

Deriving prosodic structures

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Deriving prosodic structures

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Glossary

1/2/3	1st/2nd/3rd person
Ø	null element
ABL	ablative case
ACC	accusative case
ADV	adverb deriving morpheme
AOR	aorist
COMP	complementiser
COND	conditional
COP	copula
DAT	dative case
DER	derivational suffix
EVD	evidential
FUT	future tense
GEN	genitive case
IMP	imperative
INST	instrumental case
LOC	locative case
NEG	negation
NOM	nominaliser
PAR	parenthetical linker
PASS	passive
PL	plural
POSS	possessive
PROG	progressive aspect
PST	past tense
Q	polar question particle
SG	singular

1

Introduction

This book is about the interplay between syntactic structures and prosodic structures. Based on the assumption that syntactic structures are formed before prosodic structures and that the output of the syntax provides the input for the prosody with respect to what content and category type the constituents of prosodic structures bear, this study discusses the nature of the syntax-prosody interface, with particular focus on how prosodic constituents are derived.

The language of investigation in this book is mainly Turkish. As a *phrase language*, Turkish is typologically dissimilar to *intonational languages* such as English, German, and Dutch.¹ In a nutshell, the difference between phrase and intonational languages is the way these languages express prosodic phenomena that are related to syntax and information structure. While intonational languages express such information via pitch accent placement, phrase languages express it via boundary placement, i.e. prosodic constituency. In phrase languages, prosodic constituency is the main apparatus for the demarcation of syntactic input, and this syntactic input is considerably more straightforwardly indicated via boundary phenomena. The complications that arise from extraneous factors that are observed in intonational languages (i.e. the *deformations* in prosodic constituency due to accent placement, beat dominance, and information structural tones) are typically absent in a phrase language such as Turkish. Without the presence of these extraneous factors, Turkish allows us to easily pinpoint the core properties of its prosodic grammar. For this reason, an investigation of such a language will provide a substantial contribution to our understanding of the correspondence between syntax and prosody. This book provides a

¹ See Féry (2010) for a description of phrase languages, and Güneş (2013a) and Kühn (2013) for the suggestion that Turkish is a phrase language.

2 *Introduction*

detailed analysis of prosodic constituency formation and syntax-prosody correspondence of Turkish, for the levels of word, phrase, and clause.

Both of the case studies that are presented in this book are undertaken to investigate the prosodic behaviour of the exponents of the parenthetical structures. Due to the particular syntactic and semantic properties that are observed with parentheticals, and their marked behaviour with respect to their relationship with the clause into which they interpolate, parenthetical structures exhibit a highly interesting profile for studies of how syntax interfaces with other modules of the grammar. The prosodic profile of parentheticals is no less interesting than their syntactic and semantic properties. In particular, parenthetical structures are commonly assumed to exhibit prosodic isolation from the clauses into which they interpolate. However, a number of studies show that this is not necessarily the case for all parentheticals (see Dehé 2014 and the references therein). With their marked behaviour in syntax and their rather ‘unpredictable’ prosody, parenthetical structures constitute a point of interest for anyone that investigates the correspondence between syntax and prosody. This book provides a coherent description of the configurations where parentheticals are prosodically isolated or integrated. Considering that Turkish is the language of investigation – a language that is understudied in terms of its prosodic grammar, especially with respect to the level of intonational phrases – a thorough description of the prosodic constituents that constitute intonational phrases is presented. A syntax-oriented mapping account that predicts the distribution of prosodic words, phonological phrases and intonational phrases is proposed.

1.1 *The scope*

The theoretical scope of this book is the nature of the access of prosodic operations to syntactic information, and the order of operations in deriving prosodic constituents. The core aspects of the nature of the syntax-prosody interplay that are addressed in this book are stated below.

- i. What is the structural nature of syntactic configurations that are relevant for prosodic operations?
- ii. What is the categorial nature of the syntactic constituents that correspond to prosodic constituents?
 - a. Do parentheticals in syntax have a correlate in prosody?
 - b. Do clauses in syntax have a correlate in prosody?
 - c. Do phrases in syntax have a correlate in prosody?
 - d. What is the syntactic correlate of prosodic words?
- iii. What are the sources of mismatches between syntactic constituency and prosodic constituency?

Regarding (i), the main objective of this book is to discover the extent to which syntactic relations should be considered as relevant to the processes of prosodic constituency formation. Regarding (ii), the main question of this book is what kind of constituents of syntax (e.g. a clause, a phrase, a word) *match* with what categories of constituents of prosody (e.g. an intonational phrase, a phonological phrase, a prosodic word). Regarding (iii), this book attempts to explicate the role of prosodic grammar (and its conditions on well-formedness), and the nature of syntactic input in mapping as the sources of mismatch between syntax and prosody. In the search for an answer to the questions stated above, this book aims to improve upon *Match theory* (Selkirk 2005, 2009, 2011), so that it may predict a wider range of phenomena in a more parsimonious manner.

Among the categories of correspondence, the correspondence of the syntactic clauses and parentheticals with intonational phrases has received little attention in the previous literature. For this reason, particular attention will be paid to further developing our understanding of the syntactic and

4 *Introduction*

phonological conditions that lead to the formation of intonational phrases. However, for a better understanding of intonational phrasehood, this book also provides a detailed discussion of the strategies that lead to the formation of prosodic words and phonological phrases, since intonational phrases consist of prosodic words and phonological phrases.

The empirical scope of this book concerns the mismatches between syntactic and prosodic constituents of all levels. The main questions of empirical inquiry that are addressed in this book are stated below.

- i. Do the words of prosody correspond to the phrases or sub-words of syntax?
- ii. What kind of clauses in syntax corresponds to the phrases, words, or sub-words of prosody?
- iii. What kind of parentheticals in syntax corresponds to the phrases, words, or sub-words of prosody?
- iv. Are there any cases where the intonational phrases of prosody correspond to the sub-clausal units of syntax? If so, then how can one predict the distribution of intonational phrases?

For the discussion of the syntactic conditions that lead to intonational phrase formation, the categories of prosodic constituents that correspond to the exponents of clauses, parentheticals, and speech acts are compared.

Turkish is a verb-final language that displays canonical SOV word order and which allows scrambling (i.e. word order variations). In addition to Turkish, a brief examination of Tagalog is presented for the sake of cross-linguistic comparison. Tagalog is a verb-initial language that displays canonical VSO order and which also allows scrambling. Discussions of Turkish are based on the observations that are attested from results of two experiments that are reported in Chapter 5. The discussion of the Tagalog

data is based on the observations that are reported in Richards (2010) (see §2.3).

The following section presents an outline of the notions that are assumed in this book. These notions concern the architecture of the grammar and the interaction of the modules of the grammar in this architecture.

1.2 A summary of main concepts

This section provides a summary of the main concepts that I adopt and adapt in the remainder of this book. These concepts are centered around the model of the grammar that is assumed in this book. This model represents the architectural relations that span the different modules of the grammar, which I discuss in §1.2.1. In §1.2.2, I introduce two classes of accounts that differ with respect to the kind of access to syntax they assume for phonological operations. The first class encompasses those accounts that suggest that the access is *direct*, and the second class encompasses those accounts that suggest that the access is *indirect*. I side with the indirect access accounts – especially with those that support prosodic structure theory and independent prosodic constituency, which I present in §1.2.4. The main assumptions of this book are summarised in §1.3. A list of the theoretical and empirical contributions of the book is presented in §1.4. An overview of the book can be found in §1.5.

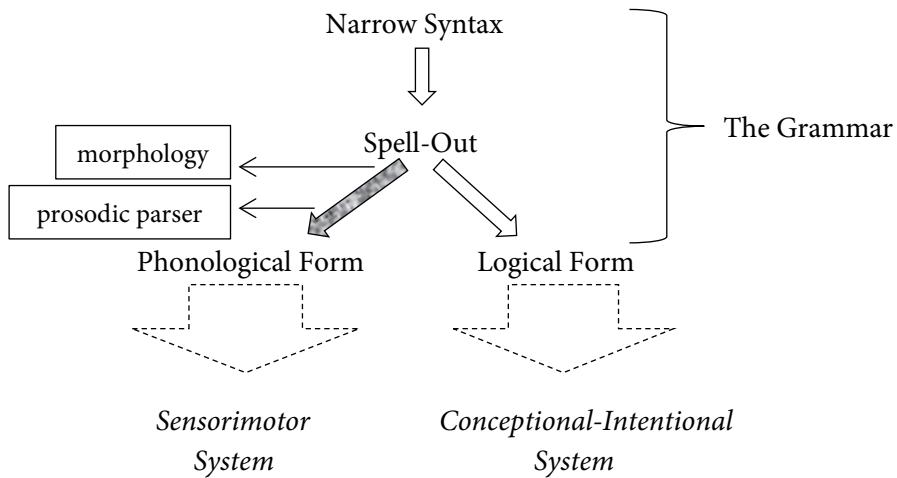
1.2.1 An architecture of the grammar

The architectural organisation of the modules of the language faculty that is assumed in this book is given in (1) (cf. Embick & Noyer 2007). In this architecture, the operations of phonological structure formation and the operations of syntactic structure formation occur in independent modules of the grammar. Phonological structure relates to the sensorimotor system and operations related to phonological structure operate at the interface of narrow syntax and the sensorimotor system: i.e. the *Phonological Form* (PF) branch of the grammar. *Narrow syntax* is the derivational mechanism of constituent structure building, the output of which is transferred to the

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interfaces: PF and *Logical Form* (LF) (Embick & Marantz 2008). The transfer to the interfaces is called spell-out (Chomsky 2007).

(1) *The architecture of the grammar:*



In (1), narrow syntax is linked to PF and LF, while PF and LF are not linked to each other. This enforces an organisation in which syntax is central and the phonological and logical components operate without any interaction with one another. Spell-out is understood as a puncture in the derivation at which point the structures derived in narrow syntax are shipped to the PF and LF interfaces. In terms of derivational timing, this assumption is linked to the idea that narrow syntactic operations occur before the operations of the interfaces. The well-formedness of narrow syntactic outputs is evaluated at each module. My focus will be on the evaluation that occurs at the PF interface, and the operations (such as those of the prosodic parser) that take place before the processing of these structures by the PF-oriented filters. Given the model in (1), my analysis is based on the premises that narrow syntactic operations occur before the operations that are triggered by the conditions of the interfaces, and that the operations of narrow syntax do not have access to the PF-oriented conditions.

For reasons of exposition, the representation in (1) is a simplification of the architecture of the grammar. Particularly, although in (1) the morphological module is represented as preceding the prosodic constituent

formation operations, a number of morphological operations may be *distributed* throughout different stages of derivation that occur in narrow syntax and PF (cf. Embick & Noyer 2007). The main concern here is to note that operations such as the insertion of *Vocabulary Items* (VIs), as well as the majority of morpho-syntactic word formation operations and the setting of basic word order patterns (but not the ‘true’ linearisation that destroys previously-established hierarchical relations), are assumed to apply before the operations that form prosodic constituency, but crucially after syntax.

This book embraces Embick & Noyer’s dynamic view of PF. On this view, the PF branch of the grammar (as represented in (1) with an arrow that is pointing towards the “Phonological Form”) hosts a number of operations that are subject to PF-internal constraints. I consider the procedure that creates prosodic constituents that are isomorphic to input syntactic constituents to be an operation *at* the PF branch of the grammar. In this sense, not only narrow syntax but also the operations that occur on the arrows on the way to the PF (and LF) branches of the grammar in (1) are considered as part of the structure building mechanisms that comprise the grammar. Although the prosodic structure formation actually occurs before the evaluation by the filters of PF (i.e. prosodic structure formation occurs “on the way to PF”), I will henceforth often describe prosodic structure formation as occurring “at PF”, in order to retain a connection with the terminology used in the previous literature.

Prosody involves parsing syntactic structures into units that can be identified audibly. However, the output of PF does not always exhibit one-to-one correspondence with the output of narrow syntax. This limited correspondence indicates the presence of other conditions, which are active at or before PF. Supporters of this line of reasoning assume that the access of PF to syntax is indirect. This is often referred to as the *indirect access* approach (Hale & Selkirk 1987, Selkirk 1984, Nespor & Vogel 1986, Truckenbrodt 1995, *i.a.*).

The arguments of this book are built on the core premises that are embraced by indirect access theories, which assume the intervention of PF-oriented parameters in deriving prosodic structures that are mapped from syntax. The following section outlines the general assumptions of these indirect access theories.

1.2.2 *Access to syntax*

The theoretical accounts of how the narrow syntactic and phonological components of the grammar communicate can be divided into two classes: *direct access* accounts and *indirect access* accounts (see Scheer 2012 for a review).

Supporters of direct access argue that the mapping from syntax to phonology is direct and there are no rules of phonology that act independently of syntax (Kaisse 1985, Odden 1995, Seidl 2001, Wagner 2005, Pak 2008, Samuels 2009, Scheer 2012, D'Alessandro & Scheer 2013, *i.a.*). Such accounts deny the presence of a prosodic structure that is independent of the syntactic structure. Accordingly, any prosodic phenomena must be related to syntactic phenomena. In terms of prosodic constituency, the supporters of direct access theories find it redundant to have an independent prosodic parser whose only function is to map syntactic constituency to prosodic representation (cf. Scheer 2012).

In contrast, supporters of indirect access argue that the mapping from syntax to the phonological component is mediated by certain phonology-oriented rules (Hale and Selkirk 1987, Selkirk 1984 et seq., Nespor & Vogel 1986, Beckman & Pierrehumbert 1986, Pierrehumbert & Beckman 1988, Truckenbrodt 1995, Féry 2011, *inter alia*). Such theories conclude that prosodic constituency must exist independently of syntactic constituency. Accordingly, there is a finite set of prosodic category types, which constitute the *Prosodic Hierarchy*, whereby prosodic category types are organised in a hierarchical manner.

With respect to the isomorphism that pertains between prosodic representations and their syntactic input, while the direct access accounts cannot afford non-isomorphism, the indirect access accounts allow for mismatches between the output of PF and the structures that are generated by narrow syntax. When an absence of direct correspondence is observed, indirect access theories treat conditions on prosodic markedness as the source of the mismatches (Selkirk 2005, 2009, 2011). When one considers that mismatches do exist, indirect access theories become more appealing than their direct access counterparts. Particularly, since both narrow syntax and PF exhibit module-internal relations and operations, there may also be occasions where the outputs of these two modules do not match up.

In this book, I endorse a theory of indirect access to syntax. Particularly, I find that PF-internal prosodic well-formedness operations may lead to mismatches between the output of narrow syntax and the output of PF. In addition to the presence of PF-internal operations, I also claim that the nature of the input to PF is an additional source for such cases of mismatch. The prosodic structural operations that are described in this book, such as the prosodic word formation strategies that are described in §2.2 where prosodic words (*ws*) are generated with reference to phonological strings rather than the units of syntax), or the generation of certain intonational phrases (*is*) that is discussed in §6.5 (where certain *is* are generated as a result of PF-oriented conditions), provide supporting evidence for the limited indirect access to syntax account that is contemplated in this book.

1.2.3 *Input to PF*

Both direct and indirect access theories assume that what is accessed by PF is the narrow syntactic representation (see Elordieta 2008 and references therein). However, narrow syntax generates structures that are not only assessed at PF, but also at LF, where meaning is interpreted. In this respect, a syntactic tree representation is equipped with information that is interpretable at (and relevant to) each interface (Chomsky 2013). In other words, the immediate output of a narrow syntactic derivation is endowed with information that relates to every module of the grammar.

On the other hand, only a subset of the information conveyed by the output of narrow syntax is relevant to the PF branch of the grammar. Only the information borne by those syntactic structures onto which phonological exponents are superimposed via the insertion of VIs are assumed to be related to the parsing operations that apply at the PF branch (Nespor & Escrig 1985, Nespor & Vogel 1986, Borsley & Tallerman 1996, Embick & Noyer 2001, Tokizaki 2007).²

² A number of studies compared the prosodic properties of structures with and without ellipsis, to see if the lack of a phonological exponent due to ellipsis yields any consequences for the prosodic parsing of such forms (e.g. Carlson 2001, Féry & Hartman 2005, Kentner 2007, Manus & Patin 2011). These studies (except Féry & Hartman 2005) concluded that any prosodic dissimilarity between elliptical and non-elliptical structures cannot be directly related to ellipsis. Bearing these conclusions in mind, this book, therefore, disregards the potential effects of ellipsis on the prosodic realisation of elliptical syntactic structures.

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The fact that PF is insensitive to a number of relations that are encoded in narrow syntax has led to the assumption that complex syntactic structures are ‘reduced’ before they are interpreted at PF. One such reduction operation is called ‘linearisation’, which is often assumed to take place after spell-out, but before prosodic operations (Biberauer & Roberts 2013, and the references in there). Via linearisation, the multi-dimensional representation of morpho-syntax is ‘reduced’ to a single dimension, which encodes only those relations that can be depicted on a linear string. In this sense, the linearisation operation may be considered as a means to ‘simplify’ the representations of narrow syntax, the application of which yields strings that are ‘ready’ to be assessed at PF.

The idea of having an operation such as “linearisation” within the PF branch of the grammar is intuitively appealing when one considers that the multi-dimensional structures of narrow syntax can only be ‘uttered’ (i.e. articulated or signed) in a sequential order as a string of terminals. However, a number of studies have shown that the PF side of the grammar, or at least certain operations that apply after a derivation has been spelled-out to it, can access more than just linear strings (Embick & Noyer 2001, Embick 2007, Embick & Noyer 2007). Certain operations at PF have access to syntactic constituency information, the labels of these constituents, and even the hierarchical relations across syntactic constituents. For this reason, linearisation must take place at a later stage at PF, after a number of operations, including prosodic constituent formation take place. Based on this, this book considers the input the prosodic parser to be not a linear string (for the arguments in support of this, see §2.1 and §2.2).

It is evident that PF has access to syntactic information, but it is equally evident that the amount of information that is relevant to the operations that apply at PF is not as detailed as the information that is encoded in the immediate output of narrow syntax. It is evident that linearisation ‘reduces’ the complexity of phono-syntactic structures, rendering them ready to be ‘uttered’ as strings of segments. However, it is also evident that this process is at a much later stage at PF and that ‘linearisation’ *cannot* be responsible for the reduction of complex syntactic structures to be processed by a number of operations at PF.

The existence of syntax-prosody mismatches entails that there must be a mechanism other than linearisation that creates representations that are

endowed with PF-related information but devoid of non-PF-related information at the stage of prosodic constituency formation. The truncation that forms *maptrees* (which I introduce in §2.2 as a means to ensure that only syntactic information relevant to PF is presented to the PF-branch of grammar) may be considered as such a mechanism.

In the following section, I summarise the tenets of the theories of indirect access, with particular emphasis on prosodic structure theory.

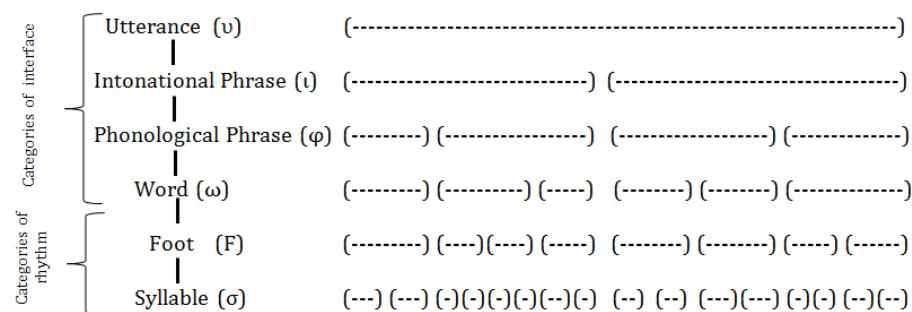
1.2.4 Prosodic structure and its rules

This section is a summary of the tenets of prosodic structure theory that will be used in the rest of the book.

Following the prosodic structure theory, a theory of indirect access, this book assumes that the mapping of syntactic information to the phonological module is mediated by certain phonological constraints that act upon the constituents of the prosodic structure (Hale & Selkirk 1987, Selkirk 1984 et seq., Nespor & Vogel 1986, Beckman & Pierrehumbert 1986, Pierrehumbert & Beckman 1988, Truckenbrodt 1995, *inter alia*).

Prosodic constituents consist of a finite set of prosodic category types. These categories make up the *Prosodic Hierarchy*, in which prosodic category types are hierarchically organised:

(2) The Prosodic Hierarchy (Nespor & Vogel 1986, *inter alia*)



Categories of interface in the hierarchy correspond to syntactic structures of different levels. Categories of rhythm are not related to mapping from

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syntax. This book focuses on the categories of interface (Itô & Mester 2012): i.e. the *Intonational Phrase* (ι), *Phonological Phrase* (φ), and *Prosodic Word* (ω). In Chapter 2, I advance a new means to derive prosodic structures in terms of these category types, where I claim that ω is not a direct outcome of the operations of correspondence to the syntactic structure, but it is indirectly generated during the prosodic constituency formation procedure. Similarly, in Chapter 6, I claim that not all ι s are formed via mapping from input syntactic structures.

The basic assumption of indirect access is that articulated speech is conditioned by two independent sources: (i) narrow syntax, and (ii) conditions of PF. The conditions that appeal to direct correspondence between narrow syntax and prosodic constituents are called the rules of *faithfulness (correspondence)*. Those that appeal to phonological relations, which operate at PF, are called the rules of *prosodic well-formedness*.

As for the correspondence between syntactic constituency and prosodic constituency, the prosodic theory that is adopted in this book is *Match theory* (Selkirk 2005, 2009, 2011). Match theory assumes that as a result of the mapping from syntax to prosody, certain syntactic category types i.e. *the word*, *the phrase*, and *the clause* match with their corresponding prosodic category types. On this theory, the prosodic category types that are matched are the categories of interface: i.e. ω , φ , and ι .

MATCH rules comprise the rules of *faithfulness*, and they predict a one-to-one correspondence between syntactic constituents and prosodic constituents.

(3) *MATCH rules (Selkirk 2005, 2009, 2011)*

a. MATCHWORD:

A word in syntactic constituent structure must be matched by a constituent of a corresponding prosodic type, call it ω , in the phonological representation.

b. MATCHPHRASE:

A phrase in syntactic constituent structure must be matched by a constituent of a corresponding prosodic type, call it φ , in the phonological representation.

c. MATCHCLAUSE:

A clause in syntactic constituent structure must be matched by a constituent of a corresponding prosodic type, call it ι , in the phonological representation.

If required by the prosodic grammar, faithfulness to syntax may be obviated by the rules of *prosodic well-formedness*. The rules of *prosodic well-formedness* involve surface dependencies that relate to:

- linear relations on a string (i.e. those that employ notions such as *leftmost* or *rightmost*);
- properties of prosodic structural categories (*strong / weak* or *recursive / non-recursive* constituents);
- language-specific properties.

Binarity (minimal (BINMIN) and maximal (BINMAX) Itô & Mester 1992, Mester 1994; Hewitt 1994; Selkirk 2000), the ban on recursion in relation to the *Strict Layer Hypothesis* (NONREC), and EXHAUSTIVITY are examples of conditions on prosodic well-formedness. Note that I have stated the last two conditions below as positive generalisations, for the sake of clarity.

(4) a. BINMIN (κ):

Every prosodic constituent of type κ should immediately dominate at least two daughter constituents.

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- b. BINMAX (κ):
Every prosodic constituent of type κ can immediately dominate two daughter constituents at most.
- c. NONREC:
Every prosodic constituent of type κ must be contained by a prosodic category type of a higher level in the prosodic hierarchy.
e.g. “A φ cannot contain another φ .”
- d. EXHAUSTIVITY:
Every prosodic constituent of type κ must exclusively dominate the prosodic constituents of the immediately lower category.
e.g. “Every φ must immediately dominate an ω .”

The prosodic well-formedness conditions that are listed above are language specific, in the sense that some of them are active in some languages and inactive in other languages. For example, in §2.2 we will see that NONREC is active in Turkish, whereas it is inactive in Tagalog, as we will see in §2.3.

In the prosodic hierarchy, an ι is composed of one or more φ s, and a φ is composed of at least one ω . Match theory assumes that the terminal nodes that are syntactic heads match with ω s, and that all maximal projections – except for root clauses – match with φ s.

The syntactic input for ι is rather understudied. There seems to be variation as to what actually maps as ι . This book attempts to provide a parsimonious account of ι -formation. Yet, since ι cannot be construed without recourse to its building blocks, i.e. φ s and ω s, I first discuss the algorithms proposed for the formation of the other categories of interface: ω s and φ s.

When one views *the clause*, *the phrase*, and *the word* as the syntactic primitives that Match theory assumes to correspond to the categories of interface in the prosodic structure, *the phrase* stands out as the most empirically discernable unit of syntax, which can be detected and described merely via the terms of narrow syntax. However, *the word* and *the clause* are

detected and described by appealing to other modules of the language faculty: i.e. morphology for the word, and semantics for the clause. Due to this, I remain sceptical about the assumptions of Match theory that state that the clause and the word are the syntactic correlates of ω s and ι s, respectively. With this in mind, for ω -hood, I examine the syntactic structures in Turkish whose exponents correspond to ω s and conclude that the majority of ω s correspond to the phonological exponents of syntactic phrases. In other words, I conclude that the exponents that correspond to φ s and most ω s are identical in Turkish. For ι -hood, I examine the category types of prosodic constituents that correspond to the exponents of syntactic clauses (finite and non-finite, root, subordinated and coordinated), parentheticals (clausal and sub-clausal, pragmatically integrated and isolated, clause initial / medial / final), and speech acts (clausal and subclausal). Based on the empirical evidence, I conclude that not all syntactic clauses or parentheticals correspond to ι s (in Turkish and elsewhere). However, the exponents of the structures that are employed to perform speech acts *always* correspond to ι s.

1.3 The toolbox

This section provides a list of the basic assumptions that I adopt and endorse. I adopt the core assumptions of Match theory, according to which each syntactic category type and the corresponding prosodic category types in phonological representation ‘match’ with each other. In my understanding of Match theory, MATCH is not a constraint (unlike in Selkirk 2009, 2011), but a command that triggers a combination of the prosodic constituent formation operations: *parse* and *label*.

As for the labels of prosodic constituents, prosodic category types such as ω , φ and ι exist independently of the syntactic structure and are sensitive to PF-internal operations and relations.

I assume the framework of Distributed Morphology (DM) (Halle & Marantz 1993), and a dynamic view of the branch to PF, in which a number of PF-internal operations apply to (a version of) the output of narrow syntax.

To account for the syntax-prosody correspondence, as well as the deviations from it, I employ a derivational perspective. Since the suprasegmental phonological phenomena are commonly discussed from an

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Optimality Theoretic (OT) (Prince & Smolensky 1993) point of view, these phenomena are addressed in relation to *constraints*, rather than *rules*. An example of this situation is observed in the assumptions of Match theory. Match theory is developed as an extension of the “Correspondence Theory” that is proposed for the OT framework by McCarthy & Prince (1995, 1999). In this theory, not only syntax-prosody correspondence but also the conditions on prosodic well-formedness are recognised and framed according to the premises of OT. For instance, in a number of languages, it is observed that a prosodic constituent cannot be composed of less than two sub-constituents. This phenomenon is accounted for with a constraint that is called *Binarity*, minimal (BINMIN). In terms of OT, in a language where the constraint BINMIN is highly ranked, the structures that do not fit the requirements of this constraint are understood to be illicit.

This book embraces a derivational perspective on prosody, in which prosodic constituents are generated via the application of rules and operations. In derivational terms, one could hypothesise that although illicit prosodic structures may possibly be generated, the corresponding prosodic structure is re-arranged (via the mechanisms of *repair*) at some point in the prosodic derivation to satisfy the binarity requirement. In other words, the requirement that a prosodic constituent must be minimally binary is a general description of a licit derivation. Put differently, the content of BINMIN sets a condition on the felicity of output prosodic forms. If this condition is not met, then repair mechanisms are triggered, followed by the application of a number of operations. The consequence of such conditions can therefore be accounted for both with a derivational account and with OT. However, this condition remains as a data-driven generalisation, which is independent of theoretical assumptions.

In the remainder of the book, I refer to a number of conditions (such as minimal and maximal binarity or non-recursivity) that have been addressed by studies that employ OT. However, my understanding of these ‘constraints’ are nothing more than data-driven generalisations. I treat these generalisations as conditions that trigger the application of certain repair operations such as ‘match’, ‘parse’, ‘insert’, or ‘reduce’.

This book adopts the *Bare Phrase Structure* theory (BPS) of syntax (Chomsky 1995). In its most recent form, a number of syntactic information, such as labels, or phrasehood, is not marked in BPS. Although irrelevant for

the narrow syntactic derivations, labels, headedness, and phrasehood are strongly relevant and informative for the phonological component of the grammar (Nespor & Vogel 1986, Selkirk 1986, Cowper & Rice 1987, Bickmore 1990, Zec & Inkelaar 1990, Kubozono 1992, Kayne 1994, Tokizaki 1999, Pak 2005, Chomsky 2013, among many others). Based upon this, I assume that the structural relations in BPS trees of narrow syntax are only visible at the PF interface, which reads the syntactic relations of phrase structures. The intention here is to assure that the structure internal relations (i.e. whether or not a projection and a head bears the same label and whether or not they are termini) in the source syntax is visible at the interfaces.

For the sake of exposition, in the remainder of this book, the source syntactic trees, and more importantly *maptrees*, depict the PF-oriented structure internal dependencies of the syntactic structures they represent. Particularly, if a syntactic category is not a projection (i.e. it does not dominate a node with its category), it is a *minimal projection*. If a syntactic category does not project any further (i.e. it is not immediately dominated by its own category), it is a *maximal projection*. A *head* is a minimal projection and it is dominated by the category of its own kind. In this book: (i) maximal projections, non-projecting termini, and intermediary nodes of a projection are notated as XPs in the source syntactic representations, and in *maptrees*, (ii) minimal projections are referred to as *terminal nodes*, which can constitute *terminal XPs* (which are minimal-maximal projections) or *heads*, (iii) heads are represented as X^0 s. Source syntactic trees are depicted with the VI items in their termini. As such, terminal nodes stand for their exponents, and they do not dominate a separate lexeme.

