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THEORETICAL LINGUISTICS PROGRAMME, BUDAPEST UNIVERSITY (ELTE)

**DOCSYMP 2:  
GRADUATE STUDENTS' SECOND  
LINGUISTICS SYMPOSIUM**

June 6, 1997, Budapest

— SELECTED PAPERS —

RESEARCH INSTITUTE FOR LINGUISTICS, HUNGARIAN ACADEMY OF SCIENCES

WORKING PAPERS IN THE THEORY OF GRAMMAR, VOL. 5, No. 2

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27 841 / 2000



## Editor's Note

This is the second volume in the (hopefully long) row of published proceedings of Docsymp (Doctoral Students' Linguistics Symposium) organized by the Theoretical Linguistics Doctoral School of Eötvös Loránd University, Budapest. The present collection of papers derives from the 2nd Docsymp, held on the premises of Eötvös Loránd University, in June 1997.

As opposed to the publishing practice of the 1st Docsymp, this time the organizers, on whose behalf my humble self acts now as volume editor, decided that the papers sent in by the students who had given talks at the symposium, be filtered by official reviewing, in order to ensure a certain quality of the material to be published. Thus what the reader is holding in his/her hands now is a selection of the papers submitted, and the papers themselves have in many cases been rewritten on advice from the reviewers, for the benefit of the overall standard. This is also the main reason for the slight delay in getting the volume out. Therefore it is my immediate task now to express our gratitude towards the people who undertook the responsibility to carry out the job of reviewing (in alphabetical order):

Zoltán Bánréti, Beáta Gyuris, Levente Juhász, László Kálmán, Ferenc Kiefer, Enikő T. Németh, Mark Newson, Péter Siptár, Tamás Terestyéni, Gabriella Tóth, Viktor Trón,

(The obligations of generally expected modesty have forced me to drop my own name from the list.)

This time, contributions cover an impressively wide range of specialization fields within linguistics: There are papers on syntax (Dalmi, Surányi), semantics (Gyuris, Czeglédi, Csillag, Ábel, Pólya), morphology (Amiridze), phonology (Filipov), as well as psycholinguistics (Racsmány & Király, Kormos), and discourse analysis (Csölle), but some of the papers indeed belong to more than one of these categories.

The papers appear alphabetically ordered according to the authors' last names, as prepared and "camera-ready-made" by the authors, and the copyright belongs to the authors as well.

The 2nd Docsymp was made possible by financial help from OSI/HESP, and the Research Institute for Linguistics, Hungarian Academy of Sciences. For the organization of the symposium we are most grateful to the following people:

Károly Varasdi, in the first place, who acted as the chief organizer;

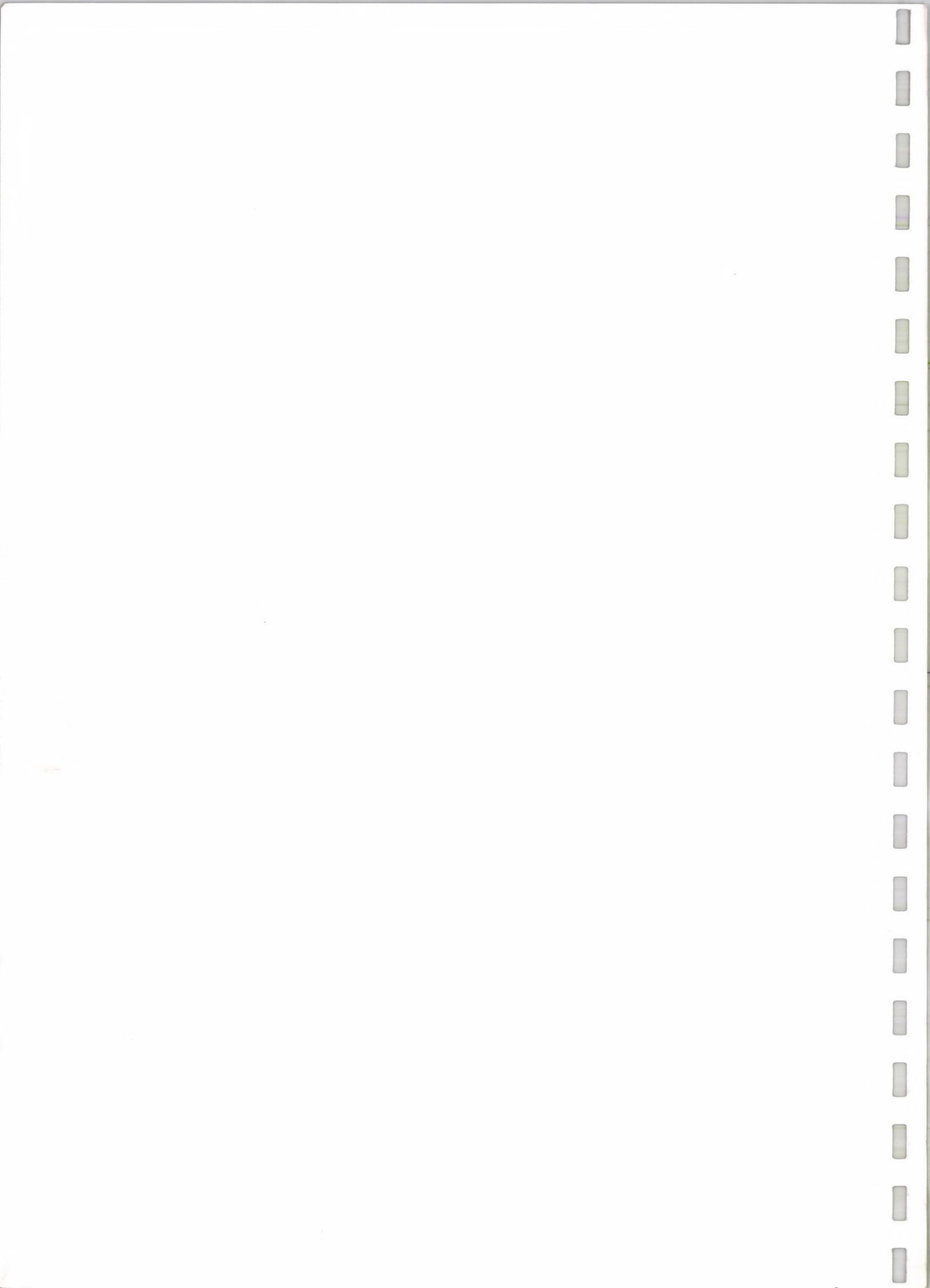
Ágnes Bende-Farkas, who offered all her experience stemming from her organizational duties of the 1st Docsymp; and

Kinga Gárdai (ELTE TLP) and Mari Hanzséros (ELTE SEAS ELD), for their technical and organizational assistance.

April, 1998.

Huba Bartos



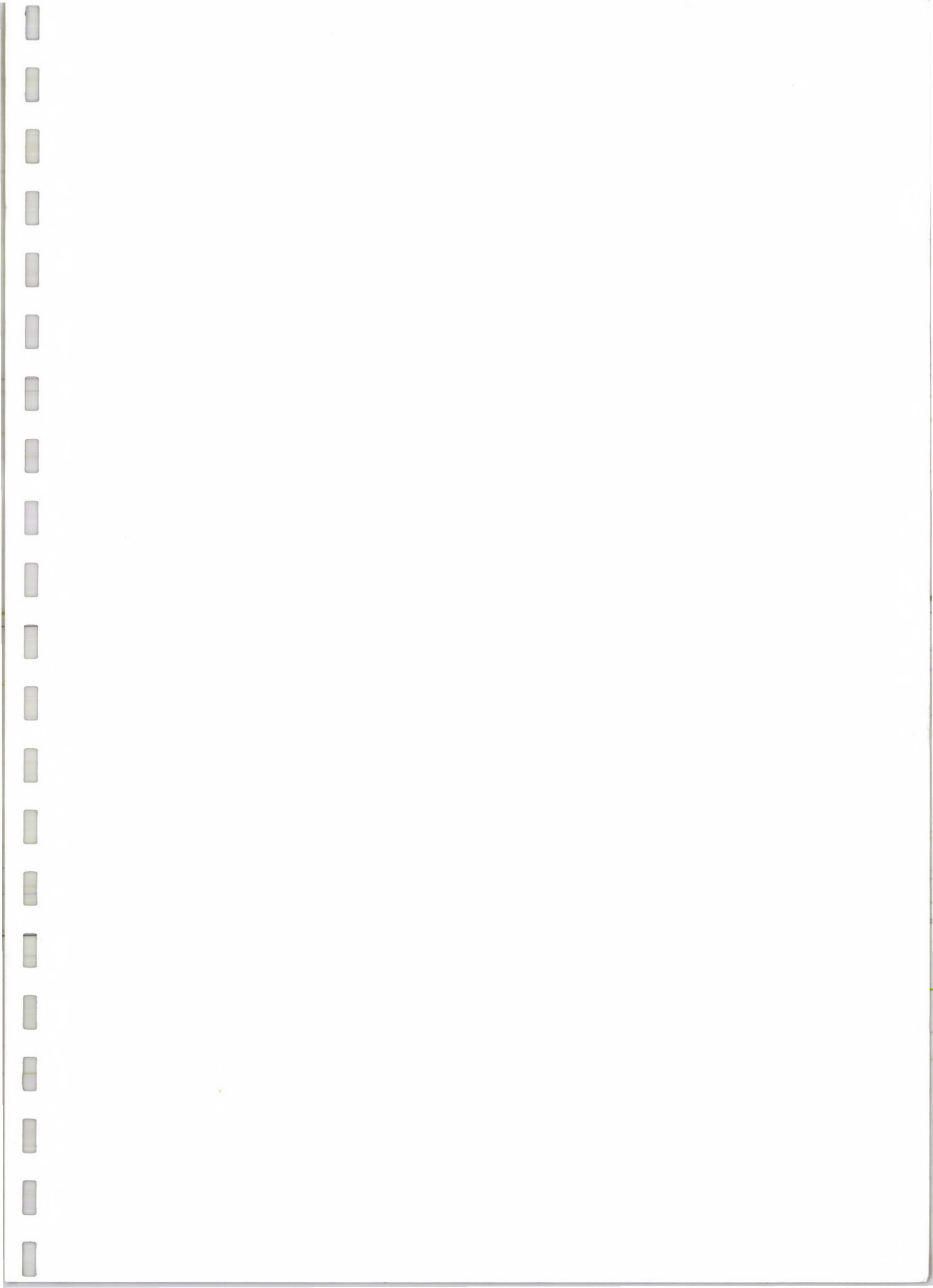




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# EPISTEMIC MODALITY AND PRESUPPOSITIONS WITH DEFAULT LOGIC

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## 1. INTRODUCTION

The interaction of epistemic modality and presuppositions seems to be a rather marginal issue in current linguistics. Each of these topics has its own extensive literature but together they have not been examined frequently. In this paper I will try to examine this neglected topic and find some explanation for the observations made.

In section 2 we will examine the question whether the modal operator *may* is transparent to presuppositions. Setting off from some observations of the literature I will distinguish a special class of presuppositions where modality plays a crucial role. I will also show that the emergence of these - as I coin them - modal presuppositions is entirely dependent on presuppositional triggers. Section 3 is devoted to the phenomenon of presupposition cancellation. I will show that presuppositions of sentences with epistemic *may* and *may not* peculiarly cannot be cancelled at all, whereas sentences with epistemic *must* and *cannot* in this respect behave exactly like their non-modal counterparts. In section 4 I give a brief introduction to the framework that seems to be appropriate for treating the problems mentioned so far. This is that of Mercer (1992). The inferential view presented in that paper making use of default logic is able to treat presupposition cancellation in a satisfactory way. In section 5 I propose an extension of this framework by some additional rules that will make it capable of treating modal aspects of presuppositions as well.

## 2. PRESUPPOSITION PROJECTION AND MODALITY

### 2.1. IS *MAY* A PRESUPPOSITIONAL HOLE ?

Some consider the question almost trivial, for instance Soames (1982) writes:

"One way of thinking about this is to see the presupposition of the positive sentence as *projected onto*, and hence, *inherited by* utterances of its negative counterpart. Such projection is by no means limited to negation. Typically, utterances of interrogatives, epistemic modals /.../ inherit the presuppositions of their sentential constituents." (p. 428)

The example Soames (1982) gives for epistemic modals is the following:

(1) Maybe it's Lauri who has solved the projection problem.

(1) contains the cleft sentence (2) as its sentential constituent:

(2) It is Lauri who has solved the projection problem.

Soames (1982) contrasts the pair (1) and (2) with the pair of (3) and (4):



- (3) Maybe Lauri has solved the projection problem.  
 (4) Lauri has solved the projection problem.

Although both (2) and (4) entail (5) only (2) presupposes it.

- (5) Someone has solved the projection problem.

Therefore (1) inherits the presupposition in (5), whereas (3) has nothing to inherit. The argument with these examples in Soames (1982) seems to show that presupposition projection into modal contexts is a pretty straightforward matter. However, as we will later see, the question is a bit more complicated.

Nevertheless it is not only Soames (1982) who claims that the interaction of presupposition and epistemic modality poses no serious problems at least on the empirical level. Recently Geurts (1996) claimed something very similar:

"Negation, as we have seen, is transparent to presuppositions: not p is defined iff p is, and I assume that the same would hold for modal operators such as *possible*, although officially our language doesn't contain any." (p. 268)

More emphatically in footnote 7 to the very sentence quoted above Geurts (1996) calls it a fact that *possible* is a presuppositional hole.

There are others who consider the matter less uncontroversial. For instance Heim (1983) in her final remark writes:

"Many non-trivial aspects of presupposition projection could not even be alluded to in this paper, e.g., the heritage properties of 'or,' modal operators, and propositional attitude verbs. As for the latter two, I expect that the present approach will make reasonable predictions when combined with a treatment of modality in terms of quantification over possible worlds. But I don't expect my readers to take this on faith." (p. 404)

Since then she proposed a treatment for attitude verbs and presupposition projection in Heim (1992) but so far nothing for modality.

There are observations as early as Karttunen (1973)'s showing that presupposition projection in modal context is far from a trivial matter. Karttunen (1973) examines factive verbs (like *know*, *regret*, *discover*, *realize*) and draws a distinction between two kinds of them along the lines of two kinds of presupposition relations. One group of factives are labelled full factives, and include *regret*, *forget*, *resent*; the other labelled semi-factives include *realize*, *discover*. In the case of full factives it is not only an assertion or denial of the proposition that *x V's that P* requires the presupposition but also the supposition that *x V's that P* in the antecedent of a conditional, or the claim that the proposition might be true. In the case of semi-factives on the other hand, it is only the assertion or denial that require the presupposition.

Translating this to our terminology used above<sup>1</sup> modal operators with full factives are transparent to presuppositions (i.e. sentences combining them always inherit the relevant presuppositions). On the other hand modal operators with semi-factives are not transparent to

<sup>1</sup> And also ignoring conditionals for the purposes of the present paper.



presuppositions (i.e. sentences combining them do not inherit the presuppositions). Let us clarify this with some examples<sup>2</sup>:

- (6) a. Bill regrets that he hurt Mary.
- b. Bill may regret that he hurt Mary.
- (7) a. Bill realized that he hurt Mary.
- b. Bill may realize that he hurt Mary.
- (8) Bill hurt Mary.

Intuitively both (6a) and (6b) presuppose (8). The same holds for (7a). But (7b) does not presuppose (8), the modal operator here is not transparent to the presupposition in (8). It might be the case that Bill did not hurt Mary after all.

## 2.2. MODAL PRESUPPOSITIONS

Now taking the above observation as our starting point let us depart from the argument in Karttunen (1973) and say that the presupposition of (7b) above is something like (9)<sup>3</sup>:

- (9) Bill may have hurt Mary.

Notice that the negation of (7b) in (10) below also presupposes (9):

- (10) Bill may not realize that he hurt Mary.

Furthermore I claim that even factive verbs like *regret* (which are full factives) may have presuppositions like in (9), which kind from now on I will call **modal presuppositions**<sup>4</sup>. Take (11) for instance:

- (11) a. Bill regrets that he may have hurt Mary.
- b. Bill does not regret that he may have hurt Mary.

It is evident that both (11a) and (11b) also presuppose (9). However, there is an apparent contrast between the two pairs (11a)-(11b) and (7b)-(10). In (11a) and (11b) the modal operator appears inside the complement sentence of the factive verb, therefore its scope is restricted to the complement. In the other pair the modal operator appears outside the complement sentence of the factive verb, yet the epistemic modal operator can also take its scope inside the complement. That is, (7b) can mean something like (12):

- (12) Bill may realize that he may have hurt Mary.

The previous examples showed that both full factives (like *regret*) and semi-factives (like *realize*) can have modal presuppositions. The crucial difference between them is that with full factives the modal operator must appear inside the complement to have a modal presupposition (like in (11)). If the modal operator is outside the complement, modality will not change the presupposition: it will be the same in the non-modal and modal sentences as well (as in (6a) and

<sup>2</sup> Note that these examples are not taken from Karttunen (1973), but have been created by the author of the present paper along the lines of Karttunen (1973).

<sup>3</sup> Recall that I am concerned only with epistemic modality in the present paper.

<sup>4</sup> This kind of presupposition is very similar to what Soames (1982) calls a non-committal presupposition.



(6b)). In the case of semi-factives on the other hand, modal presupposition arises even if the modal operator is outside the complement (like in (7b) and (10)).

I have shown that sentences with factive verbs can have modal presuppositions. Now we should take a look at some sentences with other presuppositional triggers. First let us return to our very first example repeated here as (13):

(13) Maybe it's Lauri who has solved the projection problem.

Here the modal operator is outside the whole cleft sentence and, as we have seen earlier, (13) has a non-modal presupposition. But if I put the modal operator inside the cleft clause like in (14a) its presupposition will be a modal presupposition shown in (14b):

- (14) a. It is Lauri who might have solved the projection problem.  
b. Maybe someone has solved the projection problem.

So it seems that cleft sentences, just like sentences with factives, can have modal presuppositions. To refine this parallelism: clefts behave in a similar way to full factives - the modal operator cannot change the presupposition from outside, only from inside.

Now let us turn our attention to pseudo-clefts. Consider the following sentences:

- (15) a. What John destroyed was his typewriter.  
b. Maybe what John destroyed was his typewriter.  
c. What John destroyed may have been his typewriter.  
d. What John may have destroyed was his typewriter.  
(16) a. John destroyed something.  
b. Maybe John destroyed something.

(15a), (15b) and (15c) all presuppose the non-modal (16a). (15d), in which the modal operator appears inside the wh-clause, presupposes the modal (16b).

It is time to make some generalizations on what have been observed so far. Modal presuppositions can arise with the following presuppositional triggers: factive verbs, cleft sentences and pseudo-clefts. What is common in all these constructions is that they contain some kind of (complement) clause where the modal operator can appear overtly, thus changing the presupposition into a modal one.

Let us look at some other presuppositional triggers and see if they can fit into this group. One promising candidate is the group of aspectual triggers like *stop*, *continue*. But consider:

- (17) a. John stopped smoking.  
b. Maybe John stopped smoking.  
c. John may have stopped smoking.  
(18) a. John used to smoke.  
b. Maybe John used to smoke.

All (17a), (17b) and (17c) presuppose the non-modal (18a), and none of them the modal (18b). The explanation might be that the modal operator cannot appear inside the complement of the aspectual verb, because the complement here is a non-finite construction as opposed to the finite complements of factives, clefts and pseudo-clefts.

Bearing this in mind no wonder that the following presuppositional triggers do not allow modal presuppositions either:



- (19) a. Eugene met my wife again.  
 b. Maybe Eugene met my wife again.  
 c. Eugene may have met my wife again.  
 d. Eugene has met my wife before.
- (20) a. Kirk is guilty, too.  
 b. Maybe Kirk is guilty, too.  
 c. Kirk may be guilty, too.  
 d. Someone other than Kirk is guilty.
- (21) a. The king of Reilda is bald.  
 b. Maybe the king of Reilda is bald.  
 c. The king of Reilda may be bald.  
 d. There is a king of Reilda.

All the (a), (b) and (c) sentences presuppose the respective non-modal (d) sentences. From a syntactic point of view these triggers are very different from the ones that allow modal presuppositions, and no one can deny that the rough generalization above has a strong syntactic flavour. Yet it is by no means a pure syntactic criterion - rather it might be placed somewhere along the syntax-semantics interface. Let us repeat our generalization slightly reformulated in this spirit. Presuppositional triggers that allow modal presuppositions all have a (complement) clause where the semantic content of the presupposition is quite explicitly expressed. It is this complement where the modal operator can be placed<sup>5</sup> thus making the presupposition modal.

This is a rather simple yet non-trivial generalization. If we want to incorporate it into a framework to account for the data above, we must be able to make a distinction among presuppositional triggers. We have to pick a framework that is able to model the variety of triggers. Let us keep this in mind and turn to another matter.

### 3. PRESUPPOSITION CANCELLATION AND EPISTEMIC MODALITY

#### 3.1. PRESUPPOSITION CANCELLATION

Presupposition cancellation is a phenomenon that can arise for instance in negative sentences. Consider the following examples taken from Mercer (1992):

- (22) a. Mary regrets that Fred left.  
 b. Mary does not regret that Fred left.  
 c. Fred left.

Both (22a) and (22b) presuppose (22c). However there is a simple way to indicate that negation is not to be interpreted normally, which also shows that the presupposition is no longer valid:

- (23) Mary does not regret that Fred left because he didn't leave.

Notice that the same cannot be done with the affirmative sentence:

- (24) \* Mary regrets that Fred left but he didn't leave.

<sup>5</sup> In most cases the modal operator must be there overtly, as we have seen the only sub-group that is content with covert placement is semi-factives. This distinction is an intriguing problem that I cannot account for here.



This indicates that we have to be able to differentiate between two kinds of relations: one that holds between the affirmative sentence and the presupposition (see (22a), (22c) and (24)) and another that holds between the negative sentence and the presupposition (see (22b), (22c) and (23)).

One way to grasp this difference is the so-called inferential view of presupposition followed by Mercer (1992). He makes a distinction between two kinds of inferences:

"*Entailments* of natural language utterance are those inferences derivable from the utterance which are true whenever the sentence is true. *Presuppositions* are those inferences, generated from a number of linguistic contexts, which pass a negation test, that is, being implied by the context and the preferred (or natural) interpretation of its simple negation."

Returning to our above examples: (22a) entails (22c), whereas (22b) presupposes (22c). Entailment is a monotone inference - therefore (24) is incorrect. Presupposition is a non-monotone inference, it can be overridden - so (23) is correct.<sup>6</sup>

### 3.2. EPISTEMIC *MAY*, *MAY NOT*

Now let us examine how presupposition cancellation works with epistemic modals. First we add *may* to the above example:

(25) \* Mary may regret that Fred left but he didn't leave.

It seems that (25) similarly to its non-modal counterpart (24) is incorrect. Next consider the modal pair of (23) which is a negation of (25):

(26) ?\* Mary may not regret that Fred left because he didn't leave.

Contrary to the previous affirmative pair (i.e. (24) and (25)) here the modal operator does change the grammaticality of the sentence: (26) is infelicitous as opposed to the non-modal (23).

Now we shall test whether we get the same results with a representative of the other kind of presuppositional triggers (recall that the definite article belongs to the group of triggers that do not allow modal presupposition as opposed to factives, see 2.2.):

(27) a. \* The present king of Reilda is bald; Reilda is a republic.

b. The present king of Reilda is not bald; Reilda is a republic.

(28) a. \* The present king of Reilda may be bald; Reilda is a republic.

b. ?\* The present king of Reilda may not be bald; Reilda is a republic.

Indeed we get the same results as above. So it seems in case of presupposition cancellation it does not matter what kind of presuppositional trigger the modal sentence contains.

To sum up what we have seen so far it appears that non-modal affirmative sentences do not allow presupposition cancellation (e.g. (27a)), while non-modal negatives do allow (see (27b)). This fact, we already knew. But (28a) and (28b) show that modal sentences with *may* either positive or negative do not allow presupposition cancellation (cf. also (25) and (26)). It is

<sup>6</sup> This technical distinction in the terminology between entailments and presuppositions has not been used in the present paper so far but from now on it will be followed when necessary.



quite easy to see why this is so. Uttering *may p and not p*, or uttering *may not p and not p* can only be acceptable if the speaker's information has changed between the two conjuncts of the utterances. For instance it is exactly utterances like these which Groenendijk et al (1994) calls unacceptable because they are consistent but not coherent (see the definitions there). Of course our case is a bit more complicated, since we deal with presuppositions and not with propositions alone.

### 3.3. EPISTEMIC *MUST*, *CANNOT*

Now let us turn to the other epistemic modal operator: *must*, and examine how it works with cancellation:

- (29) a. \* The present king of Reilda must be bald; Reilda is a republic.  
b. The present king of Reilda cannot be bald; Reilda is a republic.

It appears that sentences with *must* behave in the same way as their non-modal counterparts. To confirm this let us try *must* with our other example:

- (30) a. \* Mary must regret that Fred left but he didn't leave.  
b. Mary cannot regret that Fred left because he didn't leave.

So we can conclude that while *may* blocks presupposition cancellation, *must* is transparent to it. That is *must* in positive sentences forbids cancellation - just like non-modal affirmatives, however in negative sentences (where it appears as *cannot*) - as in non-modal negatives - cancellation is allowed.

This generalization, we will also have to incorporate into our framework by defining the epistemic modal operators in an appropriate way.

## 4. DEFAULT LOGIC FOR PRESUPPOSITIONS

In the previous sections we have seen a number of characteristic features of presuppositions and related phenomena. One framework that seems to be especially suitable to account for them is the already mentioned inferential view of Mercer (1992). In this section I will briefly introduce<sup>7</sup> this framework which is able to treat non-modal aspects of presupposition projection and cancellation. In the next section I will attempt to show that by making a few extensions to this frame, we will be able to account for the modal aspects of the above mentioned phenomena as well.

### 4.1. THE FRAMEWORK

The basic model of communication is the transfer of information from  $KB_S$ , the speaker's knowledge base, to  $KB_H$ , the hearer's knowledge base. There are certain simplifying assumptions made for the purposes of the paper. Firstly, we consider only declarative sentences, which the speaker uses to communicate facts. Secondly, only additions to  $KB_H$  are considered, that is we

<sup>7</sup> Note that the examples, explanations and definitions are all taken from Mercer (1992). However, because of the necessary slight modifications and reductions for the purposes of the present paper, they cannot be treated as direct quotations, though they are nearly such.



assume that the speaker intends  $KB_H$  to be updated with the logical form of the sentence uttered. Thirdly,  $KB_H$  is a set of logical statements, a theory. As we are not trying to model discourse, the only statement known to exist in  $KB_H$  is the one just communicated. Fourthly, the semantic portion of the meaning of the sentence is represented as say a formula  $\beta$  in standard first order language. There is a pragmatic portion of the utterance to be captured as  $K_S\beta$ , where  $K_S$  means 'the speaker knows that'. This pragmatic portion also includes the so called clausal quantity implicatures of Gazdar (1979) which are based upon Grice's maxim of quantity. Sentences 'A or B' and 'If A then B', where 'A' and 'B' are not compound, have the potential clausal quantity implicatures (where  $P_S$  means 'for all the speaker knows it is possible that', and  $P_S = \sim K_S \sim$ ):  $P_S A$ ,  $P_S \sim A$ ,  $P_S B$ , and  $P_S \sim B$ .

If  $u$  is the sentence uttered and  $\beta$  its semantic representation, then  $G(u)$  represents  $K_S\beta$  and the clausal quantity implicatures generated from  $u$ . The hearer's interpretation of an utterance should also include inferences generated from the sentence uttered, knowledge about the world, and knowledge about language use. So, if the  $KB_H$  contains knowledge about the world and, for our purposes, default rules representing the hearer's linguistic knowledge about presuppositions, then the inferencing can be captured by taking the logical closure of  $KB_H \cup \{G(u)\}$ .

#### 4.2. DEFAULT RULES AND DEFAULT THEORIES

Knowledge about presuppositions is represented by default rules. A normal default rule is a rule of inference denoted:

$$(31) \frac{\alpha(x^n):\beta(x^n)}{\beta(x^n)}$$

where  $\alpha(x^n)$  and  $\beta(x^n)$  are all first order formulae whose free variables are among those of  $x^n = x_1, \dots, x_n$ . Intuitively, rule (31) can be interpreted as: for all individuals  $x_1, \dots, x_n$ , if the prerequisite  $\alpha(x^n)$  is believed and if  $\beta(x^n)$  is consistent with what is believed, then the consequent  $\beta(x^n)$  may be conjectured. The existence of presuppositional triggers is represented in these rules by adding a conjunct in the prerequisite of the rule. This conjunct is true only if the syntactic analysis finds the appropriate presuppositional trigger.

As we have said  $KB_H$  is represented as a theory. A default theory,  $\Delta$ , is composed of a set of first order formulae,  $W$ , and a set of default rules,  $D$ . The default rules extend the first order formulae with the consequents of the default rules. An extension,  $E$ , of a closed default theory is a fixed point having the following properties:

- i)  $W \subseteq E$
- ii) if  $E \rightarrow a$ , then  $a \in E$  ( $E$  is logically closed, that is,  $Th(E) = E$ , where  $Th$  is a fixed point operator defined by  $\rightarrow$ )
- iii) for each default,  $\frac{\alpha(x^n):\beta(x^n)}{\beta(x^n)} \in D$ , if  $\alpha(x^n) \in E$ , and  $\sim\beta(x^n) \notin E$ , then  $\beta(x^n) \in E$ .

Normal default theories always have an extension. Multiple extensions are produced when two defaults conflict. If a conflict occurs between a default and anything in the closure of  $W$ , then the consequent of the default rule is in no extension of  $\Delta$ .

#### 4.3. DEFAULT LOGIC AND PRESUPPOSITIONS



Now let us see how default rules are used to represent presuppositions. The meaning of *stop* can roughly be given as:

$$(32) \text{STOP}(e) = \exists t_1 \exists t_2. t_1 < t_2 \ \& \ \text{DO}(e, t_1) \ \& \ \sim \text{DO}(e, t_2)$$

Here  $e$  represents an event, and  $t_1$  and  $t_2$  are time parameters relevant to the event,  $e$ . Paraphrasing (32), an event stops if and only if there is a time,  $t_1$ , at which the event was being done and a later time,  $t_2$ , at which the event was not being done. By a simple wide-scoped negation of (32) the definition of *not stop* is given in (33):

$$(33) \sim \text{STOP}(e) = \forall t_1 \forall t_2. \sim(t_1 < t_2) \vee \sim \text{DO}(e, t_1) \vee \text{DO}(e, t_2)$$

In addition to this the default rule (34) also supplies part of the meaning of *not stop*:

$$(34) \frac{\sim \text{STOP}(e) \ \& \ \text{LF}(\text{STOP}, e): \exists t. \text{DO}(e, t)}{\exists t. \text{DO}(e, t)}$$

This default rule plays a crucial role in generating the preferred interpretation of *not stop*. The predicate *LF* (as anticipated in the explanation under (31)) is used to prevent the default rule from being used except in those cases in which the predication of *STOP* to the event  $e$  arises directly from the linguistic form, that is, the sentence.

Now suppose that a speaker utters (35):

(35) John stopped beating the rug.

The hearer can interpret this utterance as:

(36)  $K_S \text{STOP}(\text{BEAT}(\text{John}, r))$

The resulting default theory,  $\Delta_1$ , shown in (37), represents  $\text{KB}_H \cup \{(36)\}$ :

$$(37) \Delta_1 = \frac{\text{STOP}(\text{BEAT}(\text{John}, r)) \quad \text{STOP}(e) = \exists t_1 \exists t_2. t_1 < t_2 \ \& \ \text{DO}(e, t_1) \ \& \ \sim \text{DO}(e, t_2)}{\frac{\sim \text{STOP}(e) \ \& \ \text{LF}(\text{STOP}, e): \exists t. \text{DO}(e, t)}{\exists t. \text{DO}(e, t)}}$$

(38) can be derived from  $\Delta_1$  using the ordinary proof theory of First Order Logic, therefore it is an entailment of (35) (c.f. the distinction between presupposition and entailment in the previous section).

(38)  $\exists t. \text{DO}(\text{BEAT}(\text{John}, r), t)$

Now suppose that a speaker utters (39):

(39) John did not stop beating the rug.

The hearer can interpret it as:

(40)  $K_S \sim \text{STOP}(\text{BEAT}(\text{John}, r))$

The resulting default theory,  $\Delta_2$ , shown in (41) represents  $KB_H \cup \{(40)\}$ :

$$(41) \Delta_2 = \begin{array}{l} \sim\text{STOP}(\text{BEAT}(\text{John}, r)) \\ \sim\text{STOP}(e) = \forall t_1 \forall t_2. \sim(t_1 < t_2) \vee \sim\text{DO}(e, t_1) \vee \text{DO}(e, t_2) \\ \frac{\sim\text{STOP}(e) \& \text{LF}(\text{STOP}, e): \exists t. \text{DO}(e, t)}{\exists t. \text{DO}(e, t)} \end{array}$$

The presupposition of (39), shown in (42), can be derived from  $\Delta_2$  using Default Logic Proof Theory:

$$(42) \exists t. \text{DO}(\text{BEAT}(\text{John}, r), t)$$

However, this presupposition may be cancelled as in (43):

$$(43) \text{John did not stop beating the rug because he was never doing it.}$$

The cancelling clause is interpreted by the hearer as (44):

$$(44) K_S \forall t. \sim\text{DO}(\text{BEAT}(\text{John}, r), t)$$

and (44) added to  $\Delta_2$  results  $\Delta_3$ , shown in (45):

$$(45) \Delta_3 = \begin{array}{l} \sim\text{STOP}(\text{BEAT}(\text{John}, r)) \& \forall t. \sim\text{DO}(\text{BEAT}(\text{John}, r), t) \\ \sim\text{STOP}(e) = \forall t_1 \forall t_2. \sim(t_1 < t_2) \vee \sim\text{DO}(e, t_1) \vee \text{DO}(e, t_2) \\ \frac{\sim\text{STOP}(e) \& \text{LF}(\text{STOP}, e): \exists t. \text{DO}(e, t)}{\exists t. \text{DO}(e, t)} \end{array}$$

The cancelled presupposition (42) cannot be derived from  $\Delta_3$  because the invocation of the default rule is blocked by (44).

#### 4.4. CASE ANALYSIS

Case analysis in Default Logic Proof Theory is a key issue. Since a statement is provable in a case analysis only if it is provable in all cases representing the statement, the generation of cases is critical. As in a first order theory, too few cases would allow incorrect statements to be proved. Moreover, because of the context-sensitive nature of default logic, having too many cases or having inappropriately defined cases could prevent the desired statements being proved. The choice of cases must reflect two principles. Firstly, since the case analysis is a proof theoretic analogue of the model theoretic law of the excluded middle, each case must completely determine the truth values of each of the disjuncts found in the statement to which the case analysis is being applied. Secondly, since the case analysis here is justified solely on linguistic grounds, the cases must reflect this linguistic situation. To justify a case, the possibility of the statement that distinguishes the case must be provable from  $KB_H \cup \{G(u)\}$ .

Now let us see the proof-theoretic definition of presuppositions: Let  $u$  be a sentence uttered by a speaker,  $S$ , in accordance with Grice's Maxims of Cooperative Conversation. Let  $KB_H$  be the hearer's knowledge base before the utterance, and let the default theories  $\Delta_{u\text{Case}1}, \dots, \Delta_{u\text{Case}n}$  be the first order cases of the theory  $KB_H \cup \{G(u)\}$ . A sentence  $\beta$  is a presupposition of  $u$  with respect to  $KB_H$  if and only if



- (i)  $\Delta_u \text{Case}_i \rightarrow \Delta \beta$  and  $\beta \in \text{Th}(\text{CONSEQUENTS}\{D\})$ , for  $i=1, \dots, n$   
(ii)  $\text{KB}_H \cup \{G(u)\} \not\rightarrow \beta$   
(iii)  $\text{KB}_H \not\rightarrow \Delta / \beta$   
(iv)  $\Delta_u \text{Case}_i \not\rightarrow \Delta \sim \beta$  for  $i=1, \dots, n$

This definition can be loosely paraphrased as: if  $\beta$  is in the logical closure of the default consequents and is provable from the utterance, and all proofs require the invocation of a default rule and in the case of multiple extension default theories,  $\beta$  is in all extensions, then  $\beta$  is a presupposition of the utterance.

Let us see an example to clarify these ideas. Consider:

(46) Mary stopped beating the rug or John stopped beating the egg.

$T_4$  the  $\text{KB}_H \cup \{K_{Su}\}$ , shown in (47), is produced as a result of (46) being uttered:

$$(47) T_4 = \begin{array}{l} K_S[\text{STOP}(\text{BEAT}(\text{Mary}, r)) \vee \text{STOP}(\text{BEAT}(\text{John}, g))] \\ P_S \text{STOP}(\text{BEAT}(\text{Mary}, r)) \\ P_S \sim \text{STOP}(\text{BEAT}(\text{Mary}, r)) \\ P_S \text{STOP}(\text{BEAT}(\text{John}, g)) \\ P_S \sim \text{STOP}(\text{BEAT}(\text{John}, g)) \\ \text{STOP}(e) = \exists t_1 \exists t_2. t_1 < t_2 \& \text{DO}(e, t_1) \& \sim \text{DO}(e, t_2) \\ \quad \underline{\sim \text{STOP}(e) \& \text{LF}(\text{STOP}, e) : \exists t. \text{DO}(e, t)} \\ \quad \exists t. \text{DO}(e, t) \end{array}$$

The two statements described in (48) are derivable from  $T_4$ :

- (48) a.  $P_S[\text{STOP}(\text{BEAT}(\text{Mary}, r)) \& \sim \text{STOP}(\text{BEAT}(\text{John}, g))]$   
b.  $P_S[\sim \text{STOP}(\text{BEAT}(\text{Mary}, r)) \& \text{STOP}(\text{BEAT}(\text{John}, g))]$

The two cases of  $T_4$  distinguished by these statements are displayed in (49) and (50). Case analysis is applied to these two default theories.

$$(49) \Delta_{4.1} = \begin{array}{l} \text{STOP}(\text{BEAT}(\text{Mary}, r)) \& \sim \text{STOP}(\text{BEAT}(\text{John}, g)) \\ \text{STOP}(e) = \exists t_1 \exists t_2. t_1 < t_2 \& \text{DO}(e, t_1) \& \sim \text{DO}(e, t_2) \\ \quad \underline{\sim \text{STOP}(e) \& \text{LF}(\text{STOP}, e) : \exists t. \text{DO}(e, t)} \\ \quad \exists t. \text{DO}(e, t) \end{array}$$

$$(50) \Delta_{4.2} = \begin{array}{l} \sim \text{STOP}(\text{BEAT}(\text{Mary}, r)) \& \text{STOP}(\text{BEAT}(\text{John}, g)) \\ \text{STOP}(e) = \exists t_1 \exists t_2. t_1 < t_2 \& \text{DO}(e, t_1) \& \sim \text{DO}(e, t_2) \\ \quad \underline{\sim \text{STOP}(e) \& \text{LF}(\text{STOP}, e) : \exists t. \text{DO}(e, t)} \\ \quad \exists t. \text{DO}(e, t) \end{array}$$

Now let us see how the derivation proceeds in the two cases. In  $\Delta_{4.1}$  (51a) can be derived without the use of any default rules. The default rule and default proof theory are used to generate (51b):

- (51) a.  $\exists t. \text{DO}(\text{BEAT}(\text{Mary}, r), t)$   
b.  $\exists t. \text{DO}(\text{BEAT}(\text{John}, g), t)$



The conjunction of (51a) and (51b) gives (52). Note that (52) is derivable using default proof theory but not using first order methods alone:

$$(52) \exists t.D0(BEAT(Mary,r),t) \& \exists t.D0(BEAT(John,g),t)$$

The derivation of (52) proceeds in a similar manner in  $\Delta_{4.2}$ . Because (52) is derivable in both cases, and because it is not derivable as an entailment it is a presupposition of (46).

For the purposes of the present paper this much introduction to the framework should be sufficient. Now we are able to move on to our undertaken task and extend the framework to account for sentences with modal operators as well.

## 5. EPISTEMIC MODALITY AND DEFAULT LOGIC

### 5.1. EPISTEMIC MAY

Our first task is to incorporate *may* into our framework. There are several definitions for this modal operator in various frameworks. The common intuition behind them is something like this: if a speaker asserts *may p*, where *p* is any proposition, (s)he allows for the possibility of *p*. This intuition can be represented in our framework in a very straightforward way. We only have to use the same tool which we needed for treating disjunctions: Gazdar's clausal quantity implicatures. Recall what  $P_S$  means: 'for all the speaker knows it is possible that'. This is very similar to our intuition for *may*. In fact for our purposes here it will suffice to say that *may p* means: 'for all the speaker knows it is possible that *p*'. So we might accept the following very simple definition:

$$(53) \text{MAY}(p) = P_S p$$

Yet, this is not the whole information content of the epistemic modal operator. By Grice's Maxim of Quantity which is the basis of the clausal quantity implicatures employed in our framework (and in the above definition) when a speaker utters *may p* (s)he conversationally implicatures that (s)he does not know *p*<sup>8</sup>. Therefore (s)he allows for the possibility of  $\sim p$  as well. But of course this is only an implicature which can be overridden by the context. This pragmatic portion of the meaning of *may* can be captured in the following default rule<sup>9</sup>:

$$(54) \frac{P_S p: P_S \sim p}{P_S \sim p}$$

If a sentence *u* uttered contains *may p*, (53) will generate the statement  $P_S p$ . Whenever there is nothing in the context, which is in our case is  $KB_H \cup \{K_{S_u}\}$ , to prevent it, (54) will generate the statement  $P_S \sim p$ .

Now let us see how these rules work. Let us take example (6b) repeated here as (55):

(55) Bill may regret that he hurt Mary.

<sup>8</sup> It might be interesting to note that Beaver (1992) gives a quite similar "double" semantic-pragmatic intuitive characterization for the epistemic *may*.

<sup>9</sup> Notice that this default rule might be useful not only for *may* but for disjunctions like (46) above as well. For in cases like 'A or B' it is enough to generate the clausal quantity implicatures  $P_S A$  and  $P_S B$  and the default rule will do the rest.



To represent this sentence in our framework, we need to give the meaning of regret from Mercer (1992):

$$(56) \forall x. \text{REGRET}(x,p) \rightarrow p$$

We also need the default rule (57) to capture the presupposition of *regret*:

$$(57) \frac{\sim \text{REGRET}(x,p) \ \& \ \text{LF}(\text{REGRET},x,p):p}{p}$$

$T_5$  the  $\text{KB}_H \cup \{\text{K}_{Su}\}$ , shown in (58), is produced as a result of (55) being uttered:

$$(58) T_5 = \begin{array}{c} \text{K}_S \text{ MAY}(\text{REGRET}(\text{Bill}, \text{HURT}(\text{Bill}, \text{Mary}))) \\ \text{MAY}(p) = \text{P}_S p \\ \frac{\text{P}_S p : \text{P}_S \sim p}{\text{P}_S \sim p} \\ \forall x. \text{REGRET}(x,p) \rightarrow p \\ \frac{\sim \text{REGRET}(x,p) \ \& \ \text{LF}(\text{REGRET},x,p):p}{p} \end{array}$$

The two statements derivable from  $T_5$  which will distinguish the two cases of  $T_5$  are displayed in (59):

$$(59) \begin{array}{l} \text{a. } \text{P}_S \text{ REGRET}(\text{Bill}, \text{HURT}(\text{Bill}, \text{Mary})) \\ \text{b. } \text{P}_S \sim \text{REGRET}(\text{Bill}, \text{HURT}(\text{Bill}, \text{Mary})) \end{array}$$

(59a) is derived by rule (53), while (59b) is derived by the default rule (54). The two cases of  $T_5$  distinguished by these two statements are shown in (60) and (61):

$$(60) \Delta_{5.1} = \begin{array}{c} \text{REGRET}(\text{Bill}, \text{HURT}(\text{Bill}, \text{Mary})) \\ \forall x. \text{REGRET}(x,p) \rightarrow p \end{array}$$

$$(61) \Delta_{5.2} = \begin{array}{c} \sim \text{REGRET}(\text{Bill}, \text{HURT}(\text{Bill}, \text{Mary})) \\ \frac{\sim \text{REGRET}(x,p) \ \& \ \text{LF}(\text{REGRET},x,p):p}{p} \end{array}$$

In  $\Delta_{5.1}$  (62) is derivable without any default rules but in  $\Delta_{5.2}$  default rules are used to derive (62):

$$(62) \text{HURT}(\text{Bill}, \text{Mary})$$

According to Mercer (1992) (62) is an entailment of the non-modal counterpart of (55). But (62) cannot be an entailment of (55) itself, since in  $\Delta_{5.2}$  it is derived by a default rule. And recalling our proof-theoretic definition of presuppositions from the previous section (62) is not a presupposition of (55) either. Recall that the definition of presupposition requires the use of default reasoning in each case (c.f. condition (i) on page X). So it seems (62) is something inbetween: not an entailment, yet stronger than a presupposition. This is justified if we try to attach a cancelling clause to (55) as in (63):

(63) \* Bill may regret that he hurt Mary but he didn't hurt her.

(62) cannot be cancelled, this is why (63) is incorrect. The representation of this sentence in our framework is  $T_6$  which we get by adding (64) to  $T_5$ :

(64)  $K_S \sim HURT(Bill, Mary)$

$$(65) T_6 = \begin{array}{c} K_S \text{ MAY}(\text{REGRET}(\text{Bill}, \text{HURT}(\text{Bill}, \text{Mary}))) \\ \text{MAY}(p) = P_S p \\ \frac{P_S p: P_S \sim p}{P_S \sim p} \\ \forall x. \text{REGRET}(x, p) \rightarrow p \\ \frac{\sim \text{REGRET}(x, p) \ \& \ \text{LF}(\text{REGRET}, x, p): p}{p} \\ K_S \sim \text{HURT}(\text{Bill}, \text{Mary}) \end{array}$$

The two cases of  $T_6$  are displayed in (66) and (67):

$$(66) \Delta_{6.1} = \begin{array}{c} \text{REGRET}(\text{Bill}, \text{HURT}(\text{Bill}, \text{Mary})) \\ \forall x. \text{REGRET}(x, p) \rightarrow p \\ \sim \text{HURT}(\text{Bill}, \text{Mary}) \end{array}$$

$$(67) \Delta_{6.2} = \begin{array}{c} \sim \text{REGRET}(\text{Bill}, \text{HURT}(\text{Bill}, \text{Mary})) \\ \frac{\sim \text{REGRET}(x, p) \ \& \ \text{LF}(\text{REGRET}, x, p): p}{p} \\ \sim \text{HURT}(\text{Bill}, \text{Mary}) \end{array}$$

In  $\Delta_{6.2}$  the default rule is prevented from giving (62) by (64). However, in  $\Delta_{6.1}$  we do get (62) without using any default rule and  $\Delta_{6.1}$  also contains (64), so we get (68):

(68)  $HURT(Bill, Mary) \ \& \ \sim HURT(Bill, Mary)$

Since (68) is a contradiction, the incorrectness of sentence (63) it has been derived from is accounted for.

Now consider (69) the negation of (63) which is incorrect either:

(69) \* Bill may not regret that he hurt Mary because he didn't hurt her.

$T_7$  the  $KB_H \cup \{K_{Su}\}$ , shown in (70), produced as a result of (69) being uttered is almost identical to  $T_6$ :

$$(70) T_7 = \begin{array}{c} K_S \text{ MAY}(\sim \text{REGRET}(\text{Bill}, \text{HURT}(\text{Bill}, \text{Mary}))) \\ \text{MAY}(p) = P_S p \\ \frac{P_S p: P_S \sim p}{P_S \sim p} \\ \forall x. \text{REGRET}(x, p) \rightarrow p \\ \frac{\sim \text{REGRET}(x, p) \ \& \ \text{LF}(\text{REGRET}, x, p): p}{p} \\ K_S \sim \text{HURT}(\text{Bill}, \text{Mary}) \end{array}$$



The only difference is that here REGRET is negated just like in the sentence it is derived from. The two cases of T<sub>7</sub> are identical to those of T<sub>6</sub>, it is only their way of generation that is exchanged<sup>10</sup>:

$$(71) \Delta_{7.1} = \frac{\sim\text{REGRET}(\text{Bill}, \text{HURT}(\text{Bill}, \text{Mary}))}{\sim\text{REGRET}(x, p) \ \& \ \text{LF}(\text{REGRET}, x, p): p} \quad p$$

$$\sim\text{HURT}(\text{Bill}, \text{Mary})$$

$$(72) \Delta_{7.2} = \frac{\text{REGRET}(\text{Bill}, \text{HURT}(\text{Bill}, \text{Mary}))}{\forall x. \text{REGRET}(x, p) \rightarrow p} \quad p$$

$$\sim\text{HURT}(\text{Bill}, \text{Mary})$$

Since the cases are the same, we will get the same contradiction (i.e. (68)), so the incorrectness of (69) is accounted for as well.

Returning to our earlier terminological problem, that is what to call (62) in case of (55), our previous examples might have helped to solve it. Taking (63) and (69) into consideration we might say it is a special kind of presupposition: let us call it **uncancellable presupposition**. This is of course a departure from the terminology of Mercer (1992), as in that paper presuppositions are always cancellable, while uncancellable inferences are entailments. However, it seems that the introduction of the modal operator *may* has introduced a third kind of inference which does not fit exactly into either category. But this is not a problem, on the contrary, it reflects the peculiar way presupposition cancellation and the modal operator *may* interact. It seems that the two rules given for *may* in this section are able to capture the generalization of section 3. So, by incorporating these rules into the framework introduced in section 4, we can account for the data examined in section 3.

## 5.2. MUST

Now we should try to explain the rest of the data from section 3, that is sentences with *must*. The epistemic necessity operator is usually defined in terms of the other modal operator, that is: *must*  $p = \sim\text{may} \sim p$ . Let us see what we get if we apply this intuitive method to our rules for *may*:

$$(73) \text{MUST}(p) = \sim\text{MAY}(\sim p) = \sim\text{P}_S \sim p = \text{K}_S p$$

So *must*  $p$  means 'for all the speaker knows it is not possible that *not*  $p$ ', that is 'the speaker knows that  $p$ '. This is not against intuition. If a speaker utters *must*  $p$  the hearer can interpret this as the speaker knows that  $p$ . Notice that default rule (54) created to supply the definition of MAY will not be fired here as its prerequisite ( $\text{P}_S p$ ) is not met. This is exactly what we want because we are content with (73).

Now consider example (30a) from section 3 repeated here as (74):

$$(74) * \text{Mary must regret that Fred left but he didn't leave.}$$

The hearer can interpret (74) as (75a) which is by (73) is equivalent to (75b):

$$(75) \text{ a. } \text{K}_S \text{MUST}(\text{REGRET}(\text{Mary}, \text{LEFT}(\text{Fred}))) \ \& \ \sim\text{LEFT}(\text{Fred})$$

<sup>10</sup> In  $\Delta_{7.2}$  the statement  $\text{REGRET}(\text{Bill}, \text{HURT}(\text{Bill}, \text{Mary}))$  is derived by a default rule as opposed to  $\Delta_{6.1}$ .



b.  $K_S \text{ REGRET}(\text{Mary}, \text{LEFT}(\text{Fred})) \ \& \ \sim \text{LEFT}(\text{Fred})$

The resulting default theory,  $\Delta_8$ , shown in (76) represents  $\text{KB}_H \cup \{(75b)\}$ :

$$(76) \ \Delta_8 = \begin{array}{l} \text{REGRET}(\text{Mary}, \text{LEFT}(\text{Fred})) \\ \forall x. \text{REGRET}(x, p) \rightarrow p \\ \sim \text{LEFT}(\text{Fred}) \end{array}$$

$\Delta_8$  has an inconsistent extension, as it leads to the following contradiction:

$$(77) \ \sim \text{LEFT}(\text{Fred}) \ \& \ \text{LEFT}(\text{Fred})$$

So the incorrectness of (74) is explained. In terms of presupposition cancellation *must* is transparent, (74) behaves just like its non-modal counterpart.

Now consider the negation of (74) ((30b) in section 3):

(78) Mary cannot regret that Fred left because he didn't leave.

The hearer can interpret (78) as (79a) which is by (73) is equivalent to (79b):

- (79) a.  $K_S \text{ MUST}(\sim \text{REGRET}(\text{Mary}, \text{LEFT}(\text{Fred}))) \ \& \ \sim \text{LEFT}(\text{Fred})$   
 b.  $K_S \sim \text{REGRET}(\text{Mary}, \text{LEFT}(\text{Fred})) \ \& \ \sim \text{LEFT}(\text{Fred})$

The resulting default theory,  $\Delta_9$ , shown in (80) represents  $\text{KB}_H \cup \{(79b)\}$ :

$$(80) \ \Delta_9 = \begin{array}{l} \sim \text{REGRET}(\text{Mary}, \text{LEFT}(\text{Fred})) \\ \underline{\sim \text{REGRET}(x, p) \ \& \ \text{LF}(\text{REGRET}, x, p):p} \\ p \\ \sim \text{LEFT}(\text{Fred}) \end{array}$$

In (78) the presupposition (81) - that would normally arise without the second clause - is cancelled:

(81)  $\text{LEFT}(\text{Fred})$

We cannot derive (81) from  $\Delta_9$  as the invocation of the relevant default rule is blocked. We do not get any contradiction as opposed to the incorrect sentences, so the acceptability of (78) is accounted for as well as its lack of presupposition.

It seems that the rules for *may* and the rule derived from them for *must* is able to grasp the generalization of section 3, and account for the data described there. The peculiarity of *may* and the transparency of *must* with respect to presupposition cancellation can be captured by incorporating the rules proposed here into the framework of Mercer (1992). Certainly I am aware that I have taken a rather simplified view of epistemic modality here. However, for the purposes of this paper, for examining the interaction of epistemic modality and presuppositions, this view seems to be appropriate.

### 5.3. MODAL PRESUPPOSITIONS AND TRIGGERS



Now we have to account for the observations of section 2. There we said we needed a framework that is able to represent the variety of presuppositional triggers. This one conforms to this constraint by its very nature, since each trigger has its own default rule to generate its presupposition. All we have to do is to create the default rules in an appropriate way to capture the generalization of section 2.

Let us repeat the two default rules of the two presuppositional triggers we have used in this framework so far:

$$(82) \frac{\sim\text{REGRET}(x,p) \ \& \ \text{LF}(\text{REGRET},x,p):p}{p}$$

$$(83) \frac{\sim\text{STOP}(e) \ \& \ \text{LF}(\text{STOP},e):\exists t.\text{DO}(e,t)}{\exists t.\text{DO}(e,t)}$$

According to our categorization of section 2, *regret* allows modal presuppositions, whereas *stop* doesn't. Now let us recall our generalization of section 2. We concluded that presuppositional triggers that allow modal presuppositions all have a (complement) clause where the semantic content of the presupposition is quite explicitly expressed. It is this complement where the modal operator can be placed making the presupposition modal. Those presuppositional triggers that do not allow modal presuppositions lack this property. What we have to do is to find this difference in the two rules above. (82) must have a property corresponding to this generalization which is not present in (83). The key is the explicit expression of the presupposition in some complement of the trigger. This is represented in (82) by the presence of the same formula,  $p$ , both in the consequent and the prerequisite of the rule. That is the presupposition which is the consequent of the default rule is also present in the trigger itself which is described in the prerequisite of the rule. Examining (83) we can see that the formula in the consequent of the rule is not repeated in the prerequisite. That is, the presupposition is not explicitly expressed in the trigger.

On the basis of this observation we can extend the inventory of presuppositional triggers in our framework. For example clefts can be represented by the following rules:

$$(84) \begin{array}{l} \text{a. } \forall x.\text{IT-IS}(x,p) \rightarrow p \\ \text{b. } \frac{\sim\text{IT-IS}(x,p) \ \& \ \text{LF}(\text{IT-IS},x,p):p}{p} \end{array}$$

In (84) like in (82)  $p$  is a proposition, the difference being on the syntactic level that  $p$  in case of clefts is expressed in a *wh*-clause and not in a *that*-clause. Notice that the fact that clefts allow modal presuppositions is accounted for by the presence of  $p$  both in the consequent and the prerequisite of the default rule.

## 6. SUMMARY

In this paper I tried to examine the interaction of epistemic modality and presuppositions. It seems that this problem is a rather marginal one as the examples throughout the text suggest. Still the issue is worth taking notice of as the problems raised in sections 2 and 3 are far from trivial. I tried to account for these observations in section 5 by extending the framework of Mercer (1992) introduced in section 4.

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## BEYOND THE SLOT COMPETITION. ON VERBAL PERSON MARKING IN GEORGIAN

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### 1. INTRODUCTION <sup>1</sup>

In his paper on inflectional morphology Arnold M. Zwicky (1990) listing details of inflectional systems discusses so-called *slot competition* and as an example gives Georgian.

*Slot competition* means the following: in some instances where two inflectional rules are in competition with one another, in particular, because they call for the affixation of different phonological material in the same slot, only one of them wins the contest which is a language-particular fact.

In the above-mentioned paper Zwicky, as an example, discusses Georgian verb forms taking first person subject (S1) and 2nd person object (O2). Zwicky refers to Anderson (1986) where the formal markers *v-* (marking 1st person subject (S1)) and *g-* (marking 2nd person object (O2)) are considered as mutually exclusive by virtue of their 'competition' for the same formal position. But Zwicky misinterprets Anderson and makes *v-* prefix win this contest (as we guess, he considers subject more prominent than object) while the reverse is true of the co-occurrence of the arguments S1 and O2:

- |  |  |
|--|--|
| <p>(1)    <i>g--k'lav</i><br/>      O2-kill<br/>      'I kill you'</p> | <p>(2)    * <i>v--k'lav</i><br/>          S1-kill<br/>          'I kill you'</p> |
|--|--|

### 2. VERBAL PERSON MARKING IN GEORGIAN

In Georgian there are two slots in the verb form where a person marker can appear - a prefix slot (PREF) and a suffix slot (SUFF). Below we give a scheme of possible slots for the verb form and will give the slots for person markers in bold face:

Preverb-PREF-[Version Vowel]<sup>2</sup>-Stem-SUFF

**Why should competition take place if there are two different slots available for person markers?**

The thing is that SUFF is filled only when subject is 3rd person (S3). In this case the problem does not arise and the PREF<sup>3</sup> is filled with another argument marker - either O1, O2 or O3, depending on the person of the object that verb takes:

- (3)                    *m-/ g-/ Ø-k'lav-s*  
                      O1/O2/O3-kill-S3  
                      'He<sup>3</sup> kills me/you/him'

<sup>1</sup> We would particularly like to thank Katalin É. Kiss for important discussions on the topic, numerous suggestions, clarifications and corrections of an earlier version of the paper. In addition, we thank Rusudan Asatiani, Winfried Boeder, Alice C. Harris, Andras Komlosy, and an anonymous reviewer for comments. We are grateful to Steven R. Anderson and Ferenc Kiefer for providing us with the articles on the topic which were problematic for us to find around. Special thanks to Margit Biro and the staff of the Georgian Library at the Eötvös Loránd University (Budapest) for their hospitality and help when writing the paper. Any errors are our own responsibility.

