Eva Hajičová, Petr Sgall and Jarka Vrbová

Topic, Focus, and How to Identify Them

1. For an adequate description of natural language, which could serve as a component part of a model of the regularities underlying the use of language in communication, it is necessary to distinguish between the level of linguistic meaning (de Saussure's and Hjelmslev's "form of content", Coseriu's "Bedeutung", others' "literal meaning") and its interpretation in the sense of truth conditional, intensional logic (see Sgall, 1983; Sgall, Hajičová and Panevová, in prep.). The topic-focus articulation (TFA) represents one of the hierarchies of the level of meaning, whose other two hierarchies are, in our approach, that of dependency syntax and that of coordination (and apposition) relations.

1.1 We see the basic task of a description of TFA in handling the differences between such sentences as (1) through (6):[1]

(1) John gave Mary a book.

(2) John gave a book to Mary.

(3) It was MARY John gave a book.

(4) It was a BOOK what John gave to Mary.

(5) It was JOHN who gave Mary a book.

(6) It was JOHN who gave a book to Mary.

One of the results that have been gained by the empirical investigations is that every occurrence of a sentence in a

discourse can be understood as if answering a question (this question represents the context of the utterance, including the preceding verbal co-text as well as the situation).[2] Thus, only (1) and (4) can occur as answers to (7) or in a context represented by this question (i.e. where John, Mary and giving are salient enough to be referred to by contextually bound expressions; the latter notion will be discussed below).

(7) What did John give to Mary?

On the other hand, (8) can be answered by (1), rather than by the other sentences, (9) by (2) and (3), etc.

(8) What did John do?

(9) Who was it John gave the book to?

As Firbas (1957; 1974; 1982) has shown, not only a dichotomy between topic and focus, but also a scale of "communicative dynamism" (CD) and a difference between contextually bound and non-bound elements of the sentence are relevant. The latter difference corresponds to what is often called "given" and "new" information, only it is necessary to realize that con-textually non-bound items need not be really "new" for the hearer, cf. the stressed pronoun in such frequently discussed examples as (10) or (11):

(10) Jim called Jane a virgin and then she insulted HIM.

(11) They saw a young couple; Jack recognize only HIM.

Note that in (10) insulted is contextually bound, if it is assumed that the preceding attribute is depreciating. In (10) and (11) him refers to a person that is "known" or "given" at least to a certain extent (greater in the former example than in the latter), since it has just been mentioned, but it is used as contextually non-bound, as representing the

focus, the core of the ("new"?) information the utterance conveys.[3]

The hierarchy of CD can be partly determined by every dependent node being less (more) dynamic than its governing or head node if the dependent node is (not) contextually bound; also the sister nodes (depending on a single head) are ordered under communicative dynamism.[4] The basic picture of TFA (dic̆ussed in Sgall, Hajičová and Benešová, 1973; Sgall, 1979; in prep.; Hajičová, 1980; 1983) is illustrated in Fig. 1 and 2.

To arrive from the contextual boundness of the individual elements of the sentence and from their scale of CD at the identification of the topic and focus of the sentence, consider first the upper part of the dependency tree representing the meaning of the sentence, i.e. the main verb and its complementations (participants xx or deep cases and free or adverbial modifications): the topic consists of those daughter nodes of the tree (the main verb) that are contextually bound and of all their subordinated nodes, while the contextually non-bound daughter nodes of the root and their subordinated nodes constitute the focus;[5] thus, the sentence from Fig. 1 can be roughly paraphrased by "I tell you here and now about my brother that he lost his favorite pen". In secondary (marked, marginal) cases the root of the tree and all the nodes immediately dependent on it are contextually bound, so that the focus is embedded deeper on the rightmost branch of the tree: only chemistry is the focus of the sentence from Fig. 2.

The examples (1) through (6) can be considered as sharing

their truth conditions (i.e. corresponding to the same set of propositions), if some subtle questions of presuppositions are disregarded (e.g. (3) presupposes that John gave a book to someone, i.e. is not assigned any truth value with respect to those possible worlds where this presupposition is not met, whereas e.g. an utterance of (5) would be false with respect to such a possible world).