1.4 Contributions of this dissertation

This dissertation is an attempt to explicate prosodic structure formation procedures. To achieve this, empirically attested outputs of prosodic constituency patterns that are derived from a number of syntactically diverse structures are compared and contrasted. Under the premises of the reverse Y-model of the grammar, in which phrase structures that are formed in the narrow syntactic module are shipped to the PF module, a stepwise description of the procedure of mapping from syntax to prosody is

presented. Certain steps of the description that are proposed in this dissertation can be related to various aspects of the mapping procedure. Below is an outline of these aspects.

Syntax-oriented steps

- Detecting the PF-related aspects of the input syntactic structures
- Determining the category of the syntactic constituents that are mapped

Prosody-oriented steps

- Detecting the prosodic categories that are labelled as a result of direct mapping
- Detecting the prosodic categories that are derived as a result of PF conditions

As for those steps that relate to the structural nature of the syntactic input, I claim that PF can access only a portion of the structures that narrow syntax creates. For this reason, an intermediary representation that depicts only those narrow syntactic relations that are relevant to the operations of PF is favoured. This book proposes such an intermediary representation and outlines its properties. This intermediary structure is called *maptree* (see Chapter 2). In a nutshell, *maptrees* is the linguist's tool to represent the syntactic relations of only those projections that bear a morphologically free-standing phonological exponent after the insertion of the Vocabulary Items (VI insertion) (except for the projections of morphologically bound heads). *Maptrees* are generated via a *pruning* procedure that targets the projections of null and morphologically bound heads in the VI-inserted syntactic trees. After pruning, those 'floating' projections whose mother nodes are pruned attach to the next higher projection that is not pruned on the *maptree*. As a result of the procedures of pruning and attaching, certain structural relations that are attested in narrow syntax are overridden by the novel structures of *maptrees*. For example, unlike the trees of bare phrase structure, *maptrees* may exhibit n-ary branching. In line with the reformulation of containment relations, structural relations such as the structural distance of maximal projections to their heads are also re-defined (see the discussion on *the*

structural distance condition in §2.2). Additionally, in §2.3, revisiting the Tagalog data discussed in Richards (2010), a language that is genetically dissimilar to Turkish, I provide cross-linguistic empirical support to reinforce the efficacy of the theory that is developed in this book. The fact that the current theory accounts for the attested prosodic constituency of not only Turkish but also Tagalog enhances the likelihood that the *maptree* account (or any account that retains the conditions on generating *maptrees*) has a universal scope.

In terms of access to syntactic information, this book provides empirical evidence to suggest (i) that prosodic constituents are *faithful* to only a portion of narrow syntactic structures (i.e. to the structural relations that are attested on *maptree* representations), and (ii) that the conditions on the well-formedness of prosodic structures may result in the *deformation* of those prosodic structures that are generated as faithful to syntactic configurations as they are represented in *maptrees*. In this sense, the empirical findings of this book strengthen the premises of those theories that assume *indirect* and *limited* access to the narrow syntactic input.

As for those steps that relate to the nature of the category of the syntactic constituents that are mapped: (i) I claim that MATCHWORD is not part of the prosodic grammar, as *words* are not mapped from syntax. I base this claim on the empirical evidence from Turkish that is established in Chapter 2 of this book and the theoretical premises of DM, which state that “word” is not a syntactic primitive, and any “word” that is generated in morpho-syntax can only be defined with respect to its syntactic context (which involves at least one projection). This eliminates the possibility of referring to *words* independently of their syntactic context (i.e. the projections within which they are contained). Based on evidence from Turkish: (ii) I claim that MATCHCLAUSE is not employed in the *i*-formation part of the prosodic grammar, as those syntactic structures that are considered as clauses are not always parsed as *i*, and *is* that are observed in prosodic structures do not always correspond to the exponents of clausal structures (see Chapter 4). (iii) I claim that any condition that refers to parenthetical syntax (e.g. MATCHCOMMA, and MATCHPARP) is not responsible for *i*-formation, as there are parentheticals that are not parsed as *is* (see Chapter 5) and *is* that do not always consist of the exponents of parenthetical structures (see Chapter 4). (iv) I provide evidence to support the claim that those structures

that are employed to perform speech acts provide the syntactic input with the parser for ι -formation. Following Kan (2009), I call the condition that triggers the formation of ι s that correspond to structures with an illocutionary force $MATCHFORCE_{ILL}$ (see Chapter 6). In other words, this book supports the idea that clausal structures with an illocutionary force are mapped as ι s in the prosodic structure (supporting Downing 1970, Kan 2009, Selkirk 2009, 2011, Bagchi 2011, Moraes 2011, Truckenbrodt 2014, Güneş 2014). Additionally, unlike the assumptions of the previous literature (except Güneş 2014), this book provides novel empirical evidence for the existence of sub-clausal structures that bear illocutionary force and that are parsed as ι s. In other words, a major contribution of this book is to support the idea that there are non-clausal structures that bear illocutionary force (i.e. XPs that are employed to perform speech acts).

With respect to the prosodic constituents that are generated and labelled in the prosodic structure as a result of the conditions of faithfulness (i.e. those prosodic constituents that are faithful to the syntactic relations that are present in input *maptrees*), this book lists a number of theoretical reasons, and provides empirical evidence to support the claims that: (i) φ s are generated as a result of $MATCHPHRASE$, and (ii) certain ι s are generated as a result of $MATCHFORCE_{ILL}$. This book concludes that parentheticalhood and clausehood do not bear correlates in the prosodic structure. Clausal or not, and parenthetical or not, any XP that is not $Force_{ILL}P$ (and that does not violate the structural distance condition) is found to be mapped as a φ in the prosodic structure. Similarly, any $Force_{ILL}P$, regardless of whether or not it dominates a clausal structure, is mapped as an ι in the prosodic structure. In the original form of Match theory, ω s are recognised as a category of faithfulness, i.e. a category that is only generated as a result of mapping from syntax, via $MATCHWORD$, and which has a corresponding unit in syntax. Contrary to this assumption, I claim that ω s are not generated to satisfy the conditions of faithfulness. In this sense, φ and ι are the only categories that are generated as a result of the conditions on faithfulness to syntax.

With respect to the prosodic constituents that are generated and labelled in the prosodic structure as a result of conditions on prosodic well-formedness (i.e. those prosodic constituents that are recognised as *mismatches* to the syntactic input), this book lists a number of theoretical motivations, and provides empirical evidence to support the claim that ω is a

category that is generated as a result of the application of the prosodic well-formedness rule, *parse to ω*, which is activated when EXHAUSTIVITY is violated in Turkish. Specifically, I claim that any string that is flanked by a φ boundary must be parsed as a single prosodic constituent of the category ω in Turkish, as φs must exhaustively dominate ωs. Therefore, on my account, the means by which φs and ωs are formed are completely dissimilar. While, φs are formed as a result of a rule of correspondence (i.e. MATCHPHRASE), ωs are formed as a result of a prosodic well-formedness rule in Turkish (i.e. *parse to ω*), which is triggered as a repair mechanism when EXHAUSTIVITY is not satisfied (see §2.2). As such, while the correlates of φs are syntactic units, the correlates of ωs are prosodic units (more specifically phonological strings). The fact that ω, as an empirically attestable category of the prosodic constituency, is generated in order to satisfy PF-oriented constraints strengthens the assumptions of theories of indirect access, where not all aspects of prosodic grammars are directly related to mapping from syntax. Another claim of this book is that certain occurrences of *is* are generated as a result of the application of the repair rule, *insert i*, which is activated when NONREC is violated at the level of *i*. Similar to ω-formation, the fact that certain *is* are formed as a result of prosodic well-formedness conditions enhances the likelihood that theories of indirect access are on the right track.

This book constitutes one of the few studies on sentence-level prosody that incorporates the notions of prosodic structure theory and Match theory from a derivational standpoint. In other words, architectural concerns aside, this study may be interpreted as closer to those studies such as Richards (2014), which refer to the steps of prosodic constituency formation and syntactic derivation as steps of a continual procedure. In a similar vein, the account that is posited for *phonological word adjoiners* (PWAs) in Turkish (in which certain morphemes, including the copula that carries the tense morphemes, must bear an ω boundary on their left) is easily reconciled with Richards' (2014) account of *affix-support* (in which the exponents of certain projections, including the Tense Phrase, must follow a prosodic boundary). As an addition to Richards' observations, I show for Turkish that PWAs (i.e. those morphemes that are subject to affix-support) emerge only in those environments where the sisters of potential PWAs are non-branching structures on *maptrees*. In cases when such morphemes exhibit branching sisters on *maptree* representations, these morphemes exhibit the prosodic

properties of regular affixation. Additionally, due to the delayed affixation/ω-formation of such morphemes (i.e. due to the fact that their affixhood is underspecified), the projections of PWAs are represented in the *maptrees* regardless of whether or not they exhibit a morphologically free, bound or null head.

The majority of the empirical observations in this book are based on the analysis of data that are obtained via two experiments on Turkish, which are presented in Chapter 5. The data consist of various syntactic structures (clausal, phrasal, parenthetical, subordinated, root, fragmented, coordinated, copular, verbal, etc.) with various syntactic and pragmatic functions (focused, given, pragmatically integrated, and pragmatically isolated items, arguments, adverbs, parentheticals, etc.). This book is one of the few studies that provide an empirical analysis of such a wide variety of structures in Turkish by employing exploratory statistical techniques. As such, this book constitutes a number of observations on the prosodic structure of Turkish, which will hopefully shed light on our understanding of the prosodic grammar of Turkish and its interface with syntax.

With the refined syntactic input for mapping that is proposed and the improvements that are suggested for Match theory, this book attempts to provide a theoretical formulation of the correspondence between syntactic structures and prosodic structures. The cross-linguistic scope of this formulation is supported by an analysis of the Tagalog data. Needless to say, the working hypotheses of this book may require further inquiry.

1.5 *Overview*

In Chapter 2, based on the observations on Turkish, the theoretical and empirical necessity of certain reformulations of Match theory is established. As a PF-oriented syntactic representation, the *maptree* representation is suggested, and along with a discussion on deriving prosodic structures in Tagalog, the cross-linguistic applicability of such a representation is illustrated. Chapter 3 provides an outline of prosodic headedness in Turkish at the level of φ and ι . The acoustic properties of prosodic heads in Turkish at the level of φ and ι are presented, and, based on the claims that were advanced in Chapter 2, an account that predicts the distribution of φ -level

and *i*-level heads in Turkish is proposed. Additionally, acoustic correlates of the boundary tones of the “categories of interface” in Turkish are described. In the context of *i*-level heads, I present examples from contexts that are information structurally neutral as well as focus-background contexts. Chapters 4, 5, and 6 are dedicated to determining the nature of the syntactic structures that lead to *i*-formation. In Chapter 4, the clause is considered as a candidate source for *i*-formation. In Chapter 5 parentheticals are considered as the syntactic correlates of *i*-hood. These chapters conclude that neither clausehood, nor ‘parentheticalhood’, triggers *i*-formation in Turkish. In Chapter 6, the exponents of those syntactic structures that are employed to perform speech acts are analysed as the potential source of *i*-formation. Chapter 6 concludes that such structures (clausal or not, parenthetical or not) are always obligatorily mapped as *is* in Turkish. The particular configurations in which *is* do not correspond to the structures that are performed as speech acts are also discussed in Chapter 6. I suggest that a condition that bans recurring *is* in Turkish is responsible for such cases of mismatch. Chapter 7 concludes the book.

2

Mapping from syntax to prosody

The main assumption of Match theory is that the rules of syntax-prosody correspondence generate prosodic category types. Therefore, the content of a syntactic constituent corresponds to the content of the corresponding prosodic category type, as a result of the command *MATCH* α .

In this chapter, I discuss how certain assumptions of Match theory in its current form are inconsistent. I also show that Match theory has insufficient empirical reach. As a result of these observations, I deviate from the assumptions of Match theory on a number of occasions. One of these occasions is related to MATCHWORD, which states that a prosodic word (ω) is generated for each *syntactic word*. An ω is a prosodic category type, whose acoustic correlates are dissimilar to those of other prosodic category types such as *phonological phrase* (φ) or *intonational phrase* (i). I claim that an ω cannot correspond to any syntactic category. This is because a ‘word’ is not a syntactic primitive (Embick & Marantz 2008:6). Therefore, I conclude that ω s are not generated as a result of the command MATCH α .

Another case where I deviate from Match theory concerns the nature of the source syntactic input. An assumption of Match theory is that the immediate output of the narrow syntactic derivation is the sole input to the phonological module. Divergently, I suggest that certain aspects of the narrow syntactic input are ‘ignored’ by the phonological component. My proposal is based on the observation that the phonological component is sensitive only to a portion of the information that is represented in a tree of narrow syntax. For example, syntactic constituents without a phonological exponent are not ‘visible’ to the phonological module. Similarly, although notions such as headedness, or the direction of branching are not central to syntax, they are central to the phonological module. Additionally, certain projections of syntax (regardless of the fact that they have a morphologically free-standing phonological exponent) are ‘ignored’ by the rules of MATCH. I

conclude that the properties of the syntactic information to which the phonological module is sensitive is only a portion of the syntactic structures that are generated in narrow syntax.

For the ease of exposition, I propose a parsetree that represents syntactic relations that are only relevant for the phonological module of the grammar. I call this parsetree *maptree*. *Maptree* is a readjusted version of the narrow syntactic trees which represents branches of syntactic trees that exhibit morphologically free-standing phonological exponents, where these branches are reorganised in a way that partially preserves the constituent structure of the source syntax. In the remainder of the chapter, I suggest the *maptree* (or more specifically those narrow syntactic projections that are depicted in the *maptrees*) as the input to the phonological module with the discussion of a number of syntactic structures, and show that a representation such as *maptree* eases the reference to a syntactic source in accounting for phonological constituency.

In §2.1, I discuss the conditions on ω -formation and φ -formation within Match theory, and conclude that the prosodic parser is sensitive to only a portion of the narrow syntactic input. Based on this conclusion, this section also endorses the need for certain refinements to this theory. In §2.2, I outline a tree representation that is ‘tailored’ from the source syntactic tree for the prosodic parser: *maptree*. §2.3 is an instantiation of the cross-linguistic applicability of *maptree*, in which the prosodic constituent formation of Tagalog is discussed. §2.4 is a summary of Chapter 2.

2.1 Some refinements for match theory

The core assumption of Match theory is the following: the interface-related categories of the prosodic category types are generated as a result of the syntax-prosody mapping, in which the exponents of a syntactic category match with corresponding prosodic category types (Selkirk 2005, 2009, 2011). In the following subsections I show that a number of refinements to Match theory are needed. For instance, as I discuss in §2.1.1, I show that ω -formation cannot be generated as a result of MATCHWORD, and that an ω is an interface category only indirectly. Additionally, as I discuss in §2.1.2, I

show that prosodic constituent formation operations are not sensitive to all aspects of the narrow syntactic trees.

2.1.1 Elimination of MATCHWORD

In this section, I discuss the assumption that ‘words’ in syntax match with ω s in prosody. I discuss a number of cases from Turkish that pose problems for such an assumption, and conclude that MATCHWORD cannot be part of the syntax-prosody mapping algorithm, and cannot be responsible for ω -formation.

Let us consider Selkirk’s (2005, 2009) MATCHWORD:

(5) MATCHWORD

A word in syntactic constituent structure must be matched by a constituent of a corresponding prosodic type, call it ω , in the phonological representation.

I argue that the assumptions of MATCHWORD are fundamentally flawed for a number of reasons. First of all, following the syntactic process of constituent formation (i.e. syntactically smaller units concatenate to form larger syntactic units), the inherent assumption is that prosodic category types (ω , φ , and ι) are generated bottom-up in the order of the hierarchy given in (2) in §1.2 in this book. That is, hierarchically lower categories are mapped before hierarchically higher ones. The order of mapping is assumed to be as in (6):

(6) MATCH WORD-to- ω \Rightarrow MATCH PHRASE-to- φ \Rightarrow MATCH CLAUSE-to- ι

Considering the architecture of the grammar in (1) in §1.2.1 and derivational timing, the order in (6) is problematic. This is because terminal nodes (assumedly *words*) never get spelled out independently of their maximal projections.³ If a theory assumes the mapping of *words*, then, given the

³ Even for accounts that support punctuated derivations such as multiple spell-out or cyclic phasal spell-out (e.g. Kratzer & Selkirk 2007, Ishihara 2007, Dobashi 2009, Samuels 2009, among others) – in which subportions of syntactic structures are assumed to be shipped to the interfaces – bare roots, especially lexical roots, are never predicted to be transferred to the interfaces independently of their projections.

architecture of grammar in (1) in this book, the input for such a mapping can take place only after morphological operations (e.g. VI insertion) take place, but not immediately after syntactic derivations. Even on the assumption that words match after morphological operations, MATCHWORD makes wrong predictions, as it is not always the case that each morpho-syntactic word corresponds to an ω (c.f. §2.2.2).

Moreover, Match theory, which seems to adopt DM (cf. Selkirk 2011:479, fn.1, and Elfner 2012:7), will actually conflict with the assumptions of DM if the alleged category of ‘word’ is treated as a syntactic primitive. This is because of the “syntactic structure all the way down” principle of DM. This principle demands that a ‘word’ cannot be regarded as a primitive of syntax (Embick & Marantz 2008:6). Accordingly, both in numeration and as syntactic termini, there are only *feature bundles* such as [+past] or [+pl], which correspond to functional morphemes after VI insertion (such as *-ed* for [+past] and *-s* for [+pl] in English), and *roots* such as $\sqrt{\text{SEE}}$ or $\sqrt{\text{BILL}}$, which correspond to lexical items after VI insertion (such as *see* or *saw* (depending on the morpho-syntactic context) for $\sqrt{\text{SEE}}$ and *Bill* for $\sqrt{\text{BILL}}$) (cf. Harley & Noyer 2000). Thus, there are no ‘words’ in narrow syntax with which ω s can match.

MATCHWORD is suggested to define ω s in the prosodic structure. Putting aside how an ω is defined, (5) raises some additional fundamental questions. One of these questions concerns the definition of the input syntactic ‘word’: what is a *word* in a syntactic constituent? Obviously it is not defined orthographically. Is it a terminal element in the syntactic tree (akin to Nespor & Vogel 1986)?

It is relatively easy to spot a ‘word’ in a string of utterances in continuous speech using our intuitions. However, providing a formal definition for the syntactic input of ω s is a hard task when one considers the variation in the size and the structural content of them.

Nespor & Vogel (1986) suggest that an ω is roughly equal to or smaller than the terminal element in a syntactic tree. It can be a *stem*; a stem+function word; the two members of a compound or an independent function word created by exhaustive parsing (an ω that is created when there are no other ω s that function word can attach to). As one can see, with this definition, the category ω is not related to a unique property that can be independently defined on syntactic grounds. In fact, the description of an ω

seems to be constrained only by the descriptive observations of the linguist, when the surrounding prosodic, and phonological phenomena is considered for each individual instance, in each individual language.

In any case, MATCHWORD needs to be redefined not only because it is inconsistent with the assumptions of the architecture of the grammar but also because it cannot account for the empirical facts. I will now list a number of cases from Turkish to provide evidence that MATCHWORD in its current form is insufficient and unnecessary.

First of all, in Turkish, the exponents of a bare root (i.e. a lexical syntactic head) can not be parsed as an ω . In fact, VIs that correspond to bare roots (although they are words with a syntactic category) cannot be targeted by the prosodic parser (Göksel & Güneş, in prep.).⁴

- (7) a. * Aynur ((araba) $_{\omega}$ (-da) $_{\omega}$) $_{\varphi}$ uyu-yor.
 Aynur car -LOC sleep-PROG
 ‘Aynur is sleeping in the CAR.’
- b. * Gazete-ci değil-im, ((kitap-) $_{\omega}$ (ç1-yım) $_{\omega}$) $_{\varphi}$
 paper-DER not.1SG book- DER-1SG
 ‘I am not a newspaper seller I am BOOK seller.’

In (7) (and throughout the book), the brackets that mark the constituent boundaries of various prosodic category types are the schematic representations of acoustically measured correlates of each type. For

⁴ Given that Turkish exhibits vowel harmony, one may ask whether the ‘harmonic word’ equals with an ω . This is an implausible notion (cf. Kornfilt 1996). Parts of a harmonic word may be parsed as separate ω s (as (10) in the main text shows), or more than one harmonic word may be parsed as a single ω (as (8) in the main text shows). It is evident that edges of vowel harmonic word boundaries and edges of prosodic word boundaries do not converge. I speculate that the rules of vowel harmony might apply at a different stage in the derivation than the prosodic parser. If this were not true, a non-harmonic continuation outside the ω could be acceptable. This is not borne out. For example, a non-harmonic continuation to the ω in (10a) is unacceptable – i.e. *(((gel-ecek-) $_{\omega}$ lar-di) $_{\varphi}$). Therefore, one should not consider the domain of vowel harmony in Turkish as a domain that is in communication with the prosodic parser. How and when the vowel harmonic domains are set is not a concern in this book. The only assumption that is made here is that the vowel harmonic word, similar to the ω , is created somewhere after spell-out in the model of grammar that is given in (1) in this book.

example, the brackets that mark an ω are correlated with the acoustic phenomena that mark ω edges (see Chapters 3 and 5).⁵

The ungrammaticality in the examples in (7) is due to the fact that the exponents of bare roots *araba* ‘car’ in (7a) and *kitap* ‘book’ in (7b) are pronounced as ω s and the suffixes that are morphologically part of these words are parsed separately from these roots. If the assumptions of MATCHWORD – namely, that each lexical root matches with an ω – are correct, then this kind of constituency should be (at least optionally) allowed. Hence, the data in (7) conflict with the assumptions of MATCHWORD, since when the exponent of a lexical root matches with an ω , the structure is rendered unacceptable.

At this juncture, one may argue that the ungrammaticality in (7) might be irrelevant to the predictions of MATCHWORD, that MATCHWORD might still be operative, and that there might be other conditions that override the consequences of MATCHWORD. In the case of (7), the overriding condition might have been related to the fact that the prosodic parser may parse a single morpho-syntactic word into two separate prosodic words, and that this is prohibited in Turkish. This seems to be a reasonable argument given that affixation has non-trivial consequences for phonological operations, and that functional morphemes tend to be parsed together with the surrounding segments. This is also in line with the assumption that the prosodic parser applies after the insertion of VIs and the formation of morpho-syntactic words. On this line of reasoning, the ungrammaticality in (7) might not be a result of parsing the exponent of a lexical root as a separate ω , but parsing the bound affixes as independent ω s. However, this cannot be a valid argument, since Turkish does allow bound forms to be parsed as separate ω s, as (10a) in this book shows.

In the reverse Y-model of the grammar in (1) in §1.2.1, in this book, the fact that a language does not allow the exponents of bare roots to be the

⁵ In a nutshell, in Turkish, the acoustic correlates of ω , φ , and ι edges are as follows. The edges of ω s exhibit categorially shorter final syllable duration (İpek & Jun 2014). Additionally, the leftmost ω in a φ with two ω s bears relatively higher overall F0 than the rightmost ω (Kabak & Vogel 2001, Güneş 2013a, b, İpek & Jun 2014). The final syllable duration on φ edges is categorially longer than ω -edges and shorter than ι edges (İpek & Jun 2014 and Güneş & Çöltekin 2015). Additionally, non-final φ s bear a φ level rising F0 and a high right-edge tone: H-. The final syllable duration on the right edge of ι s is categorially longer than those of ω s and φ s (Kan 2009 and Güneş & Çöltekin 2015). Additionally, ι s are marked with an ι -level right edge boundary tone, which may be rising (H%) or falling (L%) (Kan 2009, Güneş & Çöltekin 2015). I refer the reader to §3.1 for a more elaborate description of these correlates.

input for the parser, in other words, that the exponents of roots are *prosodically bound* (i.e. they cannot be parsed as independent prosodic units), is uncontroversial. The parser can access strings that correspond to derived constituents of syntax, which are endowed with a syntactic function and a label and the exponents of which are inserted given a syntactic context (Harley 2014). Therefore, when items are shipped to the interfaces they are ‘syntactically loaded’ by the virtue of the fact that derivation comes before the interfaces. However, MATCHWORD, in its current form, overlooks this fact and predicts undesirable boundaries.

One may point out that termini to which roots in their bare form are superimposed might fail to match with ω s only in those environments where bound morphemes affix to them. Based on this, one might pursue the idea that in such *morphologically complex environments* lexical vocabulary item+affixes might be the input for the parser, because prosodic constituent formation takes place after the formation of morphological complexes. However, in terms of DM, which seems to be adopted by Selkirk (2011:479, fn.1), VIs (regardless of whether or not they are the realisations of feature bundles or roots) can only be inserted given their syntactic context (cf. Harley 2014, and Craenenbroeck 2014 among others). Therefore, if the assumption is that ω s are generated after morpho-syntactic units are derived, then ω s should correspond to XPs (when they are minimal-maximal projections) and X^0 s (when they project further) in syntax. Therefore, on the principles of DM (especially assuming “syntax all the way down”), one cannot pursue the assumption that morphologically complex units are non-phrasal syntactic units. If morpho-syntactic chunks correspond to phrases in syntax, then they should be subject to MATCHPHRASE, and not MATCHWORD. Notice that, in an agglutinative language such as Turkish, any morpho-syntactic word that bears an affix (i.e. the majority of the words that are formed) correspond to projections in syntax and therefore are expected to be parsed as φ s and not ω s.

Secondly, although MATCHWORD predicts that each terminal node is parsed as an ω , this is not the case in Turkish, either. An ω may contain more than one lexical item that corresponds to different termini that belong to a

larger syntactic constituent. In (8), the nominalised relative clause, which contains a postpositional phrase, an adjunct, and a verb, is parsed as one ω .^{6/7}

- (8) Dün (((ev-e)_{PP} (zamanında)_{AP} (gel)_V)_{VP}-en)_{CP} çocuk)_{NP}
 Dün ((ev-e zamanında gel-en) _{ω} (çocuk) _{ω}) _{φ}
 yesterdayhome-DAT on.time come-NOM child

çikolata kazan-dı.

çikolata kazan-dı.

chocolatewin-PST

‘The child who came home on time won a bar of chocolate yesterday.’

Thirdly, appealing to the idea of prosodic reduction of function morphemes (such as Selkirk’s (1984:226) Principle of Categorical Invisibility of Function Words) does not seem to hold, either. Although morphologically complex words are usually minimally parsed as ω s (as (9) shows), this is not always the case, as seen from the pair in (10).⁸ In (10a), a morphological word is pronounced with an ω boundary on the right edge of the participle form (i.e. *gelecek* ‘come-FUT’ in this case). This ω boundary separates the copular side of the verbal complex (i.e. *lerdi* ‘COPULA-PST-PL’ in (10)) from the participle side (cf. Göksel 2010, Göksel & Güneş in prep.). MATCHWORD, together with the assumption that all functional morphemes are prosodically integrated to surrounding segmental units, predicts that the entire fragment in (10) should be parsed as a single ω , where the bound suffixes should be parsed together with the exponent of the verb root. Such a constituency is illustrated in (10b), which shows, contrary to the predictions of MATCHWORD, that this kind of pronunciation is illicit in Turkish.⁹

⁶ For how I derive the prosodic constituency in (8), see §2.2.2.

⁷ Hereafter, the bracketed schematic representation of prosodic constituency of each example is based on the acoustic analysis of utterances expressed by native speakers.

⁸ The copula comes in multiple forms in Turkish. One of them is the free morpheme *-I*, the other is a glide (i.e. /y/) that is left bound, and the other is a zero form, i.e. Ø (Kornfilt 1996, Göksel 2001, 2003). The example (10) in the main text displays its zero form, and is therefore represented as Ø. On the morphological presence of the null copula, see Göksel (2001), Göksel & Kerslake (2005), and references therein. See §2.2.3 for more discussion of the notion of null copula.

⁹ See §2.2.3 for my explanation of why an ω boundary that intervenes between the participle verb and the copular verb is necessary in verbal complexes such as (10a).

- (9) ((Arabalı-lar-1niz-in) $_{\omega}$ (vergi-ler-i-ni) $_{\omega}$) $_{\varphi}$
 with.car -PL-2PL-GEN tax-PL-POSS-ACC
 ‘The taxes of those of you with a car’
- (10) a. (((gel-ecek-) $_{\omega}$ (\emptyset -ti-ler) $_{\omega}$) $_{\varphi}$) $_{\iota}$
 come-FUT- COP-PST-PL
 ‘They were going to come.’
- b. * (((gel-ecek- \emptyset -ti-ler) $_{\omega}$) $_{\varphi}$) $_{\iota}$
 come-FUT-COP-PST-PL
 ‘They were going to come.’

It seems that the ω -formation mechanism works completely differently from the predictions of MATCHWORD. Based upon this observation, I claim that prosodic grammar does *not* match words, simply because there are no such things as *words* in syntax. If terminal nodes themselves are not the input for the prosodic parser, then what can be?

In an end-based approach, where only terminal nodes and maximal projections map to prosodic structure, the minimum syntactic unit that is *visible* to the parser must be a phrase – i.e. an XP. However, according to the rules of Match theory, particularly MATCHPHRASE in (3), a phrase in the syntactic constituent structure corresponds to a φ and not an ω .

At this point, one may suggest that MATCHPHRASE may be an operation that is employed both for φ -formation and for ω -formation. Yet, such an assumption is far from being parsimonious and accurate. I claim that ω is not an interface category type in the sense that φ and ι are. Instead, ω s are generated only after φ s are generated, and have to be immediately contained within φ s at some point in the derivation. I relate the obligatory ω -formation to a condition: EXHAUSTIVITY. Syntactic phrases are mapped as φ s as a result of MATCHPHRASE. All φ s must immediately dominate ω s to satisfy EXHAUSTIVITY. This dictates that all ω s are contained within φ s (i.e. strings must be flanked by φ boundaries both on their right and left edges) for prosodic well-formedness to pertain.

In the next section, I discuss the φ -formation algorithm together with ω -formation, and the nature of the syntactic input to the prosodic parser.

