ book \ about \ bats]]_F]_F]_F) \]

- Gussenhoven suggests that there is no need to assume sentence focus.
- This could be a reply to the implied question: Which of the information contained in \[ \text{NEG,PAST}[\text{Mary buy a book about bats}] \] is incorrect?
- \[ \text{NEG} \] is taken as the focus (“counterassertive focus”, which needs to be distinguished from “counterpresuppositional focus”)

“Restricted” Focus Projection in Complex Sentences

- Why weren’t you admitted to the Poets’ Club?
  \( (\text{a BIRD})_{\text{Arg}} \ (\text{SING})_{\text{Pred}} \)
  \( \text{sing} \)
  1. cycle

  \( (\text{to HEAR})_{\text{Pred}} \ (\text{a BIRD sing})_{\text{Arg}} \)
  \( \text{heard} \)
  2. cycle

  \( (\text{FAILED})_{\text{Pred}} \ (\text{to hear a BIRD sing})_{\text{Arg}} \)
  \( \text{failed} \)
  3. cycle

  I \[ \text{[failed to hear a BIRD sing]}_{\text{FOC}} \].

- What’s going on with him?
  \( \text{(to look OUT)}_{\text{Pred}} \ (\text{for a MANiac})_{\text{Arg}} \)
  \( \text{out} \)
  1. cycle

  \( \text{(was WARNED)}_{\text{Pred}} \ (\text{to look out for a MANiac})_{\text{Arg}} \)
  \( \text{warned} \)
  2. cycle

  He \[ \text{[was warned to look out for a MANiac]}_{\text{FOC}} \].

Output
Speech melody, sentence stress, tempo, rhythm and tamber are all components of intonation. These are perceptible qualities of intonation. Acoustically, intonation is a complex unity of varying fundamental frequency, intensity & duration. From the very definition of prosody and intonation we can clearly see that both the notions include essentially the same phenomena, but the terms- “intonation and prosody” are used differently by different linguists. Some phoneticians apply the term “prosody” and “prosodic” only to the features pertaining to the syllable and phonetic word, or rhythmic unit which are regarded as meaningless prosodic units & oppose prosody to intonation (which is a meaningful phenomenon). The notion that the prosodic phrasing structure of a sentence plays a crucial role in organizing the segmental, tonal and prominence structures of a sentence’s phonological representation and its... Sentence prosody: intonation, stress and phrasing. In J. Goldsmith (ed), The Handbook of Phonological Theory. Oxford: Blackwell, 550-569. Google Scholar.