Lecture 3

The Prague School Approach

Outline

- The Prague School and its follow-up
- Sgall et. al: Topic-Focus Articulation
- Semantic relevance of TFA
- Systemic ordering
- Communicative dynamism
- Contextual boundness vs. non-boundness
- TFA Identification

IS in the Prague School of Linguistics

Vilém Mathesius (1915, 1924, 1929, 1936)

- introduced the IS notions Theme/Rheme into PSL
  - Theme (Cz. *jádro* 'nucleus'): what an utterance is about, point of departure
  - Rheme (Cz. *ohnisko* 'focus'): what an utterance says about the Theme
- structural comparison of English and Czech
- systematic attention to interplay of syntax and IS
- effects of word order variation on interpretation
- awareness of IS-importance for language as a means of communication
- in "free word-order" languages, WO tends to correspond to *communicative dynamism*, i.e., the ordering proceeds from contextually 'given'/'assumed' to contextually 'new'
- also in languages with "fixed word-order", some constructions can serve as means of IS; English: WO-change accompanied by passivization

The Prague School Follow-up

Jan Firbas et al. (1957, 1966, 1975, 1992, . . .)

- analyzed different factors that influence *Functional Sentence Perspective* (=IS)
  - linear modification (word order)
  - semantic factor (character of semantic content and relations involved)
  - contextual factor (retrievability of information from preceding context)
- Theme/Transition/Rheme
- analyzed interplay of IS, syntactic structure and word order
- concludes that not only a dichotomy of *Theme-Rheme*, but a whole scale of *communicative dynamism* is concerned
- *degree of communicative dynamism*: the relative extent to which a linguistic element contributes towards the further development of the communication

The Prague School Follow-up

František Daneš et. al (1957, 1970, 1974, 1985 . . .)

- systematic exploration of the relationship of *Theme* and *Rheme* to word order and intonation, as well as to the structure of text
- thorough analysis of *thematic progression* in text, i.e., textual patterns of thematization (typology of ways in which Themes relate to context) : theme-continuation, thematization of rheme, derivation of theme from hypertheme, etc.
- analysis of complex sentences in terms of condensed Theme-Rheme pairs

The Prague School Follow-up

Petr Sgall (1967, 1979, . . .) with Eva Hajičová (1977, 1980) and Jarmila Panevová (1986)

also **Partee et al. (1998)**, etc.

- studies of various aspects of *Topic-Focus Articulation* (TFA)
- TFA as part of formal description of syntax and sentence meaning (dependency-based Functional Generative Description, FGD)
- relation between TFA and word order (when "free" WO)
- studies of *systemic ordering* (SO), i.e. neutral surface word order
- question test
- TFA and scope of negation, focusing adverbs and quantifiers
- TFA and presupposition vs. allegation
- TFA and salience of entities in the stock of shared knowledge

IS in Functional Generative Description

Topic-Focus Articulation in FGD

(Sgall et al., 1986; Hajičová et al., 1995b)

Topic (theme, "given" info): the part of the sentence structure that is being presented by the speaker as readily available in the hearer's memory

Focus (comment, rheme): what is being asserted about the topic.

- Primarily, scope of negation or a "focalizer" adverb is constituted just by the Focus part of the sentence
- This notion of topic has much in common with the concept of background or restrictor, while focus comes close to nuclear scope (Partee et al., 1998)

Status of TFA in the Language System

- In FDG, TFA is considered an inherent aspect of the (underlying) syntactic structure of the sentence:
  - TFA is expressed by grammatical means, e.g., word order, morphemes or their clitic/weak vs. strong shapes, syntactic constructions, position of the sentence intonation center.
  - TFA is semantically relevant, e.g., restrictor vs. scope of quantifiers and other operators (negation, focalizers, e.g., "only", "even", "always"); topic tends to have "specific" interpretation.

