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Information Structure from the Point of View of the Relation of Function and Form

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Abstract

The function-form viewpont (means and ends, and the regard to the communicative function) is applied to the analysis of the information structure of the sentence, distinguishing between the semantically relevant topic-focus articulation and its means of expression (morphological, syntactic, prosodical).

1. Introduction

There are two attributes by which the Prague Linguistic School is generally characterized: 'structural' and 'functional'. While 'structural' is a common denominator of several linguistic trends that originated in the first decades of the 20th century following Ferdinard de Saussure's pioneering linguistic approach, the term 'function' was used by de Saussure only quite occasionally. It is supposed to be a distinctive feature of Prague scholars that at the same time as they recognized the necessity to describe and explain the collection of language phenomena as a structured whole rather than as mechanical agglomeration, they emphasized that this structured whole – language – should be understood as a functioning means of communication.

As has been observed already by the founding members of the School (e.g. Jakobson 1963, p. 482, says that "we could hardly find a unifying pattern for the Prague group which would distinguish it as a whole from other scholars …") and by many Praguian linguists afterwards (e.g. Vachek 1966; Novák and Sgall 1962, Sgall 1987, Leška 1999, Daneš 1987; 2006), the Praguian formulations of the guiding principles often differ from author to author or from one writing to another. The following quotation characterizes the situation quite well: "… the Prague group has never formed anything like a dogmatically closed body; while it has been united in the basic acceptance of the structuralist and functionalist standpoint, in matters of implementation of the common principles there has always been a great variety of opinion." (Vachek 1966, p. 8).

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However, Jakobson (1963, p. 482) points out that "at the same time, there is a typical drift which ties the work of all these explorers and strictly distinguishes them both from the older tradition and from some different doctrines which found their outspoken expression likewise in the '30's. … this common drift … (aims) toward a means-ends model of language. These efforts proceed from a universally recognized view of language as a tool of communication." This is what Oldřich Leška, one of the outstanding "second-generation" Prague School representatives, reflected in the title of his paper as *unity in diversity* (Leška 1999)..

In our present contribution we focus our attention on the necessity of the application of the function – form viewpoint ('means' and 'ends', and the regard to the communicative function) in the domain of one of the most important contributions of Prague School scholars to linguistic theory, namely the study of the information structure of the sentence.

2. Form and function in the mirror of authentic (historical) quotations

Let us first look at the use of the term *functional* and some related terms (relevant for our focus of attention) in two original sources, namely in the collective theses presented to the First International Congress of Slavicists (published in Vol. 1 of TCLP, 5–29) and in Vachek's Dictionary of the Prague School of Linguistics (originally published in 1960; its English translation appeared in 2003).

The following places in the text of the *Thèses* are characteristic for the use of the term function and its derivatives (the numbers at the beginnings of the lines refer to the respective chapters of the *Thèses*):

1.a) Conception de la langue comme système **fonctionnel**

… la langue est un système de moyens d'expression appropriés à **un but**

2.a) … Nécesssité de distinguer le son comme fait physique objectif, comme representation et **comme élément du système fonctionnel**

… les images acoustico-motrices subjectives … remplissement, dans se système, une **fonction différenciatrice de significations**

The entries in Vachek's *Dictionary of the Prague School of Linguistics* (1960, transl. 2003) mostly refer to what the author considered to be the most characteristic or typical uses of the given terms rather than bringing definitions of the head words (collocations); it is no wonder then that some of the entries reflect a certain vagueness of the use and differences between the authors quoted. We do not reproduce here the whole entries but just the relevant passsages. Our comments (mostly just abbreviated Vachek's commentary from the Dictionary) are in square brackets.

Function: Skalička 1948b, 139: … the term function is used where the meaning (the function of a word, a sentence) or the structure of semantic units (the function of a phoneme) is concerned [as opposed to Hjelmslev, with whom …"the notion of function is close to the notion of function in mathematics"]

Functional onomatology

"two important parts of linguistic investigation, that of the ways and means of calling selected elements of reality by names, and that of the ways and means organizing these names,

as applied to an actual situation into sentences … we may call these respective sections of linguistics functional onomatology and functional syntax. [Mathesius 36a, 97–98].