<sup>2</sup> The version vowel is an element by which the verbal stem may be preceded. "The commonest role for this element is to indicate either the addition of an argument (typically an indirect object) to the basic argument frame of a verb, or the elimination of a formal argument position, in the case of a class of reflexive constructions" (Anderson (1992), p. 142). In some cases it does not change number of arguments and is a lexical idiosyncrasy of a particular stem.

<sup>3</sup> unlike English, Georgian does not distinguish 3rd p. pronouns by gender. For simplicity we shall give only masculine forms (he/him/his) in English translations unless feminine or neuter forms are required by the context.



The competition takes place when the subject argument of the verb is not 3rd person. Then the only available slot is **PREF** and both subject (non-3rd person) and object markers (of all person) which are prefixes 'compete' to appear in the same slot - **PREF**.

Example (1) as well as example (4) displays an object marker as a 'winner':

- (4) m-k'lav  
O1-kill  
'You kill me'

Though there are the instances where the subject shows up, particularly, when the verb takes first or second person subject (**S1/S2**) and a 3rd person object (**DO3**):

- (5) v--k'lav                      (6) Ø-k'lav  
S1-kill                              S2-kill  
'I kill him'                          'You kill him'

Before analysing the rules of co-occurrence of markers and giving an explanation to the facts we would like to consider the following table of Modern Georgian person markers <sup>4</sup>:

PERSON	SUBJECT (S)	DIR. OBJECT (DO)	IND.OBJECT (IO)
1st	v-	m-	m(V)-
2nd	Ø-/x-	g-	g(V)-
3rd	-s/-a/-o	Ø-	Ø-/h-/s-

Table 1

## 2.1. PERSON MARKERS

**S1** is marked by v-.

**S2** is marked by Ø-. The Old Georgian **S2** marker x-, which started changing into x->h-/s->Ø- in the 8th century, is used only in the copula and in the verb 'to go':

- (i) x--ar                      (ii) c'a---x--val  
S2-be                          prev-S2-go  
'you are'                      'you will go'

**h-** and **s-** are not used in Modern Georgian (see detailed analysis of **S2** marker in **Shanidze (1920)**).

**S3** is given by a suffix which changes according to the tense series (thus, it represents not a pure person marker but a polifunctional suffix) and according to the verb's conjugation class.

**DO1/IO1** and **DO2/IO2** are given by prefixes **m-** and **g-** respectively.

Some authors (**Anderson (1984)**, **Boeder (1989)**) give indirect object 1st and 2nd person markers together with a version vowel which is indicated in the table by *V*. The version vowels certainly can also be regarded as **IO** markers since they, independently of **IO** markers given in **PREF** (**m-/g-**), again show nothing else but **IO**, more precisely, the **1st/2nd person IO (-i-)** as opposed to the **3rd person IO (-u-)**. For instance:

- (7) (is) (me) <sup>11</sup> m--i----šeneb-----s                      saxl-s  
he(NOM) I(DAT) **IO1-i-build(PRES)-S3**                      house(DAT)  
'He builds me a house'

<sup>4</sup> for simplicity we consider only singular number but not plural. We neither discuss inversion which takes place in perfective tenses and with psych verbs.



- (8) (šen) (mas) Ø-u--xat'----av surat-s  
 you(NOM) him(DAT) S2-u-draw-PRES picture(DAT)  
 'You draw him a picture'

**IO3** is given by Ø-/h-/s- (derived historically from x-) depending on the root initial consonant / vowel which immediately follows the marker (see **Boeder (to appear)**).

**DO3** is a **phonetic zero** in the case of 2-argument verbs (see example (3) where Ø- developed from Old Georgian x-) but in the case of 3-argument verbs **DO3** is a **structural zero** (see **Chapter 2.2.**).

## 2.2. MORE ON THREE-ARGUMENT VERBS

If we consider all theoretically possible trivalent verb combinations which are 37 in all

S1-IO1-DO1 (1), S1-IO1-DO2 (2), S1-IO1-DO3 (3), S1-IO2-DO1 (4), S1-IO2-DO2 (5),  
 S1-IO2-DO3 (6), S1-IO3-DO1 (7), S1-IO3-DO2 (8), S1-IO3-DO3 (9), S1-IO3-[IO3] (10),  
 S2-IO1-DO1 (11), S2-IO1-DO2 (12), S2-IO1-DO3 (13), S2-IO2-DO1 (14), S2-IO2-DO2 (15),  
 S2-IO2-DO3 (16), S2-IO3-DO1 (17), S2-IO3-DO2 (18), S2-IO3-DO3 (19), S2-IO3-[IO3] (20),  
 S3-IO1-DO1 (21), S3-IO1-DO2 (22), S3-IO1-DO3 (23), S3-IO1-[S3] (24), S3-IO2-DO1 (25),  
 S3-IO2-DO2 (26), S3-IO2-DO3 (27), S3-IO2-[S3] (28), S3-IO3-DO1 (29), S3-[S3]-DO1 (30),  
 S3-IO3-DO2 (31), S3-[S3]-DO2 (32), S3-IO3-DO3 (33), S3-IO3-[S3] (34), S3-[S3]-DO3 (35),  
 S3-IO3-[IO3] (36), S3-[S3]-[S3] (37)<sup>5</sup>

we shall see that only those combinations with **DO3** as an argument (6, 9, 13, 19, 23, 27, 33) have verb forms that code the person of all three arguments (S, IO, DO)<sup>6</sup> and as Georgian is a pro-drop language all the pronouns can be dropped out:

- (9.1) S1-IO2-DO3 (cmb 6) g--i-xat'av  
 IO2-i--draw  
 'I draw him for you'
- (9.2) S1-IO3-DO3 (cmb 9) v--u-xat'av  
 S1-u-draw  
 'I draw him(i) for him(j)'
- (9.3) S2-IO1-DO3 (cmb 13) m--i-xat'av  
 IO1-i--draw  
 'You draw him for me'
- (9.4) S2-IO3-DO3 (cmb 19) Ø-u-xat'av  
 S2-u--draw  
 'You draw him(i) for him(j)'

<sup>5</sup> [IO3] in (10), (20), (36) is a **direct object** coreferential with IO3;

[S3] in (24), (28), (34), ((37) - S3-[S3]-[S3])) is a **direct object** coreferential with S3;

[S3] in (30), (32), (35), ((37) - S3-[S3]-[S3])) is an **indirect object** coreferential with S3.

<sup>6</sup> Though the number or the person of the arguments are not always clear from the verb forms. As is known, the morphological decomposition of a word is too weak to serve as the representation for the purposes of the syntax (Anderson, 1992, p. 87). "In some languages information may sometimes be conveyed not by constituents that are present in the structure of a given word but precisely by the fact that certain other material is absent" (Anderson, 1992, p. 87). This is true for Georgian (see detailed analysis of a Georgian verb form and the further discussion in Anderson (1992), p. 87). For instance, in the cases of slot competition only one argument marker is given (see examples (1), (4), (5), (6)) but the whole verb form is clearly associated with a given pair of arguments. Presumably, the information on the unmarked arguments can be conveyed from the whole paradigm of the verb form as such.



(9.5) S3-IO1-DO3 (cmb 23)      m--i-xat'av-s  
 IO1-i--draw-S3  
 'He(i) draws him(j) for me'

(9.6) S3-IO2-DO3 (cmb 27)      g--i-xat'av-s  
 IO2-i--draw-S3  
 'He(i) draws him(j) for you'

(9.7) S3-IO3-DO3 (cmb 33)      Ø--u-xat'av-s  
 IO3-u--draw-S3  
 'He(i) draws him (j) for him(k)'

As for the other 30 combinations, they are expressed by the verb forms of one of the 7 combinations (6, 9, 13, 19, 23, 27, 33) and their DO and/or IO have to be spelt out as a POSS + *tav-*, e.g.:

(9.1') S1-IO2-DO1 (cmb 4)    me      šen      čem-s    tav-s      g---i-xat'av  
 I(nom) you(dat)    my(dat) head(dat)    IO2-i-draw  
 (S1-IO2-DO3) (cmb 6)  
 'I draw *myself* for you'

(9.2') S1-IO3-DO2 (cmb 8)    me      mas      šen-s    tav-s      v-u-xat'av  
 I(nom) he(dat)    your(dat) head(dat)    S1-u-draw  
 (S1-IO3-DO3) (cmb 9)  
 'I draw *you* for him'

(9.3') S2-IO1-DO1 (cmb 11)    šen      me      čem-s    tav-s      m--i-xat'av  
 you(nom) I(dat)    my(dat) head(dat)    IO1-i-draw  
 (S2-IO1-DO3) (cmb  
 13)  
 'You draw *me* for myself'

(9.4') S2-IO2-DO3 (cmb 16)    šen      šen-s    tav-s      mas      Ø-u-xat'av  
 you(nom) your(dat) head(dat)    he(dat)    S2-u-draw  
 (S2-IO3-DO3) (cmb  
 19)  
 'You draw him *for yourself*

(9.5') S3-IO1-[S3] (cmb 24)    is      me      tavis    tav-s      m--i-xat'av-s  
 he(nom) I(dat)    self's(dat) head(dat)    IO1-i-draw-S3  
 (S3-IO1-DO3) (cmb  
 23)  
 'He draws *himself* for me'

(9.6') S3-IO2-DO1 (cmb 25)    is      šen      čem-s    tav-s      g--i-xat'av-s  
 he(nom) I(dat)    my(dat) head(dat)    IO2-i-draw-S3  
 (S3-IO2-DO3) (cmb 27)  
 'He draws *me* for you'

(9.7') S3-IO3-DO1 (cmb 29)    is      mas      čem-s    tav-s      Ø--u-xat'av-s  
 he(nom) he(dat)    my(dat) head(dat)    IO3-u-draw-S3  
 (S3-IO3-DO3) (cmb  
 33)  
 'He(i) draws *me* for him(j)'

Therefore, any other theoretically possible combination is expressed by the verb form of one of those seven combinations taking DO3 as an argument (6, 9, 13, 19, 23, 27, 33) (see examples



(9.1') - (9.7')) and a possessive phrase *POSS + tav-* triggering 3rd person agreement. The use of personal pronouns instead of the possessive phrases is ungrammatical as, for instance, the 1st and 2nd person personal pronouns will not be able to trigger 3rd person agreement (compare (9.2') with (10)):

- (10) S1-IO3-DO2 (cmb 8) \* me mas *šen* v--u-xat'av  
 I(nom) he(dat) you(dat) S1-u-draw  
 (S1-IO3-DO3) (cmb 9)  
 'I draw you for him'

There is certainly a need for some grammatical material which will be able both to express the person of the direct object and to act as 3rd person entity as far as the only verb forms that can be used take 3rd person direct object (in this particular example this is the verb form of the (cmb 9) - S1-IO3-DO3). *POSS + tav-* perfectly qualifies for that. Namely, *POSS* expresses the person of the object and the grammaticalized noun for "head" *tav-* is understood as 3rd person <sup>7</sup>. Finally, the whole phrase *POSS + tav-* gets the feature [+3rd person] which makes *POSS + tav-* flexible for expressing all impossible combinations of arguments of the verb by the possible verb forms (i.e. the verb forms of the seven combinations - 6, 9, 13, 19, 23, 27, 33).

Thus, the whole system is economical using only a limited number of verb forms (only seven) which can express other combinations as well.

**From 3-argument verb paradigm we conclude that DO3 is an unmarked entity.**

Since every 3-argument verb form (see 9.1-9.7) takes DO3 as an argument its marking is redundant. It is an unmarked entity.

We do not agree with **Boeder (1989)** who tries to find a special slot for DO3 in the verb form - the slot before the preverb. He gives  $\emptyset$  for DO3 in the slot before the preverb in every example he discusses in his paper:

*I want to argue that it [3rd person direct object marker ( $\emptyset$ ) (N.A.)] is there from a syntactic point of view and that it occupies the initial position before the preverb (if there is one), in contrast with other markers, which occur in pre-stem position.*  
 Boeder (1989), p.166

According to **Boeder (1989)**, that the corresponding marker occurs before the preverb can be derived from the fact that incorporated direct objects have this position. **Boeder** gives the following example:

- (11) sul--ga--qid----ul-----i murman---i  
 soul-prev-sell-PERFP-nom Murman-nom  
 [DO3-preverb-stem-perfect.particle-nom]  
 'Murman who had sold his soul'

But we do not think it is only Georgian, which places direct object before the verb. **Boeder's** example displays the universal for all natural languages semantic object agreement with the verb. The order - *OBJECT-VERB* may not be universal, some languages may have the reverse - *VERB-OBJECT* - (or even both orders are not surprising at all) but we do not think it is a strong enough argument for assigning a special slot to DO3 in the verb form.

**Boeder** tries to explain the  $\emptyset$  for DO3 before the preverbal slot by the following hypothesis:

*The assumption of a third person direct object marker is based on a hypothesis that subject and object arguments which are morphologically present in some contexts are all present in the underlying structure of the verb form.*  
 Boeder (1989), p.166

If we have a look at the following example

<sup>7</sup> In **Amiridze (1997)** analysing the distribution of the phrases *POSS + tav-* we have shown that nouns undergoing grammaticalization may keep their referential property of being 3rd person entities.



- (12) (igi) **tav-kud---mo---glej-----il-----i** ga---rb-----od-----a  
 he(nom) **head-hat--prev-[tear-off]-PERFP-nom** prev-run-PASTCONT-S3  
 'He was running with all his might'

there are two objects incorporated before the preverb *mo-*. First one is **kud-'hat'** immediately preceding the preverb and another one **tav-'head'** preceding the first one. The meaning is the following: He was running so fast that his hat was falling down from his head.

If we start giving slots to the object arguments of the verb no matter where in the verb form just because the objects can be incorporated into the non-finite forms, why not to give a special slot to the locative, etc. arguments? There can be found lots of examples of them incorporated in the non-finite forms not only in Georgian. We could have the complete array of all the arguments that a particular verb can take in different contexts besides the subject, indirect and direct objects. And at last, why not to give slots for object markers in English or in any other language which does not have a formal marker for object? They surely are present in the underlying structure of the verb form and can be found both before and after the verb in the non-finite forms. For instance in English both orders can be found:

- (13) head-driven (14) open-minded  
 OBJECT-VERB VERB-OBJECT

Compare the last example with Georgian where the order is reverse:

- (15) **goneba-ga---xsn-----il-----i**  
**mind-prev-open-PERFP-nom**  
 'open-minded'

Though both orders can be found also in Georgian which poses another problem for **Boeder** to choose the slot for **DO3** - before the stem or after it:

- (16) ga---xsn-----il-----goneb-ian----i  
 prev-open-PERFP-mind-poss-nom  
 'open-minded'

According to **Boeder**,

*The assumption of a complete array of arguments seems to be warranted by their syntactic behaviour: Arguments that for some reason cannot be represented as such in the verb form require the tavi-construction [i.e., POSS + tav- (N.A.)] whereas the third person direct object doesn't.*  
 Boeder (1989), p. 166

It means that any argument that is not given by *POSS + tav-* has to be represented in the verb form. If we follow this we have to have a marker for **S1** which cannot be given by *POSS + tav-* in example (1) rewritten here as (17):

- (17) (me) (šen) g-k'lav (18) \* čem-i tav-i (šen) g-k'lav  
 I(nom) you (dat) O2-kill my(nom) head(nom) you(dat) O2-kill  
 'I kill you' 'I kill you'

But there is no marker for subject argument in the verb form. The combination is clearly a case of slot competition since both **S1** marker *v-* and **O2** marker *g-* are prefixes and they both 'compete' to appear in **PREF**. The **S1** marker *v-* cannot be given in the verb form in any other slot. **Boeder** himself gives the constraint for the co-occurrence of **S1** and **O2** markers: "1st or 2nd person subject markers are suppressed in the presence of 1st or 2nd object markers" (**Boeder** (1989), p. 166).

Therefore, an argument can be given without *POSS + tav-* and can be left without a slot in the verb form. See also example (4) rewritten here as (19) where **S2** can neither be given by *POSS + tav-* nor can be expressed in the verb form:

- (19) (šen) (me) m-k'lav (20) \* šen-i tav-i (me) m-k'lav



you(nom)	I(dat)	O1-kill	your(nom)	head(nom)	I(dat)
O1-kill					
'You kill me'			'You kill me'		

Thus, the fact that **DO3** is never given by *POSS + tav-* does not necessarily mean that **DO3** has to be given a special slot in the verb form. Again a closer look at the 3-argument verb paradigm makes it obvious that the marking of **DO3** is redundant since every available 3-argument verb form (the verb forms of the seven combinations (6, 9, 13, 19, 23, 27, 33) which are used to express all other theoretically possible combinations of arguments) has 3rd person direct object agreement (see examples (9.1) - (9.7)). We think that **DO3** is unmarked and is not given by any marker in any existed or hypothetical slot (that is why we refer to **DO3** in 3-argument verbs as 'a structural zero' (see Chapter 2.1.)). Being unmarked gives **DO3** a special strength to play an important role in the economic motivation of language.

### 3. SLOT COMPETITION

#### 3.1. REVIEW OF LITERATURE

So far we have discussed some issues of person marking in Georgian. Now we shall consider the instances of slot competition. Thus, slot competition is possible only when subject argument is 1st/2nd person (**S1/S2**) (see examples (1), (4), (5), (6)).

The most important works on agreement in Georgian describe the facts and give appropriate rules on occurrence of a certain argument marker in the case of slot competition.

According to **Harris (1981)**, the co-occurrence of personal affixes **S1** marker *v-* and **O2** marker *g-* is governed by a morphophonemic rule (see **Harris (1981)**, p. 31):

*"S1 marker v- deletes before the O2 marker g-".*

According to **Boeder (1989)**, p. 166

*"1st or 2nd person subject markers are suppressed in the presence of 1st or 2nd person object markers"*

(see examples (1) and (4)).

According to **Anderson (1982)**, the co-occurrence of markers is governed by a set of disjunctive rules

**Rule 1. O1 /m-/**

**Rule 2. O2 /g-/**

**Rule 3. S1 /v-/**

The set of disjunctive rules describes the instances of slot competition.

**Rule 1** means the following: if a verb takes a 1st person object (**O1**) then the object wins the slot competition and the 1st person object marker *m-* appears in **PREF**. There are only 2 combinations taking 1st person object - **S2O1** and **S3O1** from which the latter need not be taken into account as far as there is no slot competition there (see example (3)). As for **S2O1**, the appearance of the object marker in **PREF** is predicted by **Rule 1** (see example (4)).

By **Rule 2**, a verb taking a 2nd person object (**O2**) will display a 2nd person object marker *g-* in **PREF**. There are only 2 such combinations - **S1O2** and **S3O2**. The latter need not be regarded since there is no slot competition there (see example (3)). As for **S1O2**, the appearance of the object marker in **PREF** is predicted by **Rule 2** (see example (1)).

According to **Rule 3**, a verb taking a 1st person subject will show the 1st person subject marker *v-* in the **PREF**. There are 2 combinations taking 1st person subject - **S1O2** and **S1O3**. The rule treats the latter combination (**S1O3**) (see example (5)). As for the former, it need not be taken into account because first **Rule 2** applies to it as far as the set is hierarchically organised -



**Rule 1 or  
Rule 2 or  
Rule 3**

i. e., the disjunctive ordering of the rules means the following: if **Rule 1** does not apply try **Rule 2**. If it does not apply either then try **Rule 3**.

Thus, the disjunctive block of rules treats possible co-occurrences of verbal arguments.

**Halle & Marantz (1993)** listing Georgian verb forms taking (a) 3rd person singular object argument, (b) 3rd person singular subject argument, (c) both subject and object arguments of either 1st or 2nd person, come to the conclusion that 3rd person arguments do not surface in the pre-stem position while 1st and 2nd person arguments do. This makes them postulate that in pre-stem position these verb forms contain a Clitic cluster which incorporates all the 1st and 2nd person arguments under a single node and which syntactically attaches as a sister to the inflected verb. According to **Halle & Marantz (1993)**, before the Vocabulary insertion (the main function of which is to supply phonetic features to the morphemes) all Morphology structure rules have to apply. Namely, the Vocabulary insertion applies after (a) the incorporation of the 1st and 2nd person arguments, (b) the fusion of these pronouns into a Clitic terminal node and (c) the operation of the fission rule which splits off a plural feature from the fused Clitic cluster and sets the feature up as a separate terminal node.

As we are mainly concerned with singular number and do not discuss cases with plural arguments (see footnote 4), in this paper we will be discussing neither the fission rule, nor readjustment and impoverishment rules mainly dealing with plural cases. The most important issue for us is the mechanism of how a morpheme is chosen of the two under the Clitic cluster.

The Vocabulary entries for the clitic node which are in competition for insertion are organized into blocks like the one given by the authors where entries are ordered by the principle that the most specified entry takes precedence over entries that are less specified:

[+1], DAT	/m-/
[+2], DAT	/g-/
[+1]	/v-/
[+2]	∅

A consequence of this ordering principle is that in the block the affix marked [+1], DAT will take precedence over the one marked [+2]. This really fits the data - a verb taking S2 and O1 will display the O1 marker in the pre-stem position (i.e. in PREF).

Therefore, the authors have tried to show that the Elsewhere Principle (which can be formulated as "Given two possible structures, the more specified one is preferred") determining the precedence between the entries explains the competition between them.

The treatment of Georgian data given by **Halle & Marantz (1993)** would be a nice explanation of the complex agreement phenomenon in Georgian if one of the most important facts were not missing from the analysis - it is assumed by the authors that 3rd person arguments do not surface in the pre-stem position (see **Halle & Marantz (1993)**, p. 117), while 3rd person arguments actually do appear there (see **Harris (1981)**, p. 44; **Anderson (1992)**, p. 143). For instance:

<b>(21)</b>	is	mas	cxen-s	mi----s---cem--s
	he(nom)	he(dat)	horse(dat)	prev-IO3-give-S3
		"He will give him a horse"		

The following verb form taking S1 and IO3

<b>(22)</b>	me	mas	cxen-s	mi---v--cem
	I(nom)	he(dat)	horse(dat)	prev-S1-give
		"I will give him a horse"		

makes it clear that the competition for the insertion in the pre-stem position goes not only



between 1st and 2nd person arguments (cf. Halle & Marantz (1993)) but also between S1 and O3 where the former wins over the latter. If we add an entry for O3 to the block given by Halle & Marantz (1993)

[+1], DAT	/m-/
[+2], DAT	/g-/
[+3], DAT	/h-/ /s-/
[+1]	/v-/
[+2]	∅

the so-called Elsewhere Principle, which is good enough for describing some facts, does not work for the case when the verb takes S1 and IO3 as arguments. In this case the S1 marker /v-/ is inserted in the pre-stem position (see example (22)) which means that a less specified entry ([+1]) takes precedence over a more specified one ([+3], DAT). Therefore, sometimes a more specified entry wins 'the competition' and some other times a less specified one does. So, we doubt the Elsewhere Principle accounts for all cases.

Even if we give the entry for IO3 without indicating the case ([+3] /h-/ /s-/), provided that only the 3rd person dative (not nominative/ergative) arguments surface in the pre-stem position, the Elsewhere Principle will work only if the entry ([+3] /h-/ /s-/) is given in the hierarchy of entries lower than the entry for S1 ([+1] /v-/):

(a) [+1], DAT /m-/	OR	(b) [+1], DAT /m-/	OR	(c) [+1], DAT /m-/
[+2], DAT /g-/		[+2], DAT /g-/		[+2], DAT /g-/
[+1] /v-/		[+1] /v-/		[+2] ∅
[+3] /h-/ /s-/		[+2] ∅		[+1] /v-/
[+2] ∅		[+3] /h-/ /s-/		[+3] /h-/ /s-/

But why should the entry ([+3] /h-/ /s-/) be placed lower than the entry for S1 ([+1] /v-/)? Who can judge the precedence between the entries ([+1] /v-/), ([+2] ∅), ([+3] /h-/ /s-/)? Why the entry ([+1] /v-/) has to be regarded as more specified than the entries ([+2] ∅) and ([+3] /h-/ /s-/)? Only because we need the Elsewhere Principle to determine verbal person marking in Georgian?

To sum up, the analysis of Georgian given by Halle & Marantz (1993) does not provide treatment of the whole data.

Shanidze (1973) discusses the occurrence of

1. **subject marker** when the verb takes 1st person subject together with 3rd person object (see example (5));

2. **object marker** when verb takes S1 and O2 as well as S2 and O1 as arguments (see examples (1), (4))

but does not give rules.

Gamkrelidze (1979) uses a term *prefixal monopersonalism*, which is the same as the *slot competition* - only one person marker can appear in the prefix slot. Then he tries to somehow give a name to the behaviour of the arguments winning the slot competition and gives a term - *prominence* - for describing behaviour of certain markers, namely, he regards S and O as *equally prominent* since both can appear in the prefix slot (compare examples (5), (6) with (1), (4)).

Gamkrelidze (1979) discusses not only 2-argument verbs but also 3-argument verbs, where in the presence of 3rd person indirect object (IO3) and 3rd person direct object (DO3) only IO3 is marked. Hence, he calls indirect object more prominent than direct object:

S3-IO3-DO3 IO3-STEM-S3 /x-STEM-s/

To be more precise, Gamkrelidze discusses Old Georgian data. The prefix which he gives (x-) develops into ∅- in Modern Georgian:

(23) is mas ∅--u--šen----eb----s saxl-s



he(nom) he(dat) **IO3-u-build-PRES-S3** house(dat)  
'He builds him a house'

Since both the **IO3** and **DO3** markers are  $x \rightarrow \emptyset$ - it would be difficult to judge which object argument is represented in the prefix slot in (23). But it is not because as we see from 3-argument verb paradigm (see examples (9.1) - (9.7) and Chapter 2.2.), **DO3** is an unmarked argument and, hence, **PREF** has to be occupied by other arguments than **DO3**. Since the **S3** marker **-s** occupies **SUFF**, the argument filling **PREF** is **IO3** ( $\emptyset$ -) (see example (23)).

Therefore, the authors describe the facts and give rules for markers winning the slot competition. It has been noted that sometimes **S** shows itself, but sometimes **O** does, that **DO3** never has a marker in the 3-argument verb form while **IO3** has (**Gamkrelidze (1979)**). Thus, the following conclusions have been made (see **Gamkrelidze (1979)**):

- (1) **S** and **O** are equally prominent,
- (2) **IO** is more prominent than **DO**.

But the question why it is so is not raised.

### 3.2. RAISING THE QUESTION. ANOTHER LOOK AT THE FACTS

If we study the slot competition cases, there arise some questions:

1. Why should sometimes **S** appear in **PREF** and some other times **O**?
2. Why should **IO** be more prominent than **DO** (see **Gamkrelidze (1979)**)?

Before trying to answer the first question we shall start from the second one. After having discussed the 3-argument verbs in Chapter 2.2. it becomes clear that **DO3** is an unmarked entity. That is why it is never expressed in the 3-argument verb forms. We do not think that indirect object (**IO**) is more prominent. We regard **DO3** as a *distinguished* argument by virtue of its being unmarked, as far as it is never expressed in 3-argument verb forms and gives way to the indirect object arguments to become expressed.

Unlike the authors we have discussed in the previous chapter, our main idea is to focus on unmarked arguments (which are prominent from our point of view exactly because they are unmarked and give way to other arguments to get expressed) not the marked ones in the verb forms.

As for the first question, before we need to have a look at the whole paradigm of the 2-argument verb.

There are 10 theoretically acceptable 2-argument verb combinations:

**\*S1O1, S1O2, S1O3, S2O1, \*S2O2, S2O3, S3O1, S3O2, S3O3, \*S3[S3]**.

We do not discuss reflexive combinations (**\*S1O1, \*S2O2, \*S3[S3]**) because they have no verb form 'of their own' and use 3rd-person-object-argument verb forms (similarly to 3-argument verbs) - the verb forms of **S1O3, S2O3, S3O3** respectively and the object argument of the reflexive combinations has to be spelt out as *POSS + tav*<sup>8</sup>. We neither discuss the combinations with 3rd person subject (**S3O1, S3O2, S3O3**) because in those cases there is no slot competition (see example (3)). Thus, we discuss only the pairs of arguments left: **S1O2, S1O3, S2O1, S2O3** (the arguments that get marked in the verb form are given in bold face).

If we look at it more carefully, everything depends on the object argument of the verb. In the instances of slot competition (i.e. when verb takes non-3rd person subject as an argument) 3rd person object is never expressed and makes it possible for the subject to get expressed (see examples (5), (6)). If the object argument is not 3rd person, it needs to be expressed itself (see examples (1), (4)).

8

(i)	me	v---xat---av	čem-s	tav-s
	I(nom)	<b>S1-draw-PRES</b>	my(dat)	head(dat)
		[I-draw-him] ( <b>S1O3</b> )		
		'I draw myself' ( <b>S1O1</b> )		

For detailed analysis of *POSS + tav*- see **Amiridze (1997)**.



Below we give the rules covering person marking in Georgian (not only the slot competition cases, i.e. not only the occurrences of markers in the prefix slot (PREF)):

SUBJECT (S)	OBJECT (O)	PREF	SUFF
3rd	3rd	O	S
3rd	¬ 3rd <sup>9</sup>	O	S
¬3rd	3rd	S	-----
¬3rd	¬ 3rd	O	-----

Table 2

In our view, it is not either the subject or the object that is prominent but **certain person arguments** (cf. Gamkrelidze (1979)).

Namely, we consider

### O3

distinguished in a certain sense, namely, in the sense that in the cases of slot competition it is never marked and gives way to subject argument for getting expressed (see examples (5), (6)).

### S3

has its own slot and, hence, whenever it appears in the combination it is marked and gives way to the object argument to be expressed in the prefix slot (see example (3)).

### O1/O2

There is certainly a need for them to be expressed since whenever they appear in the combination they are marked (see examples (1), (4)).

### S1/S2

The marking of the 1st and 2nd person subject arguments is redundant since whenever S1/S2 appear in the combination there is no need for them to be expressed (see examples (1), (4)).

The last statement may seem untrue because of the 'whenever'. Because there are two such combinations which take subject arguments of 1st and 2nd person and do express them (S1O3, S2O3, see examples (5), (6)). But these cases with marked 1st and 2nd person subject arguments once again show **the distinguished role of 3rd person object - to give way to other arguments to get expressed.**

We propose that the following hierarchical ordering of rules regulate person marking in Georgian:

- |                |                                 |
|----------------|---------------------------------|
| <b>Rule 1.</b> | <b>O1/O2 has to be marked</b>   |
| <b>Rule 2.</b> | <b>S3 has to be marked</b>      |
| <b>Rule 3.</b> | <b>O3 must not be marked</b>    |
| <b>Rule 4.</b> | <b>S1/S2 must not be marked</b> |

As far as **Rule 1** and **Rule 2** are never violated they are higher in the hierarchy (see examples (1), (4), (3) for **Rule 1** and example (3) for **Rule 2**).

**Rule 3** is violable only if **Rule 2** applies at the same time (example (3)). Thus, **Rule 2** is higher in the hierarchy than **Rule 3**.

**Rule 4** is violable only if **Rule 3** applies at the same time (examples (5), (6)) which means that **Rule 3** is higher in the hierarchy than **Rule 4**.

Since **O1/O2** and **S3** have to be marked (see **Rule 1** and **Rule 2**) they can be grouped together as opposed to **O3** and **S1/S2** which do not need marking (see **Rule 3** and **Rule 4**).

We think that prototype effects can be seen in this particular phenomenon of marking certain person arguments. Namely, since speaker and hearer outrank third person participants, humans outrank non-humans, animates outrank inanimates, and so on in the *empathy hierarchy* we

<sup>9</sup> ¬3rd means non-third, i.e. 1st or 2nd person.



consider **S1/S2** to be higher on the hierarchy than **S3** and consequently inherently more agentive than **S3**<sup>10</sup>. Thus, **S1/S2** are closer to the *prototypical agent* than **S3**, which can be regarded as 'a deviation' from the prototype. As far as **S1** and **S2** do not need marking (**Rule 4**) while **S3** does (**Rule 2**) it can be concluded that there is no need for more prototypical arguments to be marked while less prototypical ones have to be somehow reflected and this is done by marking **S3**.

In the same way, **O1/O2** is higher in the *empathy hierarchy* than **O3**. That means that **O1/O2** is more agentive than **O3**, i.e. **O1/O2** is less-than-*prototypical patient*. As for **O3**, it is closer to the prototypical patient. Since **O3** does not need marking (**Rule 3**) while **O1** and **O2** do (**Rule 1**) we conclude that the marking of the prototypical patient (**O3**) is redundant while the deviation from it (**O1/O2**) has to be marked.

Thus, the arguments closer to the prototypes (**O3**, **S1/S2**) must not be marked (**Rule 3** and **Rule 4**) while deviations from the prototypes (**O1/O2**, **S3**) have to be marked (**Rule 1** and **Rule 2**).

#### 4. CONCLUSIONS

In this paper we have analysed slot competition in the Georgian verb form as well as some other issues of person marking in Georgian and have come to the conclusion that the less prototypical are the arguments the more they need to be expressed in the verb form.<sup>11</sup>

To sum up, verbal person marking in Georgian reveals that the marking of the prototypical Agent/Patient roles is redundant while deviations from the prototypes have to be marked.

<sup>10</sup> We agree with Langacker who does not consider 3rd person humans inherently less agentive than the speech-act participants (Langacker (1991), p. 397). But we consider 3rd person subject arguments (**S3**) generally less agentive than 1st and 2nd person subject arguments (**S1/S2**) because the former can be given by non-human entities as well as by humans while the latter can be represented only by humans. See Langacker (1991), p. 285 where the author himself notes that the role as non-human agent is both cognitively prominent and linguistically relevant. The very role is regarded also by DeLancey (1985) to be distinct from a human agent role by the degree of agency.

<sup>11</sup> A prototype effect can also be seen in 3-argument verbs where in the presence of 3rd person indirect object (**IO3**) and 3rd person direct object (**DO3**) only **IO3** (i.e. less prototypical patient than **DO3**) is marked (see examples (9.7), (21), (23)).



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## Red and Black – Love, Anger and Hate

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### 1. Introduction

This paper is based on some of the findings of a survey examining the relationship of colours and emotions. Hungarian university and college students were asked to associate colour terms with emotion terms in Hungarian. The students were divided into two groups and answered the questions individually in writing.

Students in group one were asked to associate emotion terms with twelve colour terms. They were encouraged to give explanations and/or examples. The twelve Hungarian colour terms (*fekete, fehér, piros, vörös, sárga, zöld, kék, barna, lila, rózsaszín, narancsszín, szürke*) correspond to the eleven colour categories (*black, white, yellow, green, blue, brown, purple, pink, orange, grey*) discussed in Berlin and Kay (1969). There is one more colour term in Hungarian because English *red* corresponds to both *piros* {light red} and *vörös* {dark red}.

Students in group two were supposed to describe twenty emotions by the help of colour terms. They were allowed to use any colour, shade or colour combination they found necessary. The list of emotions included the following:

*boldogság/öröm* {happiness/joy}, *büszkeség* {pride}, *düh/harag* {anger},  
*érdeklődés* {interest}, *félelem* {fear}, *féltékenység* {jealousy}, *gyávaság*  
 {cowardice}, *ijedtség* {fright}, *irigység* {envy}, *izgatottság* {excitement},  
*meglepődés* {surprise}, *nyugodtság* {calm}, *szégyen* {shame}, *szerelem*  
 {passionate love}, *szeretet* {love}, *szomorúság/bánat* {sadness/grief}, *tisztelet*  
 {respect}, *utálat/gyűlölet* {hate}, *unalom* {boredom}, *vidámság/jókedv*  
 {cheerfulness/gaiety }.



There were 89 women students in group one and 88 other women students in group two. The majority of them were first, second and third year students of Ferenc Kölcsey Teacher Training College of the Reformed Church, Debrecen; some of the informants were students of Lajos Kossuth University, Debrecen.

I decided to conduct the survey because in my previous studies in the field of the language of emotion I found that there are a number of expressions both in Hungarian and in English which contain colour terms. For example, *be green with envy*, *sárga az irigységtől* {be yellow with envy}, *go purple* {be very angry}, *lila a feje* {one's head is purple = be extremely angry}, *feel blue* {feel sad}, *green-eyed monster* {jealousy}, *zöld szemű szörny* {green-eyed monster = jealousy}, etc. First, I collected English expressions of emotions containing colour terms. I realized that a part of these expressions refer to the physiological changes that go with the emotion in question, e.g. *be white at the lips* {be extremely angry; very afraid}, *go purple* {be very angry}, *blue in the face* {be very angry}, etc. These expressions are metonymies and they describe the change in the neck and face area.

The other group of expressions describe other aspects of emotional states, e. g. *be in a blue mood*, *feel blue* {be sad, depressed}, *yellow-belly*, *yellow-livered* {coward}, *look through green glasses* {be jealous, envious}, etc. They refer to behavioural reactions of the person experiencing some emotions. They are considered as metaphors.

Then, I was interested in Hungarian expressions of emotions. My hypothesis was the following. If English metonymies describe physiological changes and if emotion scenarios and physiological changes accompanying emotional states are similar in western- or European-type cultures, then I should find Hungarian expressions which correspond more or less to English expressions. I was also interested to find correspondences between English and Hungarian metaphors.

In the present paper, I will focus on *red* and *black*, *piros*, *vörös* and *fekete*, and the emotions associated with them in English and Hungarian. When discussing *piros* and *vörös*, I will not claim that they are two different colours but that they seem to be different in terms of their associations in connection with certain emotions (cf. *szeretet* {love} and *szerelem* {passionate love}). I will attempt to show that the relative lightness of *piros* and the relative darkness of *vörös* correspond to different levels of intensity of certain emotions (e. g.: *elpirul* {go light red} and *elvörösödik* {go dark red} for *szégyen* {shame}).



## 2. Colours and emotions

### 2.1. Red

As I have already mentioned, English *red* corresponds to two terms in Hungarian, *piros* {light red} and *vörös* {dark red}. The two terms are defined in Magyar Értelmező Kéziszótár (1992) {Hungarian Explanatory Dictionary} in the following way:

**piros:** *élénk, világos árnyalatú vörös* {bright light shade of red}

**vörös/veres:** (a) *a vér színéhez hasonló* {similar to the colour of blood}

(b) *hőtől, erőfeszítéstől, indulattól, stb. ilyen árnyalatú* {having this shade because of heat, effort, intense emotion, etc.}

As can be seen, the difference between the two is in terms of lightness/darkness and the choice of one or the other may be related to the cause triggering redness (cf. *vörös/veres* (b)).

The meaning of *piros* and *vörös* is defined in a very similar way in A Magyar Nyelv Történeti-Etimológiai Szótára (1967) {Dictionary of the History and Etymology of the Hungarian Language}. As far as the etymology of *piros* is concerned, the dictionary says that *piros* goes back to the stem *pir-*, *per-*, which originally may have referred to the noise of burning, frying and roasting. The word *piros* originally was used to denote the reddish, brownish colouring of something that was fried or roasted; later it became the name of the colour of blood.

*Vörös/veres*, on the other hand, is a derivative of the noun *vér* {blood}. It is a word-split pair<sup>1</sup> of *véres* {bloody}). *Vörös/veres* contains a regular version of the stem and it originally meant 'bloody'. Later, the meaning 'red' was developed on the basis of referring to the colour of blood. (Several Finno-Ugric languages use a word denoting 'blood' or its derivative to refer to the colour *red*.) As can be seen, the change of meaning of *piros* and that of *vörös* went into the opposite directions. The dictionary also claims that the difference between the two words is in their use due to their emotional connotations, namely, *piros* is usually used in connection with nicer or smoother visual experiences.

Wierzbicka (1996) explains the difference between *piros* {light red} and *vörös* {dark red} in a completely different way. She identifies the universals of seeing and uses these universals in giving definitions of colours.

<sup>1</sup> Word-split (szóhasadás): development of morphological variants of a word into separate words with different meanings, cf. *szaru* {horn, horny matter, keratin} and *szarv* {a horn}.



In her analysis, she claims that we call something *piros* {light red} or *vörös* {dark red} if the thing can be associated with fire and blood. The difference between the use of the two colour terms lies in how much we see at a time when we see things that can be associated with fire and blood. When we see many things we call the thing *piros*, whereas when we see very little we call the thing *vörös* (cf. Wierzbicka, 1996, p.317).

After Wierzbicka (1996) I will use *light red* as a translation equivalent of *piros* and *dark red* as an equivalent of *vörös*. The two English terms seem to correspond to the definitions of *piros* and *vörös* in Magyar Értelmező Kéziszótár (1992) {Hungarian Explanatory Dictionary}.

It seems that the meanings of *piros* and *vörös* are very difficult to distinguish<sup>2</sup>, however the connotations<sup>3</sup> and associations that go with them show significant differences, especially in the case of emotions. Some emotions are more likely to be associated with *piros*, while others with *vörös*, and a third group of emotions can be associated with both. In the last case the two colour terms may refer to different levels of intensity of the emotion in question.

Now, I will look at the findings under *piros* and *vörös*. *Vörös* is one of the colours in the survey with which every student associated at least one emotion term. In the case of *piros* there were two students out of 89 who did not associate any emotion with it. Under *vörös* I found 55 different items, under *piros* 48. It is interesting to note that some of the items both under *vörös* and *piros* are not emotion terms but notions which can easily be associated with emotions.

Results of the survey show that *szeretet* {love}, *szerelem* {passionate love} and *szenvedély* {passion} are the dominating emotions under *piros* and *vörös*. But at the same time we have to notice that there are significant differences. Namely, *szeretet* {love} seems to be *piros* {light red}, whereas *szerelem* {passionate love} is described as both *piros* and *vörös*. The next group of emotions, in which the central idea is *passion*, is richer under *vörös* than under *piros*. The term *anger* has only two items under *piros*, while it is a relatively rich group under *vörös*. The groups of *anxiety* and *fear* are rather similar under both colour terms. The term *shame* was chosen only by one student under *piros* and by three students under *vörös*, which seems to be a bit of a surprise. I will come back to this point later.

<sup>2</sup> For some native speakers of Hungarian there is no difference between what *piros bor* {light red wine} and *vörös bor* {dark red wine} mean. However, for other people there is a great difference between the two: the former is made from red, a mixture of white and red or a mixture of white and blue grapes and it is not fermented on the marc, whereas the latter is made from blue grapes, fermented on the marc, which makes the colour of the wine a lot darker and, of course, the taste very different.

<sup>3</sup> The connotations of *piros* {light red} and *vörös* {dark red} are very different if they are used to describe the colour of a flag. *Vörös zászló* {dark red flag} may only refer to the flag of revolution and the labour movement (and the Soviet Union), while the colour of the Hungarian national flag can only be described as *piros-fehér-zöld* {light red-white-green}. It must be noted that the red of the flag of revolution or the that of the Hungarian flag may in fact be the same.



Now let me try to find evidence for the fact that *vörös* and *piros* are associated with the above emotions.

Matolcsi (1988, p. 16) claims that it can be experimentally proved that the colour *red* causes an increase in blood pressure and heartbeat and its biological effect is excitement and stimulation. She calls *red* "the colour of passion, love, anger, aggression, revolution, power and reign"<sup>4</sup> Goethe (1983, p. 67) claims that *red* is the colour of unbearable violence. Both these claims support the answers given in the survey.

The next question is whether we have linguistic expressions that contain the terms *piros* and *vörös* for the description of *passionate love*, *love*, *passion*, *anger* and *shame*.

### 2.1.1. Love and passionate love

Looking through my list of expressions, I find that there are not many expressions of *passionate love* and *love* that contain colours. Expressions like *piros*, *mint a paradicsom/ a paprika/ a rózsá/ etc.* {red as a tomato/ a pepper/ a rose/ etc.} are not only used to describe emotional states. As a native speaker of Hungarian I think, expressions like *vörös*, *mint a főtt rák/ a paprika/ a pipacs* {red as a boiled lobster/ a pepper/ a poppy flower} are used for emotional states but not for one particular emotional state. Moreover, they are not normally used for the description of *love* or *passionate love*. They are used to refer to any emotional state, usually negative ones, which go with blushing. I think, the most typical emotions with which we blush are *shame* and *embarrassment*. (I will come back to this point later.)

I have not found many expressions containing *piros* or *vörös* for *love* or *passionate love*. One example can be *Mondja el helyettem, mit érzek Irántad/ Ön iránt, ez a piros/ vörös rózsá* {Let this light red/ dark red rose tell you for me what I feel towards you/ how I feel about you}. But here, of course, the use of *red* is not only motivated by the fact that we are talking about *passionate love* since a *rose* is easily associated with this colour.

### 2.1.2. Anger

*Red* is the colour of *anger*, among other things, as I have already quoted from Matolcsi. Goethe mentions violence and adds that "the sight of a piece of red cloth upsets animals and

<sup>4</sup> Quotations from sources written in Hungarian are my translations throughout the paper.



makes them angry” (op. cit., p. 67). We can see the same in the following English and Hungarian expressions:

*It's like a red rag to a bull.*

*It's like a red rag to him.*

*It makes him see red.*

*Haragszik, mint bivaly/ bika a vörösre.* {He's angry like a buffalo/ a bull is angry with red.}

*Vörös posztó a szemében.* {It's a piece of red cloth in his eyes.}

*Úgy nézett rám, mint a véres rongyra.* {He looked at me the way he/ one would look at a bloody rag/ as if I were a bloody rag.}

*Vörösen lát.* {He sees red.}

If we are very *angry*, we *see red*, which does not mean that we see things around us as being red but it means that our sight, our visual perception does not function perfectly, that is, we are not able to perceive reality the way it is.

The above expressions all exploit the image of a bull getting angry when it sees a red rag. It is interesting to note that the Hungarian and English expressions are almost word by word equivalents of each other. (Probably they were imported into both languages when the Spanish tradition of bull fights became familiar to speakers of Hungarian and English.)

I have found one more pair of expressions that are almost word by word equivalents:

*red as a turkey cock* { be very angry }

*vörös, mint a pulyka* { red as a turkey = very angry }

*pulykavörös* {turkey-red = very angry }

We can see that the English expression is more precise than the Hungarian because it compares the *angry* person to the male turkey. As we all know, only the male animal has a red wattle that he shakes when 'he is angry.'

There are other expressions in English which describe the angry person by referring to the fact that his/her neck and face area has become red:



*red-faced*

*red-necked* (American slang)

*red-mad* (Scottish)

*red-wood* (Scottish)

As can be seen, the last examples describe a physiological change which is characteristic of the state of *anger*, namely, the change of colour in the face and neck area. These expressions can be analysed as metonymies.

The other group of expressions using the image of a bull or a turkey figuratively refers to the *angry* person's behaviour in general. (The quality of his/her perception impairs, his/her movement gets agitated and so on.) Both *it's a red rag to him* and *vörös posztó a szemében* {it's/he's a piece of red cloth in his/her eyes} are metonymies referring to the cause of *anger* by describing a small detail of a bullfight. *Red as a turkey cock* and *vörös, mint a pulyka* {dark red as a turkey} are metonymies, too, describing physiological changes. However, the image of a bull in front of which a red rag is shaken and the image of an 'angry' turkey bring the whole scene of a bullfight and that of an event irritating a turkey in a poultry yard into the picture. Bearing the image of the bullfight and the poultry yard in mind, we focus our attention to the angry animals and by using metonymies referring to them we describe the angry person's behaviour and not just physiological changes he/she experiences. This change of perspective makes the above expressions work as metaphors. (Expressions like *red as a turkey cock* and *vörös, mint a pulyka* are considered as similes in literary analysis.)

In sections 2.1.1. and 2.1.2. we have seen that *love* and *anger* are the same colour. I have found a Hungarian nursery rhyme to support this view:

<i>Piros a szerelem,</i>	{Love is light red,
<i>piros a vér,</i>	blood is light red,
<i>piros az ördög is,</i>	the devil is light red, too,
<i>ha haragra kél.</i>	if it gets angry.} (Matolcsi, 1988, p. 16)

As can be seen, the rhyme makes the relatedness of *anger* and *passionate love* explicit by identifying them with the same colour, the colour of blood.



## 2.1.3. Shame

The last emotion I would like to discuss in connection with *red* is *shame*. As I have already noted *shame* is mentioned only by a few informants. However, both Hungarian and English seem to be relatively rich in expressions of this emotion. The expressions referring to *shame* do not always contain the terms *red*, *piros* and *vörös* but the corresponding verbs (*blush*, *crimson*, *pirul/ elpirul/ megpírul* {get light red}, *irul-pirul* {redden/ get light red}) or the corresponding nouns (*elpírulás/ megpírulás* {getting light red}) instead:

*red as a boiled lobster*

*blush like a black/blue dog* {not blush at all}

*crimson*

*blush*

*red-face* {shame, embarrassment}

*red-faced* {ashamed}

*Vörös, mint a (főtt) rák.* {He/She is red as a (boiled) lobster.}

*Elvörösödött szégyenében.* {He/She has gone dark red in his/her shame.}

*Elpirult szégyenében.* {He/She has gone light red in his/her shame.}

*Irul-pirul, mint a főtt rák.* {He/She is reddening as a boiled lobster.}

*Nincsen semmi bőre, nem tud elpirulni.* {He/She has no skin, he/she cannot blush.}

*Soha meg nem pirul a kutya.* {A dog will never get light red.}

*Legszebb szín az elpirulás.* {The most beautiful colour is blushing.}

*Megpirulás festéke a jó erkölcsnek.* {Blushing is the dye of good morals.}

The above examples show that a Hungarian *elpírul* {goes light red} rather than *elvörösödik* {goes dark red} when he/she is ashamed. Although, I think, we can all recall a situation in which we were very ashamed or embarrassed and we went dark red. It seems that *shame*, just like other emotions, has different levels of intensity. Perhaps we experience *shame* or *embarrassment* of great intensity only rarely. That is why we have a smaller number of expressions for that. But if we do experience intense *shame*, probably there are more salient characteristics of it than getting red. If we are really ashamed or extremely embarrassed, we would like to disappear from the scene without a trace, we wish things like *inkább nyíljon meg alattunk a föld* {we'd rather have the ground open under us}.



There are two more points to be made here. One, both English and Hungarian use the image of a dog for someone who cannot/ will not blush when one is expected to. Two, it is obvious from the above examples that in Hungarian blushing has to do with good morals, that is, if someone has good morals, he/she will feel *shame* in certain situations and consequently he/she will blush.

#### 2.1.4. Purple

During the discussion of *piros* and *vörös* we have seen that the choice of the lighter or the darker shade of *red* is determined by the intensity of the emotion. Now we can raise the question whether *piros* and *vörös* {light and dark red} have an even darker shade in terms of some emotion. If so, which colour is it and which emotion does it correspond to? And finally, do we use the colour in question in linguistic expressions of the emotion?

According to the results of the survey, in connection with *anger piros* and *vörös* have a darker or more intense shade, which is *lila* {purple}.

Analysing the answers given under *lila* {purple}, I can see that it is the colour that has the second greatest diversity of items listed under it. The students gave 71 different items here. (*Brown* is the first having 74 different items associated with it.) Due to the diversity of the items under *lila* it is difficult to put them into groups. However, having done that I find that the biggest group is that of *anger*, where five students chose *harag* {anger}, four *düh* {rage} and one *bosszú* {revenge}. Of course, this last item is not an emotion term but a notion that is easily associated with *anger* since it refers to fighting back. Fighting back or taking revenge is a possible stage in the scenario of *anger*. Lakoff (1987, pp. 397-406) discusses the prototypical scenario of *anger* and claims that it consists of five stages: Stage 1. Offending event, Stage 2. Anger, Stage 3. Attempt at control, Stage 4. Loss of control, Stage 5. Act of retribution. The last stage corresponds to what I call the stage of fighting back or taking revenge.

(The other groups under *lila* comprise one to four items so I will not go into their analysis. On the other hand, I have to admit that a significant number of the items are not emotion terms but notions referring to ways of behaviour and attitudes of people. It is remarkable that an overwhelming majority of the items has negative connotations.)

The last question was whether we have expressions containing *lila* and *purple* to describe *anger*. And the answer is yes, although their number is not very big (to my knowledge, at least).



The reason may be that it is relatively rare that we reach the *purple* stage because our *anger* ceases at an earlier stage, probably at the *red* stage. Consider:

*go purple (in the face) (with rage)* {be/get very angry}

*have a purple fit* {be extremely angry}

*Lilul a feje.* {His/Her head is going purple.}

*Lila a feje (a dühtől).* {His/Her head is purple (with anger).}

*Ellilult a dühtől/dühében.* {He/She has gone purple with anger.}

*Ellilult az arca a dühtől.* {His/Her face has gone purple with anger.}

All the above expressions describe the angry person who has a lot of blood rushing into his/her head or face. He/She may also fling his arms about, shout at the other person and meanwhile his/her face will *go purple* or at least *dark red* or *bluish red*. These expressions are metonymies describing a physiological change experienced by the angry person.

In sum, *anger* can be described by expressions containing *piros*, *vörös* and *lila* {light red, dark red, purple} in Hungarian and *red* and *purple* in English. The expressions containing different colours refer to different stages in the scenario of *anger*. As *anger* intensifies more and more blood rushes into the head of the angry person so to describe the procedure of reddening we need darker and darker shades of *red*. *Piros, mint a paradicsom* {light red as a tomato} may refer to an early stage of *anger*; *vörös, mint a pulyka* {dark red as a turkey} refers to a later stage; while *lila a feje* {his/her head is purple} expresses extreme rage. In Hungarian, *piros*, *vörös* and *lila* seem to form a continuum the elements of which correspond to more and more intense stages of *anger*. Expressions in English have the same characteristics, *be turkey red* or *red with rage* refer to an earlier stage of anger than *have a purple fit* or *go purple with rage*. In general terms, we can say an expression containing a darker shade of a colour denotes a later stage in the emotion scenario than one with a lighter shade of the same colour. Thus, I hypothesize the schema the darker the shade of a colour in an expression of an emotion :: the more intense the emotion. In the case of *anger* the colour is *red* and the shades are *piros*, *vörös* and *lila* {light red, dark red, purple} in Hungarian, whereas *red* and *purple* in English.

The appearance of *purple* in the colour schema of *anger* is understandable not only because we know that it is the name of “the colour of red and blue mixed together” (Oxford Advanced Learner’s Dictionary, 1989), but also if we know that the word *purple* was originally



used “of crimson or other red colour” and only later “of a colour obtained by mixing red and blue” (Oxford Concise Dictionary of English Etymology, 1986).

I will return to some other emotions under *lila* {purple} when discussing the emotions under *fekete* {black}.

## 2.2. Black

Now let me turn to the discussion of *fekete* {black}. Almost all the items under *fekete* {black} are negative and *sadness*, *grief* and *mourning* dominate. The concepts *hate*, *anger* and *fear* are represented in more or less the same number. There is a relatively large number of items which are not emotion terms but rather notions that are easy to relate to certain emotions.

There are some positive ideas mentioned, like *biztonság* {security}, *nyugalom* {calm} and *nyugodtság* {rest}, which are surprising to come under *black*; and ideas like *büszkeség* {pride} and *vidámság* {cheerfulness}, which have some explanations given in brackets, perhaps showing that the students choosing them have not been certain about them.

Matolcsi (1988, p. 21) claims that *black* is the colour of “attacking spite” and “absolute denial”. Analysing the metaphorical meanings of *black* Bennett (1988, pp. 48-49) notices that it is the colour to refer to evil, deadly, disastrous, threatening and angry things. So it is not surprising to have negative emotions under *fekete* {black}.

In Goethe (1983) Runge (Goethe’s contemporary) is quoted (op. cit., p. 86), who claims that *black* and *white* are non-transparent colours and there is no transparent colour (yellow, red, blue, etc.) which could be as *dark* as *black* or as *light* as *white*. In other words, *black* and *dark* (or *very dark*, *the darkest*) are related concepts. This relatedness is obvious in the following expressions:

*feketén látja a helyzetet* {see the situation as black}

*sötéten látja a helyzetet* {see the situation as dark}

*borúsán látja a helyzetet* {see the situation as gloomy}

*sötét színben lát valamit* {see something in a dark colour}

*sötét szemüvegen át lát/néz valamit* {see/ look at something through dark glasses}

All these expressions refer to *sadness*, *depression* or *bad mood*. I have not found many expressions in English for these emotions, however,



*in a black mood*

*feel blue*

*have an attack of the blues*

are good examples for dark colours expressing *bad mood*.

### 2.2.1. Anger

The expressions below also prove that *black* and *dark* are related, however, they do not refer to *bad mood* but rather to *malice*, *hate*, *anger* or perhaps *threat* or *aggression* that may harm the self:

*sötét pillantás(oka)t vet valakire* {cast a dark glance (dark glances) at somebody }

*sötéten néz valakire* {give somebody a dark look}

*sötét a nézése* {his/her way of looking is dark}

*sötét gondolatai vannak* {have dark thoughts = 1. be very sad 2. have evil-hearted plans}

*sötét szándékai vannak* {have dark intentions = have evil-hearted intentions}

*fekete ármány* {black plot/ scheme = vicious, wicked person}

*feketemájú* {black-livered = wicked, vicious}

*sötét alak* { a dark figure = a wicked person, a low scoundrel}

*look black* {1. sad 2. angry}

*give somebody a black look* {give somebody a threatening look}

*give somebody a dirty look* {give somebody a threatening look}

*black-browed* {frowning, threatening}

*black-hearted* {wicked}

Ranschburg (1977) claims that *fear*, *anger* and *aggression* have the same roots, so it is not surprising that the expressions listed above refer to these emotions and make use of the same symbolic meanings of *dark* and *black*. It is interesting to note that English does not use the term *dark* but *dirty* for *black* in *give somebody a dirty look*.



If we give the above English and Hungarian expressions a closer look, we can see that none of them means *fear*. Instead they refer to *fear* indirectly by describing the other person who seems to be threatening for the self. This threatening or dangerous person is characterized as a dark figure (*sötét alak*) who casts a dark look or dark looks at somebody (*sötét pillantást/pillantásokat vet*), has dark thoughts or intentions (*sötét gondolatai vannak*) in Hungarian, while in English he/she *looks black* or *gives a black or a dirty look*, and he is *black-browed*. The person described by the above phrases is considered as the source of *threat* or *danger*, while the person giving the description is either the one to experience *fear of threat* or *danger* or a third person witnessing two other people in the situation. The 'describer' transfers his/her own feelings about the situation into the person regarded as threatening or dangerous. It means either he/she is afraid or he/she thinks and relates that one of the two people involved in the situation is afraid of the other. The idea that we transfer our feelings into another person and only indirectly speak about our *fear* when using the above expressions seems to be proved by the fact that we hardly ever describe ourselves with expressions like *sötét pillantást vetettem rá* {I cast a dark glance at him/her}.