⇒ TFA is a partitioning of a sentence (meaning), not only of utterance (meaning)

TFA Examples

(71) Q. What about dogs?
A. $\underbrace{\text{Dogs}}_{Topic}$ $\underbrace{\text{must be CARRIED.}}_{Focus}$

(72) Q. What must be carried?
A. $\underbrace{\text{DOGS}}_{Focus}$ $\underbrace{\text{must be carried.}}_{Topic}$

(73) Q. What must we do in order take the metro?
A. $\underbrace{\text{DOGS must be carried.}}_{Focus}$

Semantic Relevance of TFA

Difference in broad/narrow focus, and hence in presuppositions:

(74) a. They arrived by car at the LAKE.
b. They arrived at the lake by CAR.

(75) a. They moved from Boston to CHICAGO.
b. They moved to Chicago from BOSTON.

(76) a. Last year John came from Cambridge to STANFORD.
b. John came from Cambridge to Stanford last YEAR.

(77) a. John made a canoe out of every LOG.
b. John made a CANOE out of every log.

Semantic Relevance of TFA

Difference in quantifier scopes:

(78) a. Everybody in this room knows at least two languages.
b. At least two languages are known to everybody in this room.

(79) a. John talked to everyone about a problem.
b. John talked about a problem to everyone.

(80) a. John talked to few girls about many problems.
b. John talked about many problems to few girls.

TFA Examples

Difference in scope of negation:

(81) *Harry nezpůsobil naše* VÍTĚZSTVÍ.
Harry$_{nom}$ not-cause our victory.
Harry didn't cause our VICTORY.
$\neg cause(harry, win(speaker_+))$

(82) *Naše vítězství nezpůsobil* HARRY.
our victory not-cause Harry$_{nom}$.
HARRY didn't cause our victory. (Our victory wasn't caused by HARRY.)
$cause(\neg harry, win(speaker_+))$

Similarly with "focussing adverbs", e.g, *only, even, always*.

Semantic Relevance of TFA

Difference between presupposition and allegation:

(81) *Harry nezpůsobil naše* VÍTĚZSTVÍ.
Harry$_{nom}$ not-cause our victory.
Harry didn't cause our VICTORY.
$\neg cause(harry, win(speaker_+))$

(82) *Naše vítězství nezpůsobil* HARRY.
our victory not-cause Harry$_{nom}$.
HARRY didn't cause our victory.
$cause(\neg harry, win(speaker_+))$

$win(speaker_+)$ is a presupposition in (82), but in (81) only an allegation
cf. also (Partee, 1995): $\approx$ global vs. local accommodation

Question Test and Systemic Ordering

Question test can be used to compare sentences with different order of dependent elements (arguments and free modifiers):

(83) a. John talked to few girls about many PROBLEMS.
b. John talked about many problems to few GIRLS.
(84) What do you know about John?
(85) How does John behave towards few girls?
(86) To whom does John talk about many problems?

(83a) can answer questions (84) and (85), whereas (83b) can only answer (86).

$\Rightarrow$ The ordering in (83a) is more basic than that in (83b): (83a) adheres to *systemic ordering*.

Systemic Ordering

Studies using the question test enable to determine *systemic ordering* for any given language: a language specific basic (neutral, primary) ordering of types of dependency roles

Sample SO for Czech (also Russian, Bulgarian):
Actor < Time < Purpose < Location < Means < Addressee < Patient < Source < Destination

Sample SO for English:
Time < Actor < Patient < Origin < Effect < Manner < Dir.from < Means < Dir.to < Location

Sample SO for German:
Actor < Time < Location < Means < Addressee < Patient < Source < Destination < Purpose

SO is one of the factors relevant for word order and for the placement of the intonation center. SO provides a "default".

Communicative Dynamism (Underlying WO)

- The scale of CD (partial ordering) corresponds to the "dynamic" progression from topic-proper through intermediate parts to focus proper (carrying the intonation center).
- CD is relevant for quantifier scopes: more dynamic → narrower scope
- "Ideally", surface word order respects CD. Deviations are due to:
  - speaker's discourse strategy (e.g., subjectve order)
  - grammar restrictions, e.g., verb-secondness (in German, Czech), placement of clitics (in Czech), placement of adjectives or other modifiers before/after their head (in German, Czech etc. vs. French), placement of intonation center (in Hungarian or Turkish) etc.