2.1.2 Limiting the syntactic input

This section summarises MATCHPHRASE, with particular attention paid to the nature of the syntactic input for MATCHPHRASE. Let us consider again Selkirk's (2005, 2009) mapping rule for the category φ in Match theory:

- (11) i. MATCHPHRASE:
A phrase in syntactic constituent structure must be matched by a constituent of a corresponding prosodic type, call it φ , in the phonological representation.

The inputs for MATCHPHRASE are syntactic projections. However, MATCHPHRASE does not target every projection. The hidden assumption is that MATCHPHRASE only targets non-root clausal projections. Therefore, MATCHPHRASE does not target clauses; i.e. CPs, the Rizzian (1997) ForceP, or more specifically Force_{ILLP} (see Kan 2009 and chapter 6 in this book).¹⁰

Additionally, (11i) says that 'phrases' are the corresponding syntactic units for φ s. To be more precise, one should instead say that 'projections' are the corresponding syntactic units for φ s, as φ s are assumed to match with minimal-maximal projections and non-termini, and any non-terminal node of a syntactic tree is a projection. In other words, MATCHPHRASE is only concerned about whether a node that bears the category label α has a daughter or mother with the same category label (i.e. α): it is not concerned about what notational indicator of hierarchy (e.g. α^0 , α' , α'' , αP , etc.) follows this label.

With these refinements, MATCHPHRASE should be restated as the following:

- (11) ii. MATCHPHRASE:
A projection other than Force_{ILLP} in syntactic constituent structure must be matched by a constituent of a corresponding prosodic type, call it φ , in the phonological representation.

¹⁰ The elusive status of 'XP' and its correlation with φ -formation poses difficulties for ι -formation. I discuss this in detail when I discuss MATCH CLAUSE in Chapter 4.

Keeping these refinements in mind, to cohere with the previous literature, I use “XP” only to refer to subclausal projections and I mean the version of MATCHPHRASE given in (11ii) when I refer to it hereafter.

Let us take a hypothetical syntactic structure such as the one in (12a). In (12), a *simplex syntactic phrase* – a minimal-maximal projection – is mapped. In the expanded representation in (12a) this projection is represented as an XP that contains only its head. (“blah” stands for the morphologically free – i.e. those morphemes that are not affixes or clitics – exponent of this XP):

(12)	a. Syntactic representation	b. Prosodic representation
	XP	$(\text{blah})_\varphi$
	X ⁰	
	blah	

The phonological exponent of a simplex XP is parsed as a simplex φ . Note that a simplex φ is a φ whose left and right edges encompass the same segmental string.

When φ s are generated, the EXHAUSTIVITY condition is violated, as φ s do not immediately dominate ω s (rather, they dominate unparsed strings). To ensure that the EXHAUSTIVITY condition is met, a repair strategy is invoked. This repair strategy consists of a rule, which is “parse strings inside φ s that violate the EXHAUSTIVITY condition as ω s”. This rule triggers an operation that I call “PARSE to ω ”, which parses strings contained within φ s that violate the EXHAUSTIVITY condition as ω s. In a simplex φ such as the one in (12b), only one ω is generated. This is illustrated in (13):

(13)	φ and ω level phrasing in (12b) after PARSE to ω :
	$((\text{blah}))_\varphi$

Now, let us take the hypothetical case of a slightly more complex XP, every constituent of which bears a phonological exponent: e.g. an XP that branches to a head and a simplex complement. Such a structure will look like the one in (14a):

(14)	a. Syntactic input	b. MATCHPHRASE	c. PARSE to ω
	$\begin{array}{c} \text{XP} \\ \diagup \quad \diagdown \\ \text{YP} \quad \text{X}^0 \\ \qquad \\ \text{blah}^y \quad \text{blah}^x \end{array}$	$\begin{array}{ccc} ((\text{blah}^y)_\varphi \text{ blah}^x)_\varphi & \nearrow & \nwarrow \\ & & \end{array}$	$(((\text{blah}^y)_\omega)_\varphi (\text{blah}^x)_\omega)_\varphi$

From a syntactic phrase in which two constituents find an exponent (in this case blah^y and blah^x) two ω s are generated: one for the string that is dominated by the φ that corresponds to YP, and another one for the phonological exponent of X^0 . Note that the only condition for constituents to be parsed to ω s is that they have a φ boundary on both edges. The exponent of YP is flanked by the boundaries of its own φ , and blah^x has a border to the outer φ on its right edge, and to the inner φ (i.e. the right edge of the inner φ) on its left edge.

Note that the hypothetical representation in (14c) violates NONREC (which is a condition that bans a prosodic constituent of the type α from containing another prosodic constituent of the type α , cf. (4c) in this book), since the φ that matches with XP contains the φ that matches with YP. This level of representation is an intermediary step in the derivation (at least in languages such as Turkish, which does not allow recursive prosodic categories).¹¹

So far MATCHPHRASE, together with ω -formation strategy that I described, seems to work fine – except for the fact that the algorithm will never be able to generate two adjacent ω s as in (7), (8), (9) and (10) (schematised as (15a)); in other words, all ω s are predicted to be flanked by φ boundaries as in (15b), since this is the mere condition for ω -formation:

(15)	a. $((__)_\omega (__)_\omega)_\varphi$	b. $((\ldots)_\omega (\ldots)_\omega)_\varphi$
------	--	--

There must be an additional operation for Turkish that generates structures like (15a). Put differently, there must be an extraneous condition on banning

¹¹ See the discussion on Tagalog as an instance for languages that allow recursive prosodic constituents at the level of φ . In such languages, a hypothetical representation as in (14c) can possibly be the end-result of the prosodic derivation, rather than an intermediary state.

structures like (15b). This is because a structure like (14a) is never mapped as (15b) in Turkish.

The difference between (15a) and (15b) is that the φ in (15a) is not recursive. Research has shown that recursivity is usually avoided in the prosodic grammars of a number of languages (Truckenbrodt 1995, 1999). It seems that Turkish is one of those languages that do not allow recursive φ s. Based on this, I claim that NONREC is active in Turkish (at least for the categories φ and ι), and that inner recursive φ boundaries are subject to a reduction operation that functions as a repair mechanism to avoid recursivity (but see Kabak & Revithiadou 2009). Recursive φ s violate the NONREC condition. To ensure that the NONREC condition is met, a repair strategy is invoked. This repair strategy consists of a rule, which is “reduce the φ s that violate the NONREC condition”. This rule triggers an operation that I call “*reduce φ* ”. After the reduction of the *recurring φ edges* in (15b), the structure is left with one φ and multiple ω s within it (15a).

In conclusion, the ordered application of *MATCHPHRASE*, *PARSE to ω* , and *reduce φ* generates φ s with multiple ω s. Thinking in derivational terms, if *MATCHPHRASE* obligatorily applies to the exponents of each phrasal syntactic input, then one may consider the reduction of recursive φ boundaries as a repair mechanism.

Let me illustrate how these operations take place in a stepwise manner for an end-result such as the complex NP that is given in (16a). The example in (16a) is a noun phrase where the head noun is modified by an AP, in which the adjective is pronounced as an ω that is independent of the ω of the noun that it modifies. The labelled brackets in (16a) refer to the acoustic correlates of corresponding constituents. The steps in (16b) illustrate the procedure of mapping from syntax to the phonological representation. Both the NP and AP are mapped as φ s due to *MATCHPHRASE*. After φ s are formed, since these φ s immediately dominate the rhythmic category syllable (σ), and not ω , the (string of) syllables with a boundary to a φ -edge are typed as ω s to satisfy EXHAUSTIVITY.¹² After ω s are generated as a result of *PARSE to ω* , all of the

¹² The category foot is not attested in Turkish (cf. Kabak & Vogel 2001, Özçelik 2013). Therefore, in (16b, i) φ s immediately dominate σ s. In terms of constituency, I assume that the boundaries of individual σ s are not visible to the parser in the process of assigning boundaries of interface categories (such as ω and φ). Based on this, in a representation such as (16b, i), the segmental content of φ is a single coherent string. Although, there are two constituents (i.e. σ s), say, inside the innermost φ in (16b, i), the entire string (the combination of these two σ s) is parsed as one ω . This may be related to the idea that the

recursive φ boundaries are deleted as a result of the φ -level boundary reduction operation (i.e. *reduce φ*) to avoid recursion at the level of φ .

- (16) a. $((\text{ıslak})_\omega (\text{saç})_\omega)_\varphi$ Surface form
 wet hair
 ‘wet hair’
- b. $((\text{ıslak})_{\text{AP}} \text{saç}_{\text{NP}})$ Syntactic representation
 (i) $(((\text{ıs})_\sigma (\text{lak})_\sigma)_\varphi (\text{saç})_\sigma)_\varphi$ MATCH (Phrase)
 (ii) $((((\text{ıs})_\sigma (\text{lak})_\sigma)_\omega ((\text{saç})_\sigma)_\omega)_\varphi$ Parse to ω
 (iii) $(((\text{ıs})_\sigma (\text{lak})_\sigma)_\omega ((\text{saç})_\sigma)_\omega)_\varphi$ Reduce φ
 wet hair
 ‘wet hair’

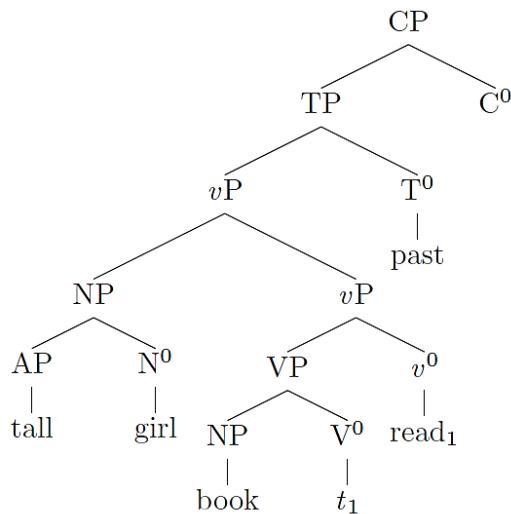
Such an ordered derivation yields the observed prosodic constituency of such a phrase that is uttered in neutral context (cf. Chapter 3 for the details of the acoustic correlates of ω s and φ s with two ω s (hereafter *bi-worded* φ s) in Turkish). In Turkish, each of these steps takes place in the order given in (16b).

This configuration naturally accounts for the mapped prosodic structure of smaller syntactic fragments, and predicts the mismatches whereby an XP corresponds to an ω rather than a φ . However, when the input is more complicated than a fragment of a phrase, for example, a clause with multiple phrases, MATCHPHRASE faces certain problems. Particularly, if MATCHPHRASE applies blindly to all of the XPs in the source syntactic tree, then every projection on that tree must match with φ s, regardless of whether they have a segmental content or not. (17) illustrates such a case.¹³

- (17) a. Uzun kız kitabı oku-du.
 tall girl book read-PST
 ‘The tall girl read a book.’

rhythmic category types are not visible to the parser at the level of generating interface categories. While this assumption should be considered in more detail, the possible consequences of such an assumption are immaterial to the present discussion.

¹³ For the F0 analysis of a similar utterance, see Figure 5 in Chapter 3.



- b. [((((((tall)_{φ-AP} girl)_{φ-NP}((book)_{φ-NP} *t*)_{φ-VP} read)_{φ-vP})_{φ-vP} PST]_{φ-TP} C⁰)_{φ-CP}]_ι
c. [(((tall)_ω (girl)_ω (book)_ω (*t*)_ω (read)_ω (PST)_ω (C⁰)_ω)_{φ-CP}]_ι

The clause in (17a) consists of a subject NP, which is modified by an AP, a transitive verb, and its internal argument.¹⁴ Each XP in (17a) – regardless of whether or not it has a phonological exponent – is represented with a corresponding φ in the prosodic representation in (17b). When each recursive φ is reduced to ωs as a consequence of the operation reduce φ , which is triggered by NONREC, the resulting representation is shown in (17c), whereby the ι contains one φ that contains seven ωs , each of which corresponds to a terminal node in the source syntactic tree.

The representation in (17c) is problematic in many respects. First of all, there are ωs that do not flank a phonological exponent (e.g. those that

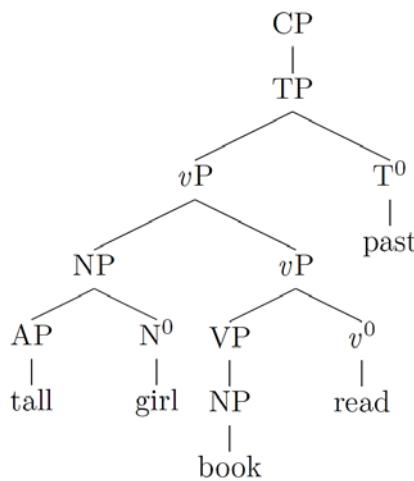
¹⁴ With respect to the syntactic representation of Turkish clausal structure, I assume that (i) the EPP feature is inactive in Turkish, and consequently subjects do not obligatorily move to spec, TP (Öztürk 2005; 2009, İşsever 2008, Arslan-Kechriotis 2009, Şener 2010), (ii) the lexical verb moves from V⁰ to v⁰ (Sailor in progress), but resides somewhere below TP (Kelepir 2001 and Aygen 2002), and (iii) accusative marked objects reside outside VP – in an AspP that is in between vP and VP – (Nakipoğlu-Demiralp 2004 and Üntak-Tarhan 2006), while bare objects are inside VP (Kelepir 2001, Üntak-Tarhan 2006, and the references therein), (iv) adverbial PPs such as those that bear locative case adjoin to vP (Üntak-Tarhan 2006). There is no DP in Turkish (Öztürk 2005 and Bošković & Şener 2014). Heads, except for coordinators, branch rightwards in Turkish (Zwart 2005).

correspond to ‘unpronounced’ or ‘empty’ heads). Secondly, a bound morpheme (T^0) is parsed as an independent ω . Most importantly, this representation is problematic because it is empirically unattested. The schematic representation in (18) shows the attested phrasing when the sentence in (17a) is uttered in neutral context (or in a context where the direct object “book” is focused); see Chapter 3 for sample F0 analysis.

- (18) $[((tall)_\omega (girl)_\omega)_\varphi ((book)_\omega (\text{read-PST})_\omega)_\varphi]_i$

As for the problem that segmentally *empty* syntactic phrases are mapped as prosodic constituents, the consensus is that they are not mapped to prosody (Truckenbrodt 1999, Richards 2010; 2014, Elfner 2012, *inter alia*). Therefore, one must assume that the prosodic parser is somehow informed about the phonological exponents of each XP in the syntactic tree. As suggested in the framework of DM (Halle & Marantz 1993, Embick & Noyer 2007, among others), prosodic parser operates after VI insertion. In line with this assumption, (19a) shows the hypothetical syntactic representation, in which only those terminal nodes that are ‘visible’ to the parser (i.e. only those that bear a VI) are represented. (19b) illustrates a prosodic representation of (17a), in a scenario in which the input syntactic structure is (19a).

- (19) a.



- b. [((((tall)_{φ-AP} girl)_{φ-NP}(((book)_{φ-NP})_{φ-VP} read)_{φ-vP} PST)_{φ-TP})_{φ-CP}]_t
- c. [((tall)_ω (girl)_ω (book)_ω (read)_ω (PST)_ω)_{φ-CP}]_t

A prosodic structure as in (19c), which is generated via a mapping procedure that applies to the hypothetical syntactic representation in (19a), and after the reduction of recurring φ s, is still far from the prosodic constituency shown in (18). First, the past tense morpheme is parsed as part of the ω that corresponds to V^0 in (18), whereas it is parsed as an independent ω in (19). Secondly, there are two φ s in (18): the first φ contains the ω s that correspond to the AP and the N^0 , and the second φ contains two ω s that correspond to the internal argument and V^0+PST , respectively. However, there is only one φ in (19c).

The cross-linguistic problem of mapping the VIs that are superimposed into the terminals with feature bundles (i.e. functional morphemes) (in this case the past morpheme, which is the realisation of [+past] on T^0) has been addressed previously (Selkirk 1984; 1986; 1995a, Chen 1987, Truckenbrodt 1995; 1999). Selkirk (1984:226) suggests the Principle of Categorical Invisibility of Function Words, which states that function words are not visible to the prosodic parser.¹⁵ More recently, scholars working with the DM framework suggest that the morphological module comes before the operations of phonological constituent formation (Embick & Noyer 2001, Seidl 2001, Ackema & Neeleman 2003, Pak 2005; 2008, *inter alia*) in the model of grammar given in (1) in this book – pg. 6. Accordingly, all VIs are inserted at the morphological component. Therefore, at the time the prosodic parser operates, complex morpho-syntactic units are already built, where bound morphemes attach to their morpho-syntactically relevant heads via the operations of ‘lowering’ or ‘local dislocation’ (cf. Embick & Noyer 2001, Embick 2007, among others), and functional words are underspecified so that they are often *reduced* (i.e. they exhibit the behaviour of bound morphemes when they are not focused and are grouped together with surrounding free morphemes).

If morphological constituent formation takes place before the application of the prosodic parser, then, for a sentence such as the one in (18), the past

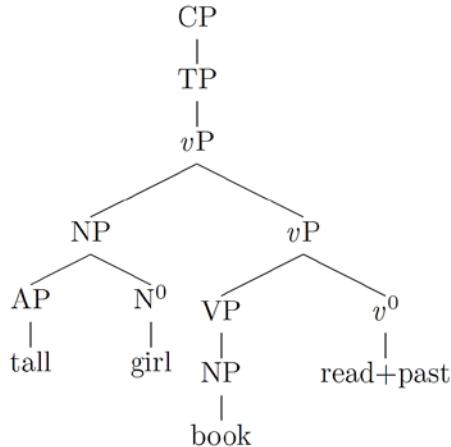
¹⁵ Also see Elordieta’s (1997) account of “feature-chains” and Truckenbrodt’s (1999) Lexical Category Condition among others for different approaches to the same issue.

morpheme that is pre-specified to be bound to its syntactically relevant head must attach to that head (in this case the verb) before the parser operates.

With respect to when and how complex morpho-syntactic words are built and how bound morphemes are realised as prefixes infixes or suffixes; DM assumes that morphological operations such as ‘morphological merger’, ‘lowering’, ‘fusion’, ‘fission’ or ‘local dislocation’ take place at some point before the parser applies (cf. Embick & Noyer 2001). The technicalities of morphological-word formation are not addressed in this book. However, for the sake of exposition, the source narrow syntactic representations in this book represent the exponents of feature bundles and roots in their corresponding syntactic positions, and each *maptree* represents the exponents of feature bundles (i.e. bound morphemes) ‘adjacent’ to the constituent to which they attach after morpho-syntactic word formation procedures. In this respect, *maptrees* represent the state of the syntactic structures after the operation of VI insertion (including the morphological operations such as *readjustment*, *fusion*, *local dislocation*, *lowering* etc.). The reader should note that such an ordering of representation does not imply any theoretical assumptions as to the timing and manner of complex morphological word formation and linearisation processes in terms of DM. A promotion of such assumptions falls far outside the objectives of this book. However, the reader should also note that in terms of morpho-syntactic word formation and the linearisation of morphemes, the assumptions of DM may easily be enforced in harmony with the proposals that are advocated in this book.

(20a) shows the hypothetical syntactic representation that is ‘visible’ to the parser in which the termini of the projections without phonological exponents are ‘reduced’, (20b) illustrates the prosodic structure that is faithful to (20a), in which complex morphological units are built prior to the parser, and (20c) illustrates the prosodic constituency after the reduction of \emptyset s that violate NONREC.

(20) a.



- b. [((((((tall)_{φ-AP} girl)_{φ-NP}((book)_{φ-NP})_{φ-VP} read+PST)_{φ-vP})_{φ-vP})_{φ-TP})_{φ-CP}]_t
c. [((tall)_ω (girl)_ω (book)_ω (read+PST)_ω)_{φ-CP}]_t

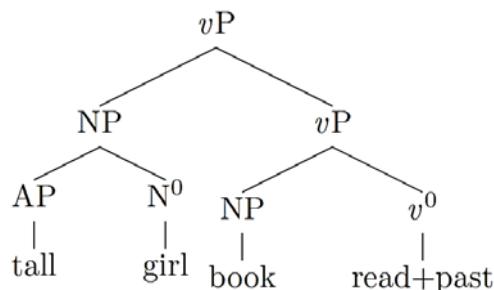
The assumptions that syntactic structures without a phonological exponent are not visible to the mapping algorithm and that morphologically complex structures are built before the parser seemingly capture the prosodic constituency in (18) at the level of ω . However, the mapping in (20) is still incapable of achieving the constituency of (18) at the level of φ . The t in (20c) contains only one φ that corresponds to the highest syntactic phrase in the source syntactic tree, i.e. CP. All the other XPs that are contained within that CP are reduced due to *reduce φ*, which is triggered to satisfy NONREC. However, this leads to the generation of an incorrect prosodic constituency. When we compare the φ s in (18) to the fully faithful representation in (17b), we see that the application of ‘*reduce φ*’ is limited.

If CP is the phrase that contains all the other XPs in (17a), then the φ that corresponds to CP is always going to recursively contain all the other φ s. At this stage, the question to be answered is: How do the two φ s in (18) manage to escape the reduction operation?

One way to approach this problem is to assume that functional projections do not map, and CP, being a functional projection, does not map. This is in harmony with the assumption that functional items are treated separately at PF. A small amendment in MATCHPHRASE – such as

‘match lexical exponents of XPs as φ s’ – would allow us to predict the ‘invisibility’ of the exponents of the feature bundles to the algorithm. However, we know that in some languages functional items *are* ‘visible’ to the parser, i.e. they may be parsed as independent prosodic constituents (cf. Elfner 2012). Moreover, such an assumption would conflict with Phase theoretic accounts that assume that phases are the corresponding syntactic units of φ s (see Chomsky 2000 for Phase theory, Kratzer & Selkirk 2007 for phase- φ correspondence, and Üntak-Tarhan 2006 for a phase theoretic account of Turkish prosodic grammar). This is because the roots of all phases are functional projections (e.g. vP , CP). Additionally, although we assume that CP , TP and vP in (17a) are not visible to the parsing mechanism, the result still cannot capture the prosodic constituency that we want, given in (18). (21a) shows the hypothetical syntactic representation that is ‘visible’ to the parser in this condition (i.e. a representation where empty termini and their projections and the projections of every bound morpheme are reduced), and (21b) shows the prosodic structure that is faithful to (21a), and (21c) shows the resulting prosodic structure:

(21) a.



- b. $[(((tall)_{\varphi\text{-}AP} girl)_{\varphi\text{-}NP} ((book)_{\varphi\text{-}NP} read+PST)_{\varphi\text{-}vP})_{\varphi\text{-}vP}]_1$
 c. $[((tall)_{\omega} (girl)_{\omega} (book)_{\omega} (read+PST)_{\omega})_{\varphi\text{-}vP}]_1$

The representation in (21) shows that the problem is not related to whether or not the (empty) functional categories are mapped. This time, two fundamental issues arise. Firstly, vP as a functional projection cannot be ignored as its head is where the verbal complex resides. Secondly, the vP contains all the ω s of its ι , therefore vP corresponds to the φ , in which all the

recursive φ s are reduced to ω s. The end result is far from exhibiting the prosodic constituency that is given in (18).

The φ s in (18) seem to correspond to the two daughters of the maximal vP (NP and vP) in (21). Somehow, the topmost vP in (21a) seems to avoid being parsed as a φ and hence being targeted by MATCHPHRASE. Based on this observation and the facts that will be discussed later, I claim that this kind of parsing is due to the fact that the maximal vP in (21) is a projection that does not have a head as one of its immediate daughters in a reduced syntactic representation such as the one in (21). In other words, my claim is that only those XPs that are (i) termini (i.e. termini that are minimal and maximal projections simultaneously in terms of bare phrase structure) or (ii) that immediately dominate an X^0 (i.e. a node that is a minimal projection and that is dominated by the category of its own kind) are ‘visible’ to MATCHPHRASE.^{16/17} The consequence of this claim is that non-terminal projections that are not the mothers of X^0 are never parsed as φ s. This idea is developed in more detail in the following section.

To summarise, for various reasons, a number of syntactic relations in the narrow syntactic tree are irrelevant to the prosodic parser. Therefore, the syntax-prosody mismatch cannot be accounted for with the current tools of the theory, unless these relations are marked to be *invisible* specifically to the prosodic parser. Such specific marking would lead to a simpler and reduced tree representation.

In the next section, I introduce such a tree diagram that is tailored for the purpose of mapping. This tree diagram limitedly inherits syntactic relations, and it is sensitive to segmental and morpho-syntactic content. I suggest that syntax-prosody mismatch is not only due to PF-oriented conditions of prosodic well-formedness, but also because of the fact that the parser is not sensitive to all the relations that are represented in the narrow syntactic structures.

¹⁶ If a syntactic category does not dominate any other category, it is a *minimal projection* (see §1.3).

¹⁷ If a syntactic category does not project further, it is a *maximal projection* (see §1.3).

2.2 A parsetree for the interface: *maptree*

In this section, I outline a parsetree as a means to visualise the source of the limited correspondence of syntactic and prosodic structures. This tree representation is a partially restructured and reduced version of the output trees of the narrow syntactic derivations. This tree representation may be considered analogous to ‘abstract syntax trees’ of computer science, which do not represent every detail in the source syntax.

Since the parser applies after VI insertion, I assume that this post-syntactically generated tree depicts the properties of syntactic nodes of the source syntax that bear phonological exponents. Hence, this novel diagram represents the syntactic hierarchy and constituency of the ‘raw’ source syntax in a limited way (e.g. limited to the phonological exponents of the source syntactic tree). I call this *intermediary* tree diagram the *maptree*.

The reader should note that this tree representation is provided solely for ease of exposition. It has no ontological significance, as it does not denote a ‘true’ intermediary stage in computation (in reality, the *maptree* represents complex mapping rules that act directly on the PF-relevant information contained within the trees created by narrow syntax). Throughout the book, *maptrees* are provided to specifically refer to those projections of syntactic trees that are relevant to the prosody, as it would rather be confusing to refer to isolate these projections on narrow syntactic trees themselves.

Notions such as headedness, branchingness and phrasehood are strongly relevant and informative for the phonological component of the grammar (Nespor & Vogel 1986, Cowper & Rice 1987, Bickmore 1990, Zec & Inkelas 1990, Kubozono 1992, Kayne 1994, Tokizaki 1999, Pak 2005, Selkirk 1986 among many others). Based on this, I assume that PF interface (which *reads* the syntactic relations of bare phrase structures) is informed about certain structural relations in phrase structural trees of narrow syntax. The intention here is to assure that the structure-internal relations (i.e. whether or not they are XPs or X^0 and whether or not they are terminal categories) in the source syntax are reported to PF. Such structural relations are, therefore, encoded in *maptree* representations.

As *maptrees* depict the syntactic relations of the phonological exponents in a syntactic tree, it facilitates the *pruning* of the source syntactic tree representation in parts where the structure branches towards phonologically

'empty' nodes, after a number of morphological operations such as VI insertion. (22) presents the two steps that are required in forming *maptrees*:

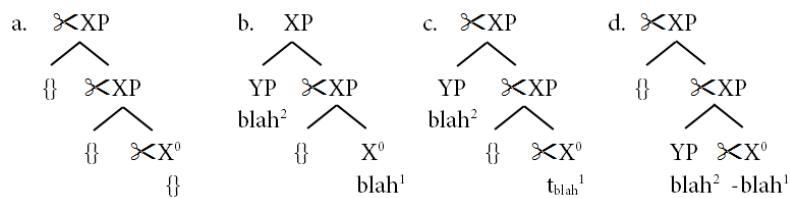
- (22) *Pruning and readjusting a source syntactic tree for maptree:*

- (i) Remove all the syntactic termini and their projections if they are empty or redundant.
- (ii) If the mother of an XP that survives the pruning is pruned, then attach that XP to the next dominating projection that is not pruned.

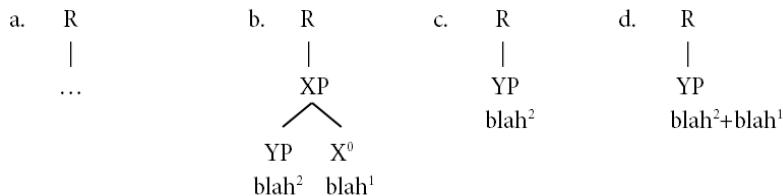
My understanding of an 'empty' terminal is any terminal that is empty after VI insertion and morpho-syntactic word formation (i.e. after the morphological merger operations cf. Marantz 1988, and Embick & Noyer 2001). On a syntax tree these terminals are the traces, the feature bundles (i.e. any functional VI that is not morphologically free-standing after VI insertion, such as affixes), PROs, and all the projections that are *marked* with features in syntax not to bear phonological exponents (e.g. ellipsis site the sister of which is marked with an *ellipsis feature*, cf. Merchant 2001).

(23) illustrates what can and cannot be pruned in a narrow syntactic tree – where '{ }' refers to empty termini, '✗' marks the targets of pruning, and (23i, a) corresponds with (23ii, a) and so on:

- (23) (i)



(ii)



In natural languages *a root* of a syntactic structure is assumed to correspond to an illocutionary force projection (i.e. the Rizzian 1997 ForceP, or more specifically Force_{ILL}P). Force_{ILL}P corresponds to a different prosodic category type – i.e. to is and not φs (Downing 1970, Selkirk 2005; 2009; 2011, Kan 2009, Truckenbrodt 2014, Güneş 2014). For this reason, although it does not bear a phonological exponent, I informally assume that Force_{ILL}P is never pruned, and for exposition, it is represented with *R* in the *maptree* representations (as in 23ii).¹⁸ Assume that all of the hypothetical narrow syntactic representations in (23i) are clauses, which ultimately bear an illocutionary force projection. With this assumption, each syntactic tree will be converted to a *maptree*, in which ‘R’ (for the *root* of the syntactic structures that are under discussion) is the dominating node of the rest of the structure. This is illustrated in the *maptree* representations in (23ii). For the time being, I assume that Rs on *maptrees* correspond to is in prosody.