Functional sentence perspective

[is not specified in general, just the means of FSP are mentioned as if the very term FSP were 'given']

Form and function in language

'it cannot be denied that form and function are not simply two sides of one thing, but they often intersect. This is … also the essence of homonymy and homosemy, and in my opinion an important impulse for language changes. Though language is a system, the system of language is perhaps never completely balanced. For this reason in analysing language, systems which are too logical and thus too simplifying will fail to some extent." [Mathesius 36b, 50]

Analytical comparison and the functional viewpoint

"If we are to apply analytical comparison with profit, the only way of approach to different languages as strictly comparable systems is the functional point of view, since general needs of expression and communication, common to all mankind, are the only denominators to which means of expression and communication, varying from language to language, can reasonably be brought." [Mathesius 36a, 95]

3. The hierarchy of levels and relations between their units

3.1. Introduction

The need for a systematic and integrated description of the relation of functions and forms has led to conceive the core of language system as consisting of levels the units of which have their functions in that they represent units of the adjacent higher levels, up to the non-linguistic layer of cognitive content. Under this understanding, the relation of means and function is interpreted as "functions as" (in the upwards direction) and "is constructed of" (in the downward direction).

From the methodological standpoint, Mathesius (influenced apparently by Marty) adopted the speaker's point of view and emphasized the necessity to proceed from function to form; i.e. from needs of communication to means of expression (see e.g. Mathesius 1929, p.119 "… functional approach consists in the convergence of linguistics to the standpoint of the speaker"; according to Daneš (1987), in his respect to the communicative needs, Mathesius himself was influenced by sociology). For Mathesius, form is subordinated to function. As duly noted by Novák and Sgall (1964), several questions may arise: are the needs quite common? what are the basic units of such needs? etc.

However, it is possible to take an opposite point of view and to proceed from form to function, which is the method applied in Jakobson's structural morphology. Leška (1995, p.10) notes that such a new arrangement opens the way to a stratification model of language, introduced by Skalička (1935) and fully developed by Trnka (see esp. Trnka1964).

3.2. Relations between units of levels

With the system of levels, two hierarchies have to be distinguished:

the relation between the (units of the) adjacent levels in the hierarchy; Hockett (1961) speaks about the "R" (representation) relation;

the relation between units of a given level: complex units are composed of more elementary units (morph of phonemes, morpheme of semes, word of morphemes, sentence of word forms; Hockett (1961) speaks about the "C" (composition) relation.

As pointed out by Sgall (1987, p. 171), three different approaches how to account for these two hierarchies can be found in the writings of Prague scholars; Sgall's (1967a) original model of functional generative description works with levels based on the hierarchy R and within each level the hierarchy C obtains. For our discussion, we will restrict ourselves to the discussion of the R relation.

A far-reaching significance for the understanding of the relations between units of adjacent levels is the notion of *asymmetrical dualism* introduced by S. Karcevskij (1929). The main idea consists in the recognition that a form and its meaning (or rather function; Karcevskij uses the French term *signification*) do not cover the same field in all their points: the same sign has several functions and the same function can be expressed by several signs. There is always a certain tension between *signifiant* and *signifié* and the asymmetrical dualism of the structure of the sign makes it possible for language to develop.

Another distinction relevant for the understanding of the relations between levels (esp. for the specification of the functions of a given form) is that of ambiguity and vagueness as discussed e.g. by Zwicky and Sadock (1975): it is possible to ask the speakers if two morphemes, or constructions differ in their functions or if they are synonymous. Similarly, two different meanings of a single morph can be distinguished from a single vague meaning. In the former case, rather than in the latter, the speaker is always able to tell which of the two different lexical or grammatical functions s/he had in mind (although not knowing the precise linguistic wording).

4. The communicative role of language and the position of TFA in the function – form hierarchy

4.1. Some historical milestones

The focal point of Mathesius' interest was "functional onomatology" (means employed by language for the purpose of naming) and "functional syntax". In the latter domain, Mathesius understood sentence as comprising a patterning primarily conditioned by the interactively based role the sentence plays in the context, in discourse. His innovative and consistent regard to this role has led to his introduction of the notions of *theme* and *rheme* into syntactic studies, which is one of the fundamental issues discussed in modern linguistic theories up to present.