Some of the above listed expressions describe the way one is looking, the other part describes what one looks like and what one is like, in other words his/her appearance and character. In Hungarian, a dangerous person's way of looking is *dark* (*sötét a nézése* {his/her way of looking is dark}), in English he/she is *black-browed*, probably because we cannot know what is behind the *dark* or *black* look. When we want to describe this wicked person in Hungarian, we call him/her *feketemájú* {black-livered} while in English *black-hearted* as if we could see inside the person and reveal the hidden part of his/her character.

We can see that many of the above expressions refer to the ways one is looking. Descriptions containing these expressions are given by somebody who experiences *fear*. The described person is considered to be dangerous or threatening and he/she is probably experiencing *anger* and planning to do something about it, perhaps taking revenge.

Kövecses (1990, pp. 72, 119) claims that ways of looking are characteristic of certain emotions thus the metonymy WAYS OF LOOKING STANDS FOR FEAR and RESPECT (e.g.: *There was fear in her eyes. They looked at the statue with great reverence. She gave the old professor an admiring look.*). I think, we can add WAYS OF LOOKING STANDS FOR THREAT. And *threat* means we can get into trouble, which we would like to avoid. If we are not sure that we can, we are afraid of it.



When discussing *piros* and *vörös*, we asked whether these colours can be intensified and we answered yes, especially if we talk about *anger*. We saw that the next stage after *vörös* is *lila* {purple}. Under *fekete* {black} only six of the informants chose *harag* {rage} and *bosszú* {revenge}. But we should also notice that *anger* and *revenge* can be put in the same group as *hate*, *malice*, *aggression*, etc. (representing another seventeen informants), to which they are clearly related. Therefore we cannot ignore them.

Now we should raise the question whether the occurrence of *anger* under *black* means that *black* is a darker shade of *purple*. Our answer is a definite no because no matter how angry we are and how much blood has rushed into our head the colour of our faces does not turn as dark as to be called *black*. In other words, the above expressions do not describe physiological changes, the change of colour in the face area.

On the other hand, *sötét gondolatai vannak* {having dark thoughts}, or *giving somebody a black look* means that the person described is very *angry* and he/she has got to a stage at which he/she is considering possible ways of fighting back and next he/she is likely to take revenge in one way or another. If this happens, we can talk about a further stage in the *anger* scenario. (Cf. the discussion of *anger* and *black* above and Lakoff (1987) and Kövecses (1990).)

In sum, expressions containing *piros*, *vörös*, *lila* in Hungarian, *red* and *purple* in English are metonymies describing the physiological changes experienced by the angry person, whereas expressions with *sötét* {dark} and *fekete* {black} in Hungarian, *dirty* and *black* in English can be analysed metaphors referring to the *angry* person's behaviour. Comparing expressions with shades of *red* and *black* we can notice a considerable change in perspective, namely, by using expressions containing *red* we describe physiological changes characteristic of the angry person, whereas by using expressions containing *black* we can show how threatening the described person is for us and indirectly we refer to how afraid of him/her we are. Thus, the expressions in question reveal the relation of an angry person and another person at whom his/her anger is directed.

### 2.2.3. Fear

Now let me return to *fear* and *anxiety*. Comparing the answers under *piros*, *vörös*, *lila* and *fekete*, I can say that *fear* has the highest frequency under *black* and in addition three informants



have chosen *halálfélelem* {fear of death}. Under *piros*, *vörös* and *lila* {light red, dark red and purple} *fear* and *anxiety*, *excitement* and *irritation* have got similar representation.

It is interesting to note that with the exception of *fekete* {black}, under all the other colours we can find *ijedtség* {fright}, too, moreover under *vörös* one informant has put *veszély* {danger}. Of course, *danger* is not an emotion term but we always react with some kind of emotion, mostly with *fright* or *fear*, to a dangerous situation.

What can the reason be for the fact that some of the informants have put *fear* under *black*, others under *red* (*piros* or *vörös*), and still others under *purple*?

It seems that the more intense the emotion :: the darker the colour schema, which I put forward as a hypothesis when discussing *anger*, cannot apply to *fear* and *anxiety* simply because somebody who is afraid of something does not normally blush but rather gets pale or *turns white*. Therefore the answers given by my informants cannot refer to the physiological changes accompanying the state of *fear* or *anxiety*. It is more likely that the choice of *piros* and *vörös* {light red and dark red} is motivated by the fact that very often the cause of *fear* is some kind of *danger* or *threat* and as we all know the most common symbol of *danger* is the colour *red*. Just think of the red light of the traffic lights or signs and notices referring to danger either in traffic or in other fields of life.

Some students have put *fear* and *fear of death* under *black*. The motivation should be something different here. Namely, we are very often afraid of unknown things. If we do not know something, we think of it as being in the shade or in the dark so we cannot see it clearly. And if we cannot see something, we do not know what it is and we cannot understand it. Consequently we are afraid of it. I think, this is the point where the motivations for expressions of *fear*, *malice* and *threat* meet; cf. *sötét pillantást/ pillantásokat vet valakire* {cast a dark glance/ dark glances at somebody}, *sötét gondolatai/ szándékai vannak* {have dark thoughts/ intentions}, *look black, give somebody a black look/ a dirty look*, etc. As we have seen it in the discussion of *anger* these expressions describe the angry person's behaviour but, at the same time, they indirectly refer to the speaker's/describer's fear of the threat that an angry person means for them.

Lakoff and Johnson (1980, p. 48) claim, UNDERSTANDING IS SEEING and IDEAS ARE LIGHT-SOURCES. If somebody casts dark glances at us or gives us a black look, we cannot see or foresee what he wants; and if somebody around us has dark thoughts or intentions, his ideas are not light-sources, which prevents us from meeting trouble halfway.

But what can explain putting *fear* and *fright* under *purple*? Perhaps the explanation is if we are *frightened* or *afraid*, blood rushes out of our heads, we turn *white*, our lips and fingers go



*blue* or *purple*. Lips described with *ellilult/ elkékült az ajka* {his/her lips have gone purple/ blue} in Hungarian would probably be described with *his/her lips are/ have gone blue* in English. We may have our blood curdled in our veins (*meghül/ megfagy a vér az ereiben* {have one's blood cooling/ freezing in one's veins}). To describe these things we need a 'cold' colour and *lila* {purple} in Hungarian can be taken as a cold colour; as we all know it is a blend of *red* and *blue*. In other words, the *lila* {purple} of *fear* and *fright* is not the same as that of *anger*. The former is closer to *blue* whereas the latter is closer to *red*. Another reason can be, which is probably totally independent of the previous one, that many people do not like *purple* because it is a repulsive colour to them so they can only associate bad, disgusting or negative things with it.

### 2.3. Summary

Summing up the whole section, we have seen that all the four colours *piros*, *vörös*, *lila* and *fekete* can be associated with emotions very easily. The survey shows that *vörös* {dark red} is primarily the colour of *passionate love*, *passion*, *anger* and *shame*. *Piros* {light red}, on the other hand, is the colour of *love* and *passionate love* and also of *anger*. I have noticed that a very angry person can be described by phrases containing *lila* and *purple*. *Piros*, *vörös* and *lila* in Hungarian, *red* and *purple* in English are shades of one and the same colour; and the darker shades describe the more intense emotional states. Metonymies containing the above colours describe the colour of an angry person's face and neck. I have also found *vörös* and *red* in metaphors, which describe the angry person's behaviour.

*Black* is associated with negative emotions: *sadness/grief*, *hate*, *anger* and *fear*. The meaning of *black* is metaphoric both in Hungarian and English expressions: 'gloomy, depressing, threatening'. We have seen that the symbolic meaning of *fekete* {black} and *sötét* {dark} are very close to each other and expressions like *feketén/ sötéten látja a helyzetet* {see the situation as black/ dark}, describe our bad mood or a situation out of which we cannot see a way. But we also use the terms *sötét* and *fekete* in Hungarian and *dirty* and *black* in English if we talk about someone's malice or wickedness that we are afraid of: *sötét alak* {a dark figure}, *feketemájú* {black-livered}, *black-hearted*, *give a black/ dirty look*. The analysis of *black* has shown that *fear* and *anger* are very closely related. So it is not surprising that the colour of *anger* is not only *red* and *purple* but also *black*. *Black* metaphorically refers to a late stage of *anger*, at which one is starting to think about fighting back.



### 3. Emotions and colours

In this section, I will discuss the answers of the students in the second group and check whether they support the findings presented in the previous section.

The answers show that the colours of *szeretet* {love} and *szerelem* {passionate love} are *piros* {light red} and *vörös* {dark red}. Under *passionate love piros* (chosen by 34 students) and its shades (*tűzpiros* {fire light red}, *vérpiros* {blood light red}, *bíborpiros* {purple light red}) and *vörös* (chosen by 29 students) and its shades (*borvörös* {wine dark red}, *élénkörös* {vivid dark red}, *skarlátvörös* {scarlet dark red}, *tűzvörös* {fire dark red}, *meggyvörös* {cherry dark red}) are practically equally represented. Under *love piros* (chosen by 37 students) and its shades (*világos piros* {light light-red}, *rózsapiros* {rose light red}) have an overwhelming majority. In addition, *rózsaszín* {pink} has been chosen by eleven students. The choice of lighter shades of *red* for *szeretet* {love} proves it again that it is considered a less intense (or less passionate) emotion than *szerelem* {passionate love}. The choice of various shades of *red* seems to be reasonable since *red* is a 'warm' colour and *love* and *passionate love* are positive emotions, which are easily associated with warmth.

*Anger and hate* are opposing emotions to *love* and *passionate love*.

The answers under *düh/harag* {anger} show that more than a third of the informants describe *anger* as *black*, another third of them choose *dark* shades of *green*, *blue* and *grey*. All these colours are *dark* and *cold* and as such they give a negative evaluation to the emotion they are used to describe. It is interesting to note that the term *sötét* {dark} is used frequently in the answers and it also appears in *sötét színek* {dark colours} and *sötét árnyalatok* {dark shades}. A bit less than a third of the students put various shades of *red* and *purple* under *anger* which refer to the colour of the angry person's face, as we have seen it in the first section. There are two colour combinations mentioned, *csíkos: fehér-fekete* {striped: white-black} and *fekete és vörös együtt* {black and dark red together}, which may refer to the fact that as long as *anger* 'is going on', it is changing, developing, combining various characteristics in its scenario. It seems to be tangible in the second answer, where *black* may refer to *anger* evaluating it as negative, while *red* is probably related to the physiological changes (blushing) accompanying *anger*.

The answers under *utálat/gyűlölet* {hate} show that *hate* has a very negative evaluation being described as *black* by almost half of the informants. With the exception of less than ten people, all the others have chosen various *dark* shades of *green* (*méregzöld* {poison green = ivy



green}, *haragos zöld* {angry green}, *sötétzöld* {dark green}, *barnás zöld* {brownish green}), *blue* (*sötétkék* {dark blue}, *lilás kék* {purplish blue}), *purple* (*sötétlila* {dark purple}, *haragos lila* {angry purple}), *brown* (*sötétbarna* {dark brown}, *barna* {brown}) and *grey* (*sötétszürke* {dark grey}, *szürke* {grey}). The shades of *purple* and *red* do not seem to be surprising if we think of a person full of *hatred* or *malice* because very often these emotions go back to a situation in which we have got very angry and have gone red or purple due to some real or unreal harm done to us. In this sense *red* and *purple* may be related to the description of the colour of our skin and, on the other hand, *purple* as a *cold* colour may refer to the negative character of the emotion of hate.

Seven informants put various shades of *yellow* under *utálat/gyűlölet* {hate}, which can perhaps be explained by the fact that in Hungarian some negative emotions are associated with *yellow*, the most important of which is *envy* (*előnti a sárga irigység* {he/she is flushed with yellow envy}, *elsárgul az irigységtől* {turn yellow with envy}). However, in English *envy* is associated with *green* in *be green with envy*. *Jealousy* is also *green*: *look through green glasses*, *the green eyed monster*. In some other expressions, on the other hand, *jealousy* is associated with *yellow*: *wear yellow stockings*, *see something with a jaundiced eye*, etc. Originally the word *jaundice* referred to a disease caused by an excess of bile in the blood which makes the skin and the whites of eyes become abnormally yellow (Oxford Advanced Learner's Dictionary).

In the previous section, I claimed that the colour of *shame* is *red*, *piros* and *vörös*, although not many students have mentioned it under *piros* and *vörös*. However, here one third of the students described *shame* with one of the shades of *red*. It is interesting to note that around half of my informants described *shame* with some *dark* colour (*black*, *brown*, *green*, *blue*). It probably shows that this emotion is very negative and if possible, it should be avoided. (There were three students who could not describe *shame* with a colour.)

*Fright* and *fear* are also negative emotions.

The answers show that *fright* can be described with a great variety of colours and shades but *white* and *dark* colours seem to be dominating. *White* refers to the colour of the face of the *frightened* person; expressions like *elfehéredett az arca az ijedségtől* {his/her face has gone white with fright} and *fehér, mint a fal* {white as a wall} illustrate this very well. *Blue* and *purple* may describe the frightened person's lips. When somebody is pale, that is, so much blood has rushed out of his/her head that his/her lips lose their colour and become abnormally *bluish* or *purplish*. The *dark* shades of *green*, *blue*, *purple*, *grey* and *black* show that *fright*, too, is a negative emotion.



Under *félelem* {fear} dark colours have a very high frequency and the number of students choosing *black*, *grey*, *blue* and *brown* is more than half of the total number. As we all know, *grey* is a blend of *black* and *white*, and *blue*, as Goethe claims (1983, p. 68), can be derived from *black*, too, that is, “the *black* which turns light turns *blue*” (op. cit., p. 51). Here again, the *dark* and mostly *cold* colours describe an emotion that is considered as very negative. In addition, ‘darkness’ probably refers to the object of *fear*, that is, what we cannot see we do not know, what we do not know we cannot control and if we cannot control a thing, the thing may take control over us. Such a situation means that we have lost our independence, our ability to make decisions and act freely; we are in danger. Getting into a situation like that is to be avoided. The possibility to get in danger is something that we all fear .

In the first section, I have shown that under *black sadness* and *grief* are mentioned most frequently. The answers under *szomorúság/bánat* {sadness/grief} prove that *sadness* and *grief* are *black* indeed, although some other dark colours (*grey*, *blue*, *brown*, *green*) are also used in great numbers. More than one third of the students put *black* under *sadness/grief* and more than half of them characterized this emotion with a *dark* shade of *grey*, *blue*, *brown* or *green*. Four students saw *sadness/grief* as *white* (*fehér, mint a fal* {white as a wall}), one as *white and black* (*fekete és fehér együtt* {black and white together}); while three students described *sadness/grief* with the following expressions, *sötét* {dark}, *sötét színek* {dark colours} or *jellegtelen színek* {characterless colours}. Therefore, we can make the statement that the *sad* see the world around them in *dark* shades (*sötéten/ borúsan/ feketén látja a helyzetet* {see the situation as dark/ gloomy/ black} is correct. Since they ‘are in the dark’, they ‘cannot see’ a way out of their situation which they consider as bad or difficult.

In this section, I have examined whether my findings and explanations presented in the first section correspond to what the answers given to the second questionnaire show. Now it seems that *love* is *piros* {light red}, *passionate love* is *piros* and *vörös* {light red, dark red}, *anger* is *piros*, *vörös*, *lila* and *fekete* {light red, dark red, purple and black}, *shame* is *piros* and *vörös* {light red, dark red}, *hate* is *fekete* {black} and *sötét* {dark} (*sötétzöld* {dark green}, *sötétkék* {dark blue}, *sötétlila* {dark purple}), *fright* is *fehér* {white}, *fear* and *fright* are *fekete*, *szürke* and *sötét* {black, grey and dark} *sadness/grief* is *fekete* {black} and *sötét* {dark} in Hungarian.

In expressions of emotion *vörös* {dark red} and its shades refer to blood, *fehér* {white} refers to a lack of blood in the face and neck area, while *sötét* {dark} colours, *fekete* and *szürke*



{black, grey} symbolically mean 'gloomy, depressing, threatening'. The English expressions collected from dictionaries show that *red* and *black* and the term *dark* have very similar meanings in English.

#### 4. Colour symbolism of *red* and *black*. Conclusions

In section 1, I described my survey examining the relationship between colours and emotions. I introduced the two questionnaires, the first of which was filled in by 89 female students while the second was filled in by 88 other female students.

In section 2, I discussed the emotions which the informants in the first group associated with *piros*, *vörös*, *lila* and *fekete* {light red, dark red, purple, black}. In my analysis, I attempted to show the relationship between colours and emotions and to prove it by illustrative examples taken from English and Hungarian.

In section 3, I discussed the colours which the second group of informants associated with the emotions *szeretet*, *szerelem*, *düh/harag*, *utálat/gyűlölet*, *szégyen*, *ijedtség*, *félelem* and *szomorúság/bánat* {love, passionate love, anger, hate, shame, fright, fear, sadness/grief}. I compared the answers with the answers given to the first questionnaire.

My findings in connection with the relationship between *piros*, *vörös*, *lila* and *fekete* {light red, dark red, purple, black} and emotions, and the symbolic meanings of these colours can be summarized as follows:

- (1) My survey has proved that certain emotions can be associated with certain colours and most of the associations have linguistic representations of the emotions in question.
- (2) Certain colours and the expressions containing them describe physiological changes that accompany emotions, with special emphasis on the change of colour in the face and neck area. *Red* and its shades refer to a change when blood rushes into one's head, e. g. *Irul-pirul, mint a főtt rák* {get light red as a boiled lobster}, *lila a feje* {his/her head is purple}; *be red as a boiled lobster*, *have a purple fit* all refer to *anger*. Although I did not go into a detailed analysis of the meaning of *white*, I demonstrated that *white* refers to a lack of blood in the face area. Experiencing certain emotions we turn pale, e. g. *falfehér az ijedtségtől* {he/she is wall-white with fright}, *be as white as a sheet*. Expressions of this kind are metonymies.



- (3) With respect to certain emotions certain colours form groups as lighter and darker shades of one and the same colour and describe different stages in the scenario of the emotion. The expressions containing the different shades of a colour refer to different levels of intensity of the emotion. This relation is present in the the darker the colour :: the more intense the emotion schema (*piros, vörös, lila* {light red, dark red, purple} in Hungarian, *red* and *purple* in English). I found the best examples, not surprisingly, among the expressions of *anger* and *shame* because these emotions are most typically accompanied by blushing, e. g. *irul-pirul, mint a főtt rák* {get light red as a boiled lobster}, *piros, mint a paradicsom/ a paprika/ a rózsá/ etc.* {light red as a tomato/ a pepper/ a rose/ etc.}, *vörös, mint a főtt rák/ a pipacs/ a paprika* {dark red as a boiled lobster/ a poppy flower/ a pepper}, *rákvörös* {lobster dark red}, which refer to *shame* and *anger*; *lila a feje* {his/her head is purple}, *have a purple fit*, which refer to *anger*.
- (4) Certain colours and expressions containing them do not describe physiological changes but some other aspects of emotional states. We saw a number of examples for it in connection with *anger* and *sadness*. Although they can be seen as metonymies, they are better analysed as metaphors (What is inside us, what we feel and what makes us behave in a certain way is difficult to verbalize. Therefore having no better means, we describe these things by referring to things which are on the surface, which can be seen outside).

Among *anger* metaphors there are a lot of expressions which use the image of bullfights referring to a scene in which the bullfighter waves his red cape in front of the bull which 'gets angry' and starts attacking. E. g. *It's like a red rag to a bull/ to him. It makes him see red. Haragszik, mint bika/ bivaly a vörösre* {He's angry like a bull/ a buffalo is angry with red}. *Vörös posztó a szemében* {It's a piece of red cloth in his eyes}. These expressions describe the behaviour of the angry person, they refer to the fact that his/her anger is intense, his gestures are agitated, he/she may shout and pant, etc.

I found expressions containing *fekete, sötét* and *borús* {black, dark, gloomy} referring to *sadness*, e. g. *feketén/ borúsán/ sötéten látja a helyzetet* {see the situation as black/ gloomy/ dark}, which means that the sad person cannot see the situation he/she is in clearly, he cannot see a way out, he is just feeling for a helping hand in the dark (cf. (a) *sötétben tapogatózik*



{groped around in the dark}). So the above metaphors refer to several aspects of the behaviour, way of thinking and thoughts of a sad person.

- (5) If we compare the physiological effects of the examined colours with their meanings in Hungarian and English expressions, we can see that the two do not contradict at all. That is, the physiological effects of *red* and its shades are an increase in heartbeat and blood pressure, while their biological effects are excitement and stimulation. Expressions containing *red* all describe emotional states in which our heartbeat increases, we get excited or agitated and we go red.

The effects of *black*, however, are of the opposite kind: depressing, tiring, exhausting. These characteristics are present in the emotional states described by *black*.

There is one more point to be made here. The symbolic meaning of colours changes, as a matter of course, from time to time, from culture to culture, not to mention the idiosyncratic differences in the language use of individuals. But it seems likely that the symbolic meaning of colours will not contradict their biological meanings (Matolcsi, 1988, p. 8).

- (6) Returning to the title, I trust that this paper has explained that the colour of *love* is *red* (in Hungarian *piros, vörös*), the colour of *anger* is *red-purple* (in Hungarian *piros-vörös-lila*) and *black* (in Hungarian *fekete*), while the colour of *hate* is *black* (in Hungarian *fekete*). The darker shades of colours refer to more intense levels of the emotion in question (in other words, they refer to later stages in the scenario of the emotion). The meaning of *red* and its shades is 'blood', whereas the meaning of *black* and *dark* is 'threatening, depressing and wicked'. *Red* is mostly used in metonymies but also in some metaphors, *black* is used in metaphors.

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## DISCOURSE COHESION AS AN ANAPHORIC RELATION

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### 1. Introduction

#### 1.1. The problem

The construction of non-sense non-texts exhibiting lexical relationships is very easy. Although example (1) displays several lexical relationships (e.g. *car-cars*; *beautiful-beauty*; *cars-cars*), most native speakers would say it is not a text, since it is not coherent (at least without a contextualized support).

- (1) John bought a car last week. Cars are said to be beautiful. Beauty is subjective. I don't like cars at all.

Example (2), however, is a fully interpretable coherent text:

- (2) John bought a car last week. The car is said to be beautiful, but this beauty is subjective, because I don't like the car.

Here similar lexical relations are in operation, and some other non-lexical relations as well. The major question that arises from the comparison of (1) and (2) is the following: what makes the difference between the two?

Lexical repetition does not always indicate textual relations even if the text does make sense. Consider (3) below:

- (3) He started to learn step dancing when he was 6. This was the first step towards his later success as a professional dancer.

In this example no textual relationship should be detected between the two occurrences of *step*, but there is no constraint in any framework of cohesion on considering such instances a cohesive tie.

From these examples it is obvious that lexis --though being a very important factor in text creation -- does not account for cohesion and coherence. One must find a rule that would label



non-sense non-texts also non-cohesive, and would at the same time exclude unrelated lexical repetitions from the cohesion of fully interpretable texts.

What distinguishes (2) from (1) is the presence of grammatical elements that indicate textual relations, and whenever lexical items are included, their identity of reference with their antecedent is guaranteed by making the nouns *car* and *beauty* definite. That is, allowing for only definite lexical items in the analysis of cohesion solves the problem: all lexical relations in example (1) would be labeled as non-cohesive, and the two occurrences of *step* in (3) would not be analyzed as related.

All these arguments boil down to one crucial point: cohesion, after all, is a grammatical relationship in texts -- as de Beaugrande and Dressler (1981) claimed, cohesion is syntax in communication -- where there are linguistically explicit elements that are related. Since cohesion always looks at how an utterance is linguistically connected to the previous discourse (Halliday & Hasan, 1976), the idea of cohesion being an anaphoric relation arises.

## 1.2. (Re)defining cohesion

The main argument of this paper is that discourse cohesion is an anaphoric relation, which is expressed by cohesive ties in the text. A cohesive tie comprises a pair of cohesively related items, in which the interpretation of the second element depends on the presence of the first (anaphora) in two ways: (1) semantically and (2) grammatically.

## 1.3. Unit of analysis: finite clause

Cohesion occurs both within and between sentences. As Halliday and Hasan (1976) argue, cohesion within sentences attracts less notice since a sentence hangs together already by virtue of its grammatical structure. Cohesive ties that occur between sentences stand out more clearly since they are the only source of texture. However, this approach is not without problems, as the following example shows:

- (4) a. *Mary* promised to write me, but she hasn't sent any letters since then.  
 b. *Mary* promised to write me. But she hasn't sent any letters since then.

According to Halliday and Hasan, in (4a) *Mary* and *she* do not form a cohesive tie since they occur in the same sentence. In (4b) they do constitute a cohesive tie because *she* occurs in a different sentence. Still, the interpretations of (4a) and (4b) do not seem very different from each



other, (4b) is not more cohesive than (4a). So this kind of distinction between intra- and intersentential ties does not seem to be justified.

Another shortcoming of Halliday and Hasan's (1976) sentence-based approach is pointed out by Smith and Frawley (1983). They examined cohesive conjunction, therefore they needed an explicit statement of the scope of cohesive conjunction, which they did not find in Halliday and Hasan's model. There are two ways to identify sentence boundaries in written text. In the narrow sense, sentence boundaries are marked by a period or question mark. In the broader sense boundary markers also include semi-colons. Though this seems a secondary question in the analysis of cohesion, the results Smith and Frawley obtained according to the narrow and the broad interpretations of sentence boundaries differ significantly.

Representing a different approach Smith (1985) and Hasan herself (1984) used a different unit of analysis: the full finite clause, which is "any clause, dependent or independent, with a tensed verb form and a present or implied subject" (Smith 1985, p. 233). This is a more plausible approach for it answers the question posed in connection with (4a) and (4b), and can be smoothly applied in the analysis of written texts. Polanyi (1988) goes even further building the Linguistic Discourse Model on the clause as the elemental discourse constituent unit (note, however, that this paper does not intend to cover formal approaches to discourse structure, e.g.: Grosz, 1981, Polanyi, 1988).

Similarly to written texts, spoken texts also have their "structure". Halliday and Hasan (1976) argue, that phonological units (syllables, feet, tone groups) are internally cohesive because of their structure. They, however, do not provide an analysis of the tone group, as opposed to the detailed analysis of the sentence as a structural unit. Scholars working with spoken discourse do need a clearly defined unit of analysis since neither sentence boundaries (e.g. narrative talk) nor clause boundaries (e.g. turns in conversation that do not even have a finite verb) can be unambiguously identified.

Several studies mention the tone group (tone unit) as the most important unit of intonation (Brown and Yule, 1983, Halliday, 1989, McCarthy, 1991), nevertheless there have not been any reports on using the tone group for the analysis of cohesion (other than its intonational indications).

Though the proper identification of structural boundaries in text is crucial in several areas of discourse analysis (cohesion, genre analysis, thematic structure analysis, conversation analysis etc.), it has not been widely treated in the literature (Paltridge, 1994). Researchers embarking upon analyzing cohesion employ one of the structural units discussed above.



Since I found the finite clause the most clearly definable unit of analysis both in written and spoken texts, I chose it as the unit of cohesion analysis, i.e. the parties of a cohesive tie are situated in different finite clauses.

## 2. Anaphora and cohesion

### 2.1. Anaphora

Anaphoric relations are in the focus of two distinct disciplines: discourse analysis and referential semantic analysis. Both study the interpretations of anaphors in their relations to their antecedents. Discourse analysts only marginally investigate the possible interpretational problems, and look at anaphors as surface phenomena regardless of underlying semantic relations. Referential semanticists, however, give a much more detailed account of referential expressions and their several interpretations and do not account for their textual functions. This paper attempts to give an insight into the findings of referential semanticists (Section 3) only to pinpoint the irrelevance of these problematic cases in actual analysis of textual cohesion.

The term 'anaphora' is defined differently by different scholars. According to the most traditional view anaphors are pronouns that have an antecedent (Brown & Yule, 1983) or according to an even more restricted definition, they are third-person singular human references (Fox, 1987), whereas a broader interpretation is given by de Beaugrande and Dressler (1981), who argue that any pro-form can express anaphoric relations. Following the latter view, all pro-forms (e.g. the pro-verb *do*, the pro-modifier *so*) are considered anaphors here.

Concerning the relationship between an anaphor and its antecedent Lyons (1977) distinguishes between a traditional approach and an alternative approach. The former approach claims that the anaphor refers to its antecedent, i. e. to the linguistic form, whereas according to the latter the anaphor refers to whatever the antecedent refers to, i.e. they are co-indexed. Consider (5a) and (5b) below:

(5) a. A: That's a *rhinoceros*.

B: A what? Spell it for me. (Lyons, 1977, p. 667)

b. (in the zoo) Look at that *rhinoceros*! She's going to have a baby.

In (5a) the pronoun *it* refers to the linguistic form and does not refer to what *rhinoceros* refers to, so they are not co-indexed. In (5b) *she* refers to whichever animal *rhinoceros* refers to, and they are co-indexed.



As Lyons (1977) argues, (5a) is a case of textual deixis, and should be clearly distinguished from anaphora (5b). From the point of view of cohesion, however, both types of relationships are labeled as anaphoric regardless of their co-indexed nature, i.e. co-indexing is not a necessary criterion of cohesion.

Co-indexing is not sufficient, either. Consider (6) below:

(6) London is a wonderful town, so the capital of England attracts a lot of tourist.

Here *London* and *the capital of England* are co-indexed in that they refer to the same thing, and the second expression is a definite NP. Even so, they do not display a cohesive tie for two reasons. First, *the capital of England* does not in any way depend on *London*, therefore it is not anaphorically related to it. Second, the definiteness of the NP *the capital of England* is not licensed by the given status of the information, but by the of-genitive structure.

## 2.2. Defining anaphora

The definition of anaphora in my approach is based on some of the aspects mentioned above with the following restrictions. Anaphora is seen as the grammatical and semantic relationship between two linguistically explicit text elements the first of which is called the antecedent and the second is called the 'dependent', since its use and interpretation strictly depends on the presence and characteristics of the antecedent both semantically (meaning) and grammatically (form). The antecedent and the dependent are interrelated such that the antecedent determines the form of the dependent provided there is a choice (e.g. *he* cannot be the dependent if the antecedent is *Susan*), and the dependent restricts the choice between the possible antecedents (e.g. if the dependent is *he*, the listener has to find a male antecedent for its interpretation).

## 2.3. Cohesion in an anaphoric view

In order to see which are the truly cohesive relations (i. e. anaphoric relations) I propose the following cline (Figure 1), which examines all the cohesive relationships mentioned in the literature of cohesion, in terms of their anaphoric nature.



**Figure 1. Explicit textual relations.**

<i>true anaphora</i>	<ul style="list-style-type: none"> <li>• pronouns (7) Yesterday Betty met <i>John</i>. <u>He</u> apologized for his mistakes.</li> <li>• demonstratives (8) <i>She kept on teasing me</i>, but I couldn't bear <u>this</u>.</li> <li>• substitution, ellipsis (9) She likes both of her <i>mini skirts</i>, but she prefers the green to the blue <u>one</u>.</li> <li>• proper names (10) He had to choose between Mary and <i>Kate</i>, and he chose <u>Kate</u>.</li> <li>• definite NP             <ul style="list-style-type: none"> <li>• repetition (11) They met an old <i>lady</i> there. <u>The lady</u> was nice to them.</li> <li>• definite morphological variant (12) The two parties <i>decided</i> to join forces and impose a new tax on the citizens. <u>This decision</u> affected more than three million people.</li> <li>• definite renaming (13) He asked me <i>whether I was at home</i>. <u>The question</u> surprised me.</li> </ul> </li> <li>• comparatives (14) They were <i>conscientious and reliable</i>. <u>Such</u> people are difficult to find.</li> <li>• relative pronouns (except <i>what</i>) (15) This is the <i>house</i> in <u>which</u> Chaucer lived.</li> </ul>
full grammatical and semantic dependence → cohesive	
semantic dependence → non-cohesive	<ul style="list-style-type: none"> <li>• coordinating conjunctions and conjuncts (16) <i>She tried to convince us</i>, <u>but</u> we didn't believe her.</li> <li>• non-relative subordinating conjunctions and conjuncts (17) He said good-bye to all of us before he left.</li> </ul>
context-based relatedness → non-cohesive	<ul style="list-style-type: none"> <li>• formulaic utterances, adjacency pairs (18) Thank you. -- Not at all. / You're welcome. (19) What time is it? -- Eight.</li> <li>• structural parallelism (20) The baseball game was canceled in New Haven, and the hockey match was postponed in Hartford. (21) My paintings the visitors admired, my sculptures they disliked. (Quirk, et. al. 1985, p.1427)</li> <li>• tense, aspect, sequencing (22) I came, I saw, I conquered. (23) The policeman put up his hand. The car stopped. (ibid.)</li> <li>• collocation (24) Ladies and gentlemen.</li> <li>• word choice due to extra-textual factor (style, social status) (25) The gentleman encountered an acquaintance. The guy met up with this bloke he knows (Brown &amp; Yule, 1983)</li> <li>• asyndetic parataxis (Quirk, et. al., 1985) (26) Go and visit your father. It's New Year's Eve.</li> <li>• conversational implicature (27) A: Can you tell me the time? B: Well, the milkman has come already. (Levinson, 1983, p. 97)</li> <li>• non-definite lexical relations (28) All of the paintings were nice. They were just wonderful.</li> </ul>

*non-anaphora*



### 2.3.1. Absolute grammatical and semantic dependence

The most tightly dependent anaphoric relations are expressed by pronouns (true anaphors), demonstratives, substitution (pro-forms) and ellipsis. In (7) the pronoun *he* refers to whoever *John* refers to, the antecedent *John* and the dependent *he* are interrelated in the sense that *John* can only be referred to as *he* (and not *she* or *it*), and vice versa, *he* can only refer back to *John* (and not *Betty*, or *yesterday*). Similarly, the same relationship is present between *She kept on teasing me* and *this* in (8). In (9), the pro-form *one* is anaphoric to *mini-skirts*, and even though they do not agree in number, the grammatical dependence is expressed by the use of *one* after the countable noun *skirts*.

Proper names are also anaphoric when used more than once in a text (cf. (10) above). The only difference between pronouns and proper names is that the anaphoric chain of proper names can be interrupted and restarted in the text, whereas that of pronouns has to be restarted by identifying the antecedent again.

Another way of expressing anaphoric relatedness is using a definite noun phrase as dependent. Speakers use a definite expression when they assume that it is identifiable or accessible to the hearer (Givón, 1995), i. e. it has an antecedent in the text (or elsewhere, but then it is not cohesive). There are three main types of cohesive NPs. The first type concerns the exact repetition of a noun accompanied with a definite article or a demonstrative (*this*, *that*), as in (11) above. An alternative case can be found in (12), where the antecedent is not repeated, but one of its morphological variants is, a phenomenon called "partial lexical recurrence" (Dressler, 1985). Both these categories express lexical relationships. The third category, however, implies a semantic relation, where the definite NP does not necessarily contain a repetition or a morphological variant. As (13) indicates, the use of the definite article is licensed by the first utterance, and the noun in the dependent NP (*question*) is a "cover term" for the antecedent. Martin (1992; following Francis, 1985) calls such nouns anaphoric nouns (A-nouns), and argues that "all (...) are grammatical metaphors" (p. 376), and provides a set of examples including nouns like *argument*, *assumption*, *belief*, *criticism*, *definition*, *point*, *suggestion*, *viewpoint*, etc. All three types of definite NPs are considered cohesive if and only if their definiteness is licensed by an element or elements in the preceding discourse.

The next category, comparison includes expressions of identity, similarity and difference, e.g. *same*, *equal*, *such*, *other*, *different*, comparative adjectives and adverbs. In example (14) above, *such* anaphorically refers to *conscientious and reliable*. Whenever they are in an



indefinite NP (e.g. *another idea; a different question*), only the expressions of comparison (i. e. *another* and *different*) are considered cohesive, not the whole NP.

The final category of absolute anaphora is relative pronouns. With the exception of *what*, all relative pronouns have a textual antecedent upon which they are grammatically and semantically dependent. In (15) for instance, the interpretation of *which* depends on the presence of *house* in the previous discourse, and the use of *who*, for instance, would result in grammatical ill-formedness.

### 2.3.2. Non-cohesive semantic dependence

Coordinating conjunctions and conjuncts are clearly dependent on the previous clause in terms of their meaning, but not their form. Therefore I do not consider them anaphoric. The reason why I placed them closer to the true anaphora end of the cline than subordinating conjunctions and conjuncts is that they are restricted to occurring in the second clause (i. e. there is a slight syntactic dependence), and an alternative of (16) below would be an impossible combination:

(29) \* But we didn't believe her, she tried to convince us.

In the case of non-relative subordination (17), however, the subordinate clause can precede the main clause as in (30) below:

(30) Before he left, he said good-bye to all of us.

However important coordinating and subordinating conjunctions and conjuncts are, they are not anaphoric, therefore they are not cohesive, either, based on the assumption that cohesion must be anaphoric. (For a complete categorization of coordination and subordination see Appendix).

### 2.3.3. Non-cohesive context-based relatedness

Since this third category of devices ever mentioned under the heading 'cohesion' do not constitute cohesive elements in this anaphoric approach, they are discussed only very briefly here.

Formulaic utterances are in the focus of studies on overall conversational organization, especially openings and closings, what linguistic formulae are used, and how they restrict the preceding or following discourse. These formulae do not exhibit cohesiveness, since they are not anaphoric relations, but very important organizational tools.



Similarly, adjacency pairs -- as the definition below also suggests -- pose certain restrictions on the discourse, but do not exhibit anaphoric relations. 'Adjacency pair' refers to

the phenomenon that, in a conversation, one utterance has a role in determining the subsequent utterance or at least in raising expectations concerning its contents.

(Renkema, 1993, p.112)

Neither (18) nor (19) above indicate any linguistic relatedness, the possible anticipation of the second turn originates in the expectations of the hearer. It is true that the interpretation of the second turn would not make much sense without the first, but the linguistic dependence that we could observe in absolute anaphora is not present here.

Structural parallelism is another device scholars consider cohesive (Cook, 1989; Hatch, 1992). Structurally parallel utterances are formally asyndetic sentences (Quirk, *et al*, 1985) that share grammatical features of tense, aspect, mood, voice, clause structure and word order, and give a strong impression of being connected thereby. An example of this is presented in (20) and (21), where due to the fronting taking place in the latter utterances the effect is even stronger. However powerful a stylistic device, parallel syntactic structure does not display any anaphoric relations, since the second utterance (the repetition of the structure) could stand in itself, and its interpretation does not depend on the first utterance.

The very same argument leads to the labeling of temporal sequences as a non-cohesive non-anaphoric textual phenomenon, although Partee (1984) considers tense a crucial anaphoric relationship. The temporal ordering of the actions is implied by the ordering of the utterances in (22) and (23) (*first I came, second I saw, and finally I conquered; The policeman put up his hand and then the car stopped*) in lack of any other linguistic relations between the utterances juxtaposed.

Halliday and Hasan (1976) argue that collocations are powerful in lexical cohesion, since the term 'collocation' means the tendency of two (or more) lexical items to co-occur (cf. '*ladies and gentlemen*' instead of '*ladies and guys*' in (24) above). That is, lexical items that form a collocation do restrict each other in use, but this relationship is not absolute, therefore these must fall out from the definition of anaphora..

A similar case can be observed in restrictions of word-choice as a result of some extra-textual factor like style (cf. (25)), social status of participants, etc. Here word choice is



determined by one or more of such context-based factors, but this does not imply any anaphoric relatedness.

In the case of asyndetic parataxis the interpretation of the juxtaposed utterances relies on the fact that "any two neighbouring sentences will be perceived as being connected" (Quirk *et al*, 1985, p.1425). The relationship between the utterances in (26) is not expressed by grammatical or lexical means, but by their juxtaposition. The interpretation of such juxtaposed utterances depends on the hearer's ability to provide the "missing link" between the two, which would be "*you usually visit your father on New Year's Eve*" in (26) above. Since the grammatical and semantic connectedness between these utterances is not even explicit, the question of cohesiveness does not even arise.

The same applies to conversational implicatures, where the two utterances are provided by two speakers, but their relationship is asyndetic. Here, again, part of the information is ellipted, since both parties of the conversation in (27) know when the milkman usually comes, and therefore the answer B gives is a proper answer to A's question, still there is no linguistically explicit link between the utterances.

The final item within the category of context-based relatedness is non-definite lexical relations including repetitions, synonyms, antonyms, hyponyms, and meronyms (Hasan, 1984). Lexical repetition is a crucial text-building device (e.g. Hoey, 1991), but it does not display anaphoric relations. This argument is illustrated in (28), where *nice* and *wonderful* are synonymous adjectives, but *wonderful* does not depend on the presence of *nice* either semantically or grammatically.

A further illustration of the non-cohesive nature of lexical repetition is given in (31) below:

- (31) His brother is giving a talk tomorrow. He believes in the brotherhood of man.

For scholars examining lexical relations *brother* and *brotherhood* would display item repetition by a morphological variant (since there is rule to prevent this). In the thorough study of cohesion, however, such accidental relations must not be considered.

To sum up, the cline in Figure 1 shows the anaphoric nature of textual elements that scholars consider cohesive. In my approach, however, only truly anaphoric textual relations enter a cohesive tie (first category). The second category includes semantically and grammatically



(e.g. word order) restricted but not dependent relations, which are not considered cohesive. The third category is a 'ragbag' of context-based textual relations which are not cohesive, either because (1) they are not explicit, or because (2) they are situation-dependent and not text-dependent.

### 3. Antecedence: ambiguous cases

In the analysis of cohesion it is the speaker's perspective that is considered as the aspect of analysis, that is all cohesive ties produced by the speaker are examined. In order to see a complete picture of anaphora, however, it might be useful to take a short glimpse at some of the problems a listener may encounter when trying to recover antecedence.

In the great majority of cases the antecedent of an anaphor is easily recoverable, but there are some ambiguous cases that originate in the scope or state of the antecedent, or the role played by background knowledge. I will discuss them separately below.

#### 3.1. Scope of antecedent

The scopes of the antecedent and the dependent may not completely overlap. The scope of the antecedent may be narrower, broader than that of the dependent, or they may differ grammatically or semantically.

Narrower scope is illustrated in (32):

(32) Arthur's very proud of his *Chihuahuas*. I don't like them.

(Halliday and Hasan, 1976. p.312).

According to the first interpretation, what the speaker does not like is the particular Chihuahuas Arthur has. In this case there is full identity of scopes. According to the second interpretation, however, the speaker does not like Chihuahuas in general, which means that *them* and *Chihuahuas* do not agree in terms of scope, since the scope of the antecedent (*Chihuahuas*) is narrower than the scope of the dependent (*them*).

The opposite may happen as well. In (33) below the scope of the antecedent (*dresses*) is broader than that of the dependent (*one*) supposing that the speaker wants one of the dresses he/she saw and not only a similar one (which would imply different scopes):

(33) I saw a lot of nice *dresses*. I wish I had one.



Difference in scope may be indicated by the grammatical disagreement between the antecedent and the dependent (usually in number), as in (34):

(34) This *house* is much bigger than the ones we've seen so far.

Here the scope of the antecedent is not included in that of the dependent, they have totally different scopes, still displaying a truly anaphoric relationship.

Another interesting phenomenon, *sloppy identity*, is discussed by Dahl (1973), who in his argument against the pure syntactic treatment of referentially ambiguous sentences examined sentences as the one in (35):

(35) Bill *loves his wife*, and so does Harry. (p. 81)

There are two possible interpretations of this sentence: (1) Bill loves his wife and Harry loves Harry's wife (non-referential reading); and (2) Bill loves his wife and Harry loves Bill's wife (referential reading). From the point of view of cohesion both the referential and non-referential readings exhibit cohesive ties.

### 3.2. State of antecedent

As Brown and Yule (1983) argue, an antecedent preserves its identity throughout a text, but it undergoes changes of state. To illustrate this, they give the following example:

(36) Wash and core *six cooking apples*. Put them into a fireproof dish. (p.201)

In their discussion of Halliday and Hasan's (1976) labeling of *them* as anaphoric to *six cooking apples* Brown and Yule argue that

whereas it is indeed those 'same cooking apples' which are at issue in the second sentence, it is relevant to note (...) that they have undergone a change of state. Whereas in the first sentence they were pristine apples, straight from the supermarket, in the second they are 'washed and cored'. Their *description* has changed (p. 201).



It is obvious that there is always something happening to the antecedent between two subsequent mentions therefore its state may undergo several changes throughout a longer text. Irrespective of this, all such cases are considered cohesive.

### 3.3. The role of background knowledge in anaphora

#### 3.3.1. Modeling background knowledge

The speaker/writer's estimation of the overall background knowledge of the hearer/reader is also crucial. If this estimation does not match the hearer/reader's actual knowledge of the world, both cohesion and coherence may eventually "break down", and the intended message is not received.

To demonstrate how important background knowledge is in the interpretation of cohesive devices, Cook (1989) uses the following example:

(37) There was a *pineapple* on the table. So I ate *it*. (p.16)

He claims that without knowing that pineapples are edible but tables are not, one would not be able to identify the referent of *it*.

Similarly, as Enkvist (1990) pointed out, a medical text would appear more coherent to a doctor, and a Chomskyan text to a linguist than to a layman having no knowledge of medicine or of Chomskyan linguistics.

There have been several attempts by researchers of Artificial Intelligence and psychologists to provide taxonomies of 'knowledge of the world' as a basic factor in the interpretation of discourse (Brown and Yule, 1983). The following four theories have been proposed by one or both of these two fields of research.

##### 3.3.1.1. Frame theory

A very well-known representation of background knowledge can be found in frame-theory (cf. Brown and Yule, 1983; Lautamatti, 1990; Nunan, 1993). It suggests that the human mind stores knowledge in the form of data structures, frames, which are based on stereotyped situations from past experiences. If the expectations are not fulfilled, the frame is modified accordingly.

A frame has slots filled by obligatory elements (e.g. kitchen in the HOUSE-frame) and optional elements (e.g. swimming-pool in the HOUSE-frame).

Probably the biggest problem with this theory is that it does not provide information concerning the selection of the frame to be activated:



(38)

This fairy-tale view of Mostar (above) ended in a nightmare. Stari Most bridge, spanning the Neretva River and linking the city's ethnic quarters, was built in 1566 by Süleyman the Magnificent. (National Geographic, June, 1996)

Even in a very short sketch of discourse like (38) there may be several frames mentioned (e.g. 'fairy-tale' frame, 'nightmare' frame, 'bridge' frame, 'ethnicity' frame, etc.) and the theory does not describe how the mind chooses the one or two necessary frames.

### 3.3.1.2. Script-theory

Script theory is based on what Schank (cf. Brown and Yule, 1983) calls conceptual dependency. The meanings of sentences are represented in conceptual terms, and the idea of dependency is based on conceptual expectations. Brown and Yule (1983) illustrate this adopting Riesbeck and Schank's example, which is given in (39) below:

(39) John's car crashed into a guard-rail. When the ambulance  
came, it took John to the *x*. (p.242)

Every reader of this text would undoubtedly know what is in the *x*-position (hospital) based on his conceptual expectations.

The main shortcoming of this theory is similar to that of frame-theory, since it is also based on stereotypical event-sequences.

### 3.3.1.3. Scenario-theory

The third theory introduced here uses a similar term to the previous two. Scenario-theory (Sanford and Garrod cf. Brown and Yule, 1983) assumes that people think of settings and situations as constituting the scenario behind a text. Scenario-based comprehension depends on the speaker/writer's effectiveness in activating the proper scenarios (i.e. what was missing in the previous two theories can be found here). The theory emphasizes that appropriate structuring, staging and thematization increase interpretability, and if a large number of scenarios is activated simultaneously, the text takes more time to process.



## 3.3.1.4. Schema-theory.

Probably the most well-known approach to defining the role of background knowledge is known as schema-theory. It suggests that knowledge is organized into interrelated patterns (schemata), which are culture-based and are constructed from previous experiences (Nunan, 1993). They lead us to expect or predict aspects in our interpretation of discourse. The main idea is that our mind, stimulated by key elements in the discourse or by the context, activates a knowledge schema, and uses it to interpret discourse (Cook, 1989). The most important feature that distinguishes this theory from the others is "activeness", which "combined with the experience of a particular piece of discourse leads to the constructive processes in memory" (Brown and Yule, 1983, p.249).

Cook (1989) gives an account of evidence of the existence of schemata. The first piece of evidence he lists is the fact that people questioned about a text fill in details which they were not actually given, but which is provided by a schema (e.g. in "He brushed teeth after dinner" it is not specified whether or not he used toothpaste, but people, if asked, would automatically say he did). A second piece of evidence concerns the use of the definite article before nouns whose referent has not been established in the text yet (e.g. "I was late and we decided to call a taxi. Unfortunately, *the* driver spent..." Cook, 1989, p.71). The reason is that our taxi-schema contains the driver already, therefore there is no need to specify it. The third piece of evidence is provided by the considerations of words with more than one meaning. Cook gives the following example:

(40)

She's one of those dumb, pretty Marilyn Monroe type blondes. She spends hours looking after her nails. She polishes them every day and keeps them ... (p.71)

In this text the meaning of *nail* is not ambiguous since our Marilyn Monroe-schema clarifies it, and a continuation like "all neatly arranged in little jam jars in the cellar" would increase processing time, and would even make the text more interesting. This activating and overturning of schemata and sub-schemata is the most popular device used in jokes and literature.

When the discourse is delivered, there are several schemata and sub-schemata activated in the mind, moreover they interact with one another. This whole process has to take place very rapidly. To make processing time as short as possible and increase interpretability, the speaker/writer needs to select and mention only those features which differ from the presupposed schema of the hearer/reader.



Whichever model of mental storage of information we adopt, the hearer/reader's interpretation of the discourse largely depends on his background knowledge. Interpretability, however, varies in a continuum from "fully interpreted" to "not interpreted at all". This phenomenon is referred to as the degree of interpretability by Enkvist (1990). He argues, further, that interpretability is also a threshold concept since the hearer/reader either can or cannot build a world around the text. There are several degrees of interpretability, for instance sometimes we understand the text in general but not the details, or we understand sketches but do not see the overall meaning of the text. In sum, the background knowledge of the hearer/reader can "make or break" cohesion and coherence in any kind of discourse.

### 3.3.2. Using background knowledge to disambiguate antecedents

The reason behind this rather lengthy description of the existing models of "background knowledge" in the previous section is that in the analysis of cohesion it may become crucial. Consider the following example:

(41) Ann lent an umbrella to *Susan* because she didn't want to get wet.

(Oakhill and Garnham, 1992, p. 161.)

Here the pronoun *she* is interpreted as meaning Susan, though it could, theoretically, refer to either Susan or Ann. We use our background knowledge (lending-schema, umbrella-schema etc.) to infer that it was Susan who needed the umbrella. That is, schemata constrain the reader/hearer's interpretation of an ambiguous message (Shakir and Farghal, 1991).

Similarly, in order to decide which *he* refers to the patient and which *he* refers to the doctor in (42) below, we need to use our doctor and patient schema:

(42) *Mr. Fraser* sent for the *doctor*; he diagnosed his complaint; he soon felt better.

(Quirk, et. al., 1985, p. 1431)

Thus, speakers use anaphoric expressions relying on the hearer's ability to recover their antecedents with the activation of the schemata the hearer possesses.



## 3.3.3. Using linguistic background knowledge: matching antecedents vs. anaphoric islands

Sometimes the speaker may rely on the hearer's ability to find the morphological variant which constitutes the 'missing link' between what is explicitly present in the text (direct antecedent) and the dependent. In (a) the antecedent of *it* is *vandalism*, which is not present in the text, only implied by *vandals*. This phenomenon is referred to as the use of anaphoric islands in (43a) (Oakhill & Garnham, 1992), as opposed to the unmarked case of matching antecedence in (43b).

- (43) a STOP BUS VANDALS  
by reporting it at once  
to the driver or conductor (Brown and Yule, 1983, p.204)
- b STOP BUS *VANDALISM*  
by reporting it at once  
to the driver or conductor

To illustrate that this is not a rare phenomenon, another example is provided in (44):

- (44) a Tom dreams a lot, but he never remembers them.  
(Oakhill & Garnham, 1992, p. 168)
- b Tom has a lot of *dreams*, but he never remembers them.  
(ibid.)

(44a) is the anaphoric island case, where the antecedent of *them* is definitely not the verb *dreams*, but the 'hidden' noun *dreams* (indirect antecedent), as shown in the matching antecedent case in (44b).

Since in such cases there is a linguistic imprint of the actual antecedent (a morphological variant), they have to be labeled as anaphoric.

## 3.3.4. Using extra-linguistic background knowledge

Schemata may provide the basis for filling the gaps in a text. The speaker omits information that he/she considers to be part of the hearer's background knowledge. Consider (45) below:

- (45) Then we got on a *bus*. The driver was drunk unfortunately...



*Driver* is made definite, relying on the assumption of the speaker that the hearer knows (from his "bus-schema") that buses have drivers. The only way to account for such cases is by looking at the relationship between the direct antecedent present in the text and the dependent.

Whenever there is a clearly definable semantic relationship (hyponymy, meronymy, etc.) between the direct antecedent and the dependent, we can consider such a case anaphoric. In (46) below, for instance, no one would doubt the presence of an anaphoric relationship between *the father* and *parents*, or between *the mother* and *parents*:

(46) Tom finally met her *parents*. The father was a businessman, the mother was a dentist.

Both *father* and *mother* are hyponyms of *parents*, therefore the anaphoric relationship between them is obvious.

There are cases, however, where there is no semantic label for the relationship between the direct antecedent and the dependent, still they have to be considered to be anaphoric, as *situation* and the whole previous utterance in the example below:

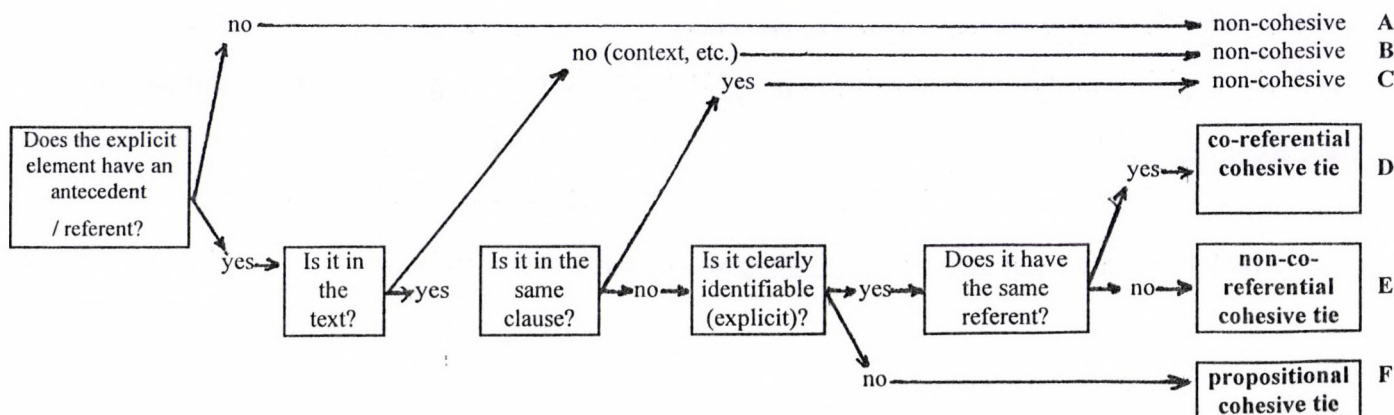
(47) *Thousands were out of work; there was hunger, anger, and unrest.* The situation required careful handling.

(Quirk, et. al., 1985, p. 1442)

#### 4. Conclusion: Algorithm of cohesiveness

The analysis of authentic data requires a reliable tool in order to identify each and every text element as cohesive or non-cohesive, so based on the arguments presented in the paper I developed the following test of cohesiveness:

**Figure 2. Test of cohesiveness**





Whenever there is a pronoun, demonstrative, pro-form, definite NP or relative pronoun in the text (or any other element placed in the white part of the cline in Figure 1), the first question to be asked is whether the element has an antecedent (previously mentioned) on which its interpretation depends or it has a referent in the situation (simultaneous referring). If it does not, then the item is non-cohesive (case A). *It* in (48) below does not have an antecedent in the text, nor does it have a referent in the situation.

(48) It's Christmas.

If it does have an antecedent or a referent, its position needs to be identified. If the referent is situated in the situational context (e.g. purely deictic expressions), the element is non-cohesive (case B), as (49) indicates:

(49) What's this? (pointing towards an object)

If there is an antecedent in the text (even if it is deictic at the same time), the next step is to examine whether the antecedent is in the same clause or any of the previous clauses. If it is in the same clause, then it is non-cohesive (case C), since cohesion applies between clauses, and cohesion within clauses is not of primary concern (see Section 1.3. above). An example of this is given in (50):

(50) *Mary* wanted to visit her sister.

If the antecedent can be found in any of the preceding clauses, the element is undoubtedly cohesive (cases D, E, F), and the researcher may want to further specify its type. The next decision to be made is whether the antecedent can be clearly identified in the text, i. e. whether the exact words can be clearly put a finger on. If not (case F), then it is the utterance or the proposition of the utterance that is being referred to, as in (51):

(51) He wanted to know everything. This curiosity was unusual, because he never bothers about details.



This I call propositional cohesion, since the proposition of the first utterance is the antecedent of the NP *this curiosity*, and they form a cohesive tie.

If the antecedent is verbally identifiable, the researcher may wish to distinguish between co-indexed and non-co-indexed ties depending on whether the element and its antecedent have the same referents. If they do (case D), they can be called a co-referential cohesive tie. If they do not (case E), they form a non-co-referential cohesive tie, as examples (52) and (53) show respectively:

(52) *My wife* went to the supermarket and she spent all the money.

(53) She has such a handsome *husband*. I wish I had one, too.

With this tool the cohesion displayed in any type of text (spoken-written; monologue-dialogue; formal-informal, etc.) can be analyzed and text elements can be clearly labeled according to the cohesive relationships they enter or do not enter.



