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KERESZTES JÚLIA

PIED-PIPING IN HUNGARIAN – AN EXPERIMENTAL INVESTIGATION ON THE RESTRICTIONS ON PIED-PIPING IN HUNGARIAN A-BAR MOVEMENTS

FÖLÉRENDELT ÖSSZETEVŐ MOZGATÁS A MAGYARBAN – KÍSÉRLETES VIZSGÁLAT A FÖLÉRENDELT ÖSSZETEVŐ MOZGATÁS MEGSZORÍTÁSAIRÓL A MAGYAR A-VONÁS MOZGATÁSOKBAN

PhD dissertation

Pázmány Péter Catholic University,

Faculty of Humanities and Social Studies

Doctoral School of Linguistics
Head: Prof. É. Kiss Katalin
professor of linguistics
member of the HAS

Theoretical Linguistics Program

Supervisor: Prof. Surányi Balázs DSc

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Abbreviations used in the thesis

SG: singular

PL: plural

ACC: accusative

PRT: particle

VM: verb-modifier

FOC: focus

POSS: possessive

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1 Introduction

This thesis investigates pied-piping by pre-nominal adjunct in A-bar movements in Hungarian. The thought of this thesis arose as an attempt to verify empirical data given as counter evidence against the existence of a syntactic focus-feature (Horváth 1997). The main claim this thesis makes is that pied-piping is unrestricted in focus-movement and *wh*-movement because these are the elements (that is focused and *wh*-phrases) that are prosodically prominent and they need to occupy the position in the sentence that bears prosodic prominence. Before I turn to the approaches to pied-piping, the constraints on pied-piping that is to chapter 2, I present some crucial technical points/notions that underlie the theories presented in this thesis.

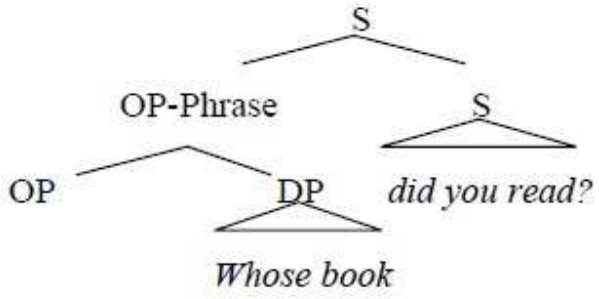
First, the key concept of this thesis is pied-piping. Pied-piping is type of syntactic displacement in which the motivation for displacement is inside a containing phrase that cannot move alone. The phenomenon was first observed by Ross (1967); he represents pied-piping in relative clauses with a sentence fragments.

(1) a. … reports [which] the government prescribes the height of the lettering on …
b. … reports [the covers of which] the government prescribes the height of the lettering on …
c. … reports [the lettering on the covers of which] the government prescribes the height of….

Pied-piping has some language specific constraints which restrict the size and the type of phrases that can undergo pied-piping (chapter 2). With respect to pied-piping one of the key notions seem to be the position the pied-piper takes inside a given phrase, XP. Somelanguages allow full clauses to undergo pied-piping (such as Tlingit in (2)), while other languages allow only smaller constituents to be pied-piped (such as English in (3) or Hungarian in (4)).

(2) [$_{CP}$ [$_{QP}$ [$_{CP}$ *Goodéi* wugoot<u>x</u>] sá]$_1$ [has oowajée t_1 i shagóonich]]
where.to he.went Q they.think your parents
'Where do your parents think that he went?'
(Cable 2010:573)

(3) a. [$_S$ [*Whose* book] did you read*t*]?



b. [$_{CP}$[To *whom*] did you talk?

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(4) [CP [*Kinek* a könyvét] olvastad *t*]?
whose the book-ACC read.you
'Whose book did you read? '

Languages show different patterns, but there are groups of languages to which certain constraints hold.

There is an ongoing debate about the nature of discourse related features in the Minimalist Program. Chomsky (1995) states that lexical items are taken from the lexicon with their features on them. Afterwards they enter into the derivation and at this stage no features can be added (Inclusiveness Condition in (5)).

(5) Inclusiveness Condition
Any structure formed by the computation is constituted of elements already present in the lexical items selected for Numeration; no new objects are added in the course of computation, apart from rearrangements of lexical properties (in particular, no indices, bar levels in the sense of X-bar theory, etc.)
(Chomsky 1995:228)

(6) No Tampering Condition
Merge of X and Y leaves the two SOs unchanged […] Merge cannot break up X or Y, or add new features to them. Merge is invariably "to the edge'.
(Chomsky 2008:138)

These two conditions in (5) and (6) prevent any features to be added to a lexical element during the syntactic derivation, which caused a disagreement between linguists about the status and nature of discourse related features such as the focus feature. Some theories assume a syntactic focus-feature (É. Kiss 1998, 2008; Bródy 1995 among others), while some theories posit a discourse related operator that is not part of the lexicon (Horváth 2005, 2010; Zubizarreta 1998, Fanselow 2008, Szendrői 2003, 2010, 2017). Theories arguing that focus (and topic) should be encoded outside syntax support their claim by referring to (5) and (6) and by drawing the attention to the difference between lexical features and non-lexical features (that is, discourse related features). Key differences between the two types of features are the following:

- lexical features are features of a lexical item (such as gender, person) encoded in the lexicon
- discourse-related features can be added to any lexical item, hence it cannot be included in the lexicon (Zubizarreta 1998)
- lexical features are independent of the context – the gender-feature of a noun will not change according to the context
- focus- features (and topic-features) depend heavily on context – their interpretation is external to syntax (Fanselow 2008)
- lexical-features can project only from heads and up to the phrase boundary
- discourse-related features project differently and can go beyond phrase boundaries
- lexical features behave differently in pied-piping (they are more restricted)
- focus-feature does not exhibit restrictions in pied-piping (Horváth 1997, 2005, 2010)

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Based on these differences, it can be presumed that discourse related features are not part of the lexical description of any given phrase. There are non-syntactic features that can be responsible for the displacement of a phrase.

Pied-piping is restricted by locality conditions, which is a question of how deep and in what type of a phrase the pied-piper is contained in. Syntactic boundaries create a barrier (in the sense of Chomsky 1986) through which some movement operations cannot apply. In recent syntactic theory the crucial boundaries are phases. Phases are the maximal projection of a phrase (CP, vP for Chomsky 2000 but others assume DP and PP (Boskovic 2016, Citko 2014) to be a phase also) which are closed off for syntactic operations once they are built up. There is an escape hatch from the phase, which is the (left) edge position inside the phase. Feature-bearing elements need to move to the edge of the phase if they want to be visible for later syntactic operations. As I will show in this thesis, phases create boundaries for pied-piping as well (chapter 2 and 4).

The main research questions of this dissertation are as follows:

Research Question 1: Is there a syntactic focus-feature on the element that is prosodically prominent?

Research Question 2: Does focus-pied-piping show similarities in the restrictions on pied-piping to the other A-bar movement types – which are restricted with regards to pied-piping? The two other A-bar movements are relativization involving a syntactic [rel]-feature on the relative pronoun and wh-movement involving a syntactic [wh]-feature on the *wh*-pronoun.

Research Question 3: Does *wh*-movement in Hungarian align with relative-movement or with focus-movement?

In chapter 2 I give an overview of relevant approaches to pied-piping. I give an overview of theories from earlier syntactic theory and then present recent theories on the topic, all approaches are similar in the fact that they connect the availability of pied-piping to a position inside the phrase, but they differ in the way they analyze the movement to that particular position as well as what that position is. In chapter 3, I give the background on the investigated A-bar movements in Hungarian. I concentrate on the aspects of the constructions that are relevant with regards to the experiments presented in this thesis. In chapter 4, I report on the experiments conducted as a part of the research for this dissertation. In chapter 5, I make a tentative proposal to account for the pattern drawn by the results of the experiments. Chapter 6 concludes this dissertation.

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2 Approaches to Pied-piping

In this chapter I give an overview of the approaches to pied-piping that are relevant for the experiments conducted (chapter 4). First, I review the early generative literature on pied-piping (section 2.1). Then, I give an overview of theories that are built on the significance of the edge of the ph(r)ase (section 2.2). And then in section 2.3, I present an approach that is based on semantic operator movement.

2.1 Pied-piping first observed

Pied-piping was first described in Ross's (1967) dissertation; the term pied-piping was coined by Ross as well. Pied-piping refers to a syntactic movement operation that moves an element together with a larger element containing the element targeted by the movement operation. Ross works in the framework of the early Transformational Grammar, in which transformation rules target specific elements in a string of words on which they operate. Ross illustrates pied-piping in relative clauses with the following examples.

(1) a. … reports [which] the government prescribes the height of the lettering on …
b. …reports [the covers of which] the government prescribes the height of the lettering on …
c. … reports [the lettering on the covers of which] the government prescribes the height of …

These constructions show variation among the size of the constituent that can be moved by pied-piping. The transformation rule targets the relative *wh*-pronoun and moves it to the front of the clause with or without other parts of the containing phrase. In (1b) and (1c) there is pied-piping involved as the moved element is bigger than the *wh*-element itself.

Ross (1967) proposes the Pied-piping Convention as an addition to the A-over-A principle (Chomsky, 1964) to account for Relative Clause transformations in which a unit that is bigger than the relative pronoun itself is moved. As an illustration compare (2) and (3).

(2) Reports [which] the government prescribes the height of the lettering on the covers of are invariably boring.
(3) a. Reports [the covers of which] the government prescribes the height of the lettering on almost always put me to sleep.
b. Reports [the lettering on the covers of which] the government prescribes the height of are a shocking waste of public funds.
c. Reports [the height of the lettering on the covers of which] the government prescribes should be abolished.

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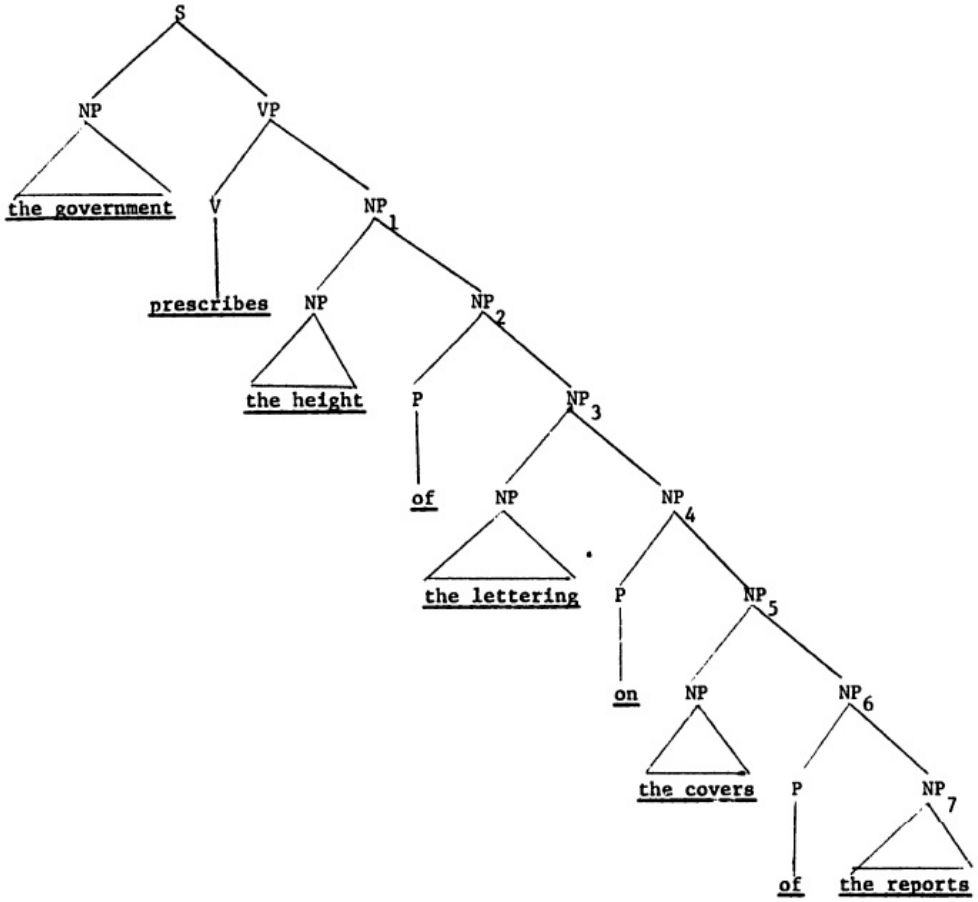
d.



In (2), only the relative pronoun ‘which’ is moved to the beginning of the clause, whereas in (3) other parts of the complex phrase are moved to the front too. From (a) to (c) more and more material is dragged along together with the relative pronoun. In (3d) we can see the structure more clearly. This is not sufficiently captured by the A-over-A principle (as in (4)), hence Ross (1967) proposes the Pied-Piping Convention (as in (5)).

(4) A-over-A Principle:
In a structure … [A … [A …] ….] …, if a structural description refers to A ambiguously, then that structural description can only analyze the higher, more inclusive, node A.

That is, if there is a structural description that fits two categories of the same type that are contained in each other, then the higher node – containing the lower node – must be the one analyzed with that description.

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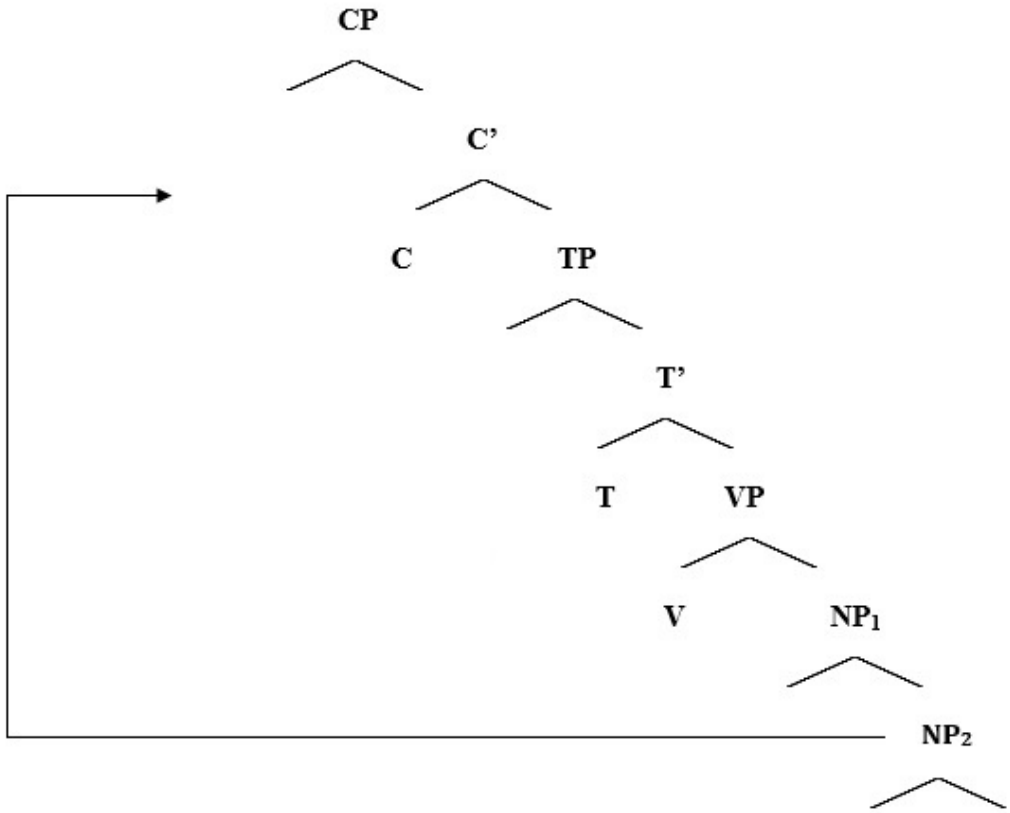
(5) Pied-Piping Convention
Any transformation which is stated in a way as to effect the reordering of some specified NP node, where this node is preceded and followed by variables in the structural index of the rule, may apply to this NP or to any non-coordinate NP which dominates it, as long as there are no occurrences of any coordinate node, nor the node S, on the branch connecting the higher node and 'the specified node'.

This means that if a transformation rule targets an NP node – either NP node in the case of a phrase where NPs are embedded under one another (for instance, possessive structures or relative clauses) – and that NP is moved either on its own, or with the higher NP containing the other. To make it clearer consider the tree diagram in (6).

(6) a. NP2 is moved alone:



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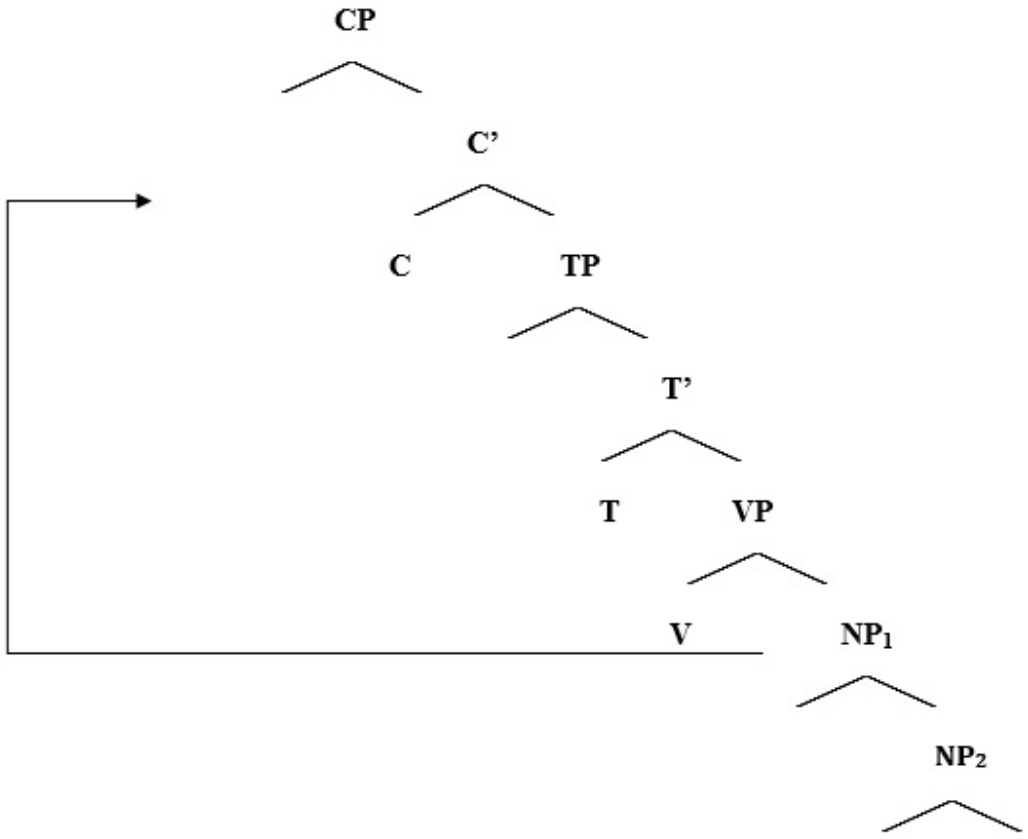
b. NP1 containing NP2 is moved – pied-piping



This Convention allows for optionality in pied-piping. However, Ross states that there are environments where pied-piping is obligatory. Pied-piping is obligatory in cases when the targeted element cannot be moved out of the constituent containing it on its own. One of these cases is when a possessor is a *wh*/relative pronoun. This constraint is independent of the Pied-piping Convention. The constraint restricting the movement of the *wh*/relative pronoun out of an NP is called The Left Branch Condition.

(7) The Left Branch Condition
No NP which is the leftmost constituent of a larger NP can be reordered out of this NP by a transformational rule.

This constraint blocks structures as in (8b), (8c), (9b) and (9c).

(8) a. The boy whose guardian's employer we elected president ratted on us.
b. * The boy whose guardian's we elected __ employer president ratted on us.
c. * The boy whose we elected __ guardian's employer president ratted on us.
(9) a. Which boy's guardian's employer did we elect president?
b. * Which boy's guardian's did we elect __ employer president?
c. * Which boy's did we elect __ guardian's employer president?

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In cases like this, the only option is the move the largest NP as a whole to the front of the clause. Restrictive and non-restrictive relative clauses are not targeted by the same transformation rule. Emonds (1979, 1985) also observes a difference between restrictive relative clauses and non-restrictive relative clauses (as in (8)); he also claims that when there is possibility for an appositive interpretation then pied-piping becomes acceptable (9).

(10) a. * Few windows here the curtains on which I really dislike let enough light in.
b. Few windows here, the curtains on which I really dislike, let enough light in.

(11) a. * Most students are interested in any professor [a security file on whom] the government won't release.
b. ? We should visit only the city [a favorable report on which] Jack received.
c. Most students are interested in Professor Rotestern [the security file on whom] the government won't release.

Emonds (1985) claims that the phrase containing the relative pronoun in appositive (i.e. non-restrictive) relative clauses is interpreted as a topic, which is not moved by relativization per se but it is topicalized. As topicalization falls under different constraints, the restrictions on pied-piping do not apply.

These early theories on pied-piping give us a good starting point. However, they are not able to identify the motivation for movement of a given phrase. They are unable to account for the possibility of pied-piping in the case of non-restrictive relative clauses, and the unavailability of certain cases of pied-piping in restrictive relative clauses. Emonds (1985) tries to solve this imbalance by analyzing non-restrictive relative clauses as topicalization. It is also important to note that Ross's original examples showed pied-piping with PPs, which are one of the less well-understood constructions in English with regard to pied-piping. Later (in section 4), we will see that pied-piping in relative clauses poses a challenge in Hungarian as well. In the next section, I turn to theories on pied-piping that link the availability of pied-piping to the structural position of the pied-piper.

2.2 Theories on pied-piping based on the position of the pied-piper

Most of the works presented here focus on the position the pied-piper takes within a phrase since feature assignment and licensing depends on the position the specific elements take inside the phrase. The relationship between a specifier and a head of the phrase is special in that that is where licensing happens. The specifier-head relationship plays a role in pied-piping because the specifier is a governed position and that is the position involved in feature percolation as well.

2.2.1 The theory of feature percolation

The *wh*-feature percolation hypothesis states that special features are able to percolate (spread) to a node that is higher than where the lexical element bearing the feature is in the structure. Chomsky (1973) states that it is possible for a *wh*-phrase β to transmit its features to a node that dominates β. The features of a head have the ability to project up to the maximal projection of the head (Lieber 1980, di Sciullo and Williams 1987). When features are located on a lexical item embedded inside a phrase, the mechanisms that trigger movement cannot reach/see the lexical item and thus feature percolation allows the feature to be made visible by spreading to the highest node of a projection.

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However, the mechanism of *wh*-feature percolation allows the *wh*-feature to spread across phrase boundaries in the context of pied-piping. The mechanism involved in this cannot be feature-projection: α and β do not belong to the same minimal projection, there is at least one phrase boundary in between them. For this reason, it is not enough if the feature spreads to the highest node in the phrase XP if there is a phrase YP that contains XP. However, the most significant problem with feature percolation is that it only applies to some special features (e.g. the *wh*-feature), while it does not work with other syntactic features (e.g. categorical features, gender features, Case features).

Sells (1985) discusses pied-piping in relative clauses and questions in the framework of Government and Binding (GB). Sells claims that in the case of appositive relative clauses there is a *wh*-feature involved and that is what makes pied-piping possible.

(12) a. This half-literate good-for-nothing, [$_{DP}$ the absurdity of wanting to marry whom]$_3$ t_3 is eclipsed only by your aunt's desire that the wedding should happen, …
b. *some half-literate good-for-nothing [$_{DP}$ the absurdity of wanting to marry whom]$_3$ t_3 is eclipsed only by your aunt's desire that the wedding should happen
(Sells 1985:7)

He claims that restrictive relative clauses and embedded questions pattern together as neither of them allows feature percolation. Therefore, the *wh*/relative-feature must be visible for the N head to be interpretable. Although embedded questions and restrictive relative clauses behave similarly with respect to pied-piping, Sells claims that there are different reasons for this; in the case of embedded questions restrictions on pied-piping are rooted in a theory of *wh*-subcategorization, while in the case of restrictive relative clauses the restriction is a restriction on *wh*-feature percolation.

(13) a. ?Lawrence Welk, [$_{DP}$ the need to imitate whom]$_2$ I cannot claim to understand t_2 ….
b. *Lawrence Welk, [$_{DP}$ the need for whom to imitate you]$_2$ I cannot claim to understand t_2 …..
(Sells 1985:12)

This difference in between (13a) and (13b) shows subject-object asymmetry. Feature percolation from a subject position is not possible, unlike from an object position. Sells (1985) follows Kayne (1983) in this. He adopts the mechanism of feature percolation that is based on Kayne's (1983:225) theory of g-projection.[1] G-projection is a containment relation that is more flexible than the X-bar theory was in the framework of Government and Binding; it allows for a

[1] (i) G-projection:
Y is a g-projection of X iff
a. Y is a projection of X (in the usual sense of the X'-theory) of a g-projection of X
or
b. X is a structural governor and Y immediately dominates W and Z, where Z I a maximal projection of a g-projection of X, and W and Z are in a canonical government configuration.
(Kayne 1983:8)

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structurally bigger chunk to act as a projection of a feature-bearing element, thus allowing feature-percolation to reach higher than the XP (maximal projection) of the phrase containing the feature-bearing element.

This means that a feature [F] can percolate from a node α to a node β if α occupies a position in the phrase that is in a canonically governed position and it is in a government relation with β. Canonical government positions in a language are determined by the government relations of verbs in that language.[2] In English DPs, APs, VPs and clauses bear referential indices, whereas PPs do not have referential indices because, by assumption, they do not project an external argument position. This means that in DPs, APs, and VPs there is a specifier position open for the external argument – or if there is no external argument, there is a position which serves as a landing site for the element that bears the *wh*-feature. The restrictions of pied-piping from a subject position cannot account for the possibility of pied-piping by a possessive *wh*-phrase, namely *whose*.

(14) Horace, [DP whose mother's deckchair's seat]$_2$ you spilled coffee on t_2 yesterday, ….
(15) a woman [whose deckchair] you spilled coffee on ….

(Sells 1985:12)

Sells follows Kayne in stipulating that *whose*-phrases are not formed the same way as other *wh*-phrases are. This way, *whose deckchair* and *whose mother's deckchair's seat* behave like regular *wh*-phrases (e.g. *what*, *where*, *who* etc.); there is a generalized transformation rule that generates a phrase α containing *whose* plus the noun following it, and hence the whole phrase gets the *wh*-feature – not as in a regular case of *wh*-feature-percolation.

Webelhuth (1989, 1992) discusses pied-piping in Germanic languages. His theory of pied-piping involves feature percolation and theta theory: features can only percolate from certain positions to the maximal projection and this enables the constituent to undergo pied-piping. He distinguishes the positions in a given phrase by their ability to act as pied-piper of the phrase: specifiers and heads are pied-pipers, while complements and adjuncts are not. Webelhuth (1992) claims that it is not only feature percolation that counts. The Theta Criterion dictates that theta marked arguments can only be in the derivation once – as the Theta Criterion demands that a theta-marked position must be a part of a chain containing exactly one argument. Theta-marked positions in his theory are exactly the positions from which constituents cannot undergo pied-piping. This means that since according to Webelhuth complements and modifiers/adjuncts are theta-marked, they cannot be pied-pipers of a given phrase. Whereas specifiers and heads of a phrase are not theta-marked, consequently they are pied-pipers for the phrase. In (16a) the pied-piper would be the complement of the verb, which is a position to which the verb assigns a theta-role, and hence pied-piping is not permitted. In (16b), we can see an example of pied-piping failing because the pied-piper is in an adjunct position, which is also a position that blocks pied-piping (in Germanic languages).

[2] Typical governing heads are ones that assign a theta-role or case to its complements (verbs, prepositions, inflectional heads etc.).

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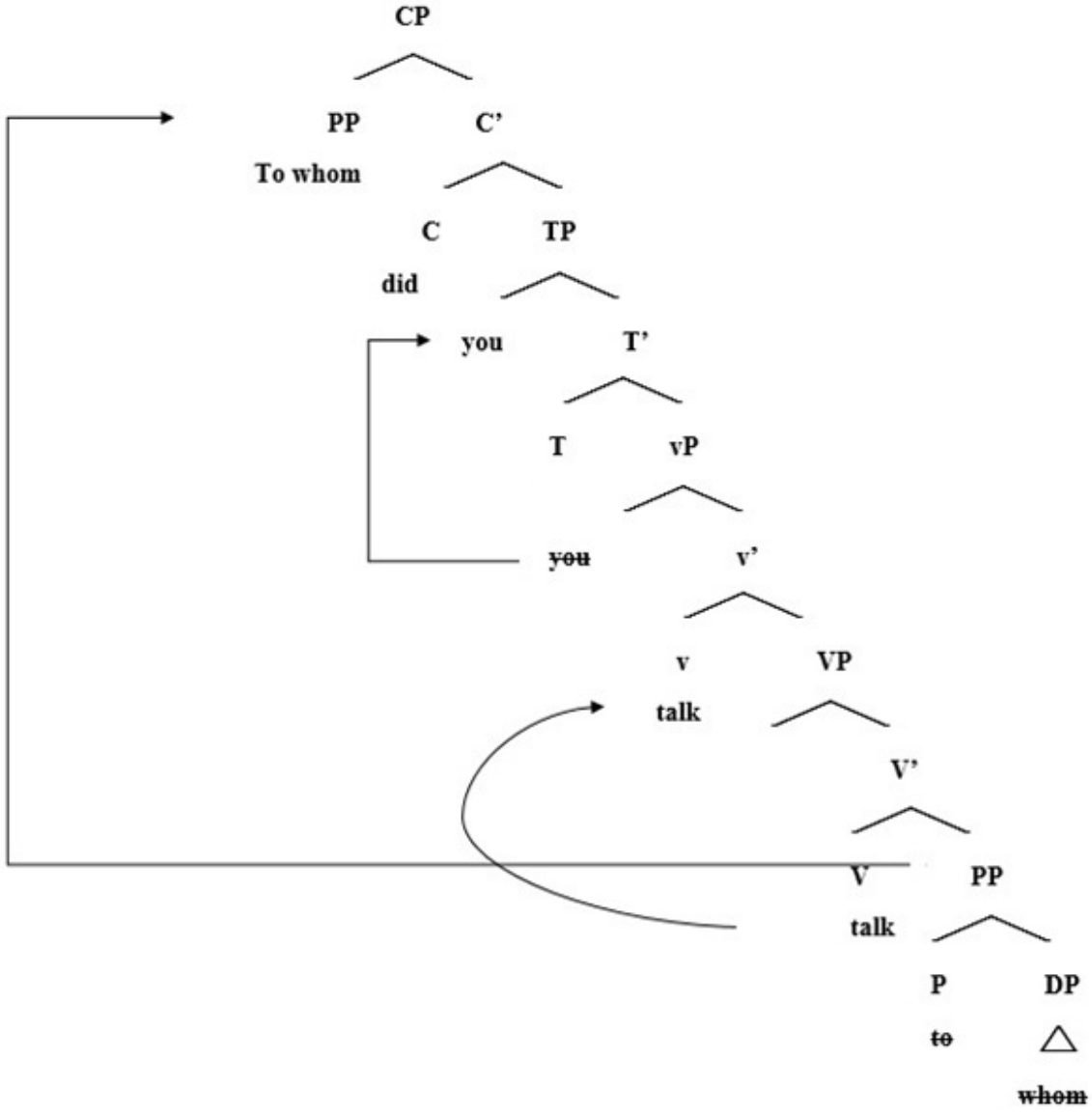
(16) a. * I wonder [give a talk where] John will t.
b. * I wonder [the party where] John will enjoy t.

(Webelhuth 1992:145–146)

In (17), we can see two examples of *wh*-pied-piping in English. (17a) shows a type of pied-piping in which the pied-piper is situated in the specifier position of a DP. The specifier position is not theta-marked and for this reason it allows pied-piping. (17b) also presents a case where pied-piping is allowed, however, it seems to be problematic inasmuch as it is as much a complement as it is a head.

(17) a. [To whom] did John talk?
b.



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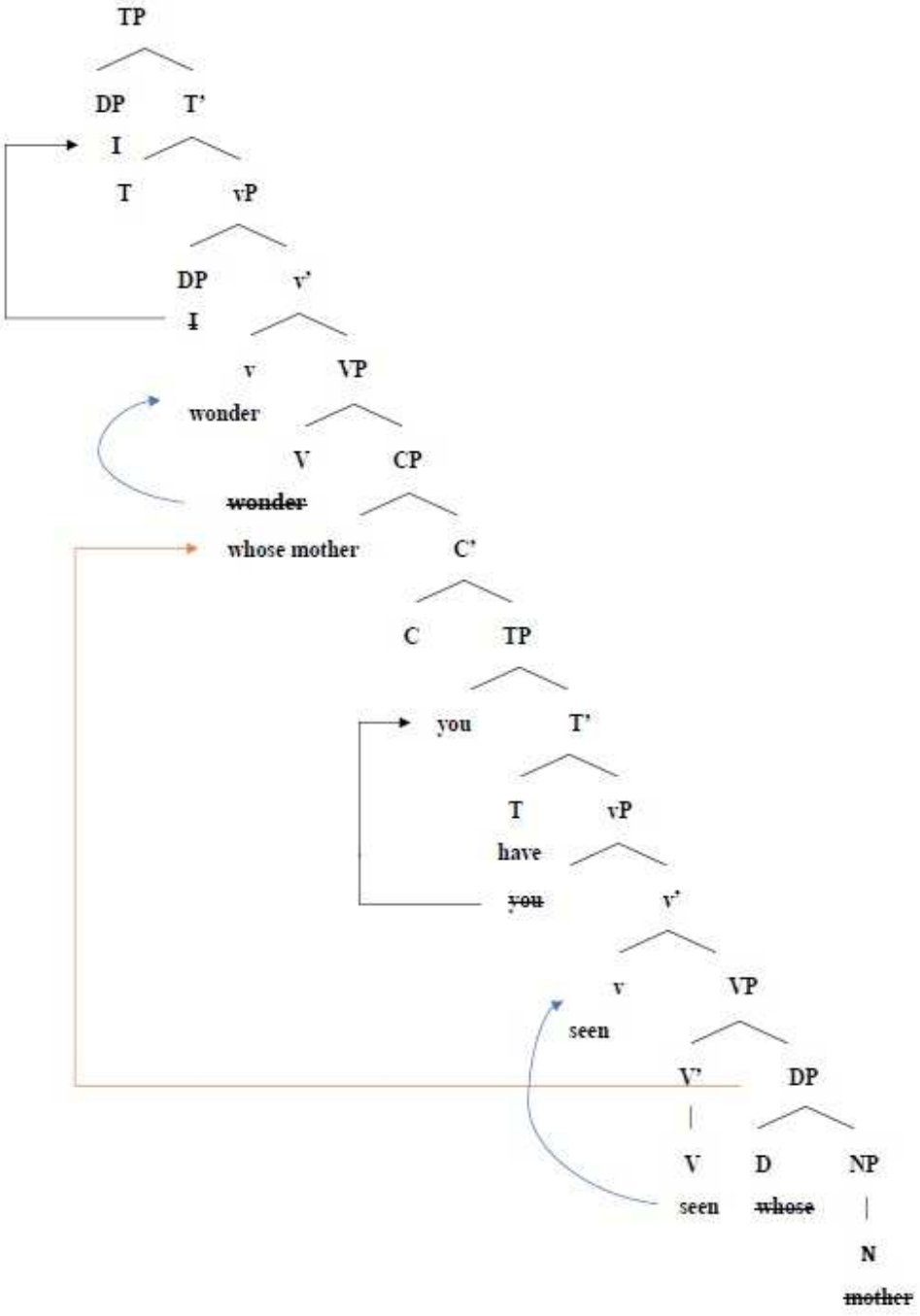
c. I wonder [whose mother] you have seen in the store.
d.



Nonetheless, Webelhuth (1992) brings (17b) forth to illustrate the cases in which pied-piping is possible in English. As a result of the observed facts, Webelhuth (1992) suggests the following generalization concerning the positions from which pied-piping is allowed (as in (18)).

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(18) Given a phrase XP,
a. the head X and the specifier YP are pied-pipers for XP;
b. complements of X and modifiers (adjuncts) are not pied-pipers for XP.

Webelhuth (1992) claims that the *wh*-element has to move to the specifier position of the phrase to be able to percolate its feature to the topmost node. As we have seen before (see Sells 1985 above), percolation can be restricted by phrase boundaries. Webelhuth claims that the specifier position is a position that is high enough in the structure for feature-percolation to happen.

This analysis fails to capture the instances of pied-piping in relative clauses. Webelhuth (1992) does not specifically aim at describing pied-piping in relative clauses. He touches upon the issue, however, he does not go into a detailed analysis. Concerning relative clause pied-piping Webelhuth adopts Emonds's analysis, that is, he also treats them as instances of topicalization.

The examples that Webelhuth (1992) brings to support the idea that PP pied-piping are not always acceptable. As we can see in (19a), pied-piping is not allowed, while it is allowed in (19b). Webelhuth suggests that there are two different mechanisms at work in each of these examples. In (19a) pied-piping is blocked by being inside an embedded question, which generally blocks illicit pied-piping. In (19b) however, the pied-piper is inside a relative phrase which is topicalized. Webelhuth (1992) also points out that whether or not a given phrase can undergo (apparent) pied-piping depends on the ability of the constituent to be topicalized.

(19) a. *I asked Bill [$_{DP}$ proud of whom] he was t.
b. His wife, [$_{DP}$ proud of whom] he never was t.

(Webelhuth 1992:129-130)

Webelhuth (1992) claims that (19b) is grammatical because the PP is not pied-pied but it is topicalized (following Emonds 1985). However, this also means that pied-piping in relative clauses seem to be ungrammatical in the traditional sense of the operation, that is, when we talk about a relative feature of the relative pronoun that is responsible for the movement. Whenever movement of the relative phrase is grammatical, it is topicalized. Topicalization is a different mechanism, however, and discussing it would take us away from the scope of this thesis.

Another environment where we can see PPs undergoing pied-piping is *wh*-movement. There is a difference already within Germanic with respect to preposition stranding in questions. PP pied-piping is obligatory in questions in German, but it is optional in English. Compare (20) and (21).

(20) a. Mit wem hat Hans gesprochen?
with whom has Hans talked
'To whom did Hans talk?'
b. *Wem hat Hans gesprochen mit?

(Webelhuth 1992:124)

(21) a. To whom did John talk?
b. Who(m) did John talk to?

(Webelhuth 1992:125)

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However, pied-piping in *wh*-movement is problematic in both languages as it does not fit the otherwise observable pattern. Webelhuth (1992) brings examples from all Germanic languages showing that it is possible for a PP to be pied-piped in all of them, though he does not discuss the optionality of pied-piping in all these languages. This fact leads him to modify his generalization in a way that would yield the required result. He claims that the ability to pied-pipe a phrase is connected to the antecedent being in a theta-marked position or not.

(22) The antecedent of a constituent in a theta marked position is not a pied-piper.
(23) *[See *what*] did you?

For Webelhuth (1992) the analysis lies in two important parts: (i) the position the pied-piper occupies and (ii) theta-marking. His theory seems to be inappropriate in describing certain languages. While it appears to be able to account for most Germanic languages, there are certain cases in English that present difficulties for the theory such as PP pied-piping. In the next section we will take a look at other approaches to the same phenomenon. The approaches in the next section are similar in the sense that they operate on the assumption that pied-piping is connected to some position in the structure, however, they take different paths. I will introduce the concept of the edge, which is a crucial notion for pied-piping in Hungarian (as we will see later in chapter 4 and 5).

2.2.2 Movement to the edge

Some theories assume that the possibility of pied-piping is not necessarily to a specifier or a head that is able to pied-pipe a phrase (again, not necessarily to the specifier position but it can move there as well), as much as it is the requirement for the pied-piper to move to the edge of the pied-piped phrase, unless it was base-generated there. It has been observed in several languages that this requirement – that is, that the pied-piper move to the so-called edge of the phrase – seems to be the crucial element in constructions which allow pied-piping. The size of the pied-piped constituent varies among languages – it can be as small as a DP or as big as a CP. Not all languages that allow pied-piping allow pied-piping of all types, there are language specific/independent constraints restricting pied-piping in certain constructions. Let us take a look at some languages that show a pattern for pied-piping that is less restricted than English and other Germanic languages are.

There are languages that allow for constituents as big as CP to be pied-piped as seen in examples from Basque (as in (24)) and Imbabura Quechua (as in (25)) where *wh*-elements have to move to the front of the sentence and they can pied-pipe the phrase containing them (Aissen 1996, Ortiz de Urbina 1993).

(24) a. [$_{CP}$Nor joango d-ela]$_3$ esan du Jonek t_3? **Basque**
who go AUX-C said AUX John
'Who has John said will go?'
b. [$_{CP}$Nor etorri d-ela bihar]$_3$ esan diozu Mireni t_3?
who come AUX-C tomorrow said AUX Mary
'Who did you tell Mary will come tomorrow?'
(Ortiz de Urbina 1993:194)

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(25) [$_{CP}$ Imata$_2$ wawa t_2 mikuchun]$_3$-taj Maria t_3 munan? Imbabura Quechua
what.ACC child.NOM eat.SUBJ -Q Maria want.PR3
'What does Maria want that child eats?'

(Hermon 1985:151)

As it can be seen from the examples above, the *wh*-element moves to the leftmost position inside the phrase. It is not allowed for the *wh*-element to stay in situ, movement is not optional (26).

(26) *[$_{CP}$ Juan ima-ta randi-ska]-ta-taj$_i$ pro ya-ngui t_i. **Imbabura Quechua**
Juan what-ACC buy-NML-ACC-Q(you) think-2
'What do you think that Juan bought?'

(Yoon 2002:1090)

The lack of optionality leads one to assume in the framework of the time that the designated position was a unique one, that is the specifier position.

In Tzotzil also, the *wh*-element moves to the left edge of the phrase. The movement of the *wh*-element to the leftmost position is exemplified in a DP (27) and a PP (28) in Tzotzil.

(27) a. [$_{DP}$ Buch'ux-ch'amal]$_1$ i-cham t_1? **Tzotzil**
who A3-child CP-died
'Whose child died?'
b. *[$_{DP}$ X-ch'amal buch'u]$_1$ i-cham t_1?
A3-child who CP-died
'Whose child died?'

(Aissen 1996:457)

(28) a. [$_{PP}$ Buch'u$_2$ ta s-na]$_4$ ch-a-bat t_4? **Tzotzil**
who to A3-house ICP-B2-go
'To whose house are you going?'
b. *[Ta s-na buch'u] ch-a-bat?
P A3-house who ICP-B2-go
'To whose house are you going?'