SO an CD: Rule 1

If sentence parts A and B are in the Focus of sentence S, and A precedes B under SO, i.e., DepRole(A) $<_{SO}$ DepRole(B),

then A precedes B in the CD (i.e., underlying word order) of S, i.e. A $<_{CD}$ B.

Example:
SO: Temporal < Actor < Patient < Origin < Effect < Manner < Dir.from < Means < Dir.to < Locative

(87) What about John?
(John)$_{Act}$ went (by car)$_{Mann}$ (from Paris)$_{Dir.from}$ (to NANCY.)$_{Dir.to}$

(88) Where did John go from Paris?
(John)$_{Act}$ went (from Paris)$_{Dir.from}$ (by car)$_{Mann}$ (to NANCY.)$_{Dir.to}$
(From Paris,)$_{Dir.from}$ (John)$_{Act}$ went (by car)$_{Mann}$ (to NANCY)$_{Dir.to}$.

SO and CD: Rule 2

The boundary between Topic and Focus can be drawn between any two elements following the verb (in CD), provided that those belonging to the focus are arranged (in CD) in accordance with SO.

(89) (John)$_{Act}$ went (by car)$_{Mann}$ (from Paris)$_{Dir.from}$ (to NANCY.)$_{Dir.to}$

(90) (John)$_{Act}$ went (from Paris)$_{Dir.from}$ (by car)$_{Mann}$ (to NANCY).$_{Dir.to}$

Contextual Boundness/Non-boundness

- TFA is a partitioning of the meaning of the sentence as a whole
- The individual lexico-semantic items (nodes in dependency tree) are considered either *contextually bound* (CB) or *contextually non-bound* (NB)
- CB items are those that the speaker treats as easily accesible (salient) in the hearer's memory (→ *stock of shared knowledge*)
- So, CB vs. NB is a primitive opposition, from which TFA is derived
- How can we determine whether an element is CB or NB?

SO, CD and CB/NB: Rule 1 Used Backwards

It is assumed that

- ordering of NB elements adheres to SO (Rule 1)
- deviation of CD from SO indicates an element is (treated as) CB

If DepRole(A) $<_{SO}$ DepRole(B) & B $<_{CD}$ A then B is CB.
(Note that A could be either CB or NB.)

(91) (John)$_{Act}$ went (by car)$_{Mann}$ (from Paris)$_{Dir.from}$ (to NANCY.)$^{NB}{}_{Dir.to}$

(92) (John)$^{CB}{}_{Act}$ went (from Paris)$^{CB}{}_{Dir.from}$ (by car)$_{Mann}$ (to NANCY).$^{NB}{}_{Dir.to}$

(93) (From Paris,)$^{CB}{}_{Dir.from}$ (John)$_{Act}$ went (by car)$_{Mann}$ (to NANCY)$^{NB}{}_{Dir.to}$.

CB/NB and TFA

Derivation of TFA from the CB/NB assignment:

- The main verb and its immediate dependents belong to the Topic if they are CB, and to the Focus if they are NB
- More deeply embedded elements belong to the Topic (Focus) if their governing element belongs there
- If the main verb and all its immediate dependents are CB, then the Focus consists of the NB elements embedded under the most dynamic CB element

Examples

(94) What trip did John make by car?
$\underbrace{\text{(John)}^{CB}{}_{Act}\ \text{went}^{CB}\ \text{(by car)}^{CB}{}_{Mann}}_{Topic}$ $\underbrace{\text{(from Paris)}^{NB}{}_{Dir.from}\ \text{(to NANCY.)}^{NB}{}_{Dir.to}}_{Focus}$