With another lexical setting, however, sentences of the same structure clearly differ in their truth conditions (the corresponding propositions assign different sets of possible worlds the value ´true´), which can be illustrated by (12) through (15):

(12)(a) Many people read few books.

(b) Few books are read by many people.

(13)(a) German is spoken in Liechtenstein.

(b) It is LIECHTENSTEIN where German is spoken.

(c) It is GERMAN what is spoken in Liechtenstein.

(14)(a) In the corridor one smokes.

(b) One smokes in the ´corridor.

(15)(a) On Sundays I can do some linguistics.

(b) I can do some linguistics on Sundays.

As we have pointed out in the writings quoted above, it is not just the boundary between topic and focus, but the whole scale of CD that is semantically relevant in this respect, corresponding at least in some cases to the differences in the scopes of operators in a formula of a formal system of logic. This can be exemplified by (16), where the relevant scopes are included in the topic, while only _John_ consitutes

the focus in such a cleft sentence:

(16)(a) It is JOHN, who talked to few girls about many
problems.

(b) It was JOHN, who talked about many problems
to few girls.

On the other hand, the boundary between topic and focus
is relevant for the scope of negation (see Hajičová, 1973;
also in Sgall, Hajičová and Benešová, 1973, 81-102); cf. the
following examples:

(17) No FOG is falling.

(18)(a) No blond Albanians study chemistry at Harvard.

(b) Blond Albanians do not study chemistry at Harvard.

(19)(a) John did not come home to watch the TV.

(b) John did not come here to listen to the speaker,
but just to meet Jane.

(c) John did not come here due to the illness of
his wife.

In (17) and (18)(a) there is no topic, so that the sen-
tence (i.e., its meaning) as a whole is negated, as in the
paraphrases widely used in logical literature: It is not true
that ... . Thus in (18)(a) the existence of blond Albanians
is not presupposed, we face the kind of entailment called
allegation (see Hajičová, 1974; 1984; also in Sgall, Hajičová
and Benešová, 1973, 108f): the entailment is triggered only
by the positive, not by the negative sentence. In (18)(b) this
presupposition is present, the subject belonging here to the
topic and thus not being included in the scope of negation,
which, in the primary cases (prototypical) is identical with
the focus: it is asserted that the focus does not hold with
respect to the topic. Also (19)(a) behaves similarly, while

in (19)(b) come is contextually bound, it belongs to the topic,
and is not negated (i.e. an action of John's coming somewhere
is presupposed); the negation again has the focus in its scope,
only the focus here does not include the verb. In the preferred
reading of (19)(c) the scope of negation covers only the con-
textually bound verb (which is a marked case): one speaks
here about the reason of John's not having come.

1.2 With the framework briefly characterized in 1.1 it
is possible to account for several other phenomena from the
domain of TFA:

First of all, it is important to notice that with the
elements belonging to the focus the scale of CD is determin-
ed by the kinds of complementation, the order always being in
accordance with what we call systemic ordering; for the main
participants of the verb in English this ordering is Time -
- Actor - Addressee - Objective - Origin - Effect - Manner -
- Instrument - Locative (see Seidlová, 1983). The scale of CD
differs from this ordering only if at least one of the elements
in question belongs to the topic (this is true as to Addressee
in (20)(b), as to Origin in (21)(b), and as to Effect in
(22)(b) below):

    (20)(a) I gave several children a few apples.

      (b) I gave a few apples to several children.

    (21)(a) John made a canoe out of a log.

      (b) John made a CANOE out of a log.

    (22)(a) John made a log into a canoe.

      (b) It was a LOG John made into a canoe.

Thus, in the (b) sentences a_few_apples, a_log and a
canoe are contextually bound, standing close to a_few_of_those

apples, one_of_the_logs, the_canoe_we_spoke_about, respective-
ly. In the (a) examples the rightmost complementations belong
to the focus (they carry the intonation centre), while the
complementations standing between them and the verb are
ambiguous in this respect: in some meanings of the sentence
they are contextually bound and belong to the topic, in others
they are non-bound and belong to the focus; a similar ambig-
uity concerns also the verbs in all the examples.