(Aissen, 1996:470)

Aissen (1996) analyzes the Tzotzil data as movement to the specifier of the containing phrase, as non-*wh* complements of a noun or a preposition in Tzotzil can appear after the noun or preposition; *wh*-complements, thus, contrast with the non-wh position of complements. All these examples show that in all three of the languages (Basque, Imbabura Quechua and Tzotzil), a phrase can be pied-piped if the pied-piper moves to a phrase initial position. The phrase initial position is of crucial importance in these languages regardless of the size of the pied-piped phrase.

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Pied-piping seems to be optional in some cases in Basque and Imbabura Quechua (as in (29) and (30)).

(29) [$_{DP}$ Nor] esan-du Mirenek uste du-ela Jonek ettori d-ela? **Basque**
who said-AUX Mary think AUX-that John come AUX-that
'Who has Mary said John thinks will come?'
(Ortiz de Urbina 1993:194)

(30) [$_{DP}$ Ima-ta-taj] ya-ngui Juan randi-shka-ta? **Imbabura Quechua**
what-ACC-Q think-2Juan buy-NML-ACC
'What do you think that Juan bought?'
(Cole 1982:21)

In (29) and (30), we can see that pied-piping seems to be optional, however, it can be argued, that in these cases the *wh*-element has been base-generated in the specifier of the CP. This optionality arises from the optionality of feature percolation – pied-piping happens when there is feature percolation inside the phrase containing the *wh*-element. Feature percolation can happen only from the specifier or head position, and so, when there is movement to an initial position within the phrase, the *wh*-feature percolates to the mother node and the element pied-pipes the containing phrase with it. When the *wh*-element is moved by itself or base generated in the higher position, there is no pied-piping. This optionality can be observed in English with PP pied-piping (as in (31) and (32)).

(31) a. [$_{PP}$ To whom] did you send the letter?
b. [$_{DP}$ Who] did you send the letter to?
(32) a. The man, [$_{CP}$ pictures of whom you saw in the magazine], is my brother.
b. The man, [$_{CP}$ whom you saw pictures of in the magazine], is my brother.
(Yoon 2002:1093)

Yoon (2002) claims that this optionality suggests that pied-piping is not a last resort in English, if it was, it would not be optional. One of the main problems with the theories on feature percolation is that the mechanisms involved are not clear-cut. How can percolation be optional in one instance but obligatory in another? The arbitrariness of spreading a feature makes the theory less desirable, even though it might be flexible enough to explain the optionality of preposition stranding versus pied-piping in English. It seems to be the case that most theories have to come up with an additional stipulation to be able to handle the exceptional case of English PP pied-piping.

Yoon (ibid) also claims that there are cases in English in which the construction cannot be saved by pied-piping (as in (33) and (34)).

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(33) a. *[$_{DP}$ The writer who wrote which novel] do you like?
b. *The writer, [$_{CP}$ who wrote which] happens to be here now, is very interesting.
c. *[$_{CP}$ Because John likes whom] is Mary upset?
d. *The man, [$_{CP}$ because John likes whom] Mary is upset, came to see her.
(Yoon 2002:1093)

(34) a. *Which novel do you like the writer who wrote?
b. *The book, which the writer who wrote happens to be here now, is very interesting.
c. *Whom is Mary upset because John likes?
d. *The man, whom Mary is upset because John likes, came to see her.
(Yoon 2002:1093)

In these cases, other individual constraints restrict the availability of pied-piping, namely these are complex NP islands and adjunct islands, which – at least in English – do not license pied-piping (as in (33)), or the movement of the *wh*-element by itself out of the phrase (as in (34)). Also, as we can see, in the hypothetically pied-piped cases, the *wh*-element is not in a position which usually allows pied-piping. Yoon proposes that the *wh*-feature-bearing element has to move to the left edge inside the phrase to be able to pied-pipe it. The movement for him can be either overt or covert movement. He proposes a unified account for all the languages that have pied-piping in them. He discusses Japanese where there is no overt movement of the *wh*-elements – *wh*-phrases stay in situ, and they are later, at LF, interpreted higher up in the structure, that is, they move to a higher structural position covertly.

Yoon (2002) claims that there are similarities between pied-piping and quantifier raising (QR) in the way they work. He argues that pied-piping has to be analyzed similarly to QR, that way it is possible to unify the accounts on pied-piping in English, and other languages that are more permissive with pied-piping than English is.

Yoon (2002) assumes that there is covert movement of the *wh*-element to the edge of the phrase from where feature percolation is allowed, and after that the whole phrase is moved overtly to a sentence initial position[3], to the specifier of CP. In cases when the preposition is stranded, Yoon assumes that feature percolation did not happen – it being optional, this is possible – and the *wh*-element moved to the specifier of CP by itself. In all other cases of possible pied-piping in English, he assumes the same two-step movement as exemplified in (34); that is, in the case of APs, DPs and PPs, the *wh*-element first covertly moves to the specifier of the phrase containing it, and then it drags it along to the CP domain (see (35) for the tree diagram). With this assumption, Yoon can account for the cases that were problematic for earlier approaches to pied-piping in English.

[3] The assumption that covert movement can precede overt movement is not unprecedented, Chomsky (1998) and Uriagereka (2000) also assume this.

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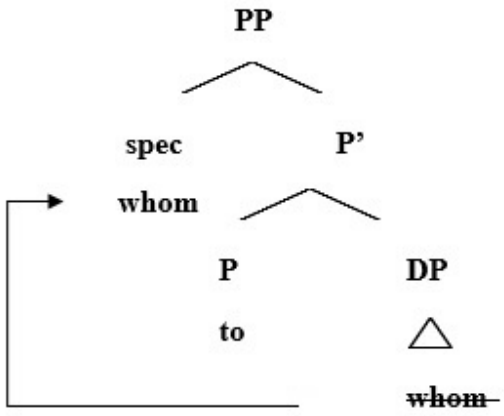
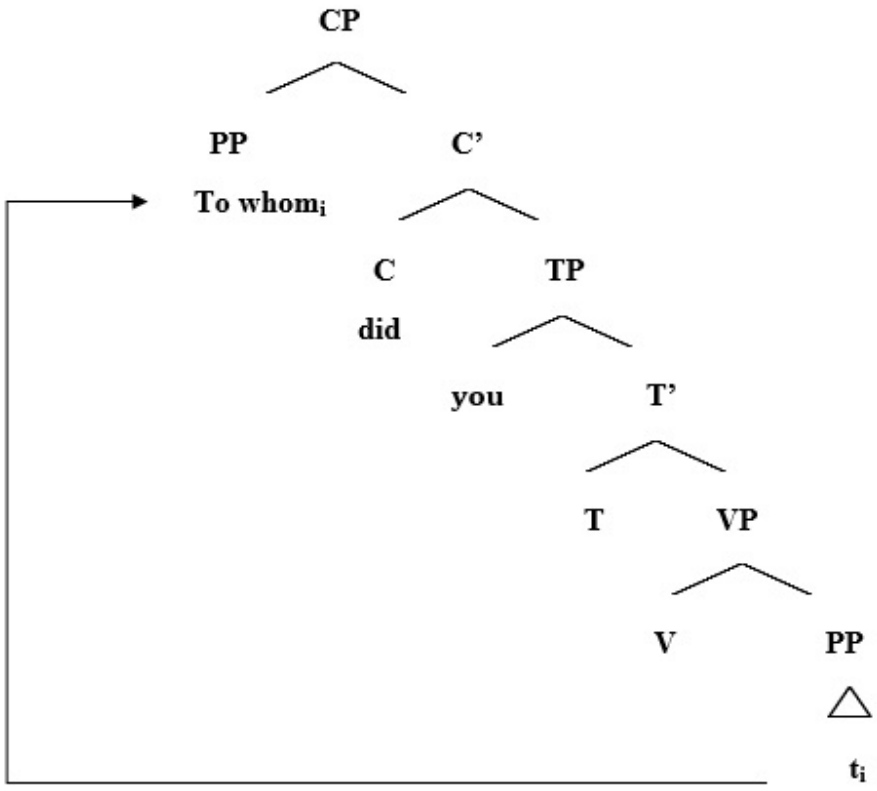
(35) a. [PP To whom] did you talk?
b. Did you talk [whom$_i$ to t$_i$]^{wh}? (covert movement + feature percolation)
→ [whom$_i$ to t$_i$]$_j^{wh}$ did you talk t$_j$? (overt movement)

(Yoon 2002:1095)

(36) a. covert movement to the edge of PP



b. overt movement to CP



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Yoon's (2002) analysis is modelled after quantifier raising (QR). Quantifier raising is a type of movement that is not motivated by feature checking but rather Interface Economy (Reinhart 1995). This means that some economy conditions can be violated due to interface needs. These contrast with standard economy conditions, which cannot be violated for any reasons.

(37) Interface Economy:
If at a stage of translating a given convergent derivation D into some semantic representation we discover that an equivalent semantic representation can be obtained by a more economical derivation D' (from the same numeration), then D' blocks D.

According to Yoon (2002) there are similarities between the way pied-piping and QR work. First, let us see some relevant details about quantifier raising to highlight the similarities between the two types of movement. The scope of a QP is its overt c-command domain – although there are different restrictions on existential NPs and strong NPs – the movement operations they are involved in do not fit into the computational system, and there has to be different types of operations accounting for these phenomena (Reinhart, 1995). This is also supported by the fact that QR does not have morphological motivation, and it has nothing in common with regular A-bar movements that are part of the syntactic derivation. QR affects interpretation, hence, according to Reinhart, it has to apply at the interface, triggered by a violation in the computational system.

Both QR and pied-piping are movement operations that happen for reasons outside the computational system. In pied-piping, the feature-bearing element has to move covertly to the specifier of the phrase containing it (as in (38)), just like the quantifier has to move to the left inside the phrase to be able to be QR-ed (see (41) and (42)).

(38) The man, [whom$_i$ picture of t_i]$_j^{wh}$ I saw t_j in newspaper yesterday, is here.
(Yoon 2002:1098)

This movement (that is, pied-piping of '(the) picture of) is not motivated by standard computational system needs: it does not check any features in the specifier of the DP, nor is it motivated by Subjacency (or the Phase Impenetrability Condition, Chomsky 2001). It is also an optional movement as shown in (38) and (39). The *wh*-word is allowed to leave the containing phrase and move to the clause-initial position by itself.

(39) a. the man, [afraid of whom] John is, ….
b. the man, [whom] John is afraid of, ….
(40) a. the man, [pictures of whom] John saw on the magazine, ….
b. the man, [whom] John saw pictures of on the magazine, ……
(Yoon 2002:1098)

Yoon (2002) assumes that the optionality in (38a) and (38b), and (39a) and (39b) is rooted in the *wh*-element covertly moving to the specifier of the containing phrase in the (a) examples, thus pied-piping the whole phrase, while in the (b) examples the *wh*-element does not move inside the containing phrase, it does not percolate its feature, and it is not able to pied-pipe the containing phrase. Another similarity between QR and pied-piping is that the type of movement is that both

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of them result in a construction that is considered highly marked. QR – or certain types of QR – are marked (Reinhart 1995, Kayne 1994, May 1985).

The mechanics of QR and pied-piping are shown above in (41) and (42), according to Yoon (2002) the mechanism of pied-piping and QR are the same. Both covertly move to a specifier position and both move because of interpretative reasons. Since QR is not motivated by feature checking, anything that undergoes QR has to be adjoined. Yoon (2002) assumes that feature percolation is allowed from adjoined positions – which originally is not a position for feature percolation. Feature percolation happened in a specifier of the phrase and head of the phrase relation in the versions of the feature percolation hypothesis (Koopman and Szabolcsi 2000). In a similar vein, when there is pied-piping in a *wh*-construction, the *wh*-phrase has to move to a position sufficiently high enough in the structure. This position is usually the leftmost position in any given phrase. The movement of the *wh*-phrase occurs covertly, just like QR.

(41) $[_{DP}$ Every city$_i$ [somebody from t_i]]$_j$ $[_{IP}$ despises it$_i$].
(42) the man, $[_{DP}$ whom$_i$ $[_{D'}$ pictures of t_i]]$_j$ I saw t_j on the mantelpiece, …

(Yoon 2002:1001)

According to Yoon (2002) pied-piping in PPs are acceptable because the *wh*-element moves to the specifier for case checking (covertly), however, when it does not have to move there for case, pied-piping becomes less acceptable (compare (42a) and (42b)). In (42) the complement of the P is not a noun phrase, but a clause, hence it does not need to check case.

(43) a. ?I wonder [without meeting whom] Mary left.
b. I wonder $[_{PP}$ without $[_{CP}$ $[_{IP}$ PRO meeting whom]]] Mary left.

(Yoon 2002:1110)

PP pied-piping is not possible in main questions because it is blocked by Interface Economy (see (44)).

(44) a. *Pictures of whom did you see?
b. Whom did you see pictures of?

(Yoon 2002:1105)

The unavailability of (43a) can be explained by Interface Economy: "If at the stage of translating a given convergent derivation D into some semantic representation, we discover that an equivalent semantic representation could be obtained by a more economical derivation D', D' blocks D" (Reinhart 1995:51). This explanation – that is, the movement without QR (44a) is more economical that pied-piping and QR (44b) – is satisfactory with regard to PP pied piping in main questions. Pied-piping in relative clauses is more restricted than pied-piping in questions according to Yoon (2002), unless there is an available reading for the relative phrase as a topic. Here too, although this type of pied-piping would be a violation in the computational system, Interface

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Economy prevails and allows this derivation under LF – as there is a difference between having *whom* as a topic or the whole phrase *picture of whom*. Interface Economy chooses the most economical derivation possible for a contrsuction. Although pied-piping is not possible out of a finite clause, it is possible out of an ECM construction (as in (45a)) and it is not impossible from an infinitival clause (as in (45b)).

(45) a. Someone believes everybody to be smart.
b. Somebody wants to go to every party.

(Yoon 2002:1113)

However, pied-piping seems not to be possible for another reason. When the pied-piped clause has a subject, pied-piping becomes unacceptable (as in (46)).

(46) a. The elegant parties, [to be admitted to one of which] was a privilege, had usually been held at Delmonico's.
b. *The elegant parties, [for us to be admitted to one of which] was a privilege, had usually been held at Delmonico's.
c. *They bought a car, [that their son might drive which] was a surprise to them.

(Yoon 2002:1111)

Yoon (2002) adopts Fox's (2000) Scope Economy principle to account for the locality of QR in English. Scope Economy states that semantically vacuous applications of QR that reverse the relative scope of two QPs are not allowed. Yoon combines this restriction with Shortest Move (46), which gives him the desired locality restriction on QR in English.

(47) Shortest Move
QR must move a QP to the closest position in which it is interpretable. In other words, a QP must always move to the closest clause-denoting element that dominates it.

(Fox 2000:23)

To sum up, Yoon (2002) gives a more unified account of pied-piping in English by implementing pied-piping as a form of QR. He claims that in pied-piping the *wh*-phrase covertly moves to a phrase-initial position – where it might be adjoined – from which feature percolation can proceed. Non-phrase-initial pied-piping ceases to be a problem for his account of pied-piping as it allows covert movement to precede overt movement, thus the feature-bearing element first moves to a phrase-initial position and then the pied-piped phrase is raised to a clause-initial position inside a clause – depending on where the pied-piped element needs to end up. Yoon associates pied-piping in relative clauses to the possibility of interpreting them appositively. He explains the impossibility of clausal pied-piping in English by an independent constraint connected to QR—it is clause bounded, so pied-piping must be clause bounded as well.

There are two other relevant accounts to be mentioned in which the left edge of a phrase plays an important role as well. In the theories seen so far, it was already pointed out that the feature-bearing element has to be in a position that is the highest position inside a phrase, however, the edge position might be reachable through other mechanisms.

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2.2.3 Optimality Theory and the Edge

Heck (2008) and Huhmarniemi (2012) both discuss pied-piping in A'-constructions. Heck (2008) focuses on *wh*-movement and pied-piping, while Huhmarniemi (2012) gives an account of *wh*-movement in Finnish touching on pied-piping. First, I will discuss Heck (2008), as Huhmarniemi (2012) builds in part on the generalizations in Heck (2008).

Heck (2008) discusses *wh*-movement and pied-piping (mainly) in questions. Heck (2008) analyzes pied-piping in Optimality Theory, which means that constraints on pied-piping, and movement in general, are ranked, and they are gradual and violable. Heck surveys many languages and draws generalizations from them. Heck reviews the types of recursive pied-piping in languages (as in (50)-(54)). Recursive pied-piping is the phenomenon in which the pied-piped phrase contains recursion of the type of position from where an element pied-piped the phrase (the generalization is given in (48), also schematized in (49)).

(48) Generalization on Recursive pied-piping
If a *wh*-phrase α can pied-pipe a constituent β, and if β is in a canonical position to pied-pipe γ, then α can also pied-pipe γ.

(49) a. $[_{\beta} \ldots \alpha \ldots]_2 \ldots t_2 \ldots$
b. $[_{\gamma} \ldots. \beta \ldots.]_3 \ldots t_3 \ldots..$
c. $[_{\gamma} \ldots [_{\beta} \ldots \alpha \ldots]_2 \ldots]_3 \ldots. t_3 \ldots$

This can be observed with specifier recursion in many Germanic and non-Germanic languages alike.

(50) a. I know a man [whose deckchair] you spilled coffee on. **English**
b. I know a man [whose sister's deckchair] you spilled coffee on.
c. I know a man [whose sister's lawyer's deckchair] you spilled coffee on t_2.
d. I know a man [whose lawyer's sister's deckchair] you spilled coffee on t.

(51) a. en man $[_{DP}$ hvis holdning$]_2$ jeg godt kan lide t_2 **Danish**
a man whose attitude I good can like
'a man whose attitude I like'
b. en man $[_{DP}$ hvis søsters holdning$]_2$ jeg godt kan lide t_2
a man whose sister's attitude I good can like
'a man whose sister's attitude I like'
c. en man $[_{DP}$ hvis søsters vens holdning$]_2$ jeg godt kan lide t_2
a man whose sister's friend's attitude I good can like
'a man whose sister's friend's attitude I like'

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(52) a. čelovek, [$_{DP}$ č'ë otnošenie]$_2$ mne nravitsja t$_2$ **Russian**
man whose attitude me pleases
'a man whose attitude pleases me'
b. čelovek, [$_{DP}$ otnošenie č'ej sestry]$_3$ mne nravitsja t$_3$
man attitude whose sister me pleases
'a man whose sister's attitude pleases me'
c. čelovek, [$_{DP}$ otnošenie druga č'ej sestry]$_3$ mne nravitsja t$_3$
man attitude friend whose sister me pleases
'a man whose sister's friend's attitude pleases me'

(53) a. jemand, [$_{DP}$ dem seine Tochter]$_2$ du t$_2$ magst **colloquial German**
someone who his daughter you like
'somene whose daughter you like'
b. jemand, [$_{DP}$ dem seiner Tochter ihren Sohn]$_2$ du t$_2$ magst
someone who his daughter her son you like
'someone whose daughter's son you like'
c. jemand, [$_{DP}$ dem seiner Tochter ihrem Sohn sein Art]$_2$ du t$_2$ magst
someone who his daughter her son his way you like
'someone whose daughter's son's way you like'

(54) a. ein Mann, [$_{DP}$ dessen Vaters Liegestuhl]$_2$ du t$_2$ ruiniert hast **German**
a man whose father deckchair you ruined have
'a man whose father's deckchair you ruined'
b. ?ein Mann, [$_{DP}$ dessen Vaters Bruders Liegestuhl]$_2$ du t$_2$ ruiniert hast
a man whose father brother deckchair you ruined have
'a man whose father's brother's deckchair you ruined'
c. *ein Mann, [$_{DP}$ dessen Mutter Liegestuhl]$_2$ du t$_2$ willst
a man whose mother deckchair you want
'a man whose mother's deckchair you want'
d. *ein Mann, [$_{DP}$ dessen Mutter Schwester Liegestuhl]$_2$ du t$_2$ willst
a man whose mother sister deckchair you want
'a man whose mother's sister's deckchair you want'

In (50)-(54) we can see instances of specifier recursion and pied-piping by specifiers in relative clauses. In (55) - (57), it is possible for a *wh*-pronoun to pied-pipe the containing phrase. It is interesting to note, that only colloquial spoken German allows recursion of a possessive element, whereas standard German only marginally allows possessive recursion with masculine/neuter nouns and it does not allow recursion of possessives with feminine nouns. Heck (2008) suggests that the reason for this is morphological – in German, nouns can bear a genitive -*s* marker, however, this marker can only attach to nouns whose gender is masculine or neuter. Feminine nouns have a different declination and no genitive marking on them, which makes it impossible for them to form recursive possessive structures.

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(55) a. [DP Którego autora książkę]$_2$ niedawno kupiłeś t$_2$? **Polish**
which.GEN author.GEN book recently bought.2SG
'Which author's book did you recently buy?'
b. [DP Czyiego ojca sklep]$_2$ kupiłes t$_2$?
who.GEN father.GEN store bought.2SG
'Whose father's store did you buy?'
c. [DP Jakiej firmy benzinę]$_2$ najczęściej Pan jupuje t$_2$?
which.GEN company.GEN gasoline most-frequently you buy2.SG
'Which company's gasoline do you buy most frequently?'

(56) a. Ég velti því fyrir mér [DP móður hvers]$_2$ hann kvæntist t$_2$. **Icelandic**
I roll it in-front me mother's whose he married
'I wonder whose mother he married.'
b. *Ég velti því fyrir mér [DP systur móður hvers]$_2$ hann kvæntist t$_2$.
I roll it in-front me sister mother's whose he married
'I wonder whose mother's sister he married.'
c. * Ég velti því fyrir mér [DP systur vinar móður hvers]$_2$ hann kvæntist t$_2$.
I roll it in-front me sister friend mother's whose he married
'I wonder whose mother's sister's friend he married.'

(57) a. I-'ixtalaj[DP s-kayijonal y-osil li j-tot-e]$_2$. **Tzotzil**
CP-ruin A3-firelane A3-land the A1-father
'Whose land's firelane was ruined?'
b. *[Buch'u y-osil s-kayijonal]$_2$ i-'ixtalaj t$_2$?
who A3-land A3-father CP-ruin
'Whose land's firelane was ruined?'

Specifier recursion can be observed in main and embedded questions as well. Note that in Icelandic (56) specifier recursion is not allowed and hence pied-piping is also blocked.[4] In Polish (55), specifier recursion is allowed and the possessive phrase can be pied-piped in main questions. Interestingly, as we saw above, Tzotzil allows pied-piping in regular questions where the *wh*-element is possessive (see (57)) and as long as the *wh*-element is on the left edge of the phrase, however, it does not allow pied-piping when the possessor is embedded deeper, and there is specifier recursion with possessors.

Heck (2008) assumes that movement of the *wh*-phrase is triggered by Agreement: the *wh*-feature on the *wh*-element has to Agree (58) with the *wh*-feature on C. Heck considers Agree an activation mechanism.

(58) Agree
Let β be a probe and γ a matching goal in Σ.[5] Then β and γ can establish Agree if and only if a. and b. hold.
a. β m-commands γ
b. There is no potential goal α such that β m-commands α and α c-commands γ.

[4] I would like to thank one of my reviewers, Krisztina Szécsényi for pointing out that the pattern unfolding may account for the unavailability of pied-piping and specifier recursion in Icelandic. The pattern shows that languages employ different mechanisms for pied-piping. In Germanic languages pied-piping might be a covert movement type similar to QR while in other languages it might be an overt movement to the leftmost position in the phrase (such as a specifier) thus allowing specifier recursion.

[5] Σ is a root, that is, the maximal projection. Every Σ is a phase. (Heck 2008:193)

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This requirement is fulfilled if the *wh*-element (the goal) moves closest to the C head (the probe), to the highest possible position structurally, and if there is no other goal element that could potentially Agree with the feature on C. Heck (2008) does not assume that there is an EPP feature and that movement is triggered by the EPP (departing from Chomsky 2001). Movement is triggered by the need for other morpho-syntactic features to be checked via Agree. The checking/Agree relationship between C and the given morpho-syntactic feature – *wh*-feature or relative-feature – has to be local. This requirement is what Heck (2008) calls Local Agree (58).

(59) Local Agree
For every active probe β, there is a different matching goal γ in Σ such that no XP dominates γ but not β.

(60) Active Probe
A probe β is active if and only if a. or b. hold.
a. β is a part of Σ
b. β is a single in the numeration.

(Heck 2008:191)

The constraint Local Agree minimizes the distance between the probe and the goal, and it attracts the element towards the probe; yet it is not necessary for the element to move. Local Agree is a violable constraint: it can be violated by phrase boundaries. This also means that pied-piping does not involve feature percolation – and Heck (2008) claims that there is no feature percolation (see Heck 2008, chapter 1). Heck (2008) argues that there is *wh*-movement inside the phrase to the edge of the phrase. This movement he calls secondary *wh*-movement, as it moves a *wh*-element to a position which is not its scope position. Heck calls *wh*-movement to a scope position primary *wh*-movement. The need for secondary *wh*-movement inside a phrase can be described by the Edge Generalization (as in (61a), schematized in (61b)).

(61) a. Edge generalization
If a *wh*-phrase α pied-pipes a constituent β, then α has to be at the edge of β.
b. $[_{\beta}\ \alpha_2 \ldots [_{\gamma} \ldots t_2 \ldots] \ldots]_3 \ldots t_3 \ldots$

As the examples above (50) – (57) illustrate, movement to the edge of the phrase makes agreement local, and in cases where the *wh*-element cannot move out of the phrase for some reason, the whole phrase containing the *wh*-element gets pied-piped. Independent constraints of movement out of a phrase do play a role in primary *wh*-movement. It has been observed that a(n) (*wh*-)element cannot be moved out of a DP from the Left Branch in English – that is, this constraint is not violable in English. This constraint is called the Left Branch Condition (as in (62)).

(62) Left Branch Condition
If α is the leftmost category in a DP, then α cannot undergo movement out of this DP by a transformational rule.

(63) a. *Whose$_i$ did you read [$_{DP}$ t_i book]?
b. [$_{DP}$ Whose book]$_i$ did you read t_i?

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As it can be seen in (62), the *wh*-element cannot move out of the DP, and so the whole phrase undergoes pied-piping to the left periphery of the clause. It is important to identify which positions are accessible for pied-piping and what constitutes the edge of a phrase.

(64) Accessibility
γ is accessible in Ω if and only if a. or b. hold.
a. Ω is a phase and γ is in the edge domain of Ω.
b. Ω is not a phase and γ is in the domain of Ω.

(65) Edge Domain
γ is in the edge domain of a phase Ω if and only if a., b., or c. hold.
a. γ is (adjoined to) the head of Ω.
b. γ is a specifier of Ω.
c. (i) α is a specifier of Ω and
(ii) γ is accessible in α.

Heck (2008) follows Chomsky (2000) in assuming that CP and vP constitute phases, adding DP to it. Being a phase means that after the building up of a phase has finished, anything that is within the phase is not visible to syntactic operations[6] – which is called Phase Impenetrability Condition (Chomsky 2000) (given in (66)).

(66) Phase Impenetrability Condition
The domain of a head H of a phrase HP is not accessible to operations outside of HP. Only H and its edge domain are accessible to such operations.

Heck (2008) suggests that this is the reason for secondary *wh*-movement: the *wh*-element has to move to the edge of the given phrase/phase to be accessible to further (movement) operations. Heck defines accessibility in a way that it allows the optionality of secondary *wh*-movement in cases in which the element is not embedded in a phase – that is, it is not inside a CP, vP, or a DP. This allows for the optionality in PP pied-piping in English. Heck (2008) assumes that movement can proceed in strict cyclicity, hence feature-bearing elements have to move to the edge domain, and further movement can proceed from there. No possible landing site can be skipped during a movement operation. Heck (2008) gives the following derivation (67) to successive cyclic *wh*-movement with pied-piping (66).

[6] Heck and Müller (2003) suggest that secondary *wh*-movement is triggered by the constraint Phase Balance, that requires movement to the phase edges.
(i) Phase Balance
For every single probe β in the numeration there is a different accessible matching goal γ in the current phase Σ.

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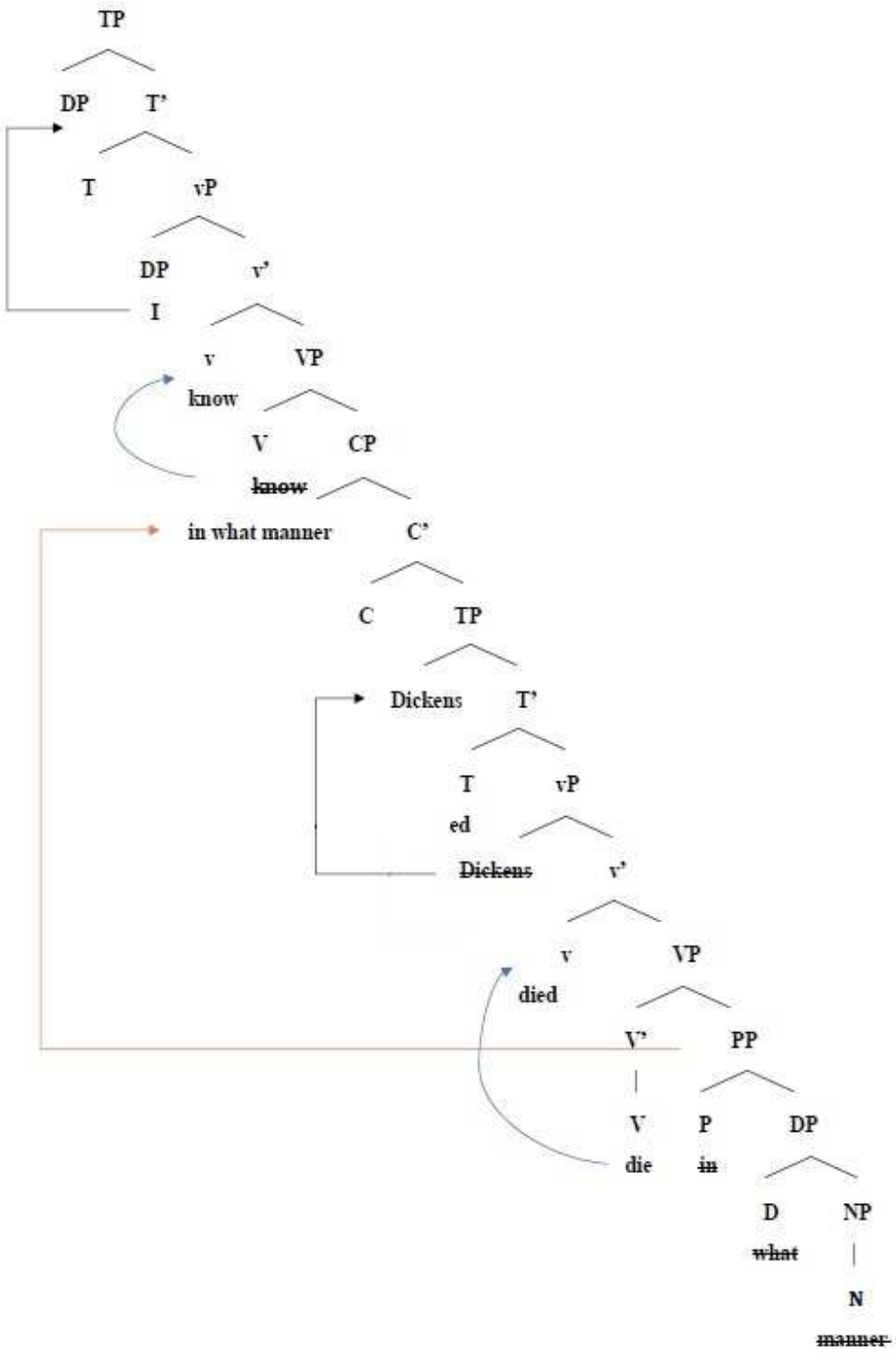
(67) John wonders in what manner did Dickens die.

(68) a. [$_{VP}$ died [$_{PP}$ in what manner]$_4$]$_5$ → (Merge + verb raising)
b. [$_{vP}$ died$_2$+v [$_{VP}$ t$_2$ [$_{PP}$ in what manner]$_4$]$_5$] → (Merge *Dickens*)
c. [$_{vP}$ Dickens died$_2$+v[$_{VP}$ t$_2$ [$_{PP}$ in what manner]$_4$]$_5$]→ (Move PP4)
d. [$_{vP}$[$_{PP}$ in what manner]$_4$ Dickens died$_2$+v [$_{VP}$ t$_2$ t$_4$]$_5$]→ (Move VP5)
e. I know [$_{VP}$ t$_5$ in what manner]$_4$ Dickens$_3$ [$_{vP}$ t´$_4$ t$_3$ died$_5$ t$_4$].

(69)



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Essentially, pied-piping is a repair mechanism for Heck (2008): it happens in cases in which the *wh*-element cannot move alone, and – even though it violates some of the constraints – moving the whole phrase containing the feature-bearing element can save the construction.

The most significant constraint with respect to pied-piping is Local Agree, which requires the feature-bearing element to move as close to the edge of the phrase/phase containing it as possible. Every node that separates probe and goal counts as a violation of Local Agree, however, there are cases in which a bigger violation of one constraint yields a lesser violation for the computational system – that is, for Heck, pied-piping is a repair mechanism that can rescue the derivation. Heck (2008) assumes that it is better to violate a lesser violation (such as Local Agree) more times than violating another constraint (in this case LBC) even once.

To summarize, Heck (2008) analyzes pied-piping in Optimality Theory, which allows for a more flexible theory with respect to describe pied-piping in most construction.

2.2.4 The edge generalization and snowball movement

Huhmarniemi (2012) discusses A-bar movements in Finnish. She assumes that the Edge generalization holds for Finnish *wh*-movement, and that there has to be secondary *wh*-movement inside the phrase to reach the edge position in the phrase. She assumes that movement to the edge of the phase/phrase is triggered by the EPP feature on the phase head, adopting Chomsky's (2001) proposal. The following phrases can undergo pied-piping in Finnish (70) – (74).

(70) The determiner phrase (DP)

[Kenen polkupyörää] sinä lainasit_?
who.GEN bike.PAR you.NOM borrowed
'Whose bike did you borrow?'

Huhmarniemi (2012:209)

(71) The adpositional phrase (PP)

[Mitä kohti _] he kävelivät _?
what.PAR towards they.NOM walked
'What did they walk towards?'

Huhmarniemi (2012:209)

(72) The adjectival phrase (AP)

[Minkä värinen] Pekan talo on _?
what.GEN colored.NOM Pekka.NOM house.NOM is
'Which color is Pekka's house?'

Huhmarniemi (2012:209)

(73) Participial adjectives (agentive participle)

[Kenen kunnostaman pyörän] Merja osti _?
who.GEN repaired.MA/PTCP.ACC bike.ACC Merja.NOM bought
'Who repaired the bike Merja bought?'

Huhmarniemi (2012:209)

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(74) The adverb phrase (AdvP)

[Miten nopeasti] Sirkku käveli _?
how fast Sirkku.NOM walked
'How fast did Sirkku walk?'

Huhmarniemi (2012:209)

The examples above show that in Finnish the *wh*-element has to raise to the edge of any phrase directly containing it. Finnish is a language where only one *wh*-element is moved to a left-peripheral position, even in cases when there are multiple *wh*-elements in a sentence. In cases when there is only one *wh*-word in the sentence, it must move to a clause initial position designated for *wh*-elements otherwise it is interpreted as an echo-question (as in (75)).

(75) a. Pekka osti minkä?
Pekka.NOM bought what.ACC
'Pekka bought what?'
b. Minkä Pekka osti _?
what.ACC Pekka.NOM bought
'What did Pekka buy?'

Huhmarniemi (2012:211)

In relative clauses there is no available interpretation for an in-situ relative, it must occupy a position on the edge of CP (as in (76)).

(76) a. *kirja, Pekka osti jonka
book Pekka.NOM bought which.ACC
b. kirja, jonka Pekka osti
book which.ACC Pekka.NOM bought
'a/the book which Pekka bought'

Huhmarniemi (2012:211)

In cases when there are two *wh*-elements in the sentence, only one of them is allowed to move to the edge of C, the second *wh*-element has to stay in situ. (76) exemplifies this phenomenon. In (76a) we can see a sentence containing two *wh*-words; the sentence has a single pair reading. In (76b) we can see the same sentence, however, in this case the sentence has a pair-list reading that is signaled by the *-kin* suffix on the object. (76c) shows that moving the object to the front alongside the subject yields an ungrammatical sentence.

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(77) a. Kuka osti mitä?
who.NOM bought what.PAR
'Who bought what?'
b. Kuka osti mitä- kin?
who.NOM bought what.PAR-*kin*
Who bought what?
c. *? Kuka mitä osti _?
who.NOM what.PAR bought

Huhmarniemi (2012:211)

Both properties of single *wh*-movement – the movement of the *wh*-element to the edge (77b), and the fact that without movement only the echo reading is available (77a) – are present in pied-piping too. The relative pronoun has to move to the edge of CP in pied-piping cases as well, and there is no meaning available when the relative pronoun is in-situ, thus rendering the whole construction ungrammatical (see in (78)).

(78) a. [Auttaessaan ketä] Pekka kaatui _?
help.ESSA/PRS.PX/3SG who.PAR Pekka.NOM fell
'Pekka fell when he was helping whom?'
b. [Ketä auttaessan_] Pekka kaatui _?
who.PAR help.ESSA/PRS.PX3/SG Pekka.NOM fell
'Who was Pekka helping when he fell?'

Huhmarniemi (2012:211)

(79) a. *mies, [auttaessan jota] Pekka kaatui _
man help.ESSA/PRS.PX/3SG who.PAR Pekka.NOM fell

b. mies, [jota autaessan] Pekka kaatui _
man who.PAR help.ESSA/PRS.PX/3SG Pekka.NOM fell
'the man, who Pekka was helping when he (=Pekka) fell'

Huhmarniemi (2012:211)

Huhmarniemi (2012) assumes that recursive pied-piping has to proceed in cyclic steps by moving to the edge of each phrase containing the *wh*-element when the whole/the largest phrase undergoes pied-piping (as in (80)). Internal *wh*-movement is exemplified in Finnish in (81); in this example the snowballing movement is easy to track.

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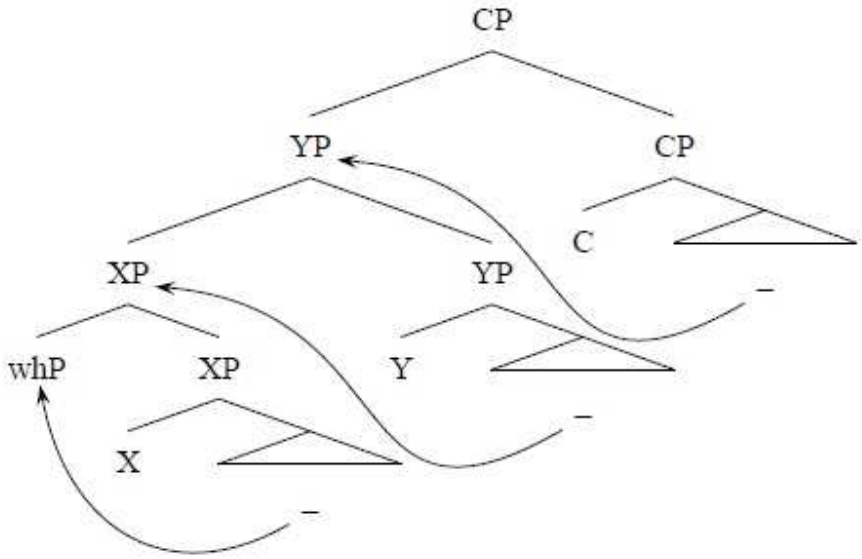
(80)



(81) a. [[Mitä kohti _i] kävellessään _j]$_k$ Pekka näki Merjan_$_k$?
what.PAR towards walk.ESSA/PRS.PX3/SG Pekka.NOM saw Merja.ACC
'What was Pekka walking towards when he saw Merja?'

b. Pekka näki Merjan [kävellessään [kohti puistoa]].
Pekka.NOM saw Merja.GEN walk.ESSA/PRS.PX3/SG towards park.PAR
'Pekka saw Merja when he was walking towards a/the park.'

(Huhmarniemi 2012: 225)

Huhmarniemi (2012) presents a compelling analysis of pied-piping building on Heck (2008). She assumes internal *wh*-movement in cases where a bigger phrase undergoes pied-piping. Internal *wh*-movement can proceed in a cyclic, step-by-step manner, and creates a snowball movement. As will be shown in chapter 5, this analysis is not sufficient in the case of prenominal adjuncts in Hungarian.

In the next section I will present an approach that reformulates the traditional view on pied-piping by separating the type of construction and the motivation and mechanism of movement.

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2.3 Does pied-piping exist? – Q-particle and operator movement

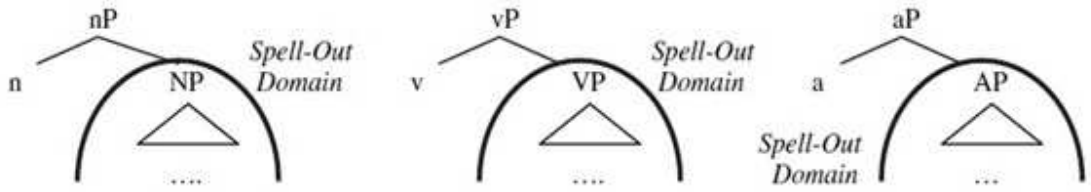
Cable (2010) challenges the existence of pied-piping as a syntactic operation. One of the most crucial distinctions is between pied-piping as a syntactic operation (82) and pied-piping structures (83).

(82) Pied-Piping:
Pied-piping occurs when the operation that targets the feature of a lexical item L applies to a phrase properly containing the maximal projection of L (L^{max}).

(83) Pied-Piping Structure:
A pied-piping structure is one where a phrase properly containing a maximal projection of a *wh*-word (or related operator) has undergone movement typically associated with that operator.

Cable (2010) investigates interrogative sentences, and pied-piping in questions. Cable (2010) builds on Horváth (2000, 2007), where she analyses focus in Hungarian. Horváth (2000, 2007) assumes a semantic operator that attaches to a focused phrase and is responsible for the focus interpretation. Cable (2010) assumes a Q operator on the phase that move, and a QP projection in the CP domain. The QP is projected by a Q particle that probes the lexical item bearing the Q feature. The Q particle can be phonologically zero (for instance in English or in Hungarian) or it can be manifested as a lexical item (as in Tlingit). This Q particle – which is also a semantic operator – attaches to a phrase containing a *wh*-word. A QP projection is formed with Q as the head of the projection taking the phrase containing the *wh*-element as a complement. The lexical projections are domains of phases constituting a unit that is impenetrable for *Agree*.