After pruning, a syntactic structure like (23i, a) is invisible to the parser, as all of its projections are pruned. As a result, an R that dominates no phonological exponent in the *maptree* corresponds to nothing in the prosodic representation. This is marked with ‘...’ in (23ii, a).

As (22ii) states, if the mother node of a phonologically overt node is pruned, then the phonologically overt constituent of the pruned mother attaches to the next dominating node in the hierarchy. For example, the result of reduction and re-attachment in a structure like (23i, b) is like the representation in (23ii, b): i.e. [XP [YP blah²] blah¹]. Note that the non-maximal XP in the source syntax in (23i, b) is not represented in the *maptree*, since the equation of [XP [YP blah²] blah¹] = [XP [YP blah²] [blah¹]XP] leaves the XP on the right of this equation as a redundant projection in

¹⁸ I discuss the details of syntax-prosody interactions at the level of clauses in Chapter 4.

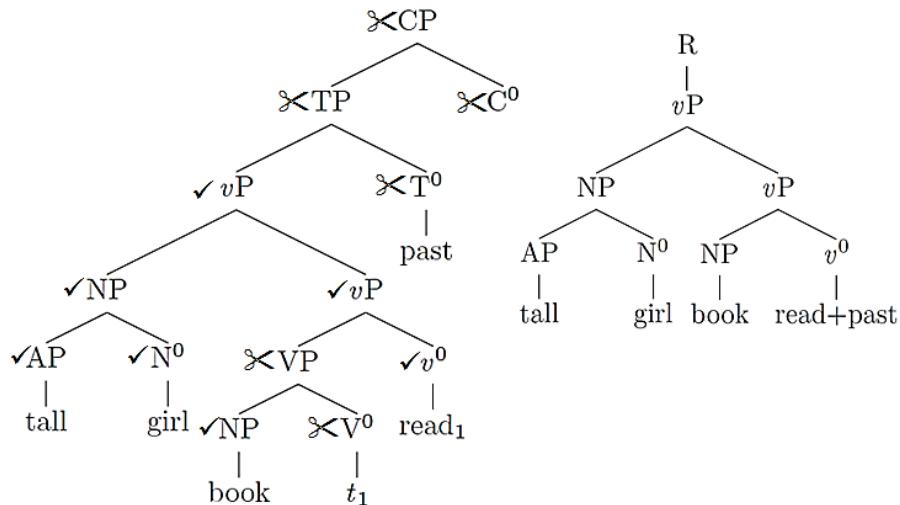
syntactic terms (in other words, $[_{XP} [_{XP} [_{X_0} \text{blah}]]]$ equals $[_{XP} [_{X_0} \text{blah}]]$). Redundant nodes are pruned according to (22).

Since traces and the nodes without phonological exponents are pruned, a structure like (23i, c) is reduced to one projection in its *maptree* in (23ii, c), which contains only one phonological exponent, i.e. that of YP: $[_R [_{YP} \text{blah}^2]]$.

Bound and phonologically weak morphemes are linearised next to ‘neighbouring’ exponents of syntactic constituents that bear morphologically free segmental content (Embick & Noyer 2007 i.a.). For instance, the result of morpheme attachment and pruning in a structure like (23i, d) – in which *blah*¹ is a suffix – looks like (23ii, d).¹⁹

Syntactic nodes that are targeted by the pruning procedure on the source syntactic tree representation of (17) and the resulting *maptree* are shown in (24).²⁰

(24) *Source syntactic tree of (17)* *maptree of (17):*



¹⁹ See Embick (2007) on the details of how processes such as morpheme attachment take place.

²⁰ The root node (*R*) in the representation in (24) corresponds to a Force_{ILLP}. Throughout the book, all clauses that are discussed bear Force_{ILLP} unless otherwise stated. Force_{ILLP} projections are not represented in the source syntactic trees when they are immaterial to the discussion, but all *maptrees* are assumed to be dominated by an *R*.

I assume that when the parser operates, it *scans* the syntactic source like the one above, and when operations such as faithfulness apply, they access only the syntactic structures as they are depicted in *maptrees*. The operation ‘parse’ applies to *maptree* as indicated in (25).

- (25) *Parse maptree:*
Apply MATCH to *maptree*.

The *scanning* procedure is not unconstrained. As stated previously, root clauses, i.e. Rs of *maptrees*, are subject to MATCHCLAUSE or a version of it. The constituents within a root clause are subject to the other match rule, which is MATCHPHRASE, which was given in (11ii).

Notice that not all projections with a morphologically free-standing phonological exponent are visible to the parser. For example, the structural distance of a projection to its head is informative in setting the candidates of MATCHPHRASE, in which MATCH does not apply to the *structurally distant* projections of syntax.²¹

- (26) *Structural distance condition on MATCH*
Do not MATCH structurally distant projections.

A structurally distant projection in a maptree:
A projection that does not immediately dominate a head

The condition in (26) demands that only the projections that immediately dominate a head (X^0) (i.e. the ones that are structurally *closest* to their heads), or non-projecting terminus in the *maptree* can match with a corresponding prosodic constituent.²² This predicts that the *vP* that branches to *NP* and *vP* in the *maptree* representation in (24) does not match with a φ , as it is *structurally distant* from the v^0 . Similarly, in the *maptree* representation in (24), both the *AP* and the *NP* that is the sister of v^0 are predicted to correspond to a φ in the prosodic representation, as these termini are not *structurally distant*.

²¹ A *head* is a category that is a minimal projection and is dominated by a category of its own kind.

²² A terminal *XP* is a phrasal node that is simultaneously minimal and maximal in terms of bare phrase structure, and it is represented as *XP* in *maptree* representations.

The structural distance condition in (26) is defined referring to *maptrees*, not the VI-inserted syntactic trees. If the structural distance condition were defined on VI-inserted syntactic trees, then notion of distance on the such trees should have been different. Below is a description of how structural distance is calculated on the VI-inserted syntactic trees:

Match algorithym for structurally distant projections in the VI-inserted syntactic tree:

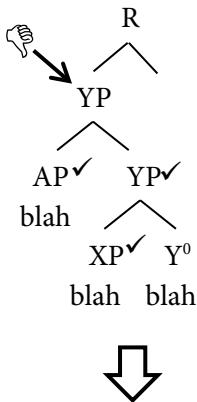
For each X^0 that is *relevant* to the parser, match only the first *relevant* projection up from that X^0 with a corresponding phonological constituent.

A relevant head on a VI-inserted syntactic tree: An X^0 with a morphologically free-standing phonological exponent.

A relevant projection on a VI-inserted syntactic tree: A projection of a relevant X^0 that minimally bears VIx^0 and VI_a .

In the source syntactic representation in (24), of the syntactic heads that bear a morphologically free-standing phonological exponent, there is only one projection that is structurally distant to its head. This projection, which is predicted not to correspond to a φ , is the maximal vP that immediately dominates NP and the non-maximal vP . I continue to employ the *maptree* definition of structural distance, in (26). The hypothetical representation in (27) illustrates what is relevant to the parser on a *maptree* for the φ -level and what is not. The projections that are not relevant to the parser (i.e. structurally distant projections) are marked with ‘ \bowtie ’, and those that are relevant are marked with ‘ \checkmark ’.

(27)

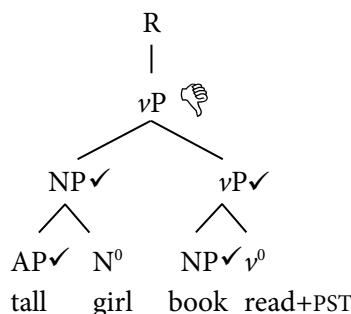


- a. ✘ [((blah)_{φ-AP}((blah)_{φ-XP} blah)_{φ-YP})_{φ-YP}]
b. ✓ [(blah)_{φ-AP}((blah)_{φ-XP} blah)_{φ-YP}]

The representations in (27a) and (27b) (respectively) illustrate the *incorrect* and *correct* phrasing when the abovementioned conditions on φ -formation are considered. The higher YP cannot be mapped as a φ because of the structural distance condition, given in (26). AP is parsed as an independent φ as it is not dominated by a ‘mappable’ candidate other than R, which is irrelevant at the level of φ -formation. The lower YP is matched with a φ , as it immediately dominates a head (i.e. Y^0). The XP is matched with a φ as it is a terminal.

The desired φ -formation that applies to the *maptree* of (17) – as given in (24) – and the following steps of derivation are shown in (28):

(28)



- a. *MATCH (phrase and clause)*
[((tall)_{φ-AP} girl)_{φ-NP} ((book)_{φ-NP} read+PST)_{φ-vP}]₁

- b. PARSE to ω (EXHAUSTIVITY)
 $[((((tall)_\omega)_{\varphi\text{-AP}} (girl)_\omega)_{\varphi\text{-NP}} (((book)_\omega)_{\varphi\text{-NP}} (\text{read+PST})_\omega)_{\varphi\text{-vP}}]_t$
- c. Reduce φ (NONREC)
 $[((tall)_\omega (girl)_\omega)_{\varphi\text{-NP}} ((book)_\omega (\text{read+PST})_\omega)_{\varphi\text{-vP}}]_t$

When the input for MATCHPHRASE is *maptree*, the prosodic constituency at the φ -level, which is given in (18), is naturally accounted for in declarative sentences like (17).

In this section, as a means of exposition, I outlined a simplified version of a bare syntactic tree, which represents those projections of narrow syntax that are relevant to the prosodic parser. I called this tree representation *maptree*. I have listed the basic relations in a syntactic tree that are relevant and irrelevant for the prosodic parser. I discussed how certain attested prosodic representations cannot be derived from applying MATCHPHRASE to every projection of a source syntactic structure. I claimed that parsing operations apply to match the morpho-syntactic units of *maptrees* (or of any syntactic tree that is delimited in the same way that *maptrees* are formed) with prosodic constituents.

One should note that the pruning procedure and the notion of *maptrees* in general are merely expository devices that help to straightforwardly depict the partial correspondence that is observed between syntactic and prosodic structures. As such, it is possible that one could refer to the relations between nodes that are depicted in *maptrees* without reducing VI-inserted syntactic trees, i.e. without pruning VI-inserted syntactic trees in the first place. For instance, a feasible alternative strategy for representing the syntactic relations that *maptrees* depict directly on VI-inserted trees is to instil greater syntactic sensitivity into correspondence rules like MATCHPHRASE and further complicate the structural distance condition. What is crucial is that, regardless of which strategy is adopted, one must endorse an algorithm that limits how much of a complex syntactic structure is ‘visible’ to the correspondence rules of prosody, in order to account for the fact that (i) narrow syntax is only partially represented in the prosodic structure and (ii) recourse to prosodic well-formedness constraints cannot adequately account for why the syntactic input to the prosody is so limited.

In §2.2.1, §2.2.2, and §2.2.3, by employing *maptree*, I show how delayed ω -formation accounts for the ‘problematic cases’ that MATCHWORD and MATCHPHRASE could not predict in §2.1. I will revisit these problems one by one.

2.2.1 *Mapping lexical syntactic heads*

In §2.1.1, I discussed the theoretical consequences of MATCHWORD, which conflict with the assumptions of DM. I stated that termini (assumedly words) never get spelled out independently of their syntactic context, therefore a PF operation cannot be understood as targeting termini independently of their projections (and/or other projections).

If a theory assumes the mapping of *words*, then the input for such a mapping can take place only after morphological operations (e.g. VI insertion), and not immediately after syntactic derivations. However, even with the assumption that morpho-syntactic words match with ω s, after morphological operations, MATCHWORD makes wrong predictions, as it is not always the case that all morpho-syntactically complex units correspond to ω s.

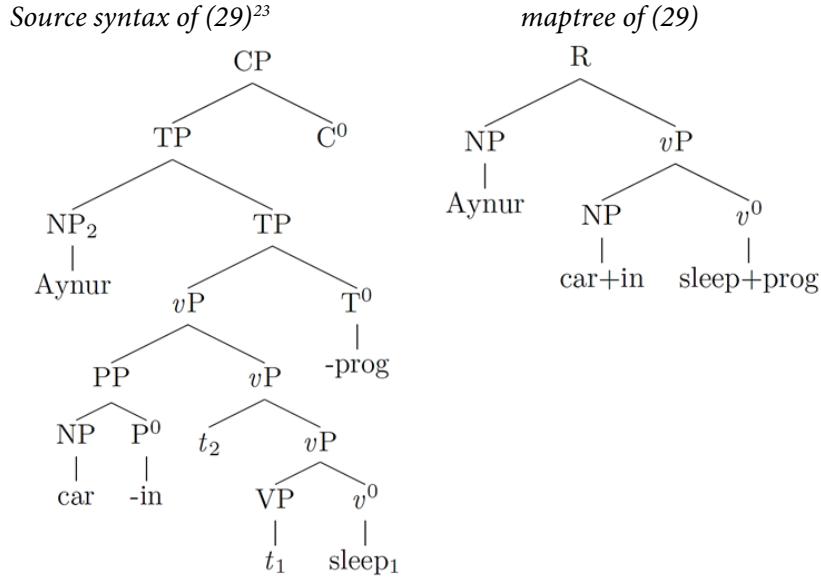
In the same section, I highlighted a number of empirical issues to provide evidence for the fact that although MATCHWORD predicts that lexical roots may be parsed as ω s in isolation, this is not necessarily the case in Turkish.

The first issue raised in §2.1.1, and which is the subject of this section, was that no bare exponent of a lexical root can be parsed as ω s in Turkish. In this subsection, I show that the only way to approach this fact is to assume that ω s are generated after VI insertion and morphological operations, and after matching φ s. The example given for this was in (7a), which is repeated in (29), where the Vocabulary Item that corresponds to the noun root (in this case *araba* ‘car’) cannot be parsed as an ω of its own.

I employ *maptree* (illustrated for the source syntax of (29) in (30)) and the consequent operations proposed in the previous section (listed in (30a-c)) to account for the ungrammaticality of cases like (7a).

- (29) Aynur **araba**-da uyu-yor.
 Aynur car-LOC sleep-PROG
 ‘Aynur is sleeping in the CAR.’

(30) *Mapping (29)*



Operations of prosodic constituent formation for (29)

- a. MATCH (*phrase and clause*)
[(Aynur)_φ ((car+in)_φ sleep+prog)_φ]_ι
- b. PARSE to ω (*EXHAUSTIVITY*)
[((Aynur) $_{\omega}$)_φ (((car+in) $_{\omega}$)_φ (sleep+prog) $_{\omega}$)_φ]_ι
- c. Reduce φ (*NONREC*)
[((Aynur) $_{\omega}$)_φ ((car+in) $_{\omega}$ (sleep+prog) $_{\omega}$)_φ]_ι
- c'. * [((Aynur) $_{\omega}$)_φ (((car) $_{\omega}$ (-in sleep+prog) $_{\omega}$)_φ]_ι

²³ Following Üntak-Tarhan (2006) I represent the locative adverbial PP as adjoined to vP. However, it could as well be assumed to be adjoined at the VP level. At this point, the exact position of the adjunction site of the PP in the tree in (30) in the main text is immaterial, as it is represented as the sister of v⁰ in the *maptree* in any case. If the adjunct XP adjoins to VP, then it is represented as the sister of v⁰ in the *maptree* as VP is pruned. If it is assumed to adjoin to vP (and below where the subject NP adjoins) it is represented as the sister of v⁰ in the *maptree* as, again, the intervening vP that is the mother of VP is pruned together with that VP.

At the time of mapping, morphologically related combinations are already formed. This avoids any Vocabulary Item that corresponds to a root being parsed separately from its affixes, if it has any. For the accounts that favour MATCHWORD, all Vocabulary Items that correspond to roots in syntax are eligible for being parsed as independent ω s. However, in my account, an ω is predicted to match with the exponent of a lexical root only if that lexical root is in a phrasal environment, either as a terminal XP (as in the case of the NP subject *Aynur* in (30)), or if it is the only phonological exponent of the syntactic projection that contains it (as in the case of the N⁰ *girl* in (28)), where no morphological inflection is expected to attach to the exponent of that root. In line with the predictions of the account that is assumed here, an ω -formation process that singles out a root of a complex morphological structure (as in 30c') is not preferred as this would require parsing to apply before the morpho-syntactic words are formed.

The fact that ω s cannot correspond to syntactic nodes outside the context of phrasal environments strengthens the idea that ω s are not parsed independently of φ s.

2.2.2 Matching multiple XPs with a single ω

The second issue was related to the fact that multiple morphological words can be parsed as a single ω . This case was illustrated in (8), which is repeated in (31).

If MATCHWORD is an operation that generates prosodic structures that are faithful to morpho-syntactic representations, and if (in the best case scenario) it matches morphological words with ω s, then (31) cannot be directly predicted on the basis of MATCHWORD. As such, MATCHWORD is not sufficient to account for the data.

- (31) [((Dün) $_{\omega}$) $_{\varphi}$ ((ev-e zamanında gel-en) $_{\omega}$ ((çocuk) $_{\omega}$) $_{\varphi}$
yesterday home-DAT on.time come-NOM child

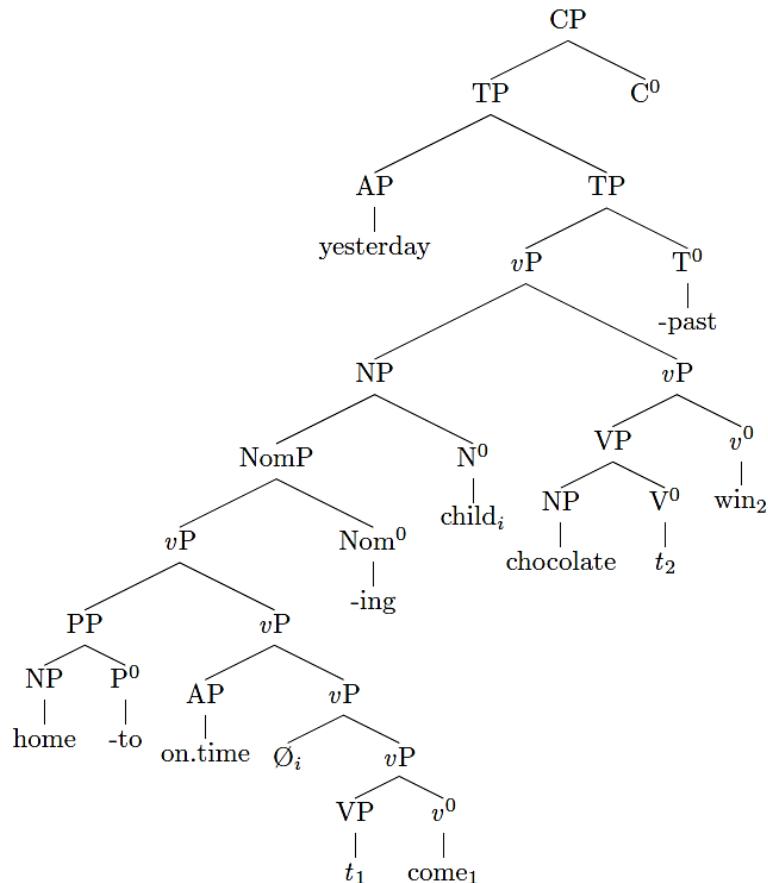
((çikolata) $_{\omega}$ (kazan-dı.) $_{\omega}$) $_{\varphi}$]_i

chocolate win-PST

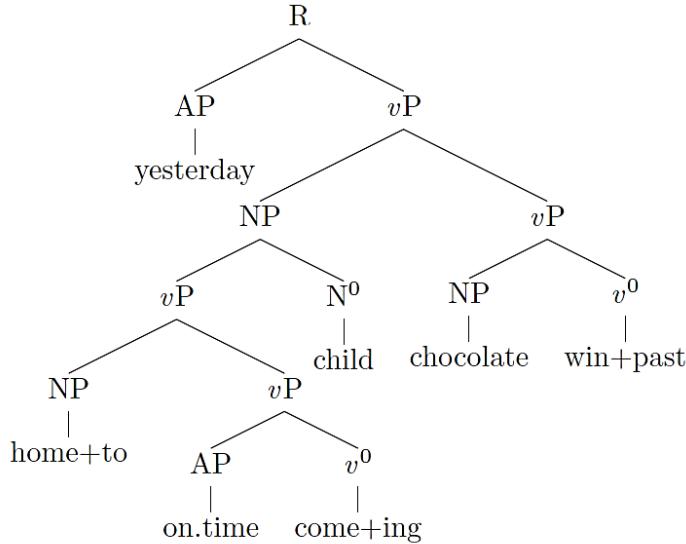
‘The child who came home on time won a bar of chocolate yesterday.’

(32) *Mapping (31)*

Source syntax of (31)



maptree of (31)



Operations of prosodic constituent formation for (31):

- a. MATCH (*phrase and clause*)
 $[(\text{yesterday})_\varphi ((\text{home+to})_\varphi ((\text{on.time})_\varphi \text{ come+ing})_\varphi \text{ child})_\varphi$
 $((\text{chocolate})_\varphi \text{ win+PST})_\varphi]_t$
- b. PARSE to ω (*EXHAUSTIVITY*)
 $[(\text{(yesterday})_\omega)_\varphi ((\text{(home+to})_\omega)_\varphi ((\text{(on.time})_\omega)_\varphi (\text{come+ing})_\omega)_\varphi$
 $(\text{child})_\omega)_\varphi ((\text{(chocolate})_\omega)_\varphi (\text{win+PST})_\omega)_\varphi]_t$
- c. Reduce φ (*NONREC*)
 $[(\text{(yesterday})_\omega)_\varphi ((\text{(home+to})_\omega(\text{on.time})_\omega (\text{come+ing})_\omega)_\varphi$
 $(\text{child})_\omega)_\varphi ((\text{(chocolate})_\omega (\text{win+PST})_\omega)_\varphi]_t$

The last step of mapping is the reduction of recursive φ s, which is represented in (32c). At this stage, φ s are organised as desired, yet ω s in (32c) are not in the same number as the ω s in (31). In (31), which shows the attested phrasing, there are three φ s. The first one contains one ω (the adverb), the second one contains two ω s (the nominalised clause and the head noun), and the last one contains two ω s (the object and the verb). In the

end result of mapping in (32), the number of ω s in the medial φ is not as desired; there are four ω s instead of two. In fact, if one returns to all the examples provided so far, one will see that each instance of φ in the attested constituency contains either one ω or maximally two ω s.

It seems that the maximum number of φ s is limited to two in Turkish. A restriction on the number of sub-constituents of a prosodic category is not controversial and is known to be a cross-linguistic phenomenon. It is called the *Binarity (BIN)* condition. In some languages, prosodic constituents are required to be minimally binary. This is called *Binarity, Minimal (BINMIN)*. Similarly, in some languages, prosodic constituents are required to be maximally binary. This is called *Binarity, Maximal (BINMAX)* (Itô & Mester 1992, Mester 1994, Hewitt 1994, Selkirk 2000).

The data shows that Turkish φ s can maximally contain two ω s. Based on this observation, I conclude that BINMAX (particularly BINMAX- φ) conditions the number of ω s within a φ in Turkish, which only allows φ s with a single ω (hereafter *mono-worded* φ s) or *bi-worded* φ s.

- (33) BINMAX- φ : A φ must be maximally binary.

The condition in (33) accounts for the fact that the medial φ in (31) has two ω s. After the reduction of multiple recursive φ -layers, if the number of the remaining ω s is more than two, this violates BINMAX. To ensure that the BINMAX condition is met, a repair strategy is invoked. This repair strategy consists of a rule, which is “combine the ω s that violate the BINMAX condition”. This rule triggers an operation that I call “combine ω ”. After this combinatory operation has applied, the resulting structure will satisfy BINMAX. If the assumption that BINMAX is a condition on the number of ω s in Turkish φ s, then any parsing that does not violate BINMAX, and which satisfies all the other conditions on prosodic well-formedness, must be legitimate. The alternative ω -level constituencies in (34), each of which is empirically attestable, shows that this prediction is borne out.

(34) *Combine ω (BINMAX)*

- a. ✓ [((yesterday)_ω)_φ ((home+to on.time come+ing)_ω (child)_ω)_φ
((chocolate)_ω (win+PST)_ω)_φ]
- b. ✓ [((yesterday)_ω)_φ ((home+to on.time)(come+ing child)_ω)_φ
((chocolate)_ω (win+ PST)_ω)_φ]²⁴
- c. ✓ [((yesterday)_ω)_φ ((home+to)_ω(on.time come+ing child)_ω)_φ
((chocolate)_ω (win+ PST)_ω)_φ]
- d. ✓ [((yesterday)_ω)_φ ((home+to on.time come+ing child)_ω)_φ
((chocolate)_ω (win+ PST)_ω)_φ]

(34a) is the parsing in (8), which was problematic for MATCHWORD, but easily derived in the current account. In all of the parsing patterns illustrated in (34), φs exhibit one or maximally two ωs, which is accounted for with BINMAX. Note that any φ that is parsed into more than two ωs is infelicitous.

At this point, one may state that these phonological well-formedness conditions might also be derivable on the assumption that MATCHWORD is responsible for ω-formation. One may further state that after morphological words are matched with ωs, BINMAX applies and the number of ωs in φs may be reduced to one or two ωs. However, there are independent reasons to abandon the idea of MATCHWORD as a mapping operation, which were discussed in §2.1.1.

2.2.3 *Multiple ωs in a single morpho-syntactic word*

The third issue was the fact that a single morphological word may be parsed as two ωs. This case was illustrated in (10), which is repeated below:

- (35) a. (((gel-ecek-)_ω (Ø-ti-ler)_ω)_φ)_i
come-FUT- COP-PST-PL
'They were going to come.'

²⁴ Note that parsing the two modifiers of the subject (i.e. home+to and on.time) is rather marked, at least in my dialect. This is not contradictory when one considers that although these modifiers are contained within the same XP in the *maptree*; they are separate in the sense that they do not have any dominance / containment relation between one another. This lack of dominance / containment relation in the *maptree* may be the reason for the degraded interpretation of the parsing of these two modifiers as an independent ω.

- b. * (((gel-ecek-Ø-ti-ler) $_{\omega}$) $_{\varphi}$) $_{\iota}$
 come-FUT-COP-PST-PL
 'They were going to come.'

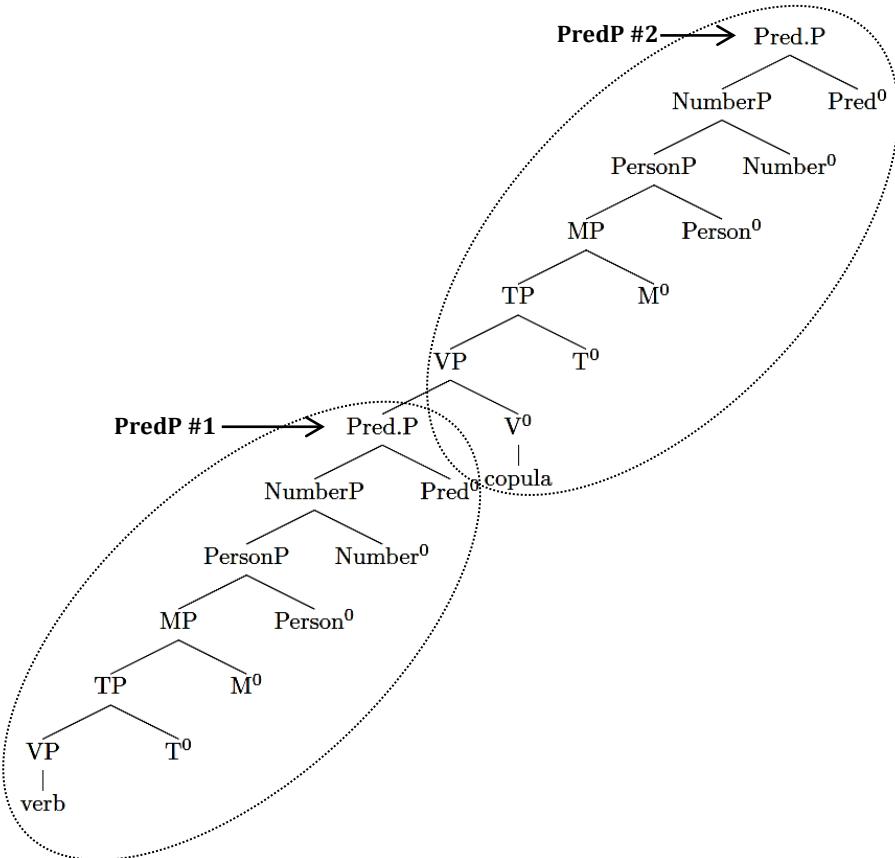
The fact that the φ in (35) is obligatorily split into two ω s cannot be predicted by MATCHWORD. In fact MATCHWORD predicts that the single morpho-syntactic word in (35) (which is also the domain of vowel harmony in this case) is parsed as a single ω , which yields an unacceptable prosodic structure as (35b) shows.

In the account proposed here, an ω can only be generated if its content is flanked by φ boundaries. In this sense, the ω -formation algorithm that I propose has no recourse to morphological words or syntactic forms. This implies that at least the segmental content of the leftmost ω must first be parsed as a φ , so that later it is reduced to a ω in order to avoid violation NONREC. φ s can only be generated as a result of MATCHPHRASE. If my proposal is on the right track, at least the leftmost ω must always correspond to a syntactic projection in the source syntax.

A number of works on the predicate complex in Turkish, such as Kornfilt (1996), Göksel (2001, 2003), Aygen (2002), Zwart (2002), Kelepir (2003), Kahnemuyipour & Kornfilt (2006), Sağ (2013), and Bayırlı (2012), discuss the split behaviour of the copular domain from the rest of the verbal domain. Among these, Sağ (2013) and Bayırlı (2012) argue that the copular complex is a phrasal unit that cannot be derived via head adjunction. In Turkish, the predicate complex bears more than one VP and PredP; one of which is for the lexical verbal complex, and the other for the copular complex. Below is the syntax of fragments such as (35), in which I indicate the terminal nodes of the copula and the lexical verb for expository reasons (Sağ 2013).²⁵

²⁵ At the moment, how the ellipsis site of the fragment is derived and marked for the spell-out is irrelevant to the discussion. Therefore only non-ellided parts of the structure are represented in the syntax trees.

