

APPROACHES TO WH-STRUCTURES IN TURKISH

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ABSTRACT

Approaches to Wh-Structures in Turkish

by

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The aim of this study is to analyze and account for the syntactic properties of wh-structures in Turkish within the Government and Binding framework.

Wh-constituents in a Turkish interrogative sentence occurs "in situ", i.e. in the position where a non-question word with the same grammatical function would occur in the corresponding declarative structure. However, the fact that the wh-element can take the matrix scope without undergoing syntactic movement to clause initial position has led to the assumption that Turkish wh-structures undergo a movement rule at the level of Logical Form (Akar, 1990; Özsoy, 1990).

This study presents arguments for a non-raising analysis of wh-structures in Turkish. It discusses that the LF wh-movement analysis fails to account for the occurrence of adjunct wh-elements within a sentential subject and a postpositional phrase, and further argues that the interpretation of scope interaction of quantifier phrases, wh-constituents and the operator *yalnızca* 'only' is left unexplained. The explanation to these structures is offered along the lines of the wh-indexing analysis proposed by Aoun and Li (1993) who claim that wh-elements in situ do not undergo movement at any syntactic level, but instead, get coindexed with a Qu(estion) operator in the [Spec, CP] position of the clause they have scope over. The function of this Qu operator is to bind and provide an antecedent for the wh-element in situ which thus reflects its scopal properties.

KISA ÖZET

Türkçe *Ne*-Yapılarına Yaklaşımlar

Bu çalışmanın amacı Türkçe'deki *Ne*-yapılarının sözdizimsel özelliklerini Yönetim ve Bağlama Kuramı (YB) içinde incelemek ve bu yapılara açıklama sunmaktır.

Türkçe tümcelerde *ne*-öbekleri yüzeysel yapıda aynı dilbilgisel işlevi taşıyan bir öbeğin bulunduğu yerde oldukları halde tüm tümceyi etki alanı içine almakta ve bunun sonucu olarak da yapı soru tümcesi olarak algılanmaktadır. Türkçe'deki *Ne*-yapıları üzerine bugüne kadar yapılan çalışmalarda *ne*-öbeğinin bu özellikleri kuramın öngördüğü bir yer-değiştirme işlemi ile açıklanmıştır (Akar, 1990; Özsoy, 1990). Bu çalışmalara göre, yer-değiştirme işlemi yüzeysel yapıda değil Mantıksal Biçim'de gerçekleşmektedir.

Bu çalışma Türkçe *Ne*-yapılarının yer-değiştirme işlemine uğramadığını, öne sürülmüş olan Mantıksal Biçim'de Yer-Değiştirme yaklaşımının üye olmayan *ne*-öbeklerinin tümcesel özne ve sonilgeç öbekleri içinde bulunmasını açıklayamadığını göstermekte ve niceleyiciler, *ne*-öbekleri ve *yalnızca* işleyicisinin etki alanı etkileşimine bu yaklaşımda açıklama sunulmadığını öne sürmektedir. Bu yapılara açıklama Aoun ve Li (1993)'nin *Ne*-Eşdizinleme yaklaşımı doğrultusunda sunulmaktadır. Bu yaklaşımda *ne*-öbeğinin yer-değiştirmeye uğramadığı, tümcenin belirleyici konumunda boş bir soru işleyicisinin bulunduğu, bu işleyicinin tümce içindeki *ne*-sözcüğünün öncülü olduğu ve etki alanını belirlediği ileri sürülmektedir.

Table of Contents

	page
Acknowledgements	iii
Abstract	iv
Kısa Özet	v
Table of Contents	vi
Chapter 1: Introduction	
1. The Aim	1
2. Wh-Constructions	1
2.1. English	1
2.2. Turkish	2
3. Theoretical Framework	6
3.1. General Framework	6
3.2. Wh-Analyses	7
3.2.1. Movement Approach	8
3.2.2. Indexing Approach	14
Notes	17
Chapter 2: The LF Wh-Movement Analysis	
0. Introduction	18
1. Interpretation and the Selectional Restrictions of the Verb	19
2. Locality Conditions	21
2.1. Sentential Subjects	21
2.2. Complex Noun Phrases	25
2.3. Adjunct Phrases	28
3. Scope	30
3.1. May (1985)	30
3.2. Aoun and Li (1993a)	33
3.3. Application to Turkish	36
4. Conclusion	38
Notes	39

Chapter 3: Counter-Examples to Wh-Movement Analysis	
0. Introduction	40
1. Adjunct Phrases	40
1.1. Sentential Subjects	40
1.2. Postpositional Phrases	43
2. Scope Interaction- Revisited	46
3. Conclusion	52
Chapter 4: The Wh-Indexing Analysis	
0. Introduction	53
1. Wh-in-situ and the Selectional Restrictions of the Verb	54
2. Wh-in-situ and Argument vs. Adjunct Asymmetry	56
2.1. Wh-Islands	60
2.2. Adjunct Islands	65
2.3. Complex Noun Phrases	66
3. Scope Interaction	68
Notes	74
Chapter 5: Towards a Minimalist Account	
1. Basic Assumptions of the Minimalist Program	76
2. Clausal Typing	77
3. Turkish Clause Structure in MP	79
4. The Minimalist Account of Turkish Wh-Structures	80
5. A Proposal for the Ungrammatical Structures	83
5.1. Pesetsky (1987)'s D(iscourse)-Linking	86
5.2. Reinhart (1998)'s Choice-Function Analysis	87
6. Conclusion	89
Notes	90
Bibliography	91

List of Abbreviations

Abl	Ablative case marker
Acc	Accusative case marker
Aor	Aorist marker
Caus	Causative
Com	Comitative case marker
Cop	Copular
Dat	Dative case marker
Fut	Future marker
Gen	Genitive case marker
Ger	Gerundive
Loc	Locative case marker
Mod	Modality marker
Neg	Negative marker
Nm	Nominalizing suffix
Pass	Passive
Past	Past tense marker
Poss	Possessive case marker
Prog	Progressive marker
Rel	Relative clause participial suffix

CHAPTER 1

Introduction

1. The Aim

This study will investigate the implications of LF wh-movement analysis and wh-indexing analysis for the wh-constructions in Turkish within the framework of the Government and Binding Theory. It will be shown that there are a number of wh-constructions in Turkish which cannot be accounted for in terms of the canonical LF wh-movement assumed in the framework. It will be argued that these structures can be accounted for only if we assume the wh-indexing analysis as proposed by Aoun and Li (1993b) and Cole and Hermon (1994).

2. Wh-Constructions

2.1. English

Wh-constructions in languages like English have been argued to involve the general rule Move-Alpha which involves the movement of a maximal projection marked [+wh] to [Spec, CP] at S-Structure allowing it to have scope over the matrix clause. Two examples are given below:

- (1) a. [_{CP}What did [_{IP}the prime minister do t_i after the broadcasting of the secret files]]?
 b. [_{CP}How did [_{IP}the accident happen t_i]]?

In (1a), the internal argument *what* undergoes movement from its base position within the IP to [Spec, CP]. In (1b), the wh-element *how* functioning as the adjunct moves to [Spec, CP]. In both cases, the wh-movement takes place at S-structure and leaves behind a trace coindexed with the wh-element.

2.2. Turkish

The wh-elements in Turkish are listed as follows:

- (2) a. kim 'who'
 b. ne 'what'
 c. nere-de 'where'
 d. nasıl 'how'
 e. ne zaman 'when'
 f. neden 'why'
 g. niye 'why'
 h. niçin 'why'
 i. hangi 'which'

(2a) and (2b) are the canonical argument *wh*-forms, (2c-h) adjuncts. (2i) is the *wh*-element that occupies the Spec position. Note that the forms in (2b), (2c) and (2i) can be marked with the possessive marker *-sI*.

Consider the following structures which illustrate the behavior of the canonical *wh*-elements that occur in argument positions *kim*, *ne* and *hangi* NP:

- (3) a. Ayşe **kim-i** gör-dü?
 Ayşe who-Acc see-Past
 'Who did Ayşe see?'
 b. Çocuk **ne-yi** iste-di?
 child what-Acc want-Past
 'What did the child want?'
 c. Sen **hangi film-i** seyred-iyor-sun?
 you which film watch-Prog-2sg.
 'Which film are you watching?'

As seen in these examples, the *wh*-constituents do not move to the sentence initial position. In (3), the *wh*-elements are the internal arguments of the verbs which have assigned them the accusative case *-(y)I*. Contrary to the *wh*-constructions in languages like English, there is no obligatory S-Structure movement rule that places the *wh*-element in a scope position in Turkish. The *wh*-phrase appears in the position in which its non-question counterpart with the same grammatical function would occur in the declarative structure.

The following examples illustrate that the generalization that there is no overt movement of the wh-element in surface structure in Turkish holds for non-argument wh-elements as well:

- (4) a. Çocuk o şiir-i **kim-e** oku-du?
 child that poem-Acc who-Dat read-Past
 'To who did the child read that poem?'
- b. Nere-ye koş-uyor-sunuz?
 where-Dat run-Prog-2pl
 'Where are you running to?'
- c. Arkadaş-lar-ın **hangi oyun-a** gid-ecek?
 friend-Plu-Poss(2sg) which play-Dat go-Fut
 'Which play are your friends going to go to?'
- (5) a. O yüzüğ-ü **kim-de** gör-dü-n?
 that ring-Acc who-Loc see-Past-2sg
 'On whom did you see that ring?'
- b. Bütün para-n-ı **ne-de** kaybet-ti-n?
 all money-Poss(2sg)-Acc what-Loc lose-Past-2sg.
 Lit. 'On what did you lose all your money?'
- c. Öğrenci-ler **hangi oda-da** çalış-ıyor-lar?
 student-Plu which room-Loc study-Prog-3pl.
 'In which room are the students studying?'
- (6) a. Telefon numara-m-ı **kim-den** al-dı-n?
 telephone number-Poss(1sg)-Acc who-Abl take-Past-2sg
 'From whom did you take my phone number?'
- b. Çocuk **ne-den** düş-tü?
 child what-Abl fall-Past
 Lit. 'What did the child fall off?'

c. O evrak-lar **hangi bölüm-den** gel-di?

those document-Plu which department-Abl come-Past

'From which department have those documents come?'

The *wh*-constituents in sentences (4-6) function as adjuncts and are assigned inherent case. The *wh*-elements in (4) are marked with Dative *-(y)A*, those in (5) are marked with Locative *-DA*, and the ones in (6) are marked with Ablative *-DAn*.¹

The constituent questions with *wh*-adjuncts other than those formed with *ne* 'what', *kim* 'who' and *hangi* 'which' are exemplified below:

(7) a. Başbakan istifa-sın-ı **ne zaman** ver-ecek?

prime minister resignation-Poss(3sg.)-Acc when hand in-Fut

'When will the prime minister hand in his resignation?'

b. Ali o problem-i **nasıl** çöz-dü?

Ali that problem-Acc how solve-Past

'How did Ali solve that problem?'

c. Zeynep parti-ye **neden/niye/niçin** gel-me-di?

Zeynep party-Dat why come-Neg-Past

'Why didn't Zeynep come to the party?'

In (7a), the *wh*-element *ne zaman* is the temporal adjunct; in (7b), *nasıl* is the manner adjunct, and in (7c) *neden/niye/niçin* are *wh*-adjuncts denoting reason. These examples illustrate that in simple Turkish *wh*-questions, the *wh*-constituent does not move to sentence initial position at S-structure.

Similarly, in embedded *wh*-questions, too, the *wh*-element remains in situ, but changes the interpretation of the matrix structure:

- (8) a. Ali [Zeynep-in **kim**-i ara-yacağ-ın]ı bil-iyor-du.
 Ali Zeynep-Gen who-Acc call-Nm-Poss(3sg)-Acc know-Prog-past
 'Ali knew who Zeynep would call.'
- b. Ali [Zeynep-in **kim**-i ara-yacağ-ın]ı bil-iyor-du?
 Ali Zeynep-Gen who-Acc call-Nm-Poss(3sg)-Acc know-Prog-past
 'Who did Ali know Zeynep would call?'

In (8a), the wh-element *kim* 'who' is in the embedded clause functioning as the internal argument of the matrix verb *bil-* 'know'. The scope of the wh-element is, thus, the embedded clause. The interpretation of (8b) as a matrix wh-question indicates that the wh-element has scope over the whole sentence although it remains within the embedded clause.

3. Theoretical Framework

3.1. General Framework

This work assumes the tenets and principles of the Government and Binding (GB) Theory, which consists of a number of subtheories which determine the nature of linguistic structures and relate the levels of representation (D-structure, S-structure, LF (Logical Form) and PF (Phonetic Form)).

As discussed in Chomsky (1981, 1986), the lexicon and the categorial component of syntax constitute the base, which generate the D-structure representations. These structures are mapped onto S-structures which are, then, assigned to PF and LF representations (Chomsky, 1981:5).

Within this framework, any kind of transformation is explained by the general rule *Move-Alpha*, which involves the movement of the target element to a host position fulfilling the requirements of the subtheories of θ -criterion, case theory, subadjacency and the *Empty Category Principle (ECP)*.

The *Projection Principle*, which states that a structure established at D-structure must be preserved at other levels of representation, necessitates that the movement transformation leaves traces coindexed with the moved constituent (i.e., the antecedent). The constituent that has undergone movement will receive its θ -role at S-structure through the chain it forms with its trace. The structure obeys the case theory by assigning case either to the moved element (as in the case of NP movement) or to the trace coindexed with its antecedent (as in the case of *wh*-movement). *Subadjacency Principle* defines the boundaries of movement and requires movement not to cross more than one bounding node, where bounding nodes are parameterized (Lasnik and Saito, 1984, 1992). Another constraint on movement is stated by the *Empty Category Principle (ECP)* which requires that an empty category must be properly governed either through theta-government or through antecedent government.

3.2. Wh-Analyses

Within the framework of GB, *wh*-constituents in languages like English are argued to move to sentence initial position in the surface structure (see example (1)). There are, however, languages in which the *wh*-phrase does not occur in a sentence initial position but still has scope over the whole structure. After Huang (1982), this parametric variation among

languages was accounted for by a movement transformation applying at different levels of representation. As a result, languages have been classified as:

- (9) languages with overt movement (i.e., at S-structure) like English
- (10) languages with covert movement (i.e., at LF) like Chinese, Japanese, and Turkish.

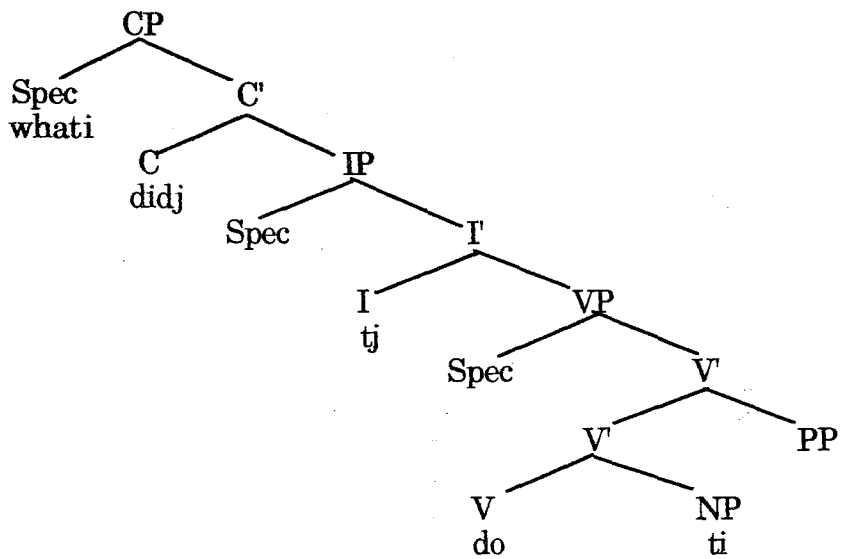
However, a recent analysis within the GB framework, wh-indexing, does not assume LF-movement for the wh-constituents which appear in situ. The following sections will outline the movement and the indexing approaches respectively.