Another remark concerns the sentences having no topic
and thus corresponding to Kuno's (1972) "neutral description"
and to the thetic judgements known from logic (see Kuroda,
1972), cf. the examples (17) and (18)(a) above or their pos-
itive counterparts. If a definite noun plays the role of
Actor and Subject in an English sentence with normal (neutral,
unmarked, see Note 1) intonation, then the preferred reading
is that where this noun is contextually bound (and thus be-
longs to the topic), so that in (23)(a) this noun triggers a
presupposition; the reading of this sentence as topicless
(and standing close semantically to It_is_not_true_that_...)
is only marginal, improbable. In other words, the linguistic
negation is interpreted here (with a strong preference) as
having a narrow scope (partial negation), while in (23)(b)
an allegation rather than a presupposition is present (the
sentence is false, with respect to what we assume to be the
actual world, cf. Cooper, 1974, 37f).

(23)(a) The king of France is bald.

(b) John interviewed the king of France.

A further comment has to do with Kuno's (1972) "exhaustive
listing", which seems to be present - as a kind of convers-

ational implicature - in those cases when the topic is specific enough (first of all, when it contains the verb), so that the focus is supposed to list all the specifications which hold as to the given topic (only those specification the importance of which is lower than a certain threshold can be left out of consideration). This can be illustrated by such examples as (24) - in the reading in which this sentence can be used to answer (25); also (3) to (6), and perhaps (13), belong here.[6]

(24) In Riga I visited Eva and Janis.

(25) Whom did you visit in Riga?

Still other questions, for which the empirical material has not yet been studied systematically enough, concern contrast and sentences with more than one intonation center. Here we would like only to note that e.g. in ..._and_then_SHE insulted_HIM the second of the two intonation centers marks the focus, while the first (leftmost) one seems to mark the contrasted (part of the) topic.

2. It is the task of empirical linguistics to describe the relationships between the outer (sound) patterns of linguistic expressions and the level of meaning. The semantic interpretation itself, i.e. the description of the relations between the representations of meaning and the postulated universal formalism of intensional logic should be taken care of in cooperation between linguists and logicians. In the domain of TFA the procedure mapping representations of meanings into the formulas of the framework elaborated in logic should meet among others also the following requirements:

(a) The hierarchy of CD should be mapped into an ordering of quantifiers such that the ssmantically relevant differences of their scopes are adequately represented, cf. (12)

above, (20) through (22) and their variants with many, few,
some, all, etc., or (26):

(26)(a) Everyone in this room speaks at least two lang-

uages.

(b) At least two languages are spoken by everyone

in this room.

It should certainly be captured that the different inton-
ation patterns of the sentences correspond more or less system-
atically to different distributions of quantifier scopes. Also
the interpretation of such examples as (13) through (15)
is to be ensured.

(b) The scope of negation should be derived from the pos-
ition of the boundary between topic and focus, taking into
account

(ba) that it is the whole focus, rather than its most
dynamic part, what constitutes the scope of negation in the
unmarked (prototypical) case - illustrated by (18)(b), (19)(a),
(b) above - while

(bb) in a marked (marginal) case only the verb stands
in the scope of negation; in this case the verb always is
contextually bound, cf. (19)(c);

(bc) negation itself needhot be regarded as ambiguous;
it is the ambiguity of the boundary between topic and focus -
- i.e. an ambiguity present also in the positive sentence -
that underlies the difference in the scope of negation in the
meanings of a single negative sentence.

(c) The specific properties of thetic judgements (or of
neutral description, see 1.2) should be derived by the inter-
pretation from the fact that the sentence meanings correspond-
ing to thetic judgements do not have any topic, or at least

not a topic proper.[7] Therefore the scope of negation covers the whole sentence in these cases, and thus the usual paraphrase by means of It_is_not_true_that_... can be used more or less adequately here, though not in those where the sentence has a topic, so that only a part of the sentence is in the scope of negation.

(d) The features proper to exhaustive listing should be captured by the interpretation, at least in those cases where the main verb of the sentence is contextually bound, or where it is semantically almost empty (with respect to the given topic).

(e) Presuppositions and allegations should be characterized as such, also in the cases where the difference between them is connected with the topic-focus position of the triggering element, cf. the remarks on (18)(a) and (23) above.