- (36) *Syntax of the verbal domain in Turkish (Sağ 2013:124):*²⁶



The crucial observation about such verbal complexes is that the content of the lower PredP (i.e. PredP#1): e.g. the lexical verb and its participle marker in the case of (35) constitute a single unit in terms of their morpho-syntax.²⁷ Similarly, copula and tense/aspect/modality (TAM) markers that are above the PredP#1 constitute another unit in terms of their morpho-syntax. I will call it ‘PredP#2’. PredP#2 corresponds to the content of the higher PredP in

²⁶ In order to be faithful to Sağ’s representation, I ignore the vP layer in the discussion of the fragments like (35a).

²⁷ Participle-making verbal suffixes are *zone 2* markers in Enç’s (2004) terminology. These include the future *-AcAK*, perfective *-mIş*, imperfective/progressive *-Iyor*, or the aorist *-(A)r* and the modal *-mAll*. Copular suffixes are *zone 3* suffixes in Enç’s terms. These include the past tense *-dI* and the evidential *-mIş*. See Sağ (2013) for further references.

(36) (Kornfilt 1996, Aygen 2002, Sağ 2013, Bayırlı 2012, among others).²⁸ The split phrasal nature of PredP#1 and PredP#2 is easily tractable in a number of structures.

Firstly, the example in (37) illustrates a case of doubling, where the doubled unit (*italicised*) may be the whole verbal complex, i.e. the PredP#1 and the PredP#2 together, as in (37a), or only PredP#1 (37b). Omitting the internal parts of these phrases yields unacceptability (37c) and (37d).

- (37) a. [_{PREDP2} [_{PREDP1} *Gel-ecek*] -Ø-ti-ler], *gel-ecek*-Ø-ti-ler.
 come-FUT-COP-PST-PL come-FUT-COP-PST-PL
 ‘They were going to come to school, they were.’
- b. [_{PREDP2} [_{PREDP1} *Gel-ecek*] -Ø-ti-ler], *gel-ecek*.
 come-FUT-COP-PST-PL come-FUT
 ‘They were going to come to school, they were.’
- c. * [_{PREDP2} [_{PREDP1} *Gel-ecek*] -Ø-ti-ler], *gel*.
 come-FUT-COP-PST-PL come
 ‘They were going to come to school, they were.’
- d. * [_{PREDP2} [_{PREDP1} *Gel-ecek*] -Ø-ti-ler], *gel-ecek*-Ø-ler.
 come-FUT-COP-PST-PL come-FUT-COP-PL
 ‘They were going to come to school, they were.’

Secondly, phrasal adjunction targets maximal projections. If PredP#1 and PredP#2 are two separate phrases, then one expects to find adjuncts in the juncture of the two. This is also borne out. As shown in (38), an adjunct (*italicised*) can only adjoin in the juncture between these two PredPs (38a) or adjoin to the edge of the entire verbal complex (38b). Other possibilities are ruled out (38c) and (38d).

²⁸ See Aygen (2002) for the evidence that the non-participle markers and TAM markers target a position higher than what is referred to as PredP#1 in (36). Also see Kelepřík (2001) and Aygen (2002) for that the verb with TAM markers (the PredP#1 here) reside somewhere lower than TP.

- (38) a. Gel-me-yecek *falan-*Ø-sa-nız, haber ver-in.
 come-NEG-FUT and.so-COP-COND-2PL news give-IMP.2PL
 ‘If you are not going to come or so, let us know.’
- b. Gel-me-yecek-Ø-se-nız *falan*, haber ver-in.
 come-NEG-FUT-COP-COND-2PL or.so news give-IMP-2PL
 ‘If you are not going to come or so, let us know.’
- c. * Gel-me *falan-acak-*Ø-sa-nız, haber ver-in.
 come-NEG and.so-FUT-COP-COND-2PL news give-IMP-2PL
 ‘If you are not going to come or so, let us know.’
- d. * Gel-me-ecek-i- *falan* sa-nız, haber ver-in.²⁹
 come-NEG-FUT-COP and.so-COND-2PL news give-IMP-2PL
 ‘If you are not going to come or so, let us know.’

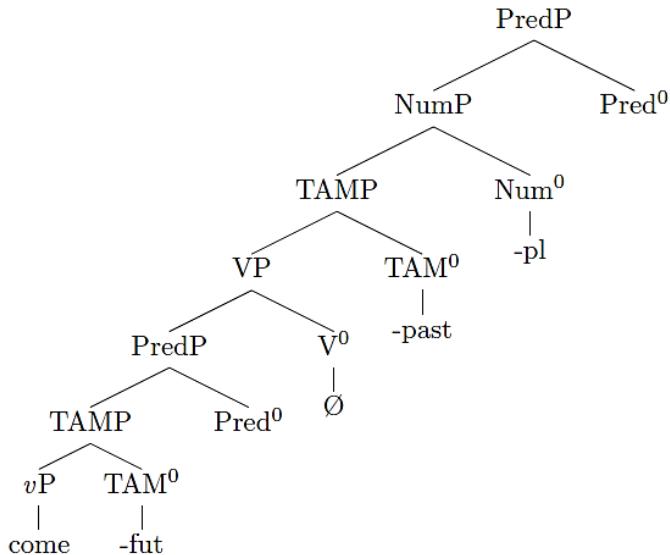
Thirdly, suspended affixation is a phenomenon that is observed when two projections are coordinated in Turkish. It is a phenomenon in which only the rightmost conjunct exhibits the affixes that are shared among all the conjuncts (cf. Kabak 2007). If PredP#1 and PredP#2 are separate phrasal units, then one expects to observe suspended affixation only at the juncture of these two phrases. This, in fact, is a known fact about Turkish (cf. Kornfilt 1996, Kahnemuyipour & Kornfilt 2006, Kabak 2007, *i.a.*).

- (39) a. Gel-ecek ve gör-ecek-Ø-ti-ler.
 come-FUT and see-FUT-COP-PST-PL
 ‘They were going to come and see.’
- b. * Gel ve gör-ecek-Ø-ti-ler.
 come and see-FUT-COP-PST-PL
 ‘They were going to come and see.’

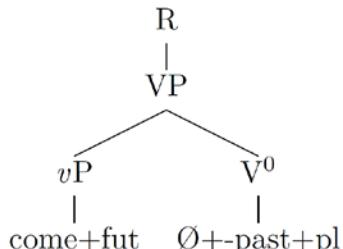
²⁹ The overt form of the copula is preferred in this example to ensure that the copula is adjacent to the content of the PredP#1. In all other instances, the null morpheme is preferred as it yields a single harmonic word, which indicates the morpho-syntactic unity, yet the same judgements hold in the case of the overt use of the copula in the other examples.

In light of the evidence, and based on Sağ (2013), the source syntax and the *maptree* of a fragment such as the one in (35a) is depicted in (40).³⁰

(40) Source syntax of (35a)



maptree of (35a)



The heads without an exponent and their projections are pruned – in which the heads of the bound morphemes are also considered as lacking an exponent. When **PredP#1** and the **TAMP** that it dominates are pruned, the remaining **vP** attaches to the next dominating syntactic node that bears a phonological exponent. In the case of the source syntax in (40), the next

³⁰ I have reduced the projection of tense/aspect/modality in both of the verbal domain into one (*TAMP*) as each of these projections corresponds to one morpheme. I also overlook the **VP** of the lexical verb, assuming that the lexical verb always moves to **vP** in Turkish (cf. Sailor, in progress).

dominating node is the VP of the PredP#2 which hosts the null copula. Therefore, in the *maptree* representation, the copular VP immediately dominates its head and the vP in (40). This predicts the parsing of (35a) when we apply the match and prosodic well-formedness rules to the *maptree* shown in (40).

(41) Prosodic parsing for the *maptree* of (35a)

- a. MATCH (*phrase and clause*)
 $[((\text{come+FUT})_\varphi \emptyset + \text{PST+PL})_\varphi]_i$
- b. PARSE to ω (*EXHAUSTIVITY*)
 $[(((\text{come+FUT})_\omega)_\varphi (\emptyset + \text{PST+PL})_\omega)_\varphi]_i$
- c. Reduce φ (*NONREC*)
 $[((\text{come+FUT})_\omega (\emptyset + \text{PST+PL})_\omega)_\varphi]_i$

In conclusion, in fragments such as those (10a), the part of the morpho-syntactic word that corresponds to PredP#1 is parsed as an ω even though in most cases it is part of a larger morpho-syntactic word. When one considers the syntactic relationship between PredP#2 and PredP#1, it is not surprising to see that MATCHPHRASE and consequently PARSE to ω targets parts of a ‘word’, regardless of the morphological makeup. What seems like a mismatch in cases such as (10a) is in fact a typical case of syntax-prosody matching. On the other hand, MATCHWORD is crucially incapable of accounting for such a distribution of ω s.

However, the account I advocate here does not seem to be free of issues. There are two consequences of my assumptions that seem to be problematic for certain data.

The first point is a concern for almost all phonological accounts (including mine) that assume that syntactically empty nodes are not mapped to prosody. I have stated that phonologically empty projections of a syntactic tree are truncated as they are invisible to the parser. However, in (40) the *maptree* contains the null copula head as if it is a head with a phonological exponent. If null items are ignored by the parser, one predicts that the morphemes bound to the copular domain attach to the next available

phonological exponent and not to a null one. In the case of (40), one expects that past and plural agreement that is assumed to attach to the copula should prosodically blend with the lower vP (i.e. *come+FUT*). The morphological makeup of such forms fulfils this expectation. The verbal complex of both PredPs constitutes one single morphological word in cases of null copula (i.e. *come+FUT+PST+PL*), as the vowel harmonic domain indicates – vowel harmonic domain is sensitive to the domain of morphological word, and harmony extends to the entire fragmented verb in the case of *come+FUT+PST+PL*. However, as seen from the prosodic constituency, prosody does not satisfy this condition. Why is it the case that in this particular situation, a syntactic projection is *visible* to the parser (i.e. represented in the *maptree*) although it does not bear any phonological exponent?

The second issue is related to a specific consequence of my account. The mapping algorithm proposed here predicts that syntactic heads are usually parsed as independent ω s if they are the heads of branching structures. However, it is also the case that multiple ω s may be conjoined to reduce the number of ω s in a φ to two or one. (34) was an example that illustrates that a number of prosodic structures of the same syntactic source is acceptable provided that they obey conditions such as BINMAX. In (34a) the content of the N^0 is parsed as an independent ω from the rest. In (34d), the entire NP is parsed as a single ω , which does not violate BINMAX. The conclusion is that as long as BINMAX is not violated (which applies obligatorily when there is more than two ω s in a φ), multiple ω s can optionally be reduced to a single ω in the Turkish prosodic grammar. If this generalisation is correct, then one will expect that a parsing such as $(\text{come}+\text{FUT}+\text{PST}+\text{PL})_\omega$ should be licit, as it does not violate BINMAX, and combining ω s within a φ is optional. Yet, such an ω -level constituency is illicit. This was already shown in (10b). Why is it the case that *re-wording*, which applies optionally in other cases, is avoided in copular environments?

I propose that these two issues are related to one another and can be accounted for by appealing to two principles of DM: *underspecification of Vocabulary Items* and *late insertion*. Late insertion refers to the hypothesis that phonological exponents of syntactic features are inserted at PF, therefore syntax is devoid of phonological content. Underspecification of Vocabulary Items means that certain properties of the phonological exponents of

syntactic structures are not specified, and are conditioned relative to their context of insertion. For example, the third person pronouns *she* and *he* in English are specified for their gender feature, yet ‘they’ is underspecified in terms of gender.

For the issue that is discussed in this section, I claim that the copula is underspecified in terms of whether it is a *Phonological Word Adjoiner* or not. Descriptively, Phonological Word Adjoiners (PWAs) (Kabak & Vogel 2001) are a set of Vocabulary Items (mostly functional morphemes) that require an ω boundary to their left. The list in (42) presents some of the PWAs in Turkish form Kabak & Vogel (2001).

(42) *Some PWAs in Turkish*

- | | | |
|----|----------------------|--------------------------------------|
| a. | <i>-dA</i> | additive/coordinating particle |
| b. | <i>ki</i> | parenthetical coordinator (enclitic) |
| c. | <i>-y, -i, Ø</i> | copula |
| d. | <i>-mI</i> | question particle |
| e. | <i>-(y)lA, ile</i> | commutative/instrumental particle |
| f. | <i>-(y)ken, iken</i> | converb marker meaning ‘when’ |

The morphemes listed above are PWAs in Turkish (Kabak & Vogel 2001). Thus, they may require an ω boundary to their left. Building on the account of PWAs that is posited by Kabak & Vogel (2001), I claim that whether or not a morpheme is a PWA is not pre-specified but underspecified. This creates the possibility that in certain syntactic environments such morphemes do not obligatorily bear an ω boundary to their left. The example in (44) below shows that this possibility is borne out.

Related to the current discussion, my specific claim is that the copula is underspecified as to whether it is a PWA or not, and that the PWA status of a Vocabulary Item can be predicted via its syntactic context / distribution. I define the syntactic distribution of PWAs after VI insertion as the following:

(43) *Distribution of PWAs in Turkish:*

- A Vocabulary Item that is underspecified with respect to its PWA status is rendered as a PWA if its sister is a terminus on the *maptree*.

In any distribution other than the one described in (43), the ‘elsewhere condition’ applies. In such a case, the copular domain (in which the copula is considered as the ‘functional morpheme’ that is mentioned in (43)) is not rendered as a PWA, and behaves like a suffix.³¹

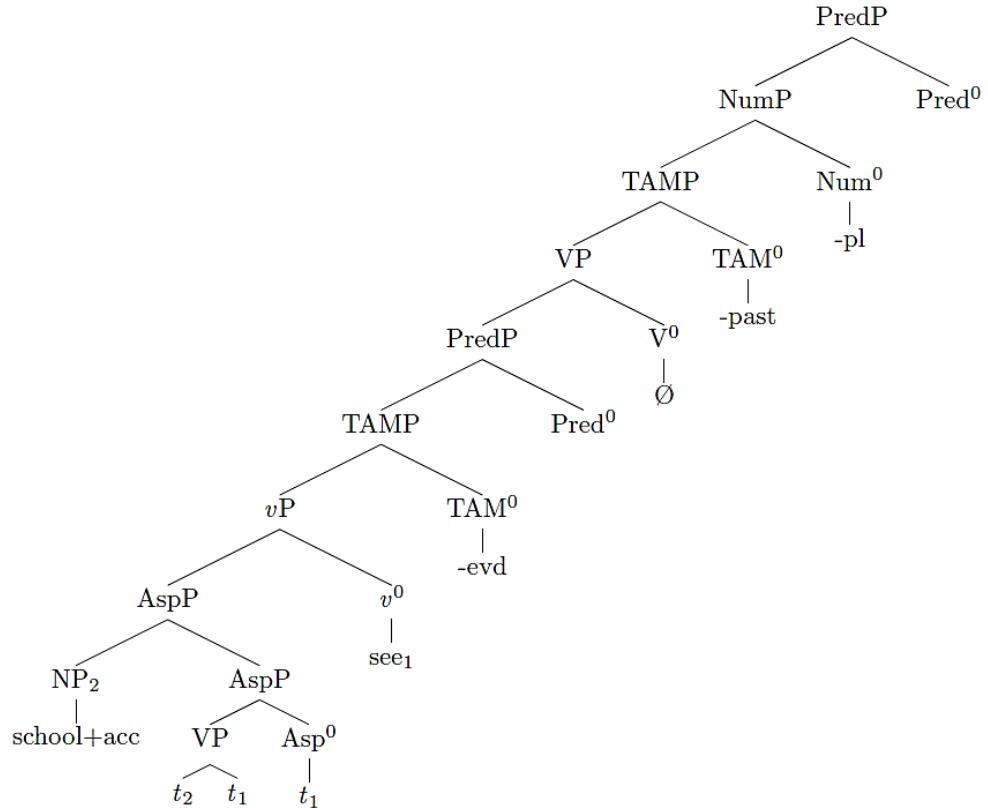
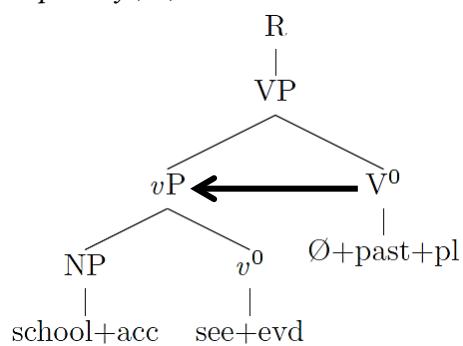
In the example in (35a), the sister of the copular verb is a terminal on its *maptree* representation as shown in (40). Thus, based on (43), the copular verb is rendered as a PWA.

The sentence in (44) illustrates a scenario when the lexical verb is sister to an object with an exponent, in a neutral context. (44) is a clause without a phonologically realised subject. As the labelled brackets that mark the empirically observed boundaries of the prosodic constituents indicate, the indirect object *okulu* ‘school.ACC’ is parsed as a separate ω , which is the leftmost ω . Both the participle form of the lexical verb (*görmüş* ‘see.EVD’) and the copular domain (*tüler* ‘COP.PST.PL’) are contained within a single ω , which is the rightmost ω in (44). The clause is composed of a single φ that is immediately dominated by an ι . In the *maptree* of (44), the maximal projection of the copula dominates all the other phonological exponents of (44). The *vP* on the *maptree* in (44) corresponds to the residing projection of the lexical verb *see*, which dominates the lexical head verb and its NP complement, i.e. the NP *school*, together with its case.³²

- (44) [((Okul-u) $_{\omega}$ (gör-müş-Ø-tü-ler) $_{\omega}$) $_{\varphi}$] $_{\iota}$
 school-ACC see-EVD-COP-PST-PL
 ‘They had seen the school.’

³¹ Notice that, since the ω s that contain PWAs cannot combine with the neighbouring ω s, and since φ s in Turkish maximally allow two ω s (due to BINMAX), the φ s that contain PWAs must minimally and maximally contain two ω s. For such environments one could speculate that the φ s with PWAs are not only subject to BINMAX, but also to BINMIN- φ (i.e. *Binarity, minimal*, which states that a φ must at least bear two ω s). Although, such an assumption is in line with the analysis proposed here, the validity of the idea that BINMIN is operative in only certain morpho-phonological environments requires further research.

³² All finite predicates involve copular predicates in Turkish (Kornfilt 1996, Kelepir 2001, 2007, *i.a.*). Therefore, the detailed source syntactic trees in (44) and (45) depict the clausal syntax of finite clauses in a more accurate way. I refer to such a detailed way of depicting finite clausal syntax only in cases where it is relevant (e.g. in the discussion of copulas as PWAs). In other environments, I use a simplified version of such trees, in which the multi-layered PredPs or the projections such as TAM or NumP are ignored.

Syntax of (44)*Maptree of (44)*

Operations of prosodic constituent formation for (44):

- a. MATCH (*phrase and clause*)
[((school+ACC) $_{\varphi}$ see+EVD+Ø+PST+PL) $_{\varphi}$] $_{\iota}$
- b. PARSE to ω (*EXHAUSTIVITY*)
[((((school+ACC) $_{\omega}$) $_{\varphi}$ (see+EVD+Ø+PST+PL) $_{\omega}$) $_{\varphi}$] $_{\iota}$
- c. Reduce φ (*NONREC*)
[((school+ACC) $_{\omega}$ (see+EVD+Ø+PST+PL) $_{\omega}$) $_{\varphi}$] $_{\iota}$

The first operation that applies to the input *maptree* in (44) is MATCH, which matches R_s with ι s and any terminal XP or any XP that directly branches to a head with φ s. The result of this operation is schematised in (44a). In the following step, ω s are generated, where each phonological exponent that is flanked by φ edges is typed as an ω . This step is presented in (44b). If the resulting prosodic structure exhibits recursive φ s, then the operation of φ -reduction applies. There is a recursive φ in (44b). Thus, the inner φ is reduced, leaving behind the ω within it. This is shown in (44c). At this juncture, if the number of ω s is more than two, then ω s are combined until there are maximally two ω s left. Since the number of the ω s after the operation ‘reduce φ ’ is not more than two, BINMAX is not violated. (44c) is the output of the derivation, which is identical to the constituency of the empirically attested structure of (44).³³

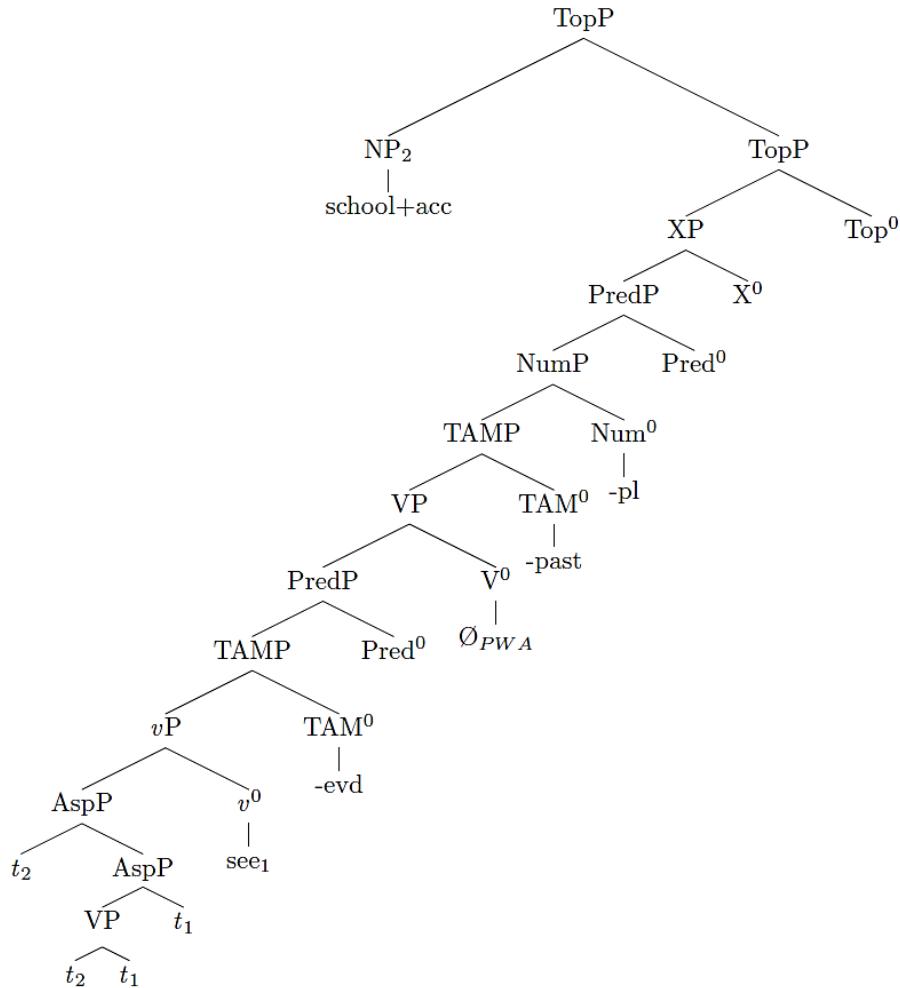
Notice that when a lexical verb exhibits an object with a phonological exponent, the copular predicate is still rendered as a PWA as long as its lexical verb is a terminus on the *maptree*. Such a scenario arises in contexts that are information structurally marked, in which the lexical verb bears narrow focus inside the VP and its object moves to a higher position for information structural reasons (Şener 2010).

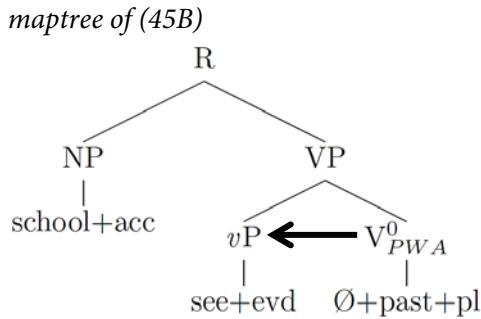
³³ Interestingly, one of the predictions of the current account is that the ω of the object and the ω of the participle+copula complex in (44c) in the main text may optionally be combined as a single ω . However, similar to the case in (10b) in the main text, such a single- ω formation is not allowed – *[school+ACC see+EVD+Ø+PST+PL) $_{\omega}$]. This is in support of the idea that the φ s that contain PWAs are not only subject to BINMAX, but also to BINMIN, in which a φ must minimally contain two ω s.

The example in (45B) is an instantiation of such a structure. The constituents of (45B) are identical to those of (44). However, (45B) is uttered in an information structurally marked context where the lexical verb is focused. This yields a dissimilar syntactic structure in (44), where the non-focused object moves to a Topic Phrase (TopP). The representation of the prosodic constituents in (45B) depicts the default prosodic constituency (i.e. how it is pronounced in the given context). According to this, the sentence-initial direct object *okulu* ‘school.ACC’ is parsed as a φ of its own, which is the leftmost φ . The participle verb and the copular domain are contained within the same φ , which is the final- φ . These two φ s are the only φ s in the ι that flanks the entire clause. The final- φ is composed of two ω s, the leftmost of which contains the participle verb. The copular domain in (45B) is parsed as a separate ω within the final- φ . As seen in (45B’), a constituency in which the copular domain is parsed together with the participle domain is illicit. The source syntax tree, the *maptree*, and the steps of mapping of (45B) are given below.

- (45) A: Okulu ne yapmışlardır?
 ‘What had they done with the school?’
- B: $[((\text{Okul-u})_\omega)_\varphi ((\text{gör-müş})_\omega (-\emptyset\text{-tü-ler})_\omega)_\varphi]_\iota$
 school-ACC see-EVD -COP-PST-PL
 ‘They had seen the school.’
- B': * $[((\text{Okul-u})_\omega (\text{gör-müş-Ø-tü-ler})_\omega)_\varphi]_\iota$
 school-ACC see-EVD-COP-PST-PL
 ‘They had seen the school.’

*Mapping procedure of (45B):
Syntax of (45B)*





Operations of prosodic constituent formation for (45B)

- a. MATCH (*phrase and clause*)
 $[(\text{school+ACC})_\varphi ((\text{see+EVD})_\varphi \emptyset + \text{PST+PL})_\varphi]_t$
- b. PARSE to ω (*EXHAUSTIVITY*)
 $[(\text{(school+ACC)}_\omega)_\varphi (((\text{see+EVD})_\omega)_\varphi (\emptyset + \text{PST+PL})_{\omega \cdot \text{PWA}})_\varphi]_t$
- c. Reduce φ (*NONREC*)
 $[(\text{(school+ACC)}_\omega)_\varphi ((\text{see+EVD})_\omega (\emptyset + \text{PST+PL})_{\omega \cdot \text{PWA}})_\varphi]_t$
- d. Combine ω (*BINMAX*)
 - * $[(\text{(school+ACC)}_\omega)_\varphi ((\text{see+EVD+Ø+PST+PL})_\omega)_\varphi]_t$

The prosodic well-formedness operations of Turkish prosodic grammar apply to the *maptree* in (45), except for the last step (i.e. *combine* ω). The first operation that applies is MATCH, which matches Rs with is and any terminal XP or any XP that directly branches to a head with φ s. The result of this operation is schematised in (45a). In the following step, ω s are generated, where each phonological exponent that is flanked by φ edges is typed as an ω . This step is presented in (45b). If the resulting prosodic structure exhibits recursive φ s, then the operation of φ -reduction applies. There is one φ that is recursive in (45b), which is the final- φ . Thus, the recursive layer of this φ (i.e. the φ that flanks the participle verb) is reduced. This is shown in (45c). The representation in (45c) is identical to the actual pronunciation of such a clause in such a context. At this point, due to the fact that the sister of the copular verb is a terminus on the *maptree* in (45), the copula is rendered as a

PWA. As a result of this, the application of the ω -combination operation is banned. If it applied, the output of the derivation would be illicit as shown in (45d). Therefore, (45c) is the termination of derivation for the clause in (45B).

The distribution of PWAs in Turkish can be stated simply by referring to the syntactic structural relations that are depicted in *maptrees*. When one compares the source syntactic trees and the *maptrees* in (44) and (45), one sees that in the former the sister of the PWA (in both cases, the lower PredP) or the next lower projection with a morphologically free-standing phonological exponent (in both cases, *vP*) is never a terminus. In fact, these two projections are identical in the source syntactic representations in (44) and (45). However, prosodically, the PWA in (44) is rendered as a suffix, while the PWA in (45) must bear an ω boundary to its left (as (45B) shows). If one refers to VI-inserted syntactic trees to describe the distribution of the PWAs, then the description of a PWA must be put differently (similar to the definition of structural distance on VI-inserted syntactic trees). For the ease of reference, I continue to follow the description advanced in (43).

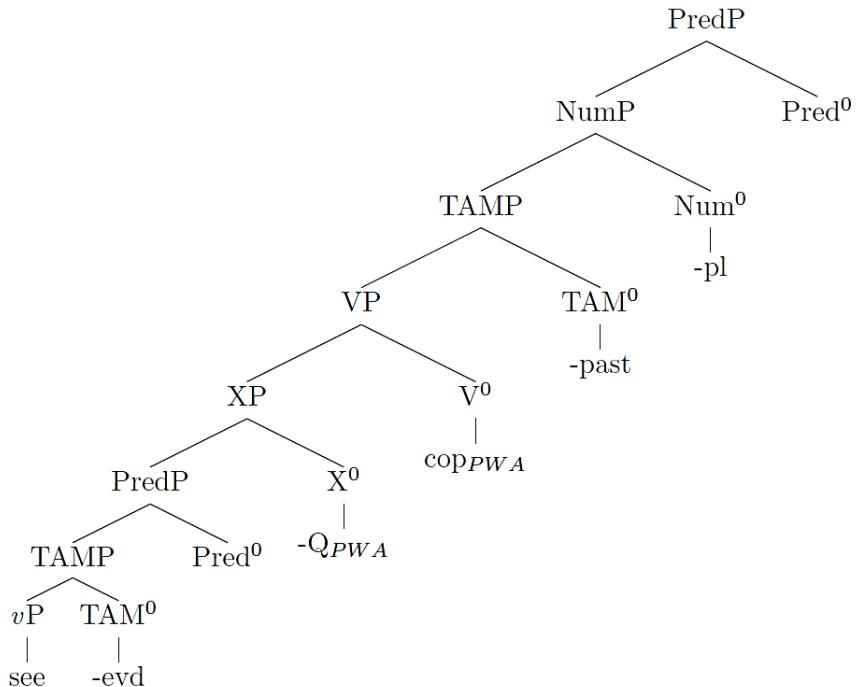
Inkelas & Orgun (2003) criticises Kabak & Vogel's (2001) account of PWAs, stating that such an account cannot predict the prosodic behaviour of multiple PWAs in a single morpho-syntactic word. In such cases where more than one PWA are stacked, as in (46i), only the leftmost PWA exhibits a boundary to its left – e.g. the question particle in (46i). All the other PWAs that follow the leftmost PWA do not exhibit a boundary to their left – e.g. the copular complex in (46i). In other words, these morphemes are obligatorily rendered as regular suffixes and not PWAs, as the ungrammaticality of (46ii) indicates. Kabak & Vogel's description of PWAs is not sufficient to predict this distributional variation. However, if one limits the distribution of PWAs in the way that I suggested in (43), then Inkelas & Orgun's criticism is nullified. Consider below the mapping procedure of such a fragmented verb with multiple PWAs, in which the leftmost PWA is the polar question particle *-mI*, and the second potential PWA is the copula *-i*.