(84) The Fine Structure of Lexical Categories (Embick and Marantz 2008)
Every lexical projection (VP, NP, AP) is complement to a *phase head* (little-v, little-n, little-a).
Diagram of the Lexical Projections:



This is a crucial part of Cable's (2010) theory since the main difference between languages lies in the ability and need to establish an Agree relationship between the lexical *wh*-element and the Q particle (see (91) and (92)). As phases are closed off units in syntax (due to the Phase Impenetrability Condition, PIC), the *wh*-element needs to move to the edge of the phase to be able to Agree, otherwise the agreement is blocked (as in (85)).

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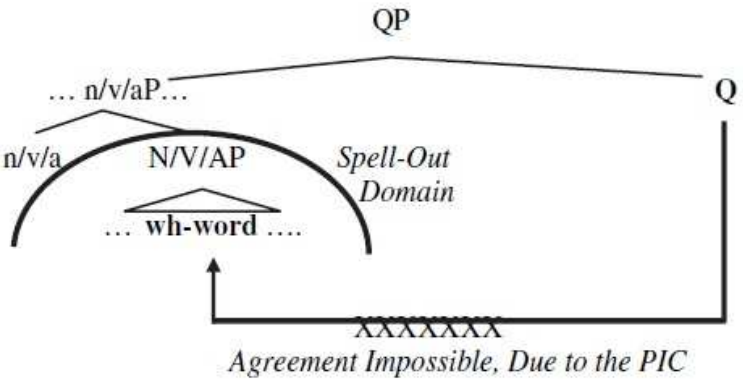
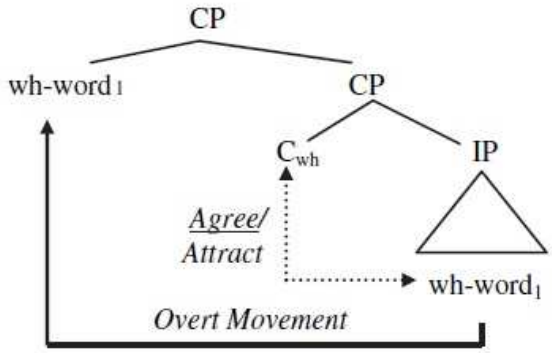
(85) Inability for Q/Wh-Agreement to Cross a Lexical Projection



When the *wh*-word is in a position from which it can move out by itself – in cases when it is not embedded inside a phase – then it does move to the specifier of CP alone (as in (86)).

(86) Wh-Fronting as Direct Attraction of the Wh-Word



Cable (2010) argues that under his Q-based theory the structure of pied-piping in English is as in (87). The Q operator is always head-final.

(87) a. Whose father's cousin's uncle did you meet at the party?
b. [$_{QP}$ [[[[**whose**] father's] cousin's] uncle] **Q**] did you meet at the party?
(Cable 2010:143)

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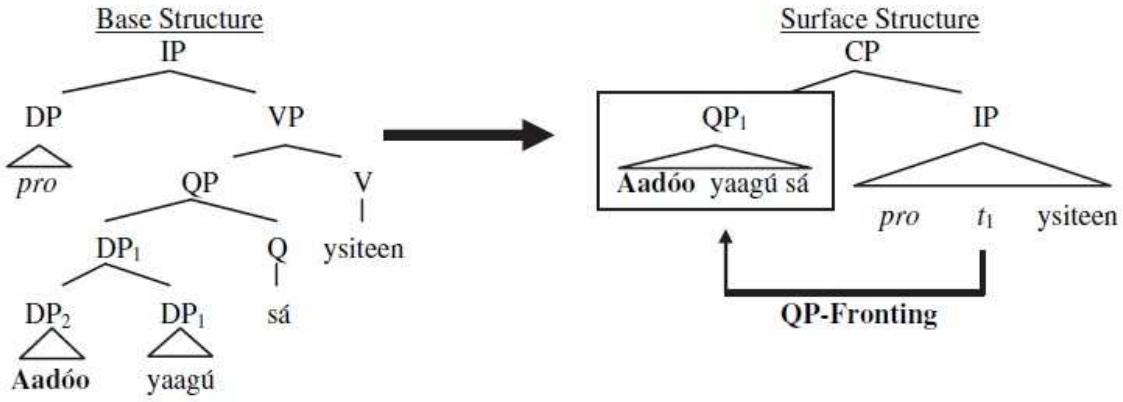
Cable builds his theory on the surface form of Tlingit questions. In Tlingit, the interrogative operator is expressed by a lexical particle *sá* that attaches to a phrase that is in the scope of the question (as in (88)).

(88) a. [$_{QP}$ [$_{DP}$**Aadóo** yaagú] **sá**] ysiteen?
who boat Q you.saw.it
'Whose boat did you see?'
b. * [$_{QP}$ [$_{DP}$ **Aadóo sá**] yaagú] ysiteen?
who Q boat you.saw.it

(89) Pied-piping structure without pied-piping in Tlingit



As it can be seen in (88a) the interrogative particle has to attach to the whole phrase, otherwise the construction is not well-formed (88b). In (89) we can see the structure of (88a). This derivation of movement in Tlingit is an instance of movement of the QP, which was not triggered by the *wh*-word inside the QP. Cable (2010) calls these kinds of movement patterns *Pied-piping Structures*, meaning that even though the constituent containing the *wh*-word moves, the trigger of the movement was not a (syntactic) feature on the *wh*-word. Rather, the trigger of movement is the Q operator manifesting as *sá* in Tlingit. In this sense, there is no pied-piping in this type of derivation, as defined in (82) above. In Cable's (2010) theory, all pied-piping structures look like Tlingit questions – even though the particle is not an overt lexical element in some languages. The constraints on pied-piping described in earlier literature are not observed in Tlingit, see (88) as an example. Tlingit allows *wh*-words to be embedded inside constructions that English does not allow (as in (90)).

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(90) Pied-piping past islands in Tlingit

a. [[Wáa kwligeyi$_{CP}$] x̲áat $_{NP}$] sá i tuwáa sigóo?
how it.is.big.REL fish Q your spirit.at it.is.happy
Literally: A fish that is how big do you want?

(Cable 2010:143)

b. [[Goodáx̲] k̲'anáax̲án tlein] sáyá du kát satéen?
where.from fence big Q.FOC its surface.to place
Literally: 'A big fence from where was placed on it?'

(Nyman&Leer 1993:150)

In English, lexical elements to the left of the feature-bearing element block the movement past them. That is, there is no pied-piping past lexical categories (= VP, NP, AP) in English.

Cable (2010) argues that there are two types of languages depending on agreement: limited pied-piping languages (91) and non-limited pied piping languages (92).

(91) Limited Pied-Piping Languages:
A language where a *wh*-word cannot be dominated in a phrase pied-piped by either an island or a lexical category (=phase domain).

(92) Non-limited Pied-Piping Languages
A language where a *wh*-word can be dominated by an island or a lexical category.

Limited pied-piping languages are the ones where there is an Agree relationship between the Q particle and the lexical item bearing the Q-feature. Agreement must be in a sense local in Cable's analysis as well. There cannot be anything between the Q particle and the Q-feature bearing element is the complement of Q^0 (Figure 1).

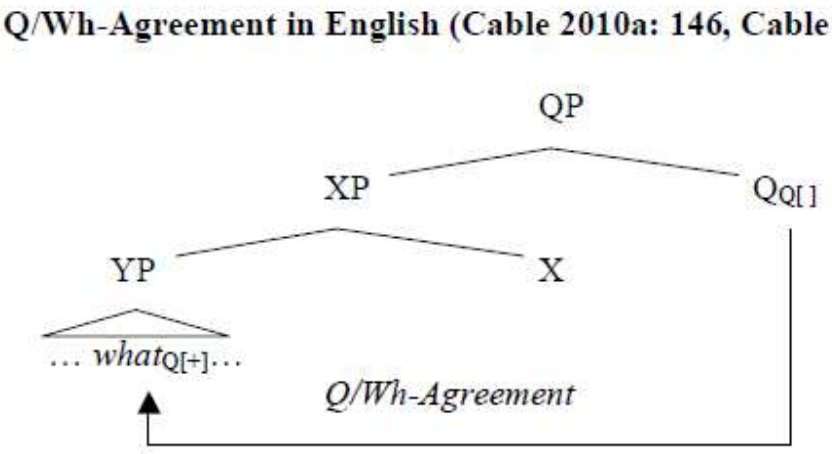

Figure 1: Q Agreement in English

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This figure shows a head-final QP modelled after the Tlingit structure. Cable (2010) assumes that every language utilizes a Q particle, which is in some cases a phonologically empty semantic operator. Figure 1 shows Q agreement in English; as we have seen above (87), in some languages the syntactic feature on the *wh*-phrase needs to establish an Agree relation with the Q operator. This relation can only be established if the *wh*-phrase moves to the edge of the phase (YP). There cannot be any lexicalprojection between the *wh*-phrase and the operator Q as it would block Agree. Cable (2010) calls this the QP Intervention Principle (QIP).

(93) The QP Intervention Principle
A QP cannot intervene between a functional head F and a phrase selected by F.

Agreement can be blocked if the *wh*-word is embedded in a lexical category deeper in the structure. Cable (2010) assumes a Strong Phase Impenetrability Condition, which means that there can be no agreement relationship between the Q particle and heads in separate Spell-Out domains (Figure 3). Thus, constructions as in (94) are ill-formed.

(94) *[A fish that is *how* big] did you buy?

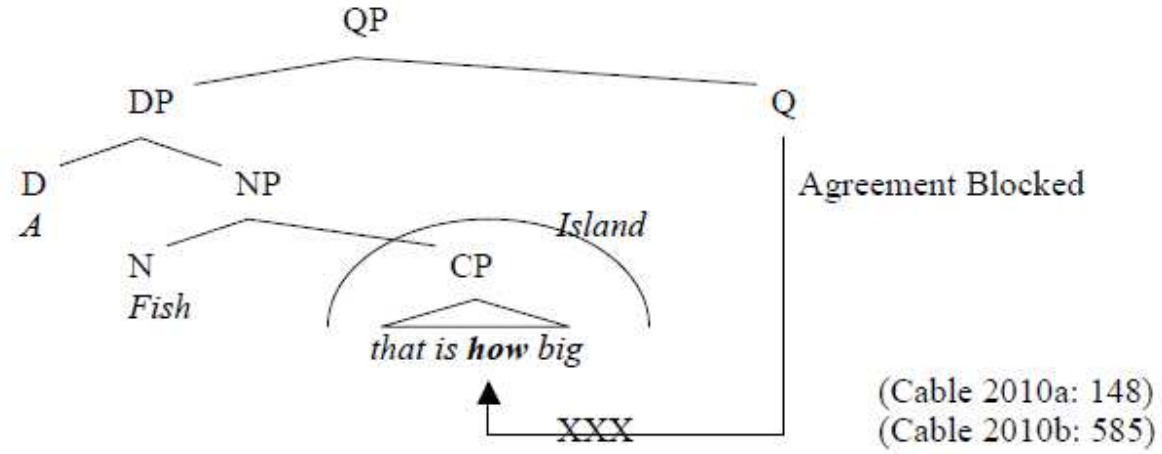

Figure 3: Strong Phase Impenetrability Condition

However, Cable (2010) claims that a *wh*-word can pied-pipe a clause as long as it can escape to Spec,CP and occupy the edge position of the phase (as in (95)).

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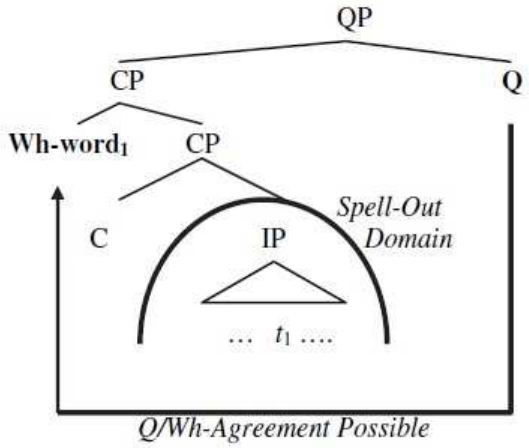
(95) Subordinate CP Pied-Piping Is Possible if the Wh-Word Is in SpecCP



Cable's (2010) approach is able to account for the difference in languages with respect to the size of constituents that can be pied-piped. It makes a good prediction about in which constructions can can account for most constructions of pied-piping. However, there are cases that still pose a challenge to his theory too, such as the optionality of PP pied-piping in English. Cable's (2010) theory encompasses the Edge Generalization (Heck 2008) as to get to the edge of a phase, the feature-bearing element needs to move to the edge of the phase (that is, in languages in which there is Agreement between Q and the feature-bearing element). Although, this theory cannot fully predict the patterns observed in pre-nominal pied-piping in Hungarian (see chapter 4), it provides a basis for an account for Hungarian.

This concludes my review of the main theoretical approaches to pied-piping. In the next chapter, I provide an overview of the relevant A-bar movement constructions (focus-movement, *wh*-movement, relativization) in Hungarian whose pied-piping properties the experiments in this thesis investigate.

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3. Hungarian background of focus-movement, *wh*-movement and relativization

In this chapter, I give an overview of the relevant background from the Hungarian literature concerning A-bar movements in Hungarian. I concentrate on three types of A-bar movements, namely, focus movement, *wh*-movement and relativization. These types of movements are the ones that are relevant with respect to the experiments conducted, and presented in chapter 4. The experiments contain instances of pied-piping in focus-movement, *wh*-movement and relativization. There is also theoretical disagreement about the motivation for displacement (see chapter 1) and the mechanisms triggering the displacement – in fact, in some cases displacement is also questioned.

In what follows (section 3.1), I am going to overview focusing in Hungarian and the theories that analyze the phenomenon in different ways. Focus (movement) is a cross-linguistic phenomenon that presents many challenges for linguists in various languages and it is one that seems to split the views in Hungarian as well. We will see different accounts that consider focus-movement to be triggered by (i) a syntactic focus-feature (Horváth 1986; Bródy 1990, 1995; É. Kiss 1986, 2008); (ii) a semantic operator (Horváth 1997, 2000, 2005, 2010); (iii) [pred]-feature that is connected to focus being a predicate (É. Kiss 2006); and (iv) semantic operator and a prosodic need together triggers focus-movement (Surányi 2010, 2012).

Then in section 3.2, I give some background to *wh*-movement in Hungarian and the approaches to it. With respect to *wh*-movement there are different strategies that languages apply, Hungarian belonging to the group of languages that hold a designated position for the question word and that involve syntactic displacement. There have been different views on the nature of the *wh*-feature as well, although not as substantial as the one surrounding the focus-feature in Hungarian. Though the main path of analyses consider the *wh*-feature syntactic in nature (Kenesei 1986, É Kiss 1998, Horváth 1986, Lipták 2001, Surányi 2006) with some difference in the motivation for movement (feature checking versus focus-movement), there are other approaches that consider it to be a semantic operator rather than a syntactic feature (Cable 2008, 2010) – although there is a [Q]-feature on the operator that is checked in the CP domain.

In the last section of this chapter (section 3.3), I give an overview of relativization in Hungarian and some accounts on how a relative clause is built up (Kenesei 1994,Lipták 2005, 2006; Dékány and Den Dikken 2018, É. Kiss 2002). Relative pronouns are complex entities in themselves and their syntactic behavior is constrained. In a more classical view, the literature treats relative pronouns and relativization similarly to *wh*-pronouns and *wh*-movement. However the nature of the *wh*-feature is less debated, and this way, it serves as a measure to which *wh*-movement can be compared.

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3.1 Focus feature and focus movement in Hungarian

There are different theories on focus in Hungarian with respect to the existence of a syntactic focus feature, the motivation for movement and whether there is a designated focus phrase in the sentence structure. In what follows, I review the accounts based on the approach they take – that is, first I will present approaches that account for focus by positing a syntactic feature responsible for semantics and also for movement, then I present an approach that is based on the semantics of focus positing a semantic operator responsible for movement and meaning while discarding a syntactic focus-feature and connecting focus-movement to an operator, lastly I turn to an approach that accounts for focus movement by claiming that it is driven by requirements in prosody, without a syntactic feature.

3.1.1 Focus feature in syntax

There are languages that have a designated position in a sentence for given information structural functions (É. Kiss 1995). Focus is connected to an operator that takes scope over some constituents – it can be narrow, one XP in its domain; or it can be wide, taking a whole predicate in its domain (see in (1)).

(1) a. [$_{\text{TopP}}$ Pétert[$_{\text{Predicate}}$ [$_{\text{Focus}}$ JÁNOS] mutatta be Marinak]].
Peter-ACC John introduced VM Mary-to
'As for Peter, it was John who introduced him to Mary.'

b. [$_{\text{TopP}}$ János [$_{\text{Predicate}}$ [$_{\text{Focus}}$ PÉTERT] mutatta be Marinak]].
John Peter-ACC introduced VM Mary-to
'As for John, it was Peter that he introduced to Mary.'

c. [$_{\text{TopP}}$ Pétert[$_{\text{Predicate}}$ [$_{\text{Focus}}$ MARINAK] mutatta be János]].
Peter-ACC Mary-to introduced VM John
'As for Peter, it was to Mary that John introduced him.'

d. [$_{\text{Focus}}$ Bemutatta János Pétert Marinak.]
introduced John Peter-ACC Mary-to
'John introduced Peter to Mary.'

e. A: Mi történt?
what happened
'What happened?'
B: [$_{\text{Focus}}$ Bemutatta János Pétert Marinak.]
introduced John Peter-ACC Mary-to
'John introduced Peter to Mary.'

The focus is a (presuppositional) operator that can be preceded by Topic Phrase(s). The focus position in Hungarian was first defined as identificational by Kenesei (1986). The phrase that is moved to this position picks out one referent form a set and identifies it (as it is in the focus position). Horváth (1986) observes the difference between focused and topicalized phrases and formulates a FOCUS-Parameter for every language giving two options for [+focus]-feature (as in (2)).

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(2) FOCUS-Parameter:
   a. [+FOCUS]: a feature associated freely with any category – deriving the English-type languages, that is, Focus in-situ
   b. the grammaticalized version of the [+FOCUS] feature: an intrinsic part of the feature-matrix of a category, namely V – meant to derive the Hungarian-type, structurally limited, instantiations of focus

(Horváth 1986:132)

This FOCUS-Parameter combines with a Locality Condition on Feature-Assignment – stating that any feature-assigning category must be adjacent to the phrase receiving the feature – can account for the two surface realizations of Focus described in (2). The focus of a sentence is a semantic function that exhaustively identifies the items of a set (as in (3)).

(3) The function of focus
   The focus represents a proper subset of the set of contextually or situationally given referents for which the predicate phrase can potentially hold; it is identified as the exhaustive subset of this set for which the predicate phrase holds.

(É. Kiss 1998)

This exhaustive identification holds only for structural focus, that is, focus in the immediately pre-verbal position in the structure. Szabolcsi (1981) proposes a test for exhaustivity: anything in the structural focus position is exhaustively identified if it lists the items of the set of possible answers.

(4) a. KIT mutatott be János Marinak?
   Whom introduced VM John Mary.to
   'Who did John introduce to Mary?
   b. János PÉTERT ÉS ZOLTÁNT mutatta be Marinak.
   John Peter-ACC and Zoltan-ACC introduced VM Mary-to
   'As for John, it was Peter and Zoltan that he introduced to Mary.'
   c. János PÉTERT mutatta be Marinak.
   John Peter-ACC introduced VM Mary-to
   'As for John, it was Peter that he introduced to Mary.'

As it can be seen in (4), If we want to interpret the focus exhaustively, then we cannot answer (4a) with a statement of (4c), because (4c) does not state exhaustively who John introduced to Mary, if the exhaustive answer is (4b). Nonetheless, (4c) is exhaustive in and of itself, if that is the only answer to (4a). The reason for this is that when the speaker utters (4b), the set of individuals are exhaustively identified as {*Péter*, *Zoltán*} and thus it follows that each element of the set is part of the exhaustive identification. If a follow-up sentence (5b) contradicts the predicate in the previous statement (5a), then the focus was exhaustive in it.

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(5) a. János PÉTERT mutatta be Marinak.
John Peter-ACC introduced VM Mary-to
'As for John, it was Peter that he introduced to Mary.'
b. Nem, Zoltánt is bemutatta neki.
no Zoltan-ACC also introduced to.her
'No, he also introduced Zoltan to her.'

(É. Kiss 2002:79)

The exhaustively identified element does not always contrast with a closed set of alternatives. There are examples where the focus comes from an open set of items, and hence contrast is not present in its interpretation (as in (6)).

(6) a. A magyar rapszódiákat LISZT FERENC írta.
the Hungarian rhapsodies-ACC Liszt Ferenc wrote
'As for the Hungarian rhapsodies, Ferenc Liszt wrote them.'
b. Liszt Ferenc 1886-BAN halt meg.
Liszt Ferenc 1886-in died VM
'As for Ferenc Liszt, it was in 1886 that he died.'

(É. Kiss 2002:80)

Szabolcsi (1981, 1983) shows that non-individual-denoting (e.g. predicative) phrases can also move to the structural focus position (as in (7)). In this case, alternatives are also of a non-individual denoting (e.g. predicative) type, and focus is exhaustive with respect to this set of alternatives.

(7) a. János OROSZ LÁNYT vett feleségül.
John Russian girl-ACC took as.wife
'As for John, it was a Russian girl that he married.'
b. Péter OKOS LÁNYT akart feleségül venni, nem SZÉPET.
Peter smart girl-ACC wanted as.wife to.take not beautiful-ACC
'As for Peter, it was a smart girl that he wanted to marry, not a beautiful one.'
c. János FOKOZATOSAN értette meg a problémát.
John gradually understood VM the problem-ACC
'As for John, it was gradually that he understood the problem.'

Brody (1990, 1995)[7] proposes that the focused element has to move to a designated position outside the VP into the specifier of a functional projection FP where it can check its [focus]-feature.

[7] Brody suggests a modified version of the *wh*-criterion for focus-movement:
(i) Focus-criterion:
a. At S-structure and LF the spec of [+F] XP must contain a [+f] phrase.
b. At LF all [+f] phrases must be in the spec of a [+F] XP.

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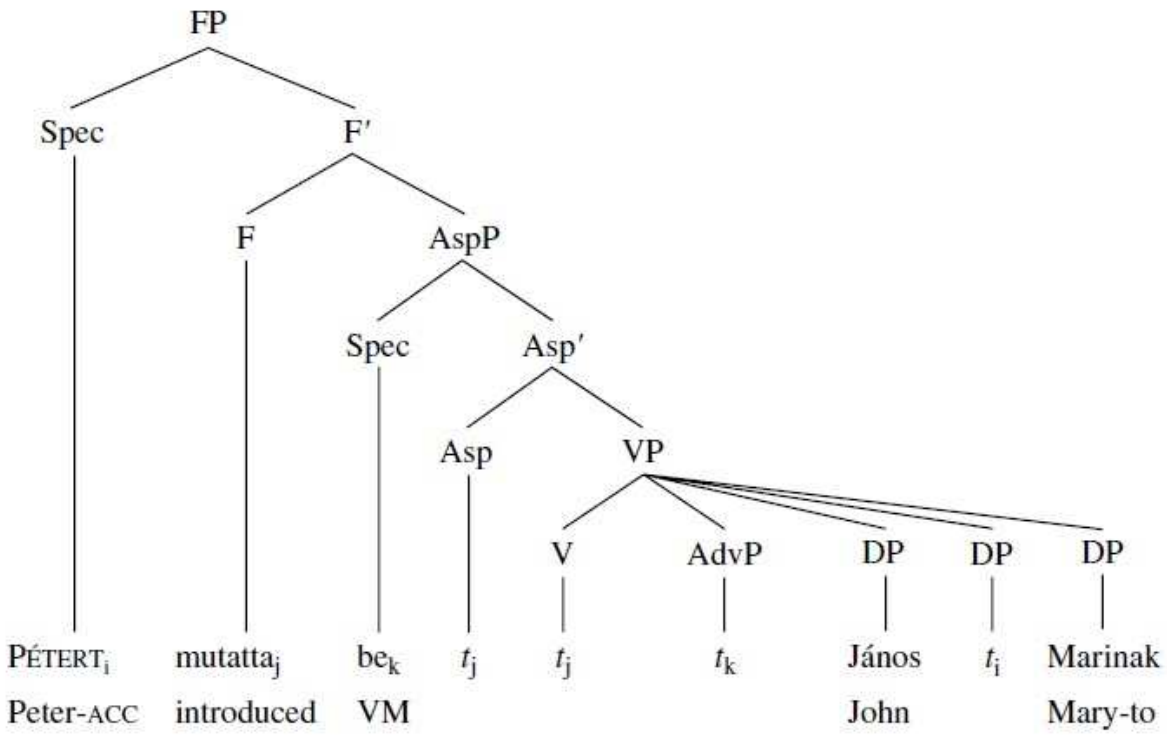
The verb moves to FP by V-to-F movement, yielding the adjacent position of the verb and the focused-phrase, and resulting in the inversion of the verb and the Verb Modifier (VM), which in neutral, broad focus sentences immediately precedes the verb. The structure of a sentence containing focus is given in (8).

(8)



É. Kiss (2002) points out a problem with assuming that the FP is built on top of a projection (AspP in (8) above) which has the VM in its specifier – it would predict falsely that the verb modifier always immediately follows the verb, which is not true (9).

(9) a. PÉTERT mutatta be János Marinak.
Peter-ACC introduced VM John Mary-to
'It was Peter that John introduced to Mary.'
b. PÉTERT mutatta János be Marinak.
Peter-ACC introduced John VM Mary-to
'It was Peter that John introduced to Mary.'
c. ?PÉTERT mutatta János Marinak be.
Peter-ACC introduced John Mary-to VM
'It was Peter that John introduced to Mary.'

Although (9c) is only marginally acceptable, it is not ungrammatical. The structure suggested by Brody (1990, 1995) cannot account for (9b) and (9c). Based on this observation, É. Kiss (1998)

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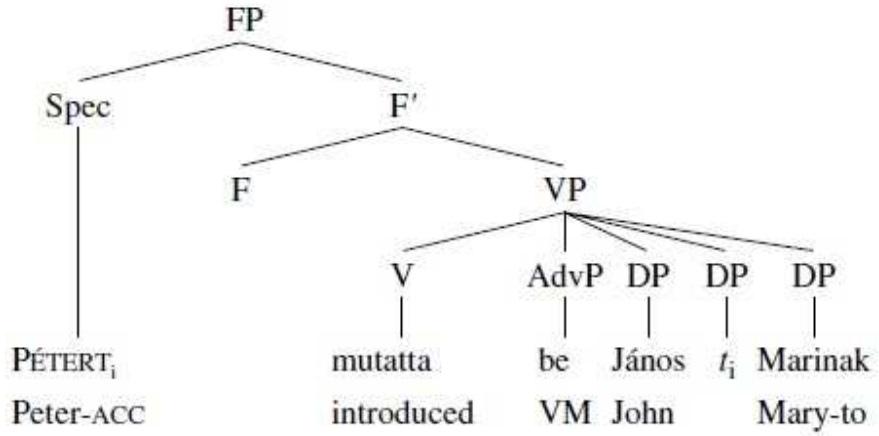
suggests that FP should be an extension of a flat VP –allowing free word order of all the elements that remain in the VP, this analysis can account for all variations of word order after the verb (10).[8]

(10) PÉTERT mutatta be János Marinak.
Peter-ACC introduced VM John Mary-to
'It was Peter that John introduced to Mary.'



(É. Kiss 2002:86)

Movement of the focused phrase to the specifier of FP is an operator movement, it binds a trace in an argument position inside VP. Like Brody (1990, 1995), É. Kiss (1998) also assumes a designated Focus Phrase, and she adopts Brody's (1995) view that focus movement is triggered by feature-checking. She assumes a strong syntactic [focus]-feature on the focused phrase. É. Kiss (1998) claims that focus is a specificational predicate – just like English cleft-constructions – and as such it carries a [+exhaustive]-feature. Sometimes a part of a constituent can be focused, just like the adjectival modifier of the noun phrase in (11a) (Kenesei 1994).

(11) a. [JAPÁN autót] vettél, vagy NÉMETET?
Japanese car-ACC bought-you or German-ACC
'Is it a Japanese car, or a German one, that you bought?'
b. Egy TOYOTÁT vettem.
a Toyota-ACC bought-I
'I have bought a Toyota.'

Kenesei (1994) claims that the adjective is the element that bears the [+focus]-feature and triggers movement, and hence, pied-pipes the rest of the phrase with it. There are elements that are

[8] For an alternative, see Surányi (2006).

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inherently focused (e.g. negative quantifiers like *kevés* 'little', *ritkán* 'seldom'). These elements must occur in the specifier of FocP, accompanied by the inversion of the VM and the verb.

(12) a. *János kevés matematikafeladatot [$_{AspP}$ meg oldott].
John few math-problem-ACC VM solved
'John solved few math problems.'
b. János [$_{FP}$ KEVÉS MATEMATIKAFELADATOT$_i$ [$_{VP}$ oldott t$_i$ meg]].
John few math-problem-acc solved vm
'John solved few math problems.'
c. *János [$_{AspP}$ megoldja a házi feladatot ritkán].
John VM solves the home work seldom
'John seldom does the home work.'
d. János [$_{FP}$RITKÁN [$_{VP}$ oldja meg a házi feladatot]].
John seldom solves VM the home work
'John seldom does the home work.'

To sum up, according to the approaches reviewed in this part, there is a syntactic focus feature in Hungarian that correlates with an exhaustive reading in semantics, and there is a designated, unique syntactic projection corresponding to this discourse function to which elements bearing the focus feature must move.

3.1.2 Focus-movement is operator movement

Another theory of focus-movement, which does not involve a syntactic focus-feature, is Horváth (1997, 2005, 2010). Horváth (1997) claims that focus-movement is not triggered by a syntactic feature on the focused element itself, rather, there is an operator responsible for the semantics related to exhaustive focus that is responsible for the exhaustive identification reading attached to structural focus in Hungarian. She assumes that there is an operator which she calls Exhaustive Identification Operator (EI-Op) that is attached to a phrase that is associated with the focus interpretation and moves to the CP domain by operator movement. There might be a phonological focus feature on the lexical word that bears main stress – as it is possible in the case of a bigger XP to stress any lexical element inside it.

Horváth (1997 et seq) claims that the operator, EI-Op bearing a feature [EI] is attached to the focused phrase, and it moves up to the CP domain, where an Exhaustive-Identification Phrase is projected. The movement is triggered by feature-checking, but instead of the lexical element checking its focus-feature, it is the (phonetically zero) operator that needs to check its EI-feature (as in (13)).

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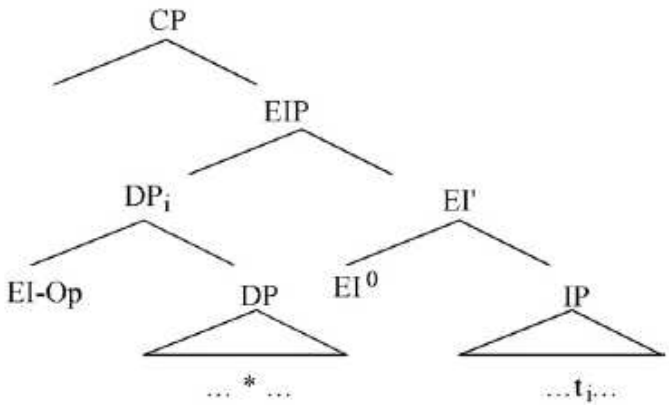
(13) The structure for EI-Op movement: (the asterisk indicates the position of main stress)



(Horváth 2010:1361)

Horváth (2005) suggests that the prosodic focus can be any constituent contained in the phrase that the EI-Op attaches to (as in (14)).

(14) a. [EI-Op [MARI Pesten lakó fiát]] hívták fel *t*.
Mary-NOM Pest-on living son-hers-ACC called-3PL up
'They called up [MARY'S son living in Pest].'
b. [EI-Op [Mari PESTEN LAKÓ fiát]] hívták fel *t*.
Mary-NOM Pest-on living son-hers-ACC called-3PL up
'They called up [Mary's son LIVING IN PEST].'
c. [EI-Op [Mari Pesten lakó FIÁT]] hívták fel *t*.
Mary-NOM Pest-on living son-hers-ACC called-3PL up
'They called up [Mary's SON living in Pest].'

(Horváth 2005:21)

Horváth (1997 et seq) presents a contrast with respect to the restrictions on pied-piping corresponding to movement types. She brings the examples as evidence against a syntactic focus feature. She claims that strong syntactic features cannot pied-pipe a phrase when the feature-bearing element is embedded inside a pre-nominal adjunct (15a) and (15b), whereas pied-piping is unrestricted in focus-movement, or rather EI-Op movement (15c).

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(15) a. *az ital, amit követelő vendégektől fél a pincér t
the drink which-ACC demanding guests fear-3SG the waiter
'the drink customers demanding which the waiter is afraid of…'
b. *Mit követelő vendégektől fél a pincér?
what-ACC demanding guests fear-3SG the waiter
'Customers demanding what is the waiter afraid of?'
c. BARACKPÁLINKÁT követelő vendégektől fél a pincér.
apricot-brandy-ACC demanding guests fear-3SG the waiter
'It is customers demanding APPRICOT BRANDY that the waiter is afraid of.'

Horváth claims that the insensitivity of focus to pied-piping restrictions is due to the fact that the operator is situated outside the phrase, and thus, Agreement between the [EI]-feature and the EIP in CP is not blocked by the ph(r)ase boundary. The phase boundary is the DP.

To sum up, the structural focus position is associated with an exhaustive semantic reading that can be accounted for in various ways according to the above mentioned theories. The existence of the syntactic focus-feature has been questioned by several authors (Horváth 1997, 2000, 2005, 2010, Zubizarreta1998, Fanselow 2008, Szendrői 2003, 2010, among others). Horváth (1997, 200, 2005, 2010) suggests a discourse related feature or operator to account for the exhaustive reading of focus. One of the main goals of this thesis is to experimentally test the behavior of the focus-construction in pied-piping, which can hopefully shed some light on the nature of the focus-feature and provide further evidence for one approach or the other.

3.1.3 Focus as a Prosody-driven movement

Szendrői (2003) claims that focus-movement is driven by prosodic needs, and it does not involve a strong syntactic feature. The motivation for movement lies in the Stress-Focus Correspondence principle (as in (16)).

(16) Stress-Focus Correspondence principle:
The focus of a clause is a(ny) constituent containing the main stress of the intonational phrase, as determined by the stress rule.

Szendrői (2003) discusses the intonational characteristics of Hungarian, and adopts the view that the intonational phrase in Hungarian is left-headed. The syntax-prosody mapping is what governs the distribution of sentence level stress in a language – and it is a language specific trait, although there are common tendencies among languages.

(17) Syntax-prosody mapping phrases in Hungarian
Align the left-edge of a syntactic phrase of the phonological phrase.

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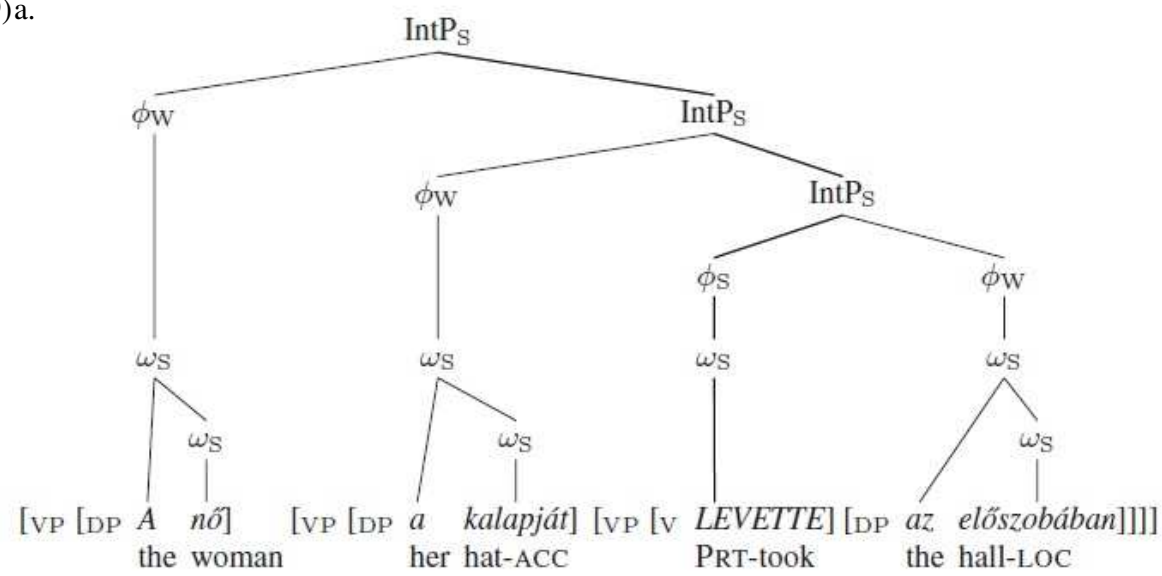
(18) Hungarian stress rule:
   a. Assign a Strong label to the leftmost phonological word in the phonological phrase. Assign Weak to the other phonological words.
   b. Assign a Strong label to the leftmost phonological phrase in an intonational phrase. Assign Weak to the other phonological phrases.
   c. Assign a Strong label to the intonational phrase.

Main stress can be assigned only to the intonational phrase that bears the highest S(trong) label. As an example, main stress in a neutral sentence in Hungarian falls on the first element of the predicate, which is a verb in (19).

(19)a.



b. [VP[DP A kalapját][VP [DP a nő][VP[V LEVETTE [DP az előszobában.]]]]
'The woman took her hat off in the hall.'

Szendrői assumes that the comment part of the sentence (the verb phrase in (19b)) corresponds to an intonational phrase, to which topics are prosodically adjoined on the left hand side. She also assumes that in prosodic adjunction, it is the prosodic host that bears the S label. As it can be seen in (19), the main stress falls within the Intonation Phrase that bears the highest S label, and stress follows along the S labels down the tree until it reaches the constituent that has only S labels dominating it, in this case, the main verb of the sentence. Although there is another constituent that is to the left of the verb, the leftmost element that bears the Strong label is the verb *levette* 'took off'.

As for focus, Szendrői (2003) follows Reinhart (1995) – and adopts her Stress-focus correspondence principle (16) – and also Neeleman and Reinhart (1998) in claiming that if the focus falls on a constituent that is not in a position that normally, that is in a neutral setting, gets the main stress, then some mechanism is needed to accommodate the prosodic need for focused elements to bear main stress. Reinhart and Neeleman (1998) suggest for English a rule of stress

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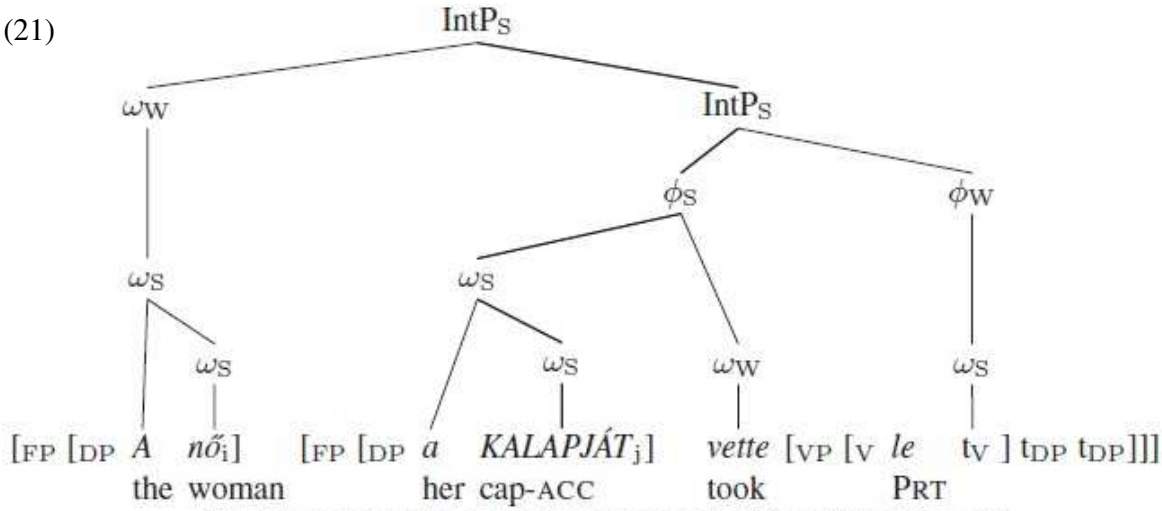
strengthening when some element other than the object is the focus of the English sentence. Szendrői (2003) claims that Hungarian resorts to syntactic movement of the focused phrase to a left-peripheral position to meet the requirement for the prosodic mapping of main stress. Thus, she suggests that focus-movement is a stress-driven movement is Hungarian (as in (20)).

(20) Stress-driven movement:
In Hungarian, movement of the focused constituent to the left-periphery is triggered by (16), the requirement that a focused constituent be stressed.

In non-neutral sentences containing a narrow focus, main stress falls on the focused constituent because it is the leftmost constituent in the specifier of FP, and FP, an extension of the verb phrase, is mapped to the main intonational phrase of the sentence. Topic Phrases adjoin to FP – and adjoined positions cannot bear a Strong label.

(21)



'It was her hat that the woman took off (not her scarf).'

This way, the focus-feature does not have to be included in syntax. Szendrői (2003) also follows Reinhart (1995) and Fox (1995) (see also chapter 2 for an Interface Economy based theory, Yoon 2002) in assuming that the prosodic mapping is governed by Interface Economy. If there is a bigger structure with the same interpretation that properly contains a smaller structure, than the less complex derivation will win, otherwise an Economy violation occurs.

Szendrői (2003) suggests that main stress can fall on the right edge of the focused phrase (as in (23)) in certain cases, which she derives with the same type of Stress strengthening as Reinhart suggests for the English cases. In cases like (21), a wide-scope reading of focus is unavailable, and hence, to save the derivation an extra prosodic rule, Stress strengthening (22), must be added.

(22) Stress strengthening:
Assign Strong to a node.