3.2.1. Movement Approach

In English, the wh-element moves overtly to the [Spec, CP] position at S-structure. Consider the analysis of the examples (1a-b) repeated below:

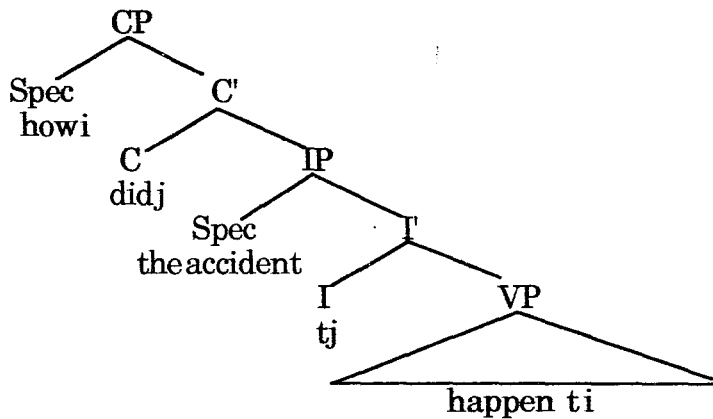
- (11) a. [_{CP}What did [_{IP}the prime minister do t_i after the broadcasting of the secret files]]?

b.



(12) a. [_{CP} How_i did_j [_{IP} the accident t_j happen t_i]]?

b.



In the S-structure representation given in (11b), the *wh*-element *what* moves from its base position within the VP to [Spec, CP]. In (12b), the *wh*-adjunct *how* moves to [Spec, CP], as well (Lasnik and Saito (1984), Chomsky (1986)).

Consider the following example which contains more than one wh-element:

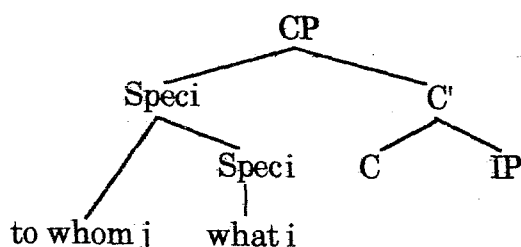
- (13) What_{*t*}_{*i*} did John send *t*_{*i*} to whom?

In this example, the wh-element *what* has moved to [Spec, CP] in syntax, and the second wh-element *to whom* has remained in its base position. The structure is interpreted as multiple interrogation. Note that the most natural answer to this question would be a structure like (14a) but not (14b) or (14c):

- (14) a. He sent the letter to Sally and the package to Bill.
b. *The letter.
c. *To Sally.

For multiple questions like (13), it has been assumed that the wh-element in situ (*to whom* in (13)) undergoes movement to the Spec position at LF (May (1985), Chomsky (1986)). Since the [Spec, CP] position is filled with the wh-element *what*, which has moved there at S-structure, it has been assumed that the movement of the wh-element *to whom* at LF will adjoin to the Spec position yielding the LF representation given in (15).

(15)



English does not allow multiple movement by which both of the *wh*-elements raise to [Spec, CP] at S-structure. Only one *wh*-element moves overtly. The *wh*-element that remains in its base position at S-structure raises and gets adjoined to [Spec, CP] at LF.

Wh-questions in English which contain a *wh*-subject are argued to undergo vacuous movement whose effect is not observed at S-structure (Chomsky, 1986). Consider the following example:

(16) Who watched the documentary on wild life?

The *wh*-element *who* in (16) seems to stay in its base position within the IP. However, structures like (17) illustrate that the *wh*-element functioning as the subject of the embedded clause must move at S-structure.

(17) [_{CP} Who_i do [_{IP} you think [[_{t_i} watched the documentary on wild life]]]]?

By analogy with (17) as well as (1a-b), it has been assumed that the *wh*-element *who* in (16) is moved to [Spec, CP] leaving a coindexed trace in its base position within the IP (see Chomsky (1986:48-53) for discussion).

(18) [_{CP} Who_i [_{IP} t_i watched the documentary on wild life]]?

As opposed to the English sentences like (11-12), the wh-questions in Turkish, on the other hand, do not involve any obligatory syntactic movement to sentence initial position. In accordance with Huang's analysis of similar phenomenon in Chinese, the fact that the wh-phrase still takes the matrix structure under its scope has led to the assumption that wh-constructions in Turkish are subject to the wh-movement rule not at S-Structure but at L(ogical) F(orm). (Akar, 1990; Özsoy, 1990; Kornfilt, 1996).

Akar (1990), in her work *Wh-Questions in Turkish*, mainly discusses the properties of simplex wh-questions and attempts to give an account of the properties of the wh-constructions in Turkish. She also analyzes the effects of NP-scrambling in a Turkish sentence which is motivated mainly by pragmatic and/or semantic purposes. She discusses the constraints that are responsible for the movement of NPs to sentence-initial, sentence-final and immediately preverbal positions and investigates the properties of those structures in which the wh-word does not occur in-situ. She proposes that Turkish possesses two rules, the Q-Placement and Q-Scrambling Rules, which, respectively, account for the unmarked position of the question word and for the various places in which the question word may occur in a Turkish sentence. She further argues that "the rules that are posited for the movement of wh-elements in Turkish can, in fact, be collapsed with the rules that determine the movement of NPs." However, the application of the

scrambling rules to *wh*-elements seems to be more restricted than to NPs in a declarative sentence (Akar 1990:68).

In her paper, "A'-Dependencies in Turkish", Özsoy (1990) also assumes that *wh*-constructions in Turkish can be explained by the LF movement analysis. She gives an account of the unexpected grammaticality patterns of certain structures in which a *wh*-phrase is extracted out of a complex NP and an adjunct island. Although the grammaticality patterns imply that subjacency is irrelevant for Turkish, Özsoy (1990:153) argues that these structures do not involve the movement of the *wh*-element out of its blocking category, and thus, are not, in fact, violations of subjacency. She proposes that there is a mechanism of pied-piping in Turkish grammar by which the [+*wh*] feature of the *wh*-element percolates up to the maximal projection dominating it. This "feature percolation" marks the maximal projection as [+*wh*] and allows the whole maximal projection to move to the Spec position of the matrix sentence. Thus, the *wh*-element moves within its own clause and does not violate subjacency.

In order to account for the difference in the grammaticality of sentences in which θ -governed categories and θ' -governed categories are extracted out of complex NPs and adjunct islands, Özsoy (1990:154) discusses the proposal of Nishigauchi, who argues for a requirement on "categorial identity". It has been assumed that there is a restriction for the *wh*-phrase to percolate its properties to the dominating node and this restriction states that the *wh*-phrase has to have the same value ([+N] or [-N]) in order to be able to percolate its [+*wh*] feature to the maximal projection dominating it. The feature specification [\pm N] is determined by the

properties of the lexical item which occupies the Comp position. If Comp is filled with a θ -governed wh-element the wh-phrase will have the feature [+N]; if it is filled with a θ' -governed wh-element (i.e., an adjunct wh-phrase) it will have the feature [-N]. If the categories, i.e., the wh-phrase and the clause dominating it, are not identical in the sense of [\pm N], the percolation of the [+wh] feature will be blocked as a result of which the maximal projection dominating the wh-phrase will not move to the [Spec, CP] of the matrix clause. Consequently, the wh-element will have to move to the Spec position of the matrix clause and hence violate subjacency. It is important to note that θ -governed categories have the inherent ability to percolate their [+wh] feature to the dominating node.

This account of LF wh-movement in wh-in-situ languages has led to the unification of the behavior of wh-elements across different languages. The behavior of wh-elements is explained by Move-Alpha either through overt extraction at S-structure (as in English) or through covert extraction in the LF component (as in Turkish).

3.2.2. Indexing Approach

A different analysis of in-situ wh-constructions has been proposed by Aoun and Li (1993b) who claim that there is no LF wh-movement for languages in which the wh-phrase does not raise to [Spec,CP] at the surface structure. The wh-phrase gets coindexed with a null Question operator (Qu) which is raised to [Spec, CP] at S-structure. The Qu operator carries two functions, one of which is to determine the scope of the wh-element in-situ

and the second is to provide an antecedent for the *wh*-element. Aoun and Li argue that the facts supporting nonraising of *wh*-in-situ concern the interaction of the operator *only* with *wh*-in-situ. The Principle of Lexical Association (PLA) states that an operator like *only* must be associated with a lexical constituent in its c-command domain. To explain a grammatical structure in which *only* occurs with a *wh*-element in-situ a raising analysis of *wh* to [Spec, CP] at LF would suggest that PLA does not hold at LF. After analyzing structures with *only* and quantifier phrases, Aoun and Li conclude that PLA holds at LF. As a result, a raising analysis of *wh*-in-situ fails to explain the grammaticality of structures in which *only* and a *wh*-element in-situ cooccur. A nonraising analysis, on the other hand, correctly predicts the grammaticality of such structures. It is important to note that the claim that *wh*-forms in Mandarin Chinese do not undergo movement seems to be problematic because the *wh*-elements in Chinese are subject to the effects of ECP (as seen in argument vs. adjunct asymmetries.) In order to account for this, Aoun and Li propose that although the *wh*-word does not move, the null *Qu* operator, with which it is coindexed, moves from its base position in the clause containing the *wh*-word to [Spec, CP]. This movement of the *Qu* operator is subject to ECP which accounts for the asymmetry in the extraction of *wh*-arguments and *wh*-adjuncts.

Cole and Hermon (1994) argue that Aoun and Li (1993b)'s analysis for Chinese also works for the *wh*-constructions in Ancash Quechua in which the *wh*-in-situ gets coindexed with a null *Qu* operator in [Spec, CP] position of the matrix clause where it binds the *wh*-word. The fact that the distribution of *wh*-in-situ in Ancash Quechua is not subject to the ECP is a strong argument against the LF movement analysis. Cole and Hermon argue that

the wh-indexing analysis of Aoun and Li (1993b) provides a full explanation of wh-constructions in Ancash Quechua. They suggest that the difference between Chinese and Ancash regarding the effects of ECP can be explained by assuming that the Qu operator in Chinese undergoes movement to [Spec, CP], whereas the Qu in Ancash is generated in the matrix [Spec, CP], thus not undergoing movement.

Notes to Chapter 1:

1 The morphemes of case markers in Turkish are as follows:

- (i) Ø 'Nominative'
- (ii) -(y)I 'Accusative'
- (iii) -(y)A 'Dative'
- (iv) -DA 'Locative'
- (v) -DAn 'Ablative'
- (vi) -(n)In 'Genitive'
- (vii) -(y)lA 'Comitative'

The high vowel 'I' signifies an alternation of *ı, i, u, ü* ; the non-high vowel 'A' signifies either *e* or *a* ; and the consonant 'D' signifies either a voiced dentalveolar plosive *d* or its voiceless counterpart *t*. These alternations all take place according to the Vowel and Consonant Harmony Rules in Turkish. See Underhill (1976), Banguoğlu (1990), Demircan (1996) among others.

CHAPTER 2

The LF Wh-Movement Analysis

0. Introduction

As mentioned in the previous chapter, Turkish *wh*-structures do not involve a syntactic movement rule that places the *wh*-element to sentence initial position. However, even though the *wh*-element remains in-situ, it can take the structure under its scope. Consider the examples below:

- (1) a. Ali Zeynep-in kim-i ara-yacağ-ın-ı bil-iyor-du.
 Ali Zeynep-Gen who-Acc call-Nm-Poss(3sg)-Acc know-Prog-Past
 'Ali knew who Zeynep would call.'
- b. Ali Zeynep-in kim-i ara-yacağ-ın-ı bil-iyor-du?
 Ali Zeynep-Gen who-Acc call-Nm-Poss(3sg)-Acc know-Prog-Past
 'Who did Ali know Zeynep would call?'

The constituent structures of the sentences above are the same. Their interpretation, however, differs due to the scope of the *wh*-element *kim* 'who', which, in both cases, stays in-situ¹. (1a) is a declarative sentence with the *wh*-element having narrow scope over the embedded structure. (1b), on the other hand, is a matrix *wh*-question, whereby the *wh*-element takes the whole structure under its scope. The fact that the *wh*-phrase can take scope

over the matrix structure has led to the assumption, along the lines of Chomsky (1981, 1986) and May (1985), that these structures undergo a *wh*-movement rule not at S-structure but at the level of LF, which encodes the logico-semantic properties of the forms under discussion. (Akar, 1990; Özsoy, 1990; Kornfilt, 1996). A number of different phenomena present evidence for *wh*-movement to apply at LF. These are

- (i) selectional restrictions of the verb,
- (ii) locality conditions, and
- (iii) scope interaction.

In the rest of this chapter, it will be shown that these phenomena are also operative in the case of Turkish *wh*-structures.

1. Interpretation and the Selectional Restrictions of the Verb

The selectional restrictions of the matrix verb determine the interpretation of the structure. This feature of English and Turkish verbs respectively is explained uniformly only if movement of the *wh*-element at LF is assumed for Turkish structures as well. Consider the English and Turkish examples below:

- (2) a. [CP₂ He wonders [CP₁ what_i [you bought x_i]]]
- b. [CP₂ What_i does [he think [CP₁ you bought x_i]]]?
- (3) a. [CP₂ [CP₁ Sen-in ne al-dığ-ın]ı merak ediyor].
 You-Gen what buy-Nm-Poss-Acc wonder-Prog
 'He wonders what you bought.'

b. [_{CP2} [_{CP1} Sen-in ne al-dığ-in]_i sanıyor]?

You-Gen what buy-Nm-Poss-Acc think-Prog

'What does he think you bought?'

The S-structure representations above illustrate that the selectional restrictions of the verbs *wonder* and *merak et-* in (2a) and (3a), and *think* and *san-* in (2b) and (3b) are the same. The matrix verbs in examples in (a) select an embedded wh-question restricting the scope of the wh-phrase to the embedded clause. The examples in (b), on the other hand, are interpreted as matrix wh-questions. Even though the English structures overtly show this difference of interpretation at S-structure, there seems to be no indication of a difference in the S-structure representations of the Turkish structures. In (3b), the wh-word that occurs in-situ has a scope over the structure allowing it to be interpreted as a wh-question. The interpretation of this structure can only be explained by the covert movement of the wh-phrase at LF. Below are given the LF-representations of the Turkish sentences in (3):

(4) a. [_{CP2} [_{CP1} ne_i [_{IP} Sen-in x_i al-dığ-in]]_i merak ediyor]

b. [_{CP2} ne_i [_{CP1} [_{IP} Sen-in x_i al-dığ-in]]_i sanıyor]?

As seen above, the wh-element in the (a) sentence has scope over the embedded clause (CP1), whereas the wh-element in the second sentence takes the matrix clause under its scope by moving to the highest [Spec, CP] at LF. The similarity of the selectional restrictions of the English and Turkish verbs under discussion can be explained uniformly: The verbs *merak et-* and *wonder* select a [+wh] complement, whereas the verbs *san-* and *think* select a [-wh] complement.

2. Locality Conditions

Another argument supporting LF movement concerns the locality conditions. The (un)grammaticality of wh-structures involving an argument vs. a non-argument wh-phrase is accounted for if those structures are assumed to undergo LF movement. There seems to be a difference in the grammaticality of the 'extraction' of arguments vs. adjuncts. The extraction process leaves behind traces which are subject to the ECP. The argument wh-elements satisfy the ECP by being lexically governed. The traces left by wh-elements functioning as adjuncts, on the other hand, need to be antecedent governed in order to satisfy the ECP. This difference between arguments and adjuncts plays a major role in the grammaticality of structures involving movement out of the so called "syntactic islands":

- (i) sentential subjects
- (ii) complex NPs
- (iii) adjunct islands

2.1. Sentential Subjects

This section will account for the opposing grammaticality of the occurrence of a wh-argument and a wh-adjunct within a sentential subject in Turkish. This difference in grammaticality of such structures is explained by assuming the movement approach.

The English examples below illustrate Ross' Sentential Subject Constraint (SSC), which states that nothing can be extracted out of a sentential subject.

- (5) a. [CP [IP [NP [CP That the prime minister will be the president]]
upsets everyone except him.]]
- b. *[CP What_i [IP does [NP [CP that the prime minister will be e_i]]
upset everyone except him]]
- c. *[CP Who_j [IP does [NP [CP that e_j will be the president]] upset
everyone except him]]
- (Akar 1990:35-36)

Turkish also displays argument vs. adjunct asymmetry in the extraction of wh-phrases out of a sentential subject. The difference in the grammaticality of such structures can be accounted for by the LF movement approach as proposed by Özsoy (1990).