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## Appendix: Conjunctions and conjuncts (based on Quirk, et. al., 1985)

### Coordination:

#### LISTING

enumerative *first, second, third ...; firstly, ...; one, two, three; a, b, c, ...; in the first place, in the second place, ...; first of all; on the one hand, on the other hand; for one thing, for another thing; for a start; to begin with; next, then; to conclude; finally, last, lastly, last of all*

#### additive

equative *correspondingly, equally, likewise, similarly, in the same way, by the same token*

#### reinforcing

*again, also, besides, further, furthermore, more, moreover, in particular, then, too, what is more, in addition, above all, on top of it all, to top it all, to cap it all*

#### SUMMATIVE

*altogether, overall, then, therefore, thus, all in all, in conclusion, in sum, to conclude, to sum up, to summarize*

#### APPOSITIONAL

*namely, thus, in other words, for example, for instance, that is, that is to say, specifically*

#### RESULTIVE

*accordingly, consequently, hence, now, so, therefore, thus, as a consequence, in consequence, as a result, of course*

#### INFERENTIAL

*else, otherwise, then; in other words; in that case*

#### CONTRASTIVE

reformulatory *better, rather, more accurately, more precisely; alias, alternatively, in other words*

#### replative

*again, alternatively, rather; better, worse; on the other hand*

#### antithetic

*contrariwise, conversely; instead; oppositely, then; on the contrary, in contrast, by contrast, by way of contrast, in comparison, by comparison, by way of comparison; on the other hand*

#### concessive

*anyhow, anyway, anyways, besides, else, however, nevertheless, nonetheless, notwithstanding, only, still, though, yet, in 'any case, in 'any event, at 'any rate, at 'all events, for 'all that, in spite of that, in spite of it all, after all, at the same 'time, on the other hand, all the same, admittedly, of course, still and all, that said*

#### TRANSITIONAL

##### discoursal

*incidentally, now; by the way*

##### temporal

*meantime, meanwhile, in the meantime, in the meanwhile; originally, subsequently, eventually*



**Subordination:****1. NOMINAL CLAUSES:**

- |                                      |  |
|--------------------------------------|--|
| 1. that-clauses                      | We are glad that you are able to join us.  |
| 2. subordinate interrogative clauses | I can't imagine what they want.<br>Whether the book will sell depends on the publishers. |
| 3. subordinate exclamative clauses   | I remember what a good time we had.  |
| 4. nominal relative clauses          | I eat what I like.   |

**2. ADVERBIAL CLAUSES:**

(syntactic functions: adjuncts, subjuncts, disjuncts, conjuncts):

time	<i>after, as, before, once, since, till, until, when, whenever, while, whilst, now (that), as long as, so long as, as soon as, immediately, directly</i>
contingency (in cases when)	<i>when(ever), where(ver), if, once</i>
place	<i>where, wherever</i>
condition	<i>if, unless, as long as, so long as, assuming (that), given (that), in case, in the event that, just so (that), on condition (that), provided (that), providing (that), supposing (that)</i>
concession	<i>although, if, even if, even though, when, whereas, while, whilst</i>
contrast	<i>whereas, while, whilst</i>
exception	<i>but that, except (that), excepting (that), save that</i>
reason	<i>because, since, as, (because of, by virtue of, in view of, on account of, owing to, in light of, due to - the fact that ...), in that</i>
purpose	<i>so that, so, in order that</i>
result	<i>so that, so, such that</i>
similarity and comparison	<i>as, like, as if, as though</i>
proportion	<i>as (... so), the ... the (+comparative form)</i>
preference	<i>rather than, sooner than</i>
comment (parenthetical disjuncts)	<i>I believe, you know, speaking as a layman, etc.</i>

**3. RELATIVE CLAUSES:***that, which, what, who(m), where, whose***4. COMPARATIVE CLAUSES:**

*as ... as*  
*not so ... as*  
*more ... than*  
*so ... that*  
*such ... that*



# CONTRASTIVE INTERPROPOSITIONAL ASPECTS OF THE SEMANTICS OF INFINITIVES AND GERUNDS IN ENGLISH

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## 1. Introduction

This paper is an inquiry into the semantics of infinitives and gerunds in English. The contribution of infinitival and gerundive complements to the meaning of sentences is examined within the context of a theory of interpropositional relations. On the approach adopted here, the meaning of a sentence is viewed not as an isolated unit of information but one that is integrated in a complex information structure in a speaker-hearer's mind. An important advantage of such an approach to sentence meaning is that it allows us to gain insight into formal properties of sentences that contribute not only to compositional but also to (explicit and implicit) interpropositional aspects of their meaning.

The paper is structured as follows. Section 2.1. presents some relevant components of a theory of sentence comprehension proposed by Gergely (1992, 1995). A theory of implicit interpropositional contrasts is sketched in sections 2.2. and 2.3. In section 2.4. we will observe how certain aspects of syntactic structure contribute systematically to the implicit contrastive interpretation of sentences. Section 3.1. will present the outlines of a hypothesis on the semantics of English infinitives and gerunds, arguing that infinitival and gerundive complements express different implicit contrasts. In sections 3.2. through 3.6. some empirical evidence will be presented in favor of the hypothesis outlined in section 3.1. Finally, in section 4. I will address a minor problem in the model of sentence comprehension introduced in section 2.1. and offer a solution to it in terms of the theory of implicit contrasts outlined in section 2.2.

## 2. Interpropositional Aspects of Sentence Meaning

### 2.1. Implicit Interpropositional Aspects of Sentence Meaning

In the model of sentence comprehension proposed by Gergely (1992, 1995) it is argued that the process of understanding the meaning of a sentence is not complete when the hearer has assigned a conceptual representation to the sentence that specifies its thematic and propositional meaning. A complete semantic interpretation of a sentence will also include information on how the proposition *P* it expresses is related to other elements in a set *M* of propositions in a complex information structure (CIS) that contains *M*. To illustrate, consider the following example, which is borrowed from Gergely (1992:215), and is presented here in a slightly modified form.

- (1) a. Though Daddy PRAISED his daughter for the excellent dinner,  
b. it was his son who prepared it.

Taken separately, neither (1a) nor (1b) may be criticized from a propositional-semantic point of view. Taken together, however, which is obviously the natural reading normally assigned to such a pair of propositions, the resulting sentence is unacceptable, as can be seen from the comparison of the following examples.

- (2) a. Though Daddy PRAISED his daughter for the excellent dinner, she was still not happy.  
b. ?Though Daddy PRAISED his daughter for the excellent dinner, it was, in fact, his son who prepared it.

(2b) is odd because the two propositions it expresses ((1a) and (1b)) do not match in a manner in which they do match in (2a). The mismatch between (1a) and (1b) can be characterized briefly as follows. The proposition expressed in (1a) supports a class of inferred proposi-



tions, which includes the proposition H 'She was happy'. Given the adversative meaning of the conjunction *though*, the hearer expects that the immediately following main clause (1b) will deny H. This expectation of the hearer is met in (2a) but not in (2b), since (1b) does not deny H. Note, finally, that the function of focusing *praised* in (2a) is to contrast the proposition expressed in the subclause with its implicit negation (3).

- (3) Daddy did not praise his daughter for the excellent dinner.

Although I will not be concerned with pragmatic inferences in the discussion of the contrastive aspect of the meaning of infinitives and gerunds, I will adopt Gergely's model of sentence comprehension as the general framework, and will supplement it with a level of Conceptual Structure as suggested in Jackendoff 1983 and 1990, with which I believe it is compatible. It will be assumed, crucially, that propositions are not isolated units of information but that they constitute integral parts of a speaker's CIS.

Some of the propositional representations in *M* correspond directly to clauses or sentences in that they are representations of the propositional meaning of the latter. In this sense they are explicit. In addition, *M* also contains implicit propositions which are systematically associated with explicit propositions in nontrivial but straightforward ways.

A proposition expressed in a sentence may be related to a class of implicit propositions by a variety of mental processes: by presupposition, inference, implication, and others. (4a), for instance, is associated with the presupposition in (4b) (cf. Kiparsky and Kiparsky 1971:347).

- (4) a. I regret having agreed to the proposal.  
b. I agreed to the proposal.

See also H 'She was happy' above, which is inferred from a general premise 'People are happy when they are praised' and the minor premise represented by the propositional meaning of (1a) (without the adversative conjunction).

## 2.2. Contrastive Interpositional Aspects of Sentence Meaning

Propositions may be related to other implicit propositions not only inferentially or presuppositionally, but also contrastively.

Let us regard the meaning of a sentence as a complex conceptual entity, a mental representation in Conceptual Structure (CS), along the lines suggested by Jackendoff (1983, 1990), and Chomsky (1981:324).

It is reasonable to assume that every content-bearing expression in a sentence carries with it a contrast with the meaning of other expressions that might occur in its place. Let us call such expressions (and their meanings) alternatives. Such alternatives constitute sets in CS.

A particular expression in a sentence, as well as its meaning, is thus contrasted with its alternatives. Let us refer to the position of such an expression in a sentence as a locus of contrast. As we observed above, a sentence may contain several loci of contrast. I can only agree with Bolinger (1961:87) that "in a broad sense every semantic peak [in a sentence] is contrastive" and that in sentences like (5) "coming as a suggestion out of the blue, [although] there is no specific contrast with dinner party, [...] there is a contrast between picnicking and anything else the group might do."

- (5) Let's have a picnic.

The loci of contrast in (5) are as follows: *let, us, have, a picnic*, and the 'phrasal' locus *have a picnic*, which is also obviously a constituent that may receive a contrastive interpretation. In fact, *have a picnic* is a more natural locus of contrast than *have*, since the former is a complex predicate in which *have* does not really count as a 'content-bearing expression'.

Let us assume that sentences correspond to propositions in CS. Each proposition in CS will be associated with a relevant set *R* of implicit propositions, *R* a subset of *M* in CS. By the



contrastive interpretation of a proposition  $P$  we will mean the relation  $\neq$  (nonidentical with) that holds between  $P$  and all other members of  $R$ . As we will see directly,  $R$  is a systematically inhomogeneous set that contains homogeneous subsets of propositions. By a particular contrastive interpretation of a proposition  $P$  we will mean the relation  $\neq$  that holds between  $P$  and a homogeneous subset  $K$  of  $R$ .

Given that every content-bearing expression in the sentence represents a locus of contrast, the number of alternatives in  $R$  will be a function of the number of the loci of contrast ( $n$ ) in the sentence and the number of alternatives ( $v$ ) in each set associated with every locus of contrast.<sup>1</sup> It is small wonder that  $R$  can be incredibly large and systematically inhomogeneous. The size and heterogeneity of  $R$  will directly characterize the uncertainty of the meaning of the sentence before it is given a particular interpretation.

### 2.3. The Uncertainty of Propositional Meaning

The propositional meaning of a sentence is uncertain in that it is open to various particular interpretations.<sup>2</sup> A particular interpretation of a proposition  $P$  expressed in a sentence is characterized by the integrative relations that hold between  $P$  and CIS, of which it is a part. The particular interpretation of a proposition  $P$  may be specified in terms of the relation of  $P$  to other explicit or implicit propositions in  $M$ .

To illustrate the kind of uncertainty that is meant, (which is essentially the same as that briefly alluded to by Szabolcsi (1980)) let us consider (6) and its alternatives in (8).

- (6) We might have a picnic.

Let us assume a very simple case in which each locus of contrast within the sentence comprises as few as two elements. Let us assume, for concreteness, that the pairs of alternatives associated with the loci of contrast are as follows (ignoring *have a picnic* as a locus of contrast for the moment):

- (7) a. we—they  
b. might—will  
c. have—pack  
d. a picnic—dinner

On these assumptions, the following set of 16 different alternatives emerges for the sentence as a whole, with a subset of which (8a) will be contrasted on a particular interpretation.

- (8) a. We might have a picnic.  
b. We might have dinner.  
c. We might pack a picnic.  
d. We might pack dinner.  
e. They might have a picnic.  
f. They might have dinner.  
g. They might pack a picnic.  
h. They might pack dinner.

<sup>1</sup> $R$  will contain  $v^n$  alternatives, provided that  $v$  is constant for each locus of contrast. If it is not, the formula is  $A \times B \times C \times D \times \dots$ , where  $A, B, C, D \dots$  represent, respectively, the number of elements in each implicit contrastive set associated with a locus of contrast (and  $x$  reads 'times').

<sup>2</sup>Uncertainty is distinguished here from ambiguity. The latter characterizes sentences like (i), which may be interpreted either as (ii) or as (iii).

- (i) Visiting relatives can be a nuisance.  
(ii) Visiting relatives is a nuisance.  
(iii) Visiting relatives are a nuisance.



- i. We will have a picnic.
- j. We will have dinner.
- k. We will pack a picnic.
- l. We will pack dinner.
- m. They will have a picnic.
- n. They will have dinner.
- o. They will pack a picnic.
- p. They will pack dinner.

Notice that the inhomogeneous set of 16 alternatives above may be subdivided into homogeneous subsets (e.g., {a, b, c, d}, {e, f, g, h}, etc.). Notice also that the contrast becomes increasingly more natural with the reduction of the number of subsets. These observations suggest that we must postulate a mental process that eliminates subsets of alternatives. What the function of this process is is to eliminate as many subsets of alternative propositions as possible, reducing the size of the set of alternatives to a small, homogeneous class.

Classes of propositional alternatives are eliminated by fixing loci of contrast in a sentence. An expression whose interpretation has been fixed becomes a constant for the purposes of assigning a particular interpretation to a sentence. Constants in the semantic interpretation of a sentence are elements of meaning that are not contrasted with relevant alternatives. The elimination of alternatives is thus the process which changes a potentially contrastive element (or a locus of contrast) into a constant.

If a sentence contains  $n$  loci of contrast, exactly  $n-1$  loci must be fixed for an ideal interpretation of the sentence. A locus that is not fixed is left open. If all loci are left open, then the meaning of the sentence is maximally uncertain in the sense just discussed.

The process of fixing loci of contrast in sentences is relevant for grammatical theory, since certain aspects of grammatical structure appear to contribute systematically to the contrastive interpretation of sentences. Topicalization, focusing, clefting, and pseudo-clefting are among the most obvious examples. Somewhat less obviously, the grammar of adjuncts and the grammar of infinitives and gerunds also interact in interesting ways with the contrastive interpretation of sentences. I will discuss them in this order in the following sections.

#### 2.4. Contrastive Implications of Sentence Adjuncts and VP Adjuncts.

Quirk et al. (1985:519) observe that if two spatial adjuncts of the same semantic class cooccur in a clause but at different levels of syntactic structure, so that one is a sentence adjunct, the other a predication adjunct, then the predication adjunct will be more prominent than the sentence adjunct, the latter expressing information which is understood as relatively given. For example, of the two position adjuncts in

- (9) Many people eat in restaurants in London. (ibid., 519)

the sentence adjunct may be expressed with a closed-class adverb "indicating that it is relatively 'given'," and when this happens, that is a closed-class adverb occurs as sentence adjunct, the order of adjuncts may be reversed (ibid., 519), as in:

- (10) Many people eat here/there in restaurants.

The point here is that if both sentence and predication adjunct of the same semantic class are present in a clause, the former tends to be understood as 'given' relative to the predication adjunct, and the latter evokes a set of similar conditions with which itself is implicitly contrasted, while the rest of the meaning of the sentence, including the contribution of the sentence adjunct, will be kept constant. This implicit contrast may be spelled out like this:

- (11) Many people eat in restaurants in London. vs. 'Many people eat at home in London'/etc.



This is confirmed by Quirk et al.'s (1985:519—20) observation that only the sentence adjunct can be fronted:

- (12) a. In London, many people eat in restaurants.  
 b. \*In restaurants, many people eat in London.

### 3. The Contribution of Infinitival and Gerundive Complements to Sentence Meaning

#### 3.1. Contrastive Implications of Infinitives and Gerunds

On the hypothesis I propose, in the unmarked case infinitival complements trigger implicit contrasts between the proposition expressed in the matrix clause and its negation or opposite, keeping, remarkably, the event described in the complement clause constant for the contrastive interpropositional interpretation of the sentence. It appears that in the unmarked case infinitival complements render the matrix proposition more prominent than the event described in the complement clause while gerundive clause complements seem to highlight the embedded event.

A gerundive complement evokes a relevant set of eventualities in which the eventuality described in the complement is identified, thus contrasting it with other eventualities in the relevant set, while the event or state expressed by the matrix verb and the entity denoted by the matrix subject are kept constant for the implicit contrastive interpretation of the sentence. Thus, the contrasts typically implied in sentences like (13a) and (13b) can be spelled out as (14a) and (14b), respectively.

- (13) a. John likes to sing.  
 b. John likes singing.  
 (14) a. 'John likes to sing' vs. 'John doesn't like/hates to sing'  
 b. 'John likes singing' vs. 'John likes jogging', 'John likes drawing', etc.

If they are not overridden by contextual factors or the effect of superimposed syntactic or phonological devices such as, for example, pseudo-clefting and focusing, which are commonly employed in English to reorganize the information structure of a sentence, these subtle differences in information prominence can be perceived in general in sentences involving an infinitival or a gerundive complement. This is not to deny the existence of dialects whose speakers may not in general be sensitive to these subtle differences in meaning. Such dialectal variation is, in fact, quite common. As Kiparsky and Kiparsky (1971) report, the sensitivity of speakers tends to vary considerably even with respect to now well-known semantic differences such as the factive—nonfactive distinction among verbs and among their complementation patterns.

The Kiparskys' analysis of factive and nonfactive predicates and complements, the account of implicativeness of verbs and their complements by Karttunen (1971) and Klein (1982), the description of some semantic regularities in the syntax of perceptual reports by Barwise (1981), and the account of various types of infinitival complementation by Bolinger (1974) in terms of a distinction between the 'perceptuality' and 'conceptuality' of predicates and complements, to mention just a few of the proposals that have revealed some important semantic regularities in complementation, all testify to the presence of systematic semantic distinctions that English speakers make in what had previously been believed to be an idiosyncratic domain of English syntax. This may justify the suspicion that some still rather poorly understood facts of complementation in English might well be reflexes of some general, albeit quite subtle, semantic distinction.

Consider a small sample of examples below with the matrix verbs *try* and *like*, which commonly take either an infinitival or a gerundive complement. The data are borrowed from different editions of one of the most prestigious corpus-based dictionaries (the *Longman Dictionary of Contemporary English*), so they may be taken to represent what is judged to be typical English usage of the past few decades. Deviating from standard typographical conventions, capitali-



zation in the examples does not identify the focused element as usual, but marks the constituent that receives a weak contrastive interpretation in the unmarked case.

- (15) a. He TRIED to stand on his head but he couldn't.  
 b. I tried STANDING ON MY HEAD but it gave me a headache.
- (16) a. He TRIED to climb the mountain (but he couldn't).  
 b. He tried CLIMBING THE MOUNTAIN (to see what it was like at the top).
- (17) a. I LIKE to visit her as often as possible.  
 b. I don't like GOING TO PARTIES because my husband always flirts with every girl in the room.
- (18) a. I know she could help, but I DON'T LIKE to ask her when she's so busy.  
 b. I don't like BOTHERING HIM when he's busy.
- (19) a. I always LIKE to get up early in the summer.  
 b. I like SWIMMING, PLAYING TENNIS, and things like that.
- (20) a. Say, how would you LIKE to go to Italy next summer?  
 b. How would you like YOUR BOSS CALLING YOU AN IDIOT?

Before I move on to discuss some empirical evidence for the hypothesis in the following paragraphs, I want to present the intuition of LDCE 1995 on the difference between the structures in the last pair of examples, which, if anything, may be taken as evidence in favor of the hypothesis. In tune with the predictions of the hypothesis outlined here, the team of lexicographers on LDCE 1995 believe that you use (20a) with the infinitival complement "to ask someone if they want something, especially when you already know they want it," and *like* in the same type of question takes a gerundive complement when you "ask someone to imagine how they would feel if something bad happened to them instead of to you or someone else."

### 3.2. Interaction of Nonfinite Complements and Clefting

Given that gerunds are themselves carriers of contrast with eventualities in the relevant set they evoke, and that infinitives render the reading of the matrix verb contrastive, the hypothesis predicts that gerunds can but infinitives cannot easily occur in the focus of a cleft sentence. This prediction is borne out, cf. (cf. also Chierchia 1984:414).

- (21) a. \*It is to write papers that Mary likes.  
 b. It is writing papers that Mary likes.

The focus of a cleft sentence fixes the interpretation of all other constituents in the sentence. Since gerunds tend to do the same, their occurrence in the focus of clefts is not unexpected. Infinitives, on the other hand, tend to be constant and shift the (weak or informational) focus of contrast on to the matrix verb, therefore they are awkward in the focus of a cleft sentence.

### 3.3. Coordination

It is well known that coordinated constituents must be of the same syntactic category. It is also known that infinitival and gerundive complement clauses cannot be coordinated (cf. (22a)), and that infinitives are freely coordinated with infinitives (cf. (22b)) and gerunds with gerunds (cf. (22c)) (cf. Quirk et al. 1985:947).

- (22) a. \*George likes going to the races and to bet on the horses.  
 b. George likes to go to the races and to bet on the horses.  
 c. George likes going to the races and betting on the horses.

If infinitives and gerunds are different syntactic categories (say the former are clauses and the latter are NPs), then the difference in grammaticality among the examples in (22) can be accounted for in syntactic terms. If, on the other hand, not only infinitives but also gerunds are clauses, for which there is accumulating evidence (cf. Reuland 1983, Johnson 1988, and



Borgonovo 1994), then the unacceptability of (22a) cannot be accounted for in terms of the violation of the categorial identity condition (CIC) of coordinated constituents.

As the examples in (23) below demonstrate, coordinated constituents must not only be of the same syntactic category, but they must also in general correspond to structurally parallel contrastive interpretations.

- (23) a. George loves apples and Mary loves bananas.  
 b. George loves APPLES and Mary loves BANANAS.  
 c. \*George LOVES apples and Mary loves BANANAS.  
 d. \*George loves APPLES and Mary LOVES bananas.

The unacceptability of (23c—d) is due to the fact that although their conjuncts are syntactically parallel, they correspond to different contrastive interpretations, since the focused constituents in the respective conjuncts differ both functionally and categorially.

The nature of the unacceptability of (22a) is essentially the same as that of (23c—d), since the coordinated nonfinite clauses in (22a) are remarkably dissimilar in their contrastive interpretations. The gerundive clause is itself a carrier of contrast, describing an eventuality which is contrasted with other potential eventualities in the relevant set it evokes, that is, other activities George may or may not like engaging in. The infinitival conjunct, on the other hand, triggers a contrast between the matrix proposition and its opposite or negation, keeping the activity described by the infinitival conjunct constant for the interpretation of the sentence.

On the present hypothesis the phenomena illustrated in (22) can be accounted for in a principled manner on either of the competing functional-categorial analyses of infinitives and gerunds. If these constituents should prove to be different syntactic categories, then structures like (22a) will be characterized as doubly bad, violating both CIC and the condition of parallel contrastive interpretations (CPCI). This might seem an undesirable redundancy in grammatical theory, but it is not necessarily a disadvantage (cf. Li 1997). If, on the other hand, both infinitives and gerunds are clauses, CPCI will account for the facts nonredundantly, given that an explanation in terms of CIC is no longer available.

### 3.4. *Prefer*

It is significant that the predictions of the present hypothesis are borne out perfectly by complements on *prefer*. *Prefer*, meaning 'choose something rather than something else', 'choose one thing or action rather than another', 'like better', is an archetypal verb expressing choice and therefore implicit or explicit contrasts between alternatives. Consider the following examples.

- (24) a. She prefers to be alone.  
 b. I prefer singing to acting.

When *prefer* takes a gerundive complement, the sentence will express choice and contrast between two (or, implicitly, more) alternative eventualities described in the complement; when it takes an infinitival complement, the sentence will express a contrast between the proposition expressed in the matrix clause and its negation or opposite.

On the hypothesis that I have sketched, these, otherwise idiosyncratic selectional properties of *prefer* fall out as a consequence and thus receive a principled explanation.

Now consider the following example.

- (25) There are those who prefer to suffer deprivation rather than claim legal aid.

Apparently, what is contrasted here is the two alternatives spelled out explicitly in the complement clauses. This would seem to require that the first clause be embedded in its gerundive form and not as an infinitive.

A careful examination of the meaning of the sentence reveals, however, that the second embedded clause, in fact, represents the opposite of the matrix proposition involving the *to*-in-



finitival complement. So what is actually contrasted here is the matrix proposition with its negation or opposite. Therefore the occurrence of the infinitival complement is not exceptional or irregular in this sentence and similar sentences at all. Thus, what at first appeared to be a counter-example to the hypothesis turns out on closer inspection to be additional evidence in its favor.

### 3.5. Choose in OED

It is relevant and instructive to consult the *Oxford English Dictionary* on the appropriate sense of *choose*, a synonym of *prefer*. As is clear from the quote below, a correlation between infinitival complements and a semantic shift in the meaning of sentences in terms of implicit contrasts has long been recognized intuitively.

- (26) The notion of a choice between alternatives is often left in the background, and the sense is little more than an emphatic equivalent of, To will, to wish, to exercise one's own pleasure in regard to a matter in which one is a free agent. a. *esp.* with *infin.* To think fit, to be pleased (to do so and so). (OED, s.v. *choose*)

### 3.6. Intend in Subject-Control Structures

*Intend* in subject-control structures may in general take either an infinitival or a gerundive complement (cf. (27a—b)).

- (27) a. He had really intended to stay longer.  
b. He had really intended staying longer.

Now consider the examples in (28), where the second clause in each is a subject-control structure, in which *intend* is supposed to take either an infinitival or a gerundive complement freely. Still, (28b) is inferior in acceptability to (28a). It is the gerundive complement in (28b) that is responsible for a decrease in acceptability.

- (28) a. This is my job and I intend to do it.  
b. ?This is my job and I intend doing it.

The gerundive complement is odd to the degree of unacceptability (for some speakers at least) in (28b) because the contrastive interpretation associated with the gerund runs counter to the fact that the action it describes is presupposed information.

The reasons why the nonfinite complement cannot be contrastive in (28) are fairly obvious. Notice, first, that the act of doing the job is introduced early on in the first conjunct by the definite predicate NP *my job*, which is suggestive of the act of doing the job simply because this is perhaps the most typical act associated with one's job. Second, the definite pronominal object NP in the embedded sentence anaphorically corefers to the NP in the first clause. A complement with a phonetically null subject and a VP that consists of an implicitly anaphoric head and a grammatically anaphoric pronominal object cannot be the informational focus of a sentence. What receives contrastive interpretation in the second conjunct in (28) is the matrix predicate, which, therefore, takes a noncontrastive infinitival complement.

Consider also the following examples.

- (29) a. He woke later than he had intended.  
b. He woke later than he had intended to wake.  
c. \*He woke later than he had intended waking.

These are somewhat different in structure from (28), but they are very similar to the latter in other relevant respects, and the principles that accounted for (28) will automatically account for (29) as well. (29c) is ungrammatical because the gerundive complement illegitimately



occupies a position that is not a locus of contrast, but a position of a constituent whose interpretation is fixed. That this is so is evidenced by (29a), which shows that the complement may even be omitted.

As regards the examples in (27), both the gerund and the infinitive are grammatical, since there is nothing in the matrix clause that would suggest that either the matrix predicate or the complement clause should be the informational focus. The subtle difference in meaning between these sentences is precisely the difference in whether the matrix predicate or the complement receives greater information prominence: contrastive interpretation in (27b) is associated with the complement, whereas in (27a), the constituent that receives contrastive interpretation is the matrix predicate.

#### 4. Activation of NCCs vs. Topic Activation

Finally, let us return briefly to the discussion surrounding (2a—b) in section 2.1. to see how the theory of implicit interpropositional contrasts outlined in section 2.2. can be exploited to remedy a minor flaw in Gergely's (1992 and 1995) otherwise correct and well motivated account for the interpretation of sentences in general and the meaning of (2a—b) in particular, which are repeated below for convenience.

- (2) a. Though Daddy PRAISED his daughter for the excellent dinner, she was still not happy.  
 b. ?Though Daddy PRAISED his daughter for the excellent dinner, it was, in fact, his son who prepared it.

Gergely (1992:215) correctly observes that the awkwardness of (2b) turns on the "implicit consequence proposition" inferred by the speaker, which is "the daughter is happy." He argues that this inferred proposition (IP) is crucially based, among other things, on the Topic—Focus structure of the first clause. Incorporated in his Topic Activation Hypothesis (TAH) is the claim that IP "contains the *topic NP* of the initial subordinate clause, which ... serves as the antecedent for the anaphoric pronoun 'she' in the second clause" (cf. Gergely 1992:215).

The reason why TAH, interpreted literally, runs aground is that on the usual interpretation of the Topic, which Gergely seems to adopt, the Topic of the subordinate clauses in (2a—b) is simply not the NP *his daughter*, but the NP *Daddy*. The former is a post-focal item, which is indeed just as noncontrastive as the Topic. Therefore the conclusion is correct, even though its based on a false premise.

This minor flaw may easily be repaired if we replace the literal interpretation of TAH by saying that it activates all noncontrastive constituents (NCCs) in the sentence rather than exclusively the Topic, as is specifically claimed in TAH. With this slight but important modification of the premise the conclusion will not only remain correct but it will also be valid, salvaging the general argument as well as TAH, which is otherwise correct and constitutes an important advance in the understanding of the processes involved in sentence comprehension.

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## ON OBJECT AGREEMENT IN HUNGARIAN

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This paper offers an alternative account of the Object Agreement phenomena presented in Bartos (1996), where these facts are explained by the difference in the projectional complexity of nominals. The present proposal is based on the feature specification of nominal expressions. This paper is organized as follows: **Part 1** will demonstrate the facts of Hungarian Object Agreement and will survey some problems discussed in Bartos (1996). In **Part 2**, some cross-linguistic evidence will be offered for the feature specification account of Object Agreement Phenomena. **Part 3** will introduce the reader to the notion of Long Head Movement, as discussed in Rivero (1994). The presence or absence of the features [DET] and [SPEC] and their interaction will provide the necessary machinery to derive the required interpretations. The selection of the different agreement patterns will **not** be deduced from the difference in their projectional complexity but rather, from the different movements of the verbal head: Short Head Movement of Vo for Definite Object Agreement and Long Head Movement of Vo for Indefinite Object Agreement. **Part 4** summarizes the main claims of this paper.

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\*\*Abbreviations and symbols used in this paper are given below:

ACC	ACCUSATIVE CASE
AGR	AGREEMENT MARKER
ASP	ASPECT
ASPP	ASPECT PHRASES
CL	CLITIC
CLASS	CLASSIFIER
COND	CONDITIONAL MOOD
DAT	DATIVE CASE
DetP	MAXIMAL PROJECTION OF Det
DP	DETERMINER PHRASE
DPC	DATIVE POSSESSIVE CONSTRUCTION



## 1 Some Facts and Problems

### 1.0 Facts

It is a fact about Hungarian that the verb in this language is morphologically marked for Object Agreement.

#### DEFINITE OBJECT AGREEMENT

- (1) Olvas-Ø-om a könyv-et.  
 read-PRES-1SG[DEF] the book-ACC  
 'I read the book.'

#### INDEFINITE OBJECT AGREEMENT

- (2) Olvas-Ø-ok egy könyv-et.  
 read-PRES-1SG[-DEF] a book-ACC  
 'I read a book.'

Traditionally, this is reflected in descriptive grammars by distinguishing between two verb conjugation patterns in Hungarian: one for Definite Object Agreement (called objective conjugation) and another one for Indefinite Object Agreement (called subjective conjugation). This latter type is also selected by intransitive verbs.

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HMC	HEAD MOVEMENT CONSTRAINT
IMPF	IMPERFECTIVE ASPECT
LHM	LONG HEAD MOVEMENT
M	MOOD
MP	MOOD PHRASE
NOM	NOMINATIVE CASE
NPC	NOMINATIVE POSSESSIVE CONSTRUCTION
PASS	PASSIVE VOICE
PAST	PAST TENSE
PERF	PERFECTIVE ASPECT
PFX	PREFIX
PRES	PRESENT TENSE
PL	PLURAL
POSS	POSSESSIVE MARKER



### 1.1 Problems with the [ $\pm$ definiteness] feature

Recent work on this issue (cf. Farkas (1987), (1990) and Bartos (1996)) suggests that the selection of one or the other type of conjugation is not so straightforward, and that it might be determined by factors other than merely the [ $\pm$ definiteness] feature of the object. One problem area is the isolation of object NPs selecting the Definite or the Indefinite Object Agreement paradigm. The definite/indefinite distinction proves to be insufficient in some cases:

(i) Possessive NPs usually, but not always, select the Definite Object Agreement paradigm. Compare the possessive constructions in (3)-(6) with those in (9)-(10):

- (3) Ismer- $\emptyset$ -em          Noam- $\emptyset$  cikk-é-t.  
 know-PRES-1SG[DEF] Noam-NOM article-POSS3SG-ACC  
 'I know[DEF] Noam's article.'
- (4) \*Ismer- $\emptyset$ -ek          Noam- $\emptyset$  cikk-é-t.  
 know-PRES-1SG[-DEF] Noam-NOM article-POSS3SG-ACC  
 'I know[-DEF] Noam's article.'
- (5) Ismer- $\emptyset$ -em          Noam- $\emptyset$  minden/néhány/öt cikk-é-t.  
 know-PRES-1SG[DEF] Noam-NOM every/some/five article-POSS3SG-ACC  
 'I know-[DEF] every article/some articles/five articles of Noam's.'
- (6) \*Ismerek                  Noam- $\emptyset$  minden/néhány/öt cikk-é-t.  
 I know-PRES-1SG[-DEF] Noam-NOM every/some/five article-POSS3SG-ACC  
 'I know[-DEF] every article/some articles/five articles of Noam's.'

In the sentences in (3)-(4) 'the possessor' within the object NP bears the morphologically unmarked Nominative case, while 'the possessed' bears both the possessive suffix and the Accusative case. Changing the [DEF] Object Agreement suffix to [-DEF] on the verb makes the sentence ungrammatical. In other words, the Possessive Construction with

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PRT	PARTICIPLE
SG	SINGULAR
SBJ	SUBJUNCTIVE MOOD
3SGO	3RD PERSON SINGULAR OBJECT AGREEMENT
[ $\pm$ DEF]	DEFINITENESS FEATURE
[ $\pm$ SPEC]	SPECIFICITY FEATURE



the *Nominative possessor* does not tolerate [-DEF] verb morphology. The same holds for (5)-(6), where the possessed NP is numerically quantified by *minden* 'every', *néhány* 'some' and *öt* 'five'. Notice that numerically quantified NPs in Hungarian require the Indefinite Object Agreement [-DEF] suffix on the verb if they are not within the Possessive Construction, as is shown in (7)-(8):

#### DEFINITE OBJECT AGREEMENT

- (7) \*Ismer- $\emptyset$ -em minden/néhány/öt cikk-et.  
 know-PRES-1SG[DEF] every/some/five article-ACC  
 'I know-[DEF] every article/some articles/five articles.'

#### INDEFINITE OBJECT AGREEMENT

- (8) Ismer- $\emptyset$ -ek minden/néhány/öt cikk-et.  
 know-PRES-1SG[-DEF] every/some/five article-ACC  
 'I know-[-DEF] every article/some articles/five articles.'

In the examples in (9) and (10) below, however, where the possessor NP bears the Dative case, both the Definite Object Agreement [DEF] suffix and the Indefinite Object Agreement [-DEF] suffix on the verb yield grammatical sentences:

#### DEFINITE OBJECT AGREEMENT

- (9) Ismer- $\emptyset$  -em Noam-nak minden/néhány/öt cikk-é-t.  
 know-PRES-1SG[DEF] Noam-DAT every/some/five article-POSS3SG-ACC  
 'I know-[DEF] every article/some articles/five articles of Noam's.'

#### INDEFINITE OBJECT AGREEMENT

- (10) Ismer- $\emptyset$  -ek Noam-nak minden/néhány/öt cikk-é-t.  
 know-PRES-1SG[DEF] Noam-DAT every/some/five article-POSS3SG-ACC  
 'I know-[-DEF] every article/some articles/five articles of Noam's.'

This latter example in (10) admittedly has *covert partitive meaning* (cf. Enc (1991)), whereby the specific reading (hence:[+SPEC]) automatically suggests itself. Covert partitive reading in Enc (1991) is associated with the specificity feature of indefinite nominals: the referent of an NP in the discourse domain must be taken from the subset of a previously given set. (This is called the Familiarity requirement in Heim (1982).) Thus, in the example in (10), the intended interpretation is 'every one of the total number of', 'some of the total number of', 'five of the total number of'. Some linguists question the acceptability of (10) on the intended reading. Note that in Enc (1991), *indefinite* NPs can



be either *specific* or *non-specific*, however, all *definite* NPs are necessarily *specific*. In other words, there are no [+DEF] [-SPEC] NPs.

(ii) Universal, negative, indefinite, interrogative and relative pronoun objects uniformly select the **Indefinite Object Agreement** paradigm. The examples in (11)-(14) below would pose a problem for an analysis established merely on the [ $\pm$ DEF] feature as this would imply that all the pronouns highlighted in (11)-(14) are invariably indefinite. This seems especially implausible in the case of the relative pronoun, (15)a-b., for which the definite reading is just as possible as the indefinite one. The same applies to interrogative pronouns, (14)a-b.

- (11) A diák-ok ismer- $\emptyset$ -nek mindenki-t.  
 the student-PL know-PRES-3PL[-DEF] everyone-ACC  
 'The students know-[-DEF] everyone.'
- (12) A diák-ok nem ismer- $\emptyset$ -nek senki-t.  
 the student-PL not know-PRES-3PL[-DEF] noone-ACC  
 'The students don't know-[-DEF] anyone.'
- (13) A diák-ok ismer- $\emptyset$ -nek valaki-t.  
 the student-PL know-PRES-3PL[-DEF] someone-ACC  
 'The students know-[-DEF] someone.'
- (14)a. Ki-t ismer- $\emptyset$ -nek a diák-ok?  
 who-ACC know-PRES-3PL[-DEF] the student-PL  
 'Who do students know-[-DEF]?'  
 b. Melyik tanár-t ismer-ik a diák-ok- $\emptyset$ ?  
 which lecturer-ACC know-PRES-3PL[DEF] the student-PL-NOM  
 'Which lecturer do students know[+DEF]?'  
 (15)a. Az- $\emptyset$ , ami-t ismer- $\emptyset$ -nek a diák-ok...  
 it-NOM what-ACC know-PRES-3PL[-DEF] the student-PL  
 'The one that students know-[-DEF]...'  
 b. Az- $\emptyset$ , amelyik-et ismer- $\emptyset$ -ik a diák-ok...  
 it-NOM which-ACC know-PRES-3PL[+DEF] the student-PL  
 'One, which students know-[DEF]...'

(iii) Personal pronoun objects do not behave in a coherent way: 1st and 2nd person pronoun objects select the Indefinite Object Agreement paradigm, 3rd person pronoun objects select the Definite Object Agreement paradigm. In terms of markedness, this is



contrary to expectations, bearing in mind the well-known Animacy Hierarchy (Comrie (1972)), or Proximity Hierarchy (Abondolo (1986)): given that 1st and 2nd person pronouns are said to be higher in the hierarchy, -- i.e. they are the more marked members of it --, they should select the marked, definite object agreement pattern, not the indefinite object agreement paradigm. Compare (16)-(19):

#### Indefinite Object Agreement Paradigm

- (16) Ő lát-∅-∅ engem/minket.                      \*Ő lát-ja engem/minket.  
 s/he see-PRES-3SG[-DEF] me/u                      s/he see-PRES-3SG[DEF] me/us  
 'S/he can see me/us.'
- (17) Ő lát-∅-∅ téged-∅/ti-tek-et.                      \*Ő lát-ja téged-∅/ti-tek-et.  
 s/he see-PRES-3SG[-DEF] you-ACC/you-PL                      s/he see-PRES-3SG[DEF] you/you-PL  
 'S/he can see you/you-PL.'

#### Definite Object Agreement Paradigm

- (18) Én lát-∅-om őt/őket.                      \*Én lát-ok őt/őket.  
 I see-PRES-1SG[DEF] him/them                      I see-PRES-1SG[-DEF] him/them  
 'I can see him/them.'
- (19) Te lát-∅-od őt/őket.                      \*Te lát-∅-sz őt/őket.  
 you see-PRES-2SG[DEF] him/them                      you see-PRES-2SG[-DEF] him/them  
 'You can see him/them.'

In the Animacy Hierarchy, 1st and 2nd person pronoun objects are more salient, and therefore the more marked Definite Object Agreement paradigm would be expected. The facts in (16)-(19), however, do not meet this expectation.

The so-called "Ergative Split Hypothesis" (cf. Jelinek (1984), 1994)), which predicts that pronouns are more likely to show NOM/ACC agreement whereas independent, fully fledged nominals tend to show ERG/ABS agreement, has no explanatory force for the Hungarian Object Agreement phenomena, either. Though there is undoubtedly some sort of "split" between 1st and 2nd person vs. 3rd person pronominal object agreement, this difference has nothing to do with case.

(iv) Intransitive verbs follow the Indefinite Object Agreement paradigm, though they do not have an object (definite or indefinite) at all.



(20)	<b>Indefinite paradigm</b>	<b>Definite paradigm</b>
	Pihen-ek. Pihen-nünk.	*Pihen-em. *Pihen-jük.
	rest-1SG rest-1PL	
	Pihen-sz. Pihen-tek.	*Pihen-ed. *Pihen-itek.
	rest-2SG rest-2PL	
	Pihen-Ø. Pihen-nek.	*Pihen-i. *Pihen-ik.
	rest-3SG rest-3PL	

## 1.2 The [ $\pm$ SPEC] feature

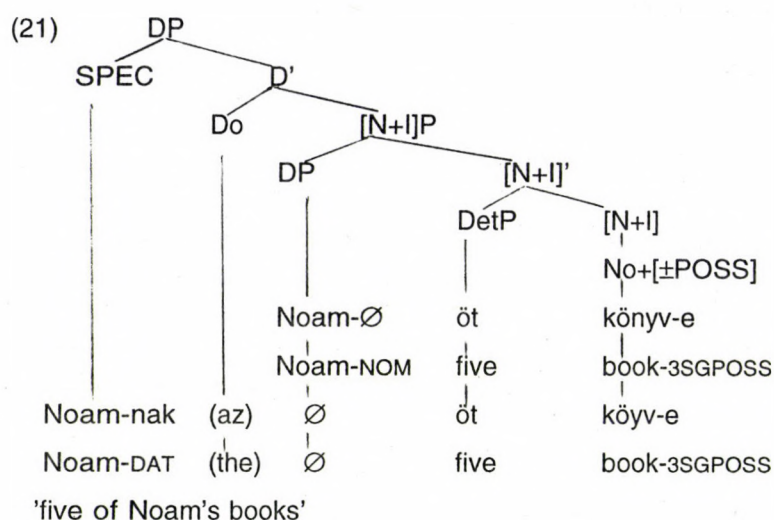
Taking [ $\pm$ SPEC] as the "key feature" alone also runs us into a contradictory situation.

- (i) Possessive NPs may occur with both paradigms, which implausibly predicts that the same possessive NP is specific on one occasion and non-specific on the other.
- (ii) Universal, negative, indefinite, interrogative and relative pronouns listed in (ii) above must be homogeneously viewed as non-specific. This is not only counter-intuitive but it also contradicts the theory of specificity, as outlined in Enc (1991).
- (iii) It is unclear why 1st and 2nd person pronouns should be less specific than 3rd person pronouns.
- (iv) Intransitive verbs are invariably non-specific selectors, an unexplained fact.

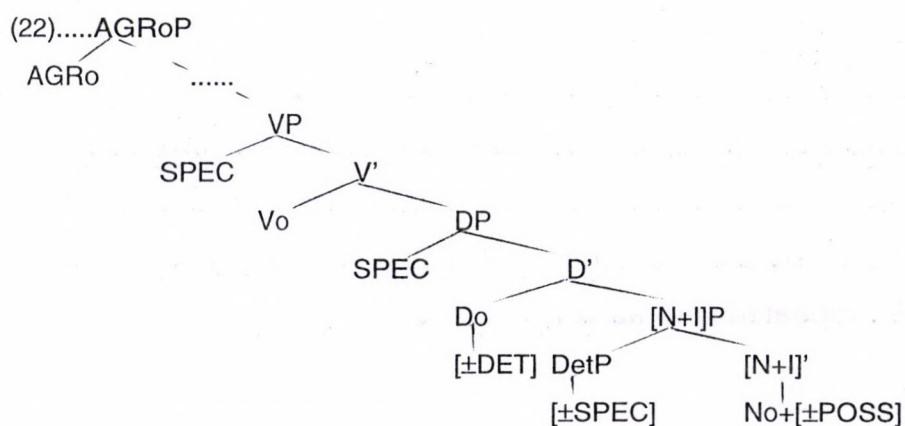
## 1.3 Bartos (1996)

Bartos (1996), drawing heavily on the extended projection of DPs in Hungarian, as outlined in Szabolcsi (1992), proposes a split syntactic derivation of nominals: on his minimalist account, if a nominal has no overt, phonologically realized determiner, then this nominal does not project as a fully fledged, maximal DP, only as a maximal NP. By this, **quantified NPs**, **pronominals**, and sometimes even **Possessive Constructions**, project merely as NPs, whereas **definite NPs** invariably project as DPs. Personal pronouns and incorporated nominals are even smaller projections, possibly No heads. Consider (9) of Bartos (1996), repeated here as (21):





The example in (21) shows the model assumed for the **Nominative Possessive Construction (NPC)** and the **Dative Possessive Construction (DPC)** in Hungarian. In Szabolcsi (1992), the DPC is transformationally derived from the NPC, with the possessor DP landing in [SPEC, DP], an A'-position, and acquiring the Dative case structurally. Bartos (1996), in turn, proposes that the instances of non-specific Dative Possessive Constructions, not selecting the Definite Object Agreement Paradigm, are merely NPs, not DPs. The non-specific DPC, according to him, is derived by Long NP movement, whereby the possessor DP moves out of [SPEC, NP] and lands in the matrix clause. In Bartos (1996), the variation of the verb morphology with Dative Possessive Constructions, illustrated in (9)-(10), is explained by assuming that the object NP in (10), being a non-fully fledged NP, does not require overt case-checking in AGRo, and thus the verb will pick up the Indefinite Object Agreement [-DEF] suffix, as the default option, somewhere else. Consider (22):



The auxiliary hypothesis needed for this analysis is that only fully fledged, maximal DPs, but not other maximal categories, e.g. NPs, are able check case in AGRo. Thus, in the model in (22), the verb will move to AGRo to check its features **iff** the object is



a fully fledged DP, and this is when Definite Object Agreement is realized. In all other cases, the verb will not enter the AGRo node, as it will not have the relevant features to check against the object NP.

Section 1.4. will show that this line of argument is somewhat problematic inasmuch as it assumes that one of the two phonologically identical possessive constructions is a fully fledged DP and the other is a non-fully fledged NP. In Part 3, it will be shown that it is possible to account for Object Agreement in Hungarian without having to stipulate the dual category status of nominal expressions: the selection of the Object Agreement paradigm follows from the feature specification of these DPs. In accordance with standard analyses (cf. Abney 1986), 1st and 2nd person pronouns, however, are assumed to be "degenerate projections" also in the present proposal: they are No heads under NP, which has no Spec or Comp. This step is discussed and motivated in Part 3. The presence and absence of the features [DET] and [SPEC], and their interaction will provide the necessary machinery to derive the required LF-interpretations. The proposed solution will retain Bartos (1996)'s idea that the verb checks its object features in the AGRo position only if the object NP has both [+DEF] and [+SPEC] features; in all other cases the verb will skip the AGRo node and will land in AGRs. The fact that the absence of the [DEF] feature results in the absence of the Do projection follows from Minimalist assumptions. In addition, the present proposal explains the exact strategy of the case-checking mechanism, which remains unrevealed in the account of Bartos (1996). In the present model, case is unambiguously checked by the verb itself. This will relieve us from the burden of the dual case-checking mechanism -- thematic and structural case for object NPs --, a problem recurring in most configurational models of Hungarian. Movement, thus, will be motivated by checking features other than case.

Bartos (1996) offers the following arguments in favour of his analysis:

**A.** Incorporated objects -- which **cannot be** fully fledged DPs by definition (cf. Baker (1988)) --, invariably select the Indefinite paradigm, hence they form a natural class with other non-specific nominals with respect to Object Agreement Paradigm selection (cf. Rapoport (1995) on the non-specificity requirement for incorporation):

- (23) Arisztid [<sub>No</sub> szen-et] lapátol-∅-∅.  
 Aristid coal-ACC shovel-PRES-3SG  
 'Aristid is coalshovelling.'



- (24) \*Arisztid [<sub>No</sub> szenet] lapától-Ø-ja.  
 Aristid coal-ACC shovel-PRES-3SG[DEF]  
 'the same'
- (25) Arisztid [<sub>DPa</sub> rajnai szen-et] lapától-Ø-ja.  
 Aristid the Rhine coal-ACC shovel-PRES-3SG-[DEF]  
 'Aristid is shovelling the Rhine coal.'
- (26) \*Arisztid [<sub>DPa</sub> rajnai szen-et] lapát-ol-Ø-Ø.  
 Aristid the Rhine coal-ACC shovel-PRES-3SG  
 'Aristid is shovelling the Rhine coal.'

The example in (24) shows that, in the case of an incorporated object, the selection of the Definite Object Agreement paradigm yields an ungrammatical sentence. The Definite Object Agreement gives grammatical results only if the object is a fully fledged, definite and specific DP, as is illustrated in (25)-26). The Indefinite Object Agreement paradigm, on the other hand, can be selected -- Bartos (1996) argues --, only if the object is not a fully fledged nominal, e.g. an incorporated object, as in (23).

**B.** If universal, negative, indefinite, interrogative and relative pronouns are also taken to be maximal projections (NPs) but not fully fledged DPs, they need not undergo Overt Object Agreement at all, as this is triggered only by fully fledged DPs, specified for both the [+DEF] and the [+SPEC] features in their projection.

**C.** The variation in the verb paradigm selection with the possessive construction falls out naturally: the definite paradigm is selected by fully fledged nominals (DPs), the indefinite paradigm is selected by non-fully fledged nominals (NPs), as the default option.

Bartos (1996) offers no explanation to the questions **why**;

*a./ intransitive verbs, having neither definite nor indefinite objects,  
 select the default paradigm;*

*b./ there is a split among 1st and 2nd vs. 3rd person pronouns;*

*c./ both paradigms can be selected by Dative Possessive Constructions; the  
 category of the DPC changes though it does not correlate with the [±SPEC]  
 feature of other nominals throughout.*

The rest of this paper will show that, in spite of all its theoretical insight and elegance, the analysis provided in Bartos (1996) is incompatible with some facts of Hungarian (Section 1.4.). Cross-linguistic evidence also supports a feature specification account



of Object Agreement phenomena (Part 2). Part 3 will introduce the reader to Rivero's model of Long Head Movement. The present proposal retains the Minimalist assumption - - spelled out also in Bartos (1996) -- that, a category develops a further projection only if this is triggered by the need of checking some feature in that projection. That is to say, if the relevant features are not present in the nominal, it will not develop the projection where such features are normally checked. However, rather than view the absence of a higher projection as an *ipso facto* cause of the variation in the agreement patterns, the present proposal derives the selection of the agreement patterns from the feature specification of the nominals. The different agreement patterns will arise from the different movements of the verbal head: Short Head Movement of Vo for Definite Object Agreement and Long Head Movement of Vo for Indefinite Object Agreement.

#### 1.4 The Critique of Bartos (1996)

The first problem with the account in Bartos (1996) is that it assigns Dative Possessive Constructions a dual status, as is shown in (28)-(29). In (28), the DPC is assumed to be a fully fledged DP, given the definite object agreement suffix on the verb. In (29), however, the same DPC is assumed to be a non-fully fledged NP. Furthermore, quantified nominals, shown in (27), project as NPs. In the model of Bartos (1996), the quantified Dative Possessive Construction in (28) should be a fully fledged DP because it agrees overtly with the verb but it should *not* be a fully fledged DP because quantified expressions project only as NPs. As there is no independent motivation provided for the change in the categorial status of the DPC, it remains stipulative. Explaining this change by the selection of the Indefinite Object Agreement Paradigm makes the argumentation in Bartos (1996) circular.

- (27) Ismer-Ø-ek                    minden/néhány/öt cikk-et.  
       know-PRES-1SG[-DEF]    every/some/five article-ACC  
       'I know-[-DEF] every article/some articles/five articles.'



- (28) *Ismer-Ø-em* minden/néhány/öt nyelvész-nek minden/néhány/öt cikk-  
 know-PRES-1SG[DEF] every/some/five linguist-DAT every/some/five article-  
 -é-t.  
 POSS3SG-ACC  
 'I know-[DEF] every linguist's/some linguists'/five linguists' every article/  
 some articles/five articles.'
- (29) *Ismerek* minden/néhány/öt nyelvész-nek minden/néhány/öt cikk-  
 know-PRES-1SG[-DEF] every/some/five linguist-DAT every/some/five article  
 -é-t.  
 -POSS3SG-ACC  
 'I know-[-DEF] every linguist's/some linguists'/five linguists' every article  
 some articles/five articles.'

A further problem, not explicated in Bartos (1996), is where the Dative case on the possessor in (29) originates. Notably, Bartos (1996) assumes Long NP Movement for the possessor NP out of [SPEC, NP], where only the Nominative case could be assigned. The matrix verb cannot assign the Dative case because it does not subcategorize for a [DAT] NP. This puzzle will be left unresolved here. In sum, we arrive at the following conflicts within Bartos's system:

- I. The Dative Possessive Construction is both a fully fledged DP and a non-fully fledged NP, (28)-(29).
- II. If there are two types of objects -- fully fledged DPs and non-fully fledged NPs --, their accusative case must be checked in two different positions: fully fledged DPs check their case against AGRo while other types of nominals must get it from the V, thematically. Consequently, when these NPs occur in passive constructions, their different sources of origin should be reflected.<sup>(1)</sup> As the examples in (30)-(33) show, no such difference can be detected<sup>(2)</sup>:

#### Quantified Possessive DP

- (30) *Senecá-nak minden vers-e fel-olvas-tat-ott-Ø.*  
 Seneca-DAT every poem-POSS3SG PFX-read-PASS-PAST-3SG  
 'All of Seneca's poems have been read out.'

<sup>(1)</sup> This observation was first made by M. Bródy (p.c.).

<sup>(2)</sup> The examples given here sound rather archaic, though interpretable.



**Incorporated No**

- (31) Levél ír-at -ott-Ø.  
 letter write-PASS-PAST-3SG  
 'There has been a letter written.'

**Quantified NP**

- (32) Minden levél meg-ír-at-ott.  
 every letter PFX-write-PASS-PAST  
 'Every letter has been written.'

III. The obligatory extraction of the possessor DP from [SPEC, NP] to the matrix clause must be stipulated to get the non-specific reading, as was also noted in Bartos (1996). Consider (16)a-d of Bartos (1996) repeated as (33)-(36) below:

**Extracted Nominative Possessor with Definite Agreement**

- (33) \*Péter-Ø<sub>i</sub> olvas-t-**uk** [DP t<sub>i</sub> vers-é-t].  
 Peter-NOM read-PAST-1PL[DEF] poem-3SGPOSS-ACC  
 'We read[DEF] a poem of Peter's.'

**Extracted Nominative Possessor with Indefinite Agreement**

- (34) \*Péter-Ø<sub>i</sub> olvas-t-**unk** [DP t<sub>i</sub> vers-é-t].  
 Peter-NOM read-PAST-1PL[-DEF] poem-3SGPOSS-ACC  
 'We read[-DEF] a poem of Peter's.'

**Extracted Dative Possessor with Definite Agreement**

- (35) Péter-nek<sub>i</sub> olvas-t-**uk** [DP t<sub>i</sub> vers-é-t].  
 Peter-DAT read-PAST-1PL[DEF] poem-3SGPOSS-ACC  
 'We read read[DEF] a poem of Peter's.'

**Extracted Dative Possessor with Indefinite Agreement**

- (36) Péter-nek<sub>i</sub> olvas-t-**unk** [NP t<sub>i</sub> vers-é-t].  
 Peter-DAT read-PAST-1PL[-DEF] poem-3SGPOSS-ACC  
 'We read[-DEF] a poem of Peter's.'

Bartos (1996) explains the obligatory extraction of the possessor DP to the matrix clause in (36) by saying that if it remained *in situ*, in [SPEC, NP], the specific reading would be forced in that position, which would lead to a feature clash. Nominative possessors, on the other hand, are not forced to move from the DP because their features can be checked *in situ*. If they are forcibly moved to the matrix clause, they



give ungrammatical results, as is shown in (34).

There are several problems arising from the Long NP Movement proposal, four of which are spelt out here:

(i) As was explained above, the stipulation that the possessor does not move via [SPEC, DP] leaves the Dative case on the possessor, moved by Long NP movement, unexplained.

(ii) Dative possessors can move in two different ways: either via [SPEC, DP] or by Long NP movement. Whether this is true or not, the whole possessive nominal also must check its Accusative case and other features somewhere if it does not enter AGRo. Bartos (1996) does not explicate where exactly this should happen.

(iii) Nominative Possessive Constructions do not necessarily improve if they remain *in situ*:

(37) \*Olvas-t-**unk** [Péter-∅ vers-é-t].  
 read-PAST-1PL[-DEF] Peter-NOM poem-POSS3SG-ACC  
 'We read[-DEF] Peter's poem.'

In (37), the Nominative possessor has not been moved, yet, the sentence is ungrammatical. Thus, the ungrammaticality of (34) does not follow from the Extraction rule application; rather, it has to do with feature-checking.

(iv) It is possible for the verb to select both agreement paradigms even if the Dative possessor is **not** extraposed at all:

(38)a. Olvas-t-**unk** már Péter-nek vers-é-t.  
 read-PAST-1PL[-DEF] already Peter-DAT poem-POSS3SG-ACC  
 'We have already read some poems by Peter.'

b. Olvas-t-**uk** már Péter-nek vers-é-t.  
 read-PAST-1PL[DEF] already Peter-DAT poem-POSS3SG-ACC  
 'We have already read some poems by Peter.'

As (38) shows, the selection of the Object Agreement Paradigm does not depend on the Extraposition rule application, in either case.

IV. Incorporated objects are [-SPEC] in the sense of Enc (1991) and Rapoport (1995), irrespective of their assumed projection. Notice, however, that the same incorporated element can sometimes appear as "unincorporated", in the F(ocus) position, in which case it is interpreted as Contrastive Focus, which is always specific by its semantic content:



- (39) Arisztid "SZEN-ET lapát-Ø-ol, nem "HAVAT.  
 Aristid coal-ACC shovel-PRES-3SG[-DET] not snow-ACC  
 'It is COAL that Aristid is shovelling, not SNOW.'