Possible ways how to meet some of these requirements were discussed in Materna and Sgall (1980); Kosík and Sgall (1981), with the use of two different frameworks of intensional logic.

3. One of the urgent tasks is that of the identification of topic and focus in a given sentence. For most practical aims such as the automatic analysis of a text, it is the written shape of the sentence that has to serve as the starting point. However, a written "sentence" is, in fact, only a string of letters corresponding, in general, to several sentences which differ in the placement of their intonation center. Thus, if an adverbial of time or of place stands at the end of the sentence, as in (27), then at least two sentences may be present, see (28)(a) and (b), where the intonation center is marked by the capitals; the TFA clearly differs:

(27) We were swimming in the pool in the afternoon.

(28)(a) We were swimming in the pool in the AFTERNOON.

(b) We were swimming in the POOL in the afternoon.

In languages with so-called free word order this fact does not bring about serious complications with technical texts, since there is a strong tendency to arrange the words so that the intonation center falls on the last word of the sentence (if this is not enclitical). A general procedure for determining the TFA can then be formulated as follows:

All complementations preceding the verb are contextually bound, only the subject need not be, if it is not a definite NP. As for the complementations following the verb, a "main rule" can be stated: the boundary between topic and focus may be drawn between any two elements, provided that those belonging to the focus are arranged in the surface word order in accordance with their systemic ordering.

For the aim of a theoretically aimed recognition procedure of spoken sentences, similar regularities hold for sentences with normal intonation. However, if a non-final element carries the intonation center, then all the complement-ations standing after this element are contextually bound.

In English, however, the word order is determined by grammatical rules to a large extent, so that intonation plays here a more decisive role than e.g. in the Slavic languages, and the written form of the sentence does not suffice to determine the TFA to such an extent as in the latter languages. Only certain important regularities can be stated here:[8]

The complementations preceding the verb belong mostly to the topic, with two important exceptions:

(a) an Actor (deep subject) is ambiguous if it is not
definite: it may belong to the focus as well as to the topic;

(b) similarly, a temporal adverbial is ambiguous in this
position, functioning either as a temporal setting (belonging
to the topic), or as a part of the focus.

The verb itself is also ambiguous in this respect: it
belongs to the topic if its meaning is the same as or included
in that of the verb in the preceding utterance; otherwise
(i.e. in the unmarked case), the verb belongs to the focus.

With the complementations following the verb, the follow-
ing three factors can be pointed out:

First of all, here again the relation between the surf-
ace word order and the systemic ordering is relevant, cf. the
"main rule", as formulated above.[9] Only, with respect to
English, the strategy of determining the TFA in those cases
where word order disagrees with systemic ordering should be
based on the estimate what would be the probable placement
of the intonation center. Thus e.g. if at the end of the sent -
ence there is a temporal adverbial, then this adverbial
either is the probable bearer of the intonation center, as
in (29), belonging to the focus, or the intonation center
precedes the adverbial, as is probable with (30), where the
adverbial belongs to the topic:

(29) The summer term ends on June 30th.

(30) In London, there was no fog yesterday.

If a Locative stands at the end of the sentence, the
situation is similar, but - due to its position in the system-
ic ordering - the Locative may be preceded by another comple-
mentation that itself also belongs to the focus (which does
not regularly accur with the temporal adverbial), cf. (31):

(31) John gave a girl flowers in the park behind our house.

It is possible to estimate the probability of temporal or local adverbials carrying the intonation center at least partly by their lexical value: a more specific and rarer phrase (on_June_30th, in_the_park_behind_our_house) bears more probably the intonation center than a more common phrase (yesterday). In principle, of course, the ambiguity is always present.

If the sentence final position is occupied by a definite NP or a pronoun, these words probably are not the bearers of the intonation center and they thus belong to the topic.

In case no clue of the quoted nature is found, it should be checked which pair of two complementations disagreeing in their surface order with their places under systemic ordering is closest to the end of the sentence; the boundary between (the left-hand part of) the topic and the focus can then be drawn between any two complementations beginning with the given pair. Let us recall that the verb can in all these cases belong either to the focus, or to the topic.