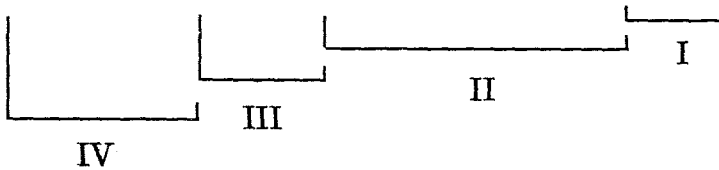
Consider the examples below ²:

- (6) a. [Zeynep-in **ne-(yi)** oku-ma-sı] herkes-i şaşırt-tı?
Zeynep-Gen what-(Acc) read-Nm-Poss everyone-Acc astonish-Past
'What is (x) such that [Zeynep's reading (x)] astonished everyone?'
- b. *? [Ne(yi)_i [Zeynep'in t_i okuması] herkesi şaşırttı?]
- (7) a. [Tatil-de **ne-(yi)** oku-mak] zevklidir?
vacation-Loc what-(Acc) read-Nm enjoyable-Cop
'What is (x) such that [reading (x) on vacation] is enjoyable?'
- b. ?[Ne(yi)_i [tatilde t_i okumak] zevklidir?]

- (8) a. [Ayşe-nin **ne-(yi)** oku-duğ-u] duy-ul-du?
 Ayşe-Gen what-(Acc) read-Nm-Poss hear-Pass-Past
 'What is (x) such that [Ayşe's reading (x)] was heard?'
 b. ?[**Ne(yi)**_i [Ayşe'nin t_i okuduğu] duyuldu]?

As seen in the (b) sentences above, the overt extraction of the wh-element out of the sentential subject renders the structures less acceptable, although not totally ungrammatical. The grammaticality of (a) sentences can be explained by assuming that the wh-movement rule applies at LF. The LF representation of (6a) is given below:

- (9) [CP₂ **neyi**_i [IP₂ [NP t_i' [CP₁ t_i' [IP₁ Zeynep'in [VP t_i' [VP t_i okuması]]]]]]
 herkesi şaşırttı]]



The structure observes the ECP in that the wh-element *ne* 'what', being the internal argument of the embedded verb *oku-* 'read', is theta-governed. The structure, however, poses problems for subjacency. The wh-element first adjoins to VP and then moves to the Spec position of the lower CP (CP1). It crosses IP1, which is a Blocking Category (as it is not L-marked), but not a barrier by itself. In Step III, the wh-element moves to the Spec position of the NP, the topmost node of the sentential subject. And in the last cycle, it moves to [Spec, CP₂] crossing NP and IP₂. NP is assigned an external theta-role not by the lexical category V, but by the maximal

projection VP. Thus, NP, not being L-marked, constitutes a barrier³. IP2, however, is a BC and inherits barrierhood by dominating NP. As a result, the structure is predicted to be ungrammatical. Özsoy (1990), however, argues that the unexpected grammaticality of this sentence does not, in fact, violate subjacency. Recall that the [+wh] feature of the wh-element percolates up to the dominating node if and only if the wh-element and the maximal node dominating it are categorially identical in terms of [+Noun] or [-Noun]. The feature specification [\pm N] is determined by θ -government, i.e., the phrase is marked [+N] if it is θ -governed and [-N] if it is θ' -governed. After feature percolation has taken place, the maximal node, bearing the [+wh] feature, can move to the matrix [Spec, CP] position allowing the wh-element to move within its own clause not violating subjacency. If we look at (9) again, we see that the wh-element, being θ -governed by the embedded verb *oku-* 'read', has the feature [+N]. The maximal node that dominates it is a sentential subject, which is, by nature, nominal and thus has the same feature, i.e., [+N]. This categorial identity triggers feature percolation, by which the sentential subject moves to the Spec position and the wh-element moves within its clause. Hence, the grammaticality of the sentence.

Similar to (6), the examples (7) and (8) illustrate the extraction of a θ -governed wh-elements out of a sentential subject. Below is given an example of the extraction of a θ' -governed wh-element out of a sentential subject:

- (10) a. *[O-nun niye gel-me-si] iyi ol-du?
 (s)he-Gen why come-Nm-Poss good be-Past
 'Why(x) was it good that he came (x)?'
 b. *Niye_i [onun t_i gelmesi] iyi oldu?

- (12) a. Sen [[kim-in yaz-dıĝ-ı] kitab] ı beĝen-di-n?
 you who-Gen write-Rel-Poss book-Acc like-Past-2sg
 'Who (x) is it such that you like the book x wrote?'
- b. *Sen [[o-nun niye yaz-dıĝ-ı] kitab] ı beĝen-di-n?
 you (s)he-Gen why write-Rel-Poss book-Acc like-Past-2sg
 'Why (x) is it such that you like the book (s)he wrote x?'
- (13) a. Sen [[kim-i davet ed-en] adam] a kız-dı-n?
 you who-Acc invite-Rel man-Dat get=angry=at-Past-2sg
 'Who (x) is it such that you are angry at the man who invited x?'
- b. *Sen [[Ayşe-yi niye davet ed-en] adam] a kız-dı-n?
 you Ayşe-Acc why invite-Rel man-Dat get=angry=at-Past-2sg
 'Why (x) is it such that you are angry at the man who invited Ayşe x?'

The relative clause (RC) in Turkish precedes the head noun it modifies. The verb in the RC is nominalized by the suffixes *-(y)An* or *-DIK* ⁴. The analysis of RC constructions within GB has centred around a movement approach in which the target noun has been extracted out of its clause (Özsoy 1994, Kornfilt 1997). Even though there is not an overt *wh*-element to bind the trace of the relativized head noun, it has been assumed that there is a phonologically null operator in the *Comp* position of the modifying clause which binds the trace of the noun after movement has taken place ⁵.

The grammatical (a) sentences in (12-13) illustrate that a *wh*-element may occur within an RC in Turkish. The fact that the *wh*-elements in (12a) and (13a) take scope over the matrix clauses has been explained by assuming that the *wh*-elements move to a scope position at the level of LF. The LF-representations of the sentences in (12-13) are given below in (14-15) respectively:

- (14) a. [CP kim-in_i [IP Sen [VP t_i" [VP [NP [CP t_i' [IP t_i t_j yaz-dıĝ-1] op_j] kitab_j]]
beĝen-di-n]]]]
- b. *[CP niye_i [IP Sen [VP t_i" [VP [NP [CP t_i' [IP o-nun t_i t_j yaz-dıĝ-1] op_j]
kitab_j]] beĝen-di-n]]]]
- (15) a. [CP kim-i_i [IP Sen [VP t_i" [VP [NP [CP t_i' [IP t_j t_i davet ed-en] op_j]
adam_j]a kız-dı-n]]]]
- b. *[CP niye_i [IP Sen [VP t_i" [VP [NP [CP t_i' [IP t_j Ayşe-yi t_i davet ed-en] op_j]
adam_j]a kız-dı-n]]]]

As seen above, the phonologically empty operator that binds the trace of the head noun occurs in the Comp position of the relative clause. The wh-element, however, moves to the matrix [Spec, CP] and this LF movement results in opposing grammaticality. These structures are explained by Özsoy (1990)'s analysis: In (14a) and (15a), the wh-elements are arguments of the verbs *yaz-* 'write' and *davet et-* 'invite' respectively, and are, thus, θ -governed. Being θ -governed elements, they are [+N]. As they occur within a complex NP, which is by nature [+N], they percolate their [+wh] feature to the complex NP, which, then, moves to the matrix Spec position, not violating subadjacency. As the wh-elements are theta-governed, the empty categories left after movement obey the ECP.

The wh-elements in (14b) and (15b), on the other hand, are adjuncts, and thus, θ' -governed by the verbs *yaz-* and *davet et-* respectively. Being θ' -governed they have the feature [-N]. As they are dominated by a [+N] category (i.e., the complex NP) feature percolation does not take place and

this leads to the movement of the θ' -governed wh-element to the matrix Spec position violating subjacency. The structures display an ECP violation, as well. The wh-elements, being θ' -governed, need to be antecedent-governed. The lowest trace t_i is antecedent-governed by t'_i , which, itself, is not properly governed since two barriers, i.e., NP and CP of the complex NP, block government by its antecedent. Hence the ungrammaticality of (14b) and (15b).

2.3. Adjunct Phrases

Like the structures discussed in 2.1. and 2.2. above, the difference in the grammaticality of structures which contain a wh-element within an adjunct phrase is accounted for by assuming that the wh-elements move at LF. Consider the examples below:

- (16) a. Ayşe [kim-i gör-ünce] ürk-tü?
 Ayşe who-Acc see-Ger get=scared-Past
 'Who (x) is it such that Ayşe got scared [when she saw x]?'
 b. *Kimi_i Ayşe [t_i görünce] ürktü?
- (17) a. *Ayşe [Orhan neden bağır-ınca] ürk-tü?
 Ayşe Orhan why shout-Ger get=scared-Past
 'Why is it such that Ayşe got scared [when Orhan shouted x]?'
 b. *Neden_i Ayşe [Orhan t_i bağırınca] ürktü?

The sentences in (16-17) contain a temporal clause formed by the gerundive suffix *-(y)Inca*. As seen above, the occurrence of a θ -governed question element in the adjunct clause is grammatical; whereas the occurrence of a θ' -governed question element results in ungrammaticality.

Note that the overt extraction of the *wh*-element to S-initial position is ungrammatical in both cases. This argument-adjunct asymmetry has led to the assumption that the *wh*-elements move to a scope position at LF. The argument *wh*-words are properly governed by θ -government; the adjunct *wh*-words, however, are not. (17a), thus, violates ECP, hence the ungrammaticality.

There are, however, grammatical interrogative structures in Turkish in which a θ '-governed *wh*-element occurs within a clause functioning as the adjunct of the matrix verb:

- (18) a. Ayşe [Ali-yi nerede gör-ünce] ürk-tü?
 Ayşe Ali-Acc where see-Ger be=scared-Past
 'Where (x) is it such that Ayşe got scared when she saw Ali (x)?'
 b. *Nerede_i Ayşe [Ali-yi t_i gör-ünce] ürk-tü?
- (19) a. Ayşe [Ali-yi ne zaman gör-ünce] ürktü?
 Ayşe Ali-Acc when see-Ger be=scared-Past
 'When (x) is it such that Ayşe got scared when she saw Ali (x)?'
 b. *Ne zaman_i Ayşe [Ali-yi t_i gör-ünce] ürk-tü?

Contrary to the example in (17), the occurrence of a θ '-governed *wh*-element within an adjunct clause is grammatical in (18) and (19). The overt extraction of the *wh*-element, however, results in ungrammaticality. Özsoy (1990)'s LF-movement analysis predicts the grammaticality of (18) and (19): The *wh*-elements in both sentences are adjuncts; and are, thus, marked [-N]. The maximal node dominating them is a temporal clause which is also an adjunct. This categorial identity triggers feature percolation by which the [+*wh*] feature of the *wh*-element percolates up to the temporal clause, which, then moves to S-initial position at LF allowing the *wh*-element to move

within its own clause. As the *wh*-adjunct does not cross any barriers it antecedent-governs its trace and obeys the ECP. However, this account still cannot explain why (17a) is ungrammatical ⁶.

3. Scope

So far, we have looked at two sets of arguments in support of the LF *wh*-movement analysis: (i) interpretation and the selectional restrictions of the verb, and (ii) locality conditions. This section will provide a third argument by discussing the scope of *wh*-elements over quantifiers, which are assumed to raise to a scope position at LF. Below is given a brief discussion of May (1985) and Aoun and Li (1993a).

3.1. May (1985)

May (1985) states that LF is a level of representation which interfaces linguistic form and interpretation by mapping syntactic structures onto logical representations. He defines scope as follows:

(20) The scope of α is the set of nodes that α c-commands at LF. (p. 5)

The general rule Move-Alpha characterizes both overt movement and Quantifier Raising (QR) which gives rise to structures in which a quantifier phrase (QP) moves to an A'-position to take scope over its domain:

- (21) a. Every student admires some professor.
 b. [_{S'} [_S every student₂ [_S some professor₃ [_S e₂ admires e₃]]]]
 c. [_{S'} [_S some professor₃ [_S every student₂ [_S e₂ admires e₃]]]]

As QR and wh-movement share certain QR properties, it might be argued that the LF representations of QR are subject to the ECP, as well. The effect of ECP should differentiate between (21b) and (21c). The empty category in the internal argument position (e_3) satisfies the ECP through theta government. The empty category in the external argument position (e_2), however, is not properly governed in sentence (21b). Being in the external argument position it can only satisfy ECP via antecedent government, but this is blocked by the intervening phrase [some professor]. The LF representation in (21c) satisfies the ECP in that both of the empty categories are properly governed, e_2 by antecedent-government, and e_3 by theta-government.

The question now arises as to how the ambiguity of (21a) will be represented. May argues that (21c), in fact, represents both interpretations in which either the some-phrase or the every-phrase takes broader scope. The quantified phrases are adjoined to S and have the same c-command domain, i.e., they c-command each other. Therefore, the quantifiers in this structure are free to take on any type of relative scope relation. May refers to this assumption as the **Scope Principle**. He also assumes the Path Containment Condition of Pesetsky (1982):

(22) Path Containment Condition (PCC)

Intersecting A'-categorial paths must embed, not overlap. (A path is a set of occurrences of successively immediately dominating categorial nodes connecting a bindee to its binder.) (May, 1985: 118)

He analyzes structures exemplifying QP/wh-interaction along the line of his Scope Principle and the PCC:

(23) What did everyone buy for Max?

(24) Who bought everything for Max?

Above are given two structures involving both a quantifier phrase and a wh-element. In (23) the QP functions as the external argument, whereas the wh-element is the internal argument of the verb. In (24), on the contrary, the QP is the internal argument and the wh-element the external argument. The sentence in (23) displays an ambiguity: it may be understood either as a single question or as a distributed question. The sentence in (24), however, does not display such ambiguity and has only the interpretation of a single question. The LF representations of these sentences are as follows ⁷:

(25) [CP What₂ [IP everyone₃ [IP e₃ bought e₂ for Max]]]

(26) a. *[CP Who₃ [IP everything₂ [IP e₃ bought e₂ for Max]]]

b. [CP Who₃ [IP e₃ [VP everything₂ [VP bought e₂ for Max]]]]

The LF-representation of (23) given in (25) obeys the PCC in that the A'-categorical paths do not overlap. The structure also obeys the Scope Principle since both the wh-phrase and the quantifier phrase have the same c-command domain (i.e., IP) and govern one another. This represents the ambiguity of the relative scopes of 'what' and 'everyone'.

The LF-representation of (24) given in (26a) violates the PCC since the paths of the wh-element and the quantifier phrase do not embed. May

proposes the LF-representation given in (26b) instead, in which the internal argument quantifier phrase adjoins not to IP but to VP. As the c-command domains of the *wh*-element and the QP are different the structure does not satisfy the Scope Principle. This gives rise to the default procedure for scope determination, that is, the hierarchical structure of the constituents. In (26b), then, the *wh*-element has broader scope than the quantifier phrase and this accounts for the nonambiguity.

3.2. Aoun and Li (1993a)

Aoun and Li (1993a), by examining data from Mandarin Chinese (henceforth Chinese) and Spanish, show that the contrast between the ambiguity of sentences like (23) and the nonambiguity of sentences like (24) cannot be accounted for by the PCC. They argue that Chinese does not display effects of the PCC as seen in examples of raising out of a *wh*-island (p.46, ex. (18)):

- (27) Ta xiang-zhidao shei mai shenme?
 he wondered who buy what
 a. 'Who (x), he wondered what (y) x bought y?'
 b. 'What (y), he wondered who (x) x bought y?'

The fact that the interpretation given in (27a) is acceptable in Chinese indicates that PCC is not at work in this language. Aoun and Li, then, discuss the Chinese counterparts of the English structures in (23) and (24) (p. 50, ex. 22):

- (28) a. Meigeren dou (gei Zhangsan) maile shenme?
 everyone all for Zhangsan bought what
 'What did everyone buy (for Zhangsan)?'
- b. Shei (gei Zhangsan) maile meige dongxi?
 who for Zhangsan bought every thing
 'Who bought everything (for Zhangsan)?'