The dual category account of Bartos (1996) would imply that *szen-et* 'coal-ACC' is a fully fledged, specific DP when focussed, and a non-fully fledged NP or No when incorporated. Moreover, all non-specific NPs would be assigned such dual category status. Thus, we would have to double the inventory of Hungarian nominals in each subclass; an undesired consequence.<sup>(3)</sup>

## 2 Object Agreement in Turkish and Palauan : A Cross-linguistic Outlook

**2.0** There are languages in which the selection of specific/non-specific NPs is morphologically marked. Turkish (Altaic) and Palauan (Austronesian) are two such languages, though the strategies of Object Agreement marking are different in them.

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<sup>(3)</sup> To stretch the parallelism further, embedded clauses could be both DP-CP chains and NP-CP chains, depending on the projection of the nominal expression in them:

- (i) Oly-at mond-Ø-ok, hogy magam is meg-bán-Ø-om.  
 such-ACC say-PRES-1SG that myself also PFX-regret-PRES-1SG  
 'I will say something that I will regret myself.'
- (ii) Akkor mond-Ø-om el, amikor meg-érkez-Ø-ünk.  
 then say-PRES-1SG PFX when PFX-arrive-PRES-1PL  
 'I will say it when we arrive.'
- (iii) Semmi-t nem hisz-Ø-ek el, ami-t nem bizonyít-Ø-asz.  
 nothing-ACC not believe-PRES-1SG PFX that-ACC not prove-PRES-2SG  
 'I won't believe anything that you do not prove.'

Bartos (1996), quoting Kenesei (1994), claims that embedded clauses are DP-CP chains, with the DP bearing the case and the CP bearing the thematic role. He adds that pronouns like those in (i)-(iii) are non-fully fledged NPs and therefore do not trigger Definite Object Agreement. However, the referring pronominals in the above examples are in Focus position, hence they must be fully fledged DPs. Thus, again the dual category conflict arises.



## 2.1 Turkish

In Turkish, specific object NPs must be **overtly** marked Accusative, whereas nonspecific object NPs are not overtly marked for case, i.e. they have "silent case" (cf. Enc (1991) and Kornfilt (1995)):

- (40) Ali bir kitab-ı aldı.  
 Ali one book-ACC bought  
 'Ali bought one (specific) book.'
- (41) Ali bir kitap aldı.  
 Ali one book bought  
 'Ali bought some book or another.'

De Hoop (1992) accounts for this fact by assuming two different kinds of Accusative Case in Turkish: strong (overt) case for specific NPs and weak (silent) case for non-specific NPs. A similar approach is taken in Kornfilt (1995), who suggests that CaseP should be a projection distinct from AGRoP.

Woolford (1995), on the other hand, argues against the concept of two types (weak and strong) of cases, saying that there is only one slot for Object Agreement. If the object NP in Turkish can get two types of structural case, it is unclear where and how the other type of case would be checked.

## 2.2 Palauan

Woolford (1995) offers a different account, based on the Mapping Hypothesis of Diesing (1992). She establishes her claims on some striking facts of Palauan, a language spoken on an island called Palau, north of the Philippines. Palauan Object Agreement, which is conditional on the presence of the [+human] and/or [+specific and +singular] features of the object NP, is realized in two ways: **Overt Object Agreement** is realized only in the **Perfective Aspect** while **Preposition Insertion** takes place in the **Imperfective Aspect**. Compare (42) and (43) in the Perfective Aspect and (44) and (45) in the Imperfective Aspect:



**PERFECTIVE ASPECT WITH AND WITHOUT OVERT OBJECT AGREEMENT**

(42) Te-'il-lebed-ii a bilis a rengalek.  
 3PL-PERF-hit-3SGO CLASS dog CLASS children  
 'The kids hit the dog.'

(43) Te'il-lebed a bilis a rengalek.  
 3PL-PERF-hit CLASS dog CLASS children  
 'The children hit a dog/the dogs[-spec]/some dog/some dogs.'

**IMPERFECTIVE ASPECT WITH AND WITHOUT PREPOSITION INSERTION**

(44) Ng-milenge-lebed er a bilis.  
 3SG-IMPF-hit P CLASS dog  
 'S/he hit the dog.'

(45) Ng-milenge-lebed a bilis.  
 3SG-IMPF-hit CLASS dog  
 'S/he hit a dog/the dogs[-spec]/some dog/some dogs.'

As the example in (42) shows, the verb bears an overt object agreement-marker if the object has the required features. In the absence of these features no suffix is added, as is shown in (43). In the Imperfective Aspect, the preposition er is inserted if the object has the given features, (44), and nothing happens in the absence of these features, (45).

Woolford (1995), adapting the Mapping Hypothesis of Diesing (1992), assumes that the movement of the object NP out of the VP -- i.e. Overt Object Agreement -- is triggered **iff** the object NP has the features [+human] and/or [+specific and +singular]. In the absence of such features, the case of the object NP is checked inside the VP, -- against the *Vo* verbal head --, and no suffix is added to the verb in the Perfective Aspect. This is consistent with Minimalist principles (cf. Chomsky (1993)) in that movement is a Last Resort option. In the Imperfective Aspect the preposition er is inserted -- very much in the fashion it is done in Spanish -- in the presence of these features, or again, nothing happens in the absence of them. <sup>(4)</sup>

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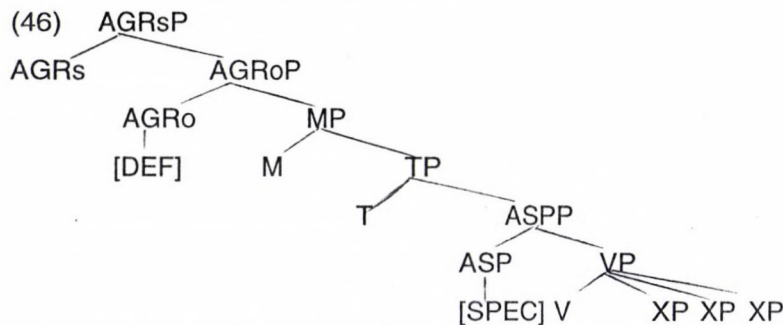
<sup>(4)</sup> If we add that Swahili has Overt Object Agreement, we arrive at the following correlation: Palauan Perfective Aspect triggers Overt Object Agreement, like Swahili, whereas Palauan Imperfective Aspect triggers Preposition Insertion, like Spanish.



Without looking at the Palauan facts, it would seem feasible to account for the Object Agreement Phenomena in various languages by establishing weak and strong cases (and consequently two separate positions for Object Agreement) or a CaseP position distinct from AGRo. However, the Palauan data suggest that the functional categories responsible for these facts must be found in the verbal AGRP projection as well as in the DP, rather than within the nominal DP projection alone.

### 3 The Proposal: Long Head Movement for Indefinite Object Agreement and Short Head Movement for Definite Object Agreement

**3.0** Assuming a highly articulated AGRP-structure like (46) below, we can establish the following correlation for Hungarian: Definite Object Agreement is realized **iff** the object nominal has both the [+DEF] and the [+SPEC] features simultaneously; in such cases the verbal head,  $V_o$ , moves through AGRo. In the absence of [+DEF], however, the verb must skip the AGRo node, and the default Indefinite Object Agreement option is selected.<sup>(5)</sup> If the verb, wrongly, moves to AGRo when the [+DEF] feature of the object is absent, the structure will crash. In other words, the [+SPEC] feature alone is not sufficient to trigger movement to AGRo.



In the model in (46), the verbal head ( $V_o$ ) moves "step-by-step", checking its features on its way up. The machinery to be introduced in Section 3.1. is needed to allow the verbal head,  $V_o$ , to skip AGRo when;

<sup>(5)</sup> In current research, the presence or absence of a feature is equivalent to the [+] or [-] value of binary features in earlier works.

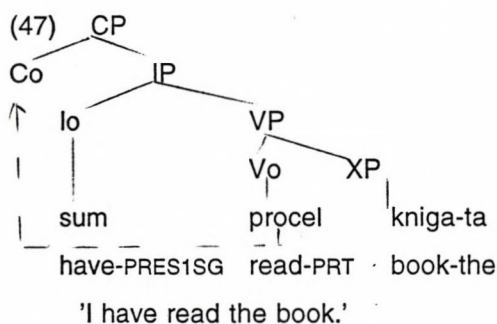


- a./ the object is indefinite,
- b./ the object is a possessive construction with covert partitive meaning,
- c./ the object is 1st and 2nd person pronoun, or
- d./ the object is an incorporated No.

Intransitive verbs will automatically move to AGRs as they do not project AGRo at all. The arrangement of the functional categories in (46) reflects the linear order of verbal inflections cross-linguistically: languages with an overt verbal inflection system project a separate ASP(ect) node, which is usually realized as the innermost suffix on the verb (Hornstein (1991)). It is immediately followed by the T(ense), M(ood), and AGR(eement) suffixes in linear order, as is also assumed in Rivero (1994) for Bulgarian, Albanian and Greek. Although further research is required as to the exact status and content of the ASPP node in Hungarian, cross-linguistic evidence indicates that in certain languages the [+SPEC] feature is closely related with the ASPP node. Therefore, it will be assumed here that the [+SPEC] feature is checked separately, in ASPP, irrespective of the presence or absence of the [DEF] feature. With 1st and 2nd personal pronoun objects the verb does not enter AGRo because it has no [DEF] feature to check there. The person/number features of the personal pronoun -- including the well known *-lak/-lek* case, i.e. agreement from 1st person subject to 2nd person object -- will have to be checked in AGRs.

### 3.1 The Mechanism

The exact mechanism underlying this proposal is an extended version of Long Head Movement (LHM) introduced in Rivero (1994), to account for certain word order phenomena in *Wackernagel-languages* (cf. a similar treatment of the *Tobler & Moussafia Effect* in Latin languages in Cardinalletti & Roberts (1991).) LHM does not obey the Head Movement Constraint (HMC) but it observes the ECP. Compare:





In this model, the non-finite verbal head,  $V_0$ , is allowed "to skip" one functional head, landing in  $Co$ . Although this movement is not as local as Short Head Movement, it is not fully uncontrolled: it observes the ECP and is, therefore, subject to Relativized Minimality (cf. Rizzi(1990)). By allowing Long Head Movement in Balkan, Slavic and some Romance languages, Rivero (1994) is able to account for the relatively free order of lexical elements:

*"In Balkan languages, which are of the so-called 'free word order' type, functional categories such as NEG, M and AUX are rigidly organized and serve to identify the clausal skeleton, while lexical categories are more flexible in position and less directly reflect underlying order."* (Rivero (1994):76)).

### 3.2 Rivero's LHM and Hungarian Object Agreement

What is relevant in Rivero (1994) for the present exposition is that the verb may skip one functional category without violating certain principles of grammar. In subsequent work, (cf. Rivero (1995a,b)) she establishes that the principle triggering Long Head Movement is **Attract**, one of the Economy Principles, (cf. Chomsky (1991)). Taking the Indefinite Paradigm to be the "unmarked" case, it seems plausible to assume a similar mechanism for Hungarian Object Agreement: unless the verb is specified for a [+DEF] object already at the input of the derivation<sup>(6)</sup>, it will skip the  $AGRo$  node, given that it has no features to check there; hence, the Indefinite Object Agreement option

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<sup>(6)</sup> The status and the exact location of these features is a debated problem.

Taking the position that the feature specification of a nominal is fully determined already in the lexicon would mean that the interpretation of every nominal could be read off straight away in the computation, or even before, i.e. ambiguity would never arise. It seems plausible to assume, though, that by the time the nominal reaches the  $AGRP$  verbal projection, it is fully specified for the [DEF] and [SPEC] features, or else the verbal head could not check its own features against the nominal. This can be achieved by postulating an independent nominal cycle, inside which the DP-internal feature checking processes take place. It is beyond the scope of this paper to give a fully developed account of this but cf. Trugman (in prep). for a similar account of the agreement facts of Russian nominal expressions.



will be selected. Note that the crucial difference between *intransitive verbs* and *transitive verbs with an indefinite object* will then be that AGRo will not be projected at all with intransitives but it still must be projected with transitives taking an indefinite object. Given that the indefinite object is not specified for the [DEF] feature, the verb will be forced to skip the AGRo projection, in order to be convergent. Thus, the verb will move step-by-step in the case of Definite Object Agreement (Short Head Movement) and will skip the AGRo node (Long Head Movement), by Attract, in all other cases. Intransitives do not project AGRo at all. Compare (48)-(56):

### **NO AGRo PROJECTION**

#### **Intransitive Verb**

(48)a. Lát-Ø-ok.

see-PRES-1SG

'I can see.'

### **LONG HEAD MOVEMENT**

#### **Indefinite Non-specific Object**

(49) Lát-Ø-ok egy/néhány/minden kutyá-t.

see-PRES-1SG a/some/every dog-ACC

'I can see a dog/some dogs/every dog.'

#### **Dative Possessive Construction with Covert Partitive Reading**

(50) Lát-Ø-ok Péter-nek Ø / egy / néhány / minden kutyá-já-t.

see-PRES-1SG[-DEF] Peter-DAT DET/ a / some every dog-POSS3SG-ACC

'I can see a particular one of / one of / some of / all of Peter's dogs.'

#### **Incorporated No Object**

(51) [<sub>No</sub>Nagy-ot] hall-Ø-ok.

big-ACC hear-PRES-1SG[-DEF]

'I am hard of hearing.'

#### **1st and 2nd Person Pronoun Object**

(52) Péter lát-Ø-Ø engem-Ø/téged-Ø.

Peter see-PRES-3SG[-DEF] I-ACC/you-ACC

'Peter can see me/you.'



**SHORT HEAD MOVEMENT****3rd Person Object**

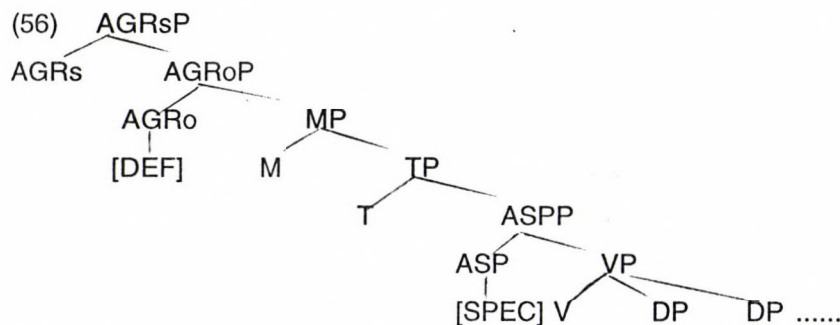
- (53) Péter lát-Ø-ja ő-t.  
 Peter see-PRES-3SG[DEF] s/he-ACC  
 'Peter can see him/her.'

**Definite Object**

- (54) Lát-Ø-om a kutyá-t.  
 see-PRES-1SG[DEF] the dog-ACC  
 'I can see the dog.'

**Dative Possessive Construction with Definite Reading**

- (55) Lát-Ø-om Péter-nek (a(z)) egyik/minden/néhány/összes kutyá-já-t.  
 see-PRES-1SG[DEF] Peter-DAT the one every /some/all dog-POSS3SG-ACC  
 'I can see one of/every single one of/some of/ all of Peter's dogs.'



To sum up, LHM (of the Vo head) gives the desired results: the verb will check all its features but the [DEF] feature, which is absent, hence only the default Indefinite Object Agreement Paradigm can be selected. When the nominal expression has the [DEF] feature, the verb will move by the familiar Short Head Movement, to check all of its features step by step against the nominal.

**3.3 Benefits**

In the light of this proposal, the problems listed in Section 1.1. will be revisited in this section. If it can be shown that the present model can account for the same set of facts as that of Bartos (1996), then this alternative is to be preferred: a model that does not stipulate a dual category status for all object nominals in Hungarian and thus avoids the double inventory of nominals assumed in Bartos (1996), meets the requirement of simplicity and elegance over that of Bartos (1996).



Besides, the proposed model offers a convenient strategy for feature checking by extending the concept of Long head Movement, familiar from Balkan languages, to the Hungarian Object Agreement phenomena.

(i) It has been shown that the Dative Possessive Construction may trigger Indefinite Object Agreement. It has been claimed that, in these cases, the DPC has covert partitive reading. As covert partitive reading is associated with the [+SPEC] feature of indefinites, in the sense of Enc (1991), it is clear that this feature alone is not sufficient to trigger Definite Object Agreement when the DPC has covert partitive reading. For this reason, the default, Indefinite Object Agreement paradigm is selected, and the verb will skip the AGRo node.

(ii) The same holds for pronouns listed in (ii) of 1.1. They may be [+SPEC] but this feature alone does not require Definite Object Agreement on the verb. Therefore, the default, indefinite paradigm is selected.

(iii) The split of personal pronouns in the Object Agreement Paradigm will be explained by the difference in their projection. Notably, 3rd person pronouns are fully fledged DPs, 1st and 2nd person pronouns are considered to be No heads. This view is not consistent with Abney (1986)), who analyzes English personal pronouns uniformly as Do heads. He establishes his analysis mostly on the complementary distribution of determiners and pronouns.<sup>(7)</sup>

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<sup>(7)</sup> Abney(1986):281-284 offers the following tests for the categorial status of personal pronouns in English.

I. They cannot be preceded by determiners, adjectives, possessive pronouns, quantifiers:

- (i) \*the she that I talked to
- (ii) \*the clever she is here
- (iii) \*many they make phone calls
- (iv) \*my she has always been good to me

II. They cannot be used in the appositive sense:

- (i) \*we idiots
- (ii) \*they sailors
- (iii) \*I stupid



However, there are several facts, listed in (A)-(D) below, indicating that the categorial status of personal pronouns in Hungarian may not be uniform. Furthermore, there is no reason to assume that they are determiner heads and not noun heads as the distribution tests given for English in Abney (1986) cannot be extended to Hungarian.<sup>(8)</sup>

**A.** 3rd person pronouns, unlike 1st and 2nd person pronouns, are referring nominals. They can be modified by, though only a restricted number of, lexical elements:

- (57) a nagy Ő  
       'the great he'  
       'Mr. Wonderful'
- (58) \*a nagy Te  
       'the great you'
- (59) \*a nagy Én  
       'the great I'

(The expression *felettes Én* 'superior Ego', an term created by psychologists to refer to the conscious level of the mind, cannot be taken into account here.)

**B.** Vocative is possible with 1st and 2nd but not with 3rd person pronouns:

- (60) Én, hülye!   Én, zseni!    Mi, hülyék!  
       I stupid    I ingenious    we stupid  
       'Stupid me!' 'Ingenious me!' 'Stupid us!'
- (61) Te, hülye!   Te, zseni!    Ti, hülyék!  
       you stupid   you ingenious   you-PL stupid  
       'Stupid you!' 'Ingenious you!' 'You stupid!' (plural reference)
- (62) \*Ő, hülye!   \*Ő, zseni!    Ők, hülyé-k!  
       he stupid    he ingenious   they stupid  
       'Stupid him!' 'Ingenious him!' 'Stupid them!'

---

<sup>(8)</sup> As Abney(1986) also admits, the head status of English pronouns reflects the fact that these nominals lack a specifier and a complement. Thus, they are head categories and maximal projections at the same time:

(i) DP

Do



**C.** 3rd person, but not 1st and 2nd person referents can be either definite or indefinite:

(63) Lát- $\emptyset$ -om az-t.  
 see-PRES-1SG[DEF] it-ACC  
 'I can see it.'

(64) Lát- $\emptyset$ -ok egy-et.  
 see-PRES-1SG[-DEF] one-ACC  
 'I can see one.'

**D.** Coordination of 1st and 2nd person pronouns with indefinite NPs gives rise to strange or funny utterances:

(65) A: Mi-t csinál- $\emptyset$ - $\emptyset$  a kisiú?  
 what do-PRES-3SG the little-boy  
 'What is the little boy doing?'

B:?? A kisiú le-rajzol- $\emptyset$ - $\emptyset$  [egy rendőrt és engem- $\emptyset$ ].  
 the little-boy PFX-draw-PRES-3SG[-DEF] a policeman-ACC and I-ACC  
 'The little boy is drawing (up) a policeman and me.'

(66) A: Ki-t lát- $\emptyset$ -tok onnan?  
 who-ACC see-PRES-2PL  
 'Who can you see from there?'

B:?? Lát- $\emptyset$ -unk [egy rendőr-t és téged- $\emptyset$ ].  
 see-PRES-1PL a policeman-ACC and you-ACC  
 'We can see a policeman and you.'

The facts listed in **A-D** suggest that 1st and 2nd person pronouns are syntactically different from 3rd person pronouns, therefore it is justifiable to distinguish their categorial status. Besides offering a natural explanation for the "unmarked" Indefinite Object Agreement, this proposal has the additional bonus of collapsing the syntactic behaviour of incorporated Xo heads and 1st/2nd person pronominal No heads regarding the selection of the Indefinite Object Agreement Paradigm. This is motivated by their semantic property: neither incorporated heads nor 1st/2nd person pronouns are true arguments in the sense of Tenny (1994) i.e. they do not have a "measuring out" function on the event.

(iv) In accordance with Baker (1988), incorporated objects are taken to be heads, which, consequently, cannot be specified for the [DEF] feature: the No head under the "degenerate" NP does not have any projection that would license the definite reading,



hence the default option is selected by the verb.

(v) Intransitive verbs do not project an AGRoP at all, therefore they have to check all their features in AGRs, as the "unmarked" option.

#### 4 Summary

The paper seeks an alternative treatment of Hungarian Object Agreement phenomena, discussed in Bartos (1996). While retaining its basic idea that the verb enters AGRo only if the object NP has both the [+DEF] and the [+SPEC] features simultaneously, this paper views this fact as a cause rather than as a consequence of the selection of the Object Agreement Paradigm, as was proposed in Bartos (1996). Long Head Movement of the Vo head is assumed in all those cases when the verb does not select the Definite Object Agreement pattern: a./ when the object is indefinite b./ when the object is a possessive NP with covert partitive meaning and c./ when the object is a 1st or 2nd person pronoun, d./ when the object is incorporated. Intransitive verbs do not project AGRo as they have no features to check there. The [+SPEC] feature is assumed to be checked in ASPP.

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## Intonational Key and Termination Revisited

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Revisiting concepts or even whole theoretical frameworks has become the fashion in linguistics. The very word 'revisiting' has the connotations of visiting someone or something one is well-nigh familiar with, an old acquaintance, so to say. This is not the case with the above concepts - 'key' and 'termination' - as they are still regarded as 'the man who came in from the cold' newcomers into the domain of intonational phonology. In fact, the concepts were begotten as such in their present interpretation by the late David Brazil and his Birmingham associates in the late seventies and early eighties (cf. Brazil *et al.* 1980).

Key is defined in terms of the relative pitch of the first stressed syllable (which may or may not coincide with the tonic syllable) in a tone unit. The system has three values: high, mid, and low. These values are defined, not in absolute terms, but relative to the terminating pitch of the preceding tone unit, hence the significance of termination. The values, to which I shall return shortly, are meant to establish some cognitively-based common core meaning of the respective value. Taylor (1989:158-172) convincingly argues that Brazil *et al.* have failed to account for the various meanings associated with each value.

Many years ago, a useful guiding principle was suggested by Pike (1945: 23), whereby he suggests:

Once a particular intonation contour has been isolated ... its meaning is determined by finding the least common denominator of the linguistic contexts or physical and emotional situations within which that contour occurs.

The problem with intonational meaning is that even if such a common denominator is ultimately arrived at it will be so abstract that it will be highly polysemous and predictively useless.

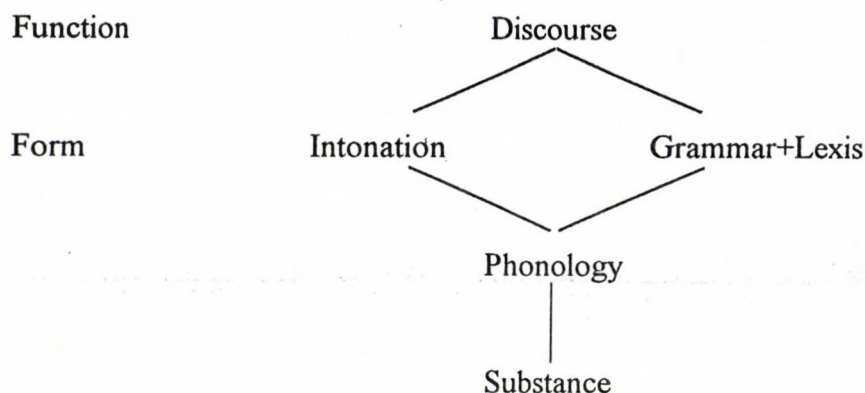
In this line I have been working on a theory of intonation answering the following questions:

- (i) What is the optimum methodological framework that can provide the analyst with a flexible degree of delicacy in the analysis of intonational phenomena;
- (ii) What are the least redundant intonation transcriptions that can serve linguistic, language-teaching and technological purposes, respectively;
- (iii) How can phonetic data be most economically digitised, i.e. an abstraction of a small, finite set of meaning-bearing elements made from the limitless possibilities?

This paper will elaborate a different approach to (iii) and tackle - by extension - some issues relevant to (i).

A major shortcoming in the theoretical reasoning of the Birmingham School approach is the rather tenuous link between intonation and discourse, though the model as such posits its importance. (Cf. the diagram of the Firthian-type language model (Coulthard & Montgomery (eds), 1981: 148)):





The reason, as I see it, is due to the fact that the discourse analysis approach is data-base oriented, i.e. it provides for the description of what Chomsky calls 'Externalised language' or 'E-language', the description of performance and the actualised instances of attested verbal behaviour (Chomsky, 1986). While such an approach is certainly advantageous for practical applied linguistics purposes, it fails to provide the theoretical rationale working behind the intonation-discourse analysis interface. In other words, the theory fails to elucidate the mechanism it employs for making choices along the syntagmatic axis without making any resort to the native speaker's intuitions of the paradigmatic contrasts each step implies. To remedy or complement this an 'Internalised-language' or 'I-language' component is needed, enquiring into discourse as abstract knowledge and linguistic cognition, and its relation to intonation.

I propose that the missing link in the intonation-discourse interface can be supplied by the theory of Functional Sentence Perspective (FSP), also known as topic-focus, theme-rheme articulation or information structure, as expounded by the Prague School and, in particular, by Jan Firbas (1992) and his Brno associates. The essence of the theory of Functional Sentence Perspective (FSP) is that in the act of communication the speaker/hearer perceives some elements as more and others as less dynamic. This induces Firbas to speak of Communicative Dynamism (CD) as -

the extent to which the sentence element contributes to the development of the communication, to which it 'pushes' communication forward as it were.

(Firbas, 1966: 122)

In assessing degrees of Communicative Dynamism in written texts Firbas' analysis takes into consideration three factors which are constantly interacting: (i) linear modification, (ii) the character of the semantic content of the linguistic element as well as the character of the semantic relations involved, and (iii) the retrievability of the information from the immediately relevant context. In the sphere of the spoken language a fourth factor becomes also operative, namely, intonation. To quote Firbas (1992: 12):

By placing the intonation centre (IC) of the sentence, i.e. the most prominent prosodic feature within the sentence ... the speaker unequivocally signals the presentational representation.

As the discussion below will show, it is the constant interaction of the above four factors that can provide an analysis of higher delicacy and more deterministic power of the choices the speaker makes along the syntagmatic axis of a grammar of speech model.

A semantic scale is empirically defined by Firbas involving the following dynamic functions:



Set(ting), Pr(esentation of Phenomenon), Ph(enomenon presented), B(earer of Quality), Q(uality), Sp(ecification) and F(urther) Sp(ecification).

At this stage I shall illustrate how a functional 'marriage of convenience' of the Functional Sentence Perspective approach and the discourse intonation approach as elaborated by David Brazil and his associates can profit from each other by reinterpreting Brazil's concept of 'key' and by extension 'termination'.

As a point of departure I shall use Brazil's parade example (1) illustrating the distinction in the key choice system: high, mid, and low. (1) (a), (b), and (c) are a felicitous triad since they exemplify how intonational meanings combine with lexico-grammatical ones:

- LOST
- (1) (a) //p he GAMbled //p and                    // **contrastive** (contrary to expectations, i.e. there is an interaction-bound opposition between the two)
- (b) //p he GAMbled //p and LOST // **additive** (he did both)
- (c) //p he GAMbled //p and                    // **equative** (as you would expect, i.e. there is an interaction-bound equivalence between them)
- LOST

(2) provides a schematic account of (1) along the lines of Danes's three-level approach to syntax (Danes, 1964) reformulated in terms of Firbas' analysis:

(2)

	He	gambled	and	lost
FSP	Th	TrPr; RhPr	TrPro	TrPr; RhPr
semantic pattern	B	Q		Q
syntactic pattern	S	V	conj.	V

The pronominal *he* is retrievable from the immediately relevant preceding context, functions as a Bearer of Quality on the dynamic scale and is the starting point of the utterance, the Theme (Th). The finite verbs *gambled* and *lost* act transition through the Temporal Modal Exponents (TMEs), the latter functioning as Transition Proper (TrPr) *par excellence*. The conjunction *and* functions as Transition Proper Oriented (TrPro) in the sense that it perspectives discourse to the transition by definition (cf. Firbas, 1992: 79). Through their notional components, however, the two finite verbs function as Rhemes Proper (RhPr) in the absence of any other competitors. Rheme Proper (RhPr) is as defined as the element within the rhematic segment that *completes* the development of the communication. Provided that there is perfect correspondence between the non-prosodic distribution of Communicative Dynamism and the distribution of prosodic prominence, the Intonation Centre will be placed on *lost*. On the semantic scale both verbs function as transient Qualities. (2) also illustrates in a straightforward manner the modificatory power of linear modification, i.e. 'gradation of position creates gradation of meaning when there are no interfering factors' (Bolinger, 1952: 1125).



A cursory look at (1), on one hand, shows that it merely registers meaningful key choices and looks for the pragmatic reasons behind them. Note, for instance, how Brazil (1985: 81) accounts for the choice of low key in (1c) by evoking the notion of the existential paradigm:

it is not only that he gambled and lost; he did both in a world, existentially conceived, in which doing one necessarily entails doing the other.

(2), on the other hand, simply does not address the issue of key and it is understandable: the formulation of the theory of Functional Sentence Perspective preceded Brazil's analysis and the notion of 'key' as understood by the Birmingham School was unknown to Firbas and Praguians. The standard Functional Sentence Perspective explanation, however, would be to refer to the immediately relevant preceding context which in principle is correct though it is thin on delicacy.

A useful hint to begin teasing out the problem is provided by Brazil's semantically defined meanings of key choices. In this respect I argue that the semantic scale of (1) *He gambled and lost* as presented in (2) reflects the least dynamic of the three choices, i.e. (1b) whereby the additive meaning glossed by Brazil is in perfect correspondence to the semantic roles of merely adding Qualities of the two verbs, *gambled* and *lost*. Both elements function as Rhemes Proper because they are syntactically and semantically equivalent, the Intonation Centre being placed on the final element, *lost*.

The equative meaning as conveyed by (1c) can be accounted for by taking the sentence-final *lost* to act as a Specification, i.e. possessing a higher degree of Communicative Dynamism compared to the Quality *gambled* and on the whole (1c) being more dynamic than (1b). Such an explanation finds its support in Brazil (1985: 100-101) who makes an apt comment on the difference between the two:

We can recognise a relation of hyponymy here if we notice that for (109) [in our case (1c)] to be appropriate in any set of circumstances, (108) [in our case (1b)] would have to be appropriate also; but (108) [(1b)] would not be appropriate in all situations where (109) [(1c)] was appropriate. (108) [(1b)] asserts that both events occurred; (109) [(1c)] asserts this and *also* that the two formulations are existentially equivalent. In this case it is the 'lower' choice that carries information additional to that carried by the 'higher' one.

This explains it why in (1c) *lost* acts as a successful competitor of *gambled* and relegates the latter to the status of Rheme (Rh). (3) exemplifies my argument in a diagramme form:

(3)

	He	gambled	and	lost
FSP	Th	TrPr; Rh	TrPro	TrPr; RhPr
semantic pattern	B	Q		Sp
syntactic pattern	S	V	conj.	V

The contrastive meaning of (1a) is illustrated in (4):



(4)

	He	gambled	and	lost
FSP	Th	TrPr; Rh	TrPro	TrPr; RhPr
semantic pattern	B	Q		FSp
syntactic pattern	S	V	conj.	V

By comparing the semantic scales of (3) and (4) it becomes obvious that there is a communicative gap along the scale of the latter, i.e. the degree of CD suddenly 'jumps' from Quality onto Further Specification 'deleting', as it were, in its development Specification. How can we account for it? I argue that in this case alternative information - in (4) the act of *not losing*, i.e. *winning* - is deliberately deactivated into the background: it is inferable from the relevant context, yet it is not allowed to surface. The hearer has to perform what has been referred to in Relevance Theory as *bridging*, i.e. interpretation has to be bridged by assumptions which are not directly mentioned in the preceding utterance, but which are constructed by a series of inferences on the basis of the hearer's knowledge or beliefs (cf. Blakemore, 1992). Both high key and Further Specification (FSp) perspective (4) towards this end. Developing a similar vein of argument Yordan Penchev (1980) in his analysis of Bulgarian intonation introduces the notion of *emphatic rheme* which in our case (4) will act as a subtype of Rheme Proper (RhPr). The differences in the degree of Communicative Dynamism manifested by Specification (Sp) in (3) and Further Specification (FSp) in (4) is of particular importance to our enquiry: whereas Specification can choose from a number of values in a paradigm, Further Specification on the grounds of referring to a deactivated Specification and being the Intonation Centre can take only one of a binary set of values to the exclusion of the other. This finds its support in Brazil's distinction between *particularising* or *contrasting* and simply *selecting* choices (Brazil, 1985: 73).

(5) illustrates that the present methodology can account for tone units with extended tonic segments:

(5) //p he GAMbled //p and //  
 LOST a FORTune

Here we find that the pitch-level choice at the first prominent syllable affects the communicative value of the whole tonic segment, and this time gives equative value to *lost a fortune*. Again Brazil (1985: 73) makes a pertinent observation:

We saw ... that when a tonic segment has more than one prominent syllable it is best thought of, for some purposes, as entering *as a syntagm* into the speaker's selective procedures.

In this respect, within a Functional Sentence Perspective analysis *lost a fortune* in (5) will be viewed as one element acting as Rheme Proper, and as Specification on the semantic scale, but having its own subfield of distribution of Communicative Dynamism. Following Firbas (1992) the asterisk is used to mark a subfield of distribution of degrees of Communicative Dynamism:



(6)\*

	lost	a fortune
FSP	TrPr	RhPr
semantic pattern	Q	Sp
syntactic pattern	V	O

A high key choice on *lost a fortune* will raise the degree of Communicative Dynamism and the element will act as one exponent of Further Specification, but its subfield will be the same as that of (6) showing the relative autonomous status of subfields within fields of Communicative Dynamism. The important point is that the gap on the semantic scale Quality - Further Specification still has to be bridged as a whole on the sentence level.

As has been shown by Brazil *et al.* there is significant correlation in termination/key choices defined as *concord* which points to the main function of termination as a means whereby one speaker restricts another's freedom of choice. Concord is by no means compulsory as (9) illustrates. (7), (8), and (9) illustrate the effect of key selection in the minimal utterances *yes* and *no*, respectively:

(7) Speaker A: // DO you underSTAND//  
SpeakerB: // YES//

STAND

(8) Speaker A: // DO you under //  
YES

Speaker B: // //

(9) Speaker A: //DO you underSTAND//  
NO

Speaker B: // //

In the *yes-no* questions it should be remembered that the Temporal Modal Exponents signal unsolved *yes-no* polarity and thus point to the question focus. Although it does not provide the missing information, they function as the Question Focus Anticipator (QFocA). In this way, the Temporal Modal Exponents continue to serve as Transition Proper, but simultaneously point through the *yes-no* polarity feature to Rheme Proper and in this way are rhematic. It should also be borne in mind that the short answers *yes* and *no* compress the whole gamut of Communicative Dynamism of their respective glossings, 'I understand' and 'I don't understand', hence the semantic role representations of the question-answer pairs of (7), (8), and (9), respectively:

(7) A: QFocA B Q  
B: B Q

(8) A: QFocA B Sp  
B: B Sp

(9) A: QFocA B Q  
B: B Sp

The different gamuts of Communicative Dynamism exemplified above point to the pertinence of the cognitive concept of *bridging* which has to account for the gaps of information provided by the relevant context. The difference between (8') and (9') illustrate discourse/intertextual dependence in the development of Communicative Dynamism and the manifestation of Functional Sentence Perspective.



To draw a definitive conclusion and posit rules reinterpreting the notions of 'key' and 'termination' within Functional Sentence Perspective framework will certainly be a premature step, yet a semantically-based account of the differing configurations of Communicative Dynamism corresponding to different key choices is, I believe, a step in the right direction. Urgent enquiry into the problem involving the analysis of a statistically representative sample of transcribed language data will certainly show variations but, I believe, the pattern will remain. What I find essentially sound in the Functional Sentence Perspective approach is that it is neither solely pragmatically-based in its explanations, nor is it entirely dependent on E-language observations. The method of Functional Sentence Perspective firmly posits in the spoken language the constant interplay of the four factors: linear modification, the contextual factor, the semantic factor, and intonation. It aims at establishing a carefully maintained balance between both E-language observations and I-language intuitions. I have attempted to illustrate how the method of Functional Sentence Perspective can be employed to increase the degree of delicacy of analysis in key choice selection, an initial step in the formulation of a more deterministic intonational phonology.

Analyses aiming at serving specific purposes need not employ such a degree of delicacy. As Firbas explicitly states (Firbas, 1974: 25), 'the delicacy of segmentation depends on the purpose of the investigation'. The point is that it has such a degree of determinism that it can successfully fulfil the functions of both a written text and an intonation parser.

#### References:

#### Abbreviations:

*TLP* *Travaux linguistiques de Prague* (Prague: Academia)

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## Subordinate Clauses are *not always* Restrictors

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### 0. The problem

The aim of this paper is to investigate the interactions of quantification, aspect (telicity) and focus in Hungarian with the help of one particular sentence construction consisting of a main clause, which contains the temporal universal quantifier *mindig* ('always'), and a focussed temporal subordinate clause introduced by the connective *amikor* ('when'). Such constructions are found in (1)–(4):

- (1) Mari mindig akkor jókedvű, amikor süt a nap.  
Mari always then in-a-good-mood when shines the sun  
Mari is always in a good mood when [the sun SHINES]<sub>F</sub>.
- (2) Mindig akkor ered el az eső, amikor Juli kocog.  
Always then starts PV the rain when Juli jogs  
It always starts raining when [Juli JOGS]<sub>F</sub>.
- (3) Juli mindig akkor kocog, amikor elered az eső.  
Juli always then jogs when PV-starts the rain  
Juli always jogs *for a while* when [it starts RAINING]<sub>F</sub>.
- (4) János mindig akkor olvassa el az újságot, amikor hazaér a munkából.  
János always then reads PV the paper when comes-home the work-FROM  
János always reads the paper when [he comes home from WORK]<sub>F</sub>.

I intend to show in section 4 that it is possible to formalize the semantic interpretation of the Hungarian sentences listed in (1)–(4) in such a way that the three kinds of semantic information referred to above are produced in a compositional fashion. Before doing that, in sections 1–3 some observations about the pairwise interactions of quantification, aspect and focus will be presented. Section 1 addresses the question of how the quantificational structure of sentences containing adverbial quantifiers is to be determined, what types of entities we quantify over in such cases, and what connections hold between the times during which the eventualities in the main and subordinate clauses take place. Section 2 is concerned with the contribution of focus to quantificational structures in general, while section 3 investigates the characteristics of focussed temporal subordinate clauses, in particular. After the formalization of results, in section 4, the paper closes with a brief summary and directions for further work.

### 1. Aspect and quantification

A theory about the semantic interpretation of sentences like (1)–(4) above must account for the fact that interesting temporal relations hold between the times of eventualities described in the main and subordinate clauses (just like in sentences containing a non-focussed temporal clause, discussed in Gyuris 1997). By this I mean the following. For the truth of sentences (1) and (2), it is required that the runtime of each eventuality (the interval it covers on the temporal axis)



satisfying the eventuality description in the main clause *be included* in the runtime of at least one eventuality satisfying the description in the subordinate clause. For the truth of sentences (3) and (4), however, it is required that the runtime of each eventuality satisfying the eventuality description in the main clause *is preceded by* the runtime of at least one eventuality satisfying the description in the subordinate clause.

I believe that an explanation of the temporal relations between the eventualities described in complex Hungarian sentences like (1)–(4) has to be based on a definition of what we take as the meaning of adverbial quantifiers and how this meaning interacts with aspectual information (telicity). These problems are going to be discussed briefly in the rest of this section. (For a detailed discussion see Gyuris 1997.)

According to De Swart (1991) and Johnston (1995), the semantic interpretation of sentences containing adverbial quantifiers (such as Hungarian *mindig* 'always', *néha* 'sometimes', *soha* 'never') mirrors that of sentences containing determiner quantifiers (e.g. *minden* 'every', *néhány* 'some', *a legtöbb* 'most', etc.). In Generalized Quantifier Theory (Barwise & Cooper 1981, Van Benthem & Ter Meulen (eds.) 1985, etc.), determiners are taken to denote relations between two sets of individuals. One of them consists of the extension of the N' the determiner attaches to, and is called the *restrictor* set in the literature, while the other one consists of the extension of the rest of the sentence, and is called the *nuclear scope* of the quantificational structure. Sentence (5),

(5) All birds fly.

for example, means that the set of individuals having the *bird* property (restrictor) is a subset of the set of individuals which *fly* (nuclear scope). The operator (quantifier), the restrictor and the nuclear scope constitute the so-called quantificational *tripartite structure* (Bach et al. 1995).

If we take the temporal quantifiers also to denote relations between two sets of entities, two problems present themselves. The first of them is what type of entities these sets consist of, while the second one is what principles determine the division of the semantic material of the sentence into restrictor and nuclear scope. In Johnston (1995) and Gyuris (1997) it is suggested that the type of entities quantified over by temporal quantifiers are intervals. In sentences containing a non-focussed temporal subordinate clause, like (6)–(7) below, the intervals assigned to the eventualities satisfying the descriptions in the subordinate clauses constitute the restrictor of the tripartite structure, while the intervals assigned to the eventualities satisfying the descriptions in the main clauses constitute the nuclear scope.

(6) Mari mindig jókedvű, amikor süt a nap.  
 Mari always in-a-good-mood when shines the sun  
 Mari is always in a good mood when the sun shines.

(7) János mindig elolvassa az újságot, amikor hazaér a munkából.  
 János always PV-reads the paper when comes-home the work-FROM  
 János always reads the paper when he comes home from work.

In the main and subordinate clauses of complex sentences the division of semantic material into restrictor and nuclear scope seems to be determined by cross-linguistic principles. For example, according to Lewis (1975) and Kratzer (1986) the function of the *if*-clause in sentences like (8) is only to restrict the domain of quantification of the adverb *usually* (i.e. the *if* has no independent meaning and therefore should not be regarded as a sentential connective).

(8) Usually if it is raining my roof leaks.



Therefore, the meaning of (8) is the following: for all intervals during which it is raining it is true that my roof leaks. Here the restrictor of the tripartite structure is the set of intervals during which it is raining and the nuclear scope is the set of intervals during which my roof leaks and the temporal universal quantifier denotes a subset relation between these two sets.

Carlson (1979) and Partee (1984) claims that *when*-clauses behave similarly to *if*-clauses, namely, they act invariably as restrictors without having any additional meaning, even in cases when there is no explicit quantifier in the sentence, only an implicit generic operator, like in (9).

(9) When it is raining my roof leaks.

The requirement that semantic material in the (non-focussed) temporal subordinate clauses should end up in the restrictor is also present in Hungarian, since (6), for example, is only true if all intervals during which the sun shines are such that Mari is happy during them. Sentence (7), however, has slightly different truth-conditions. What is required for the truth of this sentence is not that all intervals during which John arrives home are such that he reads the paper in them, but that all intervals of contextually determined length (e.g. an hour) immediately following his coming home are such that he reads the paper in them. This slight difference in the truth conditions of (6) and (7) is due, in my opinion, to the fact that (6) contains two atelic eventuality descriptions while (7) contains two telic ones.

Telic eventuality descriptions make reference to an inherent endpoint after which the eventuality cannot continue (these are Vendler's (1967) achievements and accomplishments). Telic eventuality descriptions are found in both clauses of (4), in the main clause of (2), and the subordinate clause of (3) above. Atelic eventuality descriptions (Vendler's states and activities) do not refer to such an inherent endpoint and are found in both clauses of (1), in the subordinate clause of (2) and in the main clause of (3).

We claim that the atelic eventuality descriptions in the temporal subordinate clauses of complex sentences make reference to the runtimes of the eventualities satisfying the descriptions, while telic eventuality descriptions make reference to contextually determined intervals (whose endpoints are not allowed to be later than the startpoint of the runtime of any other eventuality of the same type) following the runtimes of eventualities satisfying the descriptions. These intervals are quantified over by the adverbial quantifiers, in other words, they constitute the restrictor set of the tripartite structure. The idea of making a distinction between the intervals the two types of eventuality descriptions make reference to is also present in Partee (1984), where it is claimed that achievements and accomplishments in the *when*-clause of a linear narrative trigger the introduction of a new reference time located just after the event described in the *when*-clause. The assignment of the appropriate interval to each eventuality is completed formally with the help of the AMIKOR function defined in section 4.

According to native speaker intuitions the division of semantic material into restrictor and nuclear scope in our original examples (1)–(4) is not done according to the principles described above. For the truth of (1), for example, it is required that all intervals during which Mari is happy be such that the sun shines in them, not the other way round, as our theory predicts so far. I claim that this difference is due to the influence of focus on the interpretation procedure, which is discussed in detail in the following section.



## 2. Quantification and focus

Partee (1995) investigates the principles which guide the factoring of the information of a sentence into operator, restrictor and nuclear scope. She claims that certain syntactic, semantic and pragmatic categories are always restricted to specific positions in the tripartite structure. The table summarizing her observations is repeated in (10):

(10) Tripartite structures generalized (Partee 1995)

S		
<i>Operator</i>	<i>Restrictor</i>	<i>Nuclear Scope</i>
∇	„cases”	<b>main clause</b>
must	if-clause	assertion
not	<b>subordinate clauses</b>	<b>focus</b>
almost every	common noun phrase	consequent
<b>always</b>	topic	main predication
mostly	presuppositions	
Generic	domain	
	antecedent	
	context	

The importance of the table cited in (10) above lies in the fact that it confines both main clauses and focussed constituents to the nuclear scope and subordinate clauses to the restrictor of the tripartite structure. The Hungarian sentences in (1)–(4) however, do not fit into this general picture, since they contain a focussed subordinate clause which ends up in the nuclear scope, as mentioned at the end of section 1. The main clause in these sentences goes into the restrictor, contrary to Partee's predictions. If it was equally possible for the focussed constituent and the main clause to end up in the nuclear scope we would expect native speakers to have different opinions about the correct interpretation of these sentences or hesitate between two interpretations. In one of them semantic material from the main clause would constitute the nuclear scope and material from the subordinate clause would constitute the restrictor, while in the other one the focussed constituent (the subordinate clause) would end up in the nuclear scope and the rest of the sentence in the restrictor. Contrary to expectations like this, all native speakers prefer the former interpretation.

To explain the intricacies of semantic interpretation referred to above, it seems a reasonable thing to assume that focus is somehow semantically 'stronger' than any other constituent in the sense that whenever it is present in the sentence it ends up in the nuclear scope of the quantificational structure. Let us, however, consider the following English sentences<sup>1</sup>:

- (11) John always reads the paper when he's at home.  
 (12) John always reads the [PAPER]<sub>F</sub> when he's at home.  
 (13) John always reads the paper when he's at [HOME]<sub>F</sub>.

Sentence (11) containing a *when*-clause is ambiguous between a reading where the subordinate clause material acts as restrictor and the main clause material as nuclear scope (meaning that whenever John is at home he does nothing else but read the paper) and a reading where the main clause material acts as restrictor and the subordinate clause material as nuclear scope (meaning

<sup>1</sup> Similar examples are discussed by Rooth (1985), De Swart (1991) and Johnston (1995).



that all activities of paper-reading by John take place at home) (Johnston 1995). When (11) is uttered, however, it is necessarily disambiguated, since stress must either fall on the word *paper* (as in (12)) or on the word *home* (as in (13)). In the former case, focus projects to the whole of the main clause (Selkirk 1984), resulting in the reading where the subordinate clause ends up in the restrictor. In the latter case, focus projects to the whole of the subordinate clause, which results in a reading where the main clause ends up in the restrictor.

Unfortunately our observations cannot be generalized to all focussed subordinate clauses, since we do not get any ambiguity with focussed *if*-clauses like (14). Even if focus is placed on the word *home*, it cannot project to the whole of the subordinate clause to make its semantic content end up in the nuclear scope of the tripartite structure.

(14) John always reads the paper if he's at home.

In order to avoid unwelcome conclusions we can postulate that *if*-clauses are inherent restrictors, i.e. whenever they appear in a sentence they end up in the restrictor, regardless of other circumstances<sup>2</sup>.

However, if there is no overt adverbial quantifier present in the sentence, like in (15) and (16), *if*-clauses can be focussed. I believe that a covert generic operator in (16) does not prohibit a reading where the *if*-clause is focussed and acts as the nuclear scope, but this reading is clearly out if there is an explicit adverbial quantifier (e.g. *always*) present.

- (15) A: Are you going to play soccer on Sunday?  
 B: We'll play [if the SUN shines]<sub>F</sub>. (von Fintel (1995)'s example)
- (16) A: When do you play soccer?  
 B: We (\*always) play [if the SUN shines]<sub>F</sub>.

As opposed to structures associated with adverbial quantifiers, the tripartite structures which belong to determiner quantifiers are not so flexible. Even if we place focus on the first argument of a determiner quantifier it will not be enough to move the N' extension to the nuclear scope. (17), for example, cannot be interpreted in a way that most of the people who could help A are graduate students. According to Von Fintel's explanation this happens because the arguments of determiner quantifiers are more grammaticized than those of adverbial quantifiers, and therefore impossible to switch around.

- (17) A: Who here is clever enough to solve the problem?  
 B: Most of the [grad students]<sub>F</sub> should be able to help you. (von Fintel 1995)

To conclude this section about the influence of focus on the tripartite structures associated with quantifier expressions we can establish the following: in sentences containing an adverbial quantifier a focussed constituent always ends up in the nuclear scope unless it is part of an inherent restrictor (e.g. *if*-clause). The restrictor of an adverbial quantifier cannot be a clause in focus (contrary to von Fintel (1995)). Focussed temporal subordinate clauses (*amikor*- or *when*-clauses) always end up in the nuclear scope, therefore: *subordinate clauses are not always restrictors*, but can be nuclear scopes as well.

A similar opinion is reflected in Partee's (1995:571) negative universal:  
*..... no language has overtly subordinate structures in which it is the nuclear scope that is expressed by a subordinate clause, while the restrictor is expressed as the main clause. This does not rule out the*

<sup>2</sup> It is claimed by Haiman (1978) and Rooth (1985) that *if*-clauses are inherent topics. Topics, according to Partee (1995) tend to be restrictors. In other words, we can say that while focussed constituents are inherent nuclear scopes, topics are inherent restrictors.



possibility that some higher-order predicate or operator<sup>3</sup> might trigger such a structure; the claim is rather that no such structures will occur as the means of expressing quantification by themselves, using just grammatical structure and function words introducing one or the other clause..."

This closes our discussion about the contribution of focal information to the quantificational structure of adverbial quantifiers. In the next section the special properties of focussed Hungarian *amikor*- ('when') clauses are discussed.

### 3. Aspect and focus (properties of subordinate clauses in focus)

In order to give a formalized compositional semantic interpretation to the Hungarian sentences (1)–(4) it is necessary to determine what information the focussing of the subordinate clause adds to the meaning of the sentence. According to Rooth (1985), through the focussing of a constituent a set of alternatives is defined, which match the focussed constituent in type. Rooth primarily concentrates on sentences with NP or VP constituents in focus, and does not consider cases where the focus feature percolates to the clause containing it. In order to be able to determine what alternatives a focussed clause such as *amikor süt a nap* ('when the sun shines') defines<sup>4</sup>, we need to analyse the properties of subordinate clauses in focus.

Our analysis will be based on Van Leusen & Kálmán's (1993) paper, where two types of focus are distinguished. Focus 'bound' by a focussing adverb, such as *even* or *only* in (18), for example, is referred to as *bound focus*, while a focussed constituent not associated with any adverb is called *free focus*.

(18) Mary only introduced [BILL]<sub>BF</sub> to Sue.

We hypothesize that the focussed subordinate clauses in sentences (1)–(4) are examples of free focus (since there is no focussing adverb present in them), and therefore they should satisfy the contextual prerequisites of using free focus set up by Van Leusen & Kálmán (1993). These three conditions, the Salient Remnant Condition, the Kinship Condition and the Exhaustivity Condition are assumed to capture the essential semantic features of free focus. It is hoped that by checking their applicability to clauses in focus we can get valuable information about the interpretation of examples (1)–(4). This is what follows.

The first among the three contextual restrictions mentioned above is the *Salient Remnant Condition*, which requires that the *remnant* (the function which results from abstracting over the focus) occurs in the immediately preceding discourse or is activated by that discourse or the current non-linguistic context. In our cases abstracting over the focus would leave us with the eventuality description in the main clause plus the requirement that an eventuality satisfying this description must happen quasi-simultaneously<sup>5</sup> with another eventuality. This condition seems satisfied, since we normally use sentences like (1)–(4) only when the occurrence of the eventuality described in the main clause together with another eventuality is discussed in the earlier discourse or when we want to comment on some regularity concerning the occurrence of one type of eventuality (described in the main clause) which has something to do with the current non-linguistic context. For example, (1), repeated here as (19), is normally uttered in cases when the relation between Mary's happiness and some other eventuality was discussed earlier in the conversation or we are commenting on her current happiness.

<sup>3</sup> E.g., the focus operator.

<sup>4</sup> I.e., whether it is the set of all possible eventualities or only eventualities having a particular feature.

<sup>5</sup> More precisely, the runtime of an eventuality satisfying the description in the main clause should be included in the runtime of an atelic eventuality or immediately follow the runtime of a telic eventuality.



- (19) Mari mindig akkor jókedvű, amikor süt a nap.  
 Mari always then in-a-good-mood when shines the sun  
 Mari is always in a good mood when [the sun SHINES]<sub>F</sub>.

The second contextual restriction is the *Kinship Condition*, which is defined by Van Leusen and Kálmán (1993) as follows. The focus and its *antecedent* (the element in the previous discourse or the external context that relates to the remnant in the same way as the focus) must refer to concepts which are in some aspect of their meanings distinct or contrastive, while being akin to each other in some other aspect of their meanings. Their examples of focussed NPs and adjectives are repeated here as (20)–(22):

- (20) – I hear [LISA]<sub>F</sub> is going to visit you.  
 – No, [JOAN]<sub>F</sub> is going to visit me.
- (21) – So, your [AMERICAN]<sub>F</sub> aunt is going to visit you.  
 – No, my [CANADIAN]<sub>F</sub> aunt is.
- (22) – So, your [AMERICAN]<sub>F</sub> aunt is going to visit you.  
 – # No, my [CHILDLess]<sub>F</sub> aunt is.

The persons referred to by the names Lisa and Joan can be regarded as members of the set of possible visitors, therefore the exchange in (20) is acceptable. The meanings of the adjectives in (21) are also akin in one respect, since they both refer to nationalities, while they differ on one dimension. The adjectives in (22), however, do not form such a common domain, therefore the exchange is unacceptable.

As regards our focussed subordinate clauses, I believe that the domain of alternatives to the eventuality description in focus does not include the descriptions of all types of eventualities which can have *something* to do with the eventualities described in the main clause, only those which are in some sense contrastive. Let us illustrate this observation with the exchanges in (23) and (24):

- (23) – Éva mindig akkor kap jó jegyet, amikor a tanárnak jó kedve van.  
 Éva always then gets good mark when the teacher good mood has  
 Éva always gets good marks when [the teacher is in a GOOD MOOD]<sub>F</sub>.
- Nem, mindig akkor, amikor a tanárnak rossz kedve van.  
 No always then when the teacher bad mood has  
 No, she always gets good marks when [the teacher is in a BAD MOOD]<sub>F</sub>.
- (24) – Éva mindig akkor kap jó jegyet, amikor a tanárnak jó kedve van.  
 Éva always then gets good mark when the teacher good mood has  
 Éva always gets good marks when [the teacher is in a GOOD MOOD]<sub>F</sub>.
- Igen, és akkor, amikor megtanulja a bizonyításokat.  
 Yes and then when PV-learns the proofs  
 Yes, and when [she learns THE PROOFS]<sub>F</sub>.

The exchange in (24) would not be felicitous if the alternatives to the focussed eventuality description would be the descriptions of all eventualities which can have some connection to the eventuality of Éva getting a good mark, since the teacher's mood and her preparation clearly have something to do with it. Instead, the set of alternatives corresponding to the focussed



subordinate clause of the first sentence of (23) would be mutually incompatible eventualities, whose participants are also the same. This also shows that focussed subordinate clauses do satisfy the Kinship Condition.

The third restriction, the so-called *Exhaustivity Condition* claims that the context in which the sentence containing a free focus is uttered must entail the existence of an *exhaustive* (i.e., unique and maximal) entity for which the remnant holds. The validity of this requirement to the sentence type under examination is shown by the unacceptability of the exchange in (25).

(25) – Éva mindig akkor kap jó jegyet, amikor megtanulja a bizonyításokat.  
Éva always gets good marks when [she learns THE PROOFS]<sub>F</sub>.

–# Nem igaz, mindig akkor, amikor vagy megtanulja a bizonyításokat, vagy nem.  
No, always when [she learns the proofs]<sub>F</sub> or when [she doesn't]<sub>F</sub>.

Since the two eventualities described in the second part of the exchange are members of the domain of alternatives it cannot be the case that the remnant holds for both<sup>6</sup> of them. The exchange in (26), however, is perfectly acceptable since two eventualities satisfying the eventuality descriptions in focus are not members of a common domain:

(26) – Éva mindig akkor kap jó jegyet, amikor megtanulja a bizonyításokat.  
Éva always gets good marks when [she learns THE PROOFS]<sub>F</sub>.

–Igen, mindig akkor, amikor megtanulja a bizonyításokat, vagy amikor a tanárnak jókedve van.  
Yes, always when [she learns THE PROOFS]<sub>F</sub> or when [the teacher is in a GOOD MOOD]<sub>F</sub>.