The writings on what is more generally (and recently) covered by the term *information structure* date back centuries ago; the issue is treated under different terms and this is not always

possible to find a one-to-one mapping between them; also, they receive a slightly different interpretation. However, they share the underlying idea: a description of the structure reflecting the functioning of language in communication, which is different from the subject-verb-object structure (described in any formalism). One of the oldest and most stimulating, not only for its time, is Weil's (1844) comparison of the means expressing information structure in languages of different types. Of great interest is his proposal to distinguish two types of 'progressions' of sentences in a discourse, in relation to which part of a given sentence serves as a starting point for the subsequent one. Sentences may follow each other in a parallel mode, i.e. they share their starting points (*marche parallèle*), or in a sequential mode, i.e. the starting point of a given sentence follows up the second (final) part of the preceding sentence (*progression*). In more modern terms, one can say that in the parallel mode, the sentences share their themes (topics), in the sequential mode the theme (topic) of one sentence relates to the rheme (focus) of the preceding sentence. (It should be noted that more than one hundred years later, a similar, though a more subtle approach was developed by Daneš 1970 in his paper on thematic progressions).

It is not our intention here to present a historical survey; let us only mention that though the first hints for a systematic treatment of these issues within structural linguistics were given by Vilém Mathesius and later continued (on the initiative of Josef Vachek) by Jan Firbas, one should not forget that the topic was, so to say, hanging in the air, receiving attention esp. in German linguistics (for a more detailed discussion, see Sgall et al., 1973, 1980 and 1986).

With the entrance of formal linguistics on the scene, it is not surprising that the first suggestions for the inclusion of TFA into an integrated formal description of language came from Prague; Sgall's Functional Generative Description (Sgall 1967a) working with a tectogrammatical (underlying, deep) level of sentence structure has incorporated the TFA opposition into the description of this level (Sgall 1967b).

An important terminological (but not only terminological) side-step is in place at this point. As Svoboda duly notes (Svoboda 2003) Mathesius' Czech term *aktuální členění větné* is not directly translatable into English; Firbas – on the advice of Josef Vachek (Firbas 1992, p. xii) and apparently inspired by Mathesius' use of the German term *Satzperspektive* in his fundamental paper from 1929 – changed it into *functional sentence perspective* (FSP). However, this is not the only name under which this domain of research entered linguistics: German researchers often speak about *Thema-Rhema Gliederung*, M.A.K. Halliday, one of the leading European linguists who has been influenced by the Praguian theory, speaks about information subsystem (Halliday 1967) or information structure (reflecting the given-new strategy) distinguishing it from thematic structure (Halliday 1970); another pair of terms used are topic and comment, etc. These terminological differences often indicate some notional distinctions, as is the case of the Praguian theory of *Topic-Focus Articulation* (TFA) we subscribe to. TFA is not a mere "translation" or "rephrasing" of the term FSP; a different term was used basically to indicate certain differences in the starting points: Firstly, theme was originally defined by Firbas as the item that carries the lowest degree of communicative dynamism; if understood in this way, the existence of sentences without a theme (so-called topicless sentences in linguistic literature, or hot-news) would be excluded (every sentence *has* an item with a lowest degree of commu-

nicative dynamism); to avoid such a misunderstanding, we used the term topic rather than theme. (Firbas 1992, however, modifies his definition of theme by adding that in the absence of theme, the lowest degree of CD is carried by the first element of non-theme – referring to Sgall's objection against his original definition of theme made at a FSP conference in Sofia in 1976). Second, even though we accept the postulate that every item in the sentence carries a certain degree of CD, our analysis of negation gives an indisputable support for understanding TFA as based on the 'aboutness' relation, i.e. not just on the degree of CD but on the opposition of contextual boundness (see Sect. 3 below) and also on (as a derived notion, though) the notion of a bipartition (the focus of a sentence conveys some information about its topic). Third, certain notions have been found formulated more precisely in the TFA theory than in Firbas' insightful writings. As Sgall (2003, esp. pp. 281ff) writes, this concerns differences in the nature of the four factors of linear arrangement, prosody, semantics and contexts (the first two belonging to the means of expression of information structure and the other two to its functional layers), as well as CD and contextual boundness. And last but not least, as will be discussed below, in our understanding, TFA is a structure belonging to the underlying, deep structure of sentences (tectogrammatical, in our terms).

It should be noted that the examples serving as arguments during the split of generative transformational grammar into interpretative and generative semantics reflected the difference in TFA (actually, on both sides of the dispute, though not recognized as such; see e.g. Chomsky 1971 and Lakoff 1971a, to name just the main figures). A "breakthrough" on that side of Atlantic was Mats Rooth's doctoral dissertation on association with focus (Rooth 1985), in which the author (referring i.a. to Jackendoff 1972) quite convincingly argues for the "semantic effect of focus" in the sentence offering the explanation of this effect in terms of a domain of quantification (p. 197); his starting arguments were restricted to the presence in the sentence of the so-called focusing particles such as *only, even,* but he extended his proposal also to the so-called adverbs of quantification (*often, always*) and cases such as cleft constructions in English.