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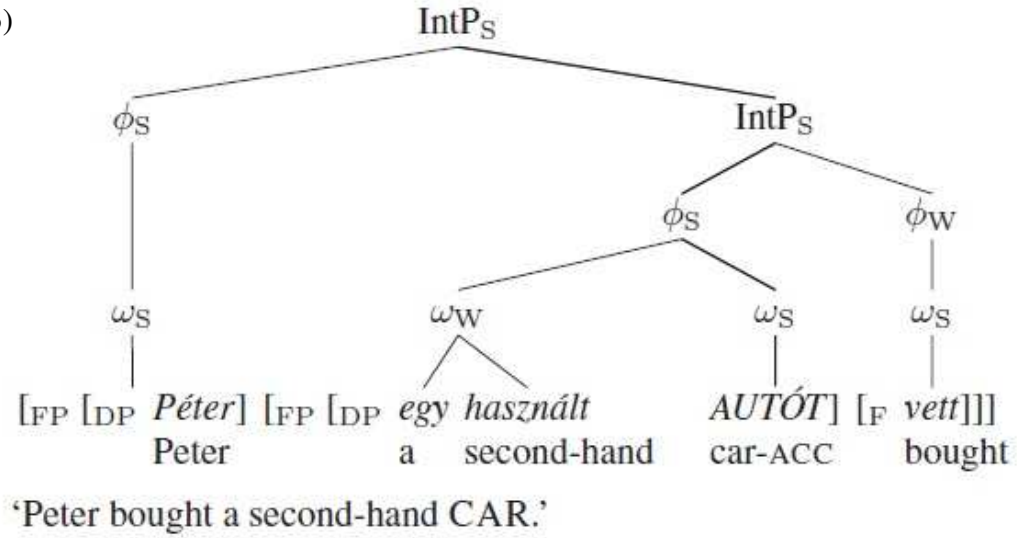
(23)



(Szendrői 2003:61)

Szendrői's (2003) prosody-based account seems to be a good alternative to a syntactic account, there is no need for a strong syntactic feature specifically for focus. The model can account for sentences containing multiple foci – of which only one can move to the left-periphery to pick up default nuclear stress there, any further focus needs to be assigned stress after spell-out by an extra stress rule. A key tenet of the account is that it does not need to syntactically stipulate a designated position for focus: where this position is emerges from the interaction of the syntax-prosody mapping with the Stress-Focus Correspondence principle, which Hungarian satisfies by moving the focus to the place of the default nuclear accent at the left edge of the extended VP.

Lekakou and Szendrői (2013) discuss the possibility of a designated focus position inside DP. Though this is a topic of debate in the literature, Lakakou and Szendrői (2013) suggest that based on the inner structure of the DP in Modern Greek there might be a number of functional projections inside the DP similar to the split CP.[9] This would in theory allow for a focus position

[9] In Modern Greek, there are two D heads, which Lekakou and Szendrői (2007) analyze as complex argument formation (as in (i)).

(i)

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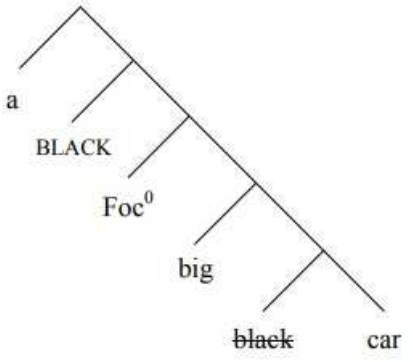
inside the DP layer, however, according to Szendrői (2010) this cannot be the case inside a DP. The analysis in Lekakou and Szendrői (2013) builds on the account in Szendrői (2010). Szendrői (2010) argues that there might be a focus position inside the DP, but the nature of this position is different from that of clausal focus. While clausal focus is propositional, DP-internal focus cannot be. For this reason Szendrői (2010) looks at cases of adjective reordering inside DPs taking the example from Truswell (2005) (as in (24)). In (24a) the focused phrase is in-situ, while in (24b) the focused phrase is moved to a focus position inside the DP.

(24) a. My friends all drive big cars, but only I drive a big BLACK car.
b. My friends all drive big cars, but only I drive a BLACK big car.



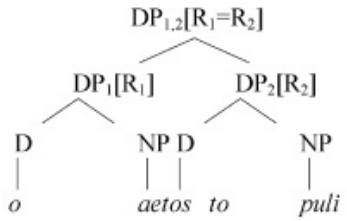
(Truswell 2005:142 – 143)

Truswell (2005) analyzes this as focus inside the DP, and he also assumes movement to a focus position inside the DP. The structure assumed by Truswell (2005) utilizes a phrase that accounts for the scope of the adjectives (as in (25)). This phrase is called Kind Phrase (KIP in the structure) that is the position for adjectives denoting kinds (in (24) *big car* is a Kind) (following Zamparelli 2000).[10]

---

a.	o	aetos	to	puli	ine	megaloprepos/	megaloprepo.
	the.m	eagle(m)	the.n	bird(n)	is	majestic.m/	majestic.n
b.	to	puli	o	aetos	ine	megaloprepos/	megaloprepo
	the.n	bird(n)	the.m	eagle(m)	is	majestic.m/	majestic.n

'The eagle the bird is majestic.'



(Leakaou and Szendrői 2007:872)

[10] Truswell (2005) gives the semantic formula for the KIP on page 141, (19).

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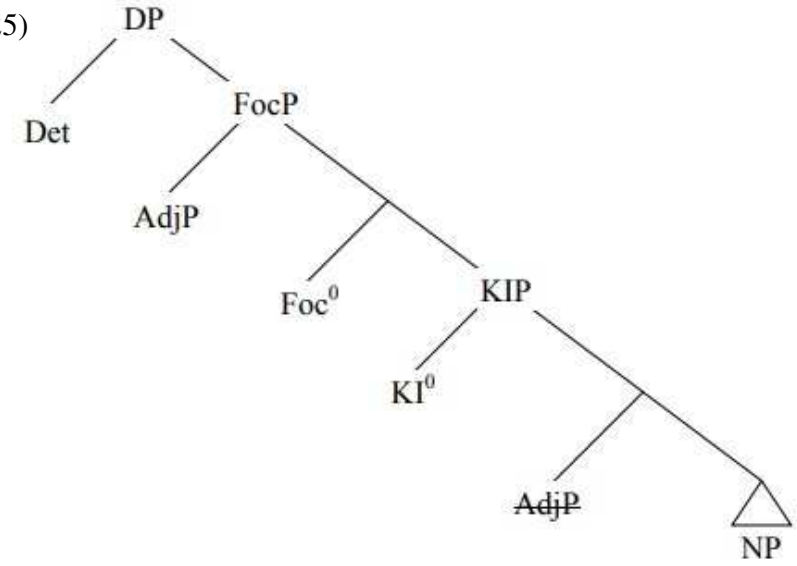
(25)



(Truswell 2005:143)

Although Truswell (2005) argues for a focus position inside the DP, Szendrői (2010) claims that given the fact that reordering inside a DP does not have any effect on the interpretation of the N head (that is, it does not modify the meaning of the noun), the reordering cannot be a result of focus-movement inside the DP. However, focus-reconstruction is not always possible in a sentence either. Rather she argues for a base-generation account, claiming that the different orders arise from the adjectives being base-generated in the position they take in the surface position. The surface position reflects the scope of the adjective, that is, the one that is higher in the structure takes scope over the one that is lower in the structure. In an experiment that I present in Chapter 4, there is a clear preference for the movement of a *wh*-adjective that takes a lower position in neutral sentences. Szendrői (2010) suggest that there might be a place for topics and focus inside the DP, but not the ones that are triggered by information structural reasons (in the sense of Neeleman and van de Koot 2008).[11]

[11] Neeleman and van de Koot (2008) assume that focus and topic movement are motivated by the need for discourse continuance. By discourse-contiunance they mean that elements that are important for the discourse will undergo the focus- and topic-movement

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3.2 *Wh*-movement in Hungarian

Hungarian is a *wh*-fronting language, which means that the interrogative pronoun or phrase must move to a position that is structurally high. At a first glance the position might seem to be the same structural position that focused elements take in the sentence, however, Hungarian also has multiple *wh*-movement into a sentence initial position, and as we saw in the previous section (section 3.1) the syntactic position – if there is one – is unique.

Wh-phrases target a position in the CP domain: the same position where focused elements move – that is, *wh*-phrases move to FP (among others Horváth 1986, É. Kiss 2002). É. Kiss (2002) considers *wh*-phrases to be inherently focused, this is why they move to FP[12]. In checking theory this means that the movement targets a position where it can check its [wh]-feature. According to WHO, *wh*-phrases have a [+focus]-feature as well, which is reflected in the fact that they require an exhaustive answer (as in (26)). The role of exhaustive identification is associated with focus in Hungarian.

(26) a. *János [$_{AspP}$ be mutatott kit Marinak]?
John VM introduced whom Mary-to
'Whom did John introduce to Mary?'
b. János [$_{FP}$ KIT$_i$ [$_{VP}$ mutattott be t$_i$ Marinak]]?
John whom introduced VM Mary-to
'Whom did John introduce to Mary?'

If there is a focus and a *wh*-phrase in the same sentence then only one of them can move to the specifier of FP, and that has to be the *wh*-phrase (see (27)).

(27) a. *CSAK PÉTERT látta KI?
only Peter-ACC saw who
'Who saw only Peter?'
b. KI látta CSAK PÉTERT?
who saw only Peter-ACC
'Who saw only Peter?'

According to É. Kiss (2002), the *wh*-phrase has to move to spec, FP for semantic reasons – the *wh*-phrase is only interpreted as a question if it combines with a [+focus]-feature and moves to the specifier of FP (to check its features). The focus in the case of (27) has been marked by the element *csak* 'only', which is a focus particle. It can elicit the focus reading without having to occupy the specifier of the focus projection, FP. There can even be two *csak*-phrases and a *wh*-phrase in a sentence (as in (28)).

[12] The Focus Phrase first was labeled FP (Brody 1990), referring to the fact that it is a functional projection and later was more specifically labeled FocP (É. Kiss 1998).

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(28) a. MELYIK FÉLÉVBEN [$_{VP}$ kapott CSAK HÁROM LÁNY
which term-in received only three girl
CSAK KÉT TÁRGYBÓL JELEST]?
only two subject-from A+
Reading 1: 'In which term was it only three girls who received an A+ only in two subjects?'
Reading 2: 'In which term was it only in two subjects that only three girls received an A+?'

b. MELYIK FÉLÉVBEN [$_{VP}$ kapott CSAK KÉT TÁRGYBÓL JELEST
which term-in received only two subject-from A+
CSAK HÁROM LÁNY]?
only three girl
Reading 1: 'In which term was it only in two subjects that only three girls received an A+?'
Reading 2: 'In which term was it only three girls who received an A+ only in two subjects?'

In the case of sentence like (28), in which there is two only-phrases and a *wh*-phrase, the *wh*-phrase moves to the specifier position of FP overtly, and the two only phrases stay inside the VP. The fact that both readings are available with both word orders provides evidence that the only-phrases stayed in-situ inside a flat VP, where they mutually c-command each other, hence their relative scope to each other is equal (É. Kiss 1994).[13] That is, the scope of the only-phrases can inform us about the structural positions they take inside the clause. If there was a fixed order one taking scope over the other, it would suggest that one is in a higher – maybe adjoined – position inside the clause.

As stated above, Horváth (1986) assumes that every *wh*-word that moves up to C has to bear a [+focus] feature. She makes this claim based on the fact that the movement of the *wh*-phrase triggers the inversion of the verb modifier and the verb (as in (29)) – just like in focus (see the previous section for details on focus-movement).

(29) a. [$_{TopP}$ A huzat [$_{FP}$ MELYIK SZOBA ABLAKAIT törte be]]?
the draft which room's windows-ACC broke in
'The windows of which room did the draft break?'

b. [$_{FP}$ MELYIK SZOBA ABLAKAIT törte be a huzat]?
which room's windows-ACC broke in the draft
'The windows of which room did the draft break?'

c. *Melyik szoba ablakait a huzat [$_{AspP}$ be törte]?
which room's windows-ACC the draft in broke

[13] For an alternative, see Surányi (2004, 2007).

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There is an exception to this, namely, the *wh*-phrase *miért* 'why' has two meanings that can be expressed by 'why' and by 'what for'. In the 'what for' meaning it is the *wh*-phrase that has to move to FP, and hence, nothing else can be focused syntactically (as in (30)). In the 'why' meaning, it is possible to focus other constituents in the sentence (as in (31)).

(30) a. [$_{FP}$ MIÉRT nyúlt a baba]?
what-for reached the baby
'What did the baby reached for?'
b. *[$_{FP}$ Miért [$_{FP}$ A BABA nyúlt]]?
what-for the baby reached

(31) a. [$_{FP}$ MIÉRT kapott János díjat]?
why received John prize-ACC
'Why did John get a prize?'
b. [$_{FP}$ Miért[$_{FP}$ JÁNOS kapott díjat]]?
why John received prize-ACC
'Why was it John who received a prize?'

The *wh*-phrase *miért* 'why' does not always trigger a variable binding reading, and hence, does not require an exhaustive identification in its answer. However, it has a [+focus]-feature when it means 'what for'. In light of this, the generalization for *wh*-interpretation has to be modified: for a sentence containing a *wh*-phrase to be interpreted as a question, the *wh*-phrase has to be in the checking domain of FP (Lipták 2006).

Hungarian allows multiple *wh*-fronting in main (as in (34)) and in embedded questions (as in (35)) without showing a Superiority effect (Chomsky 1973). That is, the order of the *wh*-phrases does not make a difference in semantics.

(34) a. Ki mit tanított?
who what taught
'Who taught what?'
b. Mit ki tanított?
what who taught

(Surányi 2002:172)

(35) a. Nem tudom, ki mit tanított.
not know-1SG who what taught
'I don't know who taught what.'
b. Nem tudom, mit ki tanított.
not know-1SG what who taught

(Surányi 2002:172)

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In English it is not allowed to move both *wh*-phrases to the front, but there can be two *wh*-elements in the sentence if one of them stays in-situ. Superiority effects can be observed in English (as in (36)).

(36) a. Who saw what?
b. *What who saw?
c. Who did you persuade to buy what?
d. *What did you persuade who to buy?

(Surányi 2002:171)

Apart from the Sueprioirity effect, discourse-linking affects which *wh*-element gets fronted. Discourse-linking is a characteristic feature of interrogative pronouns; discourse-linked *wh*-elements are connected to a set of referents already existing in the discourse (as in (37)), while non-discourse-linked *wh*-phrases are not connected to a set of referents (as in (38)) (Pesetsky 1987, Rizzi 1991)-

(38) Which car did you buy?

(39) What did you buy?

(Goodall 2015:1)

Discourse-linking can weaken or erase the Superiority effect (as in (40)) (Kartunnen 1977, Pesetsky 1987).

(40) a. I wonder who bought what.
b. *I wonder what who bought.
c. I wonder which man bought which car.
d. I wonder which car which man bought.

(Goodall 2015:1)

Discourse-linking also affects the ability of *wh*-phrase to stay in-situ. Discourse-linked *wh*-phrases can stay in-situ, while non-discourse linked *wh*-phrases have to move to the front (as in (41)).

(41) a. Who sang what?
b. *Who sang how? (cf. Who sang in which way?)

É. Kiss (1993) shows that this effect influences multiple *wh*-movement in Hungarian as well (as in (42)). In (42a), the non-discourse-linked *wh*-phrase *hány szavazatot* 'how many votes' cannot precede the discourse-linked *wh*-phrase *kire* 'to whom'. The discourse-linked *wh*-phrase has to be in a struxturally higher position preceding the non-discourse-linked *wh*-phrase (42b).

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(42) a. Hány szavazatot$_i$ kire$_j$ adtak le t$_i$ t$_j$?
how many votes-ACC who on gave they PERF
'To whom did they give how many votes?'
b. Kire$_j$ hány szavazatot$_i$ adtak le t$_i$ t$_j$?
whoon howmany votes-ACC gave they PERF
'How many votes did they give to whom?'

(É. Kiss 1993:85)

Discourse-linking is a significant feature of *wh*-elements, which will be a factor in the experiments (see chapter 4).

The pronouns that function as *wh*-phrases can also function as a relative pronoun (see the previous section), universal quantifiers and exclamation phrases (among others). When these pronouns are not in an interrogative function, they do not occupy the specifier position of FP.

The *wh*-pronoun in (43) functions as a relative pronoun that is located in the specifier of CP; in (44), the *wh*-phrase is doubled and it acts as a universal quantifier, taking the position of the specifier of DistP – that is the projection associated with distributive quantifiers (Szabolcsi 1997).

(43) [$_{CP}$Ki [$_{FP}$ KORÁN kel]], aranyat lel.
who early gets.up gold-ACC finds
'He who gets up early finds gold. [The early bird catches the worm.]'

(44) [$_{DistP}$ Ki- ki [$_{AspP}$ haza mehet.]]
who- who home go-can
'Everybody can go home.'

(É. Kiss 2002: 99)

Another occurrence of the *wh*-word as something different then introducing an interrogative clause is when it appears in an exclamative. I would like to provide a brief overview of the types of exclamatives that can be constructed so as to see that it is not only the focus-feature that triggers inversion of the verb and the verb modifier. In the examples below, the *wh*-pronoun takes a position below the complementizer, though the clause does not behave as a regular embedded interrogative clause would.. Lipták (2005) shows that all *wh*-phrases that can appear in interrogatives can appear in an exclamative construction (as in (45)). [14] There can also be intensifiers (strong evaluative adverb) in the construction that cannot occur in interrogative constructions/questions (Kálmán 2001) (as in (47)).

[14] Lipták (2005) uses pv (pre-verb) for VM (verb modifier).

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(45) a. (Hogy) ki jött el ebbe a faluba!
comp who came-3SG PV this-into the village-into
'What a person came to this village.' (scale: properties of people)
b. (Hogy) mi esett meg ebben a faluban!
comp what happened-3SG PV this-in the village-in
'What a thing happened in this village!' (scale: properties of events)
c. (Hogy) hova bújtak el a gyerekek!
comp where hid-3PL the children
'In what strange places the children hid!' (scale: properties of places)
d. (Hogy) mikor jöttél tegnap haza!
comp when came-2SG yesterday home
'At what strange time you came home yesterday!' (scale: properties of time)
e. (Hogy) melyik könyvet vetted meg!
comp which book-ACC bought-2SG PV
lit. '(I am surprised at) which book you bought!' (scale: properties of books)
f. (Hogy) milyen ruhában mentél dolgozni!
comp what.kind cloth-IN went-2SG work-into
'The kind of clothes you went to work in!' (scale: properties of clothes)
g. (Hogy) hogy egyensúlyozott Béla a biciklin!
comp how balanced-3SG Béla the bike-on
'How Béla was balancing on the bike!'
(scale: properties of manners of balancing)
(Lipták 2006:346)

(46) Structure of exclamatives with obligatory inversion

$[\ldots\ [_{\text{FocP}}\ \{ki\ /\ mi\ /\ hol\ /\ mikor\ /\ hogyan\}\ V^0\ [_{\text{AspP}}\ \text{PV}\ \ldots]]]$

(Lipták 2005:378)

(47) a. Milyen rohadtul megfáztam!
how rottenly PV-cold.caught-1SG
'What an awful cold I got!'
b. *Milyen rohadtul fáztál meg?
how rottenly cold.caught-2SGPV
'How very badly did you catch a cold?'

Lipták (2005) claims that in the exclamative use, the *wh*-phrase do not identify with a variable, rather it refers to a high point of a scale among the scale of properties the phrase refers to. In (45) we can see, that there is verb-verb modifier inversion in the sentence. The intensifier/strong evaluative adverb cannot be present in a question (47b) as it cannot bind a variable, instead it wants to elicit a judgment, which it cannot do in a question.

The *wh*-word can also occur in constructions in which it is followed by a universal pronoun (of the same type) – as a kind of reduplication. In those constructions the *wh*-phrase plus the universal pronoun act as a quantificational phrase and the verb-verb modifier inversion is optional (as in (48)), although inversion seems to be more acceptable in the case of a plural *wh*-pronoun (49).

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(48) a. (Hogy) ki mindenki {eljött/ ?jött el} az ünnepségre!
comp who everyone pv-came-3SG came-3SG PV the celebration-to
'The (different) kinds of people/the number of people who came to the celebration!'
b. (Hogy) mi mindent {megettél/ ?ettél meg}!
comp what everything pv-ate-2SG ate-2SG PV
'The number of things you ate!'

(49) a. (Hogy) kik {%eljöttek/ jöttek el} az ünnepségre!
comp who-pl pv-came-3PL came-3PL PV the celebration-to
'The kind of people who came to the celebration!'
b. (Hogy) miket {%megettél/ ettél meg}!
comp what-pl-acc pv-ate-2SG ate-2SG PV
'The things you have eaten!'

(Lipták 2006:353)

(50) Structure of exclamative in Hungarian

(a) [... [$_{many}$P {*hány/mennyi / ki mindenki / %kik*} [AspP pv-V [...]]]]
(b) [... [FocP {*hány/mennyi / ?ki mindenki / kik*} V^0 [AspP pv ...]]]

(Lipták 2006:370)

These cases show that there are situations when the *wh*-phrase can be construed as a *wh*-pronoun rather than an interrogative one. In the cases when it does not function as an interrogative pronoun, it can take several other positions in the structure according to its function in the sentence (spec, DistP, spec, QP, spec, CP, spec, FocP).

Embedded questions in Hungarian contain the same interrogative pronoun, but they are introduced by the complementizer *hogy* 'that' (51). É. Kiss (2002) argues that in embedded questions a need arises for a separate ForceP projection, as the [+/- wh]-feature has to encoded somewhere in the structure, and the complementizer *hogy* 'that' does not have a [wh]-feature.

(51) János meg kérdezte, [CP hogy [TopP Pétert [FP ki mutatta be Marinak]]].
John VM asked that Peter-ACC who introduced VM Mary-to
'John asked who introduced Peter to Mary.'

(É. Kiss 2002:99)

In embedded *wh*-questions like (51), the verb moves up to C or F to check its [wh]-feature. However, if the yes-no question is embedded in a subordinate clause, then an interrogative marker *-e* attaches to the verb. In this case there is no V-to-C or V-to-F movement inside the embedded CP, as evidenced by the verb modifier-verb word order (as in (52)). That is, the verb stays in situ inside AspP.

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(53) Nem tudom, [$_{CP}$ hogy [$_{TopP}$ Pétert[$_{AspP}$ be mutatta-e valaki Marinak]]].
not know-I that Peter-ACC VM introduced-Q someone Mary-to
'I don't know if someone has introduced Peter to Mary.'
(É. Kiss 2002:99)

This interrogative marker *-e* is a clitic that cannot stand alone. Usually it attaches to the tensed verb if there is more than one verb in a clause. This clitic does not carry a syntactic feature that requires checking, that is why the movement of the verb is not triggered inside the embedded clause.

Although the theories mentioned so far assumed that the *wh*-element moves to F(oc)P, Cable (2008) argues that *wh*-movement is not a subspecies of focus movement in Hungarian. He argues that, although there are irrefutable similarities between the two movement types, one cannot claim that the movement targets the same position as focused elements do, as *wh*-phrases do not bear the same features as focused elements (summarized in (53)).

(53) Cable (2008) summarizes the theories that claim that *wh*-movement is actually just focus movement in the following:
(a) Language X requires that (non wh) phrases bearing 'focus' (in some sense) must be fronted to position Y.
(b) *Wh*-operators in the *wh*-question of language X must be fronted to position Y.
(c) *Wh*-operators in language X usually bear 'focus' (in some sense).
(d) Therefore, given (53a) above, the obligatory 'focus' of the *wh*-operators (53c) is sufficient to explain their obligatory fronting in *wh*-questions (53b)

Cable (2008) claims that although the three traits – (i) both *wh*-words and focused elements have to immediately precede the verb, (ii) both fronted *wh*-phrase and fronted focus-phrase bears the main stress of the sentence, and (iii) both in *wh*-questions and focus-constructions the verb modifier has to follow the verb – that serve as the basis of putting focus-movement and *wh*-movement in the same natural class are indeed desirable, nonetheless, there are certain problematic points with the theory developed so far. Later research (É. Kiss 1998, Horváth 2000, 2005) shows that discourse-new/non-presupposed focused elements do not have to be pre-verbal in Hungarian (as in (54)).

(54) Question:
a. HOL tudhatnám meg a vonatok menetrendjét?
where I.can.know PRT the train schedule.ACC
'Where can I find out about the train schedule?'
Answer:
b. Megtudhatod (például) [AZ INTERNETEN]…
PRT-you.can.know for.exmple the internet.on
'You can find out about it, for example, on the Internet….'
(in addition to possibly other places)
(Cable 2008:4)

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É. Kiss (1998) observed that partial answers to a *wh*-question have to be post-verbal, suggesting that being a discourse-new focus is not a sufficient trigger for focus-movement. If the partial answer is not an exhaustive answer to the question then it has to remain in a post-verbal position.

(55) (Valószínűleg) bemutatta Pétert Manrinak
probably PRT-introduced Peter.ACC Mary.to
'Well, probably, he introduced Peter to Mary.'

(Cable 2008:5)

(56) Mari elkésett még[AZ ESKÜVŐJÉRŐL] is.
Mary prt-she.was.late yet the her.wedding.from also
'Mary was even late to HER WEDDING.'

(Cable 2008:5)

Cable (2008) discusses that the Hungarian *even*-construction always involves focus that is whatever is put between *még…. is* 'even' has to bear main stress, and thus has to be focused, although it is never exhaustive. This *even*-construction introduces alternatives to whatever is in between the phrases *még ... is* 'even'. The fact that this type of focus may follow the verb signals that it is not exhaustive.

Cable (2008) assumes that focus-movement to the immediately preverbal position is triggered by the need to exhaustively identify the set that is denoted by the phrase in focus position (É. Kiss 1998). If it is true that *wh*-movement is a sub-case of focus-movement, then it must be true that *wh*-phrases elicit exhaustive identification too. Cable (2008) assumes that focus-fronting in Hungarian is triggered by a feature EX-FOC[15] on the focused phrase that is responsible for the exhaustive identification reading of fronted focus – he bases this on the evidence above, and *only*-phrases, which associate their complement with exhaustive reading – this way, *csak* 'only' being an overt manifestation of EX-FOC.

Cable (2008) gives an empirical generalization about *wh*-question-answer pairs (57).

(57) Empirical Generalization
If the *wh*-word of a *wh*-phrase occupies a position receiving 'exhaustive focus', then the *wh*-question is infelicitous if an exhaustive answer to the question is impossible for pragmatic reasons.

[15] As discussed in the previous subsection, Horváth (1997) assumes that focus fronting is a result of an exhaustive operator that needs to establish an agreement relationship in CP with the corresponding feature in the exhaustive operator projection.

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If it were true that interrogative *wh*-constructions are a sub-species of focus-constructions, then it should also be true that every *wh*-question in Hungarian has the semantic properties associated with exhaustive focus. However, this is not true of Hungarian *wh*-questions, since there are *wh*-questions with the *wh*-phrase in the immediately preverbal position to which giving an exhaustive answer is pragmatically impossible.[16] A question like that in (58) is a natural question in Hungarian. (58) does not require an exhaustive question; it can have a 'mention some' reading but it still requires the *wh*-phrase to be fronted.

(58) a. HOL vehetek újságot itt a környéken?
where I.can.buy newspaper.ACC here the vicinity.in
'Where can I buy a newspaper around here?'
b. *Vehetek hol újságot itt a környéken?
I.can.buy where newspaper.ACC here the vicinity.in
c. Vehetsz a kávézóban például.
you.can.buy the cafeteria.in for.example
'You can buy one in the cafeteria, for example.'

(Cable 2008:11)

In the felicitous answer, focus is post verbal, and hence non-exhaustive; nonetheless, the *wh*-word had to move to the front in the question. This means that *wh*-phrases have a different reason for moving to the front – possibly a morpho-syntactic constraint triggers the movement of the phrase. Cable (2008) takes this to refute the claim that the *wh*-operator moves to the syntactic focus-position in Hungarian due to its focus status

To sum up, *wh*-phrases in Hungarian have to be moved out of VP to a structurally higher position in the CP domain (e.g. CP, FocP, ForceP[17]). The movement of the *wh*-phrase is either triggered by a focus-feature on the *wh*-phrase, or by some other morpho-syntactic requirement. This morpho-syntactic feature can be a [wh]-feature of *wh*-pronouns (cf. Surányi 2005)[18], or as Cable (2010) suggest (see chapter 2), there is a Q-operator that attaches to the phrase that contains a [wh] feature. Q, in turn, has its own feature that it needs to check in the CP domain, that is why it moves to CP.

[16] Cable (2008) reports an experiment done with Hungarian adult native speakers.
[17] With the exception of certain multiple-questions, see Surányi 2006.
[18] Surányi (2005) argues that *wh*-phrases in single questions bear both a focus feature and a *wh*-feature. In multiple *wh*-fronting, non-last *wh*-phrases only bear a *wh*-feature.

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3.3 Relative clauses in Hungarian

Relative clauses are introduced by a relative pronoun that occupies the leftmost position in the embedded CP and fills either an argument or an adjunct position in the embedded clause. The relative phrase moves to the specifier of CP to check its [complementizer]-feature. It is built up of a *wh*-pronoun and an *a-* element which is the remnant of a demonstrative functioning as a pronoun diachronically, which is not transparent to the speakers anymore. This morpheme is the only difference between interrogative and relative pronouns (as in (59) and (60)).

(59) Ki ment el a buliba?
who.INT went VM the party.to
'Who went to the party?'

(60) Aki elment a buliba, az János volt.
who.REL VM.went the party.to that János was
'It was János who went to the party.'

There are cases when the relative pronoun lacks the determiner part, that is, it looks identical to the interrogative pronoun (É. Kiss 1998), see (61).

(61)a. [$_{CP}$(A)ki [$_{TopP}$ másnak [$_{AspP}$ vermet ás]]], maga esik bele.
who other.DAT pit.ACC digs himself falls in.it
'Who digs a pit for someone else, falls in himself.'
b. [$_{CP}$[$_{TopP}$Másnak [$_{TopP}$ (a)ki [$_{VP}$ vermet ás]]]], maga esik bele.
other.DAT who pit.ACC digs himself falls in.it
'Who digs a pit for someone else, falls in himself.'

Kenesei (1994) assumes that whenever the relative pronoun/phrase follows another topicalized element, the relative does not raise to the specifier position in CP, it adjoins to IP, that is, it is topicalized as well. Relative phrases and interrogative pronouns do not occupy the same position inside a phrase (Horváth 1986)[19], the structure of (61b) would be as in (62) if the pronoun was interpreted/functioning as a question word.

(62) [$_{CP}$[$_{TopP}$Másnak [$_{FP}$ ki [$_{VP}$ ás vermet]]]]?
other.DAT who digs pit.acc
'Who digs a pit for the someone else?'

(É. Kiss 2002:244)

[19] Horváth (1986) claims that whenever a *wh*-pronoun has a [+focus] feature, it functions as an interrogative, that is what determines the position to which it raises to, as well.

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Free relatives in Hungarian are associated with a demonstrative pronoun in the higher clause. The demonstrative pronoun functions as the complement of the higher predicate and bears the case assigned by the higher predicate. The demonstrative is associated with the relative clause and they are a constituent together, although the demonstrative can be extraposed, and separated from the relative clause this way. Nonetheless, at some point in the derivation they have to form a constituent.

(63) a. [$_{Spec,TopP}$ Azt/pro, amiről beszéltünk], felejtsd el!
that-ACC what-about talked-we forget-IMPER-2SG VM
'Forget what we talked about!'

b. [$_{Spec,DistP}$ Arról is] tudok, [ami a színfalak mögött történt].
that-about also know-I what the scenes behind happened
'I also know about what happened behind the scenes.'

c. [$_{Spec,FP}$ CSAK AZT] hiszem el, [AMIT A SAJÁT SZEMEMMEL LÁTTAM].
only that-ACC believe-I VM what my own eyes-with saw-I
'Only that do I believe what I saw with my own eyes.'

d. Nem hiszek [abban, amit mond].
not believe-I that-in what says-he
'I don't believe in what he says.'

e. Felejtsd el [azt/pro, amiről beszéltünk].
forget VM that what-about talked-we
'Forget what we talked about!'

(É. Kiss 2002:245)

This demonstrative can occupy various positions in the matrix clause according to the function of the relative clause associated with it (as in (63a) through (63e)). In (63a) the demonstrative pronoun together with the relative clause function as a topicalized object, in (63b) the demonstrative acts as an oblique distributive phrase, in (63c) it is an object in focus position, in (63d) it is a VP-internal oblique complement, and in (63e) the demonstrative is a VP-internal object. As it can be seen in (63a) and (63e), the demonstrative is not obligatorily present with the free relative; in those cases, an empty pronominal element *pro* occupies the position. When the relative clause modifies a lexical phrase, the demonstrative is present in the phrase too (as in (64)).

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(64)a. az a könyv, amelyet olvasok
that the book which-ACC read-I
'that book which I am reading'

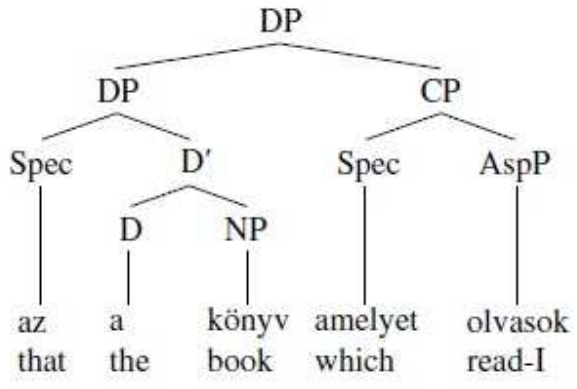
b. annyi könyv, ahányat te egy évben elolvasol
so.many book as.many-ACC you one year-in VM.read
'so many books as you read in one year'

c. egy olyan könyv, amilyet olvasok
a such book which-ACC read-I
'such a book that I am reading'

(É. Kiss 2002:245)

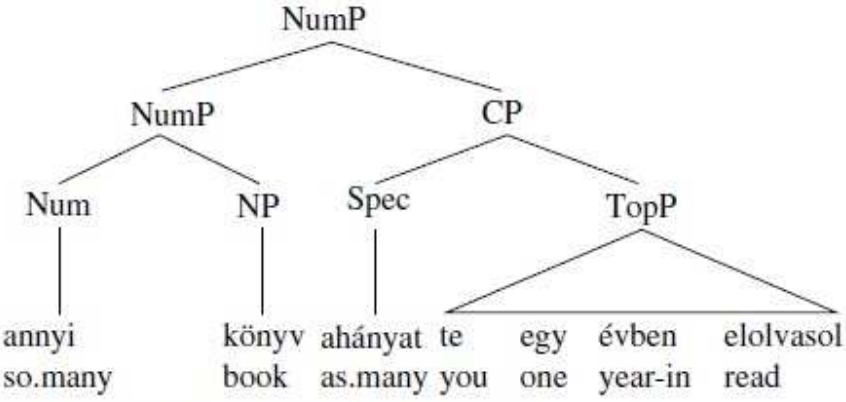
The demonstrative in (64) shows which layer of the noun phrase the relative clause modifies; in (64a) it modifies the noun phrase – in fact, it is adjoined to DP, in (64b) it modifies the number phrase (NumP), whereas in (64c), it acts as an adjectival modifier to the noun adjoined to the NP. The respective structures are in (65a) to (65c).

(65)a.



'that book which I am reading'

b.



'so many books as you read in one year'

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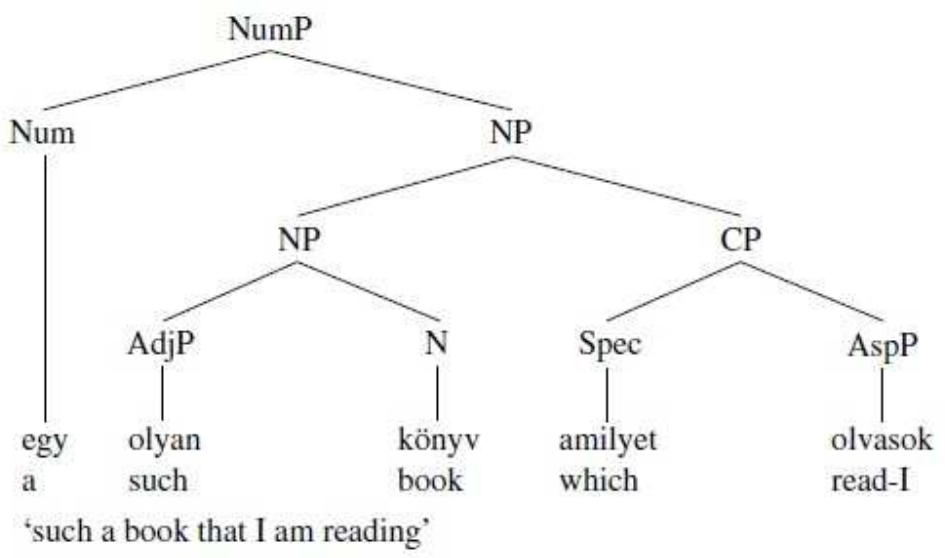
c.



(É. Kiss 2002:246)

Adverbial clauses are relative clause with optional heads as in (66). Instead of the demonstrative, in these constructions there can be a pro-adverb in the matrix clause but it is optional as well. The head of the relative clause is the demonstrative equivalent of the pro-adverb.

(66) a. A parlagfű [$_{AdvP}$ ott is] megjelenik, [ahol azelőtt soha nem
the ragweed there too up shows where before never not
tapasztalták].
attested-they
'Ragweed shows up also where it has never been attested.'

b. Sokan [$_{AdvP}$ CSAK AKKOR] irtják a parlagfüvet, [AMIKOR MÁR
many only then extirpate the ragweed when already
ELHULLATTA A MAGJÁT].
shed-it its seed
'Many extripate ragweed only when it has already shed its seed.'

c. [(Ott)[ahol megbolygatták a talajt]],megjelenik a parlagfű.
there where up broke-they the soil up shows the ragweed
'Where the soil has been broken up, ragweed appears.'

d. [(Akkor)[amikor a parlagfű már el virágzott],késő irtani.
then when the ragweed already$_{VM}$ flowered late to.extripate
'When the ragweed has already flowered, it is late to extripate it.'

In the case of (66c) and (66d), the adverb being lexically present is redundant, and hence it is not pronounced, however, it is not prohibited to have it in the sentence. When the pro-adverb is present in the matrix sentence, it fills in the position signaling which category the adverb clause modifies.

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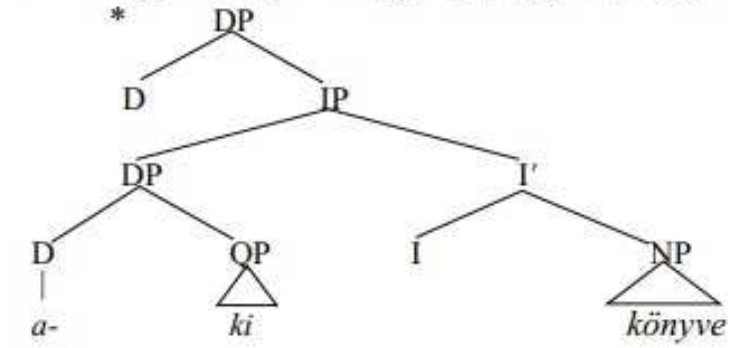
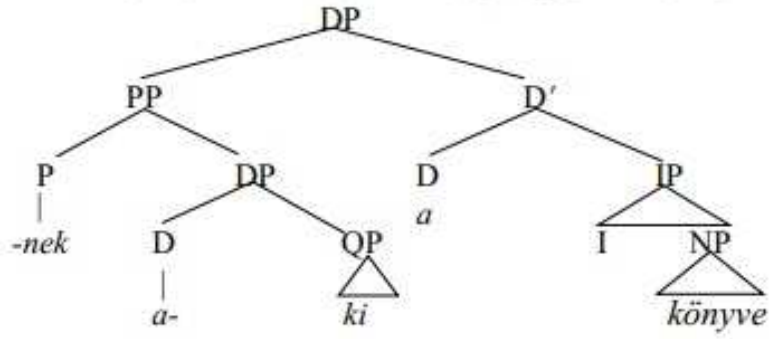
Den Dikken and Dékány (to appear) suggest that the structure of a relative pronoun is made up of a D head a- and a QP (as in (67)). Den Dikken and Dékány (to appear) analyze possessive relative constructions.

(67) a. *[$_{DP}$ D [$_{IP}$ [$_{DP}$ D=*a*- [$_{QP}$ *ki*]] [I [$_{NP}$ *könyve*]]]]



b. [$_{DP}$ [$_{PP}$ P=*-nek* [$_{D'}$ D=*a*- [$_{QP}$ *ki*]]] [D=*a* [$_{IP}$ I [$_{NP}$ *könyve*]]]]



This analysis suggests that the relative pronoun is more complex in itself than the *wh*-pronouns are, and if the inner structure always contains a D element on the left edge, the [rel]-feature-bearing element can never occupy the leftmost position inside the phrase.

Lipták (2006) argues that there are two types of temporal relative clauses with respect to their inner structure. She claims that the different syntactic behavior is rooted in a different structure. There are relative clauses in which the relative pronoun takes an IP as its complement – the clause itself is the complement of the relative pronoun (as in (68)).

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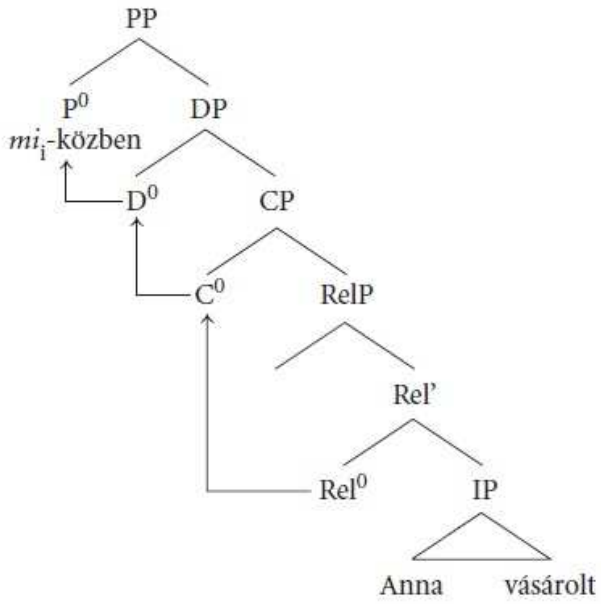
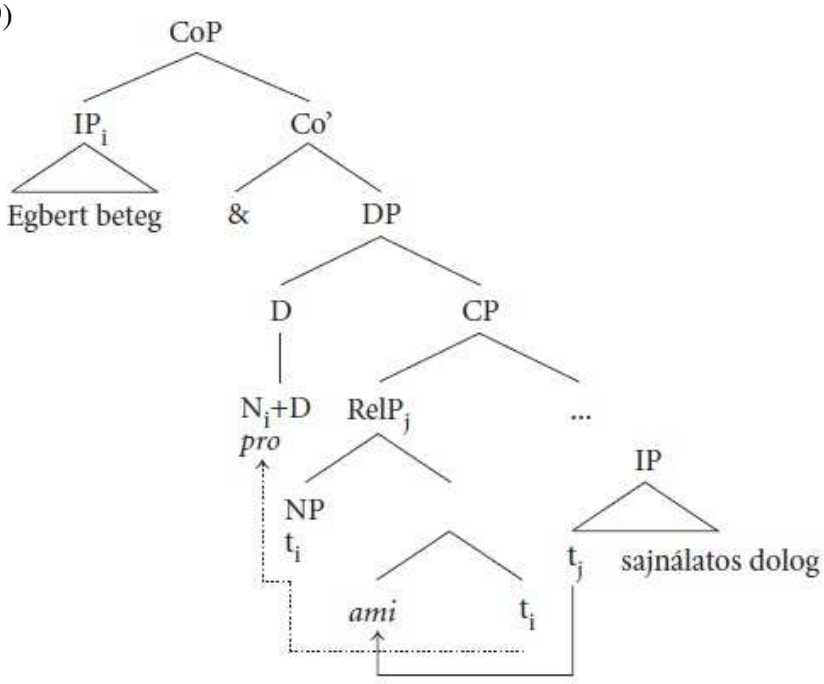
(68)



(Lipták 2006:164)

In (68), the relative pronoun comes from the IP and it carries the case assigned by the P head. That is why the relative keeps the form of a *wh*-word without the *a*- element that can be seen on other relative pronouns in Hungarian. In the case ofa-relatives Lipták (2006) argues that they are clausal appositives, the relative clause conveys a thought that is parenthetical. She analyzes the structure borrowing de Viers' structural analysis (as in (69)).