Since PCC is not relevant in Chinese, (28a-b) can have the LF-representations given in (29a-b) (p. 50, ex. 23):

- (29) a. [_{CP} shenme_j [_{IP} meigeren_i [_{IP} x_i maile x_j]]]
 what everyone bought
- b. [_{CP} shei_i [_{IP} meige dongxi_j [_{IP} x_i maile x_j]]]
 who every thing bought

Unlike the LF-representation (26a) of the English sentence (24), the LF-representation (29b) of the Chinese sentence (28b) is well-formed since PCC is not at work in Chinese. (29a) is interpreted to be ambiguous in that either the *wh*-element or the *QP* can take broader scope. May's analysis predicts (29b) to be ambiguous, too, since, again, the two operators have the same *c*-command domain and govern each other. The sentence in (29b), however, is unambiguous. Thus, May's analysis fails to account for the contrast in the Chinese sentences (28a-b) which are similar to the one in the English sentences (23-24).

Aoun and Li (1993a) argue that the contrast in the ambiguity of both the English sentences (23-24) and the Chinese sentences (28a-b) can be accounted for by the Minimal Binding Requirement and the Scope Principle given below:

(30) Minimal Binding Requirement (MBR)

Variables must be bound by the most local potential A'-binder.

(E is an A'-binder for x if it c-commands x and is in an A'-position)

(31) The Scope Principle

A quantifier A may have scope over a quantifier B if and only if A c-commands a member of the chain containing B.

(p. 19)

Consider the LF-representations (25-26) of the English sentences (23-24) repeated below:

(25) [CP What₂ [IP everyone₃ [IP e₃ bought e₂ for Max]]]

(26) [CP Wh₀₃ [IP e₃ [VP everything₂ [VP bought e₂ for Max]]]

In (25), the most local A'-binder for the subject empty category (e_3) is the quantifier 'everyone' which occurs in an IP-adjoined position. The most local A'-binder for the object empty category (e_2) is again the quantifier 'everyone'. However, the coindexation of e_2 and 'everyone' would lead to the coindexation of the external and internal arguments of the verb 'buy', which would, in turn, lead to a Principle C violation. Thus, the most local and "potential" A'-binder for e_2 is the wh-element 'what' in [Spec,CP] position. The ambiguous interpretation of the structure is predicted by the Scope Principle. The wh-element may take broader scope as it c-commands the quantifier phrase. The quantifier phrase, in the other reading, may take broader scope as it c-commands the trace bound by the wh-element.

In (26), the most local potential A'-binder for e_2 is the VP-adjoined quantifier 'everything'. The most local potential A'-binder for e_3 , however, is the wh-element 'who' in [Spec, CP] position. As neither of the operators c-command an A'-element in the chain containing each other, the Scope Principle does not come into play, as a result of which the wh-element in [Spec, CP] position takes wide scope over the structure.

Similarly, the Chinese data in (27-28), which cannot receive an explanation by the PCC, can be accounted for by the MBR and the Scope Principle as discussed by Aoun and Li (1993a).

3.3. Application to Turkish

This section shows that the analysis of the scope interaction between the quantifiers and the wh-elements in Turkish is accounted for by the LF movement analysis similar to the case observed in Chinese by Aoun and Li (1993a). Consider the examples below:

- | | | |
|------|--|-------------|
| (32) | Herkes ne gör-dü?
everyone what see-Past
'What did everyone see?' | ambiguous |
| (33) | Kim herşey-i gör-dü?
who everything-Acc see-Past
'Who saw everything?' | unambiguous |

The structure in (32) is ambiguous in that the question may either be interpreted as a single question, in which the thing seen by everyone is one and the same thing; or as a distributed question, in which everybody has

seen something different. The only interpretation of the structure given in (33), however, is the one in which the person who saw everything is the focus of question. The LF-representations of (32-33) are given in (34-35) respectively:

(34) $[_{CP} ne_j [_{IP} herkes_i [_{IP} x_i [_{VP} t_j [_{VP} x_j gör-dü]]]]]$

(35) $[_{CP} kim_i [_{IP} x_i [_{VP} herşeyi_j [_{VP} x_j gör-dü]]]]]$

In the LF-representation (34), the most local potential A'-binder for x_j is t_j ; for x_i it is the quantifier 'herkes' that is in the IP-adjoined position. Even though the most local antecedent for t_j seems to be the quantifier 'herkes', it is not the "potential" A'-binder since the coindexation of the QP and t_j would create a violation of Principle C as it would lead to the coindexation of the subject and the object. The most local "potential" A'-binder for t_j is, then, the wh-element 'ne' in [Spec, CP] position. The ambiguity of the structure is predicted by the Scope Principle since the wh-element c-commands the QP 'herkes', and the QP, in turn, c-commands the intermediate trace of the wh-element.

In the LF-representation (35), on the other hand, the most local potential binder for x_i is the wh-word 'kim' in [Spec, CP] position; and the most local potential binder for x_j is the QP 'herşey' that has adjoined to the VP. The Scope Principle does not play a role since neither the QP nor the wh-element c-commands a member in the A'-chain of each other. As a result, the wh-element, which is hierarchically in the highest position, has wide scope over the QP in this structure.

To sum up, the scope interaction of wh-elements and quantifier phrases within a structure has been explained by LF-movement approach by which both the wh-element and the quantifier phrase raise to an A'-position in order to reflect their scopal properties to their c-command domains. The interpretation of the Turkish sentences (32-33) has provided an argument for the LF wh-movement analysis similar to the one observed in Mandarin Chinese by Aoun and Li (1993a).

4. Conclusion

This chapter has provided arguments for the LF movement analysis of Turkish wh-structures, which do not involve a syntactic movement rule placing the wh-element to a scope position at S-structure. Within this analysis, the wide scope of the in-situ wh-element has been explained by assuming that it moves to [Spec, CP] position successive cyclically at the level of LF where it reflects its scopal properties and takes the structure under its scope.

Notes to Chapter 2:

- 1 The different intonational patterns of the structures in (1a-b) are also an evidence for the scope difference of the wh-element.
- 2 Embedded verbs in Turkish are nominalized by being marked with the following suffixes:
 - (i) -mA, the verbal noun (VN) marker, which is an inflected infinitive;
 - (ii) -mA_K, the control infinitive marker;
 - (iii) -DIK/-(y)AcAK, the non-future and the future nominalizing suffixes
- 3 See the definition of L-marking. (Chomsky 1986:15)
- 4 See Hankamer and Knecht (1976), Zimmer (1990), Özsoy (1994) and Kornfilt (1997) for the discussion of the choice of the participial suffixes.
- 5 In Turkish, which is a head-final language, the Comp position occurs after the IP.
- 6 The different behavior of reason clauses will be discussed in the following chapters.
- 7 In the LF-representations given here, the nodes of CP and IP are used instead of May's classification of S' and S.

CHAPTER 3

Counter-Examples to Wh-Movement Analysis

0. Introduction

This chapter aims at looking at wh-structures which do not receive an explanation by the LF wh-movement analysis discussed in the previous chapter. The structures which constitute counter-examples to the approach mentioned are grouped as follows:

- (a) Adjunct wh-phrases
 - i. within a sentential subject
 - ii. within postpositional phrases
- (b) scope interaction- revisited

1. Adjunct Wh-Phrases

1.1. Sentential Subjects

As discussed in the previous chapter in 2.1., extraction out of sentential subject clauses is explained by the LF wh-movement analysis of Özsoy (1990) which centers around "categorial identity" and "feature percolation". There are, however, similar structures whose grammaticality cannot be explained by the analysis proposed. This section will exemplify

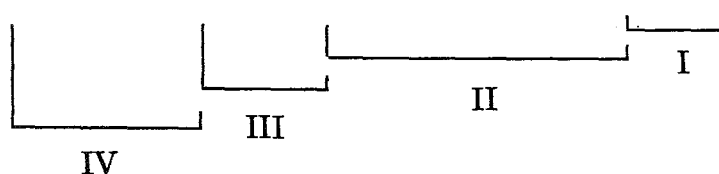
those structures involving sentential subjects which remain problematic for the LF-movement analysis. Recall example (6) of the previous chapter repeated here as (1):

(1) a. [Zeynep-in **ne-(yi)** oku-ma-sı] herkes-i şaşırt-tı?

Zeynep-Gen what-(Acc) read-Nm-Poss everyone-Acc astonish-Past

'What is (x) such that [Zeynep's reading (x)] astonished everyone?'

b. [_{CP2} **neyi**_i [_{IP2} [_{NP} **t_i^{'''}** [_{CP1} **t_i^{''}** [_{IP1} Zeynep'in [_{VP} **t_i'** [_{VP} **t_i** okuması]]]]]]
herkesi şaşırttı]]



In the LF-representation of (1a) given in (1b), the traces of the wh-complement of the verb *oku-* 'read' are properly governed under lexical government. The structure, thus, obeys the ECP. However, the intermediate trace t_i''' in [Spec, NP] seems to cross two barriers in the fourth cycle: the NP and the IP which inherits barrierhood by dominating NP. The structure displays a subjacency violation but is still grammatical. The grammaticality of the sentence is predicted by Özsoy (1990)'s analysis in which the categorial identity of the wh-element and the sentential clause dominating it triggers feature percolation after which the whole clause moves to [Spec, CP] allowing the wh-element to move within its own clause.

The LF-movement analysis as proposed by Özsoy (1990) accounts for the ungrammaticality of the extraction of a wh-adjunct denoting reason out of a sentential subject, as well. The example is repeated below in (2):

- (2) a. *[O-nun niye gel-me-si] iyi ol-du?
 (s)he-Gen why come-Nm-Poss good be-Past
 'Why(x) was it good that he came (x)?'
- b. *[CP₂ niye_i [IP₂ [NP t_i' [CP₁ t_i' [IP₁ O-nun [VP t_i' [VP t_i gelmesi]]]]]]
 iyi oldu]]

Similar to (1), the intermediate trace of the wh-adjunct crosses two barriers, NP and IP, and violates subjacency. The structure also displays an ECP violation. The wh-element is an adjunct and the traces created by movement need to be antecedent-governed. The intermediate trace in [Spec, NP] fails to be properly governed since two barriers intervene. The LF-movement analysis (Özsoy, 1990) predicts the ungrammaticality of the structure. The wh-element is θ -governed and, thus, has the feature [-N]. The sentential subject, on the other hand, has the feature [+N]. As there is no categorial identity, feature percolation does not take place, as a result of which the wh-adjunct *niye* 'why' moves to [Spec, CP] and violates both subjacency and the ECP.

As opposed to (2), there are grammatical structures involving a sentential subject which contains wh-adjuncts other than *niye* 'why' discussed above. These structures provide counter arguments for the LF-movement analysis. Consider the examples below:

- (3) a. [CP₂ [NP [CP₁ Film-in kaçta başla-yacağ-ı]] duy-ur-ul-du]?
 film-Gen when begin-Nm-Poss hear-Caus-Pass-Past
 'When (x) is it such that the film was announced to begin x?'
- b. *[CP₂ Kaçta_i [NP [CP₁ film-in t_i başla-yacağ-ı]] duy-ur-ul-du]?
- (4) a. [CP₂ [NP [CP₁ Yarışma-nın nasıl ol-ma-sı]] daha cazip]?
 contest-Gen how be-Nm-Poss more appealing
 'How (x) is it appealing such that the contest is x?'
- b. *[CP₂ Nasıl_i [NP [CP₁ yarışma-nın t_i ol-ma-sı]] daha cazip]?

- (5) a. [_{CP2} [_{NP} [_{CP1} Yazın nerede tatil yap-mak]] keyifli]?
 in=summer where vacation do-Nm enjoyable
 'Where (x) is it such that going on a vacation x is fun?'
 b. * [_{CP2} Nerede_i [_{NP} [_{CP1} yazın t_i tatil yap-mak]] keyifli]?

The examples above illustrate the occurrence of adjuncts denoting time (3a), manner (4a) and place (5a) within a sentential subject. As seen in (b) sentences, the overt extraction of the wh-adjuncts results in ungrammaticality in all cases. The grammaticality of (a) sentences, however, is not predicted by the analysis put forth for (1) and (2). The wh-element, being an adjunct, is marked [-N]; whereas the sentential clause dominating it, being the subject, has the feature [+N]. This prevents feature percolation as a result of which the wh-element is predicted to move to the [Spec, CP] position crossing two barriers, NP and IP. Under the given analysis, the structure is predicted to be ungrammatical since it displays a violation of both subjacency and the ECP. Therefore, the LF-movement analysis fails to explain the grammatical structures in (3-5).

1.2. Postpositional Phrases

The PP in the following examples is a non-argument of the verb, hence occupies an A'-position. As the discussion below illustrates, the structures in which a wh-element is extracted out of a PP at LF do not receive a full explanation by the LF wh-movement analysis.

Consider the examples below. The (b) sentences are the LF representations of the sentences in (a):

- (6) a. Ali Ankara-ya kim-i ziyaret et-mek için git-ti?
 Ali Ankara-Dat who-Acc visit do-Nm in=order=to go-Past
 'Who (x) is it such that Ali went to Ankara to visit x?'
- b. [_{CP2} **Kimi**_i [_{IP2} Ali_j [_{VP} **t_i**' [_{VP} [Ankara'ya] [_{PP} **t_i**' [_{CP1} **t_i**' [_{IP1} PRO_j [_{VP} **t_i**' [_{VP} **t_i** ziyaret etmek]]]] için] gitti]]]]]
- c. *Kimi Ali Ankara'ya ziyaret etmek için gitti?
- (7) a. Ali Ankara-ya nerede çalış-mak için git-ti?
 Ali Ankara-Dat where work-Nm in=order=to go-Past
 'Where (x) is it such that Ali went to Ankara to work x?'
- b. [_{CP2} **Nerede**_i [_{IP2} Ali_j [_{VP} **t_i**' [_{VP} [Ankara'ya] [_{PP} **t_i**' [_{CP1} **t_i**' [_{IP1} PRO_j [_{VP} **t_i**' [_{VP} **t_i** çalışmak]]]] için] gitti]]]]]
- c. *Nerede Ali Ankara'ya çalışmak için gitti?

The sentence in (6) illustrates the extraction of the *wh*-argument *kim* out of a PP. As seen in (6c), overt extraction of the *wh*-element results in ungrammaticality. (6b) illustrates the LF representation of the structure under the LF *wh*-movement analysis. The structure obeys the ECP since the *wh*-element, being the internal argument of the verb *ziyaret et-* 'visit', is θ -marked under lexical government. The *wh*-argument moves successive cyclically and first adjoins to the VP leaving behind a trace. In the second cycle, it moves to [Spec, CP1] position crossing IP1 which is a BC but not a barrier on its own. The *wh*-element, then, moves to the Spec position of the PP of which it is a constituent. In this movement, it crosses CP1 which is L-marked by the postpositional head *için*, and hence not a barrier. The *wh*-element adjoins to the matrix VP in the fourth cycle and crosses PP which, being an adjunct phrase, is not L-marked, thus a BC and a barrier. In the

last cycle, the wh-element moves to the highest Spec position crossing over IP2 which is a BC, but not a barrier.

As the wh-element in (6) crosses a barrier (PP) in the fourth cycle the structure is said to be a weak subjacency violation.

In the sentence in (7), the wh-element is an adjunct of the embedded verb *çalış* 'work'. Like the one in (6), it first adjoins to VP, then moves to [Spec, CP1] crossing IP1, a BC but not a barrier. The third cycle involves the movement of the wh-element to [Spec, PP] position crossing over the L-marked CP1. The wh-element, then, adjoins to the matrix VP and crosses the barrier PP. The wh-element, lastly, moves to the [Spec, CP2] position where it takes the whole structure under its scope. As the wh-element moves over the barrier PP, the structure, similar to (6), is a weak subjacency violation. The traces are not θ -governed as the wh-element is an adjunct. Thus, ECP must be satisfied via antecedent government. The wh-element *nerede* in [Spec, CP2] governs t_i'' which is in the Spec position of the adjoined VP. t_i'' in [Spec, CP1] is governed by the preceding trace in [Spec, PP]. t_i' and t_i are also antecedent governed. The intermediate trace in [Spec, PP], however, is not antecedent governed because PP constitutes a barrier for government. Even though the structure is predicted to be ungrammatical, it is not. The approach outlined in Özsoy (1990) analyzes structures of this sort through categorial identity and feature percolation. The wh-element is an adjunct and the PP (in which the wh-element occurs) is also an adjunct within the matrix clause. Being categorially identical in the sense of [$\pm N$], ($[-N]$ in this case), the [+wh] feature of the wh-element percolates up to the PP and allows the whole phrase to move to the highest Spec position at LF. Thus, the wh-element is said to move within its own clause not violating ECP.