It can be therefore be concluded that the three conditions established by Van Leusen & Kálmán (1993) do indeed characterize the behaviour of temporal subordinate clauses in focus<sup>6</sup>. After having isolated several of the semantic features of Hungarian constructions illustrated by (1)–(4), in the next section we turn to the formalization of their semantic interpretation.

#### 4. Compositional interpretation

In this section I wish to provide a compositional interpretation for the type of Hungarian sentences illustrated by (1)–(4), based on the principles and regularities observed in the previous sections. Let us first summarize the ingredients of such a semantic interpretation. I wish to adopt the view (Bach et al. 1995, Johnston 1995) here that the semantic interpretation of such a sentence takes the form of a tripartite structure consisting of a universal quantifier and two sets of entities. The quantifier denotes the subset relation between these two sets, the first of which is called the restrictor, while the second one the nuclear scope. The elements of the sets are intervals, which are assigned to the eventuality descriptions in the two clauses of the complex sentence with the help of special functions. According to our findings presented in section 2, semantic material from a focussed temporal subordinate clause ends up in the nuclear scope of the tripartite structure, while material from the main clause ends up in the restrictor.

In order to show the composition of the restrictor and nuclear scope sets it is necessary to define two functions which map eventualities (satisfying the eventuality descriptions in the appropriate clauses) onto time intervals as follows. The AKKOR function assigns its runtime to

<sup>6</sup> In the talk given at Docsymp I still held the view that focussed temporal subordinate clauses do not satisfy the Kinship and the Exhaustivity Conditions. My views about this question were changed as a result of later discussions with László Kálmán and Chris Piñón.



each eventuality satisfying the eventuality description in the main clause, while the AMIKOR function assigns intervals to eventualities satisfying the eventuality descriptions in the subordinate clause in the following manner: to atelic eventualities it assigns their runtime, while to telic eventualities it assigns an interval of contextually determined length which immediately follows their runtimes (the starting point of this interval is the endpoint of the runtime), and the endpoint of this interval cannot be later than the starting point of the runtime of any other eventuality of the same type. These functions are defined formally in (27) and (28) below:

- (27) AMIKOR:  $S \rightarrow I$   
 AMIKOR( $e_1$ ) =  $f(e_1)$ , if  $e_1$  is atelic  
 AMIKOR( $e_1$ ) =  $i_1$ , if  $e_1$  is telic, where  $f(e_1) \leq i_1$

- (28) AKKOR:  $S \rightarrow I$ , AKKOR( $e$ ) =  $f(e)$  (runtime function)

In what follows, the construction of the tripartite structure assigned to sentence (1), repeated as (29) below, is going to be shown in a step-by-step manner. (30) below is a good first approximation to the definition of the restrictor set, the set consisting of the runtimes of the eventualities satisfying the eventuality description in the main clause.

- (29) Mari mindig akkor jókedvű, amikor süt a nap.  
 Mari always then in-a-good-mood when shines the sun  
 Mari is always in a good mood when [the sun SHINES]<sub>F</sub>.

- (30)  $\{\lambda i [\exists e (\text{happy}'(Mari, e) \wedge i = \text{AKKOR}(e))]\}$

The only problem with (30) is that it does not make reference to the fact that the main clause of (29), if uttered in isolation, is not well-formed by itself. It somehow requires reference to another eventuality which happens 'around' (see footnote 5) the runtime of the eventuality described in the main clause. This feature of the main clause has also been mentioned in the discussion about the Salient Remnant Condition (section 3) above. Therefore, as opposed to Van Leusen and Kálmán, who consider this condition as a presupposition of free focus, I would opt for explicitly including reference to it in the semantic representation of the restrictor assigned to (29), which is presented in (31):

- (31)  $\{\lambda i [\exists e (\text{happy}'(Mari, e) \wedge i = \text{AKKOR}(e) \wedge \exists e' (i \subseteq \text{AMIKOR}(e') \wedge e' \neq e))]\}$

The set defined in (31) would contain all intervals which are the runtimes of eventualities of Mari being happy and for which it is also true that there exists a different type of eventuality with the property that its runtime (if atelic) or an interval following its runtime (if telic) includes the interval in question. From now on, the formalizations of the restrictors of our examples will follow the pattern of (31).

In order to determine the nuclear scope we must make reference to the semantic contribution of focus as a set of alternatives to the eventualities described in the subordinate clause. The set of eventualities which are alternatives to an eventuality  $e$  will be referred to as ALT( $e$ ). This set contains  $e$  itself and those eventualities which have the same participants and cannot happen simultaneously with each other.

I believe that the Kinship and Exhaustivity Conditions, defined originally as presuppositions by Van Leusen and Kálmán, are also part of the semantics of the nuclear scope of such quantificational expressions, and that without them the exact contribution of focus cannot be determined. (32) below is a good approximation of the definition of the nuclear scope set belonging to (29). It contains those intervals for which it is true that they are the runtimes of



eventualities of the sun shining and for which it is also true that no other eventuality from the set of alternatives to this eventuality happens in them (e.g. it is not true that the sun is not shining).

$$(32) [\lambda i_1 [\exists e_1 (\text{shines}'(\text{Sun}, e_1) \wedge i_1 = \text{AMIKOR}(e_1) \wedge \forall e_2 ((e_2 \in \text{ALT}(e_1) \wedge i_1 = \text{AMIKOR}(e_2)) \rightarrow e_2 = e_1))]]]$$

Although it is the sets defined in (31) and (32) which are compared by native speakers checking the truth of the claim in (29), they do not satisfy the requirement of set inclusion taken to be the defining characteristic of structures associated with universal quantifiers in Generalized Quantifier Theory. Sentence (29) would be judged true by native speakers if it was the case that all intervals from the set in (31) were included in an interval from (32). This, obviously, does not mean that the sets themselves also satisfy the requirement of set-inclusion. (It would happen if the corresponding intervals were equal in length, which is stronger than what sentence (29) itself claims.) To overcome this difficulty and ensure the subset-relation between the restrictor and nuclear scope sets we can say that the nuclear scope set does not consist of intervals which are the output of the AMIKOR function applied to eventualities described in the subordinate clause but the union of all subintervals of these. Since for each time interval, the set of its subintervals is unambiguously determined by the function SUBINT defined in (33), this move should not contradict intuitions. With the help of this function, the subset-relation between sets would be saved since if all members of a set of intervals are included in one interval from a second set of intervals, then the set formed by the subintervals of the members of the second set would necessarily contain the first one.

$$(33) \quad \text{SUBINT: } I \rightarrow \{I\} \\ \text{SUBINT}(i) = \{i_1 \mid i_1 \subseteq i\}$$

A modified (and also final) definition of the tripartite structure associated with (29) is found in (34) below, which satisfies the requirement that the restrictor set is a subset of the nuclear scope set. (For ease of interpretation, the restrictor set is enclosed between curly brackets, and the nuclear scope between bold square brackets.) The representations below follow the Davidsonian conception according to which events constitute a separate ontological category beside individuals and intervals and the content of sentences is represented in terms of a relation defined by the verb between the nominal arguments and an event argument.

$$(34) \text{ always' } \{ \lambda i [\exists e (\text{happy}'(\text{Mari}, e) \wedge i = \text{AKKOR}(e) \wedge \exists e' (i \subseteq \text{AMIKOR}(e') \wedge e' \neq e))] \} \\ [\lambda i_2 [\exists e_1 (\text{shines}'(\text{Sun}, e_1) \wedge i_1 = \text{AMIKOR}(e_1) \wedge i_2 \in \text{SUBINT}(i_1) \wedge \forall e_2 ((e_2 \in \text{ALT}(e_1) \wedge i_1 = \text{AMIKOR}(e_2)) \rightarrow e_2 = e_1))]]]$$

The interpretations of the sentences in (2) to (4) in the framework outlined above are presented in (35) to (37), respectively.



- (35) **always'**  $\{\lambda i [\exists e (\text{starts}'(\text{rain}, e) \wedge i = \text{AKKOR}(e) \wedge \exists e' (i \subseteq \text{AMIKOR}(e') \wedge e' \neq e))]\}$   
 $[\lambda i_2 [\exists e_1 (\text{jogs}'(\text{Juli}, e_1) \wedge i_1 = \text{AMIKOR}(e_1) \wedge i_2 \in \text{SUBINT}(i_1) \wedge \forall e_2 ((e_2 \in \text{ALT}(e_1) \wedge i_1 = \text{AMIKOR}(e_2)) \rightarrow e_2 = e_1))]]]$
- (36) **always'**  $\{\lambda i [\exists e (\text{jogs}'(\text{Juli}, e) \wedge i = \text{AKKOR}(e) \wedge \exists e' (i \subseteq \text{AMIKOR}(e') \wedge e' \neq e))]\}$   
 $[\lambda i_2 [\exists e_1 (\text{starts}'(\text{rain}, e_1) \wedge i_1 = \text{AMIKOR}(e_1) \wedge i_2 \in \text{SUBINT}(i_1) \wedge \forall e_2 ((e_2 \in \text{ALT}(e_1) \wedge i_1 = \text{AMIKOR}(e_2)) \rightarrow e_2 = e_1))]]]$
- (37) **always'**  $\{\lambda i [\exists e (\text{reads}'(\text{János}, \text{paper}, e) \wedge i = \text{AKKOR}(e) \wedge \exists e' (i \subseteq \text{AMIKOR}(e') \wedge e' \neq e))]\}$   
 $[\lambda i_2 [\exists e_1 (\text{comes-home}'(\text{János}, \text{from work}, e_1) \wedge i_1 = \text{AMIKOR}(e_1) \wedge i_2 \in \text{SUBINT}(i_1) \wedge \forall e_2 ((e_2 \in \text{ALT}(e_1) \wedge i_1 = \text{AMIKOR}(e_2)) \rightarrow e_2 = e_1))]]]$

## 5. Conclusion

This paper presented a compositional semantic interpretation for complex Hungarian sentences with a focussed temporal subordinate clause and a main clause containing a temporal universal quantifier. The semantic interpretation of the type of sentences described above was given in terms of a tripartite structure consisting of the interpretation of the universal quantifier and two sets of intervals between which the quantifier defines the subset relation. These sets of intervals are obtained from the eventualities satisfying the eventuality descriptions in the two clauses with the help of special functions. In the semantic interpretations associated with the sentences under investigation the contributions of focus and aspectual (telicity/atelicity) information are also presented in a compositional fashion.

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## **A PSYCHOLINGUISTIC ANALYSIS OF SELF-REPAIRS IN L2**

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### **ABSTRACT**

On the basis of a retrospective study conducted with 30 Hungarian speakers of English of varying levels of proficiency the paper aims at devising a new comprehensive psycholinguistic taxonomy of self-repairs. On the basis of the results of the research, it is argued that certain modifications are needed in Levelt's (1983) taxonomy so that it could be applied for the analysis of repairs in L2. The paper further specifies the categories of different information and appropriate level of information repairs and aims at providing a more precise definition of the various subtypes of error repairs. It is proposed that psycholinguistically more accurate results could be obtained in both L1 and L2 self-repair research if error repairs were not classified on the basis of the surface representation of the reparandum, but according to the location of the lapse in the speech processing phase. In addition, the paper identifies a new category of self-corrections: rephrasing repair, which is employed when the speaker is uncertain about the correctness of the utterances and rephrases parts of his/her original message.

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## 1. INTRODUCTION

Speech errors have traditionally been seen as exposures of the underlying language formulating machinery, and indeed, besides the study of hesitation devices and pauses, it is the analysis of repair mechanisms that can provide us with the most direct information about the psychological and linguistic processes at work in L1 and L2 speech production and the organisation of communication. Thus the phenomena of repairs and monitoring both in the speech of L1 and L2 speakers have been of great interest to applied linguists, sociolinguists, language teachers, and psycholinguists during the past decades and a great deal of research has been conducted in these diverse fields. Compared to the numerous and highly reliable studies on L1 self-repairs, the investigation of L2 self-correction behaviour, however, has been less advanced. Less research has been conducted on this issue of L2 speech production, and the analytical tools of L2 researchers have also been less reliable than those of their colleagues studying L1 self-repair.

The present paper assumes that one of the reasons for the relatively little progress in L2 self-repair research is that studies in this field have either used an ill-defined taxonomy or have adapted a system of classification which might be appropriate for L1, but not entirely for L2. Although the distribution of repairs established in this way is indicative of the functioning of the monitor, that is, it has the potential of revealing what type of errors or inappropriacies are detected most frequently, the quantitative analysis of the distribution of self-corrections will not provide us with detailed enough information concerning this issue. As this paper will suggest, without some accompanying retrospection procedure the intentions of the speaker may not be known, thus the surface manifestations of the self-corrections might represent several types of repairs. Thus, there seems to be a great need for a new, more reliable taxonomy of self-repairs and also for novel research methods, such as retrospection to establish these categories. This belief is in line with recent studies arguing for the usefulness of verbal reports in second language speech production research (e.g. Færch & Kasper, 1987; Poulisse, Bongaerts & Kellerman, 1987).

The purpose of the present paper is to establish a reliable and widely applicable taxonomy of L2 self-repairs, which is in accordance with recent theories of L1 and L2 speech production. As the procedure applied for the data collection aimed at reproducing the natural conditions in which L2 communication can occur, it is hoped that the types of self-corrections identified in the study will be generalizable for other instances of L2 verbal behaviour as well. The retrospective research method was used in order to enhance the reliability of classification.



The paper will not discuss previous taxonomies of L1 and L2 self-repairs due to limitations of lengths, for a review of relevant systems of classification readers are referred to Kormos (1998). First a brief description of the retrospective study carried out for the purpose of establishing a new taxonomy of L2 repairs will be provided. After the models of analysis are presented, a new system of classification will be drawn up based on a qualitative analysis of repairs.

## **2. DESIGN OF THE STUDY**

The subjects of the study were 30 native speakers of Hungarian, who were learning English in a foreign language setting. 10 participants spoke English at an intermediate level and attended an exam preparation course in a language school in Veszprém. Their age ranged between 16 and 22. 10 subjects were upper-intermediate learners aged 25-35 participating in an evening course at ELTE, and 10 students' level of proficiency was advanced, and they study English as day-students at ELTE.

A C-test was administered to all participants to measure their level of proficiency. Following the test, the subjects were interviewed one by one in a separate room to ensure environmental reliability. First, the participants were asked to act out an approximately 5 minute-long information-gap type role-play activity adapted from Jones (1991, p. 218) with the researcher being the interlocutor. The subjects' task was to answer an enquiry concerning a private room in a restaurant. Instructions and the necessary background information were provided in the native language of the subjects (see Appendix for the English translation of the participant's task sheet). Upon performing the task the subjects had to answer unexpected questions, such as what dishes the menu contains and what the room looks like, as well as to react to the problems of the customer and find compromises. Thus this task involved unpredictable interaction and considering new information, which seemed to place heavy cognitive load on the subjects. Consequently, it was assumed that participants in the research would focus rather on meaning than form, which would ensure the modelling of real-world interactions.

The role-play task was followed by a 25-35 minute-long retrospective interview in the native language of the subjects, in which upon listening to their own speech, they were requested to recall what problems they experienced in formulating their message in L2 and how they were trying to solve these problems. The retrospective interview was conducted on the basis of the guidelines set up by Ericsson and Simon (1980, 1987, 1993) to ensure the reliability of the data



gained in this way. The retrospective interview was partly controlled as subjects were asked to comment on specific aspects of their performance only, but the information they could provide was not predetermined. The recall of relevant information was aided by asking the subjects to verbalise their thoughts upon listening to their speech on a tape recorder. The retrospective report was to a certain degree self-initiated because the participants were requested to stop the tape when finding instances of breakdowns or self-repairs and comment on them. Nevertheless the researcher also took the initiative to ask questions if the subjects failed to reflect upon relevant hesitation phenomena or instances of self-correction. Due to the fact that the subjects were not informed that they would need to comment on their performance before carrying out the task, the request to provide retrospective comments was not supposed to influence task performance.

The performance of the task and the subsequent retrospective interview were both video- and audio-recorded. The transcriptions of the tasks were done by trained transcribers and were checked by the researcher herself. The retrospective interviews were transcribed by the researcher.

### 3. MODELS OF ANALYSIS

The repairs found in the corpus of the above described study were analysed on the basis of several compatible and in psycholinguistics widely used and accepted models of speech production: Levelt's (1989) model of L1 speech processing and the various adaptations of Levelt's model for L2 speech processing, most notably those of de Bot (1992), Poulisse and Bongaerts (1994) and Poulisse (in press). In the following section of the paper only Levelt's (1989, 1993) model will be briefly described as this theory is the most directly relevant one to the investigation (for a review of models of L2 speech production see Poulisse, in press).

#### 3.1. Levelt's (1989, 1993) model of speech production

Several attempts have been made in the literature to set up a comprehensive model of speech processing but the most widely used theoretical framework in L2 language production research is Levelt's (1989, 1993, 1995) model originally developed for monolingual communication. Levelt argues that speech production is modular, that is, it can be described through the functioning of a number of processing components that are relatively autonomous in the system. Five principal components are distinguished: the *conceptualizer*, the *formulator*, the



*articulator*, the *audition* (later relabelled as the acoustic-phonetic processor), and the *speech comprehension system* (relabelled as the *parser*), as well as three knowledge stores: the *lexicon*, the *syllabary* (containing phonological information) and the store containing *discourse models*, *situational* and *encyclopedic* knowledge. The basic mechanisms of speech processing are conceptualized by Levelt in a fairly straightforward manner: people produce speech first by conceptualizing the message, then formulating its language representation (i.e., encoding it), and finally by articulating it; with regard to speech perception, speech is first perceived by an acoustic-phonetic processor, then it undergoes linguistic decoding in the speech comprehension system (i.e., the parser), and is finally interpreted by a conceptualizing module. The unique feature of the model is the integration of the two processes into one comprehensive system, and its richness in details. For example, it precisely specifies the role of the 'lexicon' and the procedures of 'monitoring' in relation to the processing components, and delineates explicit directional paths between the modules outlining their cooperation in producing their joint product, speech.

In Levelt's model the processing components are 'specialists' in the particular functions they are to execute, that is, they do not share processing functions. A component will start processing if, and only if, it has received its characteristic input. Levelt assumes that processing is incremental, which means that as soon as a preverbal chunk is passed on to the formulator, the conceptualizer starts working on the next chunk regardless of the fact that the previous chunk is still being processed. As a consequence, the articulation of a sentence can begin long before the speaker has completed the planning of the whole of the message. Thus, parallel processing is taking place as the different processing components work simultaneously. This is only possible because most of the actual processing, particularly the encoding phase, is fully automatic. As de Bot (1992) points out, the incremental, parallel, and automatized nature of processing needs to be assumed in order to account for the great speed of language production.

Let us now look at the main processing components involved in generating speech, which is the 'blueprint' of the language user. The first component, the *conceptualizer*, generates the message through (a) *macro-planning*, which involves the elaboration of the communicative intention down to the level of conceptual and propositional message content, resulting in macro-plans that Levelt (1989) calls *speech-act intentions*, and (b) *micro-planning*, which shapes the semantic representations that are associated with the message content by assigning a particular information structure to the macro-plan, thereby finalizing it for expression, resulting in the *preverbal message*. As the name suggests, this preverbal message is not yet linguistic although it



is linguistically accessible, that is, contains all the necessary information to convert meaning into language.

The preverbal message is the output of the conceptualizer and, at the same time, the input of the next processing module, the *formulator*, which is the component in charge of selecting the lexical units and carrying out grammatical and phonological encoding. The formulator retrieves information from the speaker's mental *lexicon*, which in Levelt's model consists of *lexical entries*, each made up of (a) *lemmas* that specify the meaning and the syntax of the lexical entry and (b) *lexemes* that carry information about the morpho-phonological form of the lexical entry. In order for the preverbal message to be accessible to the formulator, it must contain lexicalizable *chunks*. It is not clear, however, whether this chunking is the result of micro-planning or is carried out by another processing module mediating between the conceptualizer and the formulator (cf. de Bot & Schreuder, 1993; Poulisse, 1993).

The primary procedure to take place in the formulator is *lemma activation*; the speaker will retrieve the lemma whose meaning best matches the semantic information carried by the corresponding chunk of the preverbal message. Based on Bresnan's (1982) lexical theory of syntax, Levelt (1989) assumes that the selection of the lemma activates its syntax, which, in turn, triggers syntactic building procedures. Thus, Levelt considers semantic activation primary to form activation and sees the lexicon as a mediator between conceptualization and grammatical/phonological encoding--an assumption he calls the *lexical hypothesis*; consequently, he attributes a central role to lemma retrieval in the speech process.

The output of grammatical encoding is the *surface structure*, which is "an ordered string of lemmas grouped in phrases and sub phrases" (Levelt, 1989, p. 11). This is further processed by the *phonological encoder*, which makes use of the phonological information of the lexical item contained in the lexicon, resulting in the *phonetic* or *articulatory plan* (or 'internal speech'). This is then transformed into overt speech by the *articulator*, drawing on the repertoire of articulatory gestures stored in the *syllabary*.

Levelt's model also accounts for *monitoring* in speech production. The *monitor* is located in the conceptualizer but receives information from the separate *speech comprehension system* (or *parser*), which, in turn, is connected to the mental lexicon. In order to avoid the necessity of duplicating knowledge, Levelt assumes that the same lexicon is used for both production and perception, and the same speech comprehension system is used both for attending to one's own speech and for checking other speakers' utterances (via the *acoustic-phonetic* processing module).



Furthermore, the interpretation of the perceived messages is carried out by the same conceptualizing module as the one in charge of generating one's own messages.

In Levelt's system of speech processing there are three monitor loops (i.e., direct feedback channels leading back to the monitor) for inspecting the outcome of the production processes. The first loop involves the comparison of the preverbal message with the original intentions of the speaker before being sent to the formulator. The second loop concerns the monitoring of the phonetic plan (i.e. 'internal speech') before articulation, which is also called 'covert monitoring' (see also Levelt, Roelofs & Meyer, in press; Postma & Kolk 1992, 1993; Postma, Kolk & Povel, 1990). Finally, the generated utterance is also checked after articulation, which constitutes the final, external loop of monitoring, involving the acoustic-phonetic processor. Upon perceiving an error or inappropriacy in the output in any of these three loops of control, the monitor issues an alarm signal, which, in turn, triggers the production mechanism for a second time. If a mere lapse has occurred in the speech encoding process, the same preverbal plan is re-issued and processed in the hope of an error-free output. If there is a mismatch between the preverbal plan and the speaker's original intention, or if the speaker perceives that the originally issued message is itself inappropriate or inadequate, a new message is generated in the conceptualizer and encoded in the formulator.

#### 4. RESULTS AND DISCUSSION

On the basis of the qualitative analysis of repairs found in the speech of the participants of the study, it is suggested that four main types of psycholinguistic mechanisms underlie self-repair in L2; that is, Levelt's (1983) tripartite taxonomy of repairs for L1 is extended with a fourth major type of self-correction: rephrasing-repair. In addition, a more precise psycholinguistic definition of the different types of self-repairs will be provided.

##### 4.1. Different information repairs

The first type of repair to be discussed is a self-correction which involves the modification of the content of the preverbal plan. In the case of a mistake in the conceptualizing phase of the speech production process, the speakers might decide to encode different information from the one they are currently formulating. This type of repair is called *different information (D-) repair* (Levelt, 1983). Levelt identifies two reasons why one might want to choose to convey different information;



firstly, one can realize that parts of the intended message need to be ordered differently like in (1), and secondly the information content of the message can prove to be inappropriate or incorrect (see (2)).

(1) Uhm - well there's a - big dining table for - forty person. + And - then + **we've also got - er well it's + well the dining table** occupies half of the room.\*

*(Retrospection: I thought, I did not tell you first how big the room was, so I said that the dining-table occupies half of the room, and then I said what I originally wanted to say.)*

(2) **you** have to + **we** have to + make a contract

*(Retrospection: I realised that it is stupid to say that you have to make a contract, it's the restaurant who has to write it)*

In (1), the participant realizes that she did not follow the rules of spatial descriptions and has started talking about the details of arrangement before actually providing the listener with background information about the size of the room. Upon noticing the problem, she interrupts her current utterance and reorders the description of the room. In (2), the subject perceives that she has encoded inappropriate information, as it is not the customer who has to write a contract, but the management of a restaurant. In order to rectify the problem, she replaces 'you' with 'we'. In a study with a high number of self-repairs, it might be useful to distinguish these two types of D-repairs, therefore the present paper has further subdivided D-repairs into *ordering error (DO-) repairs* and *inappropriate information (DI-) repairs*.

If one accepts Levelt's (1983) definition of D-repair, namely, that in this case the speaker decides to encode different information from the one he/she is currently formulating, another type of D-repair can be identified in the speech of L2 learners, which we will call *message replacement (DM-) repair*. This new category of self-corrections occurs when speakers abandon their originally intended message and replace it with another one. One of the reasons why L2 speakers might give up their message can be that they lacked the knowledge of the appropriate L2 lexical entries (3). Another more common cause of abandoning one's message can be that L2 learners realise that their original plan was so complex that expressing it would greatly decrease the fluency of the utterance (4). Thus, if the information they wanted to convey is not vital for the task, they frequently give it up. In addition, L1 and L2 speakers alike might interrupt an utterance because they perceive that they lack the necessary information to finish it. As an illustration, in the case of



(5), the participant left her sentence concerning the price of the room uncompleted and asked the researcher for relevant information to be able to continue her utterance. Furthermore, both L1 and L2 speakers can notice that the originally intended message is irrelevant in the given phase or type of interaction (6).

(3) **we have some er + er v... maybe you have** vegetarians in your group

*(Retrospection: Here the idea of vegetarians suddenly popped up and I abandoned what I was going to say because I would not have been able to list any more types of food anyway).*

(4) **and if you I mean it's going to be quite dark** at that time

*Retrospection: Here I could not finish the sentence, I wanted to say something like if you want a different type of lighting, but I realised that I would not be able to express this quickly enough and it is not that important anyway, so I rather went on to say something else.*

(5) Well **er you have to pay , well er how long do you want it?**

(6) **and if you have it from er this is not your case** I suppose

It has to be noted, however, that in some cases (e.g. in (3) and (4)) DM-repairs are very similar to the problem-solving strategy of message-replacement, as this type of self-correction can also arise when the speaker does not feel capable of executing the original pre-verbal plan, and, as a result, interrupts the encoding of the original message and substitutes it with a different one. In the case of the communication strategy of message replacement, however, very often the original message is not articulated and the replacement process takes place even before the pre-verbal plan is sent to the formulator.

#### 4.2. Appropriacy repairs

*Appropriacy (A-) repairs* are different from different information repairs in that they are employed when the speaker decides to encode the originally intended information but in a modified way (Levelt, 1983). Speakers resort to A-repairs when they have encoded (1) inaccurate or (2) ambiguous information that needs to be further specified, or if they have used (3) incoherent terminology or (4) pragmatically inappropriate language. The first three classes of self-corrections



have been identified by Levelt (1983), and the fourth one by Brédart (1991). He called this latter type *repair for good language*, which included both pragmatic and good language repairs. In the present paper, it is proposed that these two groups of self-repairs be more clearly separated, as their sources are distinctly different. Pragmatic self-corrections concern meaning in context, while repairs of good language are carried out to ensure a more sophisticated manner of expression.

In the first case, when the original message has not been precise enough, the speaker can decide to provide further details and carry out an *appropriate level of information (AL-) repair* (Levelt, 1983). In (7) the speaker realizes that she has not given accurate information as regards the number of tables in the restaurant and inserts 'about' to be more exact.

(7) there are er + er + **twenty** er + tables + er + **about twenty** tables.

(Retrospection: Here I was thinking about the number of the tables in the restaurant)

Besides not supplying accurate information, one can also fail to express their message unambiguously. In this case, *ambiguous reference (AA-) repairs* are applied to correct the referring expression (Levelt, 1983). In (8), the pronoun 'it' could not only denote the restaurant but the university as well, and consequently, the speaker replaces 'it' with 'this restaurant'.

(8) in this - uhm - in this part of the town - er there are many vegetarians er this is because the - university is here and vegetarians **like it** + er - **like this restaurant**

A similar type of self-correction is *coherent terminology repair*, when the speakers correct incoherent terminology (Levelt, 1983). This type of self-repair seems to be genre dependent, and no instances of this category have been found in my corpus, therefore (9) has been borrowed from Levelt (1983).

(9) Ga je een naar boven, **is uh kom** je bij geel

Go you one up, is uh come you to yellow (Levelt, 1983, p. 53)

In some cases it might prove to be difficult to decide whether the speaker has intended to further specify the original message or repairs incoherent terminology. Levelt (1983) assigns such instances of self-corrections into the mixed category of *appropriate level of information and coherent terminology (ALC-) repairs*. (10) serves as an illustration for AL repairs, in this case, the



analyst cannot determine whether the subject has used the word 'order' instead of 'letter' in order to be more precise or because she has used the same expression two turns before as well.

(10) in this case er if it is so urgent and important for you, we would like er you to:: to write us an **order** - er in er 24 hours that you make sure that you will er come and book this eel room.

R: Well, that's fine. But we might have two problems with this. Er one is that er er I'm not sure that there will be 35 people in our er company, maybe there'll be only 24. Is that a problem, if there is only 24 or 25 of us?

S: We may - agree if you::: er er would like er to:: to arrange the room er on this er condition - that you will have enough er place but I'm not sure that we can reduce the price er because of this.

R: I see, all right and then I can only pay the deposit next week when I er find out how many people come and when I have talked to all of the people.

S: Er but **this letter is er - the order-** er your request is er anyway - needed and we:::

Another source of the issuing of an inaccurate pre-verbal plan can be pragmatic inappropriacy, in which case the speaker repairs part of the message which he/she feels to be pragmatically unacceptable in the given situation (Brédart, 1991). In (11), the participant has realized that 'it does not matter' is too informal in a service encounter and, in turn, she has interrupted the encoding of this formula and replaced it with 'it 's not a problem'. We will call this type of repair *pragmatic appropriacy (AP-) repair*.

(11) **it doesn't + it's not a problem**

(Retrospection: First I wanted to say 'it does not matter' but I realised that in a business deal you cannot say 'it does not matter'.)

In the discussion of pragmatic repairs, however, the deficiencies of Levelt's (1989, 1993) theory of speech production has to be noted. Situational knowledge is assumed to be stored in Levelt's model either in the encyclopedia or in the knowledge store for situational knowledge. Similarly to linguistic deficits in the L2, less proficient L2 speakers may lack some important situational specifications (for a summary of the development of pragmatic competence, see Kasper, 1996), which, according to Thomas (1983) may lead to two types of pragmatic failure, *pragmalinguistic* and *sociopragmatic failure*. The former concerns the mapping of inappropriate pragmatic force onto (usually highly conventionalized) utterances; the latter stems from



insufficient knowledge about the social parameters of the communication situation, that is, of the social conditions placed on language in use. In L2 use, pragmalinguistic problems may be caused either by lacking the knowledge of a formulaic phrase necessary to encode or decode a pragmatic function, or attaching incorrect illocutionary specification to a lexical item either because of incorrect learning or due to some error in the sociopragmatic interpretation of the situational parameters.

It is not clear at present which processing module assigns specifications regarding illocutionary force to the message and what kind of mismatch causes pragmalinguistic errors. The problem is that illocutionary specifications do not appear to be absolute but rather situationally dependent (i.e., we cannot attach an absolute illocutionary value to a given phrase), and therefore these should be regulated by the conceptualizer, which is the only processing module that has access to the situational knowledge store. This is the reason why it is proposed that the correction of pragmalinguistic errors should be included among pragmatic appropriacy repairs, and it should not be categorized as grammatical error repair. On the other hand, it has to be noted that the conceptualizer does not have a direct link to the lexicon and cannot, therefore, directly map pragmatic force onto lexical items.

Brédart (1991) included pragmatic appropriacy repairs in his newly established group of self-corrections under the name of *repairs for good language*. In the present study, a distinction has been made between corrections which aim at rectifying pragmatic errors, and utterances, which are pragmatically acceptable, but which the speaker judges to be not sophisticated enough according to his/her standards of eloquence. We will only call the latter type of self-correction *repair for good language*. Instances of such repairs are frequent in the speech of more advanced learners, whose production processes are so automatic that they can pay attention to refined lexical choice. In (12), the speaker replaces the word 'persons' with 'people' as she remembers that she has used 'persons' several times before, while in (13), another subject substitutes 'I should think' for 'I think' merely because she finds it more elegant in expression.

(12) thirty-five **per - people**

*(Retrospection: First I wanted to say 'persons' but I had used 'persons' several times before, so I said 'people'.)*

(13) **I think** er + **I should think** it's about

*(Retrospection: I think, the second one was stylistically better).*



### 4.3. Error repairs

Error repairs involve psycholinguistically different mechanisms from the above discussed two types of repairs as in this case the speakers repair an accidental lapse which occurs in the formulator. Such lapses can occur at every phase of speech processing, that is, during lemma retrieval, grammatical and phonological encoding and articulation. When the monitor perceives this type of problem, it sends an alarm signal to the conceptualizer, which re-issues the same pre-verbal plan without any modification in the hope that this time the message will be accurately processed (Levelt, 1989).

As mentioned above, classifying error repairs according to the nature of the reparandum blurs the psycholinguistic processes underlying self-correction to a great extent. Therefore we argue that error-repairs should be grouped on the basis of where they occur in the process of encoding. In the following an attempt is made to clearly delineate the three main types of error repairs: lexical, grammatical and phonological error repairs.

#### 4.3.1. Lexical error repairs

In Levelt's (1989) model, the first phase in the processing of the pre-verbal plan is when the lemma corresponding to the concept specified by the pre-verbal plan is retrieved, which is called lexical access or lemma retrieval. Evidence from research on slips of the tongue both in L1 (e.g. Fromkin, 1973, 1980, Dell & Reich, 1981; Stemberger, 1985) and L2 (Poulisse, in press) shows that failures of lexical access are frequent. Thus the correction of an accidentally erroneously activated lemma will be called *lexical repair*. As in Levelt's (1989) theory both content and function words as well as phrases and idioms are considered to be lexical entries, i.e. lemmas, lexical repair will involve the correction of erroneously activated content and certain function words (see below), phrases, idioms and collocations. In addition, repairs of derivational morphology, for example replacing 'different' with 'difference', also belong to the category of lexical error repairs, as in Levelt's (1989) model of the lexicon, derivatives constitute different lexical entries. (14) and (15) illustrate instances of lexical error repairs.

(14) you have to - er rent it er ++ for + 35 - person ++ uhm it's **max... minimum**  
minimum yes



*(Retrospection: I realised that I was not using the right word. It's not 'maximum', but 'minimum', since it is a room for 40 people.)*

(15) will er have to - pay +++ **er five er sorry - er twenty-five** percent +++

*(Retrospection: Here I said 'five' instead of 'twenty-five' accidentally.)*

One of the problems of the classification of lexical repairs can be where corrections within idioms or expressions should belong. In (16) the speaker has selected the preposition 'on' first, which she replaces with 'in' as a result of the repair.

(16) **on a in** a + written form

It can be assumed that in the case of L2 speakers, many of the idioms and expressions have not been fully automatized and therefore are not stored as a complete lexical entry. Although very little is known about the processes of lexical encoding or word formation, the mechanisms with the help of which L2 speakers construct these set phrases can be similar to those of creating new words. Therefore it is proposed that corrections of this kind should be considered lexical repairs, which do not occur in the phase of lemma activation, but in the process of lexical encoding.

#### 4.3.2. *Grammatical error repairs*

The next phase of speech processing where lapses can occur is grammatical encoding, which, based on Kempen and Hoenkamp's (1987) Incremental Procedural Grammar is assumed to consist of 6 phases. First, the lemma's syntactic category initiates a categorial procedure in the course of which the phrasal category in which the lemma can be a head of the phrase is established. Second, the message is inspected as regards what conceptual material can fill the obligatory and/or optional complements and specifiers of the lemma and the diacritic parameters are set. After this, the formulator can proceed with the next step of grammatical encoding, which phase comprises the subroutines that handle the complements, the specifiers and the parameter values specified at the previous stage. Fourth, the materials processed at Level 3 are ordered as determined by the categorial procedure, which builds the phrases of the utterance. Fifth, the categorial procedure selects a grammatical function for the processed material, which means that it will decide whether the output will become a head or a complement of a higher order categorial procedure such as NP', VP', AP', PP' or S. Finally, the higher order categorial procedure



described above will be activated and it will start processing the relevant fragment of the message from either the phase of lemma retrieval or Stage 2.

The different analyses of the corpus of grammatical slips of the tongue (e.g. Fromkin, 1973, 1980; Garrett, 1980; Levelt, 1983) suggest that lapses can most frequently occur at stages 2, 3 and 4 of the grammatical encoding process, that is, when the various complements, specifiers and parameters are encoded and handled by the different subroutines and when these processed materials are ordered. (17) serves as an illustration for a repair which corrects the order of the constituents). Consequently, grammatical repairs can be defined as the correction of a lapse which occurs in the grammatical encoding phase.

(17) Uhm +++ **This I - I said that this** a quite (WP) er big room er +++

The terminology suggested in this paper slightly differs from that of Levelt (1983), as he calls this category of error repairs *syntactic repair*. The term 'syntactic', however, can be misleading as it does not indicate clearly where repairs of morphology belong. First of all, it is proposed that repairs of derivational and inflectional morphemes should be handled separately. As derivations (e.g. complete, incomplete, completeness) are assumed to be different lexical entries (Butterworth, 1983 cited in Levelt, 1989), and word-formation is supposed to take place as a part of lexical encoding (Levelt, 1989), corrections in derivational morphology need to be classified under lexical repairs. On the other hand, inflectional morphemes are encoded and processed in the grammatical encoding phase (Stages 2 and 3), thus their repairs belong to the class of grammatical repair. As a result, corrections of the form of the same lexical entry should be classified as grammatical repairs. (18) illustrates the case when the wrong form of the lexical entry 'be' has been accessed during the VP building procedures, and is corrected for 'are'. In example 19 the speaker encoded the wrong form of the past tense for the verb 'choose', and repairs it for the correct one.

(18) er our vegetarian menus **i... are** very good

(19) it was + nice to + meet you and + that you + **choose** + you **chose** us

The differentiation between lexical and grammatical repairs, however, is not without problems, as the processes of lexical access and grammatical encoding are closely related. For example, in Stage 3, when the subroutines handle the complements and specifiers, lemma activation also takes place, as these complements and specifiers also have to be accessed. Consequently corrections in the erroneous access of the lexical entry of a complement or specifier



(e.g. the specifier of a noun phrase, such as in example 15 above) is not considered to be grammatical repair.

Another issue is where corrections of certain function words, such as prepositions and auxiliaries would belong. In order to overcome these difficulties of classification, it is worth distinguishing function words which have conceptual specifications and those which do not (Levelt, 1989). In the case of prepositions, for example, 'under' in 'Mary put her bag under the table' specifies a direction or path of movement. Corrections of these types of prepositions should be considered lexical repairs, as in these cases the processes of lemma activation are at work. On the other hand, the preposition 'to' in the sentence 'The mother explained the rules of the game to the child' has no conceptual specification, and its function is to specify the case for the NP it is heading. As these prepositions are addressed by the syntactic building procedures (Levelt, 1989), it is proposed that instances of repairs concerning these prepositions should be considered syntactic repairs. An illustration for this process is (20), where a correction in the encoding of the complement of the verb 'decide' takes place.

(20) then you + if you + er **decide it** + **decided it on**

*(Retrospection: I was looking for the right way of saying decide on)*

The classification of repairs of auxiliaries can also be conceived of in a similar way. Certain auxiliaries in English, such as 'have', 'be' and 'do' similarly to the preposition 'to' in the above example have no conceptual specification and are addressed by VP building procedures during the process of syntactic encoding. Therefore their repairs need to be grouped under syntactic repairs. (21) illustrates the case when during the encoding of the negative form of the verb, the wrong auxiliary has been accidentally accessed.

(21) you +**don't** + you **aren't** interested in Hungarian food

*(Retrospection: I realised that another structure had to be used here)*

On the other hand, modals such as 'can', 'may' or 'shall' have independent semantic activation conditions (Levelt, 1989; Lyons, 1977) and are retrieved by means of lemma activation, thus it is logical to assume that their corrections are lexical repairs. (22) can serve as an illustration for the correction of a modal auxiliary, which is to be considered lexical repair.

(22) you + er **you ca you must** assure us that



### 4.3.3. Phonological repairs

The next steps of speech processing are *phonological encoding* and *articulation*. As research on phonological slips of the tongue is abundant (for a review see Fromkin, 1980; Levelt, 1989), here it will suffice to assume that the correction of the lapses occurring in these two phases of encoding will be called *phonological repair*. (23) illustrates the correction of the type of phonological slips when an additional phoneme intrudes into the nucleus of the syllable.

(23) we could arrange er - more - smaller [taibie] **tables** if you would like that - better  
Phonological repairs can involve the correction of a phoneme, an allophone, an allomorph (see (24)), the metrical and intonation structure of a word or of a string of words (intonational phrases).

(24) there's a place for a + for **an** orchestra

### 4.4. Rephrasing repairs

As opposed to appropriacy and different repair, the next type of repair involves the revision of the preverbal plan without changing the content of the original message. We will call this type of repair *rephrasing repair*, in the course of which the speaker repeats the slightly modified version of a word or phrase by adding something and/or using paraphrase because of uncertainty about its correctness. Rephrasing repair is also different from error repair in that the latter merely involves the correction of an accidental lapse and, consequently, the issuing of an unmodified pre-verbal plan. (25) shows that the speaker was uncertain about the success of her accessing the right lexical entry and consequently decided to substitute 'reflect' with 'answer.

(25) we will er **reflect er to you in another letter we will answer you**

*(Retrospection: What happened here was that I was not sure whether 'reflect' really means, 'answer', I knew what 'reflect' means but I do not know whether you can use it for writing as well, that is whether it means the same in writing as in speech that you 'reflect on something'.)*

In the case of rephrasing repairs found in the corpus, speakers always had problems with finding the appropriate lexical entry to match the concepts they wanted to express. Upon



producing the original utterance, they recognised that they are not certain whether the selected lexical entries (single words or expressions) convey the intended meaning. Therefore in these cases, they resorted to communication strategies, and replaced their originally chosen items with new ones. The detailed analysis revealed that the strategy of approximation, that is, the use of a “single alternative lexical item, such as a superordinate or a related term, which shares semantic features with the target word or structure” (Dörnyei & Kormos, in press) prevailed among the problem-solving mechanisms used in these cases (see (26)). Speakers also frequently decided to restructure their original utterance and express the intended meaning by means of an alternative syntactic structure like in (27). The mechanism of circumlocution, that is, the “exemplification, illustration or description of the target object or action (Dörnyei & Kormos, in press)” was used only once (see (28)).

(26) uhm our fish fish **meals** er **foods** are very good too

*Retrospection: I corrected fish meals for fish food because it seemed to be a bit better.*

(29) we can't er give it to you you can't have it

*Retrospection: I said the same thing once more because I felt that something was wrong with the way I said it, I could not come up with the appropriate words and sentence structure.*

(30) is there **any requirements** you'd like to uhm any **anything else** you'd like to know

*Retrospection: I thought that 'requirements' may not have been a very good word in this situation and I wanted to ask once more whether you have any more wishes*

Apart from the fact that rephrasing repairs are psycholinguistically different mechanisms from error repairs, sociolinguistic and discourse perspectives also support the need for the establishment of this new category. In her seminal paper, Tarone (1980) defined communication strategies as “mutual attempts of two interlocutors to agree on a meaning in situations where the requisite meaning structures do not seem to be shared” (p. 420). On the basis of these defining criteria, she rejected Schwartz's (1977 cf. Tarone, 1980) claim that all self-repairs are communication strategies but agreed that the type of repair when the aim of the correction is to “move the utterance closer to intended meaning or socially accepted form” (Tarone, 1980, p.426)



can be classified as a communication strategy. If, however, the repair corrects a linguistic form, it should not be considered a communication strategy (Tarone, 1980, p. 426). This differentiation is completely in line with the system of classification proposed here.

On the other hand, it is understandable that researchers of speech production have failed to distinguish error repairs from rephrasing repair. One reason for this might be that situations when L1 speakers' knowledge of the language is incomplete are less frequent, thus rephrasing repair occurs more rarely in L1 speech than in L2. In addition, it is not easy to delineate these two types of repair processes without retrospection. Apart from retrospective comments, the placing of the cut-off point in repair and the measures of the timing of corrections might also help in the analysis. The reparandum in error repairs is frequently cut off before the complete articulation of the word (Levelt, 1983; Brédart, 1991), whereas it is expected that in the case of self-rephrasing repairs the word or phrase to be reformulated will be completed. This assumption has also been borne out by the analysis of the point of interruption of the repairs in our database. The type of repair was found to affect the point of interruption to a significant extent ( $\chi^2 = 29.97$ ,  $p < 0.00$ ). Erroneous output was interrupted significantly more often than the expected frequency, while rephrasing repairs were completed with high frequency. The measures of the timing of self-repairs in the study also suggest that error-repairs and rephrasing repairs involve different mechanisms, as error-repairs were interrupted significantly earlier ( $F = 6.28$ ,  $p = 0.00$ ) ( $X = 571$  ms) rephrasing-repairs ( $X = 1079$  ms).

## 5. CONCLUSION

This paper has argued that as both the L1 and L2 psycholinguistic taxonomies of self-repair behaviour have certain shortcomings and this might influence the results of the studies on self-corrections. There is therefore a need for a new system of classification of self-corrections. On the basis of a retrospective study carried out specifically for obtaining relevant data for the purpose, it was suggested that Levelt's (1983) taxonomy of L1 self-repairs needs to be modified so that it could be applied for the analysis of repairs in L2.

It was argued that for the analysis of speech samples elected under less control than in Levelt's (1983) study, the category of different repairs should be further subdivided into ordering error repairs and inappropriate information repairs. A new class of different information repair has also been identified: message replacement repair, in the case of which the speaker completely



gives up the originally intended message. This type of repair is frequent in L2 speech, but can occur in informal L1 conversations as well.

Within the class of appropriacy repairs, Brédart's (1991) group of repair for good language has been divided into two types of self-corrections: pragmatic appropriacy repairs and repairs for good language. The former concerns the modification of meaning in context, and the latter the manner or the eloquence of expression.

It was argued that psycholinguistically more accurate results can be obtained in speech production studies if error repairs are classified not on the basis of their surface representations, that is, based on the nature of the reparandum, but according to the locus of the lapse in the message processing phase. An attempt was made to delineate lexical and grammatical repairs more distinctly. It was proposed that the criterion for assigning repairs into these two categories should be whether the given lexical entry is accessed via the syntactic building procedures or on the basis of its conceptual specification, that is, lemma activation. In the first case, the instance of self-correction should be classified as grammatical repair, and in the second case as a lexical repair.

Finally, a new category of repairs, rephrasing repair has also been proposed. This type of repair involves the modification of the preverbal plan but leaves the content of the message unaltered. It was argued that rephrasing repair is similar to communication strategies (Tarone, 1980) and is employed when the speaker is uncertain about the correctness of the utterance.

From a methodological perspective it can be concluded that retrospection might be of great help in establishing different categories of self-corrections and in increasing the validity of classifying repairs into these categories. Examples from the corpus illustrated that without retrospective comments several repairs would have been wrongly classed.



**APPENDIX**  
**PARTICIPANT'S TASK SHEET**

You are the manager of the Golden Fish restaurant. You'll receive a booking enquiry. Study this information before the customer arrives.

**Information:**

- Private room: capacity 40 persons but only if 35 people book not for smaller number.
- The room is available on 18 and 19 December.
- You require confirmation in writing with 25% percent deposit within 24 hours.

**Task:**

1. Greet the customer
2. Listen to the customer's wishes and try to come to a compromise
3. Answer the various questions of the customer
4. Say good-bye

(adapted from Jones, L. (1991). Cambridge Advanced English. Cambridge: CUP. p.218)



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\* Transcript notation:

- = 0-0.5 sec long pause

+ = 1-2 sec long pause

++ = 2-5 sec long pause

+++ = pause longer than 5 seconds

:: (: ) = prolonged sound



## Hungarian verbal prefixes as predicates

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### *Abstract.*

I would like to present here partial results of an ongoing lexical study concerning Hungarian verbal prefixes of the resultative type. My paper examines the meaning and the lexical structure of these resultative elements which show three main types of meaning: spatial, orientational metaphorical, and event-frame (manner-indicating) ones. The most intriguing questions in this inquiry are: *a*, what does the lexical-conceptual structure (LCS) of verbs and prefixes look like, and, *b*, what characteristics do the prefixational processes in the lexicon have in order to construct the right LCS-s?

### 1. Phenomena to be accounted for

Hungarian verbs can be prefixed and can express spatial and non-literal meaning according to the original meaning of the verb and the prefix. Each verb can only take one prefix at a time. The prefixes are generally adverb-like elements, the so called *igekötők* ('verb-binders'). However, the exact definition of *igekötő* is not an easy task: in fact, a rather heterogeneous set of adverbs or former adverbs (in a historical sense) constitutes what was labelled under this category (cf. KOMLÓSY [1992]). the present analysis can not even survey all the related linguistic phenomena; instead, it tries to analyse a group of lexemes which seem to have a common (or, at least, a very similar) origin, and it is only concerned with the following structural types:

- a, unprefixed verbs (with an optional spatial suffix or an argument) expressing spatial meaning
- b, prefixed verbs expressing spatial meaning (with or without the spatial suffix)
- c, prefixed verbs expressing orientational metaphorical meaning
- d, prefixed verbs expressing an "event-frame"/"manner-indicating" meaning

It must be admitted that we are rather concerned with groups *c* and *d* than with *a* and *b* - but for the sake of comprehensibility all the four types of verbs will be presented.

The structure of each section is very similar. generally, one or more verbs are given first (the subcategorizational frame; the meaning in English), and then their lexical-conceptual structures (LCS-s), which are constructed according to a slightly modified version of Ray Jackendoff's *Conceptual Semantics* or CS.<sup>1</sup> After the description of the LCS, a general scheme is presented, representing the conceptual and/or lexical merging rule, according to which such verbal structures are constructed (actually, the lexicon is conceived of as an interface between the conceptual and the purely linguistic realms in the speaker's head).

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<sup>1</sup> Cf. Jackendoff [1983], [1987], [1990]; about the modification for Hungarian see PÓLYA [1997a].



## 2. Unprefixed verbs expressing spatial meaning

A common verb expressing spatial meaning is:

*fut* <vki, (vhonnan), (vhova)>  
'to run' <sby, (from somewhere), (to somewhere)>

The LCS of *fut* looks like this:

(L1) [Event GO (.../Nom [Thing ],  
[(Path (FROM/... [Place ], THROUGH/... [Place ], TO/... [Place ])],  
[Manner RUNNING ] )]<sup>2</sup>

The general scheme for the event-constructing process is this:

• EVENT ⇒ METAVERB + (PATH) + MANNER OF EVENT

What is new with respect to the Jackendoffian notation is three things. First, the LCS contains slots for the morphological case; this is a feature English almost completely lacks. For example, the first argument of GO [...], which is generally the subject of the sentence the LCS represents, is in *nominative* case in Hungarian: and this is what the .../NOM shows. In the case of the functions FROM, THROUGH and TO there are different possibilities as to the bearer of the function on the morphological level; there are more suffixes which can express this fraction of the meaning. Secondly, the metaverb is a new element. That part of the LCS is supposed to be that which determines the type of the action a lexeme expresses; in this case this is movement.<sup>3</sup> The metaverb is a basic semantic element (it could be "HAVE" and "STAY" as well) belonging to something like a *basic conceptual repertoire* of meanings, acquired or innate. The third new constituent, the "manner" of the event is defined in a different slot of the LCS, it is the additional informational a verb carries beside the metaverb. Thus, the metaverb in the LCS determines which super-category the verb belongs to, and the manner shows the subtype of the verb (they are something like the genus and species in a biological taxonomy). In this way, the task of specifying the meaning of the verb which in the Jackendoffian system was assigned to a (sole) main function in the LCS and a specific 3D model, outside the lexicon and a separate cognitive faculty (cf. JACKENDOFF [1990]), is assigned to what the "metaverb" amounts to and the "manner" slots "contains". The introduction of the "manner" slot seems to me a natural way to separate what is defined in the lexicon and what is determined outside it: the metaverb is a lexical element, whilst the "manner" slot itself is only something like a pointer to other cognitive faculties, e.g. the spatial or a kinetic model. The lexical elements (the metaverb and the other functions) and the non-lexical element (the manner of the action/state) constitute together the meaning of a lexeme.

<sup>2</sup> Bold brackets indicate the optionality of that part in the LCS.

<sup>3</sup> This is shown by the function "GO". Movement can be conceived of in non-spatial semantic fields as well, such as identificational, temporal, etc.



### 3. Prefixed verbs expressing spatial meaning

A prefix can be attached to most verbs in Hungarian, e.g. to *fut*:

*ki- fut* <vki, (vhonnan), (vhova)>  
'to run out(wards)' <sby, (from somewhere), (to somewhere)>

The LCS of such a prefixed lexeme is the following in its general form:

(L2) [ <sub>Event</sub> GO (.../Nom [Thing ],  
[Path ( (FROM/... [Place ], THROUGH/... [Place ] ), TO/... [Place <DEF. BY THE PREFIX >] ) ) ],  
[Manner <DEF. BY THE MAIN VERB>] )]<sup>4</sup>

Which in this case is this:

(L2a) [ <sub>Event</sub> GO (.../Nom [Thing ],  
[Path (TO/... [Place <outside>] ) ) ],  
[Manner <running>] )]

And the scheme is:

• EVENT ⇒ METAVERB + PATH + MANNER OF EVENT

In this LCS the contribution of the prefix appears in the TO-slot (that slot is meant to contain the *lative* argument, generally called the thematic role "GOAL") and it expresses a *specific selectional restriction* with respect to the endpoint of the movement (cf. KOMLÓSY [1992]). The exact conditions this selectionally restricted argument must meet are defined by the meaning of the prefix, that is, by means of *spatial image schemes* (LAKOFF [1987]). In the case of the prefix *ki-* ('outwards'), this endpoint must approximately be in the region 'outside of a container' (for a more detailed account see PÓLYA [1997b]).

Function-bearer elements (e.g. suffixes) which on the level of the LCS exert semantic restrictions are predicates, in the same way as *internal semantic arguments*: if one is *buttering* the bread, there can be only one type of substance to be spread on the bread, namely, butter. In the case of *to butter*, there is a *fixed* argument in the LCS, that is, the LCS *predicates* about the substance to be spread that it is butter.

Similarly, I propose, the prefixes are fixed in the LCS of the derived lexeme, and by virtue of the image scheme they carry *predicate about the endpoint* of the motion trajectory, for example, that it is 'outside'.

The general form of the LCS for the original verb was shown in (L2), the general form of the LCS of the prefix is this:

(L3) [ <sub>Event</sub> GO(.../Nom [Thing ],  
[Path (FROM/... [Place ], THROUGH/... [Place ], TO/... [Place <DEF. BY THE PREFIX >] ) ) ]]

<sup>4</sup> The relevant parts are typed in bold prints.



The scheme is this:

- PREFIX ⇒ METAVERB + PATH<sup>5</sup>

It may be surprising that a prefix represents an EVENT and does not correspond simply to a PLACE or PATH function. The reason for this modification is the following. A host of prefixed verbs in Hungarian can express motion (e.g. *kifut* / 'to run out') and in a large number of cases it seems reasonable to deduce that it is the original verb which carries this fraction of meaning, for the verb expresses motion in itself (e.g. *fut* / 'to run'). However, there are many cases of prefixation where the derived syntagm contains a *non*-motion verb (such as *ül* / 'to sit' or *trombitál* / 'to play the trumpet') and the prefixed syntagm either expresses pure motion (*át-ül a másik székre* / 'to sit down on the other chair') or its meaning contains very clearly a motion aspect (*vissza-trombitálta a lovasságot* / 'he blow his trumpet and so caused the cavalry to return back', literally: 'back(wards)-<plays-the-trumpet> the cavalry.ACC'). How can such syntagms express motion? The verb cannot be responsible for this; it is only the prefix to which we can assign this task. A verbal prefix, in my view, is a complex structure, capable to express motion but only when a verb is attached to it. And the LCS of the prefix should resemble this capacity. What has been advanced here is a straightforward proposal: the prefix expresses a direction (or something like this) and a motion (an event), if necessary, and the original verb expresses the manner of this event, or, the manner of a sub-event (as in the case of *át-ül*, where the manner of the movement is not specified, only the manner of the resulting state (sitting)). There are cases where the original verb itself contains a motion-part in its LCS, so that one of the two meaning-fractions referring to movement (either that of the verb or that of the prefix) becomes redundant. We will see in chapter 5, 6 and 7 how this analysis can resolve problems with further lexemes.

So far we have had the building blocks of prefixation and its result, but it would be desirable to characterize the process itself. The question is how one gets to an LCS like that in (L2), and what the exact process of prefixation in the lexicon looks like.

It is generally assumed that the prefix and the main verb are in the lexicon, and could be joined by virtue of a lexical rule ("prefixation"). As the prefixing process takes place, the two LCS-s are supposed to form a coherent new LCS in a *compositional* way. Consequently, we are interested in the way and the extent to which the respective LCS-s contributed to the new LCS.

In this case (L3), the two LCS-s, being complementary, can *merge* almost fully (the prefix expresses the PATH indicated as optional in the LCS of the verb), with the exception of the two metapredicates (GO [ ]) the one of which is redundant. It is reasonable to postulate the following two rules (informally) in order to have the right LCS at the end of the prefixational process:

- (R1) During prefixation join the main verb's LCS and the LCS of the prefix.
- (R2) IF the two LCS-s to be merged in prefixation contain the same metapredicate (MP), THEN take the default MP of the prefix as the MP of the derived lexeme.

This type of account can be generalised to cover the full range of prefixation yielding lexemes with spatial meaning.