(69)



(Lipták 2006:163)

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In (69) the relative clause is the complement of a N/D head, there is a pro in the specifier of the DP, since there are languages in which there is a lexical element occupying that position (cf. de Vries 2006).[20] Relative pronouns of this type obligatorily combine with the *a-* element, which also points to a difference between the two types. Lipták (2006) also claims that there is only one exception from this; in the case of *(a-)mely* 'which', the relative pronoun can stand with or without the a- element.

There are a number of relative adverbs that could be considered relative pronouns because of their build-up, however, they are not the same as real relative pronouns – they are not complements of the embedded verb. The relatives in (70) – *mielőtt* 'before', *amióta* 'since (when)', *miután* 'after' – are in fact are used as complementizers of adverb clauses.

(70) a. (Azóta) amióta megérkezett, még nem szólt egy szót sem.
since.that since.what VM arrived-he yet not said-he a word neither
'Since he arrived he hasn't said a word yet.'

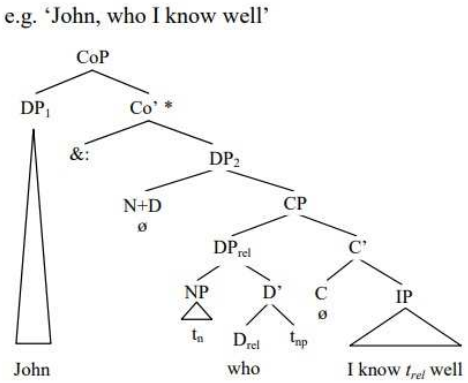
b. (Azelőtt) mielőtt a szomszédunkba költöztek, vidéken laktak.
before.that before.what our neighborhood-to moved-they country-in lived-they
'Before they moved to our neighborhood, they lived in the country.'

c. (Azután) miután letette az utolsó vizsgáját , nem vett
after.that after.what passed-he his last exam not took-he
szakkönyvet a kezébe.
technical-book his hand-in
'After he passed his last exam, he did not touch a technical book.'

The relative adverbs can be segmented into a wh/relative-word + a postposition: *ami-óta* 'since', *mi-előtt* 'before', *mi-után* 'after'. As they are not complements of the embedded verb, they are considered to be relative adverbs instead of relative pronouns, and thus they do not get to the specifier of CP by movement, rather they are base generated under CP (Lipták 2006). Lipták (2006) observes two main differences between the types of relatives in Hungarian.

[20] de Vries claims that, while all relativization involves raising, appositive relatives are structurally different. In appositive relatives there is an abstract NP – just like a free relative – that contains the antecedent of the raised relative.

(i)



(de Vries 2006:30)

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The pronominal element *mi-* 'what' is in an appositive relationship with the embedded clause that expresses a temporal adjunct of the matrix predicate. The complementizer has to agree in case with the relative adverb it associates with (cf. (71) and (72)).

(71) a. Akkora, amikorra elmentek a vendégek, a háziak
by.then by.when left the guests the hosts
teljesen kimerültek.
completely got.exhausted
'By the time the guests left, the hosts became completely exhausted.'
b. Azért késett el, mert lekéste a buszt.
that-for late.was-he VM what-for missed the bus-ACC
'He was late because he missed the bus.'

(72) a. *Akkora, amikor ekmentek a vendégek ….
by.then when left the guests
b. *Azelőtt, amikor férjhez ment ……
before.that when married got-she

These matching demonstrative pro-adverbs are generated in the matrix clause for the same reason as the other demonstratives are – because the slot where they are generated wouldn't be able to host a clausal complement, thus the demonstrative pro-adverb is generated there. This is also the reason for the need of matching in case, the demonstrative pro-adverb is an associate of the whole adverb phrase, and hence they need to match in case.

3.4 Interim Summary

Focus can be encoded in different parts of grammar depending on which there are different predictions about the motivation for movement, the landing site of the moved element and the constraints with respect to pied-piping. Although focus-movement is the least restricted – if it is restricted at all – in its behavior in pied-piping, there are certain mechanism to be taken into consideration. The experimental findings lead me to believe that there might be more than one mechanisms at play simultaneously (see chapter 5). *Wh*-movement can be construed as similar to focus-movement in that it targets a similar position in the functional domain of the sentence. From the point of view of semantics, questions introduce a set of alternatives as answers, and focus can also be interpreted as an answer to an underlying – unuttered question. In light of the similarities, one might expect *wh*-movement to pattern with focus-movement with respect to pied-piping. Relativization is different from questions and focus construction semantically. Syntactically the relative pronoun also moves to the CP domain in the clause. Relatives can have two structures, (i) one in which the relative is the size of an IP, and (ii) in which the relative clause is a CP. They seem to be the most constrained with regards to pied-piping.

Let us now summarize the research questions that arise with respect to pied-piping Hungarian. These are the questions that the experiments aim to find an answer for.

- Is pied-piping restricted in focus movement, *wh*-movement and relativization?
- What constraints restrict the possibility of pied-piping in the investigated constructions?

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- Is there a difference among the relative-feature, the *wh*-feature and the focus-feature?
- What patterns can we see in prenominal adjunct pied-piping in Hungarian?

In the following chapter I present the experiments aiming to gather information about these questions. The experiments combine the hypotheses based on the Hungarian background and literature on pied-piping in other languages (see chapter 2).

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4 Experiments

In this chapter, I present the experiments that were conducted during my research on pied-piping in A-bar movements in Hungarian. The experiments investigate pied-piping in three types of A-bar movements, namely focus-movement, *wh*-movement and relativization, in Hungarian in which the pied-piper was embedded inside a pre-nominal adjunct. The experiments concentrate on two types of pre-nominal adjunct constructions: reduced adjunct clause modifiers and adjectival modifiers. There are six experiments altogether, I present them in an order that shows how one experiment informed the next and helped to get closer to observing grammatical restrictions on pied-piping.

Recall that, according to the literature on pied-piping, the pied-piper needs to occupy a position in the containing phrase that is in some sense on the edge of the pied-piped phrase. The approaches presented in chapter 2 differ in how they account for movement of the feature-bearing element to the position from where it ultimately pied-pipes the phrase containing it. According to previous literature, the pied-piper cannot be embedded in an adjunct (in languages such as English, German, Finnish etc.). The pied-piper always has to occupy the leftmost position in a phrase, if needed the pied-piper has to move inside the phrase. The pied-piper can move overtly or covertly to the left edge of the phrase. The motivation for movement is different for the accounts reviewed in chapter 2, feature-checking or interface needs.

The experiments were Acceptability Judgment Tasks, using a 7-point Likert-scale. We wanted to test pied-piping in Hungarian as there has not been a comprehensive description of the phenomenon, and hence, the constraints on pied-piping have not been clearly established for Hungarian – the literature on it accepts and builds on earlier literature on pied-piping in general (see chapter 2). Horváth's (1997) empirical claim presented evidence against the syntactic focus-feature (see chapter 3). Horváth's (1997) claim – and prediction – is that syntactic features embedded in a pre-nominal adjunct are not able to pied-pipe the phrase properly containing them, while pied-piping is unrestricted in focus constructions. She draws the conclusion, that because the focus-feature – that also triggers movement (see among others É. Kiss 1998, Bródy 1990, 1995) – is not a syntactic feature, there is a semantic operator that is responsible for the exhaustive reading of the phrase interpreted as the focus of the sentence. This operator (Exhaustive Identification operator, see section 3.1.2) is what triggers movement, while in prosody, emphasis can be given to any element inside the phrase inside the phrase to which the operator adjoins (Horváth 1997).

The experiments were designed to answer the following research questions:

Research Question 1: Is there a syntactic focus-feature on the element that is prosodically prominent?

Research Question 2: Does focus-pied-piping show similarities in the restrictions on pied-piping to the other A-bar movement types – which are restricted with regards to pied-piping? The two other A-bar movements are relativization involving a syntactic [rel]-feature on the relative pronoun and *wh*-movement involving a syntactic [wh]-feature on the *wh*-pronoun.

Research Question 3: Does *wh*-movement in Hungarian align with relative-movement or with focus-movement?

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In light of these questions we constructed the experiments following certain constraints suggested by the literature on pied-piping still keeping in mind the background of the movement types and accounts on the mechanism behind the movement types we investigated.

The first two experiments served as a pilot study aiming at verifying the judgments presented in Horváth (1997). The experiment contained test sentences of the three movement type (focus-movement, *wh*-movement and relativization). The pied-piper was embedded inside a pre-nominal adjunct. The baseline sentences were similar to the target sentences but the baseline sentences did not have pied-piping in them, rather the respective movements involved only the feature-bearing element. The results of the first experiment were unexpectedly poor – that is why the second pilot experiment was constructed. The crucial difference between the two experiments was the choice of filler sentences. In the second experiment, the wording of some of the target sentences were changed as well since some items received a lower score on the acceptability scale compared to other lexicalizations in the same condition.

For a stronger statistical analysis the experimental conditions were separated and tested in themselves. The third, fourth and fifth experiment focus on *wh*-movement, focus-movement and relativization respectively. Changes were made to the baseline sentences as well. To be able to test the effect of movement, which involves pied-piping and the respective movements, the baseline sentences did not contain any movement. This way, the size of the effect is more salient in the results.

The sixth and seventh experiment investigates pied-piping by adjectival modifier in *wh*-movement. The sixth experiment served as a preliminary test for experiment 7. In a production study, participants had to read out one of two sentences, the one that they judged more natural. Participants judged the sentences containing pied-piping by *wh*-adjectives in main questions on a 7-point Likert-scale in the seventh experiment. This experiment looked at inner *wh*-movement in the DP and at the same time the need for movement to the edge.

Now I will turn to the specific experiments, and describe them in detail.

4.1 First pilot study

The goal of the experiment was to verify the judgements given by Horváth (1997) for three examples pied-piping by pre-nominal adjuncts. Horváth (1997) claims that pied-piping is acceptable in focus-movement while it is unacceptable in *wh*-movement and relativization. She accounts for this asymmetry in acceptability by claiming that movements triggered by syntactic features cannot undergo pied-piping whereas focus-movement is not triggered by a syntactic feature, hence it is unrestricted with respect to pied-piping. To verify the judgement, the target sentences contain pre-nominal adjunct that contain the arguably feature-bearing element and the whole phrase undergoes pied-piping.

4.1.1 Method

4.1.1.1 Subjects

The experiment was done by 54 adult Hungarian native speakers. Every subject saw all target sentences. The experiment was sent to the subject via email, and they did the experiment online.

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4.1.1.2 Procedure

We tested the acceptability of pied-piping in different structures using an Acceptability Judgment Task test. The sentences had to be judged on a 7-point Likert scale – 1 being unacceptable and 7 being acceptable. At the beginning of the experiment there were warm-up items to familiarize the subjects with the task. The warm-up task contained sentences with operator movement without pied-piping. The target and filler sentences were presented in a pseudo-randomized order; every subject saw different orders of the sentences, but each of them saw all of the test sentences. The experiment was built in and run with the Inquisite software (http://www.millisecond.com/).

4.1.1.3 Design

There were three factors: movement-type, discourse linking, and pied-piping. The first factor, movement-type had three levels: relativization, *wh*-movement and focus-movement, corresponding to the movement-types in Horváth's (1997, 2000, 2005, 2010) examples.

The second factor, discourse-linking had two levels: discourse-linked and non-discourse-linked. Discourse-linking was added as a factor to investigate if it affects the acceptability of pied-piping. Although discourse-linking is usually thought of as a property of *wh*-operators, we assumed that it can be construed for the other A-bar movement types (namely, relativization and focus-movement). Discourse-linking for a focused-phrase means that they answer a discourse linked *wh*-phrase, and the set of alternatives introduced by the focus is a closed set. In relativization it simply means that the *wh*-question was transformed into a relative clause with the same *wh*-pronoun turned into a relative pronoun.

The third factor was pied-piping, it had two levels: pied-piping, and no pied-piping. This means that out of the 48 target sentences half of them contained pied-piping, whereas the other half served as a baseline containing "regular" operator movement, ensuring that the construction is acceptable without pied-piping.

4.1.2 Materials[21]

There were 4 lexicalizations of the 3 factors with 12 conditions, which gave us 48 target sentences. Out of the 48 there was pied-piping in 24 target sentences. The operator item (WH, REL, FOC) was embedded in a pre-nominal adjunct phrase. When constructing the sentences, it was ensured that the sentences were as uniform as possible across all conditions. The number of words was identical in all sentences. The structure of the pre-nominal adjunct was the same across all pied-piping conditions. The structure of the target clause was identical except fpr the focused clauses due to obligatory verb-verb modifier inversion in structural focus constructions in Hungarian (see chapter 3, section 3.1). The feature-bearing element was on the left edge of the phrase and subsequently closest to C (Heck 2008). All target clauses were embedded, as relativization is always embedded, and we wanted to keep the structures as uniform as possible so we embedded the *wh*-constructions and focus-constructions. The *wh*-constructions were embedded for another reason: to avoid echo-question reading of the *wh*-words. The verbs in the main clauses always matched the illocutionary force of the embedded clause – that is, in the baseline sentences were embedded under verbs of saying such as *elmond* 'say', *elmesél* 'tell' – which were also used with relativzation; *wh*-constructions were embedded under main clause predicates like *megkérdez* 'ask', *kíváncsi* '(be) curious', *érdeklődik* '(be) interested in'; and focus-constructions were embedded under matrix predicates that encode surprise/shock such as *meglepődik* '(be) surprised', *furcsáll*

[21] The full list of sentences is attached to the thesis in the appendix.

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'find strange'. In the following, I give a sample of all conditions in D-linking (1) - (3) and non-D-linking (4)-(6). Example of relativization is in (1) and (4),the *wh*-condition can be seen (2) and (5); while focus-movement is exemplified in (3) and (6).

(1) Baseline (no pied-piping):

a. Máté elmesélte, hogy melyik az az ország, [ahonnan] az örökbe fogadott
Máté said-3SG that which the the country where.from the VM adopted
állatok származnak.
animals originate-3PL
'Mate told me, which is the country [where] the adopted animals are from _.'

Pied-piping: ….[[REL_{obl} participle]N_{ACC}] NP ADV V VM

b. Ede elmondta, hogy melyik az az ország, [ahonnan származó
Ed said-3SG that which the the country where.from originating
állatokat] szívesen örökbe fogadják.
animals.ACC gladly VM adopt-2PL
'Ed told me which is the country [animals coming from where] people like to
adopt _'

(2) Baseline (no pied-piping):

a. Kati kíváncsi volt, hogy [melyik országból] származnak a
Kate curious was-3SG that which country originate-3PL the
leggyakrabban örökbe fogafdott állatok.
most.often VM adopted animals
'Kate wondered [which country] animals adopted most frequently are from _.'

Pied-piping: …[[WH_{obl} participle] N_{ACC}] NP V VM ADV

b. Laci megkérdezte, hogy [melyik országból származó állatokat]
Leslie asked-3SG that which country originating animals.ACC
fogadják örökbe leggyarkrabban.
adopt-3PL VM most.often
'Leslie asked [animals coming from which country] people adopt _ most frequently.'

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(3) Baseline (no pied-piping):

a. József meglepődött, hogy [pont Madagaszkárról] származnak
Jo surprised-3SG that precisely Madagascar.from originate-3PL
az örökbe fogadott állatok.
the VM adopted animals
'Jo was surprised that it was [Madagascar] that the adopted animals came from _.'

Pied-piping: …[[FOC_{obl} participle] N_{ACC}] NP V VM ADV

b. Péter furcsállta, hogy [pont a Madagaszkárról származó
Peter find.strange-3SG that precisely the Madagascar.from originating
állatokat] fogadják örökbe leggyakrabban.
animals.ACC adopt-3PL VM most.otfen
'Peter found it strange that it is [precisely the animals coming from Madagascar] that people adopt _ most frequently.'

(4) Baseline (no pied-piping):

a. Anna elárulta, hogy milyen az az állapot, [amilyen állapotban]
Anna said-3SG that which the the condition such condition.in
az éjjel beszállított betegeket felvették.
the night.at in.taken patients admitted
'Anna told me what is the condition like that [in such condition] they admitted patients _ who were brought in during the night.'

Pied-piping: …[[REL_{obl} participle] N_{ACC}] NP ADV VM V

b. Dóra elárulta, hogy milyen az az állapot, [amilyen állapotban
Dora said-3SG that which the the condition such condition.in
felvett betegeket] nehéz ellátni.
admitted patients.ACC difficult treat
'Dora told me what the condition is like [patients admitted in such condition] are hard to treat _.'

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(5) Baseline (no pied-piping):

a. Viki érdeklődött, hogy [mennyi pénzzel] rendelkztek a tavaly
Viki asked-3SG that how.much money.with had-3PL the last.year
elutasított befektetők.
rejected investors.
'Viki wondered [how much money] the investors rejected last year had _.'

Pied-piping: …[[WH_{obl} participle] N_{ACC}] NP V VM ADV

b. János kíváncsi volt, hogy [mennyi pénzzel rendelkező befektetőket]
John curious was-3SG that how.much money.with having investors
hívtak meg a pályázatba.
called-3PL VM the application
'John wondered [investors having how much money] they invited _ for the application.'

(6) Baseline (no pied-piping):

a. Viki meglepődött, hogy [kifejezetten jó állapotban] vettek fel
Viki surprised-3SG that especially good condition.in admitted VM
betegeket az osztályra.
patients.ACC the floor.to
'Viki was surprised that it is [in especiallygood condition] that they admitted patients _ to the floor.'

Pied-piping: …[[FOC_{obl} participle] N_{ACC}] NP V VM ADV

b. Mari meglepődött, hogy [kifejezetten súlyos állapotban felvett
Mary surprised-3SG that especially serious condition.in admitted
betegeket] tesznek utcára időnként.
patients.ACC put-3PL street.to sometimes
'Mary was surprised that it is [patients admitted in especially serious condition] that they discharge _ sometimes.'

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4.1.3 Results

Descriptive statistics of the experiment shows that there is a difference between the discourse-linked and non-discourse-linked conditions, as well as among the movement types. (table 1).

	MEAN	STANDARD DEVIATION	MEDIAN
FOC DL	6.35	1.14	7
WH DL	6.16	1.38	7
REL DL	5.40	1.90	6
FOC NON-DL	6	1.56	7
WH NON-DL	4.96	2.25	6
REL NON-DL	4.26	2.10	5

Table 1: Descriptive statistics of experiment 1

The scores of judgments were transformed into z-scores so that statistical analyses may be conducted on them. After statistical tests (paired ANOVA), the results were Bonferoni-corrected. First, I will present the results of pied-piping with respect to the baseline sentences. Then, I will turn to the results of comparing the structures themselves. I separate the discourse-linked conditions from the non-discourse-linked conditions.

Pied-piping has a statistically significant effect in relativization (p<.01) and in the *wh*-construction (p<.05) in the discourse-linked condition (Figure 1). That is, the target sentences containing pied-piping were judged to be more unacceptable in both relativization and *wh*-constructions, while pied-piping had no effect in focus-constructions.

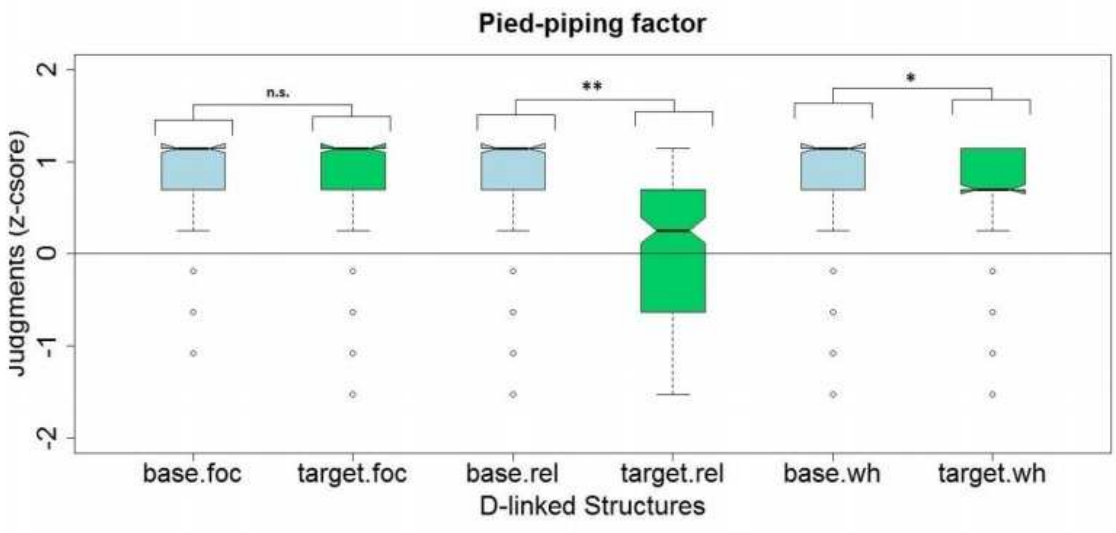

Figure 1: The effect of pied-piping in D-linking

Pied-piping shows no effect in the non-discourse-linked condition (Figure 2). The baseline sentences in the non-discourse-linked condition were judged lower on the scale – except for the

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focus-condition, the median of which was at the top of the scale. Statistically no significant difference can be observed.

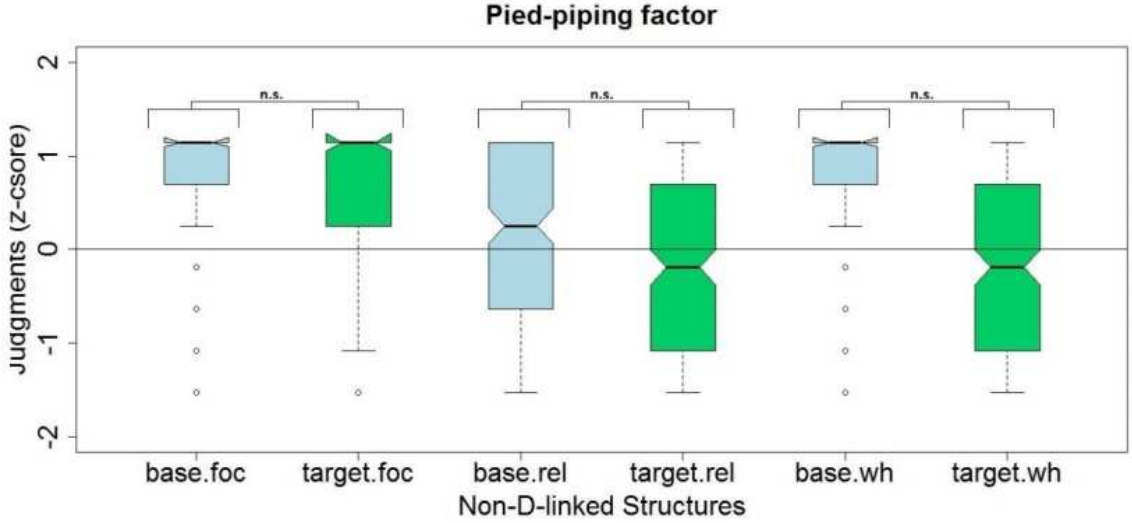

Figure 2: The effect of pied-piping in non-D-linking

Now I turn to the comparison of movement types in the target sentences. In the discourse-linked condition, relativization was significantly worse than both focus-movement (p<.01) and *wh*-movement (p<.05) (Figure 3). The difference between focus-movement and *wh*-movement was not statistically significant.

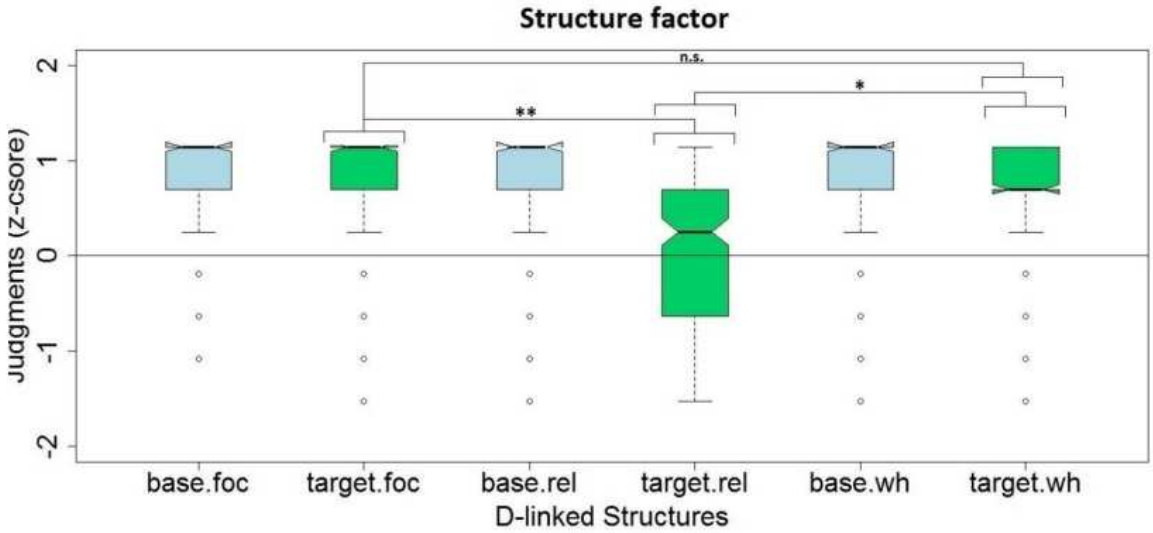

Figure 3: Difference in movement types in D-linking

In the non-discourse-linked condition, the difference between focus-movement and relativization was marginally significant (p=.05). The other structures did not differ from each other significantly (Figure 4).

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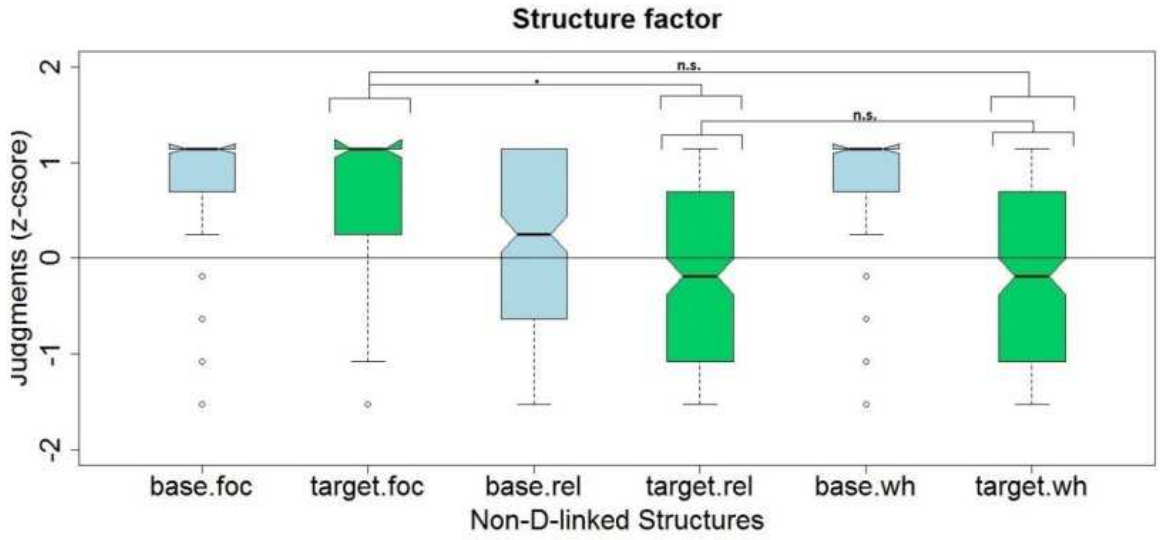

Figure 4: Differences in movement-type in non-D-linking

4.1.4 Discussion

Horváth's empirical claim has been partially verified by the findings. Focus exhibits unrestricted pied-piping behavior, while relativization exhibits restrictions with respect to pied-piping. Focus pied-piping is not sensitive to the tested (locality) restrictions. However, *wh*-movement in pied-piping is acceptable, contrary to Horváth's claim. The effect of the violation of the pied-piping restriction in the discourse-linked condition is too small to be modeled as a grammatical violation. In the discourse-linked case, *wh*-movement, though violating pied-piping restrictions, is just as acceptable as focus movement. Relativization is worse than the other two types of operator movement; however, the judgments were higher than the median, which means that they were acceptable rather than not.

There is a clear difference between discourse-linked and non-discourse-linked phrases in the acceptability of pied-piping. Focus-movement is unrestricted both with discourse-linked and non-discourse-linked phrases. In the non-discourse-linked cases, *wh*-movement patterns with relativization in that the acceptability of both is lower on the scale. The target sentences are always degraded compared to the baseline sentences; however, the baseline sentences in the non-discourse-linked relativization are questionably acceptable themselves. There can be a grammatical difference between focus-movement and relativization, while focus-movement does not differ from *wh*-movement in either of the cases suggesting no grammatical difference.

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4.2 Experiment 2 – Second pilot[22]

In the first pilot study, the scores in general seemed to be lower than expected – mostly with respect to relativization, but on the whole we expected higher scores on the individual test items. One of the reasons we suspected to be behind the low scores was the choice of fillers. We used the items of another acceptability judgment test that tested the restrictions on extraction out of islands. The complexity of the fillers and the length of the test might have influenced the subjects. Another reason for repeating the pilot study was that some of the test items were faulty in their design, that is, in the focus condition it was not clear whether the focus bearing element was embedded inside the phrase we intended to be pied-piped, or the whole phrase was the focus itself, and the movement was regular focus movement without pied-piping. After presenting the data set at conferences, it became clear that some of the items must be changed. This experiment is identical to the first pilot in the number of test items, conditions and factors; except for the non-discourse-linked conditions.

4.2.1 Method

4.2.1.1 Subjects

82 Hungarian adult speakers participated in the experiment. Every subject saw all target sentences. The experiment was sent to the subjects via email, and they did the experiment online.

4.2.1.2 Procedure

We tested the acceptability of pied-piping in different structures using an Acceptability Judgment Task test. The sentences had to be judged on a 7-point Likert scale – 1 being unacceptable and 7 being acceptable. At the beginning of the experiment there were warm-up items to familiarize the subjects with the task. The warm-up task contained sentences with operator movement without pied-piping. The target and filler sentences were presented in a pseudo-randomized order; every subject saw different orders of the sentences, but each of them saw all of the test sentences. The experiment was built in and run with the Inquisite software (http://www.millisecond.com/).

4.2.1.3 Design

The design of the second pilot experiment was almost identical to the first one with the exception that in this experiment there were only discourse-linked phrases. The movement type factor was not changed; there were three levels of the movement type factor: relativization, *wh*-movement, and focus-movement. Pied-piping was a factor with two levels: sentences without pied-piping, and sentences with pied-piping.

4.2.2 Materials

In the experiment, there were 5 lexicalizations of each condition: 5×6=30 target sentences: WH (baseline + pied-piping), REL (baseline + pied-piping), and FOC (baseline + pied-piping). Every condition contained a baseline sentence – meaning they were the same constructions but they were not pied-piped by a prenominal adjunct (clause – if we think of the participle modifiers as participle clauses). There were 45 filler sentences. There were only discourse-linked phrases in the experiment for several reasons:

- to shorten the item set, and avoid possible working memory problems
- in the first pilot study the problematic items were in the discourse-linked condition

[22] The full test material is attached to the thesis in the appendix.

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- to increase statistical power, we added an extra sentence to all conditions (making altogether 30 target sentences instead of 24).

The fillers were more balanced in their (expected) acceptability, and special attention was paid to balancing the complexity of the filler sentences. The number of filler sentences were increased by half to mask the target sentences better.

In the individual conditions, we changed the target sentences of the FOC factor to make sure that the subjects focus the exact constituent we intended. The narrow focus was highlighted by writing the phrase in all capital letters. I give a sample from the target sentences in (7) – (9).

(7) Baseline (no pied-piping):

a. Péter megsúgta, hogy melyik az a politikus, [akiről]
Peter VM.whispered-3SG that which the the politician who.about
a nemrég betiltott könyv szól.
the lately VM.banned-3SG book is.about
'Peter told me which politician is the lately banned book about _.'

Peid-Piping: … [[REL$_{obl}$ participle] N$_{ACC}$] NP ADV VM V

b. János elfelejtette, hogy melyik az a diktátor, [akiről szóló
John forgot-3SG that which the the dictator who.about be.about
könyvet] nemrég betiltották.
book.ACC lately VM.banned
'John doesn't know who the dictator is the book about whom they have lately banned _.'

(8) Baseline (no pied-piping):

a. János érdeklődött, hogy melyik művészről szól az ismét
John inquired-3SG that which artist.about is.about the again
megjelentetett könyv.
VM.published book
'John wondered which artist the book republished is about _.'

Pied-Piping: …[[WH$_{obl}$ participle] N$_{ACC}$] NP V VM ADV

b. János kíváncsi volt, hogy melyik művészről szóló könyvet
John curious was-3SG that which artist.about is.about book.ACC
jelentették meg idén.
published-3PL VM this.year
'John wondered the book about which artist they published _ this year.'

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(9) Baseline (no pied-piping):

a. Erika furcsállta, hogy pont a PÁPÁRÓL szól a nemrég
Erika found.weird-3SG that precisely the Pope.about is.about the lately
betiltott könyv.
vm.banned book
'Erika found it weird that it was the book about the Pope that they banned _.'

Pied-Piping: …[[FOC_{obl} participle] N_{ACC}] NP V VM ADV

b. Mari megdöbbent, hogy az EINSTEINRŐL szóló könyvet
Mary VM.surprised-3SG that the Einstein.about is.about book.ACC
vettem ki a könyvtárból.
borrowed VM the library.from
'Mary was surprised that it was the book about Einstein that I borrowed _ from the library.'

The lexicalizations were kept identical all through the condition with changing the given operator. The filler sentences were similar in construction and evenly divided among the three conditions. There were control sentences checking the grammatical competence of the subjects.

In the beginning of the experiment, there were familiarization exercises to make sure the subjects understand the task. In the practice/familiarization period, the subjects got feedback on the sentences. The feedback gave a general score for the practice sentences.

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4.2.3 Results

The descriptive statistics showed a more fine-grained difference among the acceptance of the three constructions (table 2).

	MEAN	STANDARD DEVIATION	MEDIAN
FOC	6.36	1	7
WH	5.83	1.60	6
REL	4.24	2.15	5

Table 2: Descriptive statistics experiment 2

The results of Experiment 2 showed a clear distinction between FOC/WH and REL. In other words, the results of the first pilot experiment were confirmed. The results were analyzed with Linear Mixed Models, and *Anova* tests. The baseline sentences do not differ from the target (with pied-piping) sentences significantly in the FOC condition and the WH-condition, while there is a strong statistical difference between the baseline and the target sentences in the REL condition (p<.001) (see Figure 5).

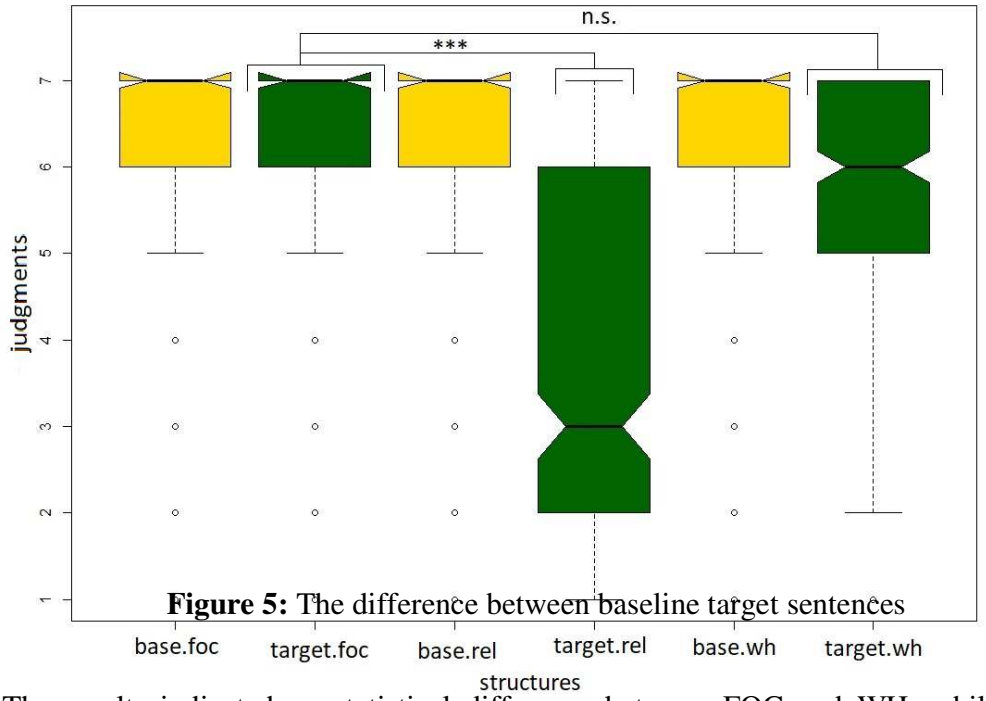

Figure 5: The difference between baseline target sentences

The results indicated no statistical difference between FOC and WH, while both were significantly better than REL. The difference between FOC and REL was highly significant (p<.001) (see Figure 6).

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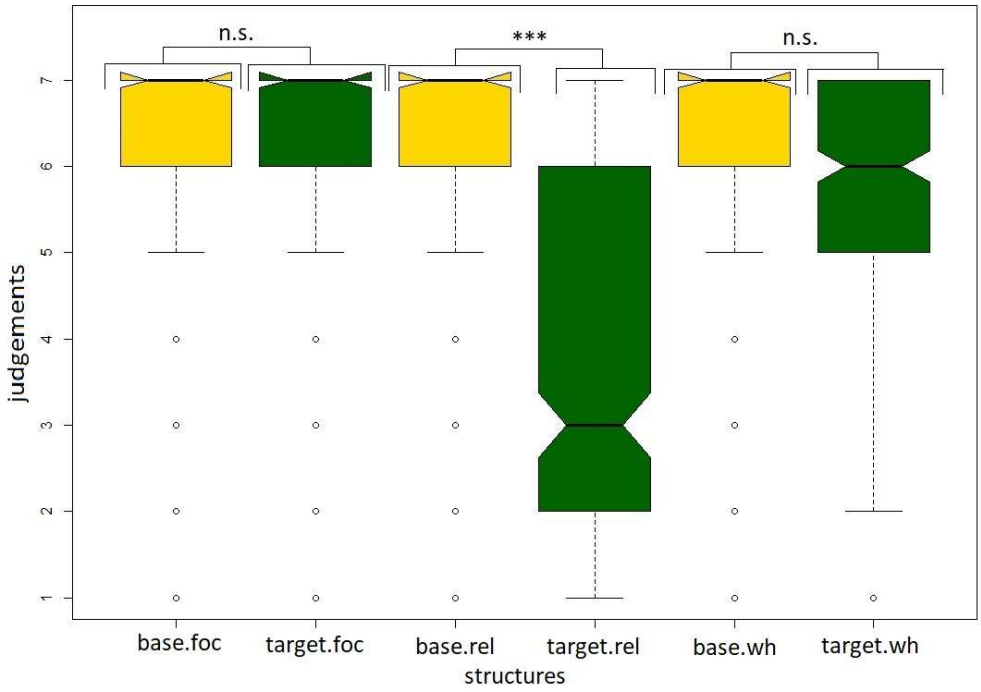

Figure 6: The difference between FOC and REL

Figure seven shows that there is a statistically significant between the target sentences in the WH and the REL condition (p<.001) (see Figure 7).

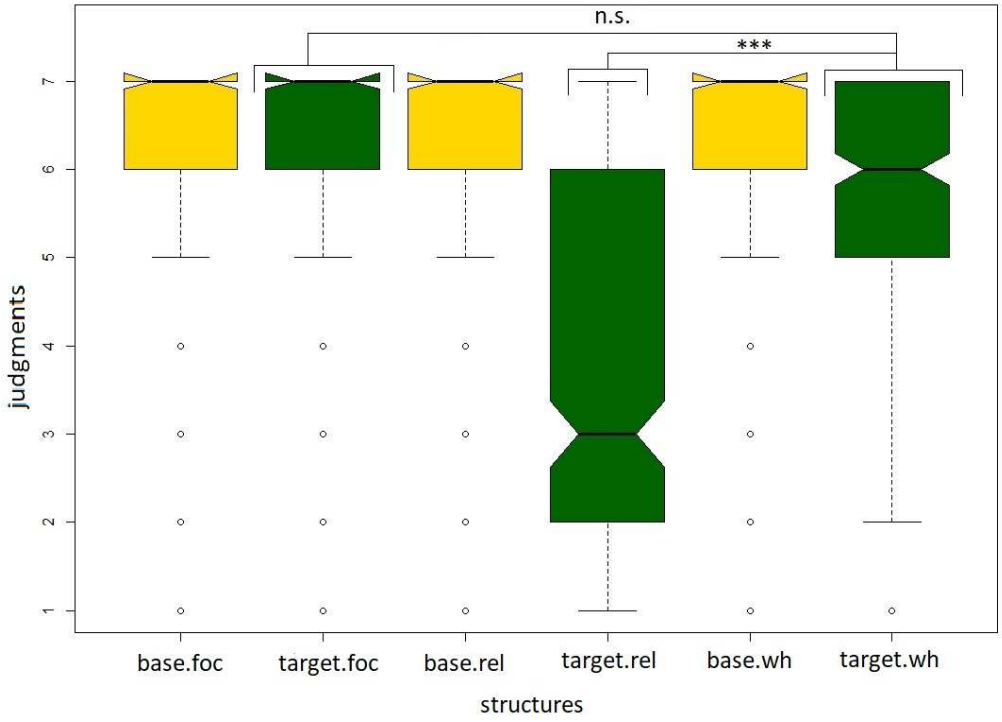

Figure 7: Difference between REL and WH

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4.2.4 Discussion

The results of the second version of the first pilot study confirmed that pied-piping is as acceptable in *wh*-movement as it is in focus-constructions in Hungarian. The clear-cut division is between relativization and the other two movement types suggests that pied-piping is less restricted in *wh*-constructions than previous literature suggests. This experiment, however, arguably combined too many variables combined. The fact that there are 3 conditions with 2 factors each makes the statistical analysis less accurate, as the number of comparisons can mask nuanced differences. The objective of the following three experiments was to corroborate the results obtained from the pilot studies by separating the conditions from each other and building a separate experiment for each movement type.