- (46) (i) [((Gör-müş) $_{\omega}$ (**mü i-di-ler?**) $_{\omega}$) $_{\varphi}$] $_{\iota}$
 see-EVD -Q COP-PST-PL
 ‘Had they seen (it)?’

- (ii) * [(Gör-müs **mü**)_ω (**i-di-ler?**)_ω)_φ]_i
 see-EVD -Q COP-PST-PL
 ‘Had they seen (it)?’

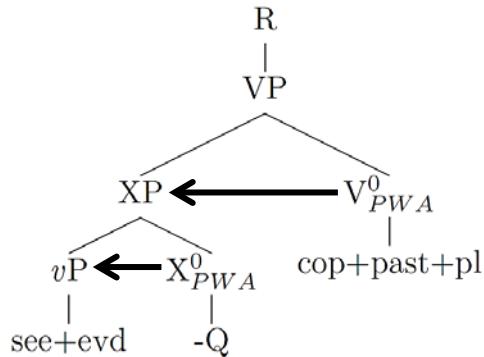
Mapping procedure of (46i):

*Syntax of (46i)*³⁴



³⁴ In terms of the syntactic projection of the question particle I remain ambivalent and represent it as **XP**. In terms of its syntactic position, I simply assume that it is somewhere between the copular domain and the lexical verbal domain. Whether it is outside (as represented above in the main text) or inside the **vP** or **PredP** of the lexical verb is immaterial to the current discussion.

maptree of (46i)



Operations of prosodic constituent formation for (46i)

- a. MATCH (*phrase and clause*)
[((see+EVD)_φ -Q COP+PST+PL)_ι]_ι
- b. PARSE to ω (*EXHAUSTIVITY*)
[((((see+EVD)_ω)_φ (-Q COP+PST+PL)_{ω-PWA})_φ]_ι
- c. Reduce φ (*NONREC*)
[((see+EVD)_ω (-Q COP+PST+PL)_{ω-PWA})_φ]_ι

When the mapping procedure that I suggested for the single occurrences of PWAs is applied to the multiple occurrences of such morphemes, the leftmost one is always predicted to be rendered as a PWA, if its sister is a terminus in the *maptree*. Similarly, my account predicts that each potential PWA that follows another potential PWA is never rendered as a PWA itself simply by the virtue of the fact that the sister of non-initial PWAs are never a terminus. Consider the *maptree* of (46i), in which the question particle is followed by the copular domain. On the *maptree* representation, we see that the copular domain is sister to the XP of the question particle. This XP is the mother of two elements, one is its head, the exponent of which is the question particle, and the other is the *vP* of the lexical verb. As such, the XP that is the sister of the copula is a non-terminus. Therefore, the copula is obligatorily rendered as a suffix and not a PWA. On the other hand, since the sister of the question particle on the *maptree* is a terminus, i.e. the *vP* of the lexical verbal complex,

the question particle is rendered as a PWA, bearing an obligatory metrical boundary to its left. When the steps of prosodic derivation are applied in the order that is given in (46a-c), one sees that the output of the derivation is identical to the attested constituency that is given in (46i). The mapping procedure in (46) demonstrates that my addition to Kabak & Vogel's account of PWAs straightforwardly captures the data that are considered problematic by Inkelas & Orgun (2003).

Now, let us recall the issues that concerned the current proposal. The first issue was related to the fact that although PWAs are sometimes bound morphemes (and even units that lack phonological exponents as in the case of null copula), unlike other null items or morphologically bound units, they survive pruning. This is the case due to the fact that prosodically underspecified syntactic units can only receive their properties post-syntactically, in the context of a structure with phonological exponents (e.g. in a context such as *maptree* represents). As a result of this, pruning PWAs is cancelled.

The second issue was related to the fact that a copular complex can never form an ω together with the lexical verbal complex in fragments such as (10a). The current proposal accounts for this fact by appealing to the defining property of PWAs: i.e. the fact that they require ω boundaries to their left (in other words the ω that contains a PWA cannot be combined with its left adjacent ω), when their sister is a terminus in the *maptree*.

I claim that the same conditions apply to all PWAs, and all PWAs (regardless of whether or not they are free, bound or null morphemes) survive the pruning (in other words, they are always 'relevant' to the prosodic parser). The power of the current proposal comes from the fact that its scope is not limited to the particular case of copular forms. The algorithm that is assumed in this section also accounts for a number of other structures with similar PWA properties (e.g. post-positional heads such as *için* 'for', *ile* 'with'; other copular/light-verb constructions such as *et-* 'do', *dur-* 'continue', *ol-* 'be'; and compounds such as *cumhurbaşkanı* 'president' or *kirkayak* 'centipede', etc.).³⁵ The detailed discussion above should be taken as an

³⁵ For an alternative view of the prosody of some of these forms see Kabak & Revithiadou (2009), who make recourse to a recursive representation, in which the ω s that correspond to the parts of such structures are contained within a larger ω : $((\text{word})_\omega (\text{word})_\omega)_\omega$. I find such an account problematic for a number of reasons. Firstly, it is limited to only a number of post-positional heads and a limited set of

exemplar case to show how PWAs are treated in the process of mapping from syntax.

To instantiate cross-linguistic applicability of *maptree* together with the operations that are triggered by the conditions of prosodic well-formedness that have been discussed here, the following section discusses the prosodic constituent formation within us with a case study on Tagalog.

2.3 Maptree from a cross-linguistic perspective

In this section, I revisit a portion of the data discussed in Richards (2010). Particularly, I focus on the prosodic constituency of Tagalog, by examining each example that is discussed in Richards (2010, §3.3.3). After a brief presentation of the Tagalog facts, I will outline Richards' account and its shortcomings. Then, I will show how the proposal that is advanced in §2.2 captures the Tagalog facts without the shortcomings of Richards' account. As such, this section provides an example of the cross-linguistic application of *maptree* and the assumptions that are associated with the current proposal.

After sharing a draft of my dissertation with him, I have been informed by Norvin Richards (p.c.) that a recursive account of the prosodic grammar of Tagalog has been endorsed and presented in a workshop by both Norvin Richards and Joseph Sabbagh. As a disclaimer, I should note that the account of Tagalog prosodic grammar that is advanced in this section was conceived

compounds (those compounds that do not bear an overt compound marker). Secondly, it seems clear that recursion is strictly banned at other levels of the Turkish prosodic grammar (see chapters 3, 5 and 6 in this book), which makes an appeal to recursion for only the ω level implausible. Thirdly, on Kabak & Revithiadou's account, a recursive ω is generated only when an X^0 recursively dominates another X^0 . However, since the arguable diagnostic for recursion in their account is not observed in compounds that bear a compound marker (*sI*-compounds), these authors conclude that such compounds do not bear recursion. Given the DM account of compound formation (Harley 2009), with or without a compound marker, any compound is expected to be dominated by a syntactic head. Therefore, these authors have to stipulate a strategy to ban a recursive mapping for the case of *sI*-compounds. Additionally, the autonomous mapping suggested by these authors predicts a recursive representation in any prosodic distribution. This prediction is not borne out. For instance, when such so-called recursive prosodic structures are pronounced in the post-nuclear area, they are not parsed as separate ω s but as part of a larger ω that flanks all the other constituents in that area. In such post-nuclear pronunciations, while one may still observe the segmental phenomena that they use as the diagnostics for recursion, it is evident that these structures are suprasegmentally parsed as one single ω , which corresponds to the final ω of a final- φ .

without prior knowledge of these workshop presentations. Since I did not attend that workshop and could not obtain any handouts or papers that relate to these presentations, I cannot say to what extent these accounts are similar to the one that is endorsed here.

2.3.1 Prosodic phrasing in Tagalog

Tagalog is a VSX language with partially free word order. The prosodic structure of Tagalog has recently received attention from Richards (2010), who proposes a theory of Tagalog prosody, and later from Sabbagh (2014), who addresses the prosodic constituency of Tagalog interrogatives in relation to word order. I focus my attention on the account posited in Richards (2010, §3.3.3).

In Richards' account, in a VSO sentence like (47) the verb is phrased together with the syntactic constituent that immediately follows it (in this case the subject and its modifier), and the object is phrased independently.³⁶

- (47) [(Ininóm nang alílang mahía)_φ (ang túbig)_φ]_i
 ACC.drunk NG servant.LI weak ANG water
 ‘The weak servant drank the water.’

To account for the fact that V is always parsed together with the subject DP that immediately follows it, Richards (*ibid.*:169) proposes two algorithms, which are given in (48):

- (48) a. Place a phrase boundary at the right edge of every DP.
 b. Place a phrase boundary at the left edge of every DP, except for one immediately after the verb.

³⁶ All of the Tagalog examples (including the glosses, translations and orthographic conventions) that are discussed in this section are taken from Richards (2010). Let me dictate you what the glosses for Tagalog examples stand for. ‘ACC’ tracks the grammatical function of the element in ANG position (e.g. an object), ‘ANG’ marks the constituent in a privileged position – which is mostly considered to be the topic or the focus, ‘NG’ is essentially a linker and it marks all the other constituents. For the details of the glossary in this section I refer the reader to Richards (2010).

Richards admits that the second of these algorithms is not parsimonious, in the sense that it is a stipulation that relies on arbitrary references to particular nodes, where certain maximal projections and not others have their edges mapped onto φ edges (*ibid.*:178).

Such a stipulation about Tagalog seems to be necessary given the traditional tools of the theory. This necessity arises from the fact that although there is a φ -boundary on the edge of each maximal projection, there is not a φ boundary in between the verb and the constituent that is right adjacent to it. A mapping algorithm that assumes that PF is sensitive to all aspects of the narrow syntactic tree will not be able to account for why this is the case.

In the following discussion, I take the source syntactic trees for the examples that Richards discusses and prune them into *maptrees* in the same way that I did for Turkish. I show that the application of MATCH operations to Tagalog *maptrees*, in conjunction with a revised version of the rule in (48a), straightforwardly accounts for the attested prosodic constituency and tonal distribution in a parsimonious manner.

Two of the examples in Richards (2010) are discussed with a one-to-one comparison of syntactic and prosodic constituency. The example in (49) is one of them. The sentence in (49) is a VSO sentence, in which the subject is a possessive phrase that is modified by an adjective.

- (49) Ininóm ng lolang mayaman ni María ang túbig.
 ACC.drank NG grandmother.LI rich NG Maria ANG water
 ‘Maria’s rich grandmother drank the water.’

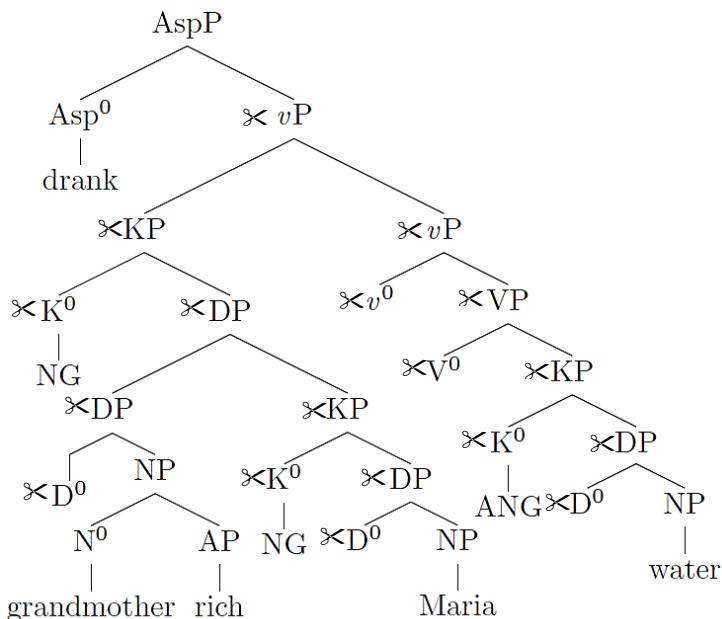
The brackets in (50) illustrate the φ -level prosodic constituency that is suggested by Richards (2010:176, 49).³⁷

³⁷ Richards (2010) account is based on ‘Minor Phrases’ rather than φ s, where each XP in syntax is assumed to correspond to a Minor Phrase. The differences between these two categories are not essential to the current discussion as both refer to a level of constituency that is lower than ω and higher than ω_0 in the prosodic hierarchy. For this reason, I stick to φ s, and refer to Minor Phrases of Richards as φ s.

- (50) [(Ininóm ng lolang mayaman)_φ (ni María)_φ (ang túbig.)_φ]_t
 ACC.grandmother.NG rich NG Maria ANG water
 'Maria's rich grandmother drank the water.'

When one applies the mapping procedure that I suggested in §2.2 to the example given in (49), one will see that the resulting prosodic structure is not identical to the one that is given in (50). The tree representation in (51) is a detailed version of the syntax tree for (49) provided by Richards (*ibid.*175, 47), where I have extended the two *rounded-up* KP projections and marked the nodes to be pruned with '✗'.

- (51) *Source syntax of (49)*

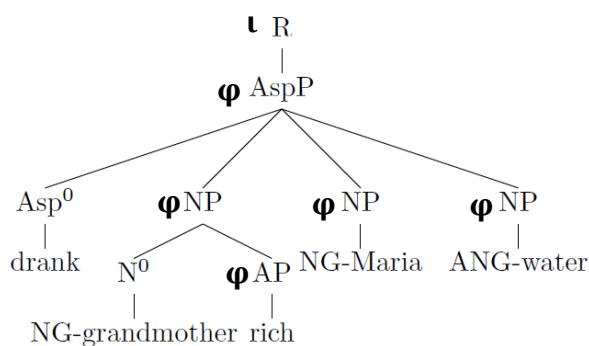


In (51), AspP is the dominating node of the entire clause and it is not pruned since its head is the verb with a phonological exponent. Similarly, all the NPs and the AP survive the pruning since they also contain phonological exponents. Although the KPs also bear phonological exponents, since these exponents are functional morphemes (i.e. the exponents of feature bundles rather than roots), they do not survive pruning and the content of these

projections is linearised with the next lower node that has a phonological exponent.

The *maptree* of (49) is shown in (52), where I notate the projections that are visible to the parser; for the operations MATCHPHRASE and MATCHCLAUSE:

(52) *maptree* of (49)



Unlike the syntactic representation, *maptree* may display n-ary branching, provided the PF-related constituency is preserved. Given the *maptree* in (52), we now can apply our φ-formation rule to Tagalog, where each XP is parsed as a φ. The φ-level constituency after MATCHPHRASE and MATCHCLAUSE is shown in (53):

- (53) [(Ininóm (ng lolang (mayaman)_φ)_φ (ni María)_φ
ACC.drank NG grandmother.LI rich NG Maria

(ang túbig)_φ]_l
ANG water
‘Maria’s rich grandmother drank the water.’

I claim that Tagalog allows recursive prosodic constituency, which means, unlike Turkish, NONREC is inactive, and therefore the reduction of recursive φs does not take place. Since no recursive φ is reduced, I conclude that the prosodic representation in (53) is the end-result of mapping and no other

boundary insertion/reduction operation is necessitated.³⁸ In support of the recursive prosodic constituency that I suggest for Tagalog, I provide tonal evidence, where certain tone combinations mark certain layers of the recursive prosodic constituency.

An important thing to note is that unlike Richards' assumption, on my account there is a φ -edge in between the verb and the constituent that it immediately follows (in this case *ng lolang* 'NG grandmother.LI'). This edge is the left edge of the φ that follows the verb.

Richards' approach is crucially based on the tonal analysis, in which Ls that are on the right edge of each φ are considered as φ -level right edge tones. The schematic representation in (54) is the illustration of the distribution of tones in a sentence like (49), with Richards' prosodic phrasing.³⁹

L H	L H	H L	H L	H L
(54) [(Ininóm ng lolang mayaman) $_{\varphi}$ (ni María) $_{\varphi}$ (ang túbig) $_{\varphi}$] _i				
ACC.drank NG grandmother.LI rich NG Maria ANG water				
'Maria's rich grandmother drank the water.'				

Richards' approach accounts for only the distribution of the φ -level right edge L tones, as they are considered to be the only φ -level boundary phenomena.⁴⁰ The distribution of LH or the H that immediately precedes the φ -edge L tone is ignored in his account, but is essential in my account, as these tones serve to our understanding of the recursive nature of Tagalog declarative prosodic constituency.

Extending Richards' proposal, I consider that all the tones in a declarative sentence like (54) serve to mark prosodic constituency at the level of φ . The reason for this assumption is the principled and patterned recurrence of these tones. I claim that not only L but also the combination of HL is one of

³⁸ One assumes that '*parse-to-* ω ' will also occur in Tagalog, to form ω s. However, Richards (2010) does not discuss ω s in Tagalog, and I have been unable to uncover precisely what the acoustic correlates of ω -hood are in Tagalog. Since φ s are not reduced in Tagalog, one expects that no ω that is not flanked by φ edges (e.g. no adjacent ω boundaries) occurs in the prosodic structure of Tagalog. I will ignore ω -formation in Tagalog hereafter.

³⁹ Tones are assumed to align only with 'tone bearing units' (cf. Gussenhoven & Bruce 1999 and Gussenhoven 2004).

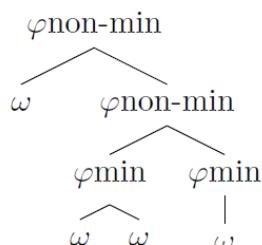
⁴⁰ The right edge φ -level tones are notated as L% in Richards (2010).

the tonal markers of φ -level prosodic constituency. I also claim that the distribution of LH combination is related to φ -level constituency.

Particularly, my account is based on the assumption that Tagalog φ s may be recursive, and that in a recursive φ , different levels of the recursive structure exhibit distinct tones. In this sense, my account of Tagalog prosodic grammar exhibit close resemblance to Elfner's (2012) account for Conamara Irish, another V-initial language.

In a recursive prosodic structure, a number of relations are observed to act upon the tonal grammar in marking prosodic constituency. These relations are based on the hierarchical recursive organisation of phonological constituents. In a hypothetical recursive prosodic structure, such as the one in (55), all the φ s that do not dominate any other φ constitute minimal prosodic projections (φ -min). All the φ s that dominate another φ constitute non-minimal φ s (φ -non-min) (cf. Elfner 2012 and references therein).

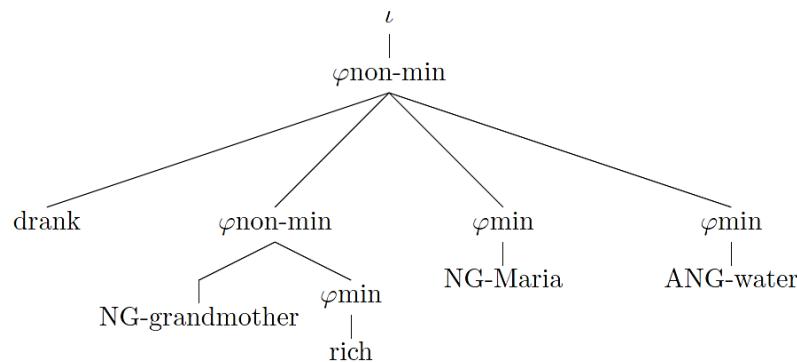
- (55) Minimal and non-minimal projections in a recursive prosodic tree:



I illustrate in (56) below the recursive prosodic structure of (53), which I claim to be the end-result of mapping for that utterance. Notice that the prosodic parsetree in (56) is identical to the input *maptree* in (52). However, this does not necessarily mean that all prosodic trees are identical to their input *maptrees*. For example, in Turkish, a prosodic tree would be completely different from the input *maptree* as there are other intervening well-formedness operations that take place after φ -formation. This is not the case in Tagalog, as no further re-phrasing operation takes place after φ -formation (i.e. after the application of MATCHPHRASE). A *maptree* depicts the syntactic relations, a prosodic tree depicts the prosodic constituency.

Therefore, prosodic trees should be considered to be completely different from *maptree* representations.

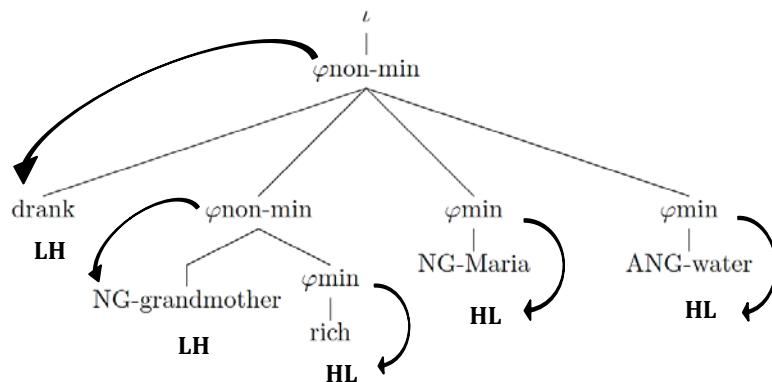
(56) Prosodic tree of (49):



My claim is that the rightmost constituents of *minimal φs* (φ_{min}) in Tagalog are marked with HL, and leftmost constituents of *non-minimal φs* ($\varphi_{\text{non-min}}$) are marked with LH. In this sense, the boundary that Richards mark with L% corresponds to the right edges of each $\varphi_{\text{-min}}$, which is L in my annotation.

The prosodic tree structure below presents the distribution of LHs and HLs in a sentence like (53), where each $\varphi_{\text{-min}}$ bears HL and each $\varphi_{\text{non-min}}$ bears LH.

(57) Distribution of HL and LH in (54):

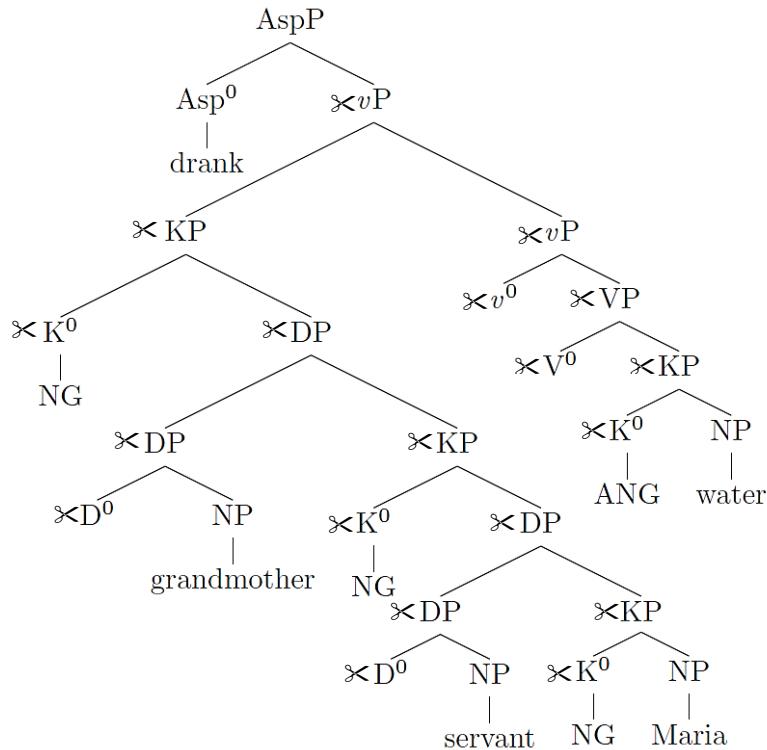


This analysis accounts for the φ -level tonal distribution in Tagalog declarative sentences. The leftmost constituent of each φ -non-min exhibits LH ('drank' and 'mother' in this case), and the rightmost constituent of each φ -min exhibits HL ('rich' 'NG Maria' and 'ANG water' in this case).

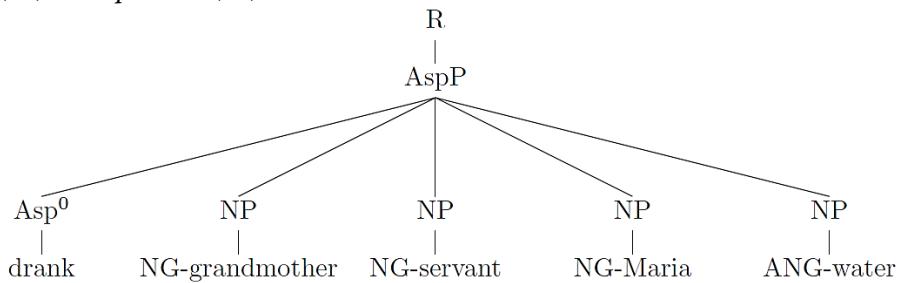
Further evidence for the above analysis of Tagalog declarative intonation comes from the investigation of different syntactic structures. The tonal distribution and the prosodic constituency in the declaratives with different syntactic structures fall out naturally on my account. Let me illustrate that this is the case with a variety of syntactic structures. The schematic representation in (58) illustrates the tonal distribution of a clause with a subject that contains multiply nested possessors (Richards 2010:171).

L H	HL	H L	HL	H L
(58) Ininóm ng lóla	ng alíla ni	María ang túbig		
ACC.drank NG grandmother	NG servant	NG Maria ANG water		
'Maria's grandmother's servant drank the water.'				

The tree representation in (59) is the syntactic tree of (58) that is given in Richards (ibid.177). Similar to the tree representation in (51), I extend the rounded-up KPs in the original representation (i.e. ibid.177, 51), and I have marked the nodes that are to be pruned.

(59) *Source syntactic representation of (58):*

After pruning, we attach the syntactic nodes that are ‘floating’ to the next higher unpruned node that would dominate them in the source syntactic tree. After reattachment, the *maptree* of a sentence as in (58) looks like the following:

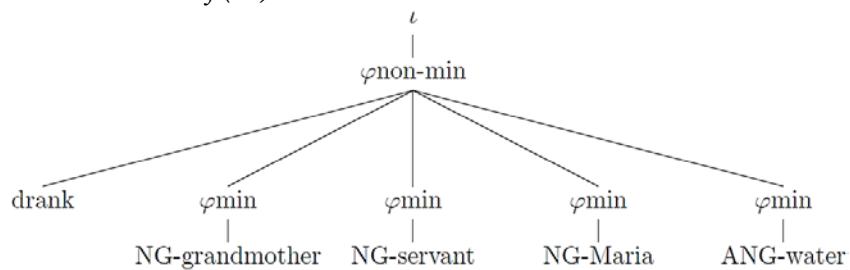
(60) *maptree of (58)*

If we assume that the tree representation in (60), and not the one in (59), is the actual input for the parser, then MATCHPHRASE applies to (60), yielding the recursive representation in (61).

(61) Prosodic constituency of (58)

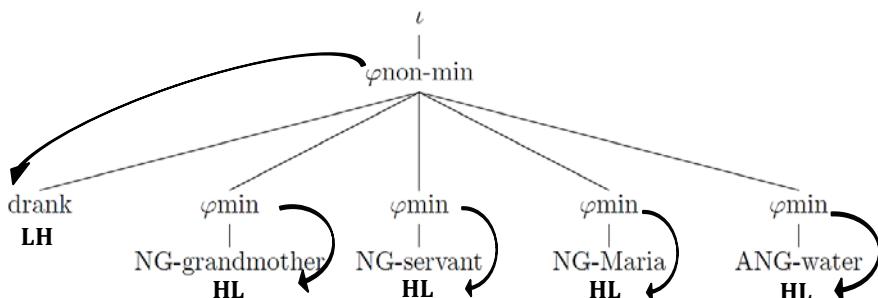
[(Ininóm (ng lóla)_φ (ng alíla)_φ (ni María)_φ (ang túbig)_φ)_φ]_t
 ACC-drank NGgrandmother NGservant NG María ANGwater
 ‘Maria’s grandmother’s servant drank the water.’

Prosodic tree of (58)



If, as I claimed, only those φ s that are minimal bear HL, and the leftmost constituents of φ -non-mins bear LH in Tagalog, then the tonal distribution in a sentence like (58) should be as schematised in (62).

(62) Tonal distribution of (58) that is predicted under current account



This prediction is borne out, as the annotation in (63) illustrates:

- (63) Actual tonal distribution of (58) (adapted from Richards 2010:171, 42)

L H	H L	H L	H L	HL
[(Ininóm (ng lóla) _φ (ng alíla) _φ (ni María) _φ (ang túbig) _φ) _ψ] _i				
ACC-drank NG grandmother NG servant NG María ANG water				
'Maria's grandmother's servant drank the water.'				

In (63), the leftmost constituent of the only φ -non-min (which is mapped from AspP) is the verb. Therefore, it bears LH as predicted. All the other constituents are minimal φ s; therefore they bear HL, which is also predicted on my account.