It is to be noted that this proposal is equivalent to the claim that a resultative prefix is a special element, capable of taking the verb as its argument, or more properly, the verb and the prefix are *co-predicating*, each playing a primary role in the construction of the derived LCS:

<sup>5</sup> Default parts are dottedly underlined both in the LCS and the scheme.



there seems to be no semantic hierarchy between the two elements, while there is a marked one from the point of view of syntax, for only verbs can appear standing by themselves in well-formed sentences.<sup>6</sup>

#### 4. Prefixed verbs expressing orientational metaphorical meaning.

There is a broad range of prefixed verbs in which the prefixes instead of referring to any kind of spatial location or region refer to a specific property. These structures are sometimes called "*orientational metaphors*" (OM), using the term of LAKOFF & JOHNSON [1980], according to the idea that formerly spatial elements (expressing, for example, orientation), by virtue of the characteristics of human cognitive abilities, are used to refer to abstract "locations". The two examples below can be clarifying:

- (S1) Az asszírok *le*-igázták a szomszéd népeket.  
 assyrians.NOM (down)-subjugated.PAST neighbouring people.ACC
- (S2) Az egyiptomiak sem szabadították *fel* őket.  
 egyptians.NOM nor liberate.PAST up them.ACC

In (S1) "*le*-" ('downwards') refers to the abstract "place" of slavery and subjectedness, while in the second sentence "*fel*-" ('upwards') denotes the opposite place of freedom. TO BE DOWN equals TO BE SUBJECTED, and TO BE UP equals TO BE FREE. The standard examples for OM-s are LAKOFF & JOHNSON's "happy is up" and "sad is down":

"I'm feeling *up*. That boosted my spirits. My spirits *rose*. You're in *high* spirits. Thinking about her always gives me a *lift*. I'm *depressed*. He is really *low* these days. I *fell* into a depression. My spirits *sank*."

Here TO BE UP equals TO BE IN A POSITIVE EMOTIONAL STATE and TO BE DOWN equals TO BE IN A NEGATIVE EMOTIONAL STATE. Abstract properties get structured by virtue of an abstract vertical axe. A host of Hungarian lexemes appear in such or similar syntagms where the prefix refers to an abstract place. The following main classes can be distinguished in Hungarian:<sup>7</sup>

- TO BE IN A POSITIVE EMOTIONAL STATE IS TO BE UP; TO BE IN A NEGATIVE EMOTIONAL STATE IS TO BE DOWN

*fel* vagyok dobva (up am I thrown, 'I am up'), *le* vagyok hangolva (down am I tuned, 'I am down'), *fellelkesült* tömeg (up-spirited crowd, 'an enthused crowd'), *letört* kedv (down-broken mood, 'low spirits'), *lepukkant* kedv (down-<onomatopoeic> mood, 'low spirits'), *lekókad*t kedv (down-wilted mood, 'low spirits'), *felderül* a kedve (up-clears her mood.NOM, 'she becomes cheerful'), *felragyog* az arca (up-brightens his face.NOM, 'his face brightened')

<sup>6</sup> On conjectures about co-predication see SPENCER & ZARETSKAYA [1996].

<sup>7</sup> The classification needs further refinements and I can not discuss the causes for the exceptionality here.



- TO HAVE POWER IS TO BE UP; TO BE SUBJECTED BY POWER IS TO BE DOWN

uralkodik valaki *felett* (dominates over someone, 'to dominate someone'), *leigázza* az országot (down-jugates the country.ACC, 'to subjugate the country'), *lerohan* valakit/valamit (down-runs someone.ACC, 'to overrun a country/enemy'), *leküzd* valakit (down-fights someone.ACC, 'to fight off someone'), *felszabadul* (up-liberates, 'to liberate'), *legyűr* harcban valakit (down-crumples someone.ACC in the fight, 'to defeat someone'), *legyőzi* az ellenséget (down-wins the enemy.ACC, 'to overcome, to defeat the enemy')

- TO BE EXISTENT, ACTIVE IS TO BE UP OR OUTSIDE; TO BE DEAD, TO BE UNACTIVE IS TO BE DOWN OR AWAY

*elalszik* (away-sleeps, 'to fall asleep'), *elenged* tartozást (away-lets debt.ACC, 'to cancel a debt'), *elhal* (away-dies, 'to die'), *elnéz* valakinek valamit (away-look someone.DAT something.ACC, 'to overlook something to someone'), *elpárolog* (away-vaporises, 'to vaporise'), *elrohad* (away-rots, 'to rot'), *eltűnik* (away-seems, 'to disappear'), *felavat* (up-inaugurates, 'to inaugurate'), *felbátorodik* (up-courages, 'to take courage'), *felbiztat* (up-stimulates, 'to encourage someone to do something'), *felbosszant* (up-vexes, 'to vex'), *feldühödik* (up-become-upsets, 'to infuriate'), *felébred* (up-wakes, 'to awake'), *felélénkül* (up-becomes-lively, 'to become lively'), *felerősít* (up-strengthens something.ACC, 'to turn up (the sound)'), *feleszmél* (up-becomes-conscious, 'to come to one's senses'), *felfegyverkezik* (up-arms, 'to arm oneself'), *felfortyan* (up-bubbles, 'to get furious'), *felháborodik* (up-becomes-stormy, 'to get angry'), *fellázad* (up-fevers, 'to revolt'), *fellép* egy hiba (up-steps an error.NOM, 'an error sets in'), *fennáll* egy eset (up-stays a situation.NOM, 'a situation holds'), *fennforog* egy probléma (up-revolves a problem.NOM, 'a problem holds'), *fennmaradó* összeg (up-remaining sum, 'remainder'), *felsorol* (up-lists, 'to enumerate'), *felszolgál* ételt (up-serves food.NOM, 'to serve dishes'), *feltalál* (up-finds, 'to invent'), *feltűnik* valahol (up-seems at a place, 'to appear'), *felzendül* ének (up-sounds the song.NOM, 'the song (re)sounds'), *kihoz* belőle eredményt (out-brings from it a result.NOM, 'to produce something from something'), *learatja* a dicsőséget (down-harvests the glory.ACC, 'to have the glory (of...)'), *leállít* gépet (down-stands the machine.ACC, 'to stop the machine'), *lecsillapodik* (down-becomes-quiet, 'to calm down'), *lefekszik* (down-lies, 'to go to sleep'), *legyilkol* (down-kills someone.ACC, 'to kill someone'), *lemond* a kormány (down-says the government.NOM, 'the government resigns'), *lepihen* (down-rests, 'to take a rest'), *letagad* (down-deny, 'to deny [the fact...]')

- TO BE VALUABLE, PRECIOUS IS TO BE UP; TO BE VALUELESS IS TO BE DOWN

*lealacsonyít* (down-inferiorates, 'to degrade'), *lealáz* valakit (down-humiliates someone.ACC, 'to humiliate someone'), *lebecsmérel* (down-disparages, 'to disparage'), *ledisznóz* valakit (down-pig-iates someone.ACC, 'to call someone 'pig', in his face'), *legorombít* valakit (down-rude-iates someone.ACC, 'to scold'), *lemarház* (down-cattle-ises someone.ACC, 'to call someone a 'cattle' (= idiot), in his face'), *feldicsér* valakit (up-praises someone.ACC, 'to praise someone'), *felmagasztal* valakit (up-extols someone.ACC, 'to extol'), *felékesít* (up-ornament-ises, 'to ornate'), *feldiszít* (up-decorates, 'to decorate')

- TO BE MORE IS TO BE UP; TO BE LESS IS TO BE DOWN

*leapad* a folyó (down-ebbs the river.NOM, 'to ebb'), *lecsökken* (down-diminishes, 'to diminish'), *leél* egy lakást (down-lives a flat.ACC, 'to live in a flat for a while making its condition worse than before'), *lefogy* (down-loses (weight), 'to lose weight'), *legyengül* (down-weakens, 'to weaken'), *lehalkul* (down-faints, 'to become fainter (for a sound)'), *lehűl* (down-cools, 'to cool')



down'), *lelassul* (down-slows, 'to slow down'), *leszegényedik* (down-poor, 'to become poor'), *felhalmoz* valamit (up-piles something.ACC, 'to accumulate'), *felhízik* (up-fats, 'to gain weight'), *felerősödik* (up-strengthens, 'to become more intense'), *felhangosodik* (up-loud-ise, 'to become more loud'), *felgyorsul* (up-fast-ise, 'to become faster'), *felmelegszik* (up-heat-ise, 'to become more heated')

• TO BE STABILIZED/RECORDED IS TO BE DOWN; TO BE LEFT UNSTABILIZED IS TO BE UP  
*lehallgat* telefont (down-listen the phone.ACC, 'to tap the phone'), *leír* egy beszédet (down-writes a talk.ACC, 'to put down a talk'), *leszögez* valamit (down-nail-ises something.ACC, 'to contend firmly'), *letartóztat* embereket (down-keeps people.ACC, 'to arrest people'), *felad* küzdelmet (up-gives the fight.ACC, 'to give up the fight'), *felbont* szerződést (up-undoes the contract.ACC, 'to cancel the contract'), *feloldja* a tilalmat (up-unties a ban.ACC, 'to lift the ban')

• TO BE IN A MORE INTIMATE RELATION IS TO BE INSIDE/CLOSE TO ONE ANOTHER  
 (coherence in danger: *elfogad* és az *elvegyül* bontja meg)  
*befogad* valakit az osztályba (in-receive someone.ACC in the class, 'to accept someone as a member of the class'), *bevesz* valakit a társaságba (in-takes someone.ACC in the company, 'to accept someone as a member of the company'), *beajánl* valakit a vállalathoz (in-recommend someone.ACC to the firm, 'to recommend someone as an acceptable prospective member of the firm'), *bevonul* (katonának) (in-proceeds, 'to join up'), *összeesküsznek* valaki ellen ((they) together-swear against someone, 'to plot against someone'), *összejátszik* valakivel (together-plays with someone, 'to conspire with someone'), *összemelegsznek* (together-warm-(ise) two people.NOM, 'the two become friends or lovers'), *összeshozik* két ember (together-custom-ise two people.NOM, 'the two get accustomed to each other'), *kitagadja* a fiát (out-denies his son.ACC, 'to disown his son'), *kiutasít* valakit (out-order-ise someone.ACC, 'to expel'), *kiutál* valakit (out-hates someone.ACC, 'to freeze out'), *elszigetel* valakit (away-isolates someone.ACC, 'to isolate'), *elutasít* (away-order-ises, 'to refuse, to turn down (a plan)'), *elvet* (away-throws, 'to reject'), *elválnak* ((they) away-separate, 'they divorce'), *szétmegy* (házasság) (away-goes the marriage.NOM, 'the couple splits up')

The question is how the lexical structure of these orientational metaphors is constructed. In the vein of a *localistic* semantics, they could be regarded as structured very similarly to prefixed spatial verbs. The OM-s differ from the latter only with respect to the PATH-function in their LCS-s, since the PATH-function in the LCS of an OM does not represent a spatial trajectory, but it refers to an *abstract trajectory*, expanding in the "space of properties". With respect to this type of PATH the term *identificational* is used.<sup>8</sup> Accepting the localistic approach, there is no problem in determining the proper LCS-s of the OM-s. The generalised form looks like the following:

<sup>8</sup> Cf. the localistic approach of GRUBER [1976].



- (L4) [Event CAUSE .../NOM [Thing], GO (.../(Nom or Acc) [Thing],  
[Path ((FROM/... [Place], THROUGH/... [Place]), TO/... [Place/Identificational <DEF. BY THE PREFIX>)]],  
[Manner <DEF. BY THE MAIN VERB>] )]<sup>9</sup>

In a specific case, for example, *a folyó vize lepad*'the water of the river ebbs', the LCS looks like this:

- (L4a) [Event GO (.../Nom [Thing WATER OF THE RIVER],  
[Path ( TO/le- [Place/Identificational <DOWN = NON-EXISTENCE>] ) ],  
[Manner <EBBING>] )]

Let us turn now to the verbs showing the most noteworthy characteristics.

### 5. A prefixed verb structure expressing an "event-frame"/ "manner-indicating" meaning.

Verbs of this class refer to a complex event-frame, and their meaning is mostly determined by pragmatic processes. This means that the interpreter should construct something like a background story in order to understand what these syntagms mean: how the action expressed by the main verb and the thing referred to by the object can be related, how the link between them looks like.<sup>10</sup> I termed this verb type the "manner-indicating" class; and I use the term "eventual metaphor" in the same sense.

- |      |                     |                        |                         |
|------|---------------------|------------------------|-------------------------|
| (S3) | Edömér ki-          | aludta/táncolta/írta   | magát.                  |
|      | Edömér.NOM out-     | sleep/dance/write.PAST | himself.ACC             |
|      | <subject> <prefix>- | <verb>                 | <reflexive pronoun.ACC> |

'Edömér has slept/danced/written enough.'

The key to the meaning to this expression is this: 'the <subject> acts in the manner defined by the <main verb> to the extent of having enough of it'<sup>11</sup>

Let us observe these expressions. The LCS of the main verb and the prefix in (S3) look like these, respectively:

*alszik* <vki>  
'to sleep' <sby>

- (L5) [State-1 BE (.../Nom [Thing], [Manner SLEEPING] )]

<sup>9</sup> Causativity is optional and it is only present in the LCS of transitive verbs (there are intransitive and transitive verbs functioning as orientational metaphors: *kiszabadul* - *kiszabadít* ('to become free' - 'to liberate'); *felröppen a hír* - *feldob témát* ('the news up-flies' (=it becomes public) - 'he up-throws a topic' (=he proposes an issue for discussion))).

<sup>10</sup> Obviously, it would be a very important task to examine these pragmatic processes in more details.

<sup>11</sup> <Having enough of something> is determined pragmatically.



*ki-*, 'outwards-':

- (L6)  $[_{\text{Event}} \text{GO} ( \dots / \text{Nom} [_{\text{Thing}} ] ,$   
 $[_{\text{Path}} (\text{FROM}/\dots [_{\text{Place}} ] , \text{THROUGH}/\dots [_{\text{Place}} ] , \text{TO}/\dots [_{\text{Place}} \text{ KINT} ] ) ) ] ]$

The derived lexeme of "*kialussza magát*" looks like the following:

- (L7)  $[_{\text{Event-2}} \text{CAUSE} \dots / \text{Nom} [_{\text{Thing}} ]^{\alpha} , (\text{GO} (/ \text{Acc} [_{\text{Thing}} \alpha ] ,$   
 $[_{\text{Path/eventual}} (\text{THROUGH}/\dots [_{\text{State-1}} \text{BE} ( (/ \dots ) [_{\text{Thing}} \alpha ] , [_{\text{Manner}} \text{SLEEPING} ] ) ) ,$   
 $\text{TO}/\dots [_{\text{Place/Identificational}} \text{OUTSIDE} ] ) ) ,$   
 $[_{\text{Manner}} ] ) ) ]$

For this the scheme is:

- $\text{EVENT}_z \Rightarrow ( \text{Cause} (x) , \text{GO} (y) , \text{THROUGH} (\text{EVENT}_w ) \text{TO} (<\text{prefix}> ) )$

This is the putative LCS. Its most interesting part is the THROUGH slot where the LCS of the main verb gets inserted, showing the structural dominance of the prefix clearly. According to this LCS, the prefix takes the verb as an argument. The reason for this proposal is that the meaning of the expression is: "<the subject> is in a state or involved in an action [here: sleeping] for a while, and then he ceases to be in that state or to act in that way, for <the subject> has enough of that state/action". If we accept that the prefix carries a substantial fraction in its LCS expressing motion (this was proposed at the onset of the paper), then it seems natural to accept that in such structures the original verb can only contribute to a different aspect of the meaning of the whole expression. The original verb refers to the abstract place the subject crosses or goes through, so, it can take the THROUGH slot. Although, at the first glance, this may seem a strange modification of the Jackendoffian system, whilst it is quite normal from the point of view of a localistic framework: this time the path stretches not in real space but in the space of events - I shall call it "eventual path" and it will be marked similarly to the identificational and temporal paths. And by adopting this proposal, after all, we are making a trade-off between a strange constructing rule (which allows the insertion of the verb in the THROUGH slot) and the compositionality of the structure; and this is preferable. I hope one can find similar structures in English and in other languages; such data could serve as a larger empirical base for these assumptions (see SPENCER & ZARETSKAYA [1996] for Russian data).

In the LCS, the  $\alpha$  indices indicate the bounded argument slots, where the same argument is present as in one or more of the other slots. This indexing guarantees that the THEME (the moving thing) appears in the surface structure as a reflexive pronoun.

The part "(.../...)" shows that although the argument which follows is present in the LCS, it still *has no access* to grammatical categories like nominal or accusative case, that is, this argument cannot appear in the surface structure.

However, it seems that in such expressions the prefix - which is a *secondary element syntactically* (it can appear only when a verb is present in the sentence) is the core or *primary element semantically*. KOMLÓSY [1992] calls the elements standing in this relation with respect to a syntactic head "syntactic modifiers", SPENCER & ZARETSKAYA [1996] call a similar prefixing phenomenon "copredication" in Russian, and they claim that the prefix is the "core predicate" and the original verb is the "subordinate predicate". The LCS of the prefix is dominant: the LCS of the main verb occupies only one slot in an otherwise complex structure.

It is still an intriguing question what determines the rules according to which the semantic arguments access the surface grammatical cases. There seems some kind of "profiling" procedure



to be at work ("Which is the most salient semantic argument? Assign the NOM case to it!"; "Which is the second most salient? Assign the ACC case to it!", ...and so on), connected with a thematic hierarchy as proposed by GRIMSHAW [1990].

So far, so good. But up until now I intentionally overlooked the biggest problem concerning this LCS. The problem is this: the LCS the non-desired property of being constructed *non-compositionally*. The CAUSE function is not present either in the LCS of the main verb or in the LCS of the prefix: where does it come from? And why does the LCS of the main verb get inserted in the THROUGH slot of the derived lexeme?

There are, in principle, two ways to answer this question. One could insist that all the appearances of a prefix in the synchronic system (in its spatial and non-spatial usage as well) must have a common structure, with additional markers in the lexical structure when used specifically. This approach is attractive because "unified theory is best". Not always, however. Clinging to this horn meant that non-compositionality became part of the system we are to build for the sake of a "generativity above all" principle, treating the lexicon as something identical to an underlying syntax. On the contrary, we have good reasons to think that a lexicon is not systematic all the way down and all the way up, but, as an effect of historical changes, it contains a large number of idiosyncrasies and irregularities (cf. WASOW [1977]), besides *local* regularities. Accordingly, analyses characterising certain parts of the lexicon, instead of giving "omnivalid" rules determining the uniform internal structure of the lexemes, can do not more than describe and classify the lexemes there, following the lexical landscape shaped by historical forces.

Taking this into account, a different proposal might be that the derived lexeme is the product of some inscrutable, idiosyncratic historical lexical processes. So, what we take for a derived lexeme, is actually an idiom, or, at least, a different entry than that of the "pure" spatial prefix - and non-compositionality should not worry us at all, as it does not even appear, following from the fact that it is the idiom (or the structure of it, with some slots to be filled) that we treat as a basic element. The presence of the reflexive pronoun, too, can support this view.

Nonetheless, the fact that many different verbs can participate in "manner-indicating" constructions - which means that this type of verbal prefixing is quite *productive* - could seem to be against such a proposal. I argue this is not the case. Possibly, the complex meaning of the prefix evolved as an idiom only with one sole construction, yielding an idiosyncratic, non-compositional LCS. And later on other verbs began to participate in similar constructions by virtue of *analogy*: the "first" verb had been substituted for a different verb, while the originally idiosyncratic structure remained untouched. That is, a new basic lexical structure was born (that which evolved idiosyncratically).

This could explain the productivity, and make it clear that compositionality can be considered only after one has determined which are the basic elements in the lexicon. In the case of a natural language, the basic elements might or might not happen to be uniform in their underlying structure. The proposal advanced here suggests that the lexical structures in Hungarian are heterogeneous. If one considers the possibility that we have a specific basic construction here (prefix, verb and pronoun together), even the hypothesis that *these* prefixes have complex LCS-s with default values and slot(s) capable to accept even a whole verbal LCS, e.g. in the THROUGH slot, becomes much more plausible.

## 6. The manner-indicating structure as a general scheme.

It is important to notice that this type of LCS can serve as a *general scheme* of one type of lexical structure. For, I suggest, other complex expressions have the very same type of LCS as



previously shown. There are four combinations of such a structure, the term "fake resultative structures" seems to be appropriate to them:

- (a) <subject> <prefix>-<verb> <reflexive pronoun.ACC>  
 (b) <subject> <prefix>-<verb> <fake object>  
 (c) <subject> <suffixed adjective>-<verb> <reflexive pronoun.ACC>  
 (d) <subject> <suffixed adjective>-<verb> <fake object>

(S1a) Edömér ki- írta magát.  
 Edömér.NOM out- wrote himself.ACC

(S1b) Edömér ki- írta a tollát.  
 Edömér.NOM out- wrote his pen.ACC

(S1c) Edömér betegre mászkálta magát.  
 Edömér.NOM to (become) sick went around himself.ACC

(S1d) Edömér rongyosra mászkálta a lábait.  
 Edömér.NOM to (become) ragged- went around his feet.ACC

It is clear that not just *any* prefix or noun can be joined to *any* verb and take *any* (pro)noun as object, but I would not like to deal with the semantic/pragmatic processes which determine the selection of the appropriate elements here. Instead, I will only give some examples for LCS of different verbs for illustration:

*ír* <vki, vmit>  
 'to write' <sby, stg>

(L8) [<sub>Event-1</sub> CREATE (.../Nom [<sub>Thing</sub> ], .../Acc [<sub>Thing</sub> ],  
 [<sub>Manner</sub> WRITING]) ]

(S1b) Edömér ki- írta a tollát.  
 Edömér.NOM out- wrote his pen.ACC

(L9) [<sub>Event-2</sub> CAUSE .../Nom [<sub>Thing</sub> Edömér]<sup>a</sup>, ( GO (.../Acc [<sub>Thing</sub> tolla ],  
 [<sub>Path</sub> (THROUGH/... [<sub>Event-1</sub> CREATE (.../... [<sub>Thing</sub> α ], .../Acc [<sub>Thing</sub> ], [<sub>Manner</sub> WRITING]) ],  
 TO/... [<sub>Place/Identificational</sub> KINT ] ) ) ],  
 [<sub>Manner</sub> ] ) ) ]

In this LCS the object is more profiled (or more salient) than in plain structures and "ki-" ('outwards'), picking out the end of the movement trajectory and having a metaphorical meaning, refers to "emptiness", because it is predicated, in turn about the "pen".

(S1c) Edömér betegre mászkálta magát.  
 Edömér.NOM to (become) sick went around himself.ACC



The LCS of the main verb is this:

*mászkal* <vki, vhol>  
'to go around' <sby, somewhere (locative)>

(L10) [Event GO (.../Nom [Thing ], [ (AT/... [Place ] ) ],  
[Manner GOING AROUND ] )]

The LCS of the derived lexeme looks like this:

(L11) [Event-2 CAUSE .../Nom [Thing Edömér ]<sup>α</sup>, ( GO (.../Acc [Thing α ],  
[Path/eventual (THROUGH/... [Event-1 GO (.../... [Thing α ], [ (AT/... [Place ] ) ],  
[Manner GOING AROUND ] ) ]), TO/-re [Place/ Identificational SICK ] ) ], [Manner ] ) ]]

Here again the subject of the inserted event cannot access the surface structure, that is, it does not get any grammatical case.

The structure the suffix, which I consider a complex predicate (similar to the prefixes), should have in order to be insertable in this structure is:

*-ra/-re*  
'(on)to'

(L12) [Event GO (.../Nom [Thing ],  
[Path (FROM/... [Place ], THROUGH/... [Place ],  
TO/-ra [Place <DEF. BY THE NOUN OR ADJECTIVE>)] ) ] ]

If the suffix is attached to a noun, the two will form an element with spatial meaning (*ház-ra* / 'onto the house', *kapu-ra* / 'onto the gate', etc.), while attaching a suffix to an adjective one gains an expression with an abstract meaning (*sárgá-ra* / 'to (become) yellow', *beteg-re* / 'to (become) sick').

It is worth comparing the LCS of the suffix with that of the prefix, as, I would like to suggest, the two elements have a similar lexical structure; they differ only in the TO argument. The suffix needs a noun at every cost, the prefix obviously not; this is the LCS of the prefix:

(L13) [Event GO (.../Nom [Thing ],  
[Path (FROM/... [Place ], THROUGH/... [Place ], TO/... [Place <DEF. BY THE PREFIX> ] ) ] ] ]

And the last variation:

(S1d) Edömér                    rongyosra                    mászkálta                    a lábait.  
Edömér.NOM                    to (become) ragged-                    went around his feet.ACC

The LCS of "*mászkalni*" is represented above. The LCS of the derived verb is this:

(L14) [Event-2 CAUSE .../Nom [Thing Edömér ]<sup>α</sup>, ( GO (.../Acc [Thing his feet],  
[Path (THROUGH/... [Event-1 GO (.../... [Thing α ], [Manner GOING AROUND]) ],  
TO/-ra [Place/ Identificational RAGGED ] ) ],  
[Manner ] ) ]]



## 7. Other types of manner-indicating constructions.

There are further constructions which have a manner-indicating structure.

- (S4) Oszkár össze- tekézt/lopott/titkárkodott magának egy nyaralót.  
 Oscar.NOM together- play bowling/steal/be a secretary himself.DAT a chalet.ACC  
 <subject> <prefix>- <verb> <reflexive pronoun.DAT> <fake object>

The meaning structure and the general scheme are for these expressions are these, respectively:

- 'the <subject> obtains the <fake object> by way of acting in the manner defined by the <main verb>'.  
 •  $EVENT_v \Rightarrow (GO(x), THROUGH(EVENT_w) TO(POSSESS(x, z)))$

- (L15) [<sub>Event-3</sub> GO (.../Nom [<sub>Thing</sub> ]<sup>α</sup>,  
 [<sub>Path/eventual</sub> (THROUGH/... [<sub>Event-1</sub> ... [<sub>Manner</sub> <def. by the verb>] ),  
 TO/össze- [<sub>State-2</sub> POSSESS (.../... [<sub>Thing</sub> α], .../Acc [<sub>Thing</sub> ],  
 [<sub>Manner</sub> <def. by the verb>] ) ) ] ] ]

- (S5) Elemér el- röhintette/köhögte/kiáltotta magát.  
 Elmer.NOM away- laugh/cough/shout himself.ACC  
 <subject> <prefix>- <verb> <reflexive pronoun.ACC>

Here: 'the <subject> acts in the manner defined by the <main verb> for a moment (aspect: semelfactive)', and the <reflexive pronoun.ACC> is simply obligatory, seemingly with no semantic contribution.

The scheme is:

- $EVENT_v \Rightarrow (CAUSE(q) (GO(x), TO(EVENT_w)))$

In this case only the GOAL-event is determined, although the derived verb is in semelfactive aspect (and this means that the action will very soon be finished).

- (L16) [<sub>Event-2</sub> CAUSE .../Nom [<sub>Thing</sub> <subject>]<sup>α</sup>, (GO (.../Acc [<sub>Thing</sub> α ],  
 [<sub>Path</sub> (TO/el- [<sub>Event-1</sub> <def. by the main verb> (.../... [<sub>Thing</sub> α ]),  
 [<sub>Manner</sub> <def. by the main verb> ] ) ) ],  
 [<sub>Manner</sub> ] ) ]<sup>12</sup>

- (S6) Anne-Marie át- cigarettázta/tévézte/tanulta az előadást.  
 A-M.NOM through- smoke/watch the TV/learn the spectacle.ACC  
 <subject> <prefix>-<verb> <fake object (denoting period of time)>

The meaning structure and the scheme here is:

- 'the <subject> acts in the manner determined by the <main verb> for a period of time determined by the <fake object>'  
 •  $EVENT_v \Rightarrow (<MAIN\ VERB>(x), FROM / TO(PERIOD-y))$

<sup>12</sup> Dotted underline expresses optionality.



In such constructions the fake object must refer to a period of time and movement occurs along a temporal trajectory.

- (L18) [Event- $\alpha$  <DEF. BY THE MAIN VERB> (.../Nom [Thing ],  
[Path/temporal (.../Acc [ FROM/... [Place ], TO/... [Place ]]),  
[Manner ]<sup>a</sup> ) ]

This was an illustration of the manner-indicating structures. Certainly, a more complete description of the Hungarian prefix system would be needed and many points should be clarified. It would be interesting to see, for example, to what extent manner-indicating structures and fake resultatives are similar; what are the limits of productivity and so on; but these issues await further research.

## 8. Summary

My aim was to construct the lexical structures for some seemingly differently structured lexemes. In the analysis I tried to propose such lexical constructions attributed to lexemes expressing abstract (non spatial) meaning which *resemble* the LCS-s of the lexemes expressing spatial meaning. In my view, the latter type of structure served as a basis for the former type. That is, I accepted a *localistic* point of view to be fully legitimate. So, the lexical structures presented have pointed to the way lexemes with an abstract meaning might be related to those with spatial meaning.

At the same time, I advanced a proposal according to which verbal prefixes, these seemingly small elements, when participating in more complex constructions, behave like full-fledged *predicates* and take normal underived verbs as their *arguments*. That is, they are sometimes bearers of really complex lexical structures, which - for me for the moment - seem to have emerged historically from non-compositional lexical processes. It was shown how a host of expressions is deducible from a single underlying lexical structure of this type with four variations, the *fake resultative structures*.

In order to maintain compositionality, such complex syntagm types were treated as specific, independent entries in the lexicon with their specific characteristics; and no "omnivalid" lexical rules affecting spatial and non-spatial lexemes were involved. It was noticed that compositionality, per definitionem, is relative to the basic elements is a system, which need not to have a uniform internal structure.

These proposals are meant to support the idea that there are domains of language (e.g. the lexicon) where diversity is as frequent as uniformity is supposed to be present in other domains (e.g. syntax).<sup>13</sup>

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## A STUDY OF CHILDREN'S EXPRESSIONS DESCRIBING SPATIAL RELATIONSHIPS IN THE HUNGARIAN LANGUAGE

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One of the basic questions in cognitive developmental psychology concerns the relationship of the different areas of cognition. The part played by representation of space and change of perspective in the course of development has been an important problem ever since Piaget's classic 'Three Hills study'.

Piaget and Inhelder (1956) differentiate between practical and conceptual representations of space. The practical representation of space refers to an egocentric use of space, this is the way the child orientates himself. On the other hand, when the conceptual representation of space is developed, the child is already able to imagine perspectives he cannot actually see, he can create a map, that is, he can use space in a conceptual sense.

The definitions above raise the question, whether we can talk about spatial representation in the case of practical space, or - according to Piaget - spatial representation is only mastered by children who have already given up egocentrism with the help of decentration.

Presson and Sommerville (1985) suggest that the 'user' concept of space and the appearance of informational and theoretical concepts of space are triggered by quite different tasks. Consequently, it is not an acceptable assumption that the practical representation of space is replaced by the conceptual one. Instead of the idea that early representations are present in an egocentric form, they assume that egocentric coding is a result of contextual factors.

The 'Three Hills study' of Piaget and Inhelder (1956) examines the attainment of the change of perspective. According to their results, correct answers can be achieved in only 50% of 6,5 - 7-year-old children and it is only by 12 years of age that children can already apply the change of perspective with confidence.



In their series of studies Flavell et al. (1981, 1988) found two stages in the change of perspective: in case of the 'first stage perspective', although the child is able to decide whether the other person can see the object or not, he is yet unable to find out how the other person sees it (whether in a different or in a similar way as he himself does). It is only after the mastery of the 'second stage perspective' that the child can already determine the perspective of the other person and therefore it is only from this stage on that he can answer the 'How the other person sees it?' question.

We could say that perspective that plays such an important role in spatial representation has quite a significant role in other cognitive areas as well - we might call that social empathy or a theory of mind.

The process of the acquisition of spatial expressions was examined by Johnston and Slobin in their already classic study (Johnston, Slobin, 1979). They wanted to explore the role of non-linguistic conceptual abilities in the acquisition of spatial expressions. They examined the use of adverbs of place in four groups of children, each group having a different mother tongue (English, Italian, Serbo-Croatian and Turkish).

In the process of language acquisition the linguistic codes of 'inclusion' and 'relation' are the first ones to appear. Then the sequence of relations acquired is the following: 'under', then 'beside' and 'between', then 'in front of' and 'behind' in case of objects with an intrinsic (inherent) perspective (e.g. a wardrobe) and finally 'in front of' and 'behind' in case of objects that have no intrinsic perspective.

Johnston and Slobin assume that the increasing complexity of spatial relations is reflected in due course by the sequence of the appearance of spatial expressions.

According to the work of Johnston and Slobin (1979) our own study focused on the following question: what circumstances would make it more difficult cognitively to use spatial expressions correctly?

Our presumption is that among all the linguistically encoded spatial relations the relation of 'in front of - behind' would probably be the most difficult one to acquire because the meaning of this



relation depends on the perspective of the observer. In such a situation a correct description should be made from the observer's perspective.

In case of the other expressions of spatial relations the description is determined by objective rules: in the cases of 'inclusion' and 'relation' it is the position of the two objects compared to each other, while in the case of the 'under - above' relation it is the position of the objects determined by the rules of gravitation. However, in the case of the 'in front of - behind' relation we can apply an objective rule for orientation only with objects having an intrinsic perspective.

The basic question we wanted to explore was whether the presence of another person (i. e. the presence of another possible perspective) influences accuracy in the use of 'in front of - behind' expressions in case of objects with and without an intrinsic perspective.

We wanted to know if any 'difficulties' caused by perspective can be detected in the performance of children.

First we attempt to prove that the use of 'in front of - behind' expressions is indeed much easier in the case of objects having an intrinsic perspective, and then we will examine whether the perspective of the experimenter influences the selection of expressions used by the children.

#### SUBJECTS:

Group 1: 4-year-old children (10 subjects)

Group 2: 5-year-old children (10 subjects)

Group 3: 6-year-old children (10 subjects)

#### DEVICES USED:

The experimental situation was similar to that used by Slobin and Johnston (1979). A doll's house was furnished with the following objects (toy furniture):

Furniture:	Frequently involved in the following relations:
a wardrobe	inherent perspective (in front of - behind)
	inclusion (in, inside)



	relation (on, on top of)
a table	no inherent perspective relation (on, on top of)
chairs (without back-rest)	no inherent perspective
glasses (one in normal position and one upside down)	no inherent perspective inclusion (in, inside) relation (on, on top of)

#### METHOD:

In each series the child was facing the doll's house that was placed on a table.

In one of the series the experimenter was sitting opposite the child ('Opposite' situation), while in the other series he was sitting beside the child ('Beside' situation).

A dice was placed on different points of the doll's house so that in each case its position could be determined unambiguously in comparison with one of the objects.

The children had to answer the question 'Where is the dice?' 22 times.

#### RESULTS:

In the problems presented to the children, we focused on the 'in front of - behind' relation, since in the case of objects without an inherent perspective the correctness of the solution of this relation depends on the perspective of the observer. The children had to solve a problem of perspective in two different situations: in one their perspective was identical with that of the experimenter and in the other it was opposing.

The consideration of the other person's perspective in the case of older children (6 years) was evidenced by the way they tried to avoid giving a precise description of the crucial spatial



relationships; such hesitation was not characteristic of younger children. (We tested the rate of correct answers in the opposite and beside situations with  $\chi^2$  probe: Group1 -  $\chi^2=3.377$ ,  $p<0.10$ ; Group2 -  $\chi^2=0.029$ ,  $p>0.10$ ; Group3 -  $\chi^2=4.255$ ,  $p<0.05$ ) Six-year-old children make significantly more mistakes when facing the experimenter than when they sit beside him and thus have the same perspective.

We inferred the underlying representation from the uncertainty of verbal answers.

To explain why the performance of children shows quite a difference in 'Opposite' and 'Beside' situations in the case of the six-year-old group but not in the other two groups, we examined the types of mistakes and found four basic groups:

#### Types of mistakes

1. Avoiding mistakes: actually not bad but imprecise solutions: the child avoids giving a precise description of the spatial relation (e. g. instead of 'in front of the table' the child says 'at the table')
2. Mistakes of perspective: from the perspective of the child the answer is incorrect (e. g. instead of 'in front of the table' the child says 'behind the table')
3. Unprovoked mistakes: inadequate descriptions of the position of the dice, however perspective is not involved (e. g. instead of 'under the wardrobe' the child says 'behind the wardrobe')
4. Inaccurate word use: the expressions used are semantically correct but imprecise, in these 'mistakes' perspective is not involved (e. g. instead of 'next to the wardrobe' the child says 'on the side of the wardrobe')

Testing the rate of uncertain answers between the groups we found that six-year-old children make significantly more avoiding mistakes and use avoiding expressions than younger children. ( $\chi^2=6.81$ ,  $p<0.01$ ).

#### DISCUSSION:



We consider our most important finding to be the fact that six-year-old children are significantly more confused by the perspective of the other person than are four-year-old children. This is demonstrated by the fact that six-year-old children make significantly more mistakes when facing the experimenter than when they sit beside him and thus have the same perspective.

It is also demonstrated by the tendency of six-year-old children to avoid giving precise descriptions when there is another perspective in the specific situation. For example, when the appropriate description should have been 'in front of the glass', they tended to give descriptions such as 'by the glass', 'beside the glass', 'outside the glass' etc. These descriptions are made significantly more often by six-year-olds than by four-year-olds.

We called these answers 'avoiding mistakes', because such descriptions would normally be considered correct as far as the meaning of the spatial relationship is concerned. However, they are not completely accurate. There is a difference in the frequency of such 'avoiding mistakes' in the case of objects with an inherent perspective (e.g. a wardrobe) and objects without such inherent perspective (e.g. a glass). In the case of the wardrobe children often rely on the perspective offered by the object itself which is shown by descriptions such as 'on the front side of the wardrobe' or 'on the back side of the wardrobe' (instead of 'in front of' and 'behind', respectively).

Our findings allow us to conclude that six-year-old children already have some knowledge about the existence of the different perspective of the other person. This result reinforces Flavell's concept of Level 2 perspective: six-year-old children arrive to count with possible perspectives (Flavell et al., 1981). According to Karmiloff-Smith (1992), who differentiates between the implicit and the explicit forms of representations, we can conclude, although this knowledge is not yet explicit and rarely appears in their actual performance, the analysis of the children's mistakes shows that the perspective of the other person already plays a role in their definition of spatial positions.

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## Optimal Operators in Hungarian and Some Typology

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### 0 Introduction

This paper essentially investigates some questions of the assembly of simple Hungarian clauses from an Optimality Theoretical perspective and gives a rudimentary analysis of the syntax of the *wh*- (and to some extent focus and quantifier) operators in some other languages. As for Hungarian, the basic problems to be addressed include the syntactic position of quantifiers, focus phrases, *wh*-phrases, negative particles and prefixes, that is, basically the functional structure to the left of the verb but to the right of the topic field. It will be demonstrated that none of the functional categories has a special fixed position in the hierarchical structure, and the proposed account will crucially build on the established hypothesis that the Hungarian clause structure is a reflex of the logical relations in the sentence. Little of what is standardly observed as empirical fact will be challenged, however, importantly, the present proposal sets issues in a different light, yielding a more explanatory account of the data.

After reviewing and pointing out inconsistencies in a standard account of the structure of the simple sentence in Hungarian, we will briefly outline the picture of the OT model, which I believe to be capable of capturing the data better. The proposal laid out below will attempt to explain Hungarian data of the types illustrated in (1–5):

- (1) a. JÁNOS jött el a buliba.  
 J. came pref. the party-to  
 'It's JOHN who came to the party'
- b. \*JÁNOS eljött a buliba.  
 c. \*JÁNOS a buliba jött el.  
 d. PÉTER evett LEVEST a vendéglőben.  
 P. had soup the restaurant-in  
 'It's PETER who had SOUP in the restaurant'
- e. \*PÉTER evett a vendéglőben LEVEST.<sup>1</sup>  
 f. PÉTER olvasott (már) fel...  
 P. read (already) pref.  
 progressive reading:  
 'It's PETER who was reading out...'  
 existential reading:  
 'It's PETER who has already read (sg) out...'
- g. \*PROGR(EXIST) olvasott PÉTER (már) fel a gyűlésen...  
 h. PROGR(EXIST) olvasott Péter (már) fel a gyűlésen...  
 i. \*PROGR(EXIST) fel olvasott (már) Péter a gyűlésen...  
 j. JÁNOS barátkozott össze PÉTERREL, (és nem PÁL TAMÁSSAL.)  
 J. made-friends pref. P.-with and not P. T.-with  
 'It's JOHN who made friends with PETER, (not PAUL with TOM)'  
 (F<sub>1</sub>=F<sub>2</sub>)

<sup>1</sup> The intended interpretation involves two identification focus expressions (vs. information focus), in the sense of E.Kiss (1996).



- (2) a. Ki jött el a buliba?  
 who came pref. the party-to  
 'Who came to the party?'
- b. \*Ki eljött a buliba?
- c. Ki kivel jött el a buliba?  
 who who-with came pref. the party-to  
 ( $wh_1 > wh_2$ )
- d. \*Ki jött kivel el a buliba?<sup>2</sup>  
 ( $wh_1 > wh_2$ )
- e. Ki kinek mit adott ajándékba?  
 who who-to what gave as-a-present  
 ( $wh_1 > wh_2 > wh_3$ )
- f. (Az érdekel, hogy) JÁNOSSAL ki jött el a buliba.  
 (It interests-me that) J. who came pref. the party-to  
 'I wonder who came to the party WITH JOHN.'  
 (intended scope relations:  $F > wh$ )
- g. \*(Az érdekel, hogy) ki jött el a buliba JÁNOSSAL.  
 (intended scope relations:  $F > wh$ )
- h. Ki jött JÁNOSSAL el tegnap a buliba?  
 who came J.-with pref yesterday the party-to
- i. \*Ki jött el tegnap a buliba JÁNOSSAL?  
 (with the intended focus reading and scope relations  $wh > F$ )
- (3) a. Ki jött el a buliba kivel?  
 ( $wh_1 = wh_2$ )
- b. Ki jött el kivel a buliba?  
 ( $wh_1 = wh_2$ )
- (4) a. Többször is mindenkit meghívott.  
 several-times even everybody-ACC pref-invited  
 'He invited everybody several times'
- b. Mindenkit meghívott 'többször is.
- c. Meghívott 'mindenkit 'többször is.
- d. Mindenkit meghívott többször is.
- e. JÁNOS hívott meg mindenkit./JÁNOS hívott mindenkit meg.  
 'It is JOHN who invited everybody'
- (5) a. Nem JÁNOS jött el a buliba.  
 not J. came pref. the party-to  
 (propositional negation)
- b. \*Nem eljött JÁNOS a buliba.
- c. JÁNOS nem jött el a buliba.  
 'It's JOHN who didn't come to the party'
- d. \*JÁNOS nem eljött a buliba.
- e. Nem jött el János a buliba.  
 'John didn't come to the party'

After presenting the alternative proposal, we will extend our analysis to some other languages. The paper concludes with a brief summary of important factors and ideas favouring the OT account.

<sup>2</sup>This string is ungrammatical as an expression of the intended scope relations  $ki > kivel$ . The appropriate answer to this question is a pair of individuals.



## 1 A previous analysis of Hungarian operator structure

### 1.1 The outline of sentence structure

Our starting point will be É.Kiss (1992, 1994), which is a fairly standard account of the structure of the Hungarian clause. The empirical observation of the linear order of constituents in a simple sentence in (6a) is captured through the basic structure in (6b) (É.Kiss (1992: 89)):

- (6) a.  $XP^*_{\text{topic}} XP_{\text{focus}} V XP^*$   
 b.  $[S XP^*_{\text{topic}} [VP XP_{\text{focus}} [V' V XP^*]]]^3$

Under (6b), in case the sentence contains multiple topic construction, the rightmost topic phrase will be sister to VP and daughter of S, while all other topics will be adjoined to S/TP, or, alternatively we could assume multiple branches from the S node. In a neutral sentence, the prefix appears immediately left to the verb (e.g. *János gyakran elment a nagymamához* 'John often went to Granny.'), and only the prefix but not the verb bears stress. This is accounted for by placing the prefix in the [Spec, VP] focus position. Universal quantifiers are supposed to adjoin to VP. Sentence negation element *nem* is adjoined to V', whose internal structure is flat in Hungarian: it immediately dominates all arguments (including the subject) and adjuncts of the verb.

The account built along these lines clearly yields a description of the data, however, it runs into complications at various points. In what follows, I will discuss several problematic issues in brief.

### 1.2 A criticism of É.Kiss (1992, 1994)

In presenting a number of puzzles for this analysis, we will discuss specific matters first, then moving on to some more general remarks. Issues are numbered for the ease of exposition. (i) is related to the treatment of focus and some invisible operators, (ii–iv) to that of universal quantifiers, (v–vi) deal with multiple questions, (vii–ix) with sentence negation, (x–xii) with the prefix, and (xiii) is devoted to more general questions.

(i) Data showing that a focussed constituent does not always immediately precede the domain of the V' (i.e. the verb and its sisters) – cf.  $[_{VP?} PÉTER\ ette\ CSAK\ A\ LEVEST\ meg]$  'It was PETER who ate ONLY THE SOUP.',  $[_{VP?} Ki\ ment\ JÁNOSSAL\ el\ a\ buliba]$  'Who went to the party WITH JOHN?' – and structures demonstrating that the focussed constituent and an invisible operator can cooccur – cf. (1f) – necessitate an extension of assumptions made in the papers.

(ii) However, it is unclear – once we have to allow for multiple focus sites, and given the claim that PROGR and EXIST invisible operators also occupy focus position – why some constructions containing both a focussed phrase and an invisible operator are ungrammatical in some cases, while grammatical in others (cf. (1f–g)). This may involve an unexplored competition between the two kinds of operators with unexplicated outcomes.

(iii) To resort to scrambling in case of stressed universal quantifiers appearing under V' (É.Kiss 1994: 74), which are interpreted as taking wide scope (cf. *János többször is meghívta minden kollégáját* 'John invited every colleague of his several times.'), leaves us without a real explanation of

<sup>3</sup>S is replaced by TP (Tense Phrase) in É.Kiss (1994), but this is irrelevant for our purposes.



the facts. For, the question is laid open why only wide scope universal quantifiers can be scrambled out of their positions, and why only to the domain of V'.

(iv) The analysis of narrow scope quantifiers (cf. *Ki néz meg minden új magyar filmet?* 'Who sees every new Hungarian film?') as being dominated by V' clearly violates the principle demanding that operators precede their scope (É.Kiss 1992: 142). In addition, as admitted, narrow scope quantifiers c-command the *content* of the V' only, instead of c-commanding the V' itself, as would be in accordance with the universal condition of scope interpretation (É.Kiss 1992: 139), which requires that operators c-command their scope. Also, the structure proposed with narrow scope quantifiers remaining in situ does not contain a relevant operator-variable chain (the quantifier binding its trace) necessary for appropriate interpretation. A further problem once again concerns the scopal properties of the in-situ quantifier. Consider sentences like (7a) and (7b) with the following hypothesised structures:

- (7) a. [Többször is [<sub>VP</sub> EL [<sub>V'</sub> ment mindenki]]]  
 'Everybody went several times.'  
 b. \*[A leckét [<sub>VP</sub> EL [<sub>V'</sub> nem [<sub>V'</sub> olvasta János]]]]  
 'John didn't read the homework.'

Now, it is argued (É.Kiss 1994: 45) that the ungrammaticality of (7b) can be attributed to the fact that the negative particle *nem* c-commands the verb *olvasta* but not the verbal prefix *el*, thus only part of the semantic unit of the verb+prefix lies in the scope of *nem*. Should this be correct, the question immediately arises why the same consideration does not apply to (7a). In (7a) the universal quantifier *mindenki* has only the verb but not the prefix in its scope, yet the sentence is grammatical.

(v) Real multiple questions are stipulated to have the following structure (É.Kiss 1994: 40):

- (8) [<sub>VP</sub> [<sub>Spec</sub> Ki] [<sub>V'</sub> vett el] [<sub>Spec</sub> kit]]

However, this structure is problematic for a number of reasons. First, it unmistakably goes against the spirit of X-bar theory, which licenses a *unique* specifier position. In addition, it is left unclear why the 'double specifier' option is not available across all categories, and, at least parametrically, across languages. Thirdly, the question arises why a focussed phrase, or a single wh-expression cannot occupy a right-specifier position. A further admitted complication is illustrated in (9) below:

- (9) Ki vesz el kit a regény végén?  
 'Who marries who at the end of the novel?'  
 (É.Kiss 1994: 40)

If we are to maintain the 'double specifier' view – and it seems we are bound to, given our assumption that wh-phrases bear a focus feature, which has to be in spec-head relation with the verb for a well-definable reason – then we are inevitably forced to complicate our grammar of Hungarian with a rule of Right Dislocation, which otherwise would not be a necessity.

(vi) We have just referred to the fact that so as to explain wh-movement, É.Kiss resorts to associating wh-expressions with a focus feature, which triggers their movement; while in case of the leftmost wh-element she argues (also elsewhere, cf. É.Kiss (1993)) that they are interpreted as universal quantifiers, hence they can be taken to be associated with a quantifier feature. (Just at what level of representation (d-structure, s-structure or LF) they get to be associated with this feature is a



question the answer to which potentially has a number of implications and problems.) It is problematic, however, that given the present assumptions in GB theory, it would seem that Hungarian *wh*-phrases are lexically [+F], while *wh*-expressions in most languages are supposed to be either [-F] or not marked for this feature at all. This is in fact a general approach in GB theory, which I believe to be a loss of explanation, namely that at points the theory resorts to attributing linguistic phenomena to certain lexical, i.e. idiosyncratic, properties. A theory that accounts for these phenomena by more constrained means (than claiming that facts are such because lexical properties in the particular language are such) is clearly more explanatory, and on these grounds preferable.

(vii) It is assumed in É.Kiss (1992: 148–151) that sentence negation element *nem* adjoins to V'. A matter that appears relevant here is in connection with adjunction. It has been observed that it is a generally applying restriction on adjunction that only identical level categories can be adjoined to each other: heads to heads and phrases to phrases. This does not seem to hold in case of X'-s: only phrases (X''-s) can be adjoined to them. Also, importantly, adjunction position to a phrase or to a head are possible landing sites of movements, however no movement can happen to adjunction position to an X'. These are some reasons why many syntacticians tend to avoid applying adjunction to X' categories, and allow adjunction only to heads and phrases. On these grounds the treatment of sentence negation above is highly problematic.

(viii) Under the view that *nem* adjoins to V', a special phonological rule is necessitated to ensure that the verb following *nem* is unstressed (É.Kiss 1992: 150), which again adds to the complexity and specificity of our grammar.

(ix) É.Kiss (1994) eliminates problems in (vii–viii). It is assumed there that instead of adjoining to V', *nem* adjoins to the head V<sub>i</sub> (when it does not have scope over an element in the focus position being adjoined to VP, and when it does not take part in constituent negation being adjoined to a phrase in [Spec,VP]). However, new problems are created here. One concerns the definition of the scope of *nem* when it adjoins to V. For, we are forced to claim that in this configuration ([<sub>VP</sub> [<sub>v</sub> [<sub>v</sub> *nem* [<sub>v</sub> *megy*]]]]) *nem* has scope over the content of V', while *nem* c-commands only V in this structure. The other problem is one of elegance: it is suggested that when [Spec,VP] falls to the left of the scope of *nem*, it is a head-level category, otherwise it is a phrase (being adjoined to phrases).

(x) It is argued in É.Kiss (1992: 127) that prefixes have to move to [Spec,VP] (unless it is occupied by a focussed phrase) for the reason that they are V'-modifiers, and as such have to c-command V'. Now if that is true, it remains to be asked why they cannot adjoin to V' itself and c-command it from that position, like sentence negation particle *nem* does. (This should happen at least when [Spec, VP] is filled by a focus element.)

(xi) In É.Kiss (1994) it is assumed that the prefix moves to [Spec,VP] to fulfil its role as an aspectual operator. However, as argued in É.Kiss (1992: 127), it is at least odd that its aspectual operator function is neutralised in a post-verbal position, in contrast to other operators (like universal quantifiers) which do retain their operator status even post-verbally.

(xii) Importantly, it is left unexplained under either version why it is the focus phrase or the invisible operators that raise to [Spec,VP] when they are in competition with a prefix for that position. A related matter is that it remains obscure why it is impossible to raise both a focus phrase/invisible operator and a prefix at the same time, whereas it is possible to have two focussed phrases/a focussed phrase and an invisible operator, as evidenced by the data (cf. (1d) and (1f)).

(xiii) In general, it is a serious shortcoming of this account, particularly in the light of the proposal below, that it fixes positions for operators (e.g. focus position, quantifier position), and their syntactic



and phonological properties are not fully predicted by general principles, particularly in the case of É.Kiss (1992). This is closely connected to applying specific (versus general) principles to fill the gaps. At the same time, it is highlighted in what ways structure determines meaning, but it is not given sufficient emphasis how in fact intended meaning governs structure building.

Having pointed out shortcomings of this fairly standard account of word order in the Hungarian simple sentence, I will make a few remarks on an alternative analysis of a specific aspect of Hungarian syntax, namely negation phenomena, as proposed by Olsvay (1996). He argues for the following structures (simplified here), which apparently solve the problems with the treatment of negation discussed above, however, they raise other curious questions.

(10) a.

János [<sub>NegP</sub> [<sub>Neg</sub> nem hívta<sub>i</sub>] [ meg t<sub>i</sub> ... Pétert]]

J. not invited *pref.* P.

'John didn't invite Peter'

b.

János [<sub>FP</sub> PÉTERT [<sub>F</sub> [nem hívta<sub>j</sub>]<sub>i</sub>] [<sub>NegP</sub> [<sub>Neg</sub> t<sub>i</sub>] [meg ... t<sub>j</sub> ...]]]

'It is PETER who John didn't invite'

c.

János [<sub>NEGP</sub> [<sub>NEG</sub> nem]] [<sub>FP</sub> A LOGIKÁT

J. not the logic

[<sub>F</sub> [nem érti<sub>j</sub>]<sub>i</sub>] [<sub>NegP</sub> [<sub>Neg</sub> t<sub>i</sub>] [ ... t<sub>j</sub> ...]]]

not understands

'It's not LOGIC that John doesn't understand'

It is striking in this analysis that while the negative particle normally attracts the verb, if it precedes the focus site, it fails to draw the verb to itself; the reason why Olsvay is driven to make a distinction between a verb-attracting and a non-verb-attracting negative element, namely Neg and NEG. However, it seems to me that assigning this behaviour simply to lexical difference is equivalent to stating that our grammar cannot predict this pattern. The proposal to follow hopes to avoid both resorting to lexical idiosyncrasy and entering complications highlighted above.<sup>4</sup>

Let us once again point out the basic conceptual problems which an É.Kiss-style analysis unavoidably faces, and which at the same time indicate the direction of a potential solution. The first question can be formulated like this: how is it possible that some scope-taking elements appear in a different position to their scopal position (cf. wide scope universal quantifiers)? The answer we will adopt here is borrowed from Brody (1995)'s theory of LLF, where the syntactic component is radically simplified. This is a representational theory, similarly to OT, where in a sense former S-structure and LF representations are collapsed into a single level, called LLF (Lexico-Logical Form). What used to be referred to in standard GB theory as covert movement of scope-bearing elements is represented at LLF as a chain of the form (SM, overt element) (in case of a two-membered chain), where the head of the chain is a scope marker (SM). The observed application of movement constraints is a straightforward consequence of the status of this construction as a chain. This treatment yields one resolution of the trivial problem of one element simultaneously having to occupy two different syntactic positions.

<sup>4</sup>It is relevant to note here that another alternative account of negation in Hungarian proposed in Newson (1994) has the serious flaw of assuming structures in which negative quantifiers like *senki* and *semmit* are adjoined in spec of NegP. This would predict that they have identical scope, which is contrary to fact. This is clearly shown by the ungrammaticality of *Semmit senki nem csinált*.



A further significant puzzle for a standard GB analysis is the observation that certain elements can choose from more than one position in the structure, i.e. structural optionality arises. As we have pointed out above, the account given for the surface position of wide scope universal quantifiers is explanatorily inadequate. If we claimed that wide scope universal quantifiers may or may not take their scope at S-structure, we would lose the validity of the general statement that Hungarian surface structure reflects logical relations in the clause. Optimality Theory has a simple way of providing an account of optionality present in linguistic phenomena: it has been proposed in the OT framework (e.g. Pesetsky 1994, Newson 1994) that it is the result of tied conflicting constraints.

Significantly, the Principles and Parameters (P&P) approach utilises purely rigid, that is, non-violable constraints. However, from time to time instances crop up where one – otherwise applying – principle has to be violated so as to ensure conformity to another principle, which in this sense can be considered more prominent. Scope precedence in case of postverbal quantifiers and *wh*-phrases, ‘competition’ between a focussed phrase and a prefix for the preverbal focus position, and verb-attracting/non-attracting negative particle are cases in point. The fundamental idea of OT provides a clear explanation for facts of these kinds; moreover OT claims that virtually all linguistic phenomena springs from such competition. Under OT assumptions, constraints are soft, that is, violable, and ranked with respect to each other.

Lastly, we have seen that fixing positions in the structure for operators in Hungarian does not always work properly. Using the OT framework, I will attempt to construct a theory which in itself predicts the possible and actual structural positions for preverbal elements in the configuration, clearly an attractive perspective.

I have now presented the chief inspirations that are suggestive of the feasibility of an OT account. In the following, I will first briefly sketch the basic theoretical apparatus used by OT, and then I will go on to present an alternative proposal within the theory, which I believe to give a more accurate, and also, in terms of explanation, more adequate account.

## 2 A sketch of OT

Basic concepts of Optimality Theory were laid out by Prince and Smolensky (1993), who formulated the framework as a theory of phonology. However, OT has proven general enough to embrace other grammatical fields, principally syntax. OT as a theory of syntax is in essence in its toddler years, and research has sprung off into several directions; hence we are not able to give a generally accepted version of OT here, we have to confine ourselves to outlining the basic concepts, i.e. the core of the model. Beyond that, we will present a few unsettled questions and some of the suggested solutions.

OT is a linearly ordered modular model. The two main modules are GEN (Generator) and EVAL (Evaluator). The former creates, or rather, associates output structures with a given input. Significantly, there is no word of structure building procedures, in fact such operations are not involved in Optimality Theory. GEN can be likened to a simple function that maps and input onto a potentially infinite set of output structures. Essentially, GEN is unconstrained: an extreme view of generation is taken here. However, it is not unrestricted: there are some very general and universal requirements it must meet.<sup>5</sup> One such requirement that has been proposed is Containment, which roughly demands that no element be literally removed from the input. Even at this point, views differ. Some have proposed ‘faithfulness constraints’ (e.g. Legendre et al. 1995), which force the grammatical output to be as close to the input as possible. Faithfulness constraints may eliminate the need for such a restriction on GEN as Containment. In sum, in OT the grammar compares output

<sup>5</sup>I suggest elsewhere that in fact GEN is defined by the set of universal constraints: only what is limited by some constraint can be ‘freely’ done by GEN. Thus the ambition of OT to avoid a direct definition of GEN is satisfied.



structures to an input, and selects and defines one or more as grammatical. The selection, or evaluation of outputs, or candidate structures is carried out by the EVAL module, which is constituted by a set of constraints. The following is taken from Prince and Smolensky (1993: 2–3):

The basic idea [...] is that Universal Grammar consists largely of a set of constraints on representational well-formedness, out of which individual grammars are constructed. [...] we assert that the constraints operating in a particular language are highly conflicting and make sharply contrary claims about the well-formedness of most representations. [...] It follows that many of the conditions which define a particular grammar are, of necessity, frequently violated in the actual forms of the language. [...] The heart of the proposal is a means for precisely determining which analysis of an input *best satisfies* (or least violates) a set of conflicting well-formedness conditions. [...] The means that a grammar uses to resolve conflicts is to rank constraints in a *strict dominance hierarchy*. Each constraint has absolute priority over all the constraints lower in the hierarchy.