The interest was aroused, and after Barbara Partee's (who was one of Mats Rooth's supervisors) involvement in the discussion of the semantic consequences of different TFA structures (see e.g. Partee 1991) the TFA issues took up an important position in the discussions of formal semanticists (for a Czech contribution to that discussion see Peregrin 1994; 1996), but not only within that domain (quite noticeable is the interest in the TFA issues in German linguistics).

One of the crucial contributions of the above mentioned discussions was the due respect to the reflection of the differences in TFA in the prosodic shape of the sentences (which view, actually, has been present in the Praguian studies of TFA). Let us mention here only Jackendoff's (1972) introduction of the difference in A and B prosodic contour and Rooth's (1985) consistent regard to the placement of the intonation pitch in his example sentences.

4.2. The position of TFA in the function – form hierarchy

To give an answer to the question posed in the title of this section, let us start with some examples (maybe notoriously known). The capitals denote the intonation centre, the names in brackets indicate the source of the examples.

(1)(a) Everybody in this room knows at least two LANGUAGES.
(b) At least two languages are known by everybody in this ROOM. (Chomsky 1957;1965)
(2)(a) Many men read few BOOKS.
(b) Few books are read by many MEN. (Lakoff 1971a)
(3)(a) Londoners are mostly at BRIGHTON.
(b) At Brighton, there are mostly LONDONERS. (Sgall 1967b)
(4)(a) I only introduced BILL to Sue.
(b) I only introduced Bill to SUE. (Rooth 1985)
(5)(a) I work on my dissertation on SUNDAYS.
(b) On Sundays, I work on my DISSERTATION.
(6)(a) English is spoken in the SHETLANDS.
(b) In the Shetlands, ENGLISH is spoken. (Sgall et al. 1986)
(7)(a) Dogs must be CARRIED.
(b) DOGS must be carried. (Halliday 1967)
(c) Carry DOGS. (a warning in London underground, around 2000)
(d) CARRY dogs.

It is not difficult to understand that the pairs of sentences under each number differ not only in their outer shapes or in their contextual appropriateness, but also in their meanings, even in their truth conditions. This difference may be attributed to the presence of quantifiers and their order (with an explicit quantification in (1) and (2) and a more or less explicit in (3) and (4)), but from (5) on, such an explanation is not possible. Also, an exclusive reference to the surface order of the sentence elements would not be correct, as illustrated by (4) and (7).

A more adequate explanation is that based on the relation of *aboutness*: the speaker communicates something (the Focus of the sentence) about something (the Topic of the sentence), i.e. F(T), the Focus holds about the Topic. In case of negative sentences, the Focus does not hold about the Topic: F(T).

A supportive argument for the semantic relevance of TFA can be traced in the discussions on the kinds of entailments starting with the fundamental contributions of Strawson. Strawson (1952, esp. p. 173ff.) distinguishes a formal logical relation of entailment and a formal logical relation of presupposition; this distinction – with certain simplifications - can be illustrated by (8) and (9):

(8) All Johns' children are asleep.
(9) John has children.

If John's children were not asleep, the sentence (8) would be false; however, if John did not have children, the sentence as well as its negation would not be false but meaningless. Thus (9) is a presupposition of (8) and as such it is not touched by the negation of (8).

Returning to the relation of aboutness, we can say that (8) is about John's children, and for (8) to be meaningful, there must be an entity John's children the speaker can refer to.[1]

[1] This need not mean that the entity the sentence is 'about' should exist in the real world, but it should be referentially available; cf. the discussion of the notion of referential vs. existential presuppositions in Hajičová 1976, 55–58, reflected also in Sgall et al. 1986).

The close connection between the notion of presupposition and TFA can be documented by a more detailed inspection of the notion of presupposition, exemplified here by sentences (10) and (11).

(10) The King of France is (not) bald.

(11) The exhibition was (not) visited by the King of France.