4.3 Experiment 3

This experiment was based on the pilot studies in experiment 1 and 2. Based on some feedback (p.c. Lyn Frazier), we decided to change the target sentences. There was no movement in the baseline sentences, as according to Lyn Frazier movement should always be compared to neutral sentences. Baseline sentences that are not neutral sentences already pose a risk in their own acceptance that is why any movement operation should be measured against a truly neutral, unmarked minimal pair. The number of factors were reduced to make a 2×2 design. This made for less statistical comparisons and a stronger statistical model.

4.3.1 Method

4.3.1.1 Subjects

30 adult Hungarian native speakers participated in the experiment. The majority of the participants were students of the University of Debrecen.

4.3.1.2 Procedure

The experiment was built and run in Ibex Farm (www.spellout.net). The subjects were presented with the target sentences one by one on the screen. The link to the experiment was sent out via email, and every subject did the experiment online. This experiment was an Acceptability Judgment Task, the subjects had to judge each sentence on a 7-point Likert-scale.

4.3.2 Materials

In this experiment there were only sentences containing pied-piping only in the *wh*-construction. We tested pied-piping by a *wh*-phrase embedded in a prenominal adjunct. We investigated pied-piping by non-discourse-linked *wh*-phrases (as in (10)), and pied-piping by discourse-linked *wh*-phrases (as in (11)). The *wh*-phrase was embedded inside a DP that had a definite determiner on the left edge of the phrase. The baseline sentences were neutral sentences containing no movement inside the embedded clause. The target sentences involved *wh*-pied-piping in the embedded questions. The questions are embedded under predicates that require an embedded interrogative clause, such as: *megkérdeztem* 'I asked', *nem tudom* 'I don't know', *fogalmam sincs* 'I have no clue' and *érdeklődtem* 'I inquired about something'. There were 32 target sentences: 8 without pied-piping with an expression that can be considered to have no specific referent/set of referents, 8 with pied-piping by a non-discourse-linked *wh*-phrase; 8 sentences without pied-piping containing an expression that can be considered to be discourse-linked in the sense that it has a specific referent associated with it, 8 corresponding sentences with pied-piping by discourse-linked *wh*-phrases. In each condition, the (same) sentences without pied-piping served as baseline

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sentences to the ones with pied-piping. The 32 target sentences were divided into two lists – one list contained either the baseline or the pied-piping version of the pairs. No subjects saw both the baseline and the pied-piping version of the same lexicalization. There were 16 filler sentences that were the same in all lists. This made 32 sentences in each list, which is a low enough number of test sentences to ensure that the subjects did not get tired and lost their attention.

(10) Baseline (DP in post-verbal position):

a. Azt hallottam, hogy az HBO filmet forgat ott a tömeggyilkosságért
that herad-1SG that the HBO film.ACC shot-3SG the mass.murder.for
letartóztatott bűnözökről tavaly.
incarcerated criminals last.year
'I heard that the HBO was shooting a movie about the criminals incarcerated for mass murder last year.'

Pied-piping: … [DP D [NP [WH obl praticile] N acc] V VM ADV

b. Nem tudom, hogy a miért letartóztatott bűnözőkről forgatott
not know-1SG that the why incarcerated criminals shot-3sg
filmet az HBO tavaly.
film.ACC the HBO last.year
'I don't know the HBO shot a movie about the why incarcerated people.'

(11) Baseline (object in post-verbal position):

a. Úgy tudom, hogy az építészkamara kizárta a kartonpapírból
so know-1SG that the architect.union banned-3SG the cardboard.out.of
készített modelleket a tervpályázatból.
made models.ACC the plan.tender.from
'I believe the architects union has banned the models made of cardboard from the tender.'

Pied-piping: … [DP D [NP [WH obl praticile] N acc] V VM ADV

b. Fogalmam sincs, hogy a miből készített modelleket zárta ki az
my.clue not that the what.out.of made models.ACC bannedVM the
építészkamara a tervpályázatból.
architects.union the plan.tender.from
'I have no clue as to made out of what models the architects union has banned from the tender.'

4.3.3 Results

The descriptive statistics of the data showed a clear difference between the discourse-linked and the non-discourse linked condition. There was a general degradation in the given scores. Interestingly, the condition that was judged highest on the acceptability scale was the one containing pied-piping by a discourse-linked *wh*-phrase.

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	MEAN	STANDARD DEVIATION	MEDIAN
BASELINE DL	4.14	2.59	4
TARGET DL	5.29	2.33	7
BASELINE NON-DL	5.11	2.28	6
TARGET NON-DL	3.02	2.03	2

Table 3: Descriptive statistics of experiment 3

Statistical analysis of the data showed a strong interaction between discourse-linking and pied-piping. There was strong statistical difference between the baseline and the target sentences, that is, pied-piping had an effect on the acceptability. What was strange was that pied-piping seemed to correct the sentences in the discourse-linked condition. In the discourse-linked condition, the participants judged the sentences containing pied-piping more acceptable than the baseline. Figure 11 shows the results of the experiment.

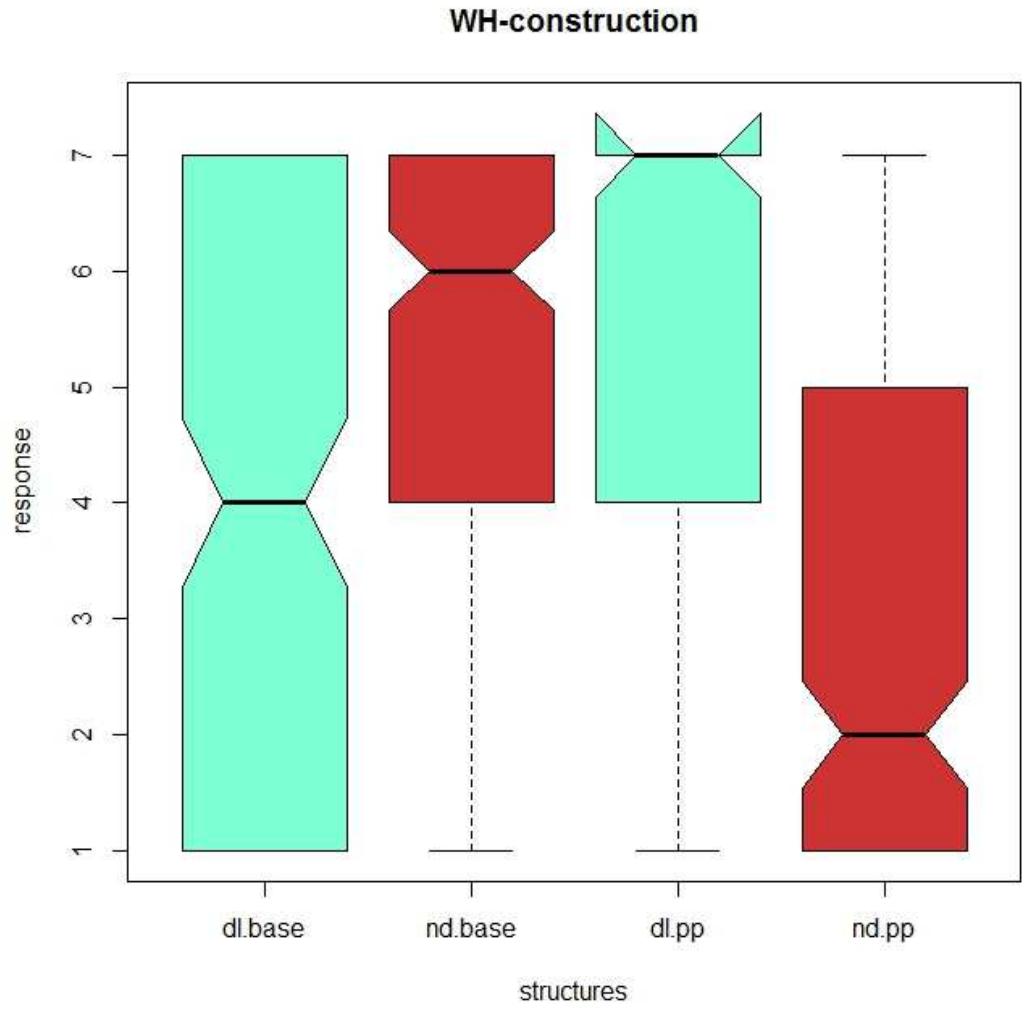

Figure 11: Pied piping in *wh*-movement

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There was an interaction between the conditions (figure 12).

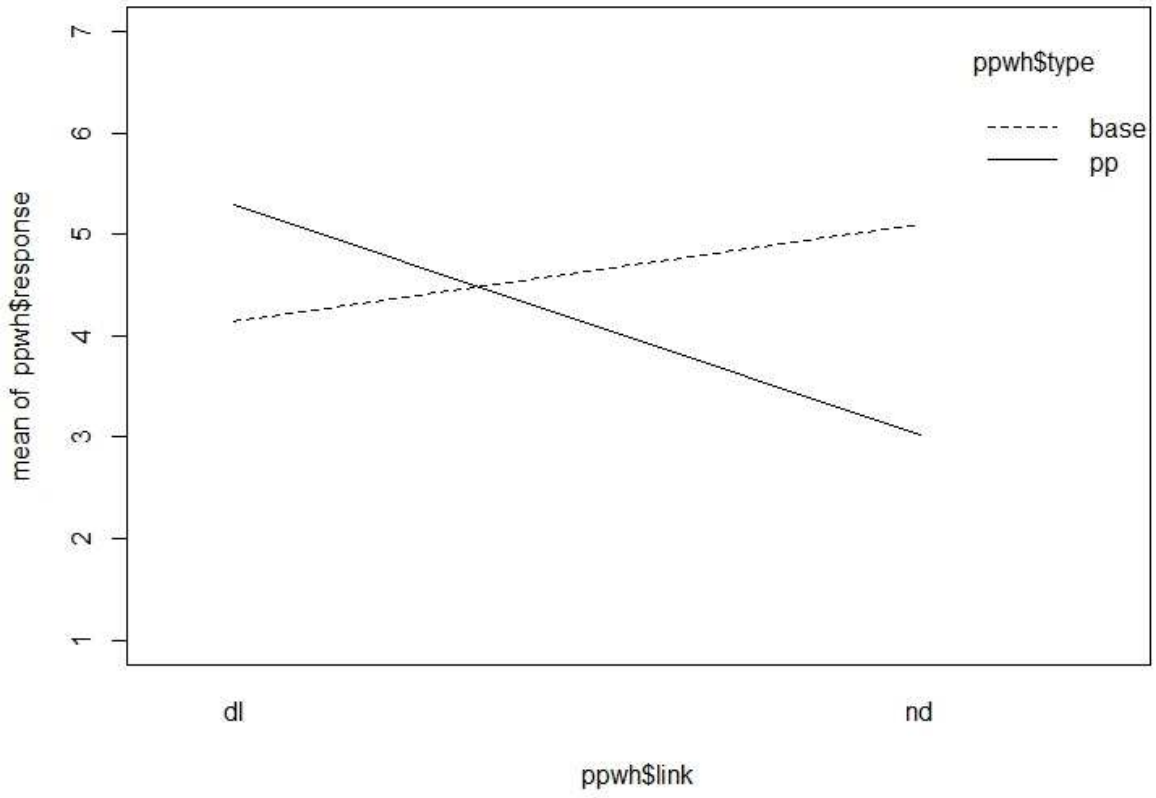

Figure 12: Interaction between conditions

4.5 Discussion

This experiment showed that the acceptability of pied-piping in *wh*-constructions is slightly less acceptable than what was expected. The statistical analysis, however, did not show a significant difference between the pied-piped and baseline sentences in the discourse-linked condition. There was a statistically significant difference (p<.01) between the non-discourse-linked baseline and pied-piped sentences.

4.4 Experiment 4

In this experiment we tested pied-piping by focus structures. This experiment, just like the one above (Experiment 3) was a separate test to make sure that the subjects did not award low points for the structures because their working memory is full and they could not pay attention to the task.

4.4.1 Method

4.4.1.1 Subjects

The experiment was completed by 32 adult native Hungarian speakers, most of whom attend the University of Debrecen.

DOI: 10.15774/PPKE.BTK.2019.014

4.4.1.2 Procedure

The experiment was built and run in Ibex Farm (www.spellout.net). The experiment was an Acceptability Judgment Task, in which the subjects judged the sentences on a 7-point Likert-scale.

4.4.2 Materials

There were 48 test sentences altogether: 32 target sentences and 16 filler sentences. The number of filler sentences were only half of the target sentences because the target sentences were divided into two lists – hence each list contained 32 test sentences – 16 target and 16 filler sentences. The target sentences contained 16 discourse-linked expressions (as in (12)) and 16 non-discourse-linked expressions (as in (13)). It might seem unusual to classify to classify expressions that are not *wh*-phrases into discourse-linked and non-discourse-linked groups. However, the way I understand discourse-linking it means that there is a (set of) specific referent(s) that the expression is associated with (see also chapter 3.2). This way, phrases that were not associated with such sets are considered non-discourse-linked. From the 32 (16/16) target sentences half of them did not contain movement, that is, the object DP stayed in-situ in its post-verbal position. In the target sentences with pied-piping, the pied-piper is embedded in a focused constituent and it undergoes movement to the pre-verbal focus-position.

(12) Baseline (DP in post-verbal position):

a. Azt hallotta, hogy a biztosító megvédi a
that heard-1SG that the insurance.company VM.protect-3SG the
téglából épített épületeket tetőbeázás esetén.
brick.from built buildings.ACC roof.leeking case.in
'I heard that the insurance company protects buildings made of brick in the case of a roof leek.'

Pied-piping: …[[FOC_{obl} participle] N_{ACC}] NP V VM ADV

b. Furcsálltam, hogy csak a téglából épített épületeket védi
weird-1SG that only the brick.from built buildings.ACC protect-3SG
meg a biztosító tetőbeázás esetén.
VM the insurance.company roof.leeking case.in
'I found it weird, that it was only the building made of brick that the insurance company protects in the case of a roof leek.'

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(13) Baseline (DP in post-verbal position):

a. Azt hallottam, hogy az ételkritikus megdicsérte a magyarosan
that heard-1SG that the food.critic VM.praised-3SG the Hungarian-style
fűszerezett ételeket a múlt heti cikkében.
spiced dishes.ACC the last week article.his.in
'I heard that the food critic praised the dishes made with Hungarian-style spices in his article last week.'

Pied-piping: …[[FOC_{obl} participle] N_{ACC}] NP V VM ADV

b. Csodálkoztam, hogy csak a magyarosan fűszerezett ételeket
surprised-1SG that only the Hungarian-style spiced dishes.ACC
dicsérte meg az ételkritikus a múlt heti cikkében.
praised-3SG VM the food.critic the last week article.his.in
'I was surprised that it was only the dishes made with Hungarian-style spices that the food critic praised in his article last week.'

4.4.3 Results

Three subjects had to be excluded from statistical analysis since they did not use the scale appropriately – they used only one value of the scale to all test items. Descriptive statistics of the data shows a difference between the discourse-linked and the non-discourse linked condition. Strangely it seems that pied-piping is better with the non-discourse-linked phrases than with the discourse-linked ones.

	MEAN	STANDARD DEVIATION	MEDIAN
BASELINE DL	6.10	1.47	7
TARGET DL	5.20	2.15	6
BASELINE NON-DL	5.36	2.17	6
TARGET NON-DL	5.51	2.02	7

Table 4: Descriptive statistics of experiment 5

The results corroborate the results of the pilot studies. Although there are specific items that some subjects rated lower than expected, the degradation is not strong enough to show in statistical analysis. There is no statistically significant difference between the conditions. The results were analyzed by linear mixed models, and show no significant difference between the baseline and the target condition (see Figure 13).

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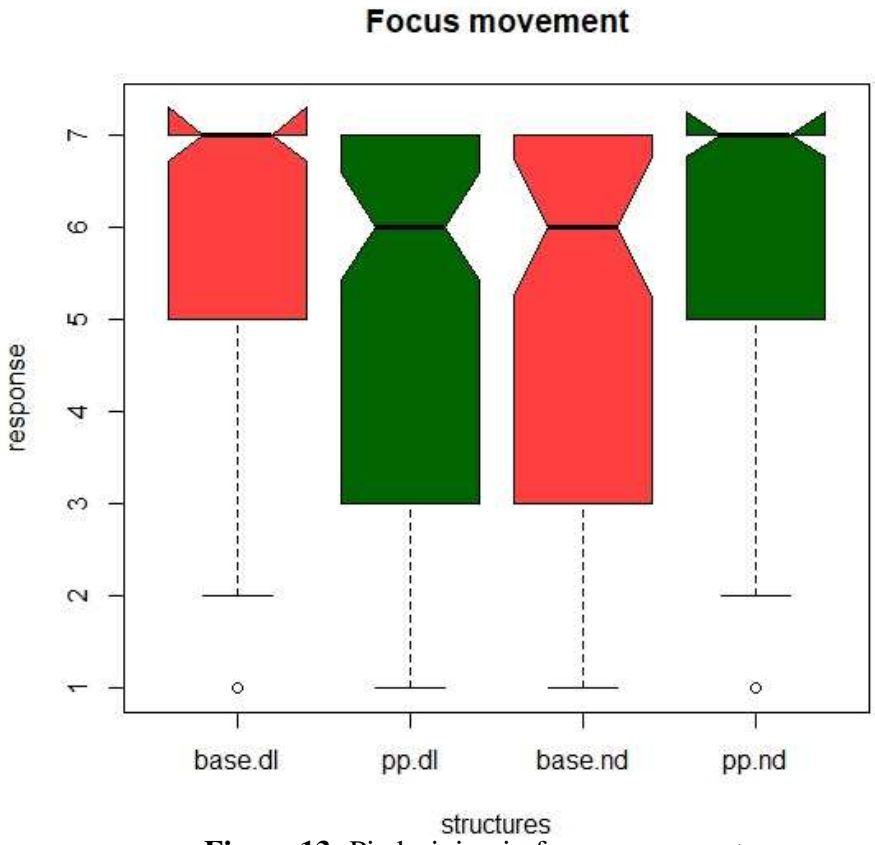

Figure 13: Pied-piping in focus-movement

There was an interaction between sentence types (target and baseline) and discourse linking (discourse-linked and non-discourse-linked conditions) (figure 14).

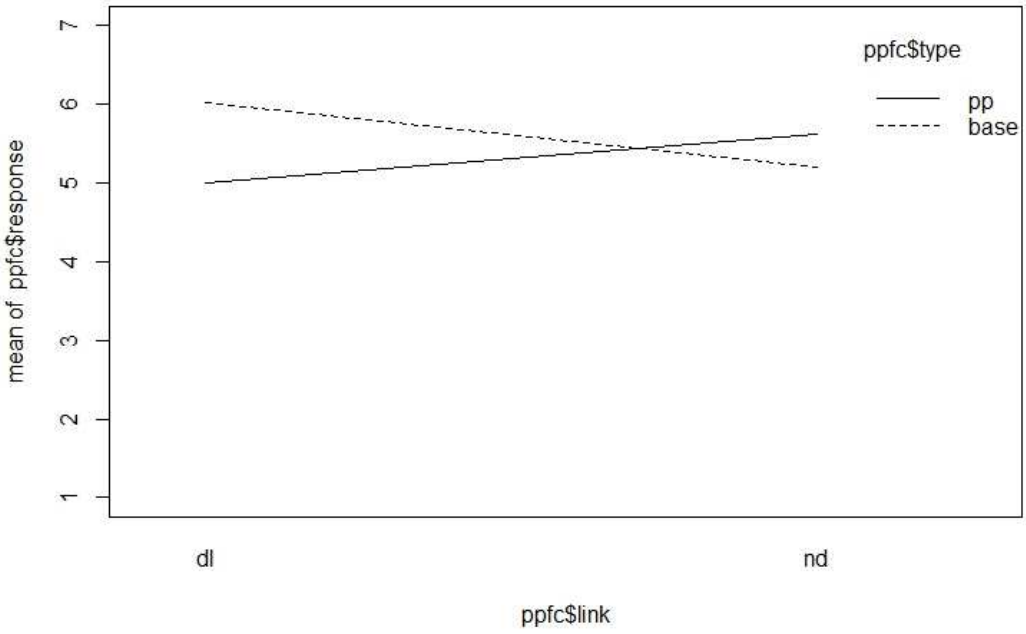

Figure 14: Interaction between conditions

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4.4.4 Discussion

The results of the experiment corroborates the findings of the pilot studies. The statistical analysis showed no significance of difference between the conditions. The higher values of standard deviation might suggest a possible grouping among speakers. For testing the existence of grouping among speakers, the experiment should be repeated and information about the social/geographical background should be gathered.

4.5 Experiment 5

Experiment 5 aimed at verifying the findings of the pilot studies with respect to relativization. In this experiment, the relative clauses were presented without the sentences containing focus-movement or *wh*-movement. The hypothesis of the experiment was that pied-piping in relative clauses are less acceptable than in the other two A-bar movement types (experiment 3 and experiment 4).

4.5.1 Method

4.5.1.1 Subjects

The experiment was completed by 25 adult native Hungarian speakers. The subjects received a link to the experiment via email.

4.5.1.2 Procedure

The experiment was built and run in Ibex Farm (www.spellout.net). The experiment was an Acceptability Judgment Task, in which the subjects judged the sentences on a 7-point Likert-scale.

4.5.1.3 Material

We kept the lexicalizations as uniform as possible. For this reason, we were trying to incorporate the lexicalizations of the *wh*- and focus-constructions into relativization. In (14), I show a minimal pair from the test.

(14) Baseline (no pied-piping):

a. Az mondta el a verset, aki gyakran szokott hallgatni
that recited-3SG VM the poem-ACC who often used.to listen.to
szépen elmondott verseket.
beautifully recited poems
'The poem was told by the person who often listens to beautifully recited poems.'

Pied-piping: …[REL$_{obl}$ participle] N$_{ACC}$] ADV VM V

b. Úgy mondta el a verset, ahogyan elmondott verseket
so recited-3SG VM the poem-ACC how recited poems-ACC
gyakran meg szokott hallgatni.
often VM used.to listen.to
'He told the poem in a way which way recited poems he often likes to listen to _.'

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4.5.3 Results

Descriptive statistics of the results showed that the mean of the judgments for the pied-piped condition is low, while the baseline condition is rated high on the acceptability scale. The standard deviation was also high, which might point to inconsistency with the items.

	MEAN	STANDARD DEVIATION	MEDIAN
BASELINE	5.83	1.54	6
PIED-PIPING	3.57	1.97	3

Table5: Descriptive statistics of experiment 4

The result show a statistically significant difference between the baseline and the pied-piped conditions ($p<.001$).

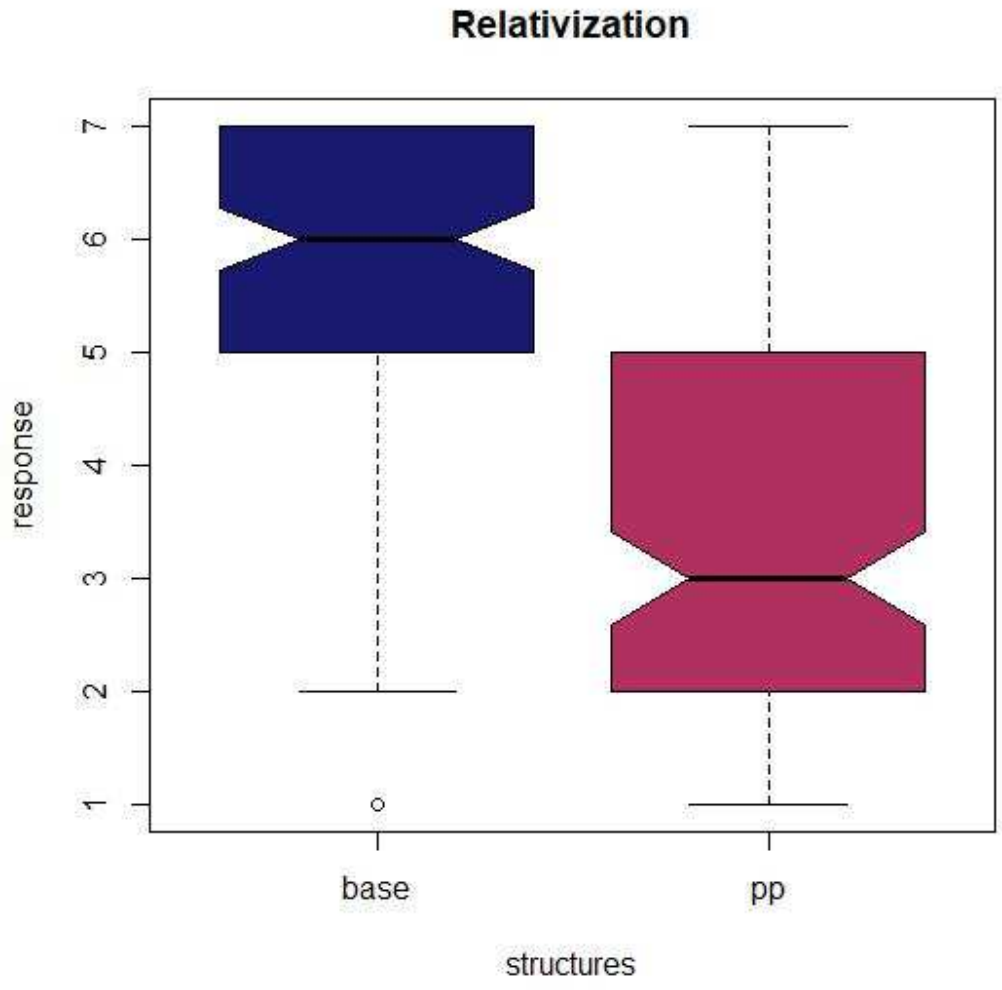

Figure 15: Results of experiment 4 – pied-piping by relative-pronouns

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4.5.4 Discussion

The results of this experiment verifies the findings of the previous pilot experiments. Relative-pronouns and clauses cannot undergo pied-piping in Hungarian.

4.6 Experiment 3 – Production study

As a pilot study for Experiment 4, we ran a production study on the test sentences. The reason for this pilot study was to ensure that native speakers of Hungarian read the target sentences with neutral intonation. The hypothesis of this experiment was that:

- If the adjective order inside the DP does not follow the hierarchical order predicted universally for languages, then it will be signaled in prosody by an intonational pause between the two adjectives.

4.6.1 Method

4.6.1.1 Subjects

33 subjects participated in the study. The subjects completed the experiment at the Research Institute for Linguistics of the Hungarian Academy of Sciences.

4.6.1.2 Procedure

The experiment was run and recorded in the Speech Recorder Software in the Studio of the Research Institute for Linguistics of the Hungarian Academy of Sciences. The speakers came in to the Institute and were recorded using a head-mounted microphone individually, no subject could hear the other subjects while recording. The subjects saw two sentences at a time on the screen and they were instructed to read aloud the sentence they find most natural with respect to the word order. Subjects were also told that they can repeat the sentence they chose from the two sentences on the screen if they are not satisfied with the first read. Sometimes – in case of electrical interference – the person conducting the experiment asked the subject to repeat the sentenceThe person conducting the experiment showed a new slide to the subject after a sufficient time has passed without them indicating the intention of repeating the sentence (approximately 5-10 seconds). The person conducting the experiment indicated the choice of the subject in a table at the same time of the reading.

4.6.1.3 Design

The sentences of the experiment were divided into two groups: one construction had a plural noun in the pied-piped DP, while in the other there was a lexical numeral on the left edge of the phrase. In both constructions there were two versions of the word order of the adjectives: (i) in straight order – corresponding to hierarchy proposed by Cinque (1994) and Sproat and Shih (1991) (as in (15)); and (ii) in inverse order (as in (16)).

(15)
ADJ1	ADJ2	N-PL V	XP-OBL
ADJ2	ADJ1	N-PL V	XP-OBL
ADJ1	WH-ADJ2	N-PL V	XP-OBL
WH-ADJ2	ADJ1	N-PL V	XP-OBL

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(16) NUM ADJ1 ADJ2 N V XP-OBL
NUM ADJ2 ADJ1 N V XP-OBL
NUM ADJ1 WH-ADJ2 N V XP-OBL
NUM WH-ADJ2 ADJ1 N V XP-OBL

4.6.2 Material

(17) a. **Unalmas családi** filmeket forgattak a városban.
Boring family movies.ACC filmed-3PL the city.in
'They shot boring family movies in the city.'
b. **Családi unalmas** filmeket forgattak a városban.
Family boring movies.ACC filmed-3PL the city.in
'They shot family boring movies in the city.'

(17') a. **Unalmas milyen típusú** filmeket forgattak a városban?
Boring what type movies.ACC filmed-3PL the city.in
'Boring what type of movies did they shoot in the city?'
b. **Milyen típusú unalmas** filmeket forgattak a városban?
what type boring movies.ACC filmed-3PL the city.in
'What type of boring family movies did they shoot in the city?'

(18) a. Két **óriási ovális** tálat vettem a piacon.
Two huge oval bowls.ACC bought-1SG the market.on
'I bought two huge oval bowls on the market.'
b. Két **ovális óriási** tálat vettem a piacon.
Two ovalhuge bowls.ACC bought-1SG the market.on
'I bought two oval huge bowls on the market.'

(18') a. Két **óriási milyen alakú** tálat vettél a piacon?
Two huge what shape bowl.ACC bought-2SG the market.on
'Two huge what shaped bowls did you buy on the market?'

b. Két **milyen alakú óriási** tálat vettél a piacon?
Two what shape huge bowl.ACC bought-1SG the market.on
'Two what shaped huge bowls did you buy in the market?'

4.6.3 Results

The results showed a clear preference for the straight order in declarative sentences and a preference for the inverse order in the *wh*-constructions.

4.6.4 Discussion

The results suggest that the adjectives are ordered in a hierarchical in Hungarian as well. If their order is changed, then it can be observed in prosody. This experiment was a first basis for the Acceptability Judgment Task experiment presented in the next section.

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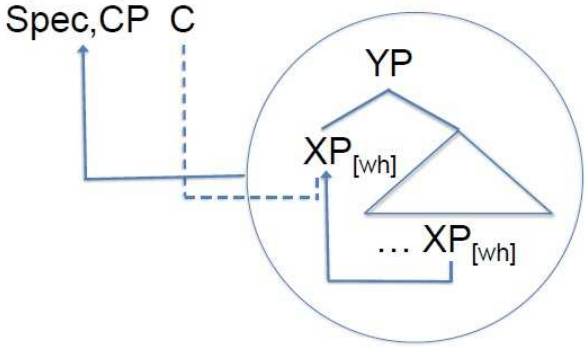
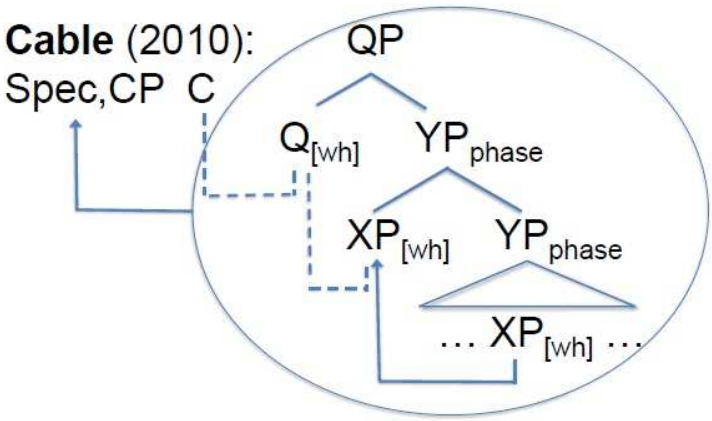
4.7 Experiment7 – Pied-piping by adjectival modifiers

This experiment aimed at taking a closer look at the restrictions on pied-piping by prenominal adjectival modifiers. Adjectival modifiers are assumed to have a strict hierarchical order in syntax (Cinque, 1994). In this experiment we were investigating whether the *wh*-adjective moves to the edge of the phrase, as predicted by theories on pied-piping (Heck 2008, Cable 2010). We also looked at whether there is inner *wh*-movement in the DP (as there is in Finnish Huhmarniemi 2012). The experiment had a secondary aim: to see which of the two theories can best describe the Hungarian pied-piping facts; that of Heck (2008) or Cable (2010). The structures that were assumed by the theories are as in (19) and (20).

(19) **Heck** (2008):



(20)



This means that according to Heck (2008) the *wh*-element should move (by secondary *wh*-movement) to the leftmost position possible in the phrase. The feature-bearing element should be as local as possible, even if it cannot be at the edge of the phrase. Agreement between the C head and the feature-bearing element is established as locally as possible (see chapter 2.2.3 (58)). According to Cable (2010) movement of the feature-bearing element on the edge of the phase is obligatory to be able to Agree with the feature on the Q head. If the feature-bearing element cannot move to the edge of the ph(r)ase, it does not have motivation to move at all, that is, it has to stay in-situ. Movement to the edge is crucial as agreement can only happen in a position in which the feature-bearing element is visible for agreement.

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The research questions were the following:

- Do the adjectives have fixed order in Hungarian?
- Does the *wh*-adjective move to the edge of the phrase when pied-piping the containing phrase?
- Is there inner/secondary *wh*-movement inside the DP in Hungarian?

4.7.1 Method

4.7.1.1 Subjects

135 adult native Hungarian speakers took part in the experiment. The experiment was sent out to an online page where people could reach the link and participate in the experiment. People saw different lists of the test sentences. The individual tests were presented in a random order.

4.7.1.2 Procedure

We tested the acceptability of pied-piping in different structures using an Acceptability Judgment Task test. The sentences had to be judged on a 7-point Likert scale – 1 being unacceptable and 7 being acceptable. At the beginning of the experiment there were warm-up items to familiarize the subjects with the task. The warm-up task contained sentences with operator movement without pied-piping. The experiment was built in and run on Ibex farm (http://www.spellout.net).

4.7.1.3 Design

The basic structures we tested are the following:

(21) a. [$_{DP}$ Adj1 Adj2 N]
b. [$_{DP}$ Adj2 Adj1 N]

(21') a. [$_{DP}$ Adj1 Adj2**$_{WH}$** N]
b. [$_{DP}$ Adj2**$_{WH}$** Adj1 N]

(22) a. [$_{DP}$ Num Adj1 Adj2 N]
b. [$_{DP}$ Num Adj2 Adj1 N]
c. *[$_{DP}$ Adj Num N]

(22') a. [$_{DP}$ Num Adj1 Adj2**$_{WH}$** N]
b. [$_{DP}$ Num Adj2**$_{WH}$** Adj1 N]

This experiment was actually two experiments merged into one. The structure in (21) and (21') were tested in Subexperiment 1, while the structures in (22) and (22') were tested in Subexperiment 2. The DP in both cases was immediately pre-verbal. The DPs were non-specific objects which are base-generated in a pre-verbal position. The number of syllables in the two adjectives were the same in each sentence, this way avoiding the displacement of an adjective for the reason of its phonological weight – phonologically heavy elements tend to prefer to move to the right edge of a phrase/clause in Hungarian.

4.7.2 Materials

There were 6 lexicalizations of each condition which yielded a total of 48 target sentences, 24 per subexperiment. The first factor was word order with two levels: straight, in which case the adjectives followed the hierarchical order described by Cinque; and inverse, in which the order of the adjectives was swapped, so the one predicted to be lower on the hierarchy preceded the one that is predicted to be higher on the hierarchy.

In subexperiment 1, the two adjectives were farther from each other on the hierarchical spine based on the assumption that the farther from each other the two adjectives are, the harder it is to swap them in a neutral sentence without invoking a comma-prosody that is associated with listing attributes (as in (24)). The sentences in subexperiment 1 contained a plural noun in the DP.

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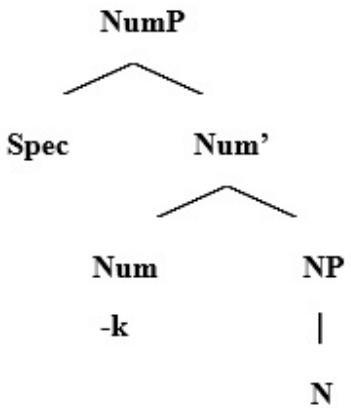
Grammatical number is encoded on the noun in the form of an inflection *-k*. The functional projection Number Phrase (NumP) is projected, the inflection is generated in the head of NumP and during the derivation it combines with the N head (23).

(23)



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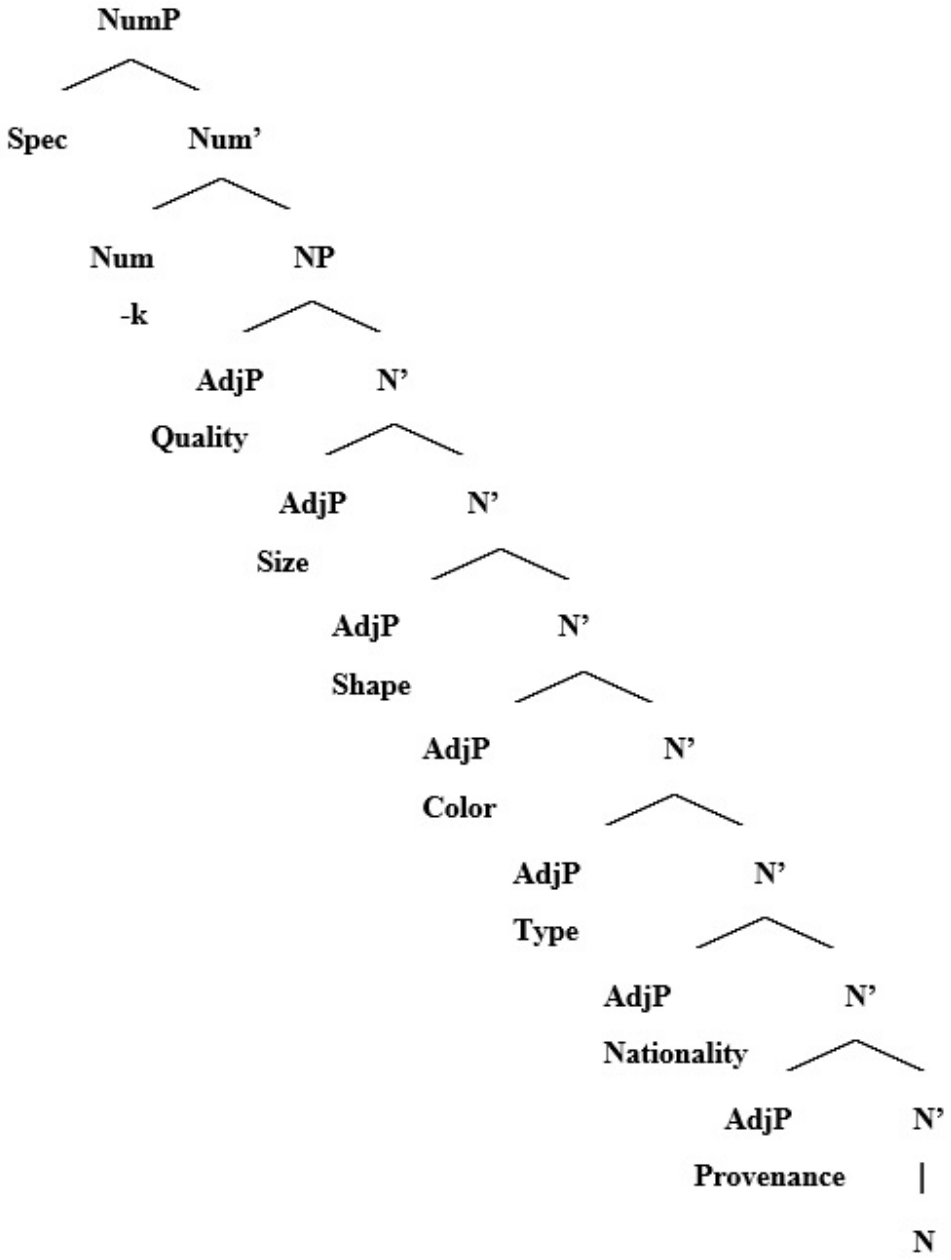
(24)



In subexperiment 1, the sentences contained an adjective high on the hierarchy, for instance quality and another lower on the hierarchy for example color. In (25), there is a sample from the subexperiment from the four conditions: (25a) was a baseline sentence with straight word order – that is, the order of the adjectives followed the hierarchy; (25b) was another baseline sentence with an inverse word order – that is the order of the adjectives were swapped; (25c) was a *wh*-pied-piping sentence with the *wh*-adjective (always the second one) remaining in-situ; and (25d) was a *wh*-pied-piping sentence with inverse word order – the *wh*-adjective moving over the non-*wh*-adjective to an edge position.

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(25) a. Ízletes ciprusi borokat kértem a szülinapomra.
Delicious Cyprus.from wines.ACC asked-1SG the birthday.my.for
'I wanted delicious wines from Cyprus for my birthday.'

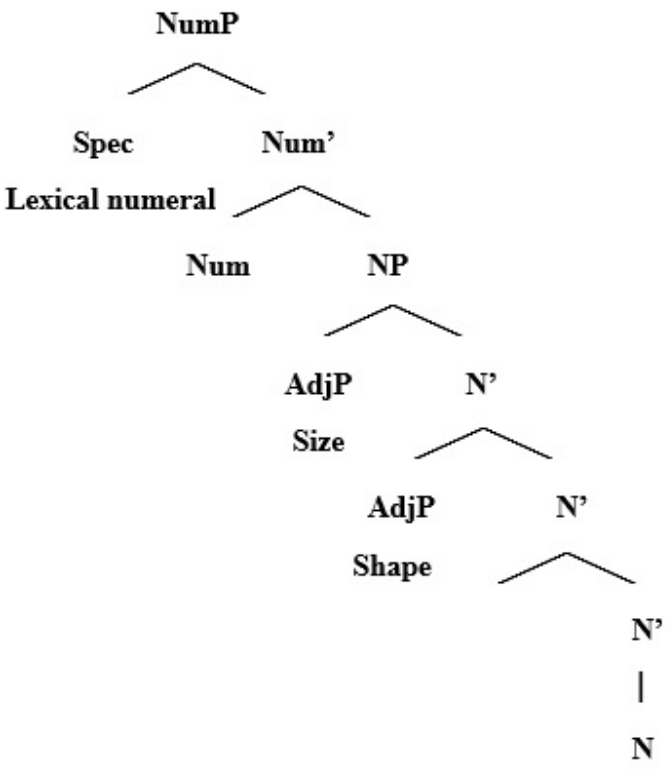
b. Ciprusi ízletes borokat kértem a szülinapomra.
Cyprus.from delicious wines.ACC asked-1SG the birthday.my.for
'I wanted delicious wines from Cyprus for my birthday.'

c. Ízletes honnan származó borokat kértél a szülinapodra?
delicious where.from originating wines.ACC asked-2SG the birthday.your.for
'Delicious wines from where did you want for your birthday?'

d. Honnan származó ízletes borokat kértél a szülinapodra?
where.from originating delicious wines.ACC asked-2SG the birthday.your.for
'Delicious wines from where did you want for your birthday?'