This analysis, however, has certain problems concerning the process of feature percolation as to what determines the topmost node that receives the [\pm wh] feature of the wh-element. According to this analysis, the maximal projection that receives [+wh] in the structure in (7) is the PP. However, the wh-element occurs within the CP which functions as the complement of the postpositional head *için*. The question that is left unexplained in this analysis is what predicts that the [+wh] feature of the question word crosses the CP it occurs in and percolates up to the PP.

2. Scope Interaction-Revisited

Within the GB framework, quantifiers are assumed to undergo movement to a scope position at LF by "Quantifier Raising". In the previous chapter, the scope interaction between quantifiers and wh-elements has been explained by the LF wh-movement analysis. This section presents examples of QP/wh-interaction which cannot be accounted for by LF-movement. The examples which raise problems for the analysis include a wh-in-situ and the operator *yalnızca* 'only' specifically. Recall the examples (32-33) of Chapter 2 repeated below as (8-9):

- (8) a. Herkes ne gör-dü? ambiguous
 everyone what see-Past
 'What did everyone see?'
 b. [_{CP} ne_j [_{IP} herkes_i [_{IP} x_i [_{VP} t_j [_{VP} x_j gör-dü]]]]]
- (9) a. Kim herşey-i gör-dü? unambiguous
 who everything-Acc see-Past
 'Who saw everything?'
 b. [_{CP} kim_i [_{IP} x_i [_{VP} herşeyi_j [_{VP} x_j gör-dü]]]]]

The ambiguity of (8) and the nonambiguity of (9) have been explained by Aoun and Li (1993a)'s Minimal Binding Requirement and the Scope Principle assuming the movement approach ((30-31) of the previous chapter). However, the structures exemplifying the interaction of *wh*-in-situ and the operator *yalnızca* 'only' are left unexplained by LF-movement (see (17) below).

Aoun and Li (1993b:206) argue that the operator 'only' is associated with an element in its c-command domain as seen in the English examples below:

- (10) He only likes Mary (he doesn't love her).
 (11) He only likes Mary (he doesn't like Sue).

The interpretation of these sentences indicate that the operator 'only' gets associated with the verb phrase in (10) and with the object in (11). The object associated with 'only' cannot undergo syntactic movement such as topicalization or *wh*-movement as exemplified below (Aoun and Li, 1993b:206):

- (12) * $Mary_i$, he only likes x_i .
 (13) * Who_j does he only like x_j ?

Aoun and Li argue that the restriction that 'only' cannot undergo topicalization or *wh*-movement can be captured by Tancredi (1990)'s Principle of Lexical Association:

(14) Principle of Lexical Association

An operator like *only* must be associated with a *lexical* constituent in its c-command domain.

In the ungrammatical structures in (12-13), the operator *only* fails to be associated with a lexical constituent, and instead gets associated with x_i in (12) and x_j in (13), thus, violating the PLA.

The generalization concerning the operator *only* is at work in the case of the Turkish *yalnızca* 'only' as well. Consider the following:

(15) *Ayşe-yi_i o yalnızca x_i sev-er.

Ayşe-Acc he only love-Aor

'*Ayşe_i, he only likes x_i .'

(16) *Kim-i_j o yalnızca x_j sever?

Who-Acc he only love-Aor

'*Who_j does he only like x_j ?'

In (15), the internal argument has undergone topicalization. In (16), the *wh*-element functioning as the internal argument has undergone overt movement. The operator *yalnızca* 'only' gets associated not with a lexical constituent but with a trace in both cases. Hence the ungrammaticality.

Let us now look at the scope interaction of the operator *yalnızca* 'only' and the *wh*-elements that have been discussed to undergo movement at LF.

(17) Ayşe yalnızca kim-i sev-iyor?

Ayşe only who-Acc love-Prog

'Ayşe only loves whom?'

A simplified LF-representation of this sentence under the LF wh-movement analysis is given below:

(18) [_{CP} *kimi*_i [_{IP} *Ayşe yalnızca x_i seviyor*]]

With this LF-representation, the structure is predicted to be ungrammatical since the operator *yalnızca* 'only' fails to get associated with the lexical item *kim* 'who', and violates the PLA. The structure, however, is totally grammatical. In order to explain the unexpected grammaticality of this structure, it may be assumed that the PLA does not hold at LF in Turkish. Following the discussion in Aoun and Li (1993b), this assumption can be tested by the passive constructions given below:

- (19) a. *Herkes biri tarafından rahatsız ed-il-iyor.* (ambiguous)
 everyone someone by discontented make-Pass-Prog
 'Everyone is disturbed by someone'
- b. *Herkes yalnızca biri tarafından rahatsız ed-il-iyor.* (unambiguous)
 everyone only someone by discontented make-Pass-Prog
 'Everyone is disturbed only by someone'

The sentence in (19a) displays an ambiguity whereby either QPs *herkes* 'everyone' and *biri* 'someone' may take wide scope. The person who disturbs everyone may either be one and the same person, or a different one for each person. The sentence in (19b), on the contrary, is unambiguous in that everyone has been disturbed by the same person. The lack of ambiguity in (19b) can be explained only if the PLA is assumed to hold at the level of LF as well as at S-structure. Under this assumption, the raising of the

quantifier *biri* 'someone' to a higher position in the structure leaving behind a trace would lead to the violation of PLA since the operator *yalnızca* 'only' would, then, fail to get associated with a lexical constituent in its c-command domain. Assuming PLA to hold at LF, the quantifier *biri* 'someone' does not move over the operator *yalnızca* 'only' it is associated with. The scope interaction of the two quantifiers is, then, determined by their hierarchical structure. The quantifier *herkes* 'everyone', being in a higher position, takes broader scope yielding the only reading of the structure.

Recall the sentence in (17), which exemplifies the interaction of wh-in-situ and *yalnızca* 'only'. The discussion above has indicated that a raising analysis of wh-in-situ fails to account for the grammaticality of such structures in which *yalnızca* 'only' and a wh-element in-situ cooccur. A non-raising analysis, on the other hand, would correctly predict the grammaticality of such structures.

Now consider the examples (20-21) below which illustrate the interaction of *yalnızca* 'only', QP and a wh-in-situ:

(20) a. [Ali [herkes-in ne al-diğ-in]_i söyle-di]? (ambiguous)

Ali everyone-Gen what buy-Nm-Poss-Acc say-Past
 'What did Ali say everyone bought?'

b. [_{CP2} ne_j [_{IP2} Ali [_{CP1} t_j' [_{IP1} herkesin_i [_{IP1} x_i [_{VP} t_j [_{VP} x_j aldığın]]]]]]]_i söyledi]]

In (20b) is given the LF-representation of (20a) under the wh-movement approach. This structure is ambiguous in the sense that it may be interpreted either as a single question, in which everyone bought the same thing; or as a distributed question, in which everyone bought something different. The ambiguity of this structure receives an explanation by the

Scope Principle of Aoun and Li (1993a). The *wh*-element *ne* 'what' may take broad scope as it *c*-commands the *QP* *herkes* 'everyone'. The *QP*, however, may have broad scope as it *c*-commands the intermediate trace bound by the *wh*-element. Thus, the LF *wh*-movement analysis does not raise any problems in accounting for the grammaticality and the ambiguity of this structure. Now consider the example below which differs from (20) only by the existence of the operator *yalnızca* 'only':

- (21) a. ? [Ali [herkes-in yalnızca ne al-diğ-in] söyle-di]? (unambiguous)
 Ali everyone-Gen only what buy-Nm-Poss-Acc say-Past
 'Ali only said everyone bought what?'

Unlike (20), (21) does not display ambiguity. The only interpretation of this sentence is the one in which the *wh*-element *ne* 'what' takes broader scope over the quantifier *herkes* 'everyone', which gives the interpretation that everybody bought the same thing. The raising analysis, however, would predict the structure to be ambiguous as the LF-representation below illustrates:

- (21) b. [_{CP2} ne_j [_{IP2} Ali [_{CP1} t_j' [_{IP1} herkesin_i [_{IP1} x_i [_{VP} t_j [_{VP} yalnızca x_j aldığın]]]]]]] söyle-di]]

The LF-representation above is similar to (20b) in that the *wh*-element *ne* 'what' *c*-commands the *QP* *herkes* 'everyone' and the *QP*, in turn, *c*-commands the intermediate trace of the *wh*-element. This, according to the Scope Principle, predicts the structure to be ambiguous, which, however, is not the case. Moreover, there is a PLA violation as *yalnızca* 'only' is associated with a trace in its *c*-command domain. As a result, the raising analysis of *wh*-in-situ cannot provide an explanation for this structure.

3. Conclusion

This chapter has provided examples that are left unexplained by the LF wh-movement analysis which was discussed in detail in Chapter 2. The structures which fail to receive an explanation include examples that involve adjunct wh-phrases within a sentential subject (section 1.1.); adjunct wh-phrases within postpositional phrases (section 1.2.); and structures in which the wh-element cooccurs with the operator *yalnızca* 'only' (section 2). The raising analysis of wh-in-situ predicts these structures to be ungrammatical and/or ambiguous contrary to the fact. A non-raising analysis, on the other hand, correctly predicts the grammaticality of the structures mentioned. The next chapter will discuss the representation of the non-raising analysis of wh-in-situ in detail.

CHAPTER 4

The Wh-Indexing Analysis

0. Introduction

The previous chapter has illustrated that the LF-movement analysis fails to account for the wh-constructions in Turkish similar to the cases in Mandarin Chinese and Ancash Quechua. The interaction of wh-elements in situ with quantifier phrases and the operator *yalnızca* 'only' has shown that the properties of wh-structures that are left unexplained can only be accounted for by a non-raising analysis which assumes that the wh-element does not move to [Spec, CP] position at any level of representation. The analysis proposed for Mandarin Chinese by Aoun and Li (1993b), and applied to Ancash Quechua by Cole and Hermon (1994) explains how the wh-element that remains in situ takes matrix scope by assuming that the wh-element gets coindexed with a phonologically null question operator, represented as Qu, that is base generated in the [Spec, CP] through which it reflects its scopal properties over the entire structure.

This chapter will analyze the application of the wh-indexing approach to Turkish wh-constructions and discuss the selectional restrictions, the syntactic islands which display argument-adjunct asymmetry in the "extraction" of wh-phrases, and the scope interaction of Quantifier Phrases and wh-in-situ within the indexing approach.

1. Wh-in-Situ and the Selectional Restrictions of the Verb

It has been assumed that *wh-in-situ* languages like Turkish and Chinese differ from English with respect to the level in which the selectional restrictions of the verb are met. As was discussed in Chapter 2, the selectional restrictions of the verb are met at S-Structure in languages like English. In Turkish, a *wh-in-situ* language, it has been claimed that the selectional restrictions of the verb are met at LF, the level in which the *wh*-element has been assumed to move to take scope. Recall the examples:

- (1) a. [CP₂ He wonders [CP₁ what_i [you bought x_i]]]
 b. [CP₂ What_i does [he think [CP₁ you bought x_i]]]?
 (2) a. [CP₂ [CP₁ Sen-in ne al-dığ-in]_i merak ediyor].
 You-Gen what buy-Nm-Poss-Acc wonder-Prog
 'He wonders what you bought.'
 b. [CP₂ [CP₁ Sen-in ne al-dığ-in]_i sanıyor]?
 You-Gen what buy-Nm-Poss-Acc think-Prog
 'What does he think you bought?'

The verbs *wonder* and *merak et-* 'wonder', respectively, select an embedded *wh*-question restricting the scope of the *wh*-phrase to the embedded clause. The (b) sentences, on the other hand, are interpreted to be matrix *wh*-questions. English marks the interpretation of the sentences by overtly moving the *wh*-phrase in syntax. The interpretation of (2a-b), however, has been explained by the covert movement of the *wh*-phrase at LF yielding the following LF representations:

- (3) a. [CP₂ [CP₁ ne_i [IP Sen-in x_i al-dığ-in]]₁ merak ediyor]
 b. [CP₂ ne_i [CP₁ [IP Sen-in x_i al-dığ-in]]₁ sanıyor]?

In (3a), the *wh*-element has moved to the Spec position of the embedded clause since the matrix verb *merak et-* 'wonder' selects a [+*wh*] complement. (3b), on the other hand, illustrates that the matrix verb *san-* 'think' selects a [-*wh*] complement, and the *wh*-element, thus moves to the matrix [Spec, CP]. Within this approach, the levels of representation where the selectional restrictions of the verbs are met differ for English and Turkish.

The assumption that the *wh*-in-situ does not, in fact, move to a Spec position at any level leads to the statement that it is always at S-Structure that the selectional restrictions of the verb are met in both English and Turkish. Hence within this approach, the S-Structure representation of the Turkish structures would be as follows:

- (4) a. [CP₂ [IP₂ [CP₁ Qu_i [IP₁ sen-in ne_i al-dığ-in]]₁ merak ed-iyor]]
 b. [CP₂ Qu_i [IP₂ [CP₁ [IP₁ sen-in ne_i al-dığ-in]]₁ san-ıyor]]

As seen above, the verb *merak et-* in (4a) selects a complement whose Spec position is filled with the null Question operator coindexed with the *wh*-in-situ. The verb *san-* in (4b), on the other hand, selects a [-*wh*] complement. The occurrence of the Question operator in matrix [Spec, CP] reflects the interpretation of the structure as a matrix question.

As a result, assuming the existence of a null Question operator binding the *wh*-in-situ allows us to unify the levels of representation where the selectional restrictions of the verbs are met. In languages like English,

the *wh*-element itself moves at S-Structure to satisfy the selectional restrictions, and in Turkish the *Qu*-operator may be generated and/or be moved to the appropriate [Spec, CP] position at S-Structure.

2. **Wh-in-Situ and Argument vs. Adjunct Asymmetry**

As has been discussed earlier, the occurrence of a *wh*-argument within a syntactic island is grammatical; whereas the occurrence of a *wh*-adjunct results in ungrammaticality¹. This asymmetry has been accounted for within the theory by the Empty Category Principle and Subjacency assuming that the *wh*-element moves either at S-Structure or at LF. The assumption that the *wh*-in-situ does *not* undergo any kind of movement appears to raise problems at first sight.

In order to account for the argument-adjunct asymmetry within the *wh*-indexing analysis, Aoun and Li (1993b) propose that the *wh*-element and the null question operator (*Qu*) have an operator-variable relationship in which *Qu* provides a binder (an antecedent) for the *wh*-element that is in situ. Given this argument, two generalizations need to be captured for the asymmetry observed (Aoun and Li, 1993b:219):

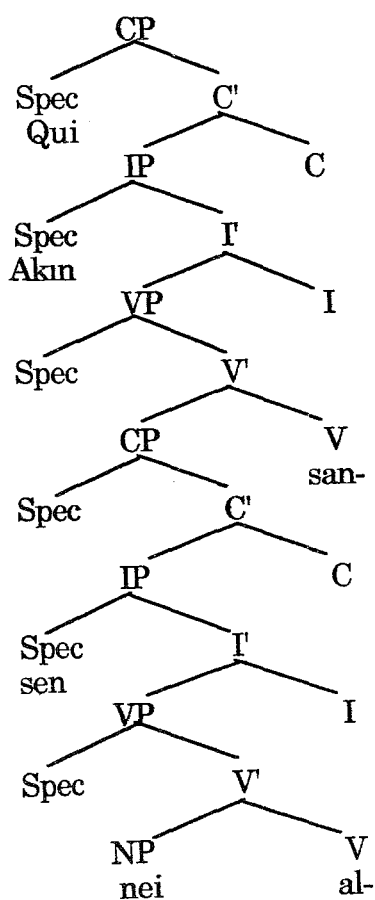
- (5) a. A *wh*-in-situ in adjunct position must have an antecedent (i.e., must be antecedent-governed) in the minimal clause in which it occurs.
- b. A *wh*-in-situ in argument position need not have a local antecedent in the minimal clause in which it occurs.

With these generalizations in mind, consider the examples below which contain a *wh*-element within the embedded clause:

- (6) a. [Akın [sen-in ne al-diğ-in]ı san-ıyor]?
 Akın you-Gen what buy-Nm-Poss-Acc think-Prog
 'What does Akın think you bought?'

The *wh*-element in the embedded clause in the above example functions as the argument of the embedded verb *al-* 'buy'. Thus, it is lexically governed, and does not need an antecedent within the embedded clause it occurs in (5b). The representation of (6a) within the *wh*-indexing approach is given below:

- (6) b.