It follows from the above mentioned discussions on presuppositions that Strawson's (1964) ex. (10) is about the King of France and the King's existence (referential availability) is presupposed, it is entailed also by its negative counterpart; otherwise (10) would have no truth value, it would be meaningless. On the other hand, there is no such presupposition for (11): the affirmative sentence is true if the King of France was among the visitors of the exhibition, while its negative counterpart is true if the King of France was not among the visitors. The truth/falsity of (11) does not depend on the referential availability of the entity "King of France". This specific kind of entailment was introduced in Hajičová (1972) and was called allegation: an allegation is an assertion A entailed by an assertion carried by a sentence S, with which the negative counterpart of S entails neither A nor its negation (see also Hajičová 1984; 1993, and the discussion by Partee 1996). Concerning the use of a definite noun group in English one can say that it often triggers a presupposition if it occurs in Topic (see sentence (10)), but only an allegation if it belongs to Focus (see sentence (11)).

These considerations have led us to the attempt at a more systematic analysis of the relations between affirmative and negative sentences (Hajičová 1972, 1984, 1993). The scope of negation can be specified, in the prototypical case, as constituted by the Focus, so that the meaning of a negative declarative sentence can be interpreted as its Focus (F) not holding of it, i.e. F(T). In this way it is possible to understand the semantic difference present in (10) and (11).

In a secondary case, the assertion holds about a negative Topic: F(T), see (12) on the reading when answering the question "Why didn't he come?".

(12) He did not come because he was out of money.

Here again, the scope of negation is dependent on TFA: it is restricted to the Topic part of the sentence. The assertion entailed (on this reading) by the *because*-clause in Focus is not touched by negation.[2]

4.3. TFA as an integral part of the underlying layer of linguistic description

The analysis summarized in Sect. 4.2. points out very clearly that TFA undoubtedly is a semantically relevant aspect of the sentence and as such should be represented at a level of an integrated language description capturing the meaning of the sentence (whatever interpretation we assign to the notion of 'meaning'). For the formal description of language we subscribe to, namely the Functional Generative Description, this is the underlying, *tectogrammatical* layer; the tectogrammatical representations of sentences (TRs) are specified as dependency tree structures, with the verb (of the main clause) as the root of the tree. While the labels of

[2]On another possible reading of (12), e.g. if the sentence is followed by *but because he was on his leave of absence,* his being out of money is neither entailed nor negated, i.e. the entailment belongs to the allegations of the sentence, i.e. he might have come for some other reason. The scope of negation concerns Focus, schematically: F(T).

the nodes of the tree are counterparts to the autosemantic words of the sentence, counterparts of function words as well as of grammatical morphemes are just indices of the nodes and the edges of the tree: the morphological values of number, tense, modalities, and so on, are specified by indices of the labels of the nodes. For each node of the TR it is specified whether it is contextually bound or non-bound.[3] The edges of the tree are labeled by underlying syntactic relations (such as Actor/Bearer, Addressee, Patient, Origin, Effect, several Local and Temporal relations, etc.). The appurtenance of an item to the Topic or Focus of the sentence is then derived on the basis of the features cb or nb assigned to individual nodes of the tree (see Sgall 1979).

An underlying structure specified in this way can be understood as the 'highest' level of the language description viewed from the point of view of the hierarchy from function to form. The inclusion of TFA into this level can serve well as a starting point for connecting this layer with an interpretation in terms of intensional semantics in the one direction and with a description of the morphemic and phonemic means expressing TFA (Sgall 2003, p. 280; see also Fig. 1 in Sect. 6 below).

The semantico-pragmatic interpretation of sentences (for which the TRs represent suitable input) may then include an application of Tripartite Structures (Operator - Restrictor - Nuclear Scope), as outlined by B. H. Partee in Hajičová et al. (1998). Let us briefly recall some of the characteristic sentences discussed there (with their relevant TRs) and specify (in a maximally simplified notation) which parts of their individual readings belong to the Operator (O), Restrictor (R) and Nuclear Scope (N) of the corresponding tripartite structures. We assume that in the interpretation of a declarative sentence, O corresponds to negation or to its positive counterpart (the assertive modality) or to some other operators such as focusing particles, R corresponds to Topic (T), and N to Focus (F).

(13) John sits by the TELEVISION.

(13') O ASSERT, R John, N sits by the TELEVISION.

(13") O ASSERT, R John sits, N by the TELEVISION.

From the point of view of TFA, (13) - leaving aside its possible interpretation as a topicless sentence (hot news) - may be analyzed in two ways: either it conveys information about John (i.e. John being its Topic and the rest its Focus), or it conveys information about John's sitting; in the latter case, the dividing line between Topic and Focus will be drawn after the verb. The ASSERT operator (introduced by Jacobs 1984) indicates the assertive modality of the sentence, and the two possible divisions into Topic and Focus are reflected by (13') and (13").