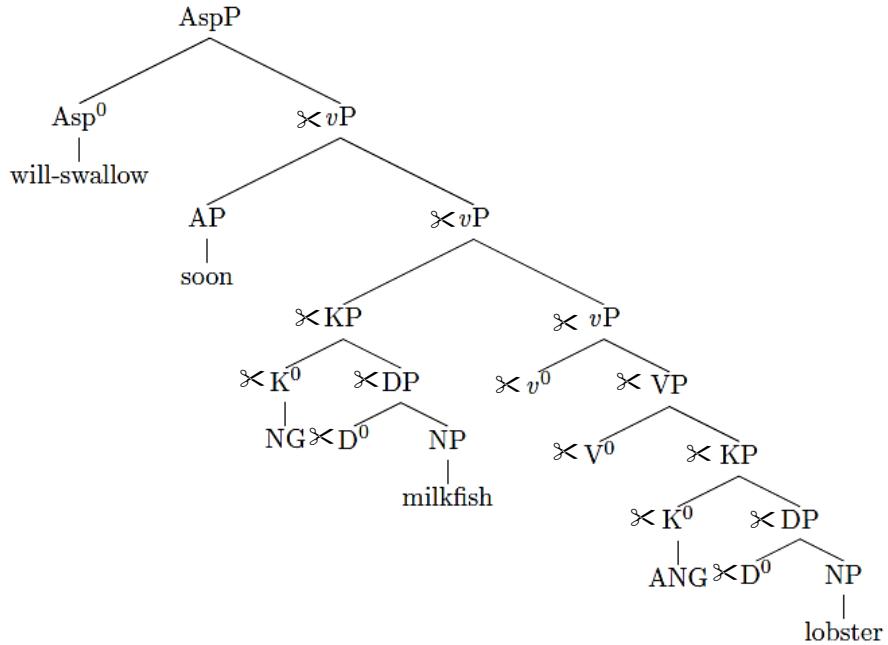
As another example in support of the account that is advocated here, I discuss another case from Richards (2010:172, 44). The example in (64) is another VSO sentence where a central internal adjunct intervenes between the verb and the subject: i.e. VXSO. The tonal distribution of such a sentence is given in (64) – with my annotations based on the pitch analysis in Richards (2010: 172, 44).

- (64) Tonal distribution in a VXSO sentence

L H	H L	H L	HL
Lululunín mamayá nang bangós ang úlang.			
ACC.will.swallow soon NG milkfish ANG lobster			
'The milkfish will swallow the lobster soon.'			

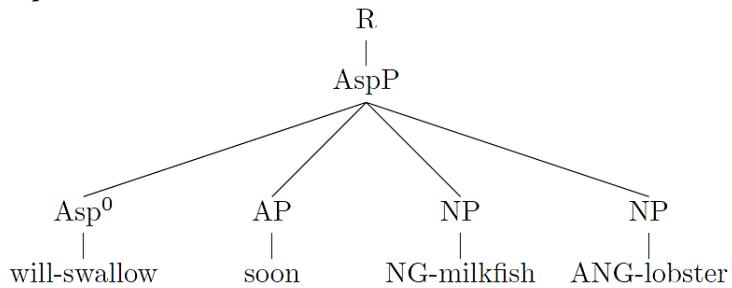
The sentence in (64) provides evidence that the tonal distribution is not contingent upon certain syntactic labels. For example, so far we have seen that DPs may bear HL, but in (64), we see that an AP exhibits HL. In terms of mapping, the syntactic structures I have discussed so far for the Tagalog data are dissimilar to the syntax of (64), too. I give the source syntax tree of (64) in (65), in which the syntactic nodes that are pruned are indicated with 'X'.

(65) *Source syntax of (64):*



Based on the syntactic source in (65), the *maptree* of a sentence with a central adjunct like (64) looks like the following:

(66) *maptree of (64):*



When MATCH applies to *maptree* given in (66), the prosodic constituency is predicted to be as in (67).⁴¹ Since, unlike Turkish, no φ-reduction applies (as

⁴¹ Also see Sabbagh (2014) for the use of Match theory in Tagalog.

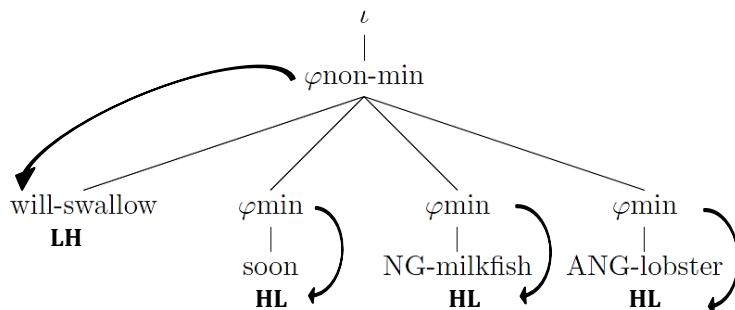
NONREC is not active in Tagalog), this recursive prosodic representation is also assumed to be the end of prosodic derivation.

(67) *Prosodic constituency of (64) after MATCH:*

[(lululunín (mamayá)_φ(nang bangós)_φ (ang úlang)_φ)_φ]_t
 ACC.will.swallow soon NG milkfish ANG lobster
 ‘The milkfish will swallow the lobster soon.’

Considering the tonal distribution given in (64) together with the recursive prosodic representation given in (67), it becomes clear that my claim that φ -non-mins bear LH on their left edge, and φ -mins bear HL, is on the right track, as it straightforwardly predicts such a tonal distribution, regardless of its syntactic input. Below is the schematic representation of (67), in which the tonal distribution is marked, too.

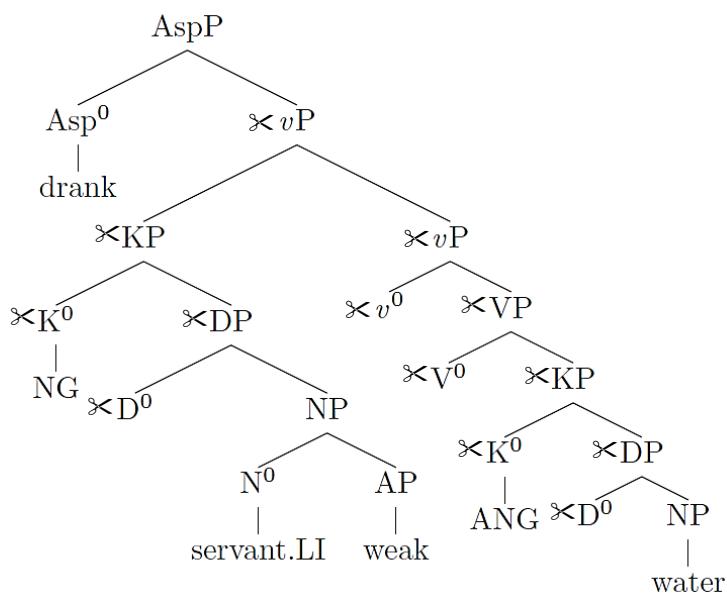
(68) The tonal distribution and recursive prosodic phrasing of (64):



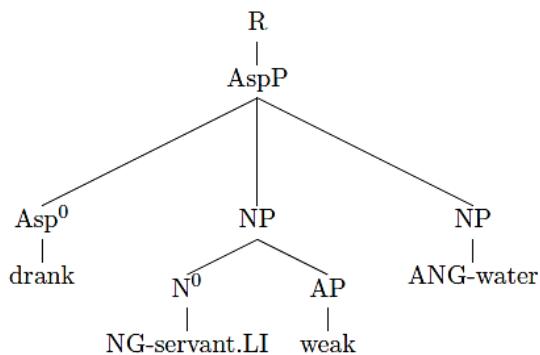
The last example to emphasise the predictive power of the current account is the description of the mapping procedure of the example given in Richards (2010:168, 37). This example, which is also given in (47) in this section, is a VSO sentence in which the subject *alílang* ‘servant.LI’ bears an adjectival modifier. The empirically attested tonal distribution of this utterance is given in (69a). In (69b) its source syntactic tree, and in (69c) its *maptree* representation is given. The tonal distribution on the recursive prosodic representation of this utterance is given in (69d).

- (69) a. Ininóm nang alílang mahína ang túbig
 ACC.drank NG servant.LI weak ANG water
 'The weak servant drank the water.'

b. *Source syntax of (69a)*

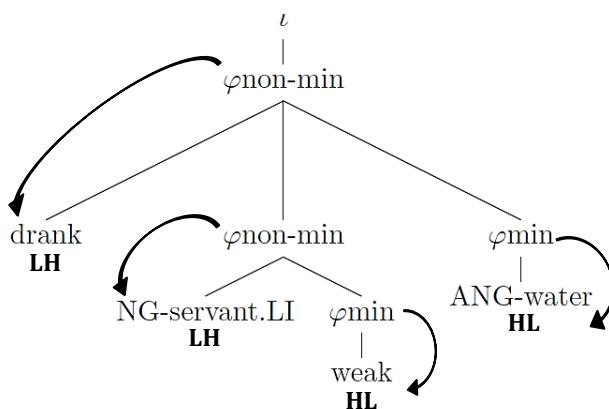


c. *maptree of (69a)*



d. *Prosodic constituency of (69a) after MATCH*

[(Ininóm (nang alílang (mahína)_φ)_φ (ang túbig)_φ)_φ]₁
 ACC.drunk NG servant.LI weak ANG water
 ‘The weak servant drank the water.’

e. *The tone assignment on the recursive prosodic phrasing of (69a)*

Compare the distribution of the tones in (69a), which is observed in the actual pitch track that was given in Richards (2010:168, 37), to the tonal distribution in (69e), which is predicted by the account that is advanced in this chapter. The distribution of the tones in both cases is identical, which provides evidence that the current account successfully predicts the actual tonal organisation of a VSO sentence such as the one in (69a).

The advantage of my proposal for Tagalog is that it predicts the distribution of not only the right-edge φ-level boundary tones (i.e. ‘L-’ in my annotation and ‘L%’ in Richards’), but also all the other tones in declarative sentences in a parsimonious way. In other words, my account predicts not only the φ level constituency that is described in Richards, but also the φ-internal constituency (in his terms) and the tonal organisation, a phenomenon that is ignored by Richards. Moreover, on my account, unmotivated and unpredicted omission or addition of boundaries (such as ‘delete the verb-adjacent φ boundary’) is avoided. When a boundary is omitted, the condition that applies to that boundary applies to all the

boundaries with the same profile. Similarly, when boundaries are inserted, they are inserted *everywhere* that meets the conditions on insertion in that language. In Tagalog, φ -boundaries are generated as a result of MATCHPHRASE, and φ -level tonal distribution is set based on the prosodic hierarchical relations of recursive φ levels. Therefore, the conditions I invoke do not appeal to pre-defined syntactic categories, but to prosodic subcategories (such as φ -min or φ -non-min) in a more parsimonious manner.

2.3.2 *Concluding remarks on Tagalog prosodic grammar*

This section revisited the Tagalog data discussed in Richards (2010). After a brief presentation of the Tagalog facts, I outlined Richards' account for the prosodic constituency of Tagalog. Then, I illustrated how *maptree* and the conditions that were discussed in §2.2 captures the Tagalog facts without the stipulations that are required on Richards' account. As such, this section was an example of the cross-linguistic application of *maptree* and the innovations that are associated with the current proposal.

It should be noted that the account that is advanced here does not lead too far afield from other cross-linguistic generalisations. For instance, such prosodically recursive sub-categories have been recently observed in Irish by Elfner (2012). As such, the Tagalog case is another instance of the interaction of tonal distribution and recursive prosodic grammar in a natural language.

Finally, I would like to note that the account presented here for Tagalog covers only a subset of the prosodic constituency in Tagalog; i.e. declarative sentences without scrambling. The consequences of such an account would vary in cases of scrambling or in cases of various clause types such as interrogative, imperative, etc. This section should be considered as an attempt to emphasise the cross-linguistic applicability of *maptree*, across languages that exhibit dissimilar syntactic and prosodic properties. I leave the prosodic investigation of more complex structures in Tagalog for future research.

2.4 Chapter summary

In this chapter, I introduced the fundamental notions that are going to be employed in the rest of this book. These notions are adaptations from the assumptions of previous accounts of prosodic structure theory. I have discussed the strategies of prosodic constituent formation, with particular focus on conditions on faithfulness and prosodic well-formedness. With respect to theoretical concerns and empirical evidence, I have concluded that MATCHWORD must be abandoned. I have also concluded that not all syntactic phrases are visible to the prosodic parser at the level of φ : i.e. MATCHPHRASE. Delimiting the syntactic relations to only those that are accessible by PF operations, I proposed a parsetree representation that specifically depicts those syntactic relations that are visible at the PF interface. I called this novel parsetree *maptree*.

In §2.1, I listed a number of problems for previous conceptions of MATCHWORD and MATCHPHRASE. In §2.1.1, I focused on the problems with MATCHWORD, which are inherited from the assumption that it applies in the same manner that MATCHPHRASE applies – i.e. it matches a prosodic constituent type with its corresponding syntactic constituent type. This assumption conflicts with the assumptions of the architecture of the grammar, in that the narrow syntactic structures that are sent to the interfaces are equipped with the information regarding their syntactic context / distribution. In terms of DM, VIs (regardless of whether or not they are the realisations of feature bundles or roots) can only be inserted given their syntactic context (cf. Harley 2014, and Craenenbroeck 2014 among others). The phonological exponents of syntactic structures cannot be bare lexical items, but phrases or morpho-syntactically complex heads. Given that the prosodic parser operates after the insertion of VIs, the items that are to be parsed cannot be free of syntactic information (they are not “words” coming directly from the lexicon). Based on this reasoning, it would be misleading to assume that PF can read ‘words’ of syntax, as, in syntax, there are *no words*.

In addition to the theoretical shortcomings of MATCHWORD, I have provided empirical evidence from Turkish to show that MATCHWORD is insufficient and unnecessary. I concluded that MATCHWORD is not part of the mapping algorithm. Given that ω s exist and that they are categorially

distinct from φ s and ι s, I have suggested that ω s are generated as a result of an operation (i.e. *Parse to ω*) that is triggered by a condition of prosodic well-formedness: i.e. EXHAUSTIVITY. Accordingly, after φ -level constituency is generated (after syntactic phrases match with φ s), the segmental content that is flanked by φ boundaries is assigned ω -status as well.

In my account of ω -formation in Turkish, the order of prosodic constituent formation is reversed. First, φ s and ι s, and then ω s are generated. Since ω -formation is not considered as an operation to obtain faithfulness in syntax-prosody correspondence, the fact that there is no unique syntactic categorial correlate of an ω is irrelevant and not in conflict with the assumptions of my account. The correlate of an ω , in my account, is a prosodic unit (i.e. a string that is flanked by φ boundaries), and not a syntactic constituent.

In §2.3, I revisited the Tagalog data discussed in Richards (2010). After a brief presentation of the Tagalog facts, I outlined Richards' account for the prosodic constituency of Tagalog. Then, I illustrated how my account captures the Tagalog facts without the stipulations that are required on Richards' account. As such, this section was an example of the cross-linguistic application of *maptree* and the innovations that are associated with the current proposal.

My view of prosodic structure formation is aligned with other indirect access accounts of prosody. However, my assumptions are dissimilar to those of other indirect access accounts. The traditional indirect access accounts assume that rules of prosodic structure have access to the narrow syntactic form, but sometimes this access is mediated by the existence of PF-oriented operations. The existence of mediating PF operations in mapping is the reason why the access is considered indirect. In addition to these operations, I claim that the rules of prosodic structure are not sensitive to every aspect of the *bare* narrow syntactic output, but instead are sensitive to only certain properties of it (specifically those that are relevant to the prosodic parser). Therefore, on my account, the access is not only indirect (due to PF rules), but it is also limited. Therefore, it may be called 'limited indirect access'.

The list below is an item-by-item recap of the main points of this chapter:

On Match:

- ω is not a category of interface in the sense that φ and ι are.
- MATCHWORD is not part of the syntax-prosody mapping algorithm.
- ω s are generated only after φ s are generated.
- MATCHPHRASE does not target Force_{ILL}Ps.
- MATCHPHRASE matches projections.

On the nature of the syntactic source for PF operations:

- PF operations have limited access to syntactic structures.
- Syntax-prosody mismatch is not only due to conditions on prosodic well-formedness, but also due to the fact that the nature of the syntactic information to which PF is sensitive is only a portion of the output of narrow syntax.
- *maptree* is a parsetree representation of the syntactic relations of the phonological exponents of syntax, and it depicts the syntactic information that is relevant to the PF interface (i.e. the status of the syntactic tree after morphological operations such as VI insertion).
- Structural distance is a condition on the visibility of syntactic constituents to the rules of correspondence to prosody.

On Turkish:

- In Turkish a φ can maximally contain two ω s.
- Turkish does not allow recursive prosodic constituents at the level of φ .
- In Turkish, a number of morphemes are underspecified as PWAs. PWAs survive pruning, and they require ω boundaries on their left if their sister on the *maptree* is a terminus.

On Tagalog:

- Tagalog allows recursive prosodic constituents at the level of φ .
- Every non-minimal φ exhibits LH.
- Every minimal φ exhibits HL.
- Similarly to Turkish, φ -level constituency in Tagalog can be predicted by applying MATCHPHRASE to the *maptree* representations.

3

Generating prosodic heads

So far I have focused on the strategies of prosodic constituent formation. However, an important property of prosodic constituents is *prominence*, or in other words *prosodic headedness*, which I have not discussed yet. This chapter outlines how prosodic prominence is conveyed, in other words, how prosodic heads are generated in Turkish at the levels of phonological phrase (φ) and intonational phrase (ι).

I understand prosodic prominence as directly related to prosodic constituency. Particularly, prosodically prominent constituents are the ‘heads’ of larger prosodic constituents that contain them. Therefore, a prominent sub-constituent of a prosodic constituent α is a demarcation of the prosodic heads and non-heads within α . The description in (70) illustrates what I mean by a *prosodic head* in this book. The descriptions in (71) and (72) define prosodic heads of φ s and ι s, respectively:

- (70) *A Prosodic Head:*

A prosodic head is the most prominent prosodic constituent of its domain.

- (71) *Prosodic head of a φ :*

A prosodic head of a φ is its phonologically prominent prosodic word (ω).

- (72) *Prosodic head of an ι (i.e. the nucleus):*

A prosodic head of an ι is the head of its phonologically prominent φ .

One thing to notice in these descriptions is that a prosodic head is always an ω ; regardless of whether it is a head at the φ level or at the ι level. Another

thing to note is the assumption that the head of an ι (hereafter referred to as ‘*nucleus*’) is always the head of one of the φ s that that ι contains. In other words, the nucleus is ultimately the head ω of a φ . Additionally, a prosodic head (a nucleus or a φ -head) is not an accent bearing syllable, or a vowel, but it is an ω . In other words, among the prosodic structure categories that are listed in (2) in §1.2.4, my description of prosodic headedness appeals to the categories of interface (where ω is not a direct outcome of the operations of faithfulness), and not to the categories of rhythm.

Such an understanding of prosodic headedness comes with a number of consequences. The most salient and important of these is the presupposition that head ω s are delimited as a result of syntax-prosody mapping, since ω s are indirectly generated via mapping. A category that is generated via mapping can, in one way or another, be traced back to the source syntax. In other words, heads of φ s or ι s cannot be thought of as independent of their source syntactic properties.

In what follows, I discuss the acoustic properties of prosodic heads in Turkish at the level of φ and ι . I suggest an account that predicts the distribution of φ -level and ι -level heads based on the claims that I advanced in Chapter 2, such as the limited syntactic input and PF-oriented operations that I argued to generate prosodic constituents in Turkish. Additionally, I discuss boundary tones in relation to heads at the level of φ and ι . In the same section, I discuss the instances of headedness in contexts that are information structurally neutral as well as focus-background contexts.

3.1 *Acoustic properties of prosodic constituents in Turkish*

In Turkish, word stress is mostly final and sometimes non-final (cf. Sezer 1981). Together with stress, non-finally stressed words bear a pitch accent that falls on the stressed syllable. The presence of an accent (H^*L) is lexically contrastive. Words with accents create minimal pairs with their non-accent bearing counterparts (see Figure 1). Non-final stress is observed in a number of roots such as place names (*Sezer roots*), in the presence of a lexically stressed suffix or a pre-stressing particle.⁴² While the fundamental frequency

⁴² Pre-stressing suffixes (e.g., negation or question particles) trigger stress to occur onto their immediately preceding syllable. Lexically stressed suffixes bear the non-final stress/accent themselves.

(F0) peak attaches to the stressed syllable, it does so only in the cases of non-final prominence (Konrot 1981). Duration and intensity are also correlates of non-final stress (Levi 2005). However, these cues are not robust as correlates of final stress (*ibid.*). Contra to Levi (2005), Öztürk (2005) observes that the mean vowel and syllable duration of finally stressed and non-finally stressed syllables show no significant variation. In summary, acoustic analyses of the correlates of final and non-final stress in Turkish confirm that (i) syllable duration does not show variation according to the location of the stressed syllable in Turkish, and (ii) F0 shows variation; only non-final stress triggers an F0 peak (i.e. pitch accent; H*L). With similar concerns, Konrot (1981) advances a distinction between *pitch accent* and *stress accent* in Turkish. Accordingly, in finally stressed words the final syllable has stress accent but not pitch accent. The F0 spreading onto the finally stressed words is realised without any peaks. In cases of non-final stress, the stressed syllable receives a coexisting pitch accent, which creates a rise-fall pattern in the F0. That stress does not have F0 as its primary correlate, whereas accent does, has previously been observed (cf. Van der Hulst 2002, among many others). Following from these studies and Konrot's suggestion (also see Kamali 2011), I refer to the words that bear an F0 peak on their lexically stressed syllables as *accented words* (notated by a binary tone, i.e. H*L), and those that do not bear an F0 excursion on the syllables that are perceived as bearing final-stress as *accentless words*. The pitch plots in Figure 1 illustrate an accented (left) and accentless (right) word in Turkish.⁴³

⁴³ Both of the recordings presented in Figure 1 were elicited in isolation, i.e. not as part of a clause or as a fragment answer. The accentless word (right) was read aloud after the following prompt: "Please say out loud the food name that is written here." The accented word (left) was elicited after the following prompt: "Please say out loud the town name that is written here."

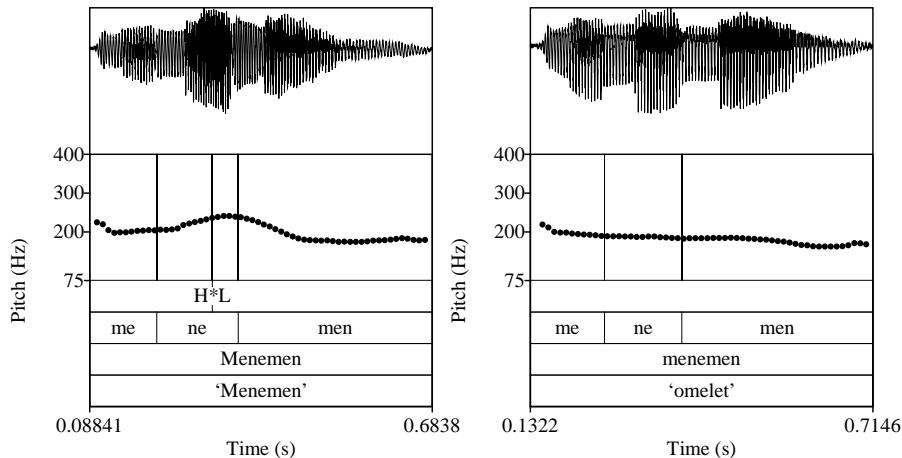


Figure 1. Sample F0 of an accented (left), and an accentless (right) word⁴⁴

φs are observed to bear edge tones that delimit one φ from another (e.g. H- for the right edge of φs that are non-final) (Özge & Bozşahin 2010, Kamali 2011). Additionally, the final syllable of a φ is significantly longer than that of an ω (İpek & Jun 2014), and shorter than that of an i (Kan 2009, Güneş & Çöltekin 2015). This patterned variation in the final syllable durations of ωs, φs, and i indicates that final syllable duration is a category defining property in Turkish prosodic grammar.

Regardless of whether they contain non-finally stressed (and accented) or finally stressed (and accentless) ωs, all mono-worded φs exhibit a rising F0 on their right edge when non-final (i.e. pre-nuclear). This high tone is an edge tone, ‘H-’, which marks the right edges of non-final-φs in Turkish. In the case of final stress, the edge tone co-exists with the finally stressed syllable, and in the case of non-final stress, the edge tone is realised independently of the stressed syllable (cf. Özge & Bozşahin 2010, Kamali 2011, Güneş 2013a, b).⁴⁵ The figure below provides an exemplar declarative

⁴⁴ For all F0 scripts: dotted lines show the F0 flow, bottom tier is the English translation, the tier that is right above the bottom tier is the glossary, the tier that is right above the glossary shows the syllable boundaries, the tier that is between the F0 tier and the syllable tier is the tone tier, top tier is the waveform, Y-axis shows the F0 values in Hertz, X-axis shows the time in seconds.

⁴⁵ See İpek & Jun (2013) for a similar point of view, where φs that end with a finally stressed ω are marked with an accented edge tone; H*--. Whether H- is actually an accented tone in the case of finally stressed words requires further investigation, and quantitative support. Whether the right edge tone on non-final-φs is represented with an accent (H*-) or not (H-) is irrelevant for the purposes of the current study. Throughout this book, H- is employed to mark the right edges of non-final-φs.

root clause ι with three φ s, which was uttered in an all-new context with canonical SOV order.

- (73) Nevriye yegen-i-ne yağmurluğ-u-nu_N ver-iyor.
 Nevriye nephew-POSS-DAT raincoat-POSS-ACC give-prog
 ‘Nevriye is giving her raincoat to her nephew.’

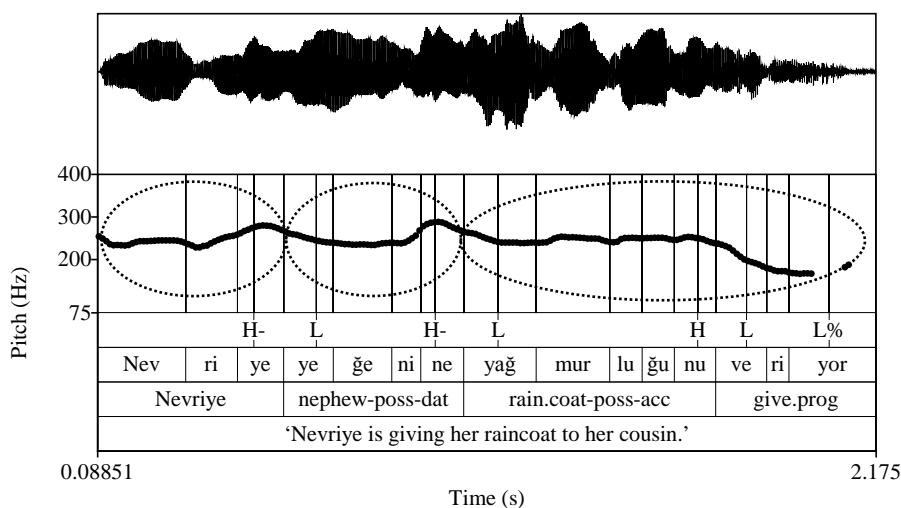


Figure 2. Sample F0 of φ s in a declarative clause

In Figure 2, all the ω s in the utterance are finally stressed and accentless. The clause-initial subject *Nevriye* and the indirect object *yegenine* ‘to her nephew’ are parsed as non-final- φ s, which are both marked with a H- right-edge tone (the amount of rise is 2 semitones (st) and 3st, and the final syllable duration is 120ms, and 110ms, respectively). Both of the non-final- φ s in Figure 2 are composed of single ω s. The final- φ ends the clause and is composed of two ω s: the direct object *yağmurluğunu* ‘her raincoat’ and the finite verb *veriyor* ‘is giving’. When we compare the non-final- φ s to the final- φ , we see that the overall pitch level remains the same in the transmission from the non-final- φ to the final- φ (the pitch interval is around 15st). The final- φ begins with an ω level low left-edge. The pitch level remains constant throughout the first ω of the final- φ – i.e. until the φ -medial head-final ω -level edge tone, H. The high levelling of F0 and the rise that follows it marks the initial ω of the final- φ (i.e. *yağmurluğunu* ‘her.raincoat.ACC’) as the *head*. The second ω of the final-

φ begins with low pitch, the level of which is scaled lower relative to the first ω in the final- φ .

Four major cues are employed to diagnose the difference between ts and qs in Turkish (cf. Kan 2009). These are: (i) boundary / edge tones (H- for the right edges of qs , and H% or L% for the right edges of ts), (ii) pauses (if there are any, then shorter across qs and longer across ts), (iii) head prominence (left prominent qs and right prominent ts), and (iv) final lengthening (shorter final syllable before φ boundaries, and longer final syllable before ι boundaries). Among these cues, I employ boundary / edge tone insertion, and final lengthening for the identification of prosodic category types of different levels.

The ι in the Figure 2 bears L%. However, Turkish ts may also exhibit H% in the cases of discourse continuation (Kan 2009, Özge & Bozşahin 2010, Güneş & Çöltekin 2015, and Chapters 4 and 5 of this book). The initial and middle ts in the figure below illustrate the cases with *continuation intonation*, which is marked with a steep H%. This rise tends to be higher than the rise of the non-final qs in Turkish.

- (74) Emine yavru-yu_N göm-dü. Miray yer-ler-i_N ovala-di.
 Emine puppy-ACC bury-PST Miray floor-PL-ACC scrub-PST

Neriman helva-yı_N yoğur-du.

Neriman halvah-ACC knead-PST

‘Emine buried the puppy. Miray scrubbed the floor. Neriman kneaded the halvah.’