(95) Where did John go from Paris by car?
$\underbrace{\text{(John)}^{CB}{}_{Act}\ \text{went}^{CB}\ \text{(from Paris)}^{CB}{}_{Dir.from}\ \text{(by car)}^{CB}{}_{Mann}}_{Topic}$ $\underbrace{\text{(to NANCY).}^{NB}{}_{Dir.to}}_{Focus}$

(96) By which car did John go from Paris to Nancy?
$\underbrace{\text{(John)}^{CB}{}_{Act}\ \text{went}^{CB}\ \text{(from Paris)}^{CB}{}_{Dir.from}\ \text{(to NANCY)}^{CB}{}_{Dir.to}\ \text{(by the car)}^{CB}{}_{Mann}}_{Topic}$
$\underbrace{\text{(from Avis)}^{NB}{}_{Orig}}_{Focus}$

CB/NB Examples

(97) How do you find your neighbourhood?
Our new neighbour has stolen my car.

(98) Which teacher do you mean?
I mean our teacher of chemistry.

(99) Which teacher of chemistry do you mean?
I mean our FEMALE teacher of chemistry from the first YEAR.

(100) In the autumn, painters often look for nice sceneries in most varied places.
A painter arrived at a French VILLAGE on a nice September day.

(101) Which house did John come to?
John came to the house which he wanted to buy.

CB/NB Examples

(102) How do you find your neighbourhood?
(Our new neighbour)^{CB} (has stolen my car)^{NB}.

(103) Which teacher do you mean?
(I mean our teacher of)^{CB} (chemistry)^{NB}.

(104) Which teacher of chemistry do you mean?
I mean our (FEMALE)^{NB} teacher of chemistry (from the first YEAR)^{NB}.

(105) In the autumn, painters often look for nice sceneries in most varied places.
A painter arrived at (a French VILLAGE)^{NB} on a nice September day.

(106) Which house did John come to?
John came to the house (which he wanted to buy)^{NB}.

TFA Identification

For "free" word order languages, (Hajičová et al., 1995b) propose an algorithm based on the following main points:

1. Complementations preceding the verb are CB (belong to the topic)

2. Among the complementations following the verb, those arranged in accordance with SO w.r.t. any other complementation are NB (belong to focus); those complementations that do not respect SO are CB (belong to topic)

3. The verb is generally ambiguous between belonging to topic or focus

4. If the intonation center is placed on a a non-final element in the sentence, then the intonation center belongs to the focus, all complementations after the intonation center belong to the topic and for the rest, rules 1 and 2 apply

TFA Identification

For English (Hajičová et al., 1995b) state:

- Surface WO in English is determined by grammatical rules to a large extent, so intonation plays a much more decisive role.

- Rule 2 also applies.

- Otherwise, only certain regularities for simple sentences are incorporated into the algorithm. E.g., the following factors are taken into account:
  - Placement of verb at the end of the sentence
  - Definiteness/indefiniteness of the subject
  - For locative and temporal modification, specific information (Focus) vs. general setting (Topic).

TFA Annotation in PDT

Annotation of the TFA concepts in the Prague Dependency Treebank (Buráňová et al., 2000; Hajičová et al., 2003)
- data from the Czech National Corpus
- TFA is annotated in the dependency structures at the tectogrammatical level
- ordering of nodes represents communicative dynamism (deep, underlying order)
- each node is annnotated with the TFA attribute:
  T contextually bound
  F contextually non-bound
  C contrastivelly bound (Partee et al., 1998)
- guidelines in Czech, translated into English (cca 50 pages)
- PDT version 2.0 has several thousand sentences annotated with TFA as well as coreference
- automatic TF assignment: 90% accuracy (Postolache et al., 2005)

Summary

- TFA: what is being talked about (Topic) and what is said about it (Focus)
- TFA is a matter of how the speaker constructs the utterance/presents its contents
- TFA is derived from the basic dichotomy: contextually bound vs. non-bound
- CB/NB is correlated with but not identical to salience in common ground: A cooperative speaker chooses CB from (highly) salient items
- Most attention devoted to realization of IS by word order
- Annotation of TFA in Prague Dependency Treebank