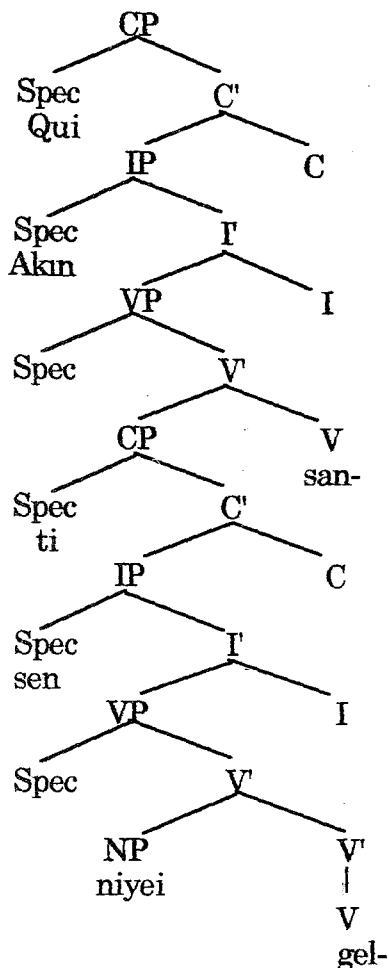


Since the *wh*-element in (6b) need not be antecedent-governed (as it is an argument and, thus, theta-marked) the null *Qu* operator is base generated in the matrix [Spec, CP]. Below is given an example in which the *wh*-element in the embedded clause functions as the adjunct of the embedded verb:

- (7) a. [Akın [sen-in niye gel-diğ-in]i san-ıyor]?
 Akın you-Gen why come-Nm-Poss-Acc think-Prog
 'Why_i does Akın think you came t_i ?'

The *wh*-element *niye* 'why' functions as the adjunct of the embedded verb *gel-* 'come', and thus needs to be antecedent governed (5a). The only way to satisfy this requirement is to assume that the *Qu* operator is base generated in the embedded [Spec, CP] and moves to the matrix [Spec, CP] in S-Structure:

(7) b.



As seen in the representation above, the wh-adjunct in situ is antecedent governed by the trace of the Qu operator in the embedded [Spec, CP]. The Qu operator has moved to the matrix [Spec, CP] to take the entire clause under its scope. The trace of Qu is governed by the embedded C via Spec-Head agreement since the embedded CP is lexically governed by the matrix verb *san*- 'think'.

In the following sections, the wh-indexing analysis will be applied to structures displaying the argument-adjunct asymmetry of the wh-elements that remain in situ.

2.1. Wh-Islands

This section will analyze the occurrence of wh-elements within wh-islands and show that the wh-indexing approach accounts for the grammaticality of the given structures.

Consider the examples below:

- (8) [Tolga [kim-in ne al-diğ-in] ı bil-iyor]
 Tolga who-Gen what buy-Nm-Poss-Acc know-Prog
- i. What_i does Tolga know who bought t_i?
 - ii. Who_j does Tolga know t_j bought what?
 - iii. Tolga knows who bought what.
- (9) [Tolga [Ayşe-nin ne-yi nasıl pişir-diğ-in] i bil-iyor]
 Tolga Ayşe-Gen what-Acc how cook-Nm-Poss-Acc know-Prog
- i. What_i does Tolga know Ayşe cooked t_i how?
 - ii. ?How_j does Tolga know Ayşe cooked what t_j ?
 - iii. Tolga knows what_i Ayşe cooked t_i how.

The structures in (8-9) display an ambiguity in that they may be interpreted either as matrix wh-questions or as declarative sentences with embedded wh-questions. Consider first the structure in (8) which contains the wh-elements *kim* 'who' and *ne* 'what' both functioning as the arguments of the embedded verb *al-* 'buy'. The interpretation of the structure as a matrix wh-question is illustrated by the following structures that are interpreted to be possible responses to (8):

- (10) a. Tolga [*kim-in televizyon al-dıĝ-ın*]_i bil-iyor.
 Tolga who-Gen television buy-Nm-Poss-Acc know-Prog
 'Tolga knows who bought a TV.'
- b. Tolga Ayşe'nin ne aldığı**nı** biliyor.
 Tolga Ayşe-Gen what buy-Nm-Poss-Acc know-Prog
 'Tolga knows what Ayşe bought.'

The possibility of (10a) as a response to (8) illustrates the fact that the wh-element *ne* 'what' functioning as the internal argument of the embedded verb *al-* 'buy' takes wide scope over the entire clause (This is represented by (i) under (8)). (10b), on the other hand, illustrates that the wh-element *kim* 'who' functioning as the external argument in the embedded clause takes wider scope (8ii). The LF-representations corresponding to these interpretations are given below respectively:

- (11) a. [_{CP2} Qu_i [_{IP2} Tolga [_{VP} [_{CP1} Qu_j [_{IP1} kim-in_j ne_i al-dıĝ-ın]]]_i bil-iyor]]]
 b. [_{CP2} Qu_j [_{IP2} Tolga [_{VP} [_{CP1} Qu_i [_{IP1} kim-in_j ne_i al-dıĝ-ın]]]_i bil-iyor]]]

(11a-b) illustrate the LF representations of (8) when the structure is interpreted as a matrix wh-question. In (11a), the wh-argument *ne* 'what' has wide scope, whereas in (11b) the wh-argument *kim* 'who' has scope over the entire clause.

(8) can also be interpreted as a non-interrogative sentence with an embedded wh-question (8iii). The LF representation corresponding to this interpretation is given below in (11c):

- (11) c. [_{CP2} [_{IP2} Tolga [_{VP} [_{CP1} Qu_j[_i] [_{IP1} kim-in_j ne_i al-dıĝ-ın]]]_i bil-iyor]]]

In (11c), the *Qu* operator indicates the scope of both *wh*-elements as shown by the index $j[i]$ where the square brackets indicate that the Qu_i binding ne_i has been absorbed into the Qu_j binding kim_j . Aoun and Li (1993b:222) argue that *wh*-elements of the same type can undergo "absorption" by getting coindexed with the same *Qu* operator. In (11c), the two *wh*-elements functioning as arguments have undergone absorption as a result of which the scope of both *wh*-elements is restricted to the embedded clause. Aoun and Li (1993b) also note that after absorption takes place the relation of the *Qu* operator and the *wh*-element that has been absorbed cannot be a true binding relation since that would lead to the coindexation of both *wh*-elements and violate Principle C of the binding theory.

Now consider the example given in (9) which contains an argument and an adjunct *wh*-element within a *wh*-island.

- (9) [Tolga [Ayşe-nin ne-yi nasıl pişir-diğ-in] i bil-iyor]
 Tolga Ayşe-Gen what-Acc how cook-Nm-Poss-Acc know-Prog
- i. What_{*t*₁} does Tolga know Ayşe cooked *t*_{*t*₁} how?
 - ii. ?How_{*j*} does Tolga know Ayşe cooked what *t*_{*j*} ?
 - iii. Tolga knows what_{*t*₁} Ayşe cooked *t*_{*t*₁} how.

Note that this structure is ambiguous, as well, since it may be interpreted either as a matrix *wh*-question or as a non-interrogative structure with an embedded question. Its interpretation as a matrix *wh*-question also leads to ambiguity in that either of the *wh*-elements may take wide scope. However, when the structure in (9) is interpreted as a question, the most natural response would be a structure like (12) which illustrates

the fact that the wh-element *ne* 'what' which is the argument of the embedded verb *pişir-* 'cook' takes wide scope over the clause:

- (12) a. Tolga [Ayşe-nin çorba-yı nasıl pişir-diğ-in] i bil-iyor.
 Tolga Ayşe-Gen soup-Acc how cook-Nm-Poss-Acc know-Prog
 'Tolga knows how Ayşe cooked the soup.'

The LF representation corresponding to the interpretation in which the wh-argument has matrix scope is given below:

- (12) b. [_{CP2} Qu_i [_{IP2} Tolga [_{VP} [_{CP1} Qu_j [_{IP1} Ayşenin ney_i nasıl_j pişirdiğ-in]]i bil-iyor]]]

The wh-element *nasıl* 'how' needs to be antecedent-governed since it is an adjunct (see (5a)). The Qu_j operator binding it occurs in the lower [Spec, CP] and restricts its scope to the embedded clause. The wh-element *ne* 'what', on the other hand, does not need an antecedent in the minimal clause in which it occurs, since it is lexically governed by the embedded verb *pişir-* 'cook'. The Qu_i operator binding *ne* 'what' occurs in the highest Spec and takes the entire clause under its scope.

There is a possible, yet marginal, interpretation of the structure in (9) as a wh-question, where the wh-adjunct *nasıl* 'why' takes matrix scope. The possibility of the following structure illustrates the point. Note that this interpretation is grammatical but less acceptable than the one represented in (12b), where the wh-argument has scope over *nasıl* 'why':

- (13) a. Tolga [Ayşe-nin ne-yi çabuk pişir-diğ-in]-i bil-iyor.
 Tolga Ayşe-Gen what-Acc quickly cook-Nm-Poss-Acc know-Prog
 'Tolga knows what Ayşe cooked quickly.'
 b. [_{CP2} Qu_j [_{IP2} Tolga [_{VP} [_{CP1} Qu_i [_{IP1} Ayşenin ney_i nasıl_j pişirdiğ-in]]i bil-iyor]]]

The representation of the interpretation in which the *wh*-adjunct takes matrix scope as in (13b) illustrates why the structure is less acceptable than the one in (12b). The *wh*-argument is bound by the Qu_i in the embedded [Spec, CP], but the *wh*-adjunct lacks an antecedent in the minimal clause in which it occurs; thus the generalization in (5a) is not met.

Unlike English and Mandarin Chinese, the Turkish structure in (9) can also be interpreted as a non-interrogative clause with an embedded *wh*-question, where the scope of both *wh*-elements is restricted to the embedded CP:

- (14) a. [_{CP2} [_{IP2} Tolga [_{VP} [_{CP1} $Qu_{i[j]}$ [_{IP1} Ayşenin ney_i nasıl_j pişirdiğ_in]]i
bil-iyor]]]

The representation given in (14a) illustrates that the *wh*-elements *ne* 'what' and *nasıl* 'how' are bound by the same Qu operator in the embedded [Spec, CP]. This, however, is not a possible derivation since *wh*-elements of different types cannot undergo absorption (Aoun and Li, 1993b:221-222). Following Özsoy (1990:146), who states that it seems possible in Turkish to violate the Doubly Filled Comp Filter, the representation of the structure in (9) as a non-interrogative sentence would be as follows:

- (14) b. [_{CP2} [_{IP2} Tolga [_{VP} [_{CP1} Qu_i Qu_j [_{IP1} Ayşenin ney_i nasıl_j pişirdiğ_in]]i
bil-iyor]]]

In (14b) above, the embedded [Spec, CP] hosts two quantifiers that bind the *wh*-elements within the embedded clause. The grammaticality of (9) as a declarative sentence with an embedded *wh*-question indicates that Turkish *wh*-structures may violate the Doubly Filled Comp Filter ².

2.2. Adjunct Islands

This section will discuss the occurrence of a *wh*-element within an adjunct clause. The (un)grammaticality of the structures will be accounted for by the indexing approach.

Consider the examples below which contain a *wh*-element within an adjunct clause denoting the temporal properties of the matrix verb:

- (15) a. Ayşe [kim-i gör-ünce] heyecanlan-dı?

Ayşe who-Acc see-Ger get=excited-Past

'Who (x) is it such that Ayşe got excited when she saw (x)?'

- b. Ayşe [Ali-yi nerede gör-ünce] heyecanlan-dı?

Ayşe Ali-Acc where see-Ger get=excited-Past

'Where (y) is it such that Ayşe got excited when she saw Ali (y)?'

In (15a), the *wh*-element *kim* 'who' within the temporal clause functions as the internal argument of the verb *gör-* 'see' which lexically governs it. Being a *wh*-argument, the *Qu* operator binding it can directly be generated in the matrix [Spec, CP] position yielding the representation below (see 5b):

- (16) a. [_{CP2} *Qu*_i [_{IP2} Ayşe [_{VP} [_{CP1} [_{IP1} kim-i_i gör-ünce]]] heyecanlan-dı]]]

In (16a) above, the matrix Spec hosts the null *Qu* operator coindexed with the *wh*-argument in situ which, hence, takes scope over the entire clause.

The *wh*-element *nerede* 'where' in (15b) takes the matrix clause in its scope, as well. However, as it is an adjunct it needs to have an antecedent within the CP of which it is a constituent. Therefore, the *Qu* operator is, first,

generated in the embedded [Spec, CP], and then gets moved to the matrix Spec leaving behind a coindexed trace:

- (16) b. [_{CP2} Qu_j [_{IP2} Ayşe [_{VP} [_{CP1} t_j [_{IP1} Ali-yi nerede_j gör-ünce]]
heyecanlandı]]]]

The Qu operator has moved from the embedded Spec position to the matrix [Spec, CP] to reflect its scopal properties. The trace t_j left by the movement of Qu_j antecedent-governs the wh-in-situ *nerede* 'where'. The grammaticality of the structure indicates that there is no violation of any requirements. But the question that remains to be answered is how the trace t_j in the embedded [Spec, CP] gets governed. The embedded CP functions as the adjunct of the matrix verb *heyecanlan-* 'get excited', and thus acts as a barrier for the antecedent government of the trace by the Qu operator itself³. Following Cheng (1997), we may assume that the presence of the Qu operator in Spec of C⁰ position triggers Spec-Head agreement by which the C⁰ acquires the [+wh] feature. By having the [+wh] feature, the C⁰ can in turn license the constituent in the Spec position. Before the movement of the Qu operator to the matrix Spec position, the embedded C⁰ (the head of CP1) receives the [+wh] feature of Qu via Spec-head agreement. After the movement of the Qu operator to the matrix Spec position to take scope over the entire clause, the trace t_j in the embedded Spec position gets licensed by the [+wh] marked C⁰, and hence obey the ECP^{4, 5}.

2.3. Complex Noun Phrases

As discussed in Chapter 2, the complex NP structures, i.e., NPs containing a relative clause, display argument-adjunct asymmetry in the

occurrence of a *wh*-element within the structure. The relative clause constructions have been analyzed as involving the movement of the target noun leaving a coindexed trace which is bound by a phonologically null operator in the *Comp* position of the modifying clause (Özsoy (1994), Kornfilt (1997)). Recall the examples (12-13) of Chapter 2 repeated below as (17-18):

- (17) a. Sen [[kim-in yaz-dıĝ-ı] kitab] _ı beĝen-di-n?
 you who-Gen write-Rel-Poss book-Acc like-Past-2sg
 'Who (x) is it such that you like the book x wrote?'
- b. *Sen [[o-nun niye yaz-dıĝ-ı] kitab] _ı beĝen-di-n?
 you (s)he-Gen why write-Rel-Poss book-Acc like-Past-2sg
 'Why (x) is it such that you like the book (s)he wrote x?'
- (18) a. Sen [[kim-i davet ed-en] adam] a kız-dı-n?
 you who-Acc invite-Rel man-Dat get=angry=at-Past-2sg
 'Who (x) is it such that you are angry at the man who invited x?'
- b. *Sen [[Ayşe-yi niye davet ed-en] adam] a kız-dı-n?
 you Ayşe-Acc why invite-Rel man-Dat get=angry=at-Past-2sg
 'Why (x) is it such that you are angry at the man who invited Ayşe x?'