In subexperiment 2, there was a lexical numeral at the left edge of the phrase. NumP hosts lexical numerals in Hungarian in the specifier position (as in (26)), and the noun is grammatically singular in these cases, that is, there is no grammatical marker on the noun.

(26)



In the target sentences of subexperiment 2, the two adjectives were right next to each other – that is, right under and above each other in the hierarchy. This was so, because I assumed that adjectives immediately neighboring on the hierarchical spine are easy to swap without adding a

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special listing prosody to the sentence. In (27) I give a sample of the target sentences. (27a) is a baseline sentence with straight order, (27b) is a baseline sentence with inverse order, (27c) is a *wh*-pied-piping sentence with the *wh*-adjective in-situ, and (27d) is a *wh*-pied-piping sentence with inner *wh*-movement of the *wh*-adjective. There is an independent grammatical constraint that prevents the *wh*-adjective to move over the lexical numeral (also schematized in (22c)).

(27) a. Négy aprócska szögletes sajtot találtam a hűtőben.
four tiny rectangle cheese.ACC found-1SG the fridge .in
'I found four tiny rectangle cheese in the fridge.'

b. Négy szögletes aprócska sajtot találtam a hűtőben.
four rectangle tiny cheese.ACC found-1SG the fridge.in
'I found four rectangle tiny cheese in the fridge.'

c. Négy aprócska milyen alakú sajtot találtál a hűtőben?
four tiny what shape cheese.ACC found-2SG the fridge.in
'Four what shaped cheese did you find in the fridge?'

d. Négy milyen alakú aprócska sajtot találtál a hűtőben?
four what shape tiny cheese.ACC found-2SG the fridge.in
'Four what shaped tiny cheese did you find in the fridge?'

4.7.3 Predictions of the theories of pied-piping

The two theories that were relevant to the design of the experiment have diverging predictions about the structures. Cable (2010) assumes that in languages where the *wh*-word has to Agree with C – or the feature in C, the *wh*-word cannot be embedded inside a phase. That is why *wh*-phrases in those languages move out of the phrase – that is a phase – to the edge of the phrase, which can be a specifier position or an adjoined one. In any case, Cable (2010) would predict the movement of the *wh*-adjective in the condition when it can theoretically move to the edge of the phrase (as in (28)).

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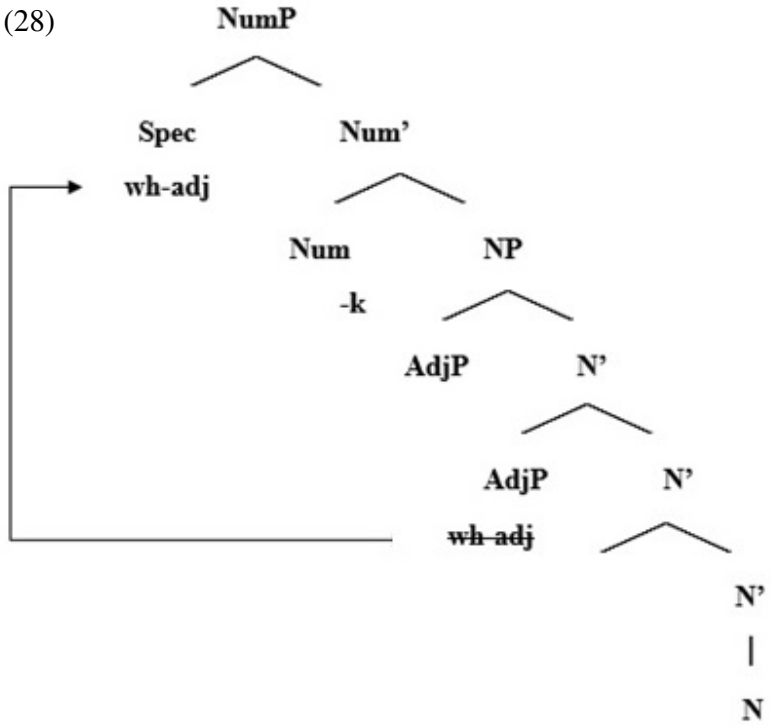
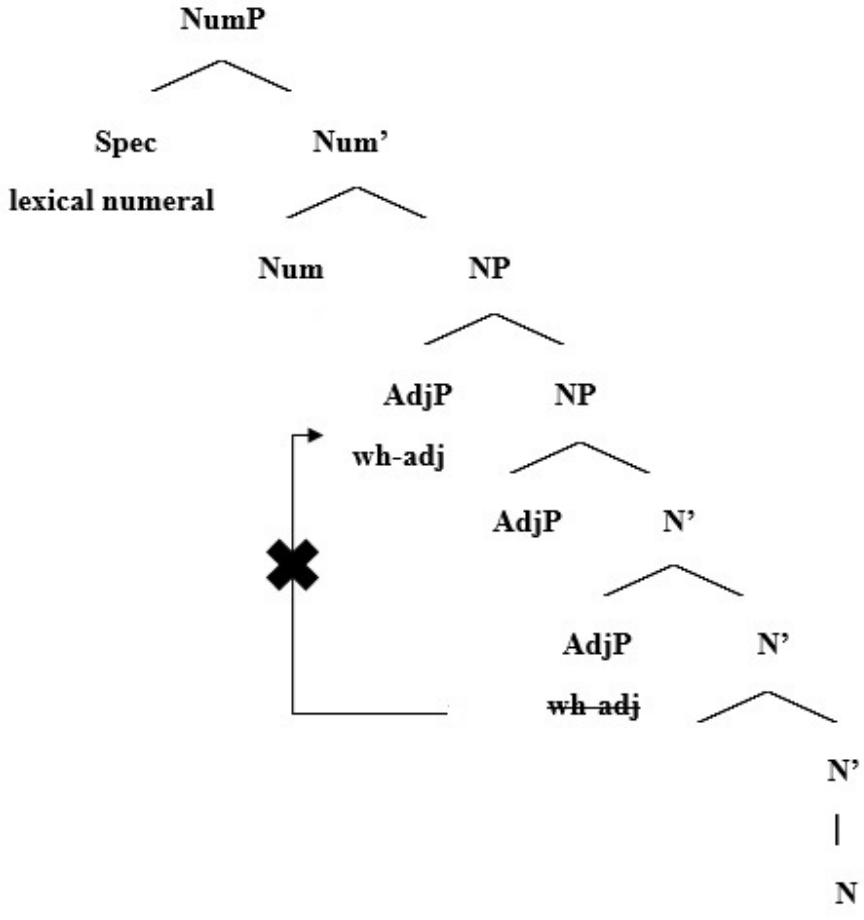
(28)



In the other condition, in which it is ungrammatical to move the *wh*-adjective over the lexical numeral, Cable (2010) would predict that it stays in-situ, having no motivation to move inside the phrase since it will not be more visible to the feature it wants to Agree with (as in (29)).

(29)



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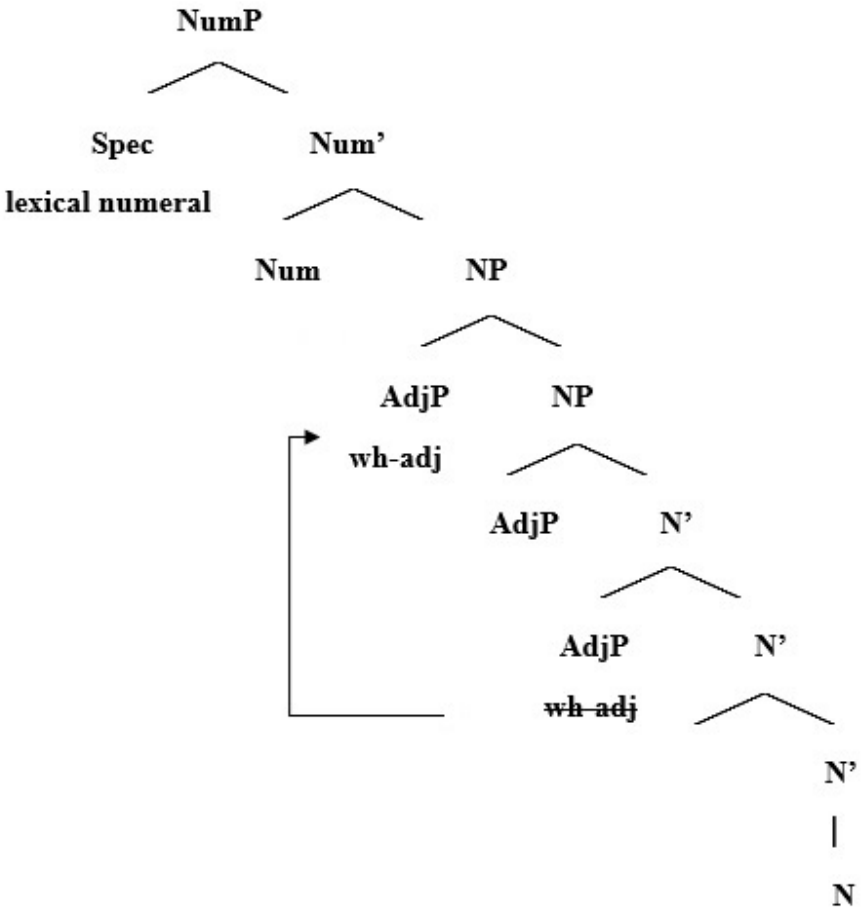
Heck (2008) would predict movement of the *wh*-adjective in both cases. In his theory the *wh*-adjective has to move as close to the Edge as grammatically possible (as in (30)). He allows for Local Agree to be violated, and thus for phrase boundaries to intervene.

(30)



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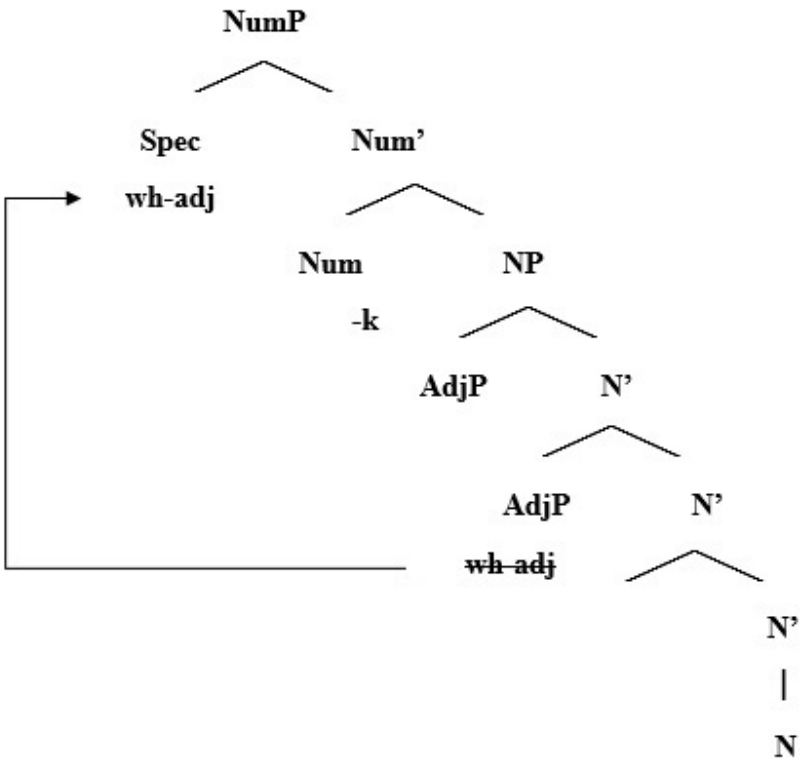
When there is no lexical numeral on the left edge of the phrase, Heck (2008) predicts movement to the edge of the phrase (as in (31)).

(31)



4.7.4 Results

The results of the experiment show that it is preferred to move the *wh*-adjective in both constructions. There was a main effect of the structure – the *wh*-constructions as a whole were rated lower than the declarative counterparts. There was interaction between the two factors, that is, between word order and structure. The diagram shows the aggregated results of the two subexperiments (Figure 16).

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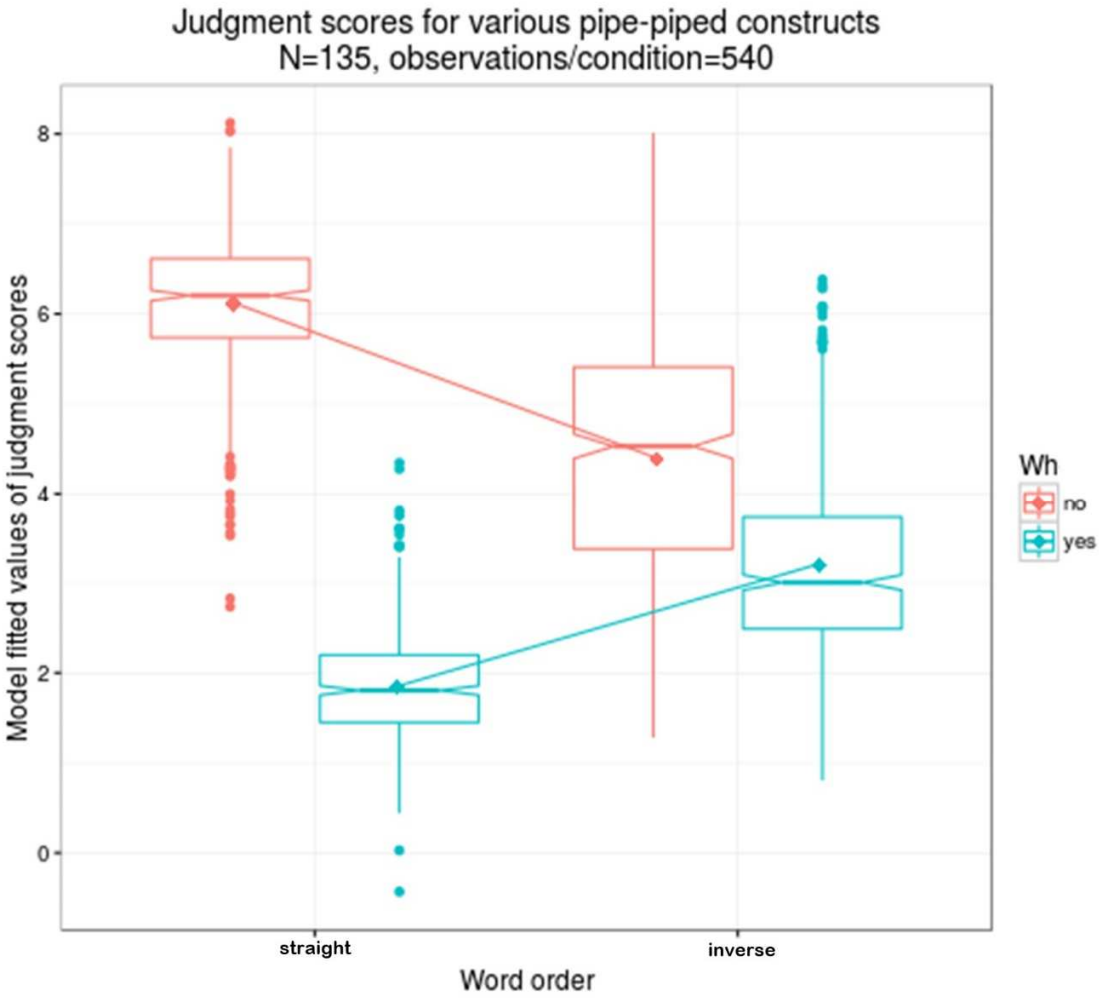

Figure 16: Aggregated results of the two subexperiments.

Descriptive statistics of Subexperiment 1 (table 5) showed that the invers word-order was preferred over the straight word-order in the *wh*-condition. However, the acceptance of *wh*-pied-piping in these sentences were low in general.

CONDITIONS		**DESCRIPTIVE INDICATORS**			
WH	**WO**	**N**	**MEAN**	**SD**	**MEDIAN**
NO	straight	513	6.341	1.456	7
NO	inverse	480	4.290	2.340	5
YES	straight	493	1.998	1.597	1
YES	inverse	466	3.519	2.192	3

Table 5: Descripitve statistics of subexperiment 1 - WH-ADJ without lexical numeral

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The results in Subexperiment 1 showed that the movement to the edge of the phrase was preferred over the *wh*-adjective staying in-situ; while in the non-*wh*-condition the hierarchical order was preferred (Figure 17). The difference in both factors are statistically significant. In the non-*wh*-constructions the straight order was preferred and the difference between straight and inverse order was highly significant (*** p<.001). In the *wh*-movement condition, secondary/inner *wh*-movement was preferred, and the difference between the two word orders were statistically significant (p<.05).

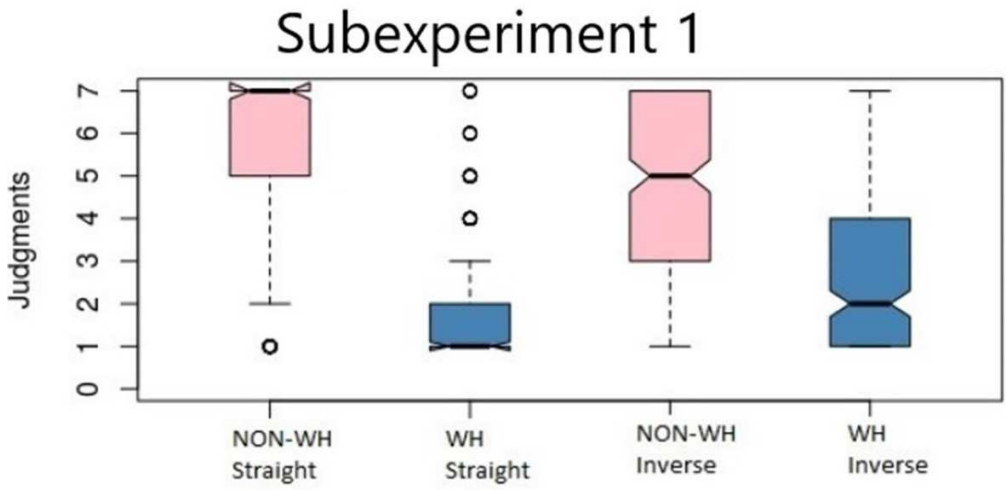

Figure 17: Results of subexperiment 1

Descriptive statistics showed that in this condition the participants rated the straight –that is, the in-situ *wh*-phrase– word-order with a *wh*-adjective worse than moving the *wh*-phrase inside the DP.

CONDITIONS		**DESCRIPTIVE INDICATORS**			
WH	**WO**	**N**	**MEAN**	**SD**	**MEDIAN**
NO	straight	559	6.114	1.606	7
NO	inverse	556	4.390	2.254	5
YES	straight	518	1.842	1.543	1
YES	inverse	527	3.205	2.147	2

Table 6: Descriptive statistics of subexperiment 2 – WH-ADJ without a lexical numeral

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In subexperiment 2, the patterns were similar to subexperiment 1 (Figure 18). In the non-wh condition, the straight order was rated higher on the scale than the inverse order (p<.001). In the *wh*-condition, the inner movement of the *wh*-adjective was preferred (p<.05), though an independent constraint prohibits the movement of the *wh*-adjective over the lexical numeral.

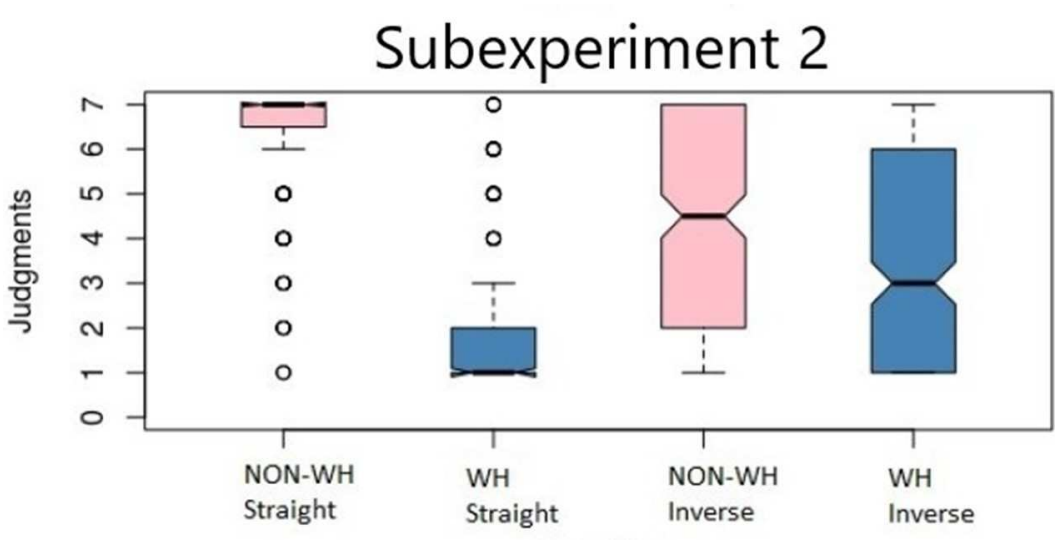

Figure 18: Results of subexperiment 2

4.7.5 Discussion

The aim of this experiment was two-fold: (i) it aimed to investigate the restrictions on pied-piping by an adjectival phrase in pre-nominal position; and (ii) it sought to evaluate the mechanisms of two recent theories in a language that is different from those which served as basis for either of them, that is, in Hungarian. Cable (2010) grounds his theory on evidence taken from Tlingit – an indigenous language of Alaska, while Heck (2008) – though surveying a number of other languages, including Hungarian possessives – builds mostly on German(ic) data. Hungarian seems to be in between these languages regarding the behavior/patterns it shows in pied-piping.

Adjectival modifiers were chosen as there can be several of them in a DP, and they have a fixed order inside the DP; hence being suitable for investigating inner/secondary *wh*-movement inside a phrase. The results of the experiments show that native Hungarian speakers prefer the movement of the *wh*-adjective regardless of whether there is a lexical numeral at the edge or not. This result also proves Heck's theory to be better able to describe the Hungarian facts.

4.8 Summary

The overall pattern from the experiments show a tendency towards the unrestrictedness of pied-piping in *wh*-constructions. Although there is an apparent slight degradation in the *wh*-constructions when the pied-piper is embedded under a lexical element on the left edge of the phrase containing it, the degradation is not pronounced enough to suggest a grammatical violation.

The results of the statistical analysis on the three movement types suggest that *wh*-movement aligns with focus-movement in its pied-piping behavior rather than aligning with relativization as earlier literature suggests (Horváth 1997, 2005, 2010). There is a statistically significant difference between pied-piping in focus-movement and pied-piping in *wh*-movement, but only in the non-

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discourse-linked condition. In the discourse-linked condition, pied-piping in *wh*-movement is as acceptable as pied-piping in focus-movement is.

Discourse-linking as a factor proved to be a significant one, it affects the acceptance of pied-piping in focus-movement as well, although it does not result in unacceptable sentences, the ratings of pied-piping in focus-movement were lower in the non-discourse-linked condition. The underlying reasons for this degradation are unclear at this point of the research. Further tests must be conducted.

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5. General discussion – Pied-Piping in Hungarian A-bar movements

This chapter draws the conclusions of the experiments and gives a tentative proposal for the investigated patterns of pied-piping in Hungarian. Before turning to each movement type, I summarize the findings of the experiments in the table below.

1. Pied-piping by pre-nominal adjuncts is acceptable in focus constructions without any restrictions.

2. Pied-piping by prenominal adjuncts is acceptable in *wh*-constructions, with some restrictions on non-discourse-linked *wh*-phrases.

3. Pied-piping by prenominal adjuncts is not acceptable in relativization – although there is a clear difference between discourse-linked and non-discourse linked relative pronouns.

4. Discourse-linking causes a degradation in each construction type, even with focus-movement, though the effects are not statistically significant in focus-movement.

In this chapter I discuss constraints on pied-piping in Hungarian A-bar movements in more detail based on the experiments in chapter 4. The result of the experiments shed light on the constraints on pied-piping and they might also contribute to some extent to the debate on the existence of the focus-feature (and *wh*-feature). As it has been shown in chapter 2 and chapter 3, several constraints on pied-piping have been observed in languages. In what follows I am going to present a generalization about the constraints that restrict pied-piping in the investigated A-bar movements. The experimental portion of this thesis concentrated on the pre-nominal field and cases in which the pied-piper (the putative feature-bearing element) was embedded in a pre-nominal modifier of some sort. I repeat the research questions for the reader's convenience.

Research Question 1: Is there a syntactic focus-feature on the element that is prosodically prominent?

Research Question 2: Does focus-pied-piping show similarities in the restrictions on pied-piping to A-bar movement types that are restricted with regard to pied-piping? The two other A-bar movements tested are relativization involving a syntactic [rel]-feature on the relative pronoun and wh-movement involving a syntactic [wh]-feature on the *wh*-pronoun.

Research Question 3: Does *wh*-movement in Hungarian align with relative-movement or with focus-movement?

In all of the experiments there is an emerging distinction between discourse-linked and non-discourse-linked elements in each of the investigated A-bar movements (namely, focus-movement, *wh*-movement and relativization). The overall relative degradation of acceptance of pied-piping by a non-discourse linked element is a new finding with respect to pied-piping. The effect of discourse-linking must be further investigated in order to be accounted for. In the following, I consider the discourse-linked conditions and propose a tentative analysis of pre-nominal adjunct pied-piping in Hungarian A-bar movements. First, I give a general overview of each feature and then I present my approach to the mechanism that underlies pied-piping in Hungarian *wh*-movement and focus-movement – which also explains why pied-piping is less acceptable or unacceptable in relativization.

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5.1.1 Focus-feature

One of the main goals of this dissertation was to gather evidence bearing on the issue of the existence of a syntactic focus-feature, a debated topic in the literature (see chapter 3) Restrictions on pied-piping is one of the diagnostics in observing the behavior of the feature. Pied-piping in Hungarian focus-structures are assumed to be unrestricted (Horváth 1997, 2000, 2005, 2010). The experiments conducted throughout this research seem to support the idea of the unrestricted nature of pied-piping in focus-constructions. Both pilot studies (Experiment 1 and Experiment 2) underpinned Horváth's observation about focus-pied-piping. The pilot studies followed an experimental practice in which the baseline sentences themselves already contained focus-movement – that is, the baseline sentence already was of a type of structure that is different from a neutral sentence. Following a suggestion made by Lyn Frazier (p.c.), this design was changed in the main experiments: baseline sentences were constructed which did not have any type of movement in them. The results of that (see experiment 4) did not give statistically significant degradation in the non-discourse-linked condition, however, the ratings were lower than what we found in the pilot studies. These results might suggest that the focus-feature is not encoded in syntax, only in prosody and semantics/pragmatics. Focus fronting is then triggered either by a separate operator (or its feature) (Horváth ibid.), or by the prosodic needs of focus (Szendrői 2003). The reason for the apparent degradation can be rooted in at least two major changes: (i) the insertion of a determiner at the left edge, or (ii) the neutral baseline sentence compared to which the target sentences might seem rather complex.

5.1.2 *Wh*-feature

One of the starting points of this research was the disagreement with Horváth's (1997) empirical evidence (see section 3.1.2), in which she claims that pied-piping is unacceptable in *wh*-movement. The experiments have confirmed that pied-piping by a pre-nominal adjunct in *wh*-movement is as acceptable as it is in focus-movement. These results suggest that the *wh*-feature is similar in its nature to the focus-feature: neither feature acts as a trigger for syntactic movement in Hungarian. This finding could be accounted for by theories of *wh*-movement in languages where the *wh*-elements move to a designated position in the sentence that assume that there is a separate operator (a Q operator) that is responsible for the semantics and the syntactic reordering of interrogative sentences, such as Cable (2010). The picture, however, is not that clear in Hungarian. The results of Experiment 7 indicate that the noun phrase-internal movement of the attributive *wh*-element is preferred over non-movement, and this movement is also preferred when an independent category (a numeral) is present that blocks the movement to the *leftmost* position inside the noun phrase. The inner movement of the *wh*-element cannot be explained by Cable (2010). Cable's theory predicts that if there is phrase-internal movement inside the pied-piped phrase, then that movement takes place in order to bring the feature-bearing element to the edge of the phrase, which functions as a phase. Since the position of the NP-internal movement does not target the edge of the noun phrase, this prediction is not borne out. Heck's (2008) account in terms of Local Agree would be able to account for the inner movement of the *wh*-phrase: the higher position of the raised attribute is more local to the C probe than its lower, canonical position. In addition, the *absolute* left edge position in the noun phrase is also important with respect to internal *wh*-movement, as evidenced by the fact that in Experiment 7, the sentences in which there was a lexical numeral at the left edge of the NP were more degraded than those which had the *wh*-element at the leftmost position of the noun phrase. But Heck's account does not extend to why wh-fronting in Hungarian, similarly to

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focus-fronting, does not seem to conform to restrictions on pied-piping, given the fact that relativization, to which we turn next, differs from these two.

5.1.3 Relative-feature

Pied-piping in relativization seems to align with the cross-linguistically observed patterns. Relativization was tested in the pilot studies, with clear results: pied-piping by a relative pronoun inside a pre-nominal adjunct is strongly degraded, and more so than its analogous are in *wh*-fronting and focus-fronting. In the separate experiment, the results showed that there is a statistically significant difference between the baseline and the pied-pied condition, and pied-piping by pre-nominal relative clauses is unacceptable. This way, pied-piping in relative clause in Hungarian patterns with what has been found in the literature so far.

	SYNTACTIC FEATURE	**PROSODIC PROMINENCE**	**PIED-PIPING**
FOC	no	yes	ok
WH	no	yes	ok
REL	yes	no	*

5.2 A tentative proposal

Pied-piping shows a pattern different from the one reported in Horváth (1997, 2000, 2005, 2010). Horváth's claim that pied-piping in focus-movement is unrestricted was verified, however, based on the results of the experiment, I found that pied-piping is acceptable and unrestricted in *wh*-movement in Hungarian. Based on the findings, the existence of a syntactic focus-feature is not supported, but at the same time, the existence of a syntactic *wh*-feature becomes questionable. Both *wh*-features and focus-features need to move to the left periphery of the sentence, and both features have to bear the main accent of the sentence (Szendrői 2003, 2010). These similarities and the pied-piping behavior of the two movement types exhibit lead me to believe that the motivation for movement cannot be a [foc]-feature or a [wh]-feature. I propose that the given elements (that is, the focused phrase and *wh*-phrase, or the phrase that contains them) move to the left periphery of the sentence for prosodic reasons, following Szendrői (2003). The position the phrase takes in the sentence is the one that bears default sentence-level prosodic prominence (i.e., the nuclear pitch accent). This position is housed in a functional projection in the CP-domain of the sentence (as in (1)).

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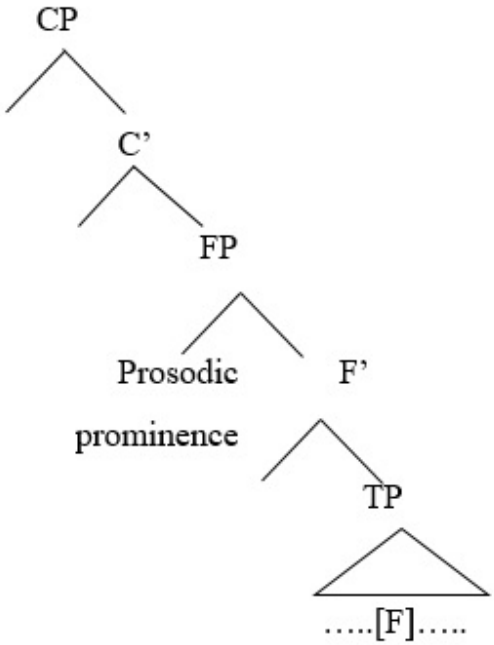
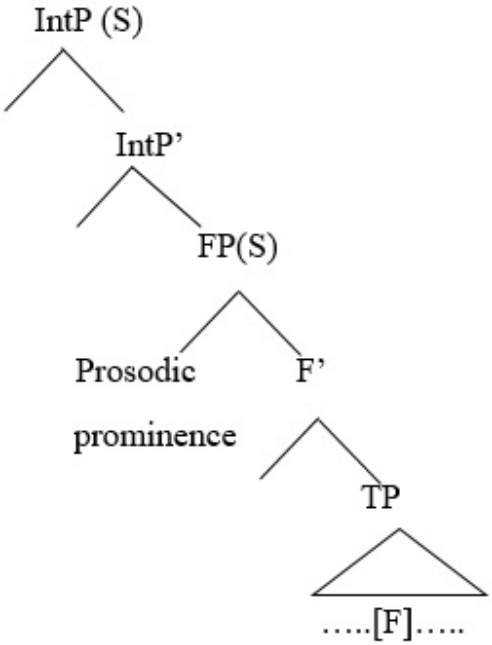
(1)



The intonational phrase is left headed in Hungarian (Hamlaoui and Szendrői 2017) and that is the position where *wh*-phrases and focused-phrases need to move (as in (2)).

(2)



This would explain why the elements that need to bear sentence-level prosodic prominence need to move, and if the movement is not possible out of a bigger phrase, why the element would pied-pipe the containing phrase (Szendrői 2003).

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In the case of embedded questions and focus constructions, Hamlaoui and Szuerdői (2017) assume the same kind of intonational phrase boundary inside the embedded clause, which creates a position for prosodically prominent material inside an embedded clause. By contrast, according to Hamloui and Szendrői (2017), there is no such intonational phrase boundary at the left edge of relative clauses. Indeed, the position of the relative pronoun in the sentence is not a prosodically prominent position. Hence, the pied-piping of such a phrase is not motivated by the need to occupy a prosodically prominent position inside intonational phrases structure. In this way, a prosody-based approach is able to correctly predict which phrases allow pied-piping by an element inside a pre-nominal adjunct and which ones do not.

A prosodic account can be extended to why attribiutive *wh*-elements prefer to move leftward within an NP. This behavior is expected if we accept that *wh*-phrases in single *wh*-questions prosodically function as a focus, and two further assumptions are made. First, focus favors a more prominent prosodic position over a less prominent prosodic position. Second, within a noun phrase with two pre-nominal attributes, the syntactic position of the first attribute receives a higher degree of metrical prominence by default than does the second attribute (this is in conformity to the assumptions made in É. Kiss (1992). It follows from these assumptions that if the pre-nominal attribute A2 that canonically comes second after another attribute A1 in a noun phrase is prosodically focused, then A2 will favor a syntactic position in which it comes before that other attribute A1. This is exactly the pattern we found in Experiment 7.

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6 Conclusion

This dissertation aimed at contributing to the understanding of the constraints on pied-piping and also, as a secondary goal, to contribute to the discussion of the status of the focus-feature (and *wh*-feature). The thesis presents 7 experiments conducted, all of them contained the pied-piper in a pre-nominal adjunct. The experimental method was chosen to obtain the judgments of native speakers of Hungarian, and follow the line of today's syntactic research. The main research questions of the dissertation are the following:

Research Question 1: Is there a syntactic focus-feature on the element that is prosodically prominent?

The answer to Research question 1 is that focus-movement seems to be motivated by a prosodic need, the need to occupy a prosodically prominent edge position inside the intonational phrase (following Hamloui and Szendrői 2017). There might be a lexical feature on the focused element, but it is not a strong syntactic that is responsible for the movement.

Research Question 2: Does focus-pied-piping show similarities in the restrictions on pied-piping to the other A-bar movement types – which are restricted with regards to pied-piping? The two other A-bar movements are relativization involving a syntactic [rel]-feature on the relative pronoun and *wh*-movement involving a syntactic [wh]-feature on the *wh*-pronoun.

The findings indicate that *wh*-movement patterns with focus-movement with respect to the constraints of pied-piping. There is a three level distinction, focus-movement is unrestricted in pied-piping, *wh*-movement is unrestricted with discourse-linked *wh*-phrases, and more restricted with non-discourse-linked *wh*-phrases, and lastly pied-piping is unacceptable in relativitation. This leads me to believe that there is no syntactic *wh*-feature either, the distinction between discourse-linked and non-discourse-linked *wh*-phrases cannot be encoded in syntax, however, at this stage of the research it is not yet clear what the difference lies in.

Research Question 3: Does *wh*-movement in Hungarian align with relative-movement or with focus-movement?

Wh-movement in Hungarian aligns with focus-movement with regards to its pied-piping behavior.

Chapter 2 reviewed approaches to pied-piping that were relevant for the designs of the experiments (in chapter 4). The edge position inside a ph(r)ase is the most important concept in the theories on pied-piping, the difference lies in the mechanisms the employ to move the feature-bearing element to that position. For pied-piping by prenominal adjuncts in Hungarian this means an edge position on the left edge of the prosodically prominent phase.

Chapter 3 gave an overview of the background on the relevant A-bar movements in Hungarian. I presented different approaches to focus-movement and the focus-feature, discussed theories on *wh*-movement and the make-up of the *wh*-pronoun as well as cases when the *wh*-pronoun functions as something different then an interrogative operator.

Chapter 4 introduced the experiments conducted as part of the research on prenominal adjunct pied-piping in Hungarian. This chapter gives statistical analyses of the data and figures to (hopefully) illuminate the data and make it easier to understand the findings of the experiments.

Chapter 5 discusses the findings of the experiment with sections devoted to each feature. This chapter also contains a tentative proposal to account for the pattern found in this research with respect to pied-piping.

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In future research I would like to explore how other constructions behave in pied-piping. Based on the literature, there are other constructions to take a look at in Hungarian (such as PP-pied-piping, pied-piping by a complement, pied-piping in topicalization if it is possible). I would like to investigate what makes discourse-linked and non-discourse-linked phrases different. Although pied-piping in relativization proved to be unacceptable in Hungarian, there is a clear effect of discourse-linking, that is, people find pied-piping marginally (more) acceptable when the relative pronoun is discourse-linked.

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Appendix

This appendix contains all of the experimental material reported in the dissertation.

All of the experiment started with this message and practice task.

Mondatok megítélése

Ebben a kérdőívben az anyanyelvi intuíciójára vagyunk kíváncsiak egy sor mondattal kapcsolatban. Nincs helyes vagy helytelen válasz: ezeket a mondatokat mindenki egyénileg másképp ítéli meg. Támaszkodjon nyugodtan Ön is a saját megérzésére.

Kérjük, hogy minden egyes mondatot értékeljen egy 1-7-ig terjedő skálán, ahol az 1-es értéket kapja a „rossz", nem lehetséges magyar mondat, míg a 7-es értéket a teljesen „jó" mondat. A mondatok itt szövegkörnyezet nélkül szerepelnek, így nyugodtan képzeljen el hozzájuk bármilyen kontextust, párbeszédet, amiben szerepelhetnek.

Példák

Melyik lánnyal szeretnéd, hogy táncoljak?

- Ezt a mondatot általában a magyar anyanyelvűek jónak tartják, és magas pontszámot adnak neki.

Hány pontot gondolod, hogy átmegy a vizsgán, aki szerez?

- Ezt a mondatot általában a magyar anyanyelvűek rossznak tartják, és alacsony pontszámot adnak neki.

Hogyan szeretnéd, hogy Mari Péterrel viselkedjen?

- Ezt a mondatot általában a magyar anyanyelvűek közepesnek tartják, és nagyjából közepes pontszámot adnak neki.

Az anyanyelvi beszélők ítéletei az iménti példamondatokkal kapcsolatban is egyénenként különböznek. A felmérésben Ön is támaszkodjon a saját megérzésére.

Szeretnénk, ha két szabályt mindenképpen betartana!

1. NE TÖPRENGJEN sokat az egyes mondatokon, használja saját nyelvérzékét!

2. NE TÉRJEN VISSZA egyik mondathoz sem amennyiben már értékelte, mert az hibákat okoz az adatrögzítésben!

Köszönjük az együttműködést!

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Experiment 1

Tesztmondatok

Target/D-Linked/Rel

TD1R) Mari bevallotta, hogy melyik az a tanár, akitől kapott kritikát néha bántónak tartod.

TD2R) János elfelejtette, hogy melyik az a diktátor, akiről szóló könyvet nemrég betiltották.

TD3R) Elemér elmondta, hogy melyik az az ország, ahonnan származó állatokat szívesen örökbe fogadnak.

TD4R) Kati elárulta, hogy melyik az a probléma, amelyikkel foglalkozó dokumentumfilmet szívesen megnéznél.

Baseline/D-Linked/Rel

BD1R) Márta elmondta, hogy melyik az a tanár, akitől néha bántó kritikát kaptál.

BD2R) Péter megsúgta, hogy melyik az a politikus, akiről a nemrég betiltott könyv szól.

BD3R) Máté elmesélte, hogy melyik az az ország, ahonnan az örökbe fogadott állatok származnak.

BD4R) Éva elmondta, hogy melyik az a probléma, amelyikkel a Svájcban forgatott film foglalkozik.

Target/D-Linked/WH

TD1W) Péter érdeklődött, hogy melyik tanártól kapott kritikát tartod néha bántónak.

TD2W) János kíváncsi volt, hogy melyik művészről szóló könyvet jelentették meg idén.

TD3W) Laci megkérdezte, hogy melyik országból származó állatokat fogadják örökbe leggyakrabban.

TD4W) Mari nem tudja, hogy melyik problémával foglalkozó dokumentumfilmet nézném meg szívesen.

Baseline/D-Linked/WH

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BD1W) Lilla megkérdezte, hogy melyik tanártól kaptam néha bántó kritikát.

BD2W) János érdeklődött, hogy melyik művészről szól az ismét megjelentetett könyv.

BD3W) Kati kíváncsi volt, hogy melyik országból származnak a leggyakrabban örökbe fogadott állatok.

BD4W) Mari nem tudja, hogy melyik problémával foglalkozik a Svájcban forgatott dokumentumfilm.

Target/D-Linked/Foc

TD1F) Gábor csodálkozott, hogy pont az igazgatótól kapott kritikát tartom bántónak néha.

TD2F) Mari megdöbbent, hogy pont az Einsteinről szóló könyvet rendeltem meg az interneten.

TD3F) Péter furcsállta, hogy pont a Madagaszkárról származó állatokat fogadják örökbe leggyakrabban.

TD4F) Enikő meglepődött, hogy pont az energiaproblémával foglalkozó dokumentumfilmet vették fel idén.