In practical terms, this means that only candidates that violate a constraint the least are passed on for further evaluation, the rest are 'killed off'. This evaluation procedure yields the optimal, i.e. grammatical structure(s).

Let us highlight the main points of the proposal. OT is a purely representational, linearly ordered modular model. Generation of structures is universal and maximally general. Constraints, which are better termed filters, since they act on representations, are violable, often conflicting, and ranked. This concept of a constraint enables the theory to operate solely with strongly universal principles, in contrast with parametrised principles of the P&P approach, which are only weakly universal, owing to the switches that are built in them. Constraints of OT potentially apply in all languages, and language variation is derived by constraint reranking. Thus, acquisition consists of fixing a certain ordering of the constraints of UG.

Views depart on many issues. For instance, particular syntactic implementations of OT differ with respect to the status of the input (although there is a general agreement that unpredicable information such as lexical items, argument relations, scopal properties, etc. must be included) (e.g. numerations, lexical projections (Grimshaw 1993), any syntactic structure (Legendre et al., 1993), an S-structure with copies (Pesetsky 1994), unstructured LFs (Newson 1997)), and also with respect to the nature of the output (e.g. extended projections of a single lexical projection, sharing a single LF (Grimshaw 1993), LLFs (Newson 1994), copy-silencing variants of the same S-structure (Pesetsky 1994)). It is apparent that the model has been adopted to fit certain already existing theoretical frameworks (e.g. GB (Grimshaw (1993, 1997), Pesetsky's SS/LF–PF mapping, LLF (Newson 1994)). However, Newson (1994, 1997) argues that in fact OT should be developed as an independent theory, which is motivated by OT considerations alone. It is also not settled whether OT should be seen as a global theory of syntax (e.g. Grimshaw 1993, 1997, Newson 1994, 1997), or only as a submodule (as in Pesetsky (1994)'s approach), or whether there is only one OT machine or we should adopt a picture of OT where several OT machines are linearly ordered feeding one another in a modular fashion.

The additional issue of constraint ranking must be mentioned here. It is a wide-spread view that not all constraints are ranked with respect to each other. Immediately, in case of conflicting constraints, tied constraints are created, which potentially give rise to optionality. The evaluation of violations of such conflicting tied constraints has basically seen two alternatives. The more accepted way of assessing such a case is as follows (e.g. Pesetsky 1994, 1996, Ackema and Neeleman 1995). The candidates that are optimal when constraint A outranks constraint B and the candidates that are optimal when B outranks A are rated equally, i.e. their union counts as the surviving subset of the candidates. An alternative (which we will pursue below) is proposed by Newson (1994). Under this



version, violations of each of the tied constraints are added up, and this number is taken into account when considering the tied constraints as one unit for the process of evaluation.

Having presented the basic framework and some concepts of OT, we move on to put forward a particular model that is capable of accounting for Hungarian operator structure, and hopefully, for some related phenomena of a few other language types.

### 3 *The proposal*

In this section I will sketch the actual OT machine that I believe to cover the data with a heightened level of explanatory power. After pinning down some crucial hypotheses concerning the OT model proposed here, I will make assumptions about the governing principles of the assembly of the predicate phrase in Hungarian and provide an ordered set of constraints that will constitute our grammar. The operation of the grammar will be illustrated by a number of examples.

#### 3.1 *The components of the model and some basic principles*

Let us begin with the nature of the input to be fed into GEN. In accordance with what has been pointed out above, crucially for our purposes, we will take the input to include information about scope relations in the sentence, besides other specifications. This accords with the intuition that the structure of the sentence is determined by its intended meaning. Arguably, the input must contain information whether it aims at a question interpretation or not: those inputs containing at least one *wh*-expression that are specified as questions will end up as proper questions, while those that are marked as non-questions will become echo-questions. As I assume that candidates in the same competition set by definition must be instances of combinations of the input material, and also, significantly, must aim a single interpretation, scope relations (among others) are necessarily identical in all candidates. (This is in accord with ideas in Grimshaw 1993, 1997, and Ackema and Neeleman 1995.) This can be attributed to the universal principle of Recoverability, which roughly demands that semantic content and relations in the input should be recoverable from the output, in neutral terms.<sup>6</sup> I believe universal inviolable principles to have a status in the OT model, though clearly not inside the evaluation, and evidently under restrictions, as I suggest elsewhere (Suranyi 1997). Recoverability may be a governing principle of GEN, or alternatively, it may stand outside the OT system altogether. Since, independently, interpretive principles assign every operator a scope corresponding to its *c*-command domain (the scope interpretation principle), no constraint needs to be included in the evaluation module that would require operators to *c*-command their scope. Moreover, this is desirable given that this regularity seems to hold across languages and is not subject to variation, thus appearing to be inviolable indeed.

Yet, scope precedence is an issue to be raised here, as it may not be a universal property of languages. Nevertheless, it can be argued that whether an operator has to linearly *precede* its scope is closely tied up with other feature(s) of the particular language: e.g. the setting of the parameter that determines whether specifiers precede or follow *X*-singe-bar categories. An alternative view also seems viable: specifiers are universally left-peripheral in a projection. Kayne's (1994) theory, under which only [XP Spec [X' X YP]] structures are permitted and all movement is leftward, is apparently related here. Adopting either of the latter two views would come close to entailing that operators

<sup>6</sup>It is to be noted here that Recoverability rules out movement into the head of, or adjunction to a selected phrase, which would render the semantic relation of selection unrecoverable from the structure. These kinds of configurations are prohibited by the Projection Principle in standard GB theory (cf. e.g. Rizzi & Roberts (1989)).



precede their scope universally. Yet, whether or not these ideas are correct, obligatory scope-precedence is established by (alignment) principles outside our restricted OT model.

Two short notes on *wh*-structures, before we move on to characterise GEN. In the model to be presented we will assume Watanabe (1992) style absorption available in case of real multiple questions. In short, this means that in-situ *wh*-phrases are parasitic in view of scope-taking on another operator in scope position. Adopting Brody (1995)'s analysis, we will allow for one SM to bind two in-situ elements, which is a variant of absorption. Accordingly, at least it is an option for in-situ *wh*-phrases to take their scope via absorption. In practical terms, we will assume that a case of 'absorption' in fact arises when an index is inserted into the structure to be associated with the operator in scope position, which index is of course identical with the index of the in-situ *wh*-phrase. This is in accord with Recoverability and will be restricted by the constraint \*Ins.

It is argued in É.Kiss (1992, 1994) that Hungarian *wh*-elements bear a focus feature. Now it would be inadequate to maintain that there is a lexical difference between languages in the feature composition of *wh*-expressions, saying that in some languages they bear a [+F] feature, but in others they do not. Therefore, if we are to adopt É.Kiss's treatment, then we are led to extend her analysis to all languages, claiming that *wh*-elements universally bear a [+F] feature – a feature that marks their identifying semantic function – besides [+Q]/[+WH].

The operation of the GEN module is assumed to conform to X-bar theory, so GEN generates X-bar structures from the input (Grimshaw 1993, 1997). The more narrow assumption will be that the candidate set contains LLF structures. What is relevant for our purposes is that these structures can contain SMs, which are assumed to be inserted by GEN into structures. This follows from the idea that contentless functional elements are not part of the input, the input contains only semantically substantive material. Nothing more needs to be said about GEN at this point. We need to elaborate on the issue of the insertion of SMs, however. I assume with Chomsky (1993: 91) that the semantic interpretational component can only interpret uniform chains. Chain links have to be uniform with respect to the syntactic features associated with them, among others. As for SMs, then, if GEN inserts an SM to mark the scope of a *wh*-element or a focussed phrase (which latter bear a [+Q] and an [+F] feature, respectively, with which, if they raise overtly, they have to mark a head to satisfy MI, a constraint to be introduced below), but at the same time GEN does not insert [+Q][+F]/[+F] features along with them, then we will get non-uniform chains, which are uninterpretable. Thus, we will consider only such SM-insertions where GEN also inserts the appropriate feature(s) along with the SM.<sup>7</sup> These assumptions naturally entail that SMs with the relevant features are capable of marking a head, and thus to satisfy MI.

The bank of constraints to be posited will select the optimal candidate(s), as usual. There is one remark to be made about the treatment of tied constraints. Here we will adopt the approach in Newson (1994), where the violations on each of the tied constraints are added up, and then this number is considered when arriving at the tied constraints in the evaluation procedure.

<sup>7</sup>The fact that echo-questions are a possibility seems to support the view that *wh*-elements may or may not be associated with a [+Q] feature. The same is evidently true in case of the feature [+F]. The assumption that GEN can only insert these features separately builds on the hypothesis that GEN can only perform operations that affect the input (so it cannot build structure independently of the input, i.e. it cannot pre-form the complex of a *wh*-element and the [+Q] feature before inserting it into the structure). This hypothesis is grounded on the consideration that GEN is essentially unconstrained in itself, and language can only 'constrain' its application through output filters. Now, operations not affecting the input are *invisible for the grammar* (as they are by definition inaccessible for any output filter), and thus are not linguistically allowed.



### 3.2 Principles of the evaluation

Let us now envisage our grammar proper, that is, the evaluation procedure. Ackema and Neeleman (1995) argue extensively that grammar presses questions to be syntactically marked as such. (The idea is remotely related to Rizzi's (1991) *Wh*-Criterion, and also to the Clausal Typing Hypothesis of Cheng (1991).) This means in particular terms, building on the more general ability of heads to mark properties of their complements (e.g. theta- and Case-marking), that a head should overtly mark the sentence (under Ackema and Neeleman's analysis: the VP) as a question. This can be observed in (11):

- (11) John wonders [if [you like him]]  
+Q

The head that does the marking can inherit its [+Q] feature in a spec-head relation with an element marked as [+Q]. Actually, the auxiliary in (12) raises precisely to inherit this feature from the *wh*-expression and thus to be able to mark the sentence as a question.

- (12) [What<sub>i</sub> have<sub>i</sub> [you t<sub>i</sub> seen t<sub>j</sub>]]  
+Q +Q

We will modify the outlined view to come close to an earlier formulation, namely that it is not its complement that the head in the complementiser position marks as a question, but rather it is the whole clause which the C heads. Importantly, as it is clauses (or in Hungarian, predicate phrases) that can be questions, it is the highest head contained in them that has to be marked as [+Q].

Now, in the same vein, I claim that besides questions, clauses containing focus also need to be marked as such at some structural position. A significant difference between question-marking and focus-marking is that it is the whole predicate phrase in Hungarian that has to be marked as a question if marked appropriately (as we have just mentioned), while a predicate does not necessarily have to be marked for focus at the hierarchically highest head, since the part of the clause where focus interpretation figures starts with the actual scope of the (highest) focus operator, which is then the left edge of the domain to be marked with [+F]. To capture these general ideas of marking syntactically question or focus interpretation, I am proposing a constraint which says 'Mark Interpretation' (MI). A [+Q] or [+F] interpretation is syntactically marked if a head element bears the [+Q]/[+F] feature at the left edge of the scope of the relevant operator. Note that this is a purely syntactic constraint and does not directly affect the actual interpretation of sentences.

Let us turn to invisible operators *PROGR* and *EXIST*. In É.Kiss (1992: 125–6) and in É.Kiss (1994: 49–50) it is assumed that they both occupy focus position, but it is left unexplained why they should do so. I suggest the simple and plausible answer that they must occupy [Spec, V]<sup>8</sup> because of the fact that they are verbal operators: accordingly I posit a constraint which demands that verbal operators should be in spec-head relation with an overt verb. (This principle will be denoted *Vop*). Importantly, it does not seem reasonable to claim that they bear a [+F] feature, which requires that they should appear in [Spec, V], since there is no element of identification in their semantics.

I will take a view close to the one developed in É.Kiss (1992), where it is argued that verbal prefixes, and indeed VMs, raise to [Spec, V] due to their status as verbal modifiers. I suggested in (x) above that this consideration is problematic if we allow adjunction to X' level categories, as is done

<sup>8</sup>I am using the expression [Spec, V] here and elsewhere in the paper to mean 'specifier of a verbal element (be it head or non-head position of a verbal chain)'. In contrast, [Spec, VP] denotes 'specifier of VP', as is standard.



in É.Kiss (1992). However, here we will exclude that option due to considerations mentioned above (cf. (vii)), thus we are free to claim that VMs are in fact V'-modifiers.<sup>9</sup> If this view is correct, we can adopt the argument from É.Kiss (1992: 127) that such V'-modifiers need to c-command V'. Given that VMs then cannot be adjoined to V', and must only c-command V' but nothing more (as this is a local relation), the only appropriate position is [Spec,VP]. Accordingly, we propose the constraint Mod, which states that modifiers should c-command the (overt) category they modify. (This will be trivial with phrases that modify a head.) Naturally, this constraint may be violated under the right set of circumstances (to fall out of the constraint-ranking below) as we can observe in (1a), (2), (3) and (5) above.<sup>10</sup>

The spirit of OT demands that an operation is carried out if and only if it serves to satisfy a principle which is more highly ranked than the one that would block the application of that operation. (This is akin to the view taken in minimalism (cf. Chomsky (1993, 1995), where interface conditions (in particular FI) are 'stronger' than economy conditions.<sup>11</sup>) Now, movement, or chain formation is precisely a case in point. One type of chain involves copies of the same element. Thus, to ensure that such chains are not generated freely, only if necessary, we will posit a constraint 'No Copies' (\*Copy), which works to minimise the number of copies in a structure.<sup>12</sup> Another class of LLF chains are usually created by a scope-taking element and an SM. SMs are inserted by GEN, as we have said above, as all semantically contentless functional elements of the structure, even the X-bar theoretic structure itself. Accordingly, we will posit the general constraint 'No Inserted Material' (\*Ins) to restrict insertion by GEN. (A similar constraint is applied in Newson (1994).) Of course, as OT is a representational theory, in which EVAL sees the output of GEN only, we will make the plausible assumption that inserted material is marked as such by GEN.

Let us now focus on negation phenomena in Hungarian. It appears a valid and broad generalisation that negative elements also need licensing. For instance negative universal quantifiers such as *senki*, *soha* cannot stand without a negative particle *nem*, unless the semantically contentless head *sem* serves this purpose. I propose some (schematic) structural analyses of constructions below:

- (13) a. [<sub>NegP</sub> *senki nem jön el* ]  
           nobody not comes *pref*
- b. [<sub>NegP</sub> *soha sem jön* [<sub>NegP</sub> *senki sem el* ] ]  
           never not comes   nobody not *pref*
- c. [<sub>XP</sub> *senki sem* [<sub>YP</sub> *soha sem* [<sub>NegP</sub> *nem jön el* ] ] ]  
           nobody not   never not       not comes *pref*
- d. [*kevesen jöttek el* ]  
           few(people) came *pref*

<sup>9</sup>É.Kiss (1992: 127) advances, among others, the following simple contrasts: *vágta a fát* ('he was cutting the tree')/ *kivágta a fát* ('he cut down the tree')/ *felvágta a fát* ('he cut up the tree'). The tree (which is a complement of the verb, dominated by V') is affected in these examples to varying degrees and in different manners, which is indicative of the fact that the VM (the prefix) modifies the whole of the V'.

<sup>10</sup>Competition of a modifier for a c-commanding specifier position is observable in English as well. Consider nominal phrases like *John's friends*, *the friends of John's that I know* and *\*friends of John's*. Clearly, the possessor is driven away from the pre-nominal specifier position, because something else has priority over it.

<sup>11</sup>The only exception in Chomsky (1993) is Shortest Move, which is stipulated to be an inviolable principle which is even more prominent than FI at the interface (i.e. if a derivation converges but violates Shortest Move, it is deemed ungrammatical). This is actually a problem for Chomsky (1993), since in its essence Shortest Move does not seem to be an economy condition at all. The solution in Chomsky (1995) is to incorporate Shortest Move into the definition of Attract.

<sup>12</sup>In the evaluation, for sake of simplicity, we will only count 'excess' copies.



In all these examples, there is a head (*sem*, *nem*, V) that licenses a local negative element. However, *nem* itself is a negative element, and as such needs to be licensed by a head. Now, adopting an Olsvay-style analysis of negation, we may claim that in the case of *nem*, it is the verb that acts as a local licenser by moving up to adjoin to the negative particle. We will assume with Ouhalla (1990) that universally the specifier of the NegP houses negative operators which mark the scope of the NegP. In Hungarian there is an empty negative operator in [Spec, NegP], and it is in fact GEN that inserts *nem* partly to license it, partly to satisfy MI, and significantly to produce an output from which the input negation is overtly recoverable. We define negative licensing as follows: a negative element is licensed by a head that is in Head–Spec or Head–Adjunction-to-Head relation with it. (This is in line with, though not identical with, minimalist assumptions.) We will call the constraint of grammar which forces negative elements to be licensed by a local head LicNg.

A further principle to be introduced is MEQ, which stands for ‘Mark the edge of a question overtly.’ Either an overt head with a [+Q] feature may serve this purpose (of course in case there is no material belonging to the question between this head and the edge), or a *wh*-expression which is again associated with a [+Q]. To illustrate the apparent difference between MI and MEQ, consider the case when a *wh*-expression is located at the left edge of the question but is not accompanied by a head marked with [+Q]: MEQ is satisfied but MI is not.

The last constraint to be introduced governs specifiers. Specifier positions in X-bar theory are crucially unique positions in the structure. We will need a principle akin to Newson (1994)’s Unispec, from whom we borrow the name, which militates against non-unique specifiers, i.e. against adjunction in specifier position.

### 3.3 Constraints at work

Having outlined some basic considerations and introduced the principles, the following constraint-ranking is proposed for Hungarian:

(14) UniSp > MI > LicNg > Vop > Mod > \*Copy, \*Ins, MEQ

Significantly, \*Ins and \*Copy are not ranked with respect to each other, which is equivalent to equal ranking. In what follows I will present the actual OT analysis of data in (1–5), which will fall out from the assumption of this set of constraints and the ordering in (14). MEQ does not play any overt role in Hungarian (which is of course by no means to say it is inactive), so we will simply ignore it in the evaluation tables below.

Let us start out with focus phenomena in (1). Taking the case of one focussed phrase a suitable input would schematically go along the lines of (15) below. The competition set and the relevant part of the evaluation is given in (16).

(15) { János, jött, el, a buliba }  
 [+F]  
 John, came, *pref*, the party-to



(16)

{ János, jött, el, a buliba }

[+F]

	Uni Sp	MI	Lic Ng	Vop	Mod	*Ins	*Copy
a.[VP [V' jött el a buliba JÁNOS]]							
b.[VP el [V' jött a buliba JÁNOS]]							
c.[VP a buliba [V' jött el JÁNOS ]]							
d.[VP JÁNOS [V' jött el a buliba]]					*		*
e.[VP JÁNOS [VP a buliba [V' jött el]]]		*!			*		
f.[VP JÁNOS [VP el [V' jött a buliba ]]]		*!					
g.[XP JÁNOS jött; [VP el [V' t; a buliba]]]					*		***!
h.[XP el jött; [VP JÁNOS [V' t; a buliba]]]		*!					
i.[VP SM [V' jött el a buliba JÁNOS]]					*	**!	

Structures a, b and c are in fact not part of the competition set, as pointed out in section 3.1 (cf. the scope interpretational principle): they do not aim at the interpretation encoded in the input, because the focus phrase does not occupy its scopal position – they are included here for sake of presentation. The consideration discussed above, that MI demands that at the appropriate point the predicate phrase should be marked as [+F] on an overt head, enforces that the verbal head should be in spec-head relation with the focussed phrase. This is violated in some of those instances where *János* does in fact take its scope (e, f, h). The three candidates still alive after passing MI are d, g and i. In none of them does the prefix c-command the overt V' (in g the verb has moved out of the V'), which is in violation of constraint Mod. Here we can see how we are able to capture the outcome of the competition between the focussed phrase and the prefix for a [Spec, V] position: Mod is ranked lower than MI. So, they all equally pass Mod and it is \*Ins and \*Copy that decide the case, since g involves two more copy chains than d, and i violates \*Ins twice (an SM and an accompanying [+Q] feature is inserted). It is d that comes out as the winner.

Let us examine sentences involving more than just one focussed phrase: ones that contain a focus and either a further focussed phrase or an invisible operator. We will begin with the first case. The input is given in the first row of the table. I will not consider candidates that I have shown to be clearly suboptimal above.

(17)<sup>13</sup>

{ Péter, evett, levest, a vendéglőben, P. &gt; levest }

[+F] [+F]

	Uni Sp	MI	Lic Ng	Vop	Mod	*Ins	*Copy
a. [VP PÉTER [VP LEVEST evett a vendéglőben]]		*!					
b. [XP PÉTER evett; [VP LEVEST t; a vendéglőben]]							***
c. [XP PÉTER evett <sub>k</sub> [VP SM <sub>i</sub> t <sub>k</sub> a vendéglőben LEVEST <sub>i</sub> ]]						**!	**
d. [VP SM <sub>i</sub> [VP LEVEST evett a vendéglőben PÉTER <sub>i</sub> ]]		*!					
e. [VP PÉTER [VP SM evett a vendéglőben LEVEST]]		*!					
f. [VP SM [SM evett a vendéglőben PÉTER LEVEST]]		*!					
g. [VP SM evett [VP LEVEST t a vendéglőben PÉTER]]						**!	**
h. [VP SM evett [VP SM t a vendéglőben PÉTER LEVEST]]						****!	*

<sup>13</sup>XP in the structures stands for a functional projection in which the syntactically required relations can be realised (e.g. spec-head agreement, marking for interpretation) - in some cases it could be identical with the FP (focus phrase) proposed in the literature (Brody 1990, E.Kiss 1997).



We can see that at MI a, d, e and f get killed off, because the widest scope focussed phrase fails to satisfy MI by marking the verb. As b, c, g and h all conform to MI, given that the predicate is marked with [+F] at the left-edge of the scope of the higher focus, they are all passed on for further evaluation. Sentences c, g and h offend \*Ins and \*Copy more than b. The sole survivor is b, thus, grammaticality judgements are once again predicted.

Let us proceed with the case of identical scope focus phrases (cf. (11h)). The table below provides the evaluation of relevant candidates:

(18)

{ Péter, barátkozott, meg, Jánossal, Péter=Jánossal }  
[+F] [+F]

	Uni Sp	MI	Lic Ng	Vop	Mod	*Ins	*Copy
a. [VP SM SM [VP meg barátkozott Péter Jánossal]]		**!					
b. [VP Péter SM [VP meg barátkozott Jánossal]]		**!					
c. [VP Péter Jánossal [VP meg barátkozott]]		**!					
d. [VP SM SM [V' barátkozott meg Péter Jánossal]]	*!				*	**** **	
e. [VP Péter SM [V' barátkozott meg Jánossal]]	*!				*	***	**
f. [VP Péter Jánossal [V' barátkozott meg]]	*!				*		**
g. [VP Péter <sub>x</sub> [V' barátkozott meg Jánossal <sub>x</sub> ]]					*	*	*
h. [VP SM <sub>x</sub> [V' barátkozott meg Péter Jánossal <sub>x</sub> ]]					*	***!	

Candidates a to c do not conform to MI, d, e and f go against UniSp. Out of the remaining two structures, h involves the insertion of an SM and an additional [+F] feature, and the insertion of the index of the in-situ focus phrase to be associated with the SM in scope position, while sentence g only involves one violation of \*Copy (the copy of *Péter*) and one violation of \*Ins (an index identical with that of *Jánossal* is associated with *Péter*), thus is assigned grammaticality.

In the following example the input will contain a focus and a verbal operator PROGR. (The same mechanisms would work in case of EXIST, which therefore is not dealt with separately.) We will not discuss sentences where the scope of the focussed phrase is marked via an SM, since they are shown to be suboptimal above (cf. (16) and (17)). So, there are basically five candidates to be considered; one in which the focussed phrase is overtly in a spec-head relation with the verb and PROGR is adjoined to VP (a), one in which it is the PROGR operator that is in [Spec, V], as required by Vop (b), a third one, in which there is an additional projection above the VP, where PROGR is in overt spec-head relation with the verb (c), another one, in which the order of the operators is reversed (d) and yet another one, in which, with the same order of operators, the focussed phrase is adjoined to VP (e).

(19)

{ Péter, olvasott, fel, a gyűlésen, PROGR }  
[+F]

	Uni Sp	MI	Lic Ng	Vop	Mod	*Ins	*Copy
a. [VP PROGR [VP PÉTER olvasott fel a gyűlésen]]				*	*		*
b. [VP PROGR [V' olvasott PÉTER fel a gyűlésen]]		*!			*		
c. [XP PROGR olvasott <sub>i</sub> [VP PÉTER t <sub>i</sub> fel a gyűlésen]]		*!			*		
d. [XP PÉTER olvasott <sub>i</sub> [VP PROGR fel a gyűlésen]]				*	*		**!
e. [VP PÉTER [VP PROGR olvasott fel a gyűlésen]]		*!			*		*



The invisible operator is 'base-generated' in its current location in all the sentences. In b, c and e Péter is not marking the verb of the predicate phrase with a focus feature, thus they are non-optimal. Sentences a and d both violate Vop so as to satisfy MI, which is clearly in conflict with Vop here. However, d contains one chain more than a, which comes out as the winner, as a result.<sup>14</sup> In case the input contains only an invisible operator (and no focus), Vop will ensure that it should occupy [Spec, VP] (cf. (1h)).

It is fairly obvious how the system predicts grammaticality of (1h,i), that is, when the neutral sentence contains an invisible operator and a prefix. This will be shown below:

(20)

{ Péter, olvasott, fel, a gyűlésen, PROGR }

	Uni Sp	MI	Lic Ng	Vop	Mod	*Ins	*Copy
a. [VP PROGR [V' olvasott fel Péter a gyűlésen]]					*		
b. [VP PROGR [VP fel [V' olvasott Péter a gyűlésen]]]				*!			*
c. [XP PROGR olvasott <sub>i</sub> [VP [V' fel t <sub>i</sub> Péter a gyűlésen]]]					*		**!
d. [VP PROGR [VP fel [V' olvasott Péter a gyűlésen]]]				*!			*

The winner, as is apparent, turns out to be sentence a, as it only goes against Mod.

Let us proceed with an examination of questions. It is to be noted that in case of clauses with a single wh-word the same considerations will predict the grammatical structure as in case of sentences with one focussed phrase (i.e. MI triggers overt wh-raising to [Spec,VP]) (cf. (2a,b) and (16d,f)). Multiple wh-movement involves more exciting phenomena. I provide an account in (21) below. Note that the candidates and the optimality results are similar in case of more than two wh-expressions.

(21)

{ jött, el, ki, kivel, a buliba, ki &gt; kivel, [ques] }

	Uni Sp	MI	Lic Ng	Vop	Mod	*Ins	*Copy
a. [VP SM [VP SM [VP el jött ki kivel a buliba]]]		**!				****	*
b. [VP ki [VP SM [VP el jött kivel a buliba]]]		**!				***	**
c. [VP ki [VP kivel [VP el jött a buliba]]]		**!					***
d. [VP ki [VP SM jött el kivel a buliba]]]		*			*	***!	*
e. [VP ki [VP kivel jött el a buliba]]]		*			*		**
f. [VP SM [VP kivel jött ki el a buliba]]]		*			*	***!	*
g. [XP ki jött <sub>i</sub> [VP kivel t <sub>i</sub> el a buliba]]]		*			*		***!
h. [XP ki jött <sub>i</sub> [VP SM t <sub>i</sub> kivel el a buliba]]]		*			*	***!	**

In a, b and c the prefix in [Spec, V] prevents the wh-phrases to mark (via spec-head agreement with the verb) the predicate both as a question and the appropriate domain as [+F]. In d through h it is a

<sup>14</sup>If we assume that invisible operators such as PROGR bear scope, then sentence d may not be regarded as a possible candidate given that the c-command relations of the two operators is reversed, which may be argued to result in dissimilar interpretations. Alternatively, if we are not to believe the scope relations of operators in a through c to reflect the intended meaning of the sentence, then it is clear that structures a to c do not even enter the competition, not aiming at the relevant interpretation. In this case, presumably, sentence d would be the optimal contestor. Note, however, that Table 18 does yield the right result in case we do not take PROGR to be a scope-bearing element, i.e. if we take the (relevant part of the) competitors to be (18a-e).



SM or a wh-expression that carries out marking [+Q], however proper [+F] marking is not successful, in violation of MI. Sentence e violates \*Ins and \*Copy only twice, as opposed to the rest of alive candidates, which now fall out of competition. This is because an insertion of an SM entails an insertion of a [+Q] and a [+F] feature. The sole survivor is e, in accordance with facts.

Let us turn now to real multiple questions, where the scopes of the wh-phrases are identical. The illustration will involve two wh-expressions, but apparently, the same mechanisms would be at work in case of more such elements.

(22)

{ jött, el, ki, kivel, a buliba, ki = kivel, [ques] }

	Uni Sp	MI	Lic Ng	Vop	Mod	*Ins	*Copy
a. [VP SM SM [VP el jött ki kivel a buliba]]		**!					
b. [VP ki SM [VP el jött kivel a buliba]]		**!					
c. [VP ki kivel [VP el jött a buliba]]		**!					
d. [VP SM SM [V' jött el ki kivel a buliba]]	*!				*	**** **	
e. [VP ki SM [V' jött el kivel a buliba]]	*!				*	***	**
f. [VP ki kivel [V' jött el a buliba]]	*!				*		**
g. [VP ki <sub>x</sub> [V' jött el kivel <sub>x</sub> a buliba]]					*	*	*
h. [VP SM <sub>x</sub> [V' jött el ki kivel <sub>x</sub> a buliba]]					*	**** !	

The evaluation resembles that in (18). Sentences d to f violate Unispec, while candidates a through c fail to mark the predicate both as a question and with a [+F] feature. Out of the survivors, the structure involving an SM and accompanying feature insertion is suboptimal. (Coindexation in g and h denotes wh-absorption of the in-situ wh-phrase *kivel*, whose index is inserted to be associated with the SM binding *ki*.) The optimal structure is g, as the system correctly predicts.

Let us examine sentences containing both a wh-element and a focussed phrase. Table (23) illustrates the case:

(23)

{ jött, el, ki, Péterrel, a buliba, ki > Péterrel, [ques] }  
[+F]

	Uni Sp	MI	Lic Ng	Vop	Mod	*Ins	*Copy
a. [VP SM [VP SM [VP el jött ki Péterrel a buliba]]]		*** !				**** *	*
b. [VP ki [VP SM [VP el jött Péterrel a buliba]]]		*** !				**	**
c. [VP ki [VP Péterrel [VP el jött a buliba]]]		*** !					***
d. [VP ki [VP SM jött el Péterrel a buliba]]]		**!			*	**	*
e. [VP ki [VP Péterrel jött el a buliba]]]		**!			*		**
f. [VP SM [VP Péterrel jött ki el a buliba]]]		**!			*	***	*
g. [XP ki jött <sub>i</sub> [VP Péterrel t <sub>i</sub> el a buliba]]]		*			*		***
h. [XP ki jött <sub>i</sub> [VP SM t <sub>i</sub> Péterrel el a buliba]]]		*			*	**!	**



Candidates a to c cannot perform any feature marking, as it is the prefix that occupies the [Spec,V] position. In d, e and f the wh-expression cannot mark a head with its [+Q] and [+F] features, entailing a double violation of MI. Out of the two remaining candidates h involves more violations at the constraint pair \*Ins-\*Copy, thus the winner is g, in accordance with the data.

Now let us take the opposite scope relations, when the focussed constituent has scope over the wh-element.

(24)

{ jött, el, János, kivel, a buliba, János > kivel, [ques] }  
[+F]

	Uni Sp	MI	Lic Ng	Vop	Mod	*Ins	*Copy
a. [VP SM [VP SM [VP el jött János kivel a buliba]]]		*** !				**** *	*
b. [VP János [VP SM [VP el jött kivel a buliba]]]		*** !				***	**
c. [VP János [VP kivel [VP el jött a buliba]]]		*** !					***
d. [VP János [VP SM jött el kivel a buliba]]]		*			*	***!	*
e. [VP János [VP kivel jött el a buliba]]]		*			*		**
f. [VP SM [VP kivel jött János el a buliba]]]		*			*	**!	*
g. [XP János jött <sub>i</sub> [VP kivel t <sub>i</sub> el a buliba]]]		**!			*		***
h. [XP János jött <sub>i</sub> [VP SM t <sub>i</sub> kivel el a buliba]]]		**!			*	***	**

Candidates a through c again do not conform to MI at all. In g and h MI is violated twice, since the wh-expression cannot mark the clause [+Q] and [+F]. Sentence d involves the insertion of an SM and the accompanying [+Q] and [+F] features, which renders it suboptimal, while f presupposes the insertion of an SM with the feature [+F]. \*Ins and \*Copy favour e, which is correctly predicted to be the grammatical output.

The next problem is that of universal quantifiers. Let us begin with wide scope universal quantifiers. I will illustrate the case with examples of the syntactic position of two quantifiers only, but the predictions naturally extend to sentences containing any number of universally quantified expressions. (Here I take pro to be part of the input for sake of simplicity, however I suggest (Suranyi 1997) that the appearance of pro falls out from the ranking of constraints relevant for Binding Theory.)



(25)

{ meg, hívott, mindenkit, többször is, pro,  
többször is > mindenkit }

	Uni Sp	MI	Lic Ng	Vop	Mod	*Ins	*Copy
a. [VP meg hívott pro mindenkit többször is]							
b. [VP SM [VP mindenkit [VP meg hívott pro többször is]]]						*	**
c. [VP SM [VP SM [VP meg hívott pro mindenkit többször is]]]						**	*
d. [VP többször is [VP mindenkit [VP meg hívott pro ]]]							***
e. [VP többször is [VP mindenkit hívott meg pro ]]					*!		**
f. [VP többször is [VP SM hívott meg pro mindenkit]]]					*!	*	*
g. [VP SM [VP mindenkit hívott meg pro többször is]]]					*!	*	*
h. [VP SM [VP SM hívott meg pro mindenkit többször is]]]					*!	**	
i. [XP meg hívott <sub>i</sub> [VP többször is [VP mindenkit [VP t <sub>i</sub> pro]]]							****!

(25a) is again included here for sake of exposition: it is not a member of the competition set, as none of the quantifiers properly take their scope – they do not c-command the VP, but they do c-command each other. Sentences e, f, g and h do faithfully reflect scope relations defined in the input, but they violate Mod, as the prefix does not c-command V'. In i, provided we accept it as representing the scope relations appropriately, there is an excess of copy chains, the cause of its non-optimality. (i has other variants in which one or both of the quantifiers take their scope via an SM, but for similar reasons as observed in case of i, they are predicted to be suboptimal as well.) Now, there are three candidates, b, c and d, which do equally well on the bank of constraints, which means they should be optionally grammatical realisations of the input. The competition has yielded the right results again.<sup>15</sup>

Let us proceed with narrow scope universal quantifiers. Note that *mindenkit* in the previous illustration has narrow scope in relation to *többször is*, hence its possible positions are derived above in a sentence containing two quantifiers of the relevant kind. Below we will exhibit the case of clauses with a narrow scope quantifier and a focussed expression.

(26)

{ meg, hívott, mindenkit, János, János > mindenkit }  
[+F]

	Uni Sp	MI	Lic Ng	Vop	Mod	*Ins	*Copy
a. [VP JÁNOS hívott meg mindenkit]							
b. [XP JÁNOS hívott <sub>i</sub> [VP mindenkit [VP t <sub>i</sub> meg]]]					*		***
c. [XP JÁNOS hívott <sub>i</sub> [VP SM [VP t <sub>i</sub> meg mindenkit]]]					*	*	**
d. [XP JÁNOS hívott <sub>i</sub> [VP SM [V' t <sub>i</sub> meg mindenkit]]]					*	*	**
e. [XP JÁNOS hívott <sub>i</sub> [VP mindenkit [V' t <sub>i</sub> meg]]]					*		***
f. [XP JÁNOS hívott <sub>i</sub> [VP SM [VP meg [V' t <sub>i</sub> mindenkit]]]]]					*	*	****!
g. [XP JÁNOS hívott <sub>i</sub> [VP mindenkit [VP meg [V' t <sub>i</sub> ]]]]					*		****!

Structure a is out of the competition, since the quantifier does not take its scope. Sentences f and g contain an offending chain: that of the prefix, which is not in specifier of the overt V. The rest of the candidates are equally optimal, hence all grammatical. There seem to be two options at this point. On

<sup>15</sup> Naturally, all in-situ quantifiers are meant here as bearing heavy stress.



the one hand, it appears questionable to suppose that given that d and e are grammatical, language would permit structures like b and c - containing an extra layer above the minimal VP. Recall that in fact we can exclude b and c from the set of optimal structures on the assumption that the generation of excess structure is constrained precisely by \*Ins, in this case minimising insertion of structure. Then the only grammatical candidates would be d and e. On the other hand, we may suggest that out of the four sentences predicted to be optimal, d and e do not have the aimed interpretation: the universal quantifier appears in [Spec,  $t_V$ ], which position may be claimed to enforce focus interpretation, which *mindenki* above may not have. However, remember that we assigned a similar position to prefixes in neutral sentences and also to invisible operators. Now it is to be decided to what extent focus interpretation figures in the latter cases. The solution advanced in É.Kiss (1994: 44) is based on the idea that a phrase in [Spec, V] with a focus feature expresses identification with exclusion only if it denotes an entity, hence e.g. prefixes in [Spec, VP] do not receive a focus interpretation. This argument would be applicable to d and e above, as well. In any event, if we believe that d and e do not have the proper interpretation, then on this very ground we have to exclude them from the competition set - just like we excluded (26a). In this case, b and c would win out, even if containing an extra VP layer, and thus violating \*Ins to a greater degree.

Finally, we direct our attention to basic (non-constituent) negation patterns in Hungarian. I will adopt the analysis developed in Olsvay (1996), but the optimality treatment proposed here will successfully overcome problems with that account mentioned above. The first illustration contains a focussed phrase whose scope is narrower than that of negation.

(27)

{ János, jött, el, a buliba, Op, Op > JÁNOS }  
[+F]

	Uni Sp	MI	Lic Ng	Vop	Mod	*Ins	*Copy
a. [NegP Op nem [VP SM jött el JÁNOS a buliba]]			*		*	***!	
b. [NegP Op nem [VP JÁNOS jött el a buliba]]			*		*	*	*
c. [NegP Op nem [XP JÁNOS jött <sub>i</sub> [VP [V' t <sub>i</sub> el a buliba]]]]			*		*	*	**!
d. [NegP Op [Neg nem jött <sub>i</sub> ] [VP SM t <sub>i</sub> el JÁNOS a buliba]]		*!			*	***	
e. [NegP Op [Neg nem jött <sub>i</sub> ] [VP JÁNOS t <sub>i</sub> el a buliba]]		*!			*	*	
f. [NegP Op nem [VP el jött JÁNOS a buliba]]							
g. [NegP Op [Neg jött <sub>i</sub> ] [VP JÁNOS t <sub>i</sub> el a buliba]]		*!			*		**
h. [NegP Op [VP JÁNOS jött el a buliba]]							

Structure f is not a member of the candidate set, as it does not aim at the scope relations in the input. The problem with structure h is apparently that the input negation is unrecoverable from the overt output, thus h does not enter the competition either. Already at MI, three members of the competition set are killed off: d, e and g violate MI, since the focussed phrase or its SM is in Spec-head relation only with the trace of the verb. The constraint ranking, in which MI is higher than LicNg, accounts for why the verb is not attracted to the negative head given these scope relations. Sentences a, b and c do equally well on LicNg and Mod and it is \*Copy that filters out the candidate with the excess structure, i.e. c. The tied constraint pair \*Ins-\*Copy assign grammaticality to b, which only entails one violation. (Candidate a involves insertion of an SM and a [+F] feature to ensure the uniformity of the chain.)<sup>16</sup>

<sup>16</sup>A brief note on the same configuration with the only difference that the focussed phrase is replaced by a wh-element. Now, we would predict the structure [NegP nem [XP ki jött [VP el a buliba]]] to be the optimal one. In contrast, we find that it is ungrammatical, what is more, what we can observe is that there is no grammatical expression in Hungarian that is associated with the relevant scope relations. It can be argued that this is the interpretational component which



The next case to be examined involves the reverse scope relations: negation having scope over the focussed phrase.<sup>17</sup>

(28)

{ János, jött, el, a buliba, Op, JÁNOS > Op }  
[+F]

	Uni Sp	MI	Lic Ng	Vop	Mod	*Ins	*Copy
a. [NegP JÁNOS [NegP Op nem [VP el [V' jött a buliba]]]]		*!	*			*	**
b. [XP JÁNOS jött <sub>i</sub> [NegP Op nem [VP el [V' t <sub>i</sub> a buliba]]]]			*!		*	*	***
c. [XP JÁNOS jött <sub>i</sub> [NegP Op nem [VP [V' t <sub>i</sub> el a buliba]]]]			*!		*	*	**
d. [NegP JÁNOS [NegP Op [Neg nem jött <sub>i</sub> ][VP el [V' t <sub>i</sub> a buliba]]]]		*!			*	*	***
e. [NegP JÁNOS [NegP Op [Neg nem jött <sub>i</sub> ][VP [V' t <sub>i</sub> el a buliba]]]]		*!			*	*	**
f. [XP JÁNOS [nem jött <sub>i</sub> ] <sub>k</sub> [NegP Op t <sub>k</sub> [VP el [V' t <sub>i</sub> a buliba]]]]					*	*	****!
g. [XP JÁNOS [nem jött <sub>i</sub> ] <sub>k</sub> [NegP Op t <sub>k</sub> [VP [V' t <sub>i</sub> el a buliba]]]]					*	*	***

We have not considered candidates which lack the negative head *nem*, since they would make outputs from with the input negation is not overtly recoverable. Sentences a, d and e violate MI, as the predicate is not marked [+F] syntactically. In b and c the negative particle is not licensed by the verbal head, contrary to the requirement of LicNg. Both surviving candidates disobey Mod, as the prefix does not c-command the whole of the overt V'. In f the movement of the prefix to [Spec, VP] constitutes a superfluous chain, as it fails to satisfy Mod. The optimal structure is that in g: it both respects MI, since the verb is in the head of the phrase whose specifier hosts the focussed phrase, and it also conforms to LicNg as *nem* is licensed by the verb and Op by the trace of [*nem jött*]; and it achieves this with the minimal number of copies involved.

We will finish the discussion with the structure of neutral clauses containing negation. Optimality is predicted as illustrated in the table below.

(29)

{ János, jött, el, a buliba, Op }

	Uni Sp	MI	Lic Ng	Vop	Mod	*Ins	*Copy
a. [NegP Op nem [VP jött el János a buliba]]			*!		*	*	
b. [NegP Op nem [VP el [V' jött János a buliba]]]			*!			*	*
c. [NegP Op [nem jött <sub>i</sub> ] [VP t <sub>i</sub> el János a buliba]]					*	*	*
d. [NegP Op [nem jött <sub>i</sub> ] [VP el [V' t <sub>i</sub> János a buliba]]]					*	*	**!

dismisses our optimal structure as uninterpretable. Note, that we predict then that this is valid across languages, the interpretational component being assumed not to vary from language to language. Notice that in fact we do have a potential explanation for this fact: it can be claimed that under these circumstances the clause/predicate phrase can never be marked as a question successfully. If we maintained that only a clause that is syntactically marked as {+Q} is interpreted by the semantic component as a question, then this would mean that we can never get an output associated with this input that does not violate the principle of Recoverability.

<sup>17</sup>The same would apply to sentences with negation and a wh-expression (cf. *Ki nem jött el a buliba?* 'Who didn't come to the party?').



Candidates a and b fail on LicNg, that is quite clear. The survivors, c and d both disobey Mod, which would force the prefix to appear in the specifier VP to c-command the overt V'. As d contains one chain in excess, it is suboptimal in the face of \*Copy. The winner is the structure where the verb is attracted to *nem*, and the prefix (and of course all other constituents) stay under V'.

A short remark on stress patterns of sentences involving clausal negation. There is no need for specific phono-syntactic rules to derive the correct stresses, general principles apply to these structures as well. In (27b) *nem* bears phrasal stress, being the leftmost element in NegP, while the focussed constituent carries focus stress. In (28g), the stress relations fall out from the assumed structure: after the focus stress the stress is deleted from the word level category *nem jött*, by the generally applying deletion rule. The same category *nem jött* in (29c) bears stress due to being at the left edge of the NegP, which is at the same time the syntactic predicate phrase itself. Thus, the basics of negation phenomena are adequately described and explained by the present model.

We have covered a great proportion of operator structure in Hungarian, and with a good result. We provided an analysis that applies simple and general constraints, and that correctly predicts the grammaticality judgements in (1–5). Now will turn to some other language types, concentrating on the distribution of *wh*-expressions in those languages. We will give a somewhat more detailed account of English, though throughout the rest of the paper we will be admittedly simplistic, since our aim in this part is essentially to illustrate, not to give a full treatment of an overwhelming body of data.

#### 4 English

In this section we will present the adaptation of the above account to English. In OT terms this is equivalent to constraint-reranking. Hereafter we will ignore Mod and Vop, as they seem to figure vacuously in the analysis of English or other data to be examined below. This is again not at all to say that they are inactive, or switched off. The proposed ordering for English is given in (30):

(30) MI > LicNg > MEQ > \*Copy > \*Ins > UniSp

Below we will give an account of simple matrix questions, multiple matrix questions, embedded questions, the position of focussed phrases, that of quantifiers, and finally, the structure of simple sentential negation.

(31) contains the analysis of a simple matrix question.

(31)

{ bought, you, what }

	MI	Lic Ng	MEQ	*Copy	*Ins	UniSp
a. what you bought	**!			*		
b. what did you buy				*	*	
c. what you did buy	**!			*	*	
d. SM did you buy what			*!		****	
e. what bought you				**!		
f. SM bought you what			*!		***	

Candidates a and c cannot satisfy MI, as there is no head to be marked as [+Q] and [+F]. Sentences d and f do not conform to MEQ, as the edge of the question is not marked *overtly*: it is marked by an SM. Structures b and e are still in the contest, when we come to \*Copy. However, e violates \*Copy



twice, because it is the verb that raises to enable *e* to satisfy MI, while this is achieved in *b* by the insertion of the dummy auxiliary *do*. Thus, *b* comes out as the best candidate. Note that the insertion of *do* seems to fall out from the constraint ranking MI > \*Copy > \*Ins, and is not attributed to a lexical property of English. The insertion of the dummy auxiliary clearly has an optimality flavour: it is the minimally offending insertion (it a minimally contentful verb) required by MI. (The same effect is achieved in Grimshaw (1993), though by different means.)

We go on now to have a look at multiple matrix questions. The illustration is given below:

(32)

{ gave, you, what, to whom }

	MI	Lic Ng	MEQ	*Copy	*Ins	UniSp
a. what <sub>x</sub> did you give to whom <sub>x</sub>				*	*	
b. what whom did you give to				**!		*
c. SM <sub>x</sub> did you give what to whom <sub>x</sub>			*!		****	
d. what SM did you give to whom				*	***!	*
e. SM SM did you give what to whom			*!		**** **	*
f. whom SM did you give what to				*	***!	*
g. whom <sub>x</sub> did you give what to				*	*	
h. SM <sub>x</sub> did you give what <sub>x</sub> to whom			*!		****	

Sentences *c*, *e* and *h* conflict with MEQ, as there is no overt material to mark the edge of the question, which starts with an SM in these cases. Double movement of the two *wh*-expressions in *b* is deemed ungrammatical by \*Copy. Candidates still alive all involve a single violation of \*Copy: in all of them, one of the *wh*-phrases is fronted. However, in *d* and *f* an SM is inserted with the accompanying features, while in *a* and *g* only an index gets inserted into the structure. Thus, *a* and *g* are correctly predicted to be both grammatical. A final note concerns the insertion of the dummy auxiliary: here we have not gone into the competition between insertion and subsequent raising of *do* and movement of the main verb; the reader can easily work the predictions out on the basis of relevant remarks under (31).

Let us turn now to embedded questions.

(33)

{ bought, you, what }

	MI	Lic Ng	MEQ	*Copy	*Ins	UniSp
a. what you bought	**			*		
b. what did you buy						
c. SM you bought what	**		*!		***	
d. SM did you buy what						
e. what bought you						
f. SM bought you what						

As embedded questions are selected by a higher predicate, Recoverability rules out adjunction to them, and movement into their heads. Now, accordingly, *b*, *d*, *e* and *f* are out of the competition. Immediately, we have only two candidates to consider, both violating MI twice. AS *c* does not conform to MEQ, the competition is decided: the winner is *a*.



The analysis of multiple embedded questions would be similar to that of multiple matrix clauses above, with the difference that Recoverability does not allow movement into the head of the clause, as the reader can verify for himself. Consider now the position of focussed phrases in English.

(34)

{ bought, I, this book, for you }  
[+F]

	MI	Lic Ng	MEQ	*Copy	*Ins	UniSp
a. I <sub>i</sub> [XP this book bought <sub>v</sub> [VP t <sub>i</sub> t <sub>v</sub> for you]]				**!		
b. I <sub>i</sub> [XP SM bought <sub>v</sub> [VP t <sub>i</sub> t <sub>v</sub> this book for you]]				*	**	
c. I <sub>i</sub> [VP this book [VP t <sub>i</sub> bought for you]]	*!			*		
d. I <sub>i</sub> [VP SM [VP t <sub>i</sub> bought this book for you]]	*!				**	

Candidates c and d fail to satisfy MI, a involves two violations of \*Copy. The optimal sentence is b.

Let us turn our attention now to the position of universal quantifiers. Where the universal quantifier is the subject, it will clearly have to appear in subject position, but that is independent of our discussion here. We will take an example where the quantifier is object.

(35)

{ bought, I, every book, for you }

	MI	Lic Ng	MEQ	*Copy	*Ins	UniSp
a. [IP every book [IP I <sub>i</sub> [VP t <sub>i</sub> bought for you]]]				*!		
b. [IP SM [IP I <sub>i</sub> [VP t <sub>i</sub> bought every book for you]]]					*	

The result is straightforward: the dominance relation \*Copy > \*Ins favours b.

Let us end the discussion of English data by taking a look at simple sentential negation. Much depends on what we take clause structure to be independently of our proposal. We will assume a minimalist-style clause structure (tracable back to Pollock's Split Infl hypothesis (Pollock 1989)), which goes along the following lines (ignoring Agr<sub>OP</sub>):

(36) [CP [AgrP [NegP [TP [VP ]]]]]

Representations below are simplified for sake of convenience.

(37)

{ bought, I, Op, this book, for you }

	MI	Lic Ng	MEQ	*Copy	*Ins	UniSp
a. I <sub>i</sub> [NegP Op bought <sub>v</sub> [TP t <sub>v</sub> [ t <sub>i</sub> t <sub>v</sub> this book for you]]]						
b. I <sub>i</sub> [NegP Op not [TP [ t <sub>i</sub> bought this book for you]]]		*!				
c. I <sub>i</sub> [NegP Op [bought <sub>v</sub> not] [TP t <sub>v</sub> [ t <sub>i</sub> t <sub>v</sub> this book for you]]]				**!		
d. I <sub>i</sub> [NegP Op [did <sub>d</sub> not] [TP t <sub>d</sub> [ t <sub>i</sub> buy this book for you]]]				*	*	

Candidate a is out of the competition by Recoverability, which demands that input negation be overtly recoverable from the output. In b, *not* is left without a licenser. The competition of c and d shows that it is more optimal to insert a dummy auxiliary than to adjoin the verb to the negative particle to license it. We have once again derived the desired results.



## 5 Romanian

In the following we briefly indicate how the model needs to be adjusted to fit relevant facts of Romanian. Romanian is known to be a language with whole-sale wh-movement. In fact, we have already seen a language like this: Hungarian exhibits the same properties with multiple questions where the scopes of the wh-expressions are not identical. Actually, Romanian real multiple questions follow the same pattern as in Hungarian: one of the wh-phrases remains in situ. As it turns out, the two languages have still more in common. Consider data in (38–41) (Agnes Bende-Farkas, p.c.):

- (38) a. MARIA s- a dus la petrecere.  
 M. refl.Cl perf.compus.3sg go to party  
 'MARY went to the party/It is Mary who went to the party'
- b. \*S-a dus in petrecere MARIA.  
 c. MARIA s-a dus cu STEFAN la petrecere.  
 d. ?\*MARIA s-a dus la petrecere cu STEFAN.
- (39) a. Cine s- a dus la petrecere?  
 who refl.Cl perf.compus.3sg go to party  
 'Who went to the party?'
- b. Cine cu cine s- a dus la petrecere?  
 who with whom refl.Aux perf.compus.3sg go to party  
 'Who went to the party with whom?' (who>with whom)
- c. Cine s-a dus cu cine la petrecere?  
 (who=with whom)
- d. ?\*Cine s-a dus la petrecere cu cine?  
 (who=with whom)
- (40) a. Cine s-a dus CU STEFAN la petrecere?  
 'Who went to the party WITH STEPHEN?' (who>WITH STEPHEN)
- b. \*Cine CU STEFAN s-a dus la petrecere?  
 (who>WITH STEPHEN)
- c. \*CU STEFAN s-a dus cine la petrecere?  
 (WITH STEPHEN>who)
- d. CU STEFAN cine s-a dus la petrecere?  
 (WITH STEPHEN>who)
- (41) a. Nu STEFAN a venit.  
 not S. has come  
 'Not S. has come, (but...)' (the proposition is negated)
- b. STEFAN nu a venit.  
 'It's STEPHEN who has not come'
- c. Nu a venit Stefan.  
 'Stephen has not come'
- d. \*Nu Stefan a venit.  
 (s.a. (41c))
- e. \*Nu a STEFAN venit.  
 (s.a. (41a))



It should be clear from this set of data that Romanian and Hungarian operator structure have much in common. It follows that the same ranking as we proposed for Hungarian holds for Romanian as well. Bulgarian is also similar in its distribution of *wh*-expressions and the verb, inasmuch as all *wh*-phrases are fronted overtly and the verb raises to satisfy MI too. Thus, facts of this language type follow straightforwardly from our account.

### 6 Czech and Polish

Czech and Polish differ from Romanian and Hungarian in that there is no verb movement, or a positioning of any overt head in order to satisfy MI (Ackema and Neeleman 1995). A Czech/Polish matrix multiple question is structured along the following lines:

(42) WH WH ... [VP V ...]

This suggests that in Czech MI is ordered below both \*Copy (to exclude V movement) and \*Ins (to rule out insertion of an overt head). To still derive whole-sale *wh*-movement, we will order \*Ins above \*Copy. The ranking of all constraints relevant to *wh*-movement is provided below:

(43) \*Ins > \*Copy, MI, MEQ, UniSp

The only example we will consider here is the case of a matrix multiple question:

(44) Kdo koho videl?  
 who whom saw  
 'Who saw whom?'

(45)

{ videl, kdo, koho, kdo > koho }	*Ins	*Copy	MI	MEQ	UniSp
a. SM SM videl kdo koho	*****!		*	*	
b. kdo SM videl koho	***!		*		
c. kdo koho videl		**	*		
d. SM <sub>x</sub> videl kdo koho <sub>x</sub>	****!		*	*	
e. kdo <sub>x</sub> videl koho <sub>x</sub>	*!	**	*		

\*Ins immediately at the start of the evaluation filters out candidates that involve either the insertion of an SM or that of an index. In fact, only one structure, c, passes this constraint, which is then deemed the grammatical form. This language type as well appears to be derivable by our system.

### 7 Chinese and Japanese

Finally, we will briefly turn to Chinese and Japanese, where all operators are in situ. We must conclude that their scope is marked via SMs, thus \*Copy must outrank \*Ins, and MEQ must be ordered low in these languages, from which we concentrate here on Japanese. As questions are often marked overtly by the particles *no* and *ka*, we will put aside some problems and will tentatively assume that MI is ranked above \*Ins, supposing that these particles are inserted by GEN. In the short illustration to follow, we will not rely on all constraints; the ranking of the ones relevant for our purposes is provided below:



(46) \*Copy > MI > \*Ins > MEQ

Let us look at a simple matrix question (taken from Lasnik and Saito 1984: 244):

(47) John-wa naze kubi-ni natta no?  
 John-topic why was fired Q  
 'Why was John fired?'

(48)

{John-wa, natta, kubi-ni, naze}	*Copy	MI	*Ins	MEQ
a. SM [John-wa naze kubi-ni natta]		*!	***	
b. SM [John-wa naze kubi-ni natta] no			****	
c. naze [John-wa t kubi-ni natta]	*!	*		
d. naze [John-wa t kubi-ni natta] no	*!		*	

As is apparent, we have assumed scope-precedence, i.e. all scope positions are left-peripheral. Nevertheless, the *wh*-expressions/SMs and the Q element are appropriately in Spec-head relation with each other. It is clear from the table above that the winner must be b, since it observes both \*Copy and MI, which no other candidates do. This language type also falls out of a simple reranking of the principles.

#### 4 Conclusion

I have presented here a theory of the basic syntax of the Hungarian predicate phrase, which, I have argued, is a more optimal explanation of the data than a standard well-known account offered in É.Kiss (1992, 1994). The advantages are mainly gained from the actual framework of Optimality Theory, which yields possible ways of successfully overcoming the problems I raised in connection with the previous account. In particular terms, I proposed an alternative which explains apparent structural optionality without violating interpretational principles, which does away with problematic issues like fixing functional positions in clause structure – clause structure is derived from the interplay of the input and the postulated constraints, and which avoids unexplained violations of existing syntactic principles – here principles are violated if and only if this serves to satisfy a more highly ranked constraint, thus avoiding complications associated with some of the specific (and sometimes ad-hoc) proposals one is forced to maintain under an É.Kiss-style account.

I have also provided some basic language typology in particular terms of the distribution of *wh*-expressions solely through a reranking of the constraints of the system. The success in straightforwardly capturing relevant facts of other language types yields strong support in favour of the theory.

To the extent that the present account elegantly solves problems lurking around standard hypotheses about the syntax of Hungarian simple clauses, and to the extent that we have been successful in extending our treatment to other language types, we have managed to illustrate in what ways OT is an attractive theory with enormous potential yet to be explored.



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