In (14), the particle *only* occupies its prototypical position in the underlying structure, so

[3] A contextually bound (*cb*) node represents an item presented by the speaker as referring to an entity assumed to be !easily accessible by the hearer(s), i.e. more or less predictable, readily available to the hearers in their memory, while a contextually non-bound (*nb*) represents an item presented as not directly available in the given context, cognitively 'new'. While the characteristics 'given' and 'new' refer only to the cognitive background of the distinction of contextual boundness, the distinction itself is an opposition understood as a grammatically patterned feature, rather than in the literal sense of the term. This point is illustrated e.g. by *(Tom entered together with his friends.) My mother recognized only HIM, but no one from his COMPANY.* Both Tom and his friends are 'given' by the preceding context (indicated here by the preceding sentence in the brackets), but in the given sentence they are structured as non-bound (which is reflected in the surface shape of the sentence by the position of the intonation center).

that the focus of the particle is identical with the Focus of the sentence on either reading, i.e. with the verb included in Focus in (14'), and in Topic in (14").

(14) John only sits by the TELEVISION.

(14') O only, R John, N sits by the TELEVISION.

(14") O only, R John sits, N by the TELEVISION.

A contextually bound (*cb*) node represents an item presented by the speaker as referring to an entity assumed to be !easily accessible by the hearer(s), i.e. more or less predictable, readily available to the hearers in their memory, while a contextually non-bound (*nb*) represents an item presented as not directly available in the given context, cognitively 'new'. While the characteristics 'given' and 'new' refer only to the cognitive background of the distinction of contextual boundness, the distinction itself is an opposition understood as a grammatically patterned feature, rather than in the literal sense of the term. This point is illustrated e.g. by *(Tom entered together with his friends.) My mother recognized only HIM, but no one from his COMPANY.* Both Tom and his friends are 'given' by the preceding context (indicated here by the preceding sentence in the brackets), but in the given sentence they are structured as non-bound (which is reflected in the surface shape of the sentence by the position of the intonation center).

Let us just note that in the cases in which Topic or Focus is complex, as illustrated by (15), it is the opposition of contextual boundness that is responsible for the difference: while contextually bound items then belong to the local (partial) R, the non-bound ones belong to the corresponding N.

5. Means of expression of TFA

5.1. Introduction

From the methodological point of view, Mathesius' emphasis on the virtual identity of the facts to be expressed by all languages of the world directs the analyst's attention to the diversity of ways by which these identical facts are referred to in various languages. As Vachek (1966, p.7) notes, this is a specific characteristic of the Prague structuralist conception delimiting it from other structurally oriented linguistic currents (Danish glossematics, American descriptivism).

5.2. The order of words

The most frequently and extensively discussed means of expression of the information structure is the word order. In some approaches, the differences in the information structure are even identified with the differences in the order of words in the surface shape of the sentence; as indicated by our set of examples in (1) through (7) this is not correct; the word order is only one of the means (forms) of the expression of the underlying difference of meaning. This is not only due to the fact that not in all languages the word order is flexible enough to express this distinction. The order of words in the surface shape of the sentence might be the same and yet the sentences acquire different information structure, see (7) above or (15), offered by the late Prof. Ivan Poldauf (pers. comm.):

(15) John and Mary saw an EXPLOSION.
(15') An explosion was seen by JOHN and MARY.
(15") An EXPLOSION was seen by John and Mary.

While either (15) or (15") might be used both if the two people saw the same explosion or each of them saw a different one, the (only, or at least preferred) interpretation of (15') is that the two people saw the same explosion (meaning: there was an explosion John and Mary saw) even though the order of elements in the surface shape of (15') and (15") is the same.

5.3. Sentence prosody

Examples such as (7) and (16) illustrate that sentence prosody, especially the placement of the intonation centre, is as an important way of expression of the TFA differences as word order is. In this respect, the pioneering analyses of M.A.K.Halliday have to be mentioned (dating as back as to Halliday 1967, see his example (7)); it was probably him who first 'exported' the issues relevant for information structure to the other side of the Atlantic. This might be attested by Chomsky's (1965; this example was used for the first time in Chomsky 1957) first reference to 'topic' as a possible source of the semantic distinction between the active sentence (16) and its passive counterpart (16'); the intonation center is assumed to fall on the last word of the sentence.