Baseline/D-Linked/Foc

BD1F) Csaba csodálkozott, hogy pont az igazgatótól kaptam néha bántó kritikát.

BD2F) Erika furcsállta, hogy pont a pápáról szól a nemrég betiltott könyv.

BD3F) József meglepődött, hogy pont Madagaszkárról származnak a leggyakrabban örökbe fogadott állatok.

BD4F) Zita megdöbbent, hogy pont az energiaproblémával foglalkozik az idén bemutatott dokumentumfilm.

Target/Non D-Linked/Rel

TN1R) Péter elmondta, hogy milyen az a mód, ahogyan viselkedő pincéreket mindig felvesznek.

TN2R) Dóra elárulta, hogy milyen az az állapot, amilyen állapotban felvett betegeket nehéz ellátni.

TN3R) István nem tudja, hogy mennyi az a pénz, amennyi pénzzel rendelkező befektetőket szívesen bevonnánk.

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TN4R) János megtudta, hogy mekkora az a távolság, amekkora távolságban keringő bolygót nemrég felfedeztek.

Baseline/Non D-Linked/Rel

BN1R) Géza megtudta, hogy milyen az a mód, ahogyan a tavaly kirúgott pincérek viselkedtek.

BN2R) Anna elárulta, hogy milyen az az állapot, amilyen állapotban az éjjel beszállított betegeket felvették.

BN3R) Péter megsúgta, hogy mennyi az a pénz, amennyivel a nemrég lecsukott befektetők rendelkeznek.

BN4R) Pál elmondta, hogy mekkora az a távolság, amekkora távolságban nemrég felfedezett bolygó kering.

Target/Non D-Linked/WH

TN1W) Péter érdeklődött, hogy hogyan viselkedő pincéreket vettek fel az étterembe.

TN2W) Marci megkérdezte, hogy milyen állapotban felvett betegeket vizsgáltak meg először.

TN3W) Laci kíváncsi volt, hogy a mennyi pénzzel rendelkező befektetőket hívtak meg a pályázatba.

TN4W) Máté megtudakolta, hogy mekkora távolságban keringő bolygót fedeztek fel tegnap.

Baseline/Non D-Linked/WH

BN1W) Laci megkérdezte, hogy hogyan viselkedtek az éttermből kirúgott pincérek.

BN2W) Márta nem tudja, hogy milyen állapotban vették fel az utoljára érkező betegeket.

BN3W) Vera érdeklődött, hogy mennyi pénzzel rendelkeztek a tavaly elutasított befektetők.

BN4W) Miklós kíváncsi volt, hogy mekkora távolságban kering a tegnap felfedezett bolygó.

Target/Non D-Linked/Foc

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TN1F) János furcsállta, hogy kifejezetten bunkón viselkedő pincéreket vettek fel tavaly.

TN2F) Mari meglepődött, hogy kifejezetten súlyos állapotban felvett betegeket tesznek utcára időnként.

TN3F) Péter csodálkozott, hogy kifejezetten sok pénzzel rendelkező befektetőket utasítottak el tavaly.

TN3F) Kati megdöbbent, hogy kifejezetten nagy távolságban keringő bolygót fedeztek fel a minap.

Baseline/Non D-Linked/Foc

BN1F) Rita nem tudta, hogy kifejezetten barátságosan viselkedtek a tavaly kirúgott pincérek.

BN2F) Szandra meglepődött, hogy kifejezetten jó állapotban vettek fel betegeket az osztályra.

BN3F) Viki csodálkozott, hogy kifejezetten kevés pénzzel rendelkeznek a kiválasztott befektetők.

BN4F) Ede megdöbbent, hogy kifejezetten nagy távolságban kering az először felfedezett bolygó.

kapitalizálás vagy kontextus/kontraszt, vagy beágyazás

UaS in situ

1. Melyik építkezésre szeretnéd, hogy a jövőben megmaradjon egy kiadott engedély?
2. Melyik javaslatra akarod, hogy az ülésen megismétlődjön egy elhangzott célzás?
3. Melyik pártra akarod, hogy az eredménybe beszámítson egy leadott szavazat?
4. Melyik politikussal szeretnéd, hogy az újságban megjelenjen egy eltitkolt interjú?
5. Melyik szabályra szeretnéd, hogy a tankönyvbe bekerüljön egy klasszikus példa?

UaS topik

6. Melyik építkezésre szeretnéd, hogy egy kiadott engedély megmaradjon a jövőben?
7. Melyik javaslatra akarod, hogy egy elhangzott célzás megismétlődjön az ülésen?
8. Melyik pártra akarod, hogy egy leadott szavazat beszámítson az eredménybe?

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9. Melyik politikussal szeretnéd, hogy egy eltitkolt interjú megjelenjen az újságban?
10. Melyik szabályra szeretnéd, hogy egy klasszikus példa bekerüljön a tankönyvbe?

TrS in situ

11. Melyik építkezésre szeretnéd, hogy a lakosságot megnyugtassa egy kiadott engedély?
12. Melyik javaslatra akarod, hogy a feszültséget feloldja egy elhangzott célzás?
13. Melyik pártra akarod, hogy az eredményt megfordítsa egy leadott szavazat?
14. Melyik politikussal szeretnéd, hogy a közvéleményt megváltoztassa egy eltitkolt interjú?
15. Melyik szabályra szeretnéd, hogy az előítéleteket megváltoztassa egy klasszikus példa?

TrS topik

16. Melyik építkezésre szeretnéd, hogy egy kiadott engedély megnyugtassa a lakosságot?
17. Melyik javaslatra akarod, hogy egy elhangzott célzás feloldja a feszültséget?
18. Melyik pártra akarod, hogy egy leadott szavazat megfordítsa az eredményt?
19. Melyik politikussal szeretnéd, hogy egy eltitkolt interjú megváltoztassa a közvéleményt?
20. Melyik szabályra szeretnéd, hogy egy klasszikus példa megváltoztassa az előítéleteket?

TrO in situ

21. Melyik építkezésre szeretnéd, hogy az önkormányzat megerősítsen egy kiadott engedélyt?
22. Melyik javaslatra akarod, hogy a szóvivő megmagyarázzon egy elhangzott célzást?
23. Melyik pártra akarod, hogy a bizottság beszámítson egy leadott szavazatot?
24. Melyik politikussal szeretnéd, hogy az újság megjelentessen egy eltitkolt interjút?
25. Melyik szabályra szeretnéd, hogy a diák megjegyezzen egy klasszikus példát?

TrO topik

26. Melyik építkezésre szeretnéd, hogy egy kiadott engedélyt megerősítsen az önkormányzat?
27. Melyik javaslatra akarod, hogy egy elhangzott célzást megmagyarázzon a szóvivő?
28. Melyik pártra akarod, hogy egy leadott szavazatot beszámítson a bizottság?

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29 Melyik politikussal szeretnéd, hogy egy eltitkolt interjút megjelentessen az újság?

30. Melyik szabályra szeretnéd, hogy egy klasszikus példát megjegyezzen a diák?

A 3. kísérlet baselinemondatai

31. Melyik lépéstől akarod, hogy az ellenzéket eltántorítsa egy korábbi botrány?
32. Melyik lépéstől akarod, hogy egy korábbi botrány az ellenzéket eltántorítsa?
33. Melyik politikusnak szeretnéd, hogy az újságban feltűnjön egy minapi interjú?
34. Melyik politikusnak szeretnéd, hogy egy minapi interjú az újságban feltűnjön?
35. Melyik politikustól szeretnéd, hogy a közvéleményt elriassza egy tavalyi interjú?
36. Melyik politikustól szeretnéd, hogy egy tavalyi interjú a közvéleményt elriassza?
37. Melyik elnökjelöltről szeretnéd, hogy a kampányban kitudódjon egy fiatalkori ballépés?
38. Melyik elnökjelöltről szeretnéd, hogy egy fiatalkori ballépés kitudódjon a kampányban?
39. Melyik vádiratba akarod, hogy az ügyészség belevegyen egy korábbi vádpontot?
40. Melyik vádiratba akarod, hogy egy korábbi vádpontot az ügyészség belevegyen?

Filler

1. Hogyan gondolod, hogy a gyerekek viselkedtek?
2. Melyik jelölt állította a sajtó, hogy megvesztegette a polgármestert?
3. Melyik koncertre lepődtél meg, hogy el akartam menni?
4. Melyik buliba említetted, hogy megkérdezted a feleségedet, hogy elmenne-e?
5. Mennyien nem is sejtetted, hogy lesznek a koncerten?
6. Kivel hitted azt, hogy jól ki tudnál jönni?
7. Melyik építkezésre újságoltad, hogy egy önkormányzati engedély el lett törölve?
8. Melyik jogszabály hitted, hogy az országgyűlés törölte a törvénykönyvből?
9. Miért dicsérte meg valamelyik diákját kevés tanár?
10. Miért dicsért meg valamelyik tanára kevés diákot?
11. Nem csak egyetlen ló tudta átugrani egyik akadályt sem.
12. Hogyan tudja egy pincér fejben tartani, hogy minden vendég mit rendelt?
13. Tengeri halat szerintem tonhalat már evett Péter, de lazacot még nem.
14. Mindenkitől azt hittem, hogy félnek az őzek.
15. Hetven éves kor fölött érdemes még idegen nyelven tanulni próbálni?
16. Jánosék mindenképp valószínűleg külföldre akarnak költözni.

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Experiment 2

Target/D-Linked/Rel

TD1R) Mari kifecsegte, hogy melyik az a tanár, akitől kapott kritikát néha bántónak tartod.

TD2R) János elfelejtette, hogy melyik az a diktátor, akiről szóló könyvet nemrég betiltották.

TD3R) Elemér elmondta, hogy melyik az az ország, ahonnan származó gyerekeket szívesen örökbe fogadnak.

TD4R) Irma elmesélte, hogy melyik az az ország, ahol termő gyümölcsöket legkorábban leszüretelik.

TD5R) Kati elárulta, hogy melyik az a város, ahol játszódó filmet tegnap bemutattak.

Baseline/D-Linked/Rel

BD1R) Márta kifesegte, hogy melyik az a tanár, akitől néha bántó kritikát kaptál.

BD2R) Péter megsúgta, hogy melyik az a politikus, akiről a nemrég betiltott könyv szól.

BD3R) Máté elmondta, hogy melyik az az ország, ahonnan az örökbe fogadott állatok származnak.

BD4R) Betti elmesélte, hogy melyik az az ország, ahol a legkorábban leszedett gyümölcsök teremnek.

BD4R) Éva elmondta, hogy melyik az a város, ahol az idén bemutatott film játszódik.

Target/D-Linked/WH

TD1W) Péter érdeklődött, hogy melyik tanártól kapott kritikát tartod néha bántónak.

TD2W) János kíváncsi volt, hogy melyik művészről szóló könyvet jelentették meg idén.

TD3W) Laci megkérdezte, hogy melyik országból származó gyerekeket fogadják örökbe leggyakrabban.

TD4W) Brigi érdeklődött, hogy melyik országban termő gyümölcsöket szüretelik le a legkorábban.

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TD5W) Mari nem tudja, hogy melyik városban játszódó filmet mutatták be idén.

Baseline/D-Linked/WH

BD1W) Lilla megkérdezte, hogy melyik tanártól kaptam néha bántó kritikát.

BD2W) János érdeklődött, hogy melyik művészről szól az ismét megjelentetett könyv.

BD3W) Kati kíváncsi volt, hogy melyik országból származnak a leggyakrabban örökbe fogadott gyerekek.

BD4W) Anna megkérdezte, hogy melyik országban teremnek a legelőbb leszedett gyümölcsök.

BD5W) Mari nem tudja, hogy melyik városban játszódik a tavaly forgatott film.

Target/D-Linked/Foc

TD1F) Gábor csodálkozott, hogy pont az IGAZGATÓTÓL kapott kritikát tartom bántónak néha.

TD2F) Mari megdöbbent, hogy pont az Einsteinről szóló könyvet vettem ki a könyvtárból.

TD3F) Péter furcsállta, hogy pont a BORSODBÓL származó gyerekeket fogadják örökbe a leggyakrabban.

TD4F) Péter furcsállta, hogy pont a HOLLANDIÁBAN termő gyümölcsöket szüretelik le a legkorábban.

TD5F) Enikő meglepődött, hogy pont a VATIKÁNBAN játszódó filmet mutatták be a moziban.

Baseline/D-Linked/Foc

BD1F) Csaba csodálkozott, hogy pont az IGAZGATÓTÓL kaptam néha bántó kritikát.

BD2F) Erika furcsállta, hogy pont a PÁPÁRÓL szól a nemrég betiltott könyv.

BD3F) József meglepődött, hogy pont BORSODBÓL származnak a leggyakrabban örökbe fogadott gyerekek.

BD4F) Mariann meglepődött, hogy pont HOLLANDIÁBAN teremnek a legkorábban leszedett gyümölcsök.

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BD5F) Zita megdöbbent, hogy pont az VATIKÁNBAN játszódik az idén bemutatott film.

Fillers

1. Zita nem tudja, hogy hogyan akarjuk, hogy elkészítse a nyulat a hétvégi családi ünnepségre. (4)
2. Jánosnak fogalma sincs, hogy hány fokra akarod, hogy a fűtést feltekerje a nyaralóban. (4)
3. Ingrid tudni szeretné, hogy hány főre akarod, hogy holnap vacsorát rendeljünk? (4)
4. Anyukám megkérdezte, hogy hányasra akarom, hogy osztályozzanak irodalomból félév végén?
5. Emma mindig elfelejti, hogy hogyan szereted, ha kivasajlják a függönyt az előszobában.
6. Melyik ünnepségre mondtad, hogy három lány is írt a verset? (2
7. PÉTER nővérét mondtad, hogy jól síel? (3)
8. A PÁRATLAN számokat mondtad, hogy nehéz megjegyezni? (3)
9. JÁNOS feleségét hallottad, hogy szülési szabadságra megy a következő félévben? (1)
10. Csak MIKLÓSRÓL hitted, hogy nem gondoskodott senki? (5)
11. JÁNOS titkárnője mondta, hogy meg fogja próbálni előkeresni a tavalyi értekezlet jegyzőkönyvét. (G:5 J:4)
12. Márta megírta, hogy mikor fog akarni elkezdeni kísérletezni a laborban. (3)
13. Melyik lánynak akarod, hogy Péter bemutasson a szombati buliban? (G: 5-6)
14. Melyik írónak akarod, hogy megjeéenjen egy könyve a jövő hónapban?
15. Kivel akarod, hogy egy találkozó elmaradjon a jövő héten?
16. Melyik zongoristát gondoltad, hogy Zoli meg fogja próbálni felkutatni az interneten?
17. Melyik professzor mondta, hogy el fog kezdeni dolgozni az egyetemen jövőre? (G:1 J:2)
18. Márk megígérte, hogy nem fogja akarni megnézni a születésnapi ajándékát korábban. (3/2)
19. Dia megkérdezte, hogy mikor fogok akarni indulni az előadásra.
20. Péter csak azt nem tudja, hogy JÁNOS mit csinál. (5)
21. Gábor SHAKESPEARE-től állította, hogy ismeri a legtöbb darabot az angol írók közül.
22. Dóri ÖTÖSRE mondta, hogy meg akarja írni a dolgozatot a jövő héten. 3
23. Milyen könyveket mondott Réka, hogy meg szeretne próbálni beszerezni egy könyvesboltban? 3
24. Józsi nem tudja, hogy Péter felhívott minket, mielőtt kirúgott. (3)
25. Mari felháborodott, hogy Géza leszúrt titeket, miután behívott az irodájába.(2/3)
26. Bori meglepődött, hogy Hanna találkozott velünk, azután hogy úgy megbántott.
27. Szabina megpróbált kibékülni veletek, miután rájött, hogy nagyon megsértett.
28. Péter azt hitte, hogy senkitől sem fog semmit sem kapni születésnapjára. (5-6)
29. Sári meglepődött, hogy senki sem semmit sem mondott neki.
30. Enikő leszögezte, hogy senkivel sem semmi esetre sem megy el a bálba.
31. Samu hallotta, hogy Patrik minden áron megpróbált elkezdeni megtanulni falatmászni.
32. Imre nagyon bánja, hogy pont a SZOMSZÉD kutyája az, amelyiket elütötte.
33. Sándor említette, hogy csak KÉT alkalommal fordult az elő, hogy karambolozott.

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34. Alex dicsekedett, hogy még a BIOLÓGIA órákon is ő az, aki a legjobban szerepel.
35. Bence nem is sejti, hogy miért pont a PADTÁRSA viselkedésével kapcsolatban kérdezte ki a rendőrség.
36. Zsuzsi nem sejtette, hogy miután Károly szövetséget kötött velünk, beárul az igazgatónál. (3)
37. Nóra elfelejtette, hogy Jónás ismer már minket, ezért újra bemutatott neki.
38. Lajos azt hazudta, hogy ez az a város, ahonnan származik sok bűnöző. (3)
39. Marika nem gondolta volna, hogy ez az a zene, amire jól esik táncolnod. (4)
40. Juli megígérte, hogy ez lesz az a film, amelyik filmet veled fogja megnézni. (3)
41. Judit érdeklődött, hogy miért épp EZT a regényt fog kelleni elolvasni a vizsgára.
42. Botond izgul, hogy melyik lesz az a film, amelyik filmnek a nézettsége a legmagasabb lesz.
43. Viola ideges, mert nem tudja, hogy melyik hely lesz az, amelyik helyen megrendezésre kerül a gála.
44. Milán megfogadta, hogy sosem megy vissza abba a városba, amelyik városban szakított a barátnőjével.
45. Lili szeretné, ha a festményt, ameliky festmény a Műcsarnokban található, megfesteném a szülinapjára.

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Experiment 3

Target NON-D-Linked WH

Baseline (BsL)

1. Azt hallottam, hogy a zsűri megjutalmazta a jól elmondott verseket a versmondó versenyen.

Target

1'. Megkérdeztem, hogy a hogyan elmondott verseket jutalmazta meg a zsűri a versmonydó versenyen.

BsL

2. Úgy tudom, hogy a tanár ötöst adott a jól megírt dolgozatokra a félév végén.

Target

2'. Nem tudom, hogy a hogyan megírt dolgozatokra adott ötöst a tanár a félév végén.

Bsl

3. Azt hallottam, hogy az ételkritikus megdicsérte a magyarosan fűszerezett ételeket a múlt heti cikkében.

Target

3'. Érdekelt, hogy a hogyan fűszerezett ételeket dicsérte meg az ételkritikus a múlt heti cikkében.

BsL

4. Azt feltételeztem, hogy a zsűri beválasztotta a tökéletesen előadott dalokat a döntőbe.

Target

4'. Nem tudom, hogy a hogyan előadott dalokat választotta be a zsűri a döntőbe.

BsL

5. Úgy tudom, hogy az igazgatóság körbeküldött egy emailt a késésért kirúgott kollégákról.

Target

5'. Fogalmam sincs, hogy a miért kirúgott kollégákról küldött körbe az igazgatóság egy emailt.

BsL

6. Azt hallottam, hogy az HBO filmet forgatott a tömeggyilkosságért letartóztatott bűnözőkről tavaly.

Target

6'. Nem tudom, hogy a miért letartóztatott bűnözőkről forgatott filmet az HBO tavaly.

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BsL

7. Azt hallottam, hogy az ÁNTSZ betiltotta a hibásan előállított gyógyszereket a múlt héten.

Target

7’. Nem tudom, hogy a hogyan előállított gyógyszereket tiltotta be az ÁNTSZ a múlt héten.

BsL

8. Azt hallottam, hogy a fegyelmi bizottság eltanácsolta a csalásért felfüggesztett diákokat az előző félévben.

Target

8’. Fogalmam sincs, hogy a miért felfüggesztett diákokat tanácsolta el a fegyelmi bizottság az előző félévben.

Target D-Linked

BsL

1. Úgy tudom, hogy a bizottság kitüntette a Mikszáthról írt dolgozatokat a félév végén.

Target

1’. Nem tudom, hogy a kiről írt dolgozatokat tüntette ki a bizottság a bizottság a félév végén.

Bsl

2. Azt hallottam, hogy az ételkritikus megdicsérte a chilivel fűszerezett ételeket a múlt heti cikkében.

Target

2’. Nem emlékszem, hogy a mivel fűszerezett ételeket dicsérte meg az ételkritikus a múlt heti cikkében.

BsL

3. Azt hallottam, hogy a bank lefoglalta a Szentendrén vásárolt házakat fizetésképtelenség miatt.

Target

3’. Nem tudom, hogy a hol vásárolt házakat foglalta le a bank fizetésképtelenség miatt.

BsL

4. Úgy tudom, hogy a festő kiállította a Párizsban készített képeit a múzeumban.

Target

4’. Kíváncsi vagyok, hogy a hol készített képeit állította ki a festő a múzeumban.

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Bsl

5. Úgy tudom, hogy a rendőrség lefoglalta a szertárban talált ékszereket rablás gyanúja miatt.

Target

Fogalmam sincs, hogy a hol talált ékszereket foglalta le a rendőrség rablás gyanúja miatt.

BsL

6. Azt hallottam, az Oktatási Minisztérium bezáratta a támogatásból fenntartott általános iskolákat a városban.

Target

6'. Nem tudom, hogy a miből fenntartott általános iskolálkat záratta be az Oktatási Minisztérium a városban.

BsL

7. Úgy tudom, hogy az építészkamara kizárta a kartonpapírból készített modelleket a tervpályázatból.

Target

7'. Fogalmam sincs, hogy a miből készített modelleket zárta ki az építészkamara a tervpályázatból.

BsL

8. Úgy hallottam, hogy egy magyar túrázó megnyerte a Tátrában megrendezett teljesítménytúrát a nyáron.

Target

8'. Nem tudtom, hogy a hol megrendezett teljesítménytúrát nyerte meg egy magyar túrázó a nyáron.

Filler sentences

FOC

1. OK Sándor említette, hogy csak két alkalommak fordult elő, hogy karambolozott.
2. Számomra csak a találkozás Péterrel volt igazán emlékezetes.
3. Nekünk csak a könyv Madonnáról nyerte el a tetszésünket.
4. Dávidnak csak a felmérés matematikából sikerült rosszabbul mint a többi.
5. *Gábor csak Shakespeare-ről állította, hogy ismeri a legtöbb darabot az angol írók közül.

WH

6. OK Nem tudom, hogy melyik ünnepségre mondta, hogy három lány is írt verset.

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7. Fogalmam sincs, hogy melyik professzor mondtad, hogy el fog kezdeni dolgozni az egyetemen jövőre.
8. Anyukám megkérdezte, hogy hányasra akarom, hogy irodalomból osztályozzanak félév végén.
9. Nem tudom, hogy milyen könyvet szeretne Réka megpróbálni beszerezni egy könyvesboltban.
10. *Dia megkérdezte, hogy mikor fogok akarni az előadásra indulni.

Rel

11. OK Marika nem gondolta volna, hogy ez az a zene,amire jól esik táncolnod.
12. *Juli megígérte, hogy ez less az a film, amelyik filmet veled fogja megnézni akarni.
13. Botond izgul, hogy melyik less az a sorozat, amelyik sorozatnak a nézettsége a legmagasabb less.
14. Viola nem tudja, hogy melyik less az a hely, amelyik jelyen mgrendezésre kerül a gálavacsora.
15. Milán megfogadta, hogy sosem megy vissza abba a városba, amelyik városban szakított a barátnőjével.

MISC

16. Laci fél, hogy be szeretnénk, hogy olvasson neked a tárgyalás után.

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Experiment 4

Target NON-D-Linked WH

Baseline (BsL)

1. Azt hallottam, hogy a zsűri megjutalmazta a jól elmondott verseket a versmondó verseny.

Target

1’. Megkérdeztem, hogy csak a jól elmondott verseket jutalmazta meg a zsűri a versmonydóversenyen.

BsL

2. Úgy tudom, hogy a tanár ötöst adott a legjobban megírt dolgozatokra a félév végén.

Target

2’. Csodálkoztam, hogy csak a legjobban megírt dolgozatokra adott ötöst a tanár a félév végén.

Bsl

3. Azt hallottam, hogy az ételkritikus megdicsérte a magyarosan fűszerezett ételeket a múlt heti cikkében.

Target

3’. Érdekelt, hogy csak a magyarosan fűszerezett ételeket dicsérte meg az ételkritikus a múlt heti cikkében.

BsL

4. Azt hiszem, hogy a zsűri beválasztotta a tökéletesen előadott dalokat a Megasztárba.

Target

4’. Meglepődtem, hogy csak a tökéletesen előadott dalokat választotta be a zsűri a megasztárba.

BsL

5. Úgy tudom, hogy az szerkesztőség előterjesztette a földrengésről írt cikket Pulitzer-díjra.

Target

5’. Furcsálltam, hogy csak a földrengésről írt cikket terjesztette elő a szerkesztőség Pulitzer-díjra.

BsL

6. Azt hallottam, hogy az HBO filmet forgatott s tömeggyilkosságért lecsukott bűnözőkről a börtönökben.

Target

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6’. Furcsálltam, hogy csak a tömeggyilkosságért lecsukott bűnözőkről forgatott filmet az HBO a börtönökben.

BsL

7. Azt hallottam, hogy az ÁNTSZ visszahívta a morfiummal előállított gyógyszereket a patikákból.

Target

7’. Csodálkoztam, hogy csak a morfiummal előállított gyógyszereket hívta vissza az ÁNTSZ a patikákból.

BsL

8. Azt hallottam, hogy a tanárok levizsgáztatták a biológiából megbuktatott diákokat a pótvizsgaidőszakban.

Target

8’. Meglepődtem, hogy csak a biológiából megbuktatott diákokat vizsgáztatták le a tanárok a pótvizsgaidőszakban.

Target D-Linked

BsL

1. Úgy tudom, hogy a bizottság kitüntette a Mikszáthról írt dolgozatokat a félév végén.

Target

1’. Csodálkoztam, hogy csak a Mikszáthról írt dolgozatokat adott ötöst a bizottság a félév végén.

Bsl

2. Azt hallottam, hogy az ételkritikus megdicsérte a chilivel fűszerezett ételeket a múlt heti cikkében.

Target

2’. Megdöbbentem, hogy csak a magyarosan fűszerezett ételeket dicsérte meg az ételkritikus a múlt heti cikkében.

BsL

3. Azt hallottam, hogy a biztosító megvédi a téglából épített épületeket tetőbeázás esetén.

Target

3’. Furcsálltam, hogy csak a téglából épített épületeket védi meg a biztosító tetőbeázás esetén.

BsL

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4. Úgy tudom, hogy a festő kiállította a Párizsban készített képeit a múzeumban.

Target

4’. Kíváncsi vagyok, hogy a hol készített képeit állította ki a festő a múzeumban.

Bsl

5. Úgy tudom, hogy a posta átvilágította a külföldön feladott leveleket a levélelosztóközpontban.

Target

5’. Csodálkoztam, hogy csak a külföldön feladott leveleket világította át a posta a levélelosztó központban.

BsL

6. Azt hallottam, hogy az iskolafelügyelet bezáratta a adományokból fenntartott iskolákat a városban.

Target

6’. Meglepődtem, hogy csak az adományokból fenntartott iskolákat záratta be az iskolafelügyelet a városban.

BsL

7. Úgy tudom, hogy a NAV megadóztatja a kubából importált kávét a behozatalkor.

Target

7’. Furcsálltam, hogy csak a kubából importált kávét adóztatja meg a NAV a behozatalkor.

BsL

8. Úgy hallottam, hogy egy magyar túrázó megnyerte a Tátrában megrendezett teljesítménytúrát a nyáron.

Target

8’. Megdöbbentem, hogy csak a Tátránban megrendezett teljesítménytúrát nyerte meg egy magyar túrázó a nyáron.

Fillers

FOC

OK Sándor említette, hogy csak két alkalommak fordult elő, hogy karambolozott.

Számomra csak a találkozás Péterrel volt igazán emlékezetes.

Nekünk csak a könyv Madonnáról nyerte el a tetszésünket.

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Dávidnak csak a felmérés matematikából sikerült rosszabbul mint a többi.

*Gábor csak Shakespeare-ről állította, hogy ismeri a legtöbb darabot az angol írók közül.

WH

OK Nem tudom, hogy melyik ünnepségre mondta, hogy három lány is írt verset.

Fogalmam sincs, hogy melyik professzor mondtad, hogy el fog kezdeni dolgozni az egyetemen jövőre.

Anyukám megkérdezte, hogy hányasra akarom, hogy irodalomból osztályozzanak félév végén.

Nem tudom, hogy milyen könyvet szeretne Réka megpróbálni beszerezni egy könyvesboltban.

*Dia megkérdezte, hogy mikor fogok akarni az előadásra indulni.

Rel

OK Marika nem gondolta volna, hogy ez az a zene,amire jól esik táncolnod.

*Juli megígérte, hogy ez less az a film, amelyik filmet veled fogja megnézni akarni.

Botond izgul, hogy melyik lesz az a sorozat, amelyik sorozatnak a nézettsége a legmagasabb lesz.

Viola nem tudja, hogy melyik less az a hely, amelyik jelyen mgrendezésre kerül a gálavacsora.

Milán megfogadta, hogy sosem megy vissza abba a városba, amelyik városban szakított a barátnőjével.

MISC

Laci fél, hogy be szeretnénk, hogy olvasson neked a tárgyalás után.

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Experiment 5

Target sentences

1a Úgy mondta el a verset, ahogyan elmondott verseket gyakran szokat hallgatni.

1b Az mondta el a verset, aki gyakran szokott szépen elmondott verseket hallgatni.

2a Úgy alakította ét a rendszert, ahogyan átalakított rendszereket a németek is megirigyelnének.

2b Az alakította át a rendszert , aki átgondolta a legmodernebben kialakított rendszereket.

3a Úgy festette le a kerítést, ahogyan lefestett kerítéseket még sosem látott.

3b Az festette le a kerítést, aki még sosem látott tökéletesen lefestett kerítéseket.

4a Annyiért vásárolta meg a festményt, amennyiért megvásárolt festményeket még múzeumokban sem látni.

4b Az vásárolta meg a festményt, aki még sosem látott milliókért megvásárolt festményeket.

5a Úgy rendezte meg az eseményt, ahogyan megrendezett eseményeket a híradóban mindig megemlítenek.

5b Az rendezte meg az eseményt, aki mindig megemlíti a híradóban az érdekesen/jól megrendezett eseményeket.

6a Annyiért árverezték el a házat, amennyiért elárverezett házakat a legtöbbször lebontanak.

6b Az árverezte el a házat, aki le szokta bonatni az olcsón elárverezett házakat.

Fillers

1 Azokat hívtam meg a buliba, akik sokat segítettek a felújításban.

2 Olyan versenyeket szervezünk, ahol a kevésbé ügyes diákok is esélyt kapnak.

3 Nekik mondtuk, akik autóval jöttek a fesztiválra.

4 Azt felejtettük el, ahogyan viselkedett a feleségével.

5 Abban az országban nehéz megélni, amelyik országban alacsony az életszínvonal.

6 Az állatkertben, amelyik állatkert a véros szélén található, elszabadult egy rinocérosz.

Control sentences

1 Marika nem gondolta volna, hogy ez az a zene,amire jól esik táncolnod.

2 Juli megígérte, hogy ez lesz az a film, amelyik filmet veled fogja megnézni akarni.

3 Dia megkérdezte, hogy mikor fogok akarni az előadásra indulni.

4 Nem tudom, hogy melyik ünnepségre mondta, hogy három lány is írt verset.

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5 János felhívta, akinek kíváncsi volt a véleményére.

6 Sándor említette, hogy csak két alkalommal fordult elő, hogy karambolozott.

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Experiment 6 and Experiment 7

These experiments had the same material, the only difference between them is the experimental method used in them.

Filler sentences

1. a. Milyen fiúk milyen lányokat kértek fel táncolni?
   b. Milyen lányokat milyen fiúk kértek fel táncolni?
2. a. Melyik mókus melyik makkot ásta el a télen?
   b. Melyik makkot melyik mókus ásta el a télen?
3. a. Milyen zenére melyik osztály akar bevonulni?
   b. Melyik osztály milyen zenére akar bevonulni?
4. a. Melyik újságra melyik lakó fizetett elő tavaly?
   b. Melyik lakó melyik újságra fizetett elő tavaly?
5. a. Mari megírta ügyesen a levelet a nagymamájának.
   b. Mari ügyesen megírta a levelet a nagymamájának.
6. a. Máté megoldotta jól a feladatot.
   b. Máté jól megoldotta a feladatot.
7. a. Krisztián nagyon megszerette a matekot.
   b. Krisztián megszerette nagyon a matekot.
8. a. Jutka teljesen bekente magát naptejjel.
   b. Jutka bekente teljesen magát naptejjel.
9. a. Pisti nem olvasta a könyvet el.
   b. Pisti nem olvasta el a könyvet.
10. a. Klári nem vágta a tortát fel.
    b. Klári nem vágta fel a tortát.
11. a. Erika nem tartotta meg a buliját.
    b. Erika nem tartotta a buliját meg.
12. a. Gábor nem vette fel a pulóverét.
    b. Gábor nem vette a pulóverét fel.
13. a. Laci szerencsére valószínűleg megoldotta a problémát.
    b. Laci valószínűleg szerencsére megoldotta a problémát.
14. a. Márk sajnos szerintem elkésett ma reggel.
    b. Márk szerintem sajnos elkésett ma reggel.
15. a. Lilla már tulajdonképpen elvégezte az egyetemet.
    b. Lilla tulajdonképpen már elvégezte az egyetemet.
16. a. Rita még talán nem látta az új filmet.
    b. Rita talán még nem látta az új filmet.

Control sentences – these sentences were there to ensure that the subjects pay attention and can differentiate between grammatical and ungrammatical sentences

17. a. Alszik keveset Jónás mostanában.
    b. Keveset alszik Jónás mostanában.

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18. a. Ismerem alig Marit.
    b. Alig ismerem Marit.
19. a. Ma szerintem kevesebb mint öt e-mailt kaptam.
    b. Ma szerintem kaptam kevesebb mint öt e-mailt.
20. a. Ritkán utazunk el a családdal külföldre.
    b. Utazunk ritkán el a családdal külföldre.
21. a. Péter valószínűleg fát vágott a kertben.
    b. Péter valószínűleg vágott fát a kertben.
22. a. Dani tulajdonképpen értette meg a kérdést.
    b. Dani tulajdonképpen megértette a kérdést.
23. a. János feltehetőleg olvasta fel a versét.
    b. János feltehetőleg felolvasta a versét.

Target sentences

24. a. Négy szögletes aprócska sajtot találtam a hűtőben.
    b. Négy aprócska szögletes sajtot találtam a hűtőben.
25. a. Négy milyen alakú apró sajtot találtál a hűtőben?
    b. Négy apró milyen alakú sajtot találtál a hűtőben?
26. a. Két ovális óriási tálat vettem a piacon.
    b. Két óriási ovális tálat vettem a piacon.
27. a. Két milyen alakú óriási tálat vettél a piacon?
    b. Két óriási milyen alakú tálat vettél a piacon?
28. a. Három rózsaszín hatalmas dobozt ajándékoztam a mamának.
    b. Három hatalmas rózsaszín dobozt ajándékoztam a mamának.
29. a. Három milyen színű hatalmas dobozt ajándékoztál a mamának?
    b. Három hatalmas milyen színű dobozt ajándékoztál a mamának?
30. a. Öt vastag fehér könyvet rendeltem az interneten.
    b. Öt fehér vastag könyvet rendeltem az interneten.
31. a. Öt vastag milyen színű könyvet rendeltél az interneten?
    b. Öt milyen színű vastag könyvet rendeltél az interneten?
32. a. Egy hosszú szürke hidat avattak a hétvégén.
    b. Egy szürke hosszú hidat avattak a hétvégén.
33. a. Egy hosszú milyen színű hidat avattak a hétvégén?
    b. Egy milyen színű hosszú hidat avattak a hétvégén?
34. a. Hét magas kocka épületet építettek a nyáron.
    b. Hét kocka magas épületet építettek a nyáron.
35. a. Hét magas milyen alakú épületet építettek a nyáron?
    b. Hét milyen alakú magas épületet építettek a nyáron?
36. a. Lenvászon kényelmes köpenyeket vásároltam a boltban.
    b. Kényelmes lenvászon köpenyeket vásároltam a boltban.
37. a. Miből készült kényelmes köpenyeket vásároltál a boltban?
    b. Kényelmes miből készült köpenyeket vásároltál a boltban?

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38. a. Világosszürke kimoshatatlan foltokat találtam a nadrágomon.
    b. Kimoshatatlan világosszürke foltokat találtam a nadrágomon.
39. a. Milyen színű kimoshatatlan foltokat találtál a nadrágodon?
    b. Kimoshatatlan milyen színű foltokat találtál a nadrágodon?
40. a. Csíkos laza ingeket kaptam a cégtől.
    b. Laza csíkos ingeket kaptam a cégtől.
41. a. Milyen mintájú laza ingeket kaptál a cégtől?
    b. Laza milyen mintájú ingeket kaptál a cégtől?
42. a. Ízletes ciprusi borokat kértem a szülinapomra.
    b. Ciprusi ízletes borokat kértem a szülinapomra.
43. a. Ízletes honnan származó borokat kértél a szülinapodra?
    b. Honnan származó ízletes borokat kértél a szülinapodra?
44. a. Unalmas családi filmeket forgattak a városban.
    b. Unalmas családi filmeket forgattak a városban.
45. a. Unalmas milyen típusú filmeket forgattak a városban?
    b. Milyen típusú unalmas filmeket forgattak a városban?
46. a. Érdekes avantgárd festményeket készítettem a nyáron.
    b. Avantgárd érdekes festményeket készítettem a nyáron.
47. a. Érdekes milyen stílusú festményeket készítettél a nyáron?
    b. Milyen stílusú érdekes festményeket készítettél a nyáron?

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Fölérendelt összetevő mozgatás a magyarban – Egy kísérletes vizsgálat a fölérendelt összetevő mozgatás megszorításairól a magyar A-vonás mozgatásokban

Összefoglaló

Disszertációmban kísérletes módszerekkel kutatom a fölérendelt összetevő mozgatás megszorításait a magyarban olyan A-vonás mozgatás szerkezetekben, melyekben a mozgatást kiváltó elem egy prenominális adjunktumba van beágyazva. A mozgatást kiváltó jegy-hordozó elem részt vesz fókuszmozgatásba, kérdő mozgatásban, és vonatkozói mozgatásban. A fölérendelt összetevő mozgatásról szóló (kurrens) szakirodalmak megoszlanak az alapján, hogy feltételeznek-e szintaktikai jegyet a mozgatás hátterében, vagy más, a mondattanon kívül eső mechanizmusoknak tulajdonítják a mozgatás kiváltását, ezzel esetenként kétségbe vonva a fölérendelt összetevő mozgatás létjogosultságát.

Kutatásom kiindulópontját egy empirikus érvként tárgyalt példa-hármas képezi (Horváth 1997), melyben a fölérendelt összetevő mozgatás megszorítottságát a mozgatást kiváltó jegy szintaktikai természete vagy éppen annak ellentéte szabályozza. Horváth (1997) példáiban azok a mozgatások, melyek tradícionálisan (erős) szintaktikai jegyhez kapcsolódnak (kérdőszómozgatás és vonatkozó-mozgatás) nem engedélyezik, hogy az azokat tartalmazó összetevőt magukkal vigyék, míg a fókusz-jegy ezt lehetővé teszi. Horváth (1997) azzal érvel, hogy ezt a mozgatást egy szemantikai operátor váltja ki, így a mozgatás nem esik ugyanazok alá a megszorítások alá, melyek korlátozzák a fölérendelt összetevő mozgatást az előző két esetben. Kísérleteim eredményei alapján azonban elmondható, hogy a kérdőszómozgatás a magyarban ugyanannyira megengedő fölérendelt összetevő mozgatás szempontjából, mint a fókuszmozgatás, míg a vonatkozói mozgatás valóban megszorított, és nem engedi meg, hogy az azt tartalmazó frázis részt vegyen a fölérendelt összetevő mozgatásban.

A dolgozatban egy lehetséges megoldásként azt javaslom, hogy a kapott eredményeket a prozódia segítségével magyarázzuk. Ez lehetővé teszi, hogy egységesen le tudjuk írni a fölérendelt összetevő mozgatásról kapott empirikus adatokat. Javaslatom olyan prozódiai hasonlóságokra épít, mely mind a fókuszált, mind pedig a kérdőszó természetéből adódik (Hamloui és Szendrői 2017). A magyarban a fókuszált elemek, ugyanúgy ahogy a kérdő-kifejezések, egy prozódiailag prominens pozícióba törekszenek és a mondatban hangsúlyos helyen állnak, magukon főhangsúlyt hordoznak. Ezzel szemben a vonatkozó névmások nem rendelkeznek prozódiai prominenciával, így a mondatban sem törekszenek olyan pozíciót betölteni, mely erős hangsúlyt visel magán. Ezek alapján leírható a kísérletek eredményeiből kirajzolódó mintázat, miszerint a fölérendelt összetevő mozgatás fókuszmozgatásban és kérdőszómozgatásban nem megszorított, míg vonatkozói szerkezetekben a fölérendelt összetevő mozgatás nem lehetséges.

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Pied-piping in Hungarian – An Experimental Investigation on the Restrictions on Pied-piping in Hungarian A-bar Movements

This dissertation investigates pied-piping in Hungarian in A-bar constructions. The pied-piper is either a focused phrase, a wh-phrase, or a relative pronoun that is embedded inside a pronominal adjunct clause. This thesis reports on the findings of 7 experiments conducted in a span of 4 years. Current linguistic literature is devided into different approaches to pied-piping. This thesis gives an overview of the literature on the approaches to pied-piping as well as the literature on the background of the relevant Hungarian A-bar features and constructions.

The starting point of this research was the goal to verify empirical evidence reported by Horváth (1997) on the distinction on the nature of features. She based her claim on the difference in pied-piping patterns between the (traditionally) syntactic features of [wh] and [rel], and [foc] which she believes to be a discourse feature rather than a lexical/syntactic one. The findings of the experiments reported in this thesis suggest that ppied-piping in wh-movement is acceptable in Hungarian – at least with discourse-linked wh-phrases. The findings verified Horváth's (1997) claim that pied-piping is unacceptable in relativization.

This dissertation makes a tentative proposal to account for the patterns found in Hungarian prenominal pied-piping by attributing the motivation for movement to prosody. Both *wh*-phrases and focused phrases need to move to a prosodically prominent position on the left edge of the intonational phrase in Hungarian (Hamloui and Szendrői 2017). Both of *wh*-phrases and focused phrases bear pitch accent in the sentence. The motivation for movement is prosodic, and it makes pied-piping unrestricted in both *wh*-movement and focus-movement. This approach could describe the pattern drawn from the findings of the experiments conducted as the part of this research.

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