It seems (cf. Sgall, 1982) that German (and probably also Dutch) shares some of the relevant properties of the means conveying TFA with English, while it has some others common with Slavic languages.

4. The pragmatic factors underlying TFA can be briefly characterized as follows (see Hajičová and Vrbová, 1982, for a more detailed discussion):

During the discourse the stock of "knowledge" the speaker assumes to share with the hearer changes according to what is in the center of attention at the given time-point, what is most salient or activated (foregrounded) in the memories. The

speaker chooses, in a smooth discourse, only those items to
be used as contextually bound, which he supposes to be among
the most salient in the stock of knowledge of the hearer; this
enables the hearer to identify relatively easily the objects
referred to by the parts of the topic of the utterance. How-
ever, also within focus the salient items may occur (even as
non-bound, cf. Note 3 above). A definite NP or an anaphoric
pronoun refer to such salient items, and it is quite import-
ant for the speaker to decide whether in a given context
it, he, she would suffice to identify the referent (this is
the case whenever just a single object - or a single male or
female being - is clearly more salient than all the others),
or an NP would be necessary, or even would require a further
specification: the_old_many, the_taller_of_the_two_girls, etc.

    We can only present here a short illustration of what is
meant by these degrees of salience of the stock of shared
knowledge. The illustration consists in a dialogue that was
constructed for the given purpose: a telephone conversation
between a bookseller (B) and a customer (C):[10]

1.C: Good morning. Be so kind, please, I need a_book on computer
    science.

2.B: We have one dealing with it.

3.C: Did it appear recently?

4.B: Half a year ago, but it is more sophisticated than the
    latest_one.

5.C: Who is the author of the_latest?

6.B: Cohen.

7.C: And of that_one_you_recommended?___

8.B: Dickinson.

9.C: I see. You are right. By the way do you know the story

of <u>the book</u>? They took his colleague for the author and <u>he</u> had to protest.

10.B: I see.So ...

11.C: And what about <u>a book on logic</u>? Have you got <u>any</u>?

12.B: We have several kinds of <u>them</u> - for beginners, advanced, for those who are specifically interested in some domain.

13.C: Which <u>one for advanced</u> do you have?

14.B: Let's say the <u>Introduction</u> by Simon.

15.C: I know <u>it</u> a little; <u>it</u> appeared last year in a big publishing house, which went bankrupt several months afterwords, and <u>it</u> was obsessed with the question of marketing.

16.B: <u>The book</u>?

17.C: No, <u>the publishing house</u>. Please, can you put <u>the book</u> aside for me? I'll come along and pick <u>it</u> up.

18.B: The one on <u>logic</u>?

19.C: No, <u>that on computer science</u>.

20.B: And which <u>one</u>?

21.C: <u>The best one</u>!

22.B: My God!

It should be studied systematically to what extent the changes of the degrees of salience depend on the TFA of the individual utterances. It is rather obvious that the items referred to by the parts of the focus of the just preceding utterance are the most activated ones at every time-point of the discourse (therefore e.g. the reference of <u>any</u> in utterance 11 or that of the first occurrence of <u>it</u> in 15 is clearly determined). If an item activated before is referred to by a part of the topic, then its activation does not fade out as quickly as would otherwise be the case in the subsequent

parts of the dialogue (therefore, after 2, _it_ is sufficient
in 3 and 4, similarly _them_ in 12).

In some cases more than one object of a given class
is activated to a relatively high degree; then either the
hearer has to use simple inferencing to detect what the pronoun
refers to (as with _one_ and _it_ in 2, or with _it_ in 17), or the
pronoun is not enough: a more specific phrase has to be used
(in 5 _it_ would not be sufficient, but _this one_ would do;
in 7 or 19 more specific means are necessary), or else the
hearer does not understand (in 9 _he_ can refer to Dickinson
as well as to the supposed author, but for B this problem is
not so urgent as to ask for a specification; this he does
later in the dialogue a couple of times).

This illustration is meant to show in which direction
the investigation of the pragmatic conversational mechanism
underlying the assignment of reference and connected with TFA
should be continued. Certainly, the rules of this mechanism
are of another kind than rules of grammar (which encompass
the relationships between expressions and meanings, including
TFA) or rules of semantic interpretation (relating the mean-
ings to truth-functional semantics).