(16) Everybody in this room knows at least two languages.
(16') At least two languages are known by everybody in this room

Also, it should be acknowledged that in his paper on presupposition and focus as related to his notions of deep and surface structure, Chomsky (1971) consistently took into consideration the position of intonation center (giving it a special graphic notation by capitals). This respect to the prosodic expression is most perspicuously reflected in the above mentioned doctoral dissertation on 'association with focus' by Rooth (1985).

The issues related to the notion of 'association with focus' and its assumed acoustic realization by a pitch accent are connected with such expressions as English 'only', 'also', even'. As indicated by the name of the category of these particles (rhematizers by Firbas, or focusing or focus sensitive particles or focalizers by Rooth, Partee and others), the question can been raised whether these particles always stipulate association with a focused element in their scope, or whether there are contexts in which they can occur without such an association. The dialogue (17) (quoted from Hajičová, Partee and Sgall 1998, p. 153) supports the view that an association of these particles with the Focus of the sentence is not necessarily the case.

(17) A. Everyone already knew that Mary only eats vegetables.
B. If even Paul knew that Mary only eats vegetables, then he should have suggested a different restaurant.

In (b), there are two 'focalizers': one of them, the particle *only*, is associated with the material repeated from the first sentence (A) of the dialogue, the second is the particle *even*. Such a complex situation is referred to in linguistic literature as "second-occurrence focus", SO (for a most recent discussion, see Beaver et al. 2007). It has been empirically testified by Bartels (1997) that the realization of second-occurrence focus (on several acoustic dimensions) is dif-

ferent from the "regular' focus; in a follow-up production experiment reported in Beaver et al. (2007), it was confirmed that not only the SO focus is marked differently from the 'regular' focus but that it is also differs acoustically from the non-focused expressions. In Hajičová, Partee and Sgall (1998), the authors therefore differentiate focus of the focusing particle (i.e. its scope) from the Focus of the sentence (i.e. the part of the sentence the sentence is 'about'). In terms of the above mentioned tripartite structures, the analysis of a complex sentence with two focusing particles is as indicated in (18). If the operator is included in Topic, its own focus (which differs from the sentence Focus in such marked cases) does not cross the boundary between the Topic and the Focus of the sentences.

(18) (What did even PAUL realize?) Even Paul realized that
Jim only admired MARY.

(18') O ASSERT, R (O even, R realized, N Paul), N (O only, R Jim admired, N Mary)

It is, of course, not only the position of the intonation center that should be taken into account in the analysis of TFA. The studies on contrastive topic (see e.g. Hajičová and Sgall. 2004, Veselá, Peterek and Hajičová 2003) covering also instances of the above-mentioned 'second-occurrence focus' convincingly support the view that one should consider the whole intonation contour of the sentence (its F0 characteristics) when deciding on the status of the given elements of the sentence in its TFA. For a very inspiring general discussion of the relation between syntax and prosody see Selkirk (1984; 1995).

It should be noted in the connection of the discussion of the prosodic means of TFA, that it is not always the case that the most dynamic element of Focus is to be prosodically marked: Firbas (1992, p. 176) quotes the English sentence (19) as an example of an 'automatic placement' of the intonation center at the end of the sentence even if it is the subject which is 'rhematic' rather than the end of the sentence.

(19) A boy came into the room.

It is worth mentioning that due to the fact that the grammatically fixed word order of English does not allow to linearly order the elements of a sentence so as to reflect the information structure of the sentence (its CD), even the written form of English has a means to indicate the position of the intonation center in the sentence, namely the use of italics.This has been observed already by Alena Skaličková in the 1970's; her observation reoccurred, surprisingly enough, in a paper by Saldanha (2007), analyzing the use of italics to mark focus in English translations of Spanish and Portugese original texts.

5.4. Syntactic constructions

The best known example of a syntactic construction used as the means of rendering the information structure of an English sentence are the so-called cleft constructions. It is a commonly accepted assumption that the *it*-clefts (in contrast to the pseudo-clefts, sometimes referred to as *wh*-clefts) make it possible to 'prepose' the rhematic element and thus to give it some kind of prominence; the rest of the sentence is then understood as being in a kind of 'shadow', backgrounded. The 'preposing' of the focused element is prototypically accompanied by placing the intonation center on this element. A typical example is (20); as its translation to Czech

in (20') illustrates, there is no need to use a specific construction in Czech (unless in a special emphatic situation), a simple reordering of the elements of the sentence is enough.