As seen above, the occurrence of *wh*-arguments (an external argument in (17a) and an internal argument in (18a)) within the complex NP is acceptable, whereas the occurrence of *wh*-adjuncts is not. This is predicted by the indexing analysis illustrated in the LF-representations below:

- (19) a. [_{CP2} Qu_i [_{IP2} Sen [_{VP} [_{NP} [_{CP1} [_{IP1} kim-in_i t_k yaz-dıĝ-ı] op_k] kitab_k]_ı beĝen-di-n]]]
- b. * [_{CP2} Qu_j [_{IP2} Sen [_{VP} [_{NP} [_{CP1} t_j [_{IP1} o-nun niye_j t_k yaz-dıĝ-ı] op_k] kitab_k]_ı beĝen-di-n]]]

- (20) a. [CP₂ Qu_i [IP₂ Sen [VP [NP [CP₁ [IP₁ t_k kim-i_i davet ed-en] op_k] adam_k]a
kız-d_i-n]]]]
- b. *[CP₂ Qu_j [IP₂ Sen [VP [NP [CP₁ t_j [IP₁ t_k Ayşe-yi niye_j davet ed-en] op_k] adam_k]a kız-d_i-n]]]]

In the LF-representations above, the empty category coindexed with the moved head noun is bound by the null operator in the C⁰ position within the NP. In (17a) and (18a), the wh-elements are the external and internal arguments of the verbs *yaz-* 'write' and *davet et-* 'invite' respectively. As they are theta-marked constituents, the Qu operators binding them can directly be generated in the matrix [Spec, CP] yielding the representations (19a-20a) (see 5b). The structures in (17b) and (18b), however, are ungrammatical. The wh-elements within the complex NP are adjuncts and thus are not theta-marked by the embedded verbs *yaz-* 'write' and *davet et-* 'invite' respectively. Following the generalization in (5a), the Qu operator is first generated in the embedded [Spec, CP] position. Following Chomsky (1986), we assume that Spec-Head agreement takes place whenever the Spec position is filled. The base-generation of the Qu operator in the embedded Spec of C⁰ position, thus, triggers Spec-Head agreement. This leads to the coindexation of Qu_j with the null operator op_k binding the relativized head noun. The coindexing of an argument and an adjunct, in turn, violates the Binding Theory. Hence, the ungrammaticality of (17b) and (18b) ⁶.

3. Scope Interaction

This section will provide further supportive evidence to the effect that the wh-indexing analysis correctly accounts for the grammaticality and the

interpretation of structures displaying scope interaction of wh-phrases, quantifier phrases and the operator *yalnızca* 'only'.

Recall the examples of (32-33) of Chapter 2 repeated here as (21-22):

- | | | |
|------|--|-------------|
| (21) | Herkes ne gör-dü?
everyone what see-Past
'What did everyone see?' | ambiguous |
| (22) | Kim herşey-i gör-dü?
who everything-Acc see-Past
'Who saw everything?' | unambiguous |

As discussed in Chapter 2, the quantifier phrases undergo a raising process at LF in order to reflect their scopal properties. The structure in (21) displays ambiguity which may be accounted for by the Scope Principle and the Minimal Binding Requirement of Aoun and Li (1993a) (see (30) and (31) in Chapter 2).

- (23) $[_{CP1} Qu_j [_{IP} herkes_i [_{IP} x_i [_{VP} ne_j gördü]]]]$

As seen above, the Qu operator binding the wh-argument *ne* 'what' is generated in the [Spec, CP]. The quantifier phrase *herkes* 'everyone' adjoins to the IP. The most local potential A'-binder for x_i is the quantifier phrase in the IP-adjoined position. Even though the most local antecedent for the wh-element seems to be the quantifier *herkes* 'everyone', it is not a potential A'-binder as it would lead to the coindexation of $herkes_i$ and ne_j , which would, in turn, lead to a violation of Principle C. The most local and potential A'-binder for the wh-in-situ is, then, the Qu operator in Spec of C^0 position. The structure, thus, obeys the Minimal Binding Requirement. The Scope

principle predicts the ambiguity of the structure since the Qu operator c-commands the quantifier *herkes* 'everyone', which, in turn, c-commands the wh-in-situ *ne* 'what'.

Now consider the LF-representation of the structure in (22) which is interpreted to be unambiguous:

(24) [_{CP1} Qu_i [_{IP} kim_i [_{VP} herşeyi_j [_{VP} x_j gördü]]]]

The Qu operator binding the wh-argument is generated in the [Spec, CP], and the quantifier phrase *herşey* 'everything' has adjoined to the VP. The structure obeys the MBR: The most local potential A'-binder for the wh-element is the Qu operator in the Spec of C⁰ position, and the most local potential A'-binder for the trace x_j is the quantifier phrase in the VP-adjoined position. Neither the wh-element nor the quantifier phrase c-commands a member in the A'-chain of each other, as a result of which the Scope Principle does not come into play. This predicts the unambiguity of the structure: the wh-element, being in a higher position, takes scope over the quantifier phrase.

Note that the wh-indexing analysis also presents a full account of structures involving the scope interaction of wh-in-situ, quantifier phrases and the operator *yalnızca* 'only' which cannot be explained by the LF-movement approach. Recall the example (17) of Chapter 3 repeated below as (25):

(25) Ayşe yalnızca kim-i sev-iyor?
 Ayşe only who-Acc love-Prog
 'Ayşe only loves whom?'

As was illustrated in Chapter 3, the movement of the *wh*-phrase in (25) to the Spec of C^0 position at LF is not possible since it would lead to the violation of the Principle of Lexical Association (see (14) in Chapter 3). This would predict the structure to be ungrammatical which, however, is not the case. The LF-movement analysis, thus, cannot explain the grammaticality of (25). The *wh*-indexing analysis, however, accounts for the structure as shown in the representation below:

(26) [CP_1 Qu_i [IP Ayşe [VP yalnızca $kimi_i$ seviyor]]]

The *wh*-element *kim* 'who' is the internal argument of the verb *sevi* 'love' and is bound by the coindexed Qu operator in the [Spec, CP] position. The structure obeys the Principle of Lexical Association since the operator *yalnızca* 'only' is associated with a lexical constituent in its c-command domain.

Now consider the examples (20) and (21) of Chapter 3 repeated here as (27-28):

(27) [Ali [herkes-in ne al-dıĝ-in]_i söyle-di]? (ambiguous)
 Ali everyone-Gen what buy-Nm-Poss-Acc say-Past
 'What did Ali say everyone bought?'

(28) ? [Ali [herkes-in yalnızca ne al-dıĝ-in]_i söyle-di]? (unambiguous)
 Ali everyone-Gen only what buy-Nm-Poss-Acc say-Past
 'Ali only said everyone bought what?'

The structures above illustrate the interaction of the *wh*-element *ne* 'what' and the quantifier phrase *herkes* 'everyone'. Unlike (27), (28) involves

the operator *yalnızca* 'only'. In Chapter 3, it was shown that the LF-movement analysis could not account for the grammaticality and the unambiguity of the structure in (28). The following LF-representations show the analysis of these structures in the wh-indexing approach:

- (29) [CP₂ Qu_i [IP₂ Ali [VP₂ [CP₁ [IP₁ herkesin_j [IP₁ x_j [VP₁ ne_i aldığın]]]]_i söyledi]]]
- (30) [CP₂ Qu_i [IP₂ Ali [VP₂ [CP₁ [IP₁ herkesin_j [IP₁ x_j [VP₁ yalnızca ne_i aldığın]]]]_i söyledi]]]

In (29-30) above, the quantifier phrase has adjoined to IP₁ at LF by the rule of Quantifier Raising. Since the wh-elements in both structures function as the internal argument of the embedded verb *al-* 'buy', the null Qu operator is directly generated in the matrix [Spec, CP]. (30) differs from (29) in the existence of the operator *yalnızca* 'only' in the structure. Both structures obey the MBR: the trace x_j left by the raising of the quantifier is bound by the quantifier phrase itself which is the most local potential A'-binder in the structure. The A'-binder of the wh-in-situ cannot be the quantifier in the IP-adjoined position since that would lead to the coindexation of an internal and an external argument, and would predict the structure to be ungrammatical contrary to the fact. The most local potential A'-binder for the wh-in-situ in the structure is the Qu operator in the highest Spec position.

The interpretations of (29) and (30), however, differ. The structure in (30), which involves *yalnızca* 'only' is unambiguous, whereas (29) displays an ambiguity in the sense that everybody buys one thing or each person buys a different thing. The ambiguity of (29) is explained by the Scope Principle: The null Qu operator binding the wh-in-situ may take wide scope since it c-commands the quantifier phrase. The QP may take wide scope, as well, since

it c-commands the wh-element itself. In (30), however, the Scope Principle does not play a role. This is due to the fact that the occurrence of *yalnızca* 'only' acts as a barrier and blocks the government of wh-in-situ by the quantifier phrase *herkes* 'everyone'. Consequently, the Qu operator, being higher in the structure, takes wide scope. Hence the unambiguity of (30).

Notes to Chapter 4:

¹ There are cases in which the occurrence of a *wh*-adjunct within a syntactic island yields grammatical structures. See examples (3-5) in Chapter 3.

² Özsoy (1990:147) states that it is also possible for the matrix Comp to be triply filled in Turkish. The possibility of (ii) as a felicitous answer to (i) indicates the point:

(i) [Alev-in hangi kutu-yu nereye yolla-dığ-ın] ı kim bil-iyor?

Alev-Gen which box-Acc where send-Nm-Poss-Acc who know-Prog

'Who knows which box Alev sent where?'

(ii) [Alev-in kırmızı kutu-yu Ankara-ya, mavi kutu-yu Denizli-ye yolla-

Alev-Gen red box-Acc Ankara-Dat blue box-Acc Denizli-Dat send-
dığ-ın] ı Akın bil-iyor.

Nm-Poss-Acc Akın know-Prog

'Akın knows that Alev sent the red box to Ankara, the blue box to Denizli.'

³ Aoun and Li (1993b:226) argue that the ungrammaticality of the occurrence of a *wh*-adjunct within an adjunct phrase in Mandarin Chinese results from the violation of the lexical government of the trace of the *Qu* operator in the embedded [Spec, CP] position. In Turkish, the grammaticality of a *wh*-adjunct within an adjunct clause indicates that the trace left by the extraction of the *Qu* operator to the matrix clause is properly governed unlike the case in Mandarin Chinese.

⁴ Cheng (1997) argues that in multiple fronting languages (i.e., languages in which multiple *wh*-words are fronted) the *wh*-words lack inherent quantificational force and thus their interpretations vary within the context. She argues that the interrogative reading of a *wh*-word in these languages can be explained by assuming the presence of a null determiner in

Spec of C⁰ position which gives interrogative force to the wh-element. There seems to be a "double effect" involved: The presence of the null determiner in Spec of C⁰ triggers Spec-Head agreement and C⁰ acquires [+wh] feature. By having the [+wh] feature, C⁰ can license the null determiner (p.92, fn. 16).

⁵ The difference between Turkish and Mandarin Chinese can be stated as follows: the trace of the Qu operator in the embedded [Spec, CP] binding a wh-adjunct within an adjunct clause can be licensed by C⁰ as a result of Spec-Head agreement in Turkish, but not in Mandarin Chinese.

⁶ There seems to be a dialectal difference in the acceptability of the structure in (i) below in which a wh-adjunct occurs within a complex NP:

- (i) ?[CP₂ Qu_j [IP₂ Sen [VP [NP [CP₁ t_j [IP₁ t_k Ayşe-yi nereye_j davet ed-en]
op_k] adam_k]a kız-dı-n]]]
'Where_i is it such that you got angry at the man who invited Ayşe t_i?'

Even though the structure is acceptable to a certain extent, it is a marked construction. The wh-indexing analysis poses a problem for the acceptability of this structure. However, the structure is interpretable in the sense of Pesetsky's D(iscourse)-linking or Reinhart's Choice-Function Analysis. See the discussion in Chapter 5. The analysis of this structure along the lines of Pesetsky (1987) and Reinhart (1998) indicates that the wh-adverbials *nereye* 'where', *ne zaman* 'when', *nasıl* 'how' can be D-linked, whereas the reason denoting wh-adverbials *niye*, *neden*, *niçin* 'why' cannot.

CHAPTER 5

Towards a Minimalist Account

This study has investigated the indexing analysis of Turkish wh-constructions within the Theory of Government and Binding. In this chapter, I aim to discuss the implications of the analysis outlined within the Minimalist Program of Chomsky (1995).

1. Basic Assumptions of MP

The Minimalist Program (Chomsky, 1995) assumes that a language consists of two components: a lexicon which lists fully inflected forms of the lexical items, and a computational system. The program reduces the levels of representation to the two interface levels of PF and LF in which the syntactic structures are represented after the application of the operations of MERGE and MOVE. Merge "takes a pair of syntactic objects (SO_i , SO_j) and replaces them by a new combined syntactic object (SO_{ij})" (Chomsky, 1995:226). In the operation Move, the underlying assumption is that movement is driven by morphological considerations whereby some feature must be checked. These operations within the framework obey a number of *economy principles* such as "Shortest Move", "Procrastinate" and "Greed" "that compare derivations involving the same lexical resources and discard all but the most economical

derivations" (Marantz, 1995:351). The minimal operation of Move, then seeks to raise just the feature F which needs to be checked (Chomsky, 1995:262). In the operation Move F, F carries along just enough material for the derivation to converge. Depending on the morphological structure of a given language L, overt raising of the feature F without pied-piping could be permitted, as well ¹.

As it seems more natural, the operation of movement is reinterpreted within the framework as "attraction": Hence, instead of assuming that a feature F raises to target K, K is assumed to attract the feature F as a result of which F merges with K and enters its checking domain (Chomsky, 1995:297).

2. Clausal Typing

This section provides evidence for the assumption of the wh-indexing analysis that there is a phonologically null Qu operator in the Spec position of a clause that is interpreted to be a wh-question.

Chomsky and Lasnik (1977:445) assume that each clause must be identified either as declarative or interrogative. Adapting this assumption, Cheng (1997:22) formulates her Clause Typing Hypothesis as follows:

(1) Clause Typing Hypothesis

Every clause needs to be typed. In the case of typing a wh-question, either a wh-particle in C⁰ is used or else fronting of a wh-word to the Spec of C⁰ is used, thereby typing a clause through C⁰ by Spec-head agreement.

Cheng (1997), analyzing the cross-linguistic variation observed in wh-question structures, argues that there is an implicational relationship between yes-no particles and wh-particles in a given language. In languages which have yes-no particles to type a sentence as a yes-no question, there seem to be wh-particles, as well, which may or may not be overt phonologically (Cheng, 1997:18). Turkish uses an overt question particle, which is *mI*, to type a clause as a yes-no question. As seen in the examples in (2) below, *mI* attaches to the sentence constituent that is being questioned:

- (2) a. Ayşe dün Ankara'ya gitti **mi** ?
 Ayşe yesterday Ankara-Dat go-Past Q
 'Did Ayşe go to Ankara yesterday?'
- b. Ayşe dün Ankara'ya **mi** gitti?
 'Did Ayşe go to ANKARA yesterday?'
- c. Ayşe dün **mi** Ankara'ya gitti ?
 'Did Ayşe go to Ankara YESTERDAY?'
- d. Ayşe **mi** dün Ankara'ya gitti?
 'Did AYŞE go to Ankara yesterday?'

Following Cheng (1997)'s assumption, we can argue that the presence of *mI* as a yes-no particle implies the presence of a phonologically null wh-particle in Turkish. This line of argument is in accord with the assumption of the indexing approach that there is a null Qu operator binding the wh-element in situ.

In order to satisfy the Clausal Typing Hypothesis, languages which do not have wh-particles involve the movement of a wh-word at S-Structure to type a clause as a wh-question. In contrast, languages which have question particles (be it overt or non-overt) type a wh-structure with the question

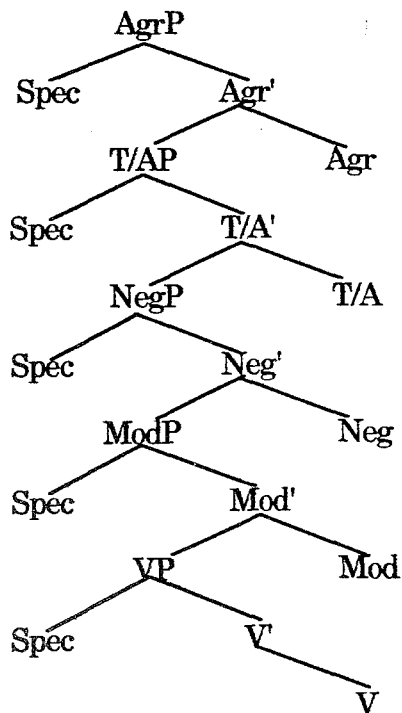
particle allowing the wh-element to stay in situ. Cheng assumes that Typing Particles are generated in C^0 . Thus, in wh-in-situ languages a wh-question is typed by a typing particle in the C^0 position, which hosts either an overt or a non-overt particle, depending on the morphological properties of a given language.

The Minimalist Program, likewise, assumes that the clause type is determined by the formal features of the functional category C^0 . Before moving on to how the minimalist theory accounts for Turkish wh-structures consider the basic structure of a Turkish sentence in the following section.