Notes:

1 The intonation center is supposed to be carried by the rightmost NP (or PrepP) in such sentences as (1) or (2); if it has another (marked) position, this is denoted by capitals.

2 Operational tests for the identification of topic and focus are based on this use of a question (see Hatcher, 1956; Daneš, 1968; Sgall and Hajičová, 1977; Hajičová, 1983), or oh negation and "natural response" (Chomsky, 1970; Posner, 1972; Sgall, Hajičová and Panevová, in prep., Chapter 3).

3 Cf. Halliday's (1967   ) notion of irrecoverability, or Chafe's (1976) "not identifiable" elements. - Such terms as "known", "given", "new" cannot be used at face value, cf. such a dialogue as: Who_is_Dr._Melvin? - I_don't_KNOW_Dr. Melvin, where the name is contextually bound in the answer.

4 Those who prefer phrase structure to dependency can easily rephrase these formulations into those about constituents being ordered in the sense of Chomsky's (1971) range of "permissible focus". However, with our approach also those elements of the sentence that in all its readings belong to its topic are ordered. Furthermore, in the general case neither topic nor focus is a single constituent of any level, see Sgall, Hajičová and Benešová,(1973, 163f) and such examples as I_am_not_going_for_a_month_to_Mallorca,_but_for_the_weekend to_my_mother. As for a detailed discussion of the types of complementations, see now Hajičová and Panevová (in press).

5 The relation of subordination is understood as the transitive closure of that of dependency: the latter relation is denoted by the edges of the tree, while the former by the

branches going down (and parts of them). A more complex frame-
work is needed to handle also coordination and apposition,
see Plátek, Sgall and Sgall (in press); note that each of
the coordinated clauses exhibits its own TFA.

6 In the discussions on focus in Hungarian the difference
between the focus as a whole and the most dynamic element
of the focus seems to be neglected, so that also the specific
properties of sentences corresponding to English cleft constr-
uctions (bearing exhaustive listing) often are left out of
consideration.

7 It has not yet been settled whether such sentences as
_In_London_it_RAINED_yesterday,_ whose topic is constituted
just by elements called local and temporal setting, correspond
to thetic or to categorical judgements.

8 Also in English - and in Norwegian, see Rinnan (1983) -
such construction as those of the cleft and pseudocleft
sentences help to identify the focus, and also to determine
that it involves a case of exhaustive listing; cf. ex. (3)
through (6) above and Rinnan's pseudocleft sentence _What_he_
_bought_was_a_DONKEY._

9 Some discrepancies between surface word order and
systemic ordering may be due e.g. to the principle according
to which a "heavier", longer, complementation follows a
shorter one, even if the former is less dynamic.

10 Italics mark the referring expressions relevant to
the present discussion.

References

Chafe W.L. (1976), Giveness, Contrastiveness, Definiteness,
    Subjects, Topics, and Point of View, in: Subject and Topic,
    ed. by C.N.Li, New York, 25-55.

Chomsky N. (1971), Deep Structure, Surface Structure, and
    Semantic Interpretation, in: Semantics. An Interdisciplin-
    ary Reader, ed. by D.D.Steinberg abd L.A.Jakobovits,
    Cambridge, U.K., 183-216.

Cooper D.E. (1974), Presupposition, The Hague.

Daneš F. (1968), Some Thoughts on the Semantic Structure of
    the Sentence, Lingua 21, 55-69.

Firbas J. (1957), Some Thoughts on the Function of Word-Order
    in Old English and Modern English, in: Sborník prací fi-
    losofické fakulty brněnské university A4, 93-104.

Firbas J. (1974), Some Aspects of the Czechoslovak Approach
    to Problems of Functional Sentence Perspective, in:
    Papers on Functional Sentence Perspective, Prague, 11-37.

Firbas J. (1982), Has Every Sentence a Theme and a Rheme?, in:
    Language Form and Linguistic Variation, ed. by J.Anderson,
    Amsterdam, 97-115.

Hajičová E. (1973), Negation and Topuc vs. Comment, Philologica
    Pragensia 16, 81-93.

Hajičová E. (1974), Meaning, Presupposition and Allegation,
    Philologica Pragensia 17, 18-25.