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

(20') S málo děvčaty mluvil o mnoha problémech HONZA.

Lit. With few girls talked about many problems John-Nominative

Though the above interpretation of the cleft constructions is the one prevailing in linguistic literature on English, it is not the only possible one. As recalled by Dušková (1993), Quirk et al. (1985, p.1379) offer the interpretation of 'divided focus'; the authors assume that the decision which of the two items of 'focus' is dominant ('new') depend on the context. Dušková (1993) compares their example (21) with (21') and suggests that in (21') Frost as the rheme of the it-clause gets more prominence and thus can be regarded as dominant, while in (21) the dominant item is the that-clause.

(21) They hoped that Herbert Frost would be elected and Frost indeed it was that topped the poll.

(21') They hoped that Herbert Frost would be elected and it was indeed Frost that topped the poll.

Cleft constructions may also serve as an additional support for the view that not only the division of the sentence into its Topic and Focus, but also the degrees of communicative dynamism as such play their role in the semantic interpretation of the sentence.

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

(22') O mnoha problémech mluvil s málo děvčaty HONZA.

Lit. About many problems talked with few girls John-Nominative

The interpretation (at least the preferred one) of (20) suggests that there was a group of few girls with which John talked about many problems, not necessarily the same set of many problems. For (22), the (preferred) interpretation suggests that there was a (single) set of many problems about which talked with few girls (not necessarily a single group of girls).

5.5. Morphemic means

To make the repertoire complete, information structure may be also rendered by morphemic means. There belong the notorious example of the Japanese particles wa and ga discussed in linguistic literature since Kuno's (1972; 1973) pioneering analysis of the function of these particles in the information structure of Japanese (most recently, the thematic function of 'wa' was discussed e.g. by Fukuda 2003).

There are many other examples of languages where morphemics serves as (one of the means of expression) of information structure quoted in linguistic literature up to now, let me only give two of them mentioned by Novák (1974, p. 177) referring also to Dahl (1959). Information structure is expressed obligatorily and by using morphological means in Yukaghir, a Paleo-Asiatic language (Krejnovič 1958). There are three series of forms for each transitive verb there (distinguished from one another by the presence or absence of personal inflection, by morphological exponents, and by the presence or absence of certain prefixes) which are used whether the rheme-component coincides with the subject of the verb, or its object, or the verb

itself, respectively. In addition, a suffix is attached to the subject or object under conditions that pertain to the distribution of the rheme. In Tagalog, an Indonesian language, the theme of the sentence is distinguished by means of certain particles (articles) and word order; the syntactic roles of the given participants are indicated by an appropriate from of the verb (Bowen 1965).

6. Conclusions

In the present contribution we argue that (i) topic-focus articulation as a semantically relevant language phenomenon is an integral part of the description of the sentence at the underlying level of language description (Sect. 4.), (b) that as such, TFA belongs to 'langue', to the language system rather than to parole understood as the domain of communication and discourse, as sometimes claimed. From the point of view of the function - form relation as postulated by the Prague School scholars (shortly recapitulated in Sect. 1 of the present contribution) it is then not precise to characterize TFA (or FSP, for that matter) as an interplay of four factors, namely context, semantics, linearity, intonation (as continuously characterized by Firbas and his followers).

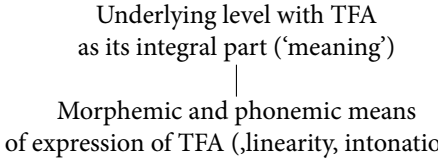

Figure 1.

While linearity and intonation (together with syntactic and morphemic means) belong to the side of 'means' or 'forms' in the hierarchy (see Fig. 1), the other two 'factors', namely the 'semantic' one (including the presentation scale: setting – presentation – phenomenon presented and the quality scale: setting – quality bearer – quality – specification(s)) and the contextual factor are of a different nature. They, of course, may help the linguist to determine what is the TFA of the sentence s/he examines (or whether the sentence is ambiguous); for the participants of the discourse the TFA of a sentence is relevant both for the suitability of the sentence for this or that context (from the point of view of the speaker) and for its semantico-pragmatic interpretation (from the viewpoint of the addressee (see Sgall 2003, p. 281).

Note: Parts 4.1 and 4.2 of the present contribution are modified and substantially enlarged versions of Sect.2 and 3.1, respectively, of Hajičová (2007).

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