3. Turkish Clause Structure in MP

Assuming the Split-Infl Hypothesis of Pollock (1989), Tosun (1998:48) argues that the basic structure of a Turkish sentence is as follows:

(3)



4. The Minimalist Account of Turkish Wh-Structures

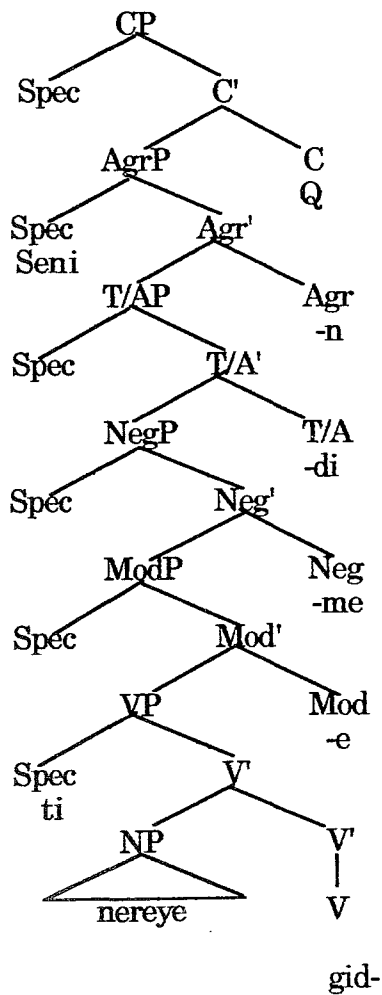
Following Chomsky (1995) and Cheng (1997), the wh-questions in Turkish must be typed by a non-overt typing particle which occurs in the C^0 position that takes AgrP as its complement. Consider the example and its representation in (4) below:

(4) a. Sen nereye gid-e-me-di-n?

You where go-Mod-Neg-Past-2sg

'Where weren't you able to go?'

b.



As seen above, the subject is assumed to be base-generated in [Spec, VP]. In order to check its nominal features it raises to [Spec, AgrP]. The verb-complex 'gid-e-me-di-n' undergoes movement to check its features, as well. It first moves to Mod⁰ where it checks off its Modal feature. It, then, moves to Neg⁰ and checks off its Negative feature. In the third step, it raises to T/A⁰ to check its tense/aspectual features. Lastly, it moves to Agr⁰ for the checking of Subject-Verb agreement through Spec-head relation, the subject NP being at the [Spec, AgrP] and the verb-complex at Agr⁰. The structure is typed as a wh-question by the non-overt wh-particle (Q) in the C⁰ position, as a result of which the wh-element remains in situ. As all the features in the structure are checked off and no clash occurs, the derivation converges ².

Thus far, we have assumed following Chomsky (1995) that wh-question structures are CPs headed by an abstract question particle Q in C⁰ position. Radford (1997) discusses another possibility whereby "the defining characteristic of an interrogative clause is that it must contain an *interrogative specifier* in order to be interpretable as a question at LF" (p. 293). Note that this is similar to what was argued for Turkish wh-structures in this study. The occurrence of a phonologically null Qu operator in some Spec position serves to bind the wh-constituent in situ and triggers the appropriate intonational structure at PF and the proper interpretation at LF. This approach does not necessitate the assumption that there must be a question particle in the functional category C⁰.

The difference between the *interrogative specifier* analysis of Radford (1997) and *interrogative head* analysis of Chomsky (1995) is observable mainly in subject wh-questions. In a wh-question which has a wh-element functioning as the subject of the clause, the wh-subject occurs in the Spec of

Agr^0 where it checks off its nominal features with the verb-complex at Agr^0 position through Spec-head relation. Radford (1997:294) argues that the occurrence of the wh-subject in [Spec, AgrP] satisfies the requirement for a wh-question to contain an interrogative specifier, and hence, there is no need to project the structure further into a CP and no possibility for doing so by the economy principles. However, note that the *interrogative specifier* analysis raises the question of how the structures with a wh-subject are typed as discussed in the Clausal Typing Hypothesis of Cheng (1997).

The discussion above illustrates that the indexing analysis proposed in the preceding chapter for Turkish wh-structures receives an explanation within the Minimalist Program of Chomsky (1995). Assuming the economy principles, the movement of a feature F is preferred as it is less costly than the movement of a phrasal category. However, depending on the properties of a given language, Move F carries along enough material for the derivation to converge. In the case of Turkish wh-questions, the wh-phrase itself does not need to undergo movement to the sentence initial position to type the clause as a question. The wh-feature (F_Q) moves to check off its features in order for the derivation to converge. The assumption that the wh-feature undergoes movement is in accord with the assumption of the wh-indexing analysis that there is a null Q_u operator in the Spec position of a wh-structure. Following Chomsky (1995)'s *interrogative head* analysis, the Q_u operator, being in the Spec position, will be licensed by the phonologically null wh-particle (Q) in C^0 assumed by Cheng (1997). Following Radford (1997)'s *interrogative specifier* analysis, on the other hand, assuming the presence of the Q_u operator in the Spec position satisfies the requirement to interpret a structure as a wh-question, hence type it as an interrogative clause.

5. A Proposal for the Ungrammatical Structures

This section aims to discuss the ungrammatical *wh*-structures in which the *wh*-constituents denoting reason occur; namely, *niye*, *neden* and *niçin* 'why'. It will be shown that there is a possibility to express the interpretation of these ungrammatical structures by the use of *which-NP* or *what-NP* phrases. In the analysis of the resulting grammatical *wh*-questions, the arguments of Pesetsky (1987) and Reinhart (1998) will be discussed.

Recall from the previous chapters that the occurrence of a *wh*-adjunct denoting reason within an island has rendered the structures unacceptable. The different behavior of the reason denoting *wh*-element has long been discussed within the theory. In English, for example, the occurrence of the *wh*-element *why* in situ, unlike other adjuncts *when* or *where*, results in ungrammaticality (see Lasnik and Saito (1984: 241), Kuno and Takami (1993: 75) and Williams (1994: 68-69) among others). Akar (1990: 64-65) noted that the *wh*-constituents *niye*, *neden*, *niçin* 'why' are VP-external adjuncts and the application of topicalization produces grammatical structures unlike the VP-internal adjuncts *nereye* 'where', *nasıl* 'how' and *ne zaman* 'when'. Her examples (22-23) are repeated below in (5-6):

- (5) a. *? Nereye Ayşe git-ti?
 where Ayşe go-Past
 'Where did Ayşe go?'
 b.*? Nasıl Ayşe git-ti?
 how Ayşe go-Past
 'How did Ayşe go?'

c. *? Ne zaman Ayşe git-ti?

when Ayşe go-Past

'When did Ayşe go?'

(6) a. Niye Sevim Teyze Nergis-e kız-dı?

why Sevim Aunt Nergis-Dat get angry-Past

'Why did Aunt Sevim get angry at Sevim?'

b. Neden Hakan Aslı-yı her gün arı-yor?

why Hakan Aslı-Acc everyday call-Prog

'Why does Hakan call Aslı everyday?'

c. Niçin Ömer çalış-mı-yor?

why Ömer work-Neg-Prog

'Why doesn't Ömer work?'

In this study, the different behavior of the *wh*-constituents *niye*, *neden* and *niçin* 'why' was discussed in Chapter 2 and 3: Even though the occurrence of other *wh*-adjuncts within a sentential subject results in grammaticality, the occurrence of *niye* 'why' is unacceptable (cf. examples (3-5) in Chapter 3). The example (2) in Chapter 3 is repeated below as (7):

(7) *[O-nun niye gel-me-si] iyi ol-du?

(s)he-Gen why come-Nm-Poss good be-Past

'Why(x) was it good that he came (x)?'

Similarly, it has been shown that the occurrence of *wh*-adjuncts within an adjunct clause is grammatical whereas the occurrence of the reason adjunct results in ungrammaticality. The example (17) in Chapter 2 is repeated below as (8) (cf. examples (18-19) in Ch. 2):

(8) *Ayşe [Orhan neden bağır-ınca] ürk-tü?

Ayşe Orhan why shout-Ger get=scared-Past

'Why is it such that Ayşe got scared [when Orhan shouted x]?'

Lastly, consider the examples (12b-13b) in Chapter 2 repeated below as (9-10). As seen below, the occurrence of a reason denoting wh-element within a complex NP renders the structure ungrammatical:

- (9) *Sen [[o-nun niye/niçin yaz-dığ-ı] kitab] ı beğen-di-n?
 you (s)he-Gen why write-Rel-Poss book-Acc like-Past-2sg
 'Why (x) is it such that you like the book (s)he wrote x?'
- (10) *Sen [[Ayşe-yi niye/niçin davet ed-en] adam] a kız-dı-n?
 you Ayşe-Acc why invite-Rel man-Dat get=angry=at-Past-2sg
 'Why (x) is it such that you are angry at the man who invited Ayşe x?'

As seen in the examples (7-10), the occurrence of the reason denoting wh-elements *niye*, *neden* and *niçin* within a sentential subject, an adjunct clause and a complex NP, respectively, results in ungrammaticality. However, there seems to be a way of expressing these structures in Turkish by using a *hangi-NP* 'which-NP' phrase. Consider the examples below in which the simple wh-elements *niye*, *neden* and *niçin* 'why' are respectively replaced by *hangi sebeple*, *hangi sebepten* and *hangi amaçla* 'for which reason':

- (11) [O-nun hangi sebep-le gel-me-si] iyi ol-du?
 (s)he-Gen which reason-Com come-Nm-Poss good be-Past
 'For what reason(x) was it good that he came (x)?'
- (12) Ayşe [Orhan hangi sebep-ten bağır-ınca] ürk-tü?
 Ayşe Orhan which reason-Abl shout-Ger get=scared-Past
 'For what reason is it such that Ayşe got scared [when Orhan shouted x]?'

- (13) Sen [[o-nun hangi amaç-la yaz-dıĝ-ı] kitab] ı beĝen-di-n?
 you (s)he-Gen which purpose-Com write-Rel-Poss book-Acc like-Past-2sg
 'For what reason (x) is it such that you like the book (s)he wrote x?'
- (14) Sen [[Ayşe-yi hangi amaç-la davet ed-en] adam] a kız-dı-n?
 you Ayşe-Acc which purpose-Com invite-Rel man-Dat get=angry=at-Past-2sg
 'For what reason (x) is it such that you are angry at the man who
 invited Ayşe x?'

As seen above, *hangi-NP* 'which-NP' structures are totally grammatical counterparts of the *wh*-elements in (7-10) which are all unacceptable. The following sections will analyze the grammaticality of (11-14) along the lines of Pesetsky (1987) and Reinhart (1998) respectively.

5.1. Pesetsky (1987)'s D(iscourse)-Linking

Pesetsky (1987) argues that *wh*-in-situ can get scope in two ways, i.e., either by LF-movement to [Spec, CP] or by "unselective binding" by the Q morpheme found in the Comp position of interrogative clauses. He suggests that D(iscourse)-linking is the factor that explains the difference in acceptability of simple *wh*-elements like *who* and *what* and *which-NPs*. His examples are given below (p. 104 and 106):

- (15) a. ??What_j did you persuade who(m) to read e_j?
 b. Which book_j did you persuade which man to read e_j?

According to Pesetsky (1987:107), *which-NP* phrases are D-linked in the sense that when a question with a *which*-phrase is asked (as (15b)

above), both the speaker and the hearer have in mind a set of men and a set of books, and a felicitous answer will pair an element from each set.

Pesetsky, thus, proposes that D-linked wh-phrases do not have to undergo LF-movement for scope assignment. Instead, they remain in situ and take scope over the structure by a binding mechanism in which both of the wh-elements get coindexed with the Q morpheme in Comp position. Non-D-linked wh-phrases like *who* and *what*, however, must move at LF in order to reflect their scopal features.

The contrast observed in the English structures in (15a-b) is displayed in Turkish, as well, as illustrated in the examples (7-10) and (11-14). The wh-elements *niye*, *neden*, *niçin* 'why' are non-D-linked elements, whereas *hangi sebeple*, *hangi sebepten* and *hangi amaçla* 'for which/what reason' are interpreted as D-linked. Note, however, that the indexing analysis does not present an explanation for the opposing grammaticality of these Turkish structures as proposed by Pesetsky (1987), since it was argued that LF-movement failed to capture Turkish wh-structures. The next section discusses Reinhart (1998)'s proposal for explaining the opposing grammaticality.

5.2. Reinhart (1998)'s Choice-Function Analysis

Reinhart (1998) argues that the LF-movement analysis of wh-in-situ does not capture certain cases of superiority violations. In the following examples even though the traces of the moved wh-constituents do not violate the ECP (as they are head-governed), the structures are still ungrammatical:

- (16) a. */? Whom did Lucie discuss what with e?

b. */? Whom did Lucie persuade whom [PRO to visit e]?

She illustrates that the LF-movement of *wh-in-situ*, unlike syntactic movement, does not obey subadjacency and this indicates that the *wh-in-situ*, in fact, does not move. Furthermore, the economy considerations of the minimalist program of Chomsky (1993, 1995) entail that the *wh-in-situ* must be interpreted and assigned scope without movement, which is a costly operation.

Reinhart (1998) accounts for the interpretive problem of how wide scope is assigned to *wh*-elements *in-situ* by proposing a choice-function analysis for *wh-in-situ*. This analysis "allows existential quantification over choice functions which are functions applying to a non-empty set and yielding an individual member of the set" (p. 39). She argues that *wh*-NPs, having an N-set, can be interpreted via choice functions selecting an individual from a set. Simple *wh*-phrases, however, do not have an N-set and thus, cannot select an individual from a set. Therefore, the *wh*-adverbials *niye*, *neden*, *niçin* 'why' in the examples in (7-10) cannot be interpreted. In contrast, the choice functions can be applied to the *wh*-NPs in (11-14) since *hangi*-phrases dominate an N-set from which an individual can be selected. Hence the opposing grammaticality of (7-10) and (11-14).

In conclusion, Reinhart (1998)'s argument has illustrated that the *wh-in-situ* does not in fact move at LF, but is interpreted *in-situ* through a mechanism of quantification over choice functions as a result of which the function variable gets bound by the question operator in C⁰ position ³.

6. Conclusion

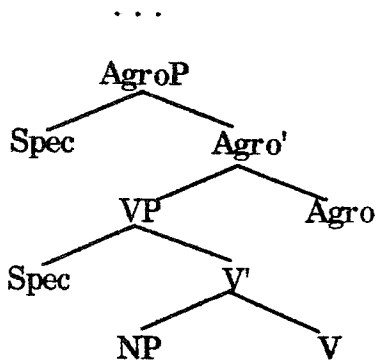
This study has discussed the properties of *wh*-constructions in Turkish within the framework of the Government and Binding Theory. Chapter 1 has discussed the general properties of *wh*-structures in English and Turkish, and introduced the theoretical framework. Chapter 2 has discussed the arguments for the LF *wh*-movement analysis, which assumes that the *wh*-elements that remain in situ at S-Structure undergoes movement at LF to the Spec position of the clause they have scope over. Chapter 3 has presented examples which could not be accounted for by the LF movement approach. Chapter 4 has discussed the *wh*-indexing analysis of Aoun and Li (1993b) and its application to Turkish *wh*-structures. It has been shown that the indexing analysis accounts for the structures that have been left unexplained by the LF movement analysis. Finally, this chapter, Chapter 5, has discussed the implications of the indexing analysis for the Minimalist Program and presented an analysis of the ungrammatical structures which contain the reason denoting *wh*-elements and their grammatical counterparts which, instead, contain a *hangi-NP* 'which-NP'.

Notes to Chapter 5:

¹ Chomsky (1995:264) notes that overt raising of the feature F without pied-piping is permitted in the theory developed by Watanebe (1992), who argues in his paper "Subjacency and S-Structure Movement of Wh-in-situ" that empty operators in Japanese are overtly raised at S-Structure.

² In transitive structures where the verb takes an internal argument, we need to project Agr_oP dominating the VP:

(i) Sen kim-i çağır-dı-n?
 You who-Acc invite-Past-2sg
 'Who did you invite?'



The object NP raises to [Spec, Agr_oP] and the verb moves to Agr_o , as a result of which the accusative case of the object NP assigned by the head V^0 can be checked off through Spec-head relation. The verb keeps on moving to the other functional heads to check off its features.

³ The grammaticality of the structures in which *kaç NP* 'how much/how many NP' occurs can be accounted for by Reinhart's analysis in that the *kaç*-phrase, having an N-set, can be interpreted via choice functions selecting an individual from a set.

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