Hajičová E. (1980), A Dependency Based Specification of Topic
    and Focus - Background and Motivation, SMIL - Journal of
    Linguistic Calculus, No.1-2, 93-109.

Hajičová E. (1983), Topic and Focus, Theoretical Linguistics
    10, 268-276; also in Sgall (in press), 175-189.

Hajičová E, (1984), Presupposition and Allegation Revisited, Journal of Pragmatics; an enlarged version in Sgall (in press)

Hajičová E. and J. Panevová (in press), Valency (Case) Frames of Verbs, in Sgall (in press), 129-174.

Hajičová E. and J. Vrbová (1982), On the Role of the Hierarchy of Activation in the Process of Natural Language Understanding, in: Coling 82, ed. by J. Horecký, Amsterdam, 107-113.

Halliday M.A.K. (1967), Notes on Transitivity and Theme in Englsih, Journal of Linguistics 3, 37-81; 199-244; 4(1968), 179-215.

Hatcher A.G. (1956), Syntax and the Sentence, Word 12, 234-250.

Kosík A. and P. Sgall (1981), Towards a Semantic Interpretation of Underlying Structures, Theoretical Linguistics 8, 157-171.

Kuno S. (1972), Functional Sentence Perspective, Linguistic Inquiry 3, 269-320.

Kuroda S.-Y. (1972), The Categorical and the Thetic Judgement, Foundation of Language 9, 153-185.

Materna P. and P. Sgall (1980), Functional Sentence Perspective, the Question Test and Intensional Semantics, SMIL - Journal of Linguistic Calculus, No. 1-2, 141-160.

Plátek M., Sgall J. and P. Sgall (in press), A Dependency Base for a Linguistic Description, in Sgall (in press), 46-79.

Posner R. (1972), Theorie des Kommentierens, Frankfurt/M.

Rinnan G.D. (1983), Setningens inndeling i tema og rema i norsk, Norsk Lingvistik Tidsskrift 1, 41-65.

Seidlová I. (1983), On the Underlying Order of Cases (Participants) and Adverbials in English, Prague Bulletin of

Mathematical Linguistics 39, 53-64.

Sgall P. (1979), Towards a Definition of Focus and Topic I,
Prague Bulletin of Mathematical Linguistics 31, 3-26;
II, 32, 24-32; printed in Prague Studies in Mathematical
Linguistics 7, 1981, 173-198.

Sgall P. (1982), Wortfolge und Fokus im Deutschen, in: Satz-
glieder im Deutschen, ed. by W. Abraham, Tübingen, 59-74.

Sgall P. (1983), On the Notion of the Meaning of the Sentence,
Journal of Semantics 2, 319-324.

Sgall P. (in prep,), Prague Functionalism and Topic vs. Focus,
to appear in Functionalism in Lingustics, ed. by R.
Dirven, Amsterdam.

Sgall P., ed. (in press), Contributions to Functional Syntax,
Semantics and Language Comprehension, to appear in
Amsterdam and Prague

Sgall P. and E. Hajičová (1977), Focus on Focus, Prague Bull-
etin of Mathematical Linguistics 28, 5-54; 29, 1978, 23-41.

Sgall P., Hajičová E. and E. Benešová (1973), Topic, Focus,
and Generative Semantics, Kronberg/Taunus.

Sgall P., Hajičová E. and J. Panevová (in prep.), The Meaning
of the Sentence in Its Semantic and Pragmatic Aspects,
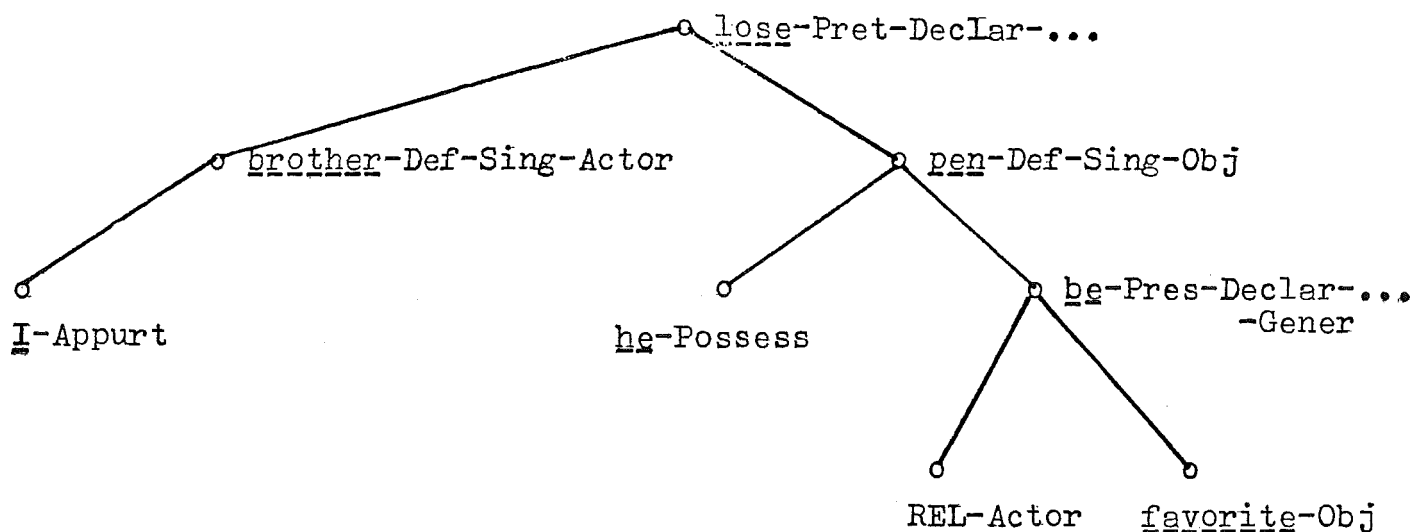to appear in Dordrecht, Holl., and Prague.

lose-Pret-Declar-...

brother-Def-Sing-Actor

pen-Def-Sing-Obj

I-Appurt

he-Possess

be-Pres-Declar-...
-Gener

REL-Actor   favorite-Obj

Fig. 1

A simplified representation of the primary meaning of My
brother_lost_his_favorite_pen, where the dependent nodes
standing to the left of their heads are contextually bound
(with the main verb this is marked by the superscript b, cf.
Fig. 2), the lexical units are denoted by the mere graphemic
shape of the corresponding words, the morphological meanings
(belonging to different categories with lexical units of
different word classes) are attached to them, the last of these
indices denoting the kind of dependency (of complementation:
Gener is the general relation, typical for an adjunct,
Appurt is the relation of 'appurtenance'; the other symbols
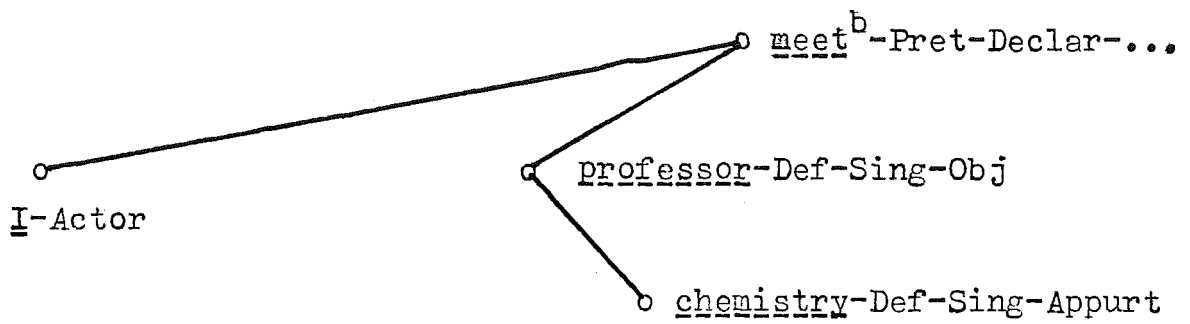should be self-explaining).

$meet^b$-Pret-Declar-...

professor-Def-Sing-Obj

chemistry-Def-Sing-Appurt

I-Actor

Fig. 2.

A simplified representation of that meaning of I_met_the professor_of_chemistry in which this sentence can answer the question Which_professor_did_you_meet?