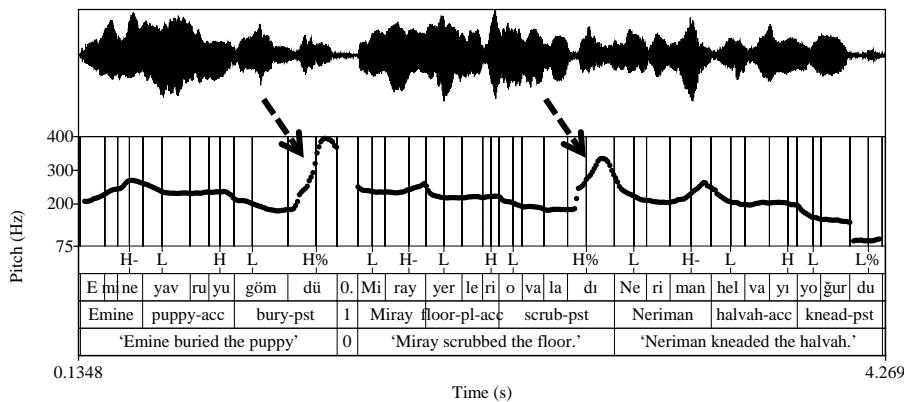


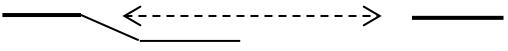
Figure 3. Sample F0 of is with continuation intonation in declarative clauses

The amount of rise on the final syllable of *gömdü* ‘buried’ is 7st, and the final syllable duration is 250ms. The amount of rise on the final syllable of *ovaladı* ‘scrubbed’ is 7st, and the final syllable duration is 240ms. The amount of rise on the edge of the pre-nuclear φ of the first i in the Figure 3 (i.e. *Emine*) is 3st, and its final syllable duration is 120ms. For the pre-nuclear φ of the second i in the Figure 3 (i.e. *Miray*); the amount of rise is 2st, the final syllable duration is 200ms.

This section described the acoustic correlates of ωs, φs, and is in Turkish. Throughout this book, labelled brackets that schematically represent prosodic constituency are based on the F0 analysis of corresponding utterances. The labels of the brackets in these schematic representations are based on the diagnostics for each prosodic category type that are described in this section.

3.2 Heads of φs and is in Turkish

In Turkish, on the level of φ, the leftmost ω contains the most prominent element in a φ (Kabak & Vogel 2001, Kan 2009, Kamali 2011, Güneş 2013a, b, İpek & Jun 2014) (the head of which is boldfaced in this section).

- (75) 
- a. $[(\text{başarılı})_\omega (\text{öğrenci})_\omega]_1$ b. $[(\text{öğrenci})_\omega]_1$
 successful student student
 'a successful student' 'a student'

What distinguishes the head- ω of a φ from the rest of that φ is the relative difference in the overall F0 level (as sometimes referred to as *pitch register*). φ -level prominence is conveyed through a relatively higher F0 range of the leftmost ω of that φ – as illustrated in (75a). However, this way of head marking can only be observed if a φ contains more than one ω . Turkish allows maximally two ω s within a φ , as a consequence of BINMAX- φ , which states that a φ can be maximally binary (see §1.2.4). When a φ contains only one ω , BINMAX is not violated. In a φ with a single ω , this ω is the head of its φ – as illustrated in (75b).

Kabak & Vogel (2001), the first study that depicts a level higher than ω in Turkish in terms of Prosodic Structure Theory, portray the φ -level as embodying phrase level head prominence. They observe that prominence falls on the leftmost ω of a φ in Turkish. Kabak & Vogel associate head prominence with the finally stressed syllable of the leftmost ω ; in a sense that is similar to the head prominence described in Jun (2005). In Jun's (*ibid.*) terminology, the prominent head is an *accented tone*.

With partial deviation from Kabak & Vogel (2001), I assume that the prominent head is not demarcated with a point in the F0, but with a prosodic constituent that is larger than the syllable: i.e. an entire ω , which is the leftmost in its φ . This is based on the observations obtained from the acoustic analysis of the data by studies such as Kamali (2011), İpek (2011), and Güneş (2013a). In these studies, the F0 level of the entire ω that is leftmost in its φ is found to be relatively higher than the overall F0 level of the non-head ω .

Directionality of head prominence, being specific to φ -level constituent formation, is considered as a diagnostic for φ -hood in Turkish (Kan 2009). φ -level prominence, I claim, is conveyed via 'phrase-medial ω boundaries' – i.e. the tonal correlate of index 1 of ToBI (Tones and Break Indices) (Silverman et al. 1992, Beckman & Hirschberg 1999) – for the case of accentless ω s, in Turkish. Phrase-medial ω boundaries have a tonal correlate if these ω s are the heads of their φ s. Specifically, within a φ that contains two

ω s, the head of that φ is delimited via an ω -level right edge tone on the rightmost syllable of that ω . The ‘phrase-medial ω boundary tone’ for Turkish φ -heads is H. The head ω in a φ bears a relatively high pitch level when compared to the non-head part of that φ . This, I believe, is due to the presence of the H on the final syllable of the head. H is different from H- in that H is an ω -level right edge tone and is not limited to non-final- φ s. The H-, on the other hand, is the φ -level edge tone, which is reserved for non-final- φ s (Özge & Bozşahin 2010, Kamali 2011, Güneş 2013a, b). While H-always denotes a certain amount of rise, H denotes less amount of rise when compared to H-, or no rise at all.

In line with the proposal of ω -formation that is advocated in Chapter 2, the H tone that marks the right edges of each head ω can be thought of as a remnant of the H- that marks the right edges of non-final φ s. This is because, considering the derivational history of ω -formation, each head ω is assumed to be typed as a φ first and then (if they constitute a recursive layer) be reduced to an ω . Under this assumption, and considering the observation that each non-final- φ bears an H tone, every recursive φ that is to be reduced to an ω is expected to bear an H tone, as such a φ is also a non-final φ (i.e. a φ that is followed by another φ boundary).

A final- φ is a φ that contains the nucleus (hereafter denoted by ‘N’). I define the nucleus as the perceptibly most prominent part of an i: i.e. the *head* of an i (also see Kamali 2011). Within the final- φ , the head ω of that φ is the nucleus, which is delimited with an L on the left and an H on the right.⁴⁶ The figure below provides an exemplar declarative root clause i with three φ s that was uttered in an all-new context with canonical order.

⁴⁶ Throughout this chapter prosodic heads are highlighted in boldface and nuclear ω s are underlined.

- (76) [((*Nevriye*)_ω)_φ ((*araba-da*)_ω)_φ ((*yağmurluğ-u-nu*)_{ω-N}(*ar-iyor.*)_ω)_φ]
 Nevriye car-LOC raincoat-3POSS-ACC search-PROG
 ‘Nevriye is looking for her raincoat in the car.’

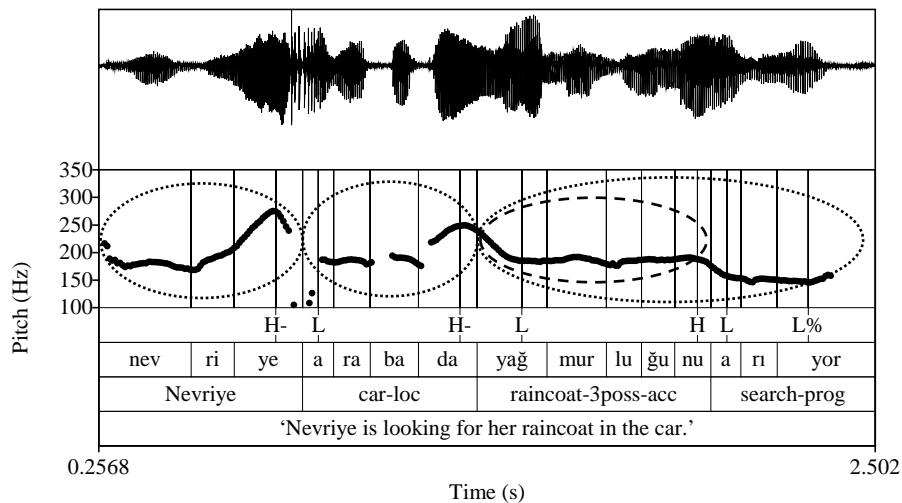


Figure 4. F0 of a declarative root clause in all-new context

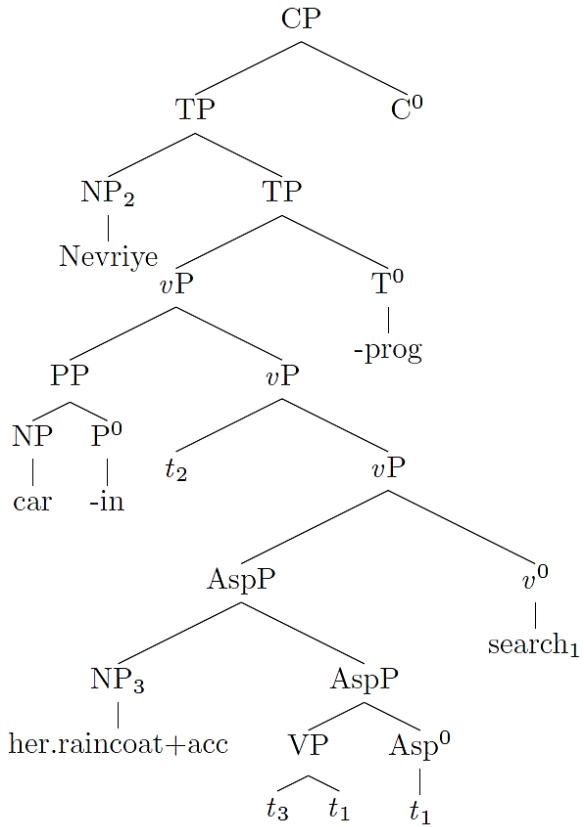
In Figure 4, the sentence-initial subject *Nevriye* and the adverb *arabada* ‘in the car’ are parsed as separate φ s, which are non-final (i.e. pre-nuclear). The final- φ ends the sentence, and is composed of a direct object and a verb. The non-final- φ s bear a high right edge (H-). In terms of final syllable duration, the final syllables of the non-final- φ s (both of which are open syllables) have a similar duration. The final syllable duration of the first non-final- φ is 179ms. The final syllable duration of the second non-final- φ is 183ms. The pitch register remains the same in the transmission from the non-final- φ s to the head of the final- φ . The mean F0 of the first non-final- φ is 202 hertz (hz). The mean F0 of the second non-final- φ is 202hz, and the mean F0 of the head (the first ω) of the final- φ is 188hz. The final- φ begins with a low tone (L). The pitch level remains constant until the end of the first ω within the final- φ , which is the head of the final- φ and the nucleus of the entire ι . The head ω of the final- φ bears an H on its right edge. The second ω of the final- φ (the verb *ariyor* ‘is looking for’) begins with a low tone (L), the level of which is scaled relatively lower than the first ω in the final- φ (the mean F0 of the nuclear ω is 188hz, and the mean F0 of the non-head ω is 153hz.). The

second ω in the final- φ constitutes the post-nuclear area of the entire ι , and it bears low levelled, flat F0, which is typical to the post-nuclear ω s in Turkish (Özge & Bozşahin 2010), and a low right edge boundary tone, L%.⁴⁷

Both of the non-final- φ s in the figure above illustrate the cases of φ s that are composed of a single ω . However, unlike the hypothetical representation of a mono-worded φ that was given in (75b), the mono-worded φ s in Figure 4 do not exhibit flat F0. Rather, the non-final φ s in Figure 4 exhibit a rising F0. This is due to the fact that the right boundary of non-final- φ s exhibit H-, which is lacking in final φ s. The tone H- is reserved for marking non-final- φ s.

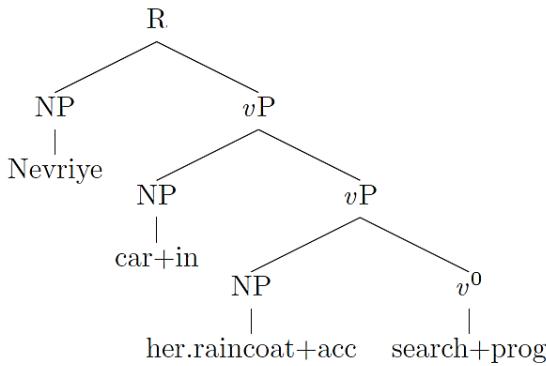
The prosodic constituency from ω -level to the level of ι can be predicted by the account that has been advanced in Chapter 2. (77) illustrates how this constituency is mapped from a source syntactic tree.

⁴⁷ In Figure 4 in the main text, there is a barely visible rise that is aligned with the L%. This is due to the friction of the word-final /r/, and is immaterial to the phonological analysis.

(77) *Source syntax of (76):*⁴⁸

⁴⁸ As mentioned in footnote 14, with respect to the syntactic representation of the Turkish clausal structure, (i) the EPP feature is inactive in Turkish, and consequently subjects do not obligatorily move to spec, TP (Öztürk 2005; 2009, İşsever 2008, Arslan-Kechriotis 2009, Şener 2010), unless there is a vP adjunct, (ii) the lexical verb moves from V⁰ to v⁰ (Sailor, in progress), but resides somewhere below TP (Kelepir 2001, Aygen 2002), and (iii) accusative marked objects reside outside VP – in AspP that is in between vP and VP – (Nakipoğlu-Demiralp 2004 and Üntak-Tarhan 2006), while bare objects are inside VP (Kelepir 2001, Üntak-Tarhan 2006, and the references therein), (iv) adverbial PPs such as those that bear locative case adjoin to vP (Üntak-Tarhan 2006). There is no DP in Turkish (Öztürk 2005 and Bošković & Şener 2014).

maptree of (76):



Operations of prosodic constituent formation for (76):

- a. MATCH (*clause and phrase*)
 $[(\text{Nevriye})_\varphi (\text{car+in})_\varphi ((\text{her.raincoat+ACC})_\varphi \text{ search+PROG})_\varphi]_i$
- b. PARSE to ω (*EXHAUSTIVITY*)
 $[((\text{Nevriye})_\omega)_\varphi ((\text{car+in})_\omega)_\varphi (((\text{her.raincoat+ACC})_\omega)_\varphi (\text{search+PROG})_\omega)_\varphi]_i$
- c. Reduce φ (*NONREC*)
 $(((\text{Nevriye})_\omega)_\varphi ((\text{car+in})_\omega)_\varphi ((\underline{\text{her.raincoat+ACC}})_\omega)_\varphi (\text{search+PROG})_\omega)_\varphi]_i$

Notice that when mapping XPs, the only projection of the v^0 that is matched with a φ is the non-maximal vP projection that is the immediate mother of the v^0 . This is due to the *structural distance condition* (see §2.2). As a result of this condition, the subject NP and the adverb in the *maptree* representation in (77) are not mapped as contained within the φ of the v^0 . Such a parsing yields the exact constituency that has been observed in the F0 contour of the sentence in (76). The φ that matches with the direct object is contained within the φ that corresponds to the non-maximal vP. After the recursive φ that flanks the direct object is reduced, the remaining ω is rendered as the leftmost ω in the φ that corresponds to the non-maximal vP in the *maptree*.

Being the leftmost ω in its φ , the direct object *yağmurluğunu* ‘her raincoat’ is the head- ω of its φ . Being the head of the rightmost φ in its ι , the direct object is also the head of its ι (i.e. nucleus).

The figure below is an instantiation of a clause that bears non-final- φ s with two ω s and a mono-worded final- φ . The utterance in (78B) is elicited as an answer to the question that is given in (78A), as a result of which the verb in (78B) bears narrow focus:

- (78) A: Yorgun hamallar dokuma halıları ne yaptı?
 ‘What did the tired porters do with the woven carpets?’
- B: $[((\text{Yorgun})_{\omega\text{-H}} (\text{hamal-lar})_{\omega})_{\varphi} ((\text{dokuma})_{\omega\text{-H}} (\text{halı-lar-1})_{\omega})_{\varphi}$
 tired porter-PL woven carpet-PL-ACC
 $(\text{yuvarla-di.})_{\omega\text{-N}}]_{\iota}$
 roll-PST
 ‘The tired porters rolled_F the woven carpets.’

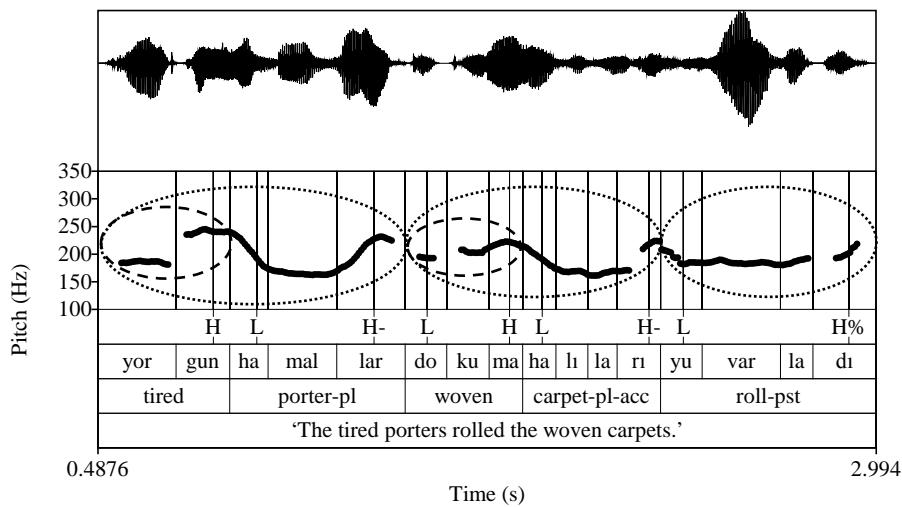


Figure 5. F0 of a declarative root clause in verb-new context

There are three φ s in the utterance that is plotted in Figure 5 (indicated with dotted ellipses). Two of these φ s are non-final- φ s. The first non-final- φ corresponds to the subject, and the second non-final- φ corresponds to the

direct object. The verb is focused and it constitutes the only ω in the final- φ . Both of the non-final- φ s are composed of two ω s. The leftmost- ω s in each non-final- φ correspond to APs modifying the subject and object NPs, respectively. Each ω that corresponds to an AP bears an F0 level that is relatively higher than the ω s that follow them.

Let me first describe the first non-final- φ (i.e. the one that corresponds to *yorgun hamallar* ‘the tired porters’). The leftmost ω in this φ (the one that corresponds to *yorgun* ‘tired’) bears an H tone on its right edge. This ω constitutes the head ω of this φ . The mean F0 of the head ω is 214hz. The final syllable of this ω is a closed syllable (i.e. .CVC) and its duration is 170ms. The second ω in this φ (i.e. the one that corresponds to *hamallar* ‘the porters’) bears L on its left edge and H- on its right edge. The mean F0 of this ω is 184hz. Similar to the head ω of this φ , the final syllable of the non-head ω is a closed syllable and its duration is 220ms. The durational difference between the head ω and the non-head ω is due to the fact that the edge of the non-head ω is also a φ -edge. The edges of ω s exhibit shorter duration than the edges of φ s in Turkish (İpek & Jun 2014).

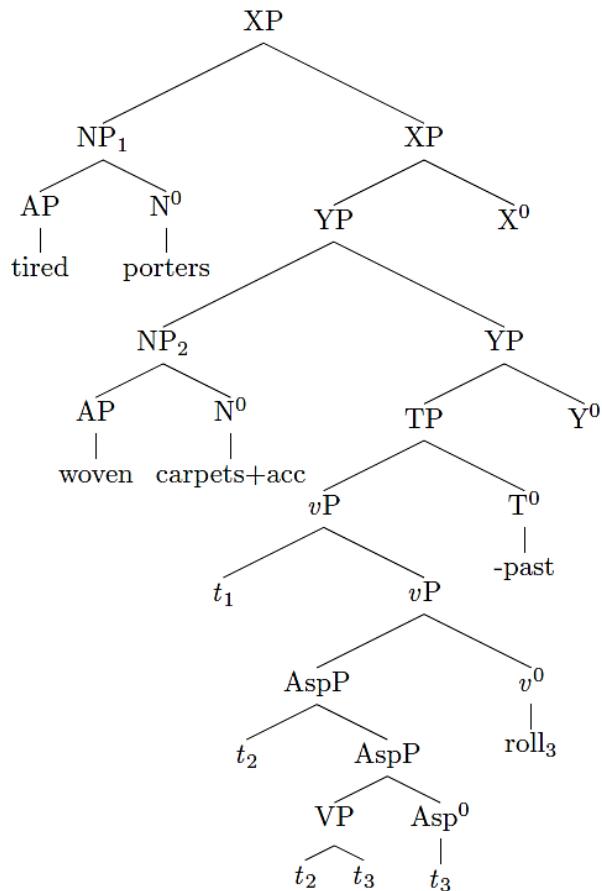
Like the leftmost non-final- φ , the second non-final- φ (i.e. the one that corresponds to *dokuma halilari* ‘the woven carpets’) bears two ω s, the leftmost of which is the head ω of this φ . The head ω (i.e. the one that corresponds to *dokuma* ‘woven’) is perceived as more prominent than the non-head- ω of this φ . The mean F0 of the head ω is 207hz. The final syllable of this ω is an open syllable (i.e. .CV). The non-head- ω of this φ (i.e. the one that corresponds to *halilari* ‘the carpets’) is marked with L on its left edge and H- on its right edge. The mean F0 of this ω is 180hz. Similarly to the head ω of this φ , the final syllable of the non-head ω is an open syllable and its duration is 137ms. The duration of the non-head- ω is longer due to the fact that it is on the edge of this φ and bears the boundary properties of a φ and not an ω . On the other hand, the final syllable duration of the head- ω is shorter than that of the non-head- ω as the head- ω exhibits only the boundary properties of an ω .

The final- φ in Figure 5 is composed of a single ω , which is the nucleus of its ι . The nuclear ω bears L on its left edge and H% on its right edge. The right edge boundary tone on the nuclear ω is neither an ω -level tone nor a φ -level tone. It is an ι -level boundary tone. As will be discussed in Chapter 5, the amount of the F0 rise on ι -level high boundary tones is larger than the

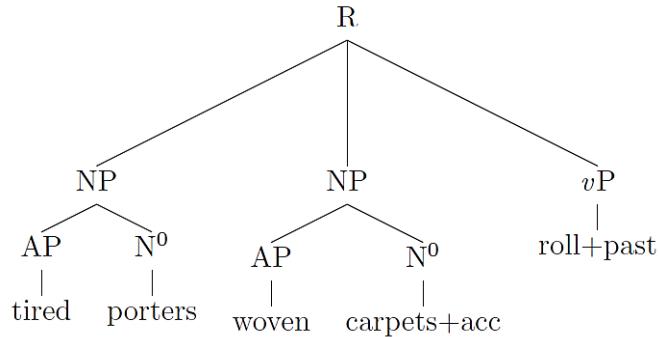
rise on the right edges of non-final- φ s in Turkish. In the ι that is plotted in Figure 5, the mean F0 of the ι -final syllable is 183hz, and the mean F0 of the syllable that immediately precedes the ι -final syllable is 202hz. When the F0 levels of the three φ s are compared, no significant difference is observed. The mean F0 of the first non-final- φ is 195hz, the mean F0 of the second non-final- φ is 191hz, and the mean F0 of the final- φ is 189hz.

Below is a stepwise illustration of how the constituency observed in (78B) is mapped from its source syntax:

(79) *Source syntax of (78B):*



maptree of (78B):



Operations of prosodic constituent formation for (78B)

- a. MATCH (*clause and phrase*)
 $[((\text{tired})_\varphi \text{porters})_\varphi ((\text{woven})_\varphi \text{carpets+ACC})_\varphi (\text{roll+PST})_\varphi]_i$
- b. PARSE to ω (*EXHAUSTIVITY*)
 $(((\text{tired})_\omega \text{porters})_\omega ((\text{woven})_\omega \text{carpets+ACC})_\omega)_\varphi$
 $((\text{roll+PST})_\omega)_\varphi]_i$
- c. Reduce φ (*NONREC*)
 $(((\text{tired})_\omega \text{porters})_\varphi ((\text{woven})_\omega \text{carpets+ACC})_\varphi$
 $((\text{roll+PST})_\omega)_\varphi]$

Notice that the sentence in (78B) is not uttered in a neutral context. In a neutral context, the direct object (and particularly the modifier of the direct object) of (78B) would bear clause level prominence. However, since the verb is narrowly focused in (78B), it is the ω that corresponds to the main verb that bears clausal prominence. As depicted in the source syntactic representation of (78B), the subject and the direct object reside in the periphery of the clause rather than inside vP (cf. Şener 2010).⁴⁹ As a result,

⁴⁹ For information structurally marked utterances, any item that is not focus resides in a corresponding maximal projection that is at the periphery of its clause (Şener 2010). Şener (2010) depicts these maximal projections in detail as to what particular topic or givenness properties these items bear. However, I represent these projections with generic labels since the information structural features of these non-focused items in the periphery are immaterial for the mapping. What is relevant here is their structural position in the source syntax.

the verb is parsed as within its own φ , which does not contain any ω s other than the morpho-syntactic word that corresponds to the verb itself. Since the φ that corresponds to vP is also the final- φ , the only ω within that φ (i.e. the morpho-syntactic exponent of the verbal complex) is rendered as the nucleus of the entire ι . The non-final- φ s bear two ω s. For each non-final- φ , the head ω is the leftmost ω . In the case of (78B), the heads of non-final- φ s correspond to the exponents of APs that modify each argument NP, respectively.

The last two cases that are illustrated in this section concern the variation in the prosodic parsing of high and low adverbs. High adverbs (such as *definitely*, *unfortunately*, *honestly*, etc.) reside outside the VP. On the other hand, low adverbs (i.e. event modifying adverbs such as *quickly*, *nicely*, *secretly*, etc.) reside inside the VP (cf. Üntak-Tarhan 2006). In Turkish, in neutral contexts, low adverbs are parsed within the φ that contains the verb in the canonical SXOV order. Whereas if a high adverb is inserted in a similar SXOV configuration, then the high adverb is parsed as an independent non-final- φ and the final- φ that contains the verbal complex hosts the nuclear ω . Compare the prosodic constituency of the sentences in (80) below:⁵⁰

- (80) a. *Low adverb: SX_NOV*
 $[((\text{Ali})_\omega)_\varphi ((\underline{\text{yavas}})_\omega\text{-N} (\text{araba} \text{ kulla-n-di.})_\omega)_\varphi]_1$
 Ali slow car drive-PST
 ‘Ali has driven the car slowly.’

⁵⁰ The accented tone on the high adverb *maalesef* ‘unfortunately’ in Figure 7 in the main text is due to the lexical accent on this word.

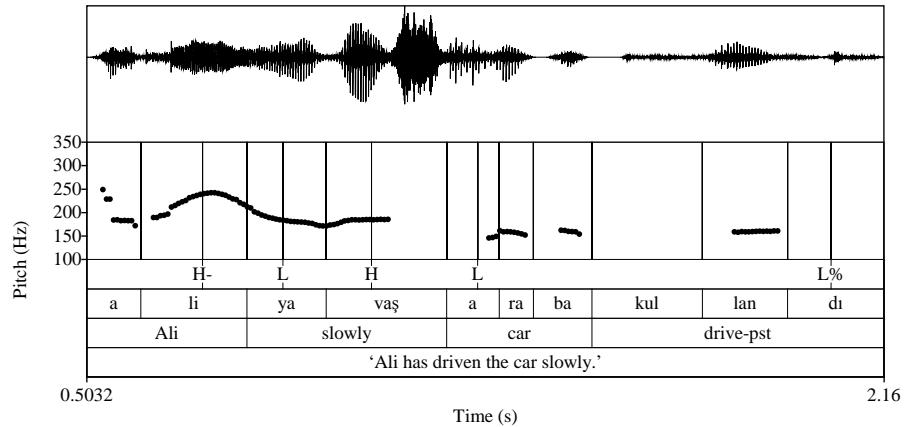


Figure 6. F0 of a clause with a low adverb in all-new context

b. *High adverb: SXO_NV*

$[(\text{((Ali)}_\omega)_\varphi ((\text{maalesef})_\omega)_\varphi ((\text{araba})_{\omega \cdot N} (\text{kullan-di.})_\omega)_\varphi]_t$

Ali unfortunately car drive-PST

'Ali has, unfortunately, driven a car.'

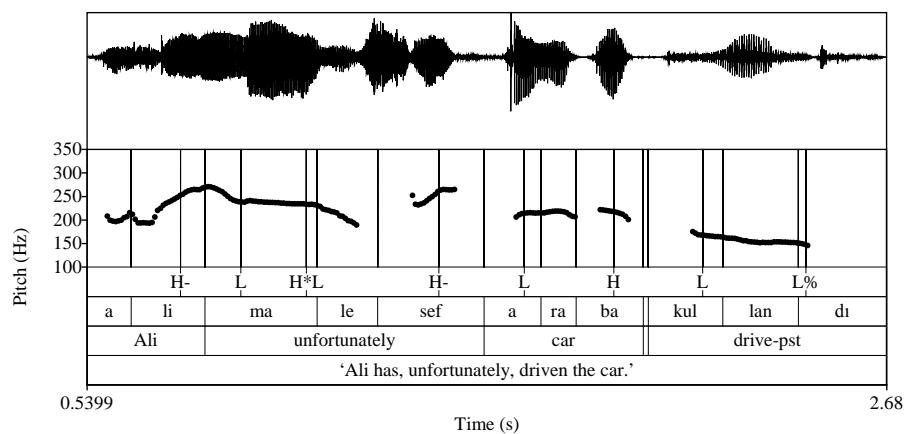


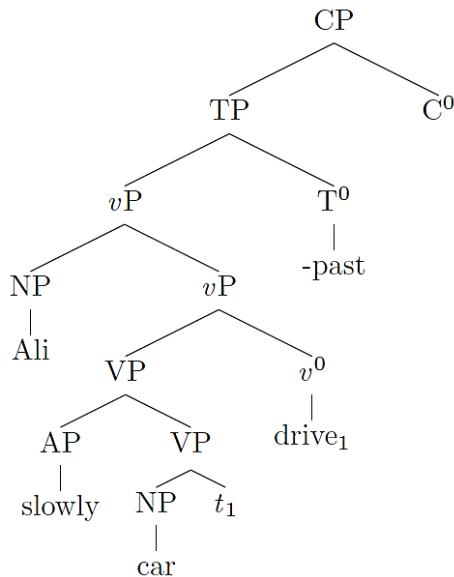
Figure 7. F0 of a clause with a high adverb in all-new context

The tonal annotations of the utterances in (80) indicate that (i) the exponent of the low adverb in (80a) is parsed as the head of the final- φ , which also contains the main verb, and (ii) the exponent of the high adverb in (80b) is parsed as a non-final- φ , which is composed of only the ω that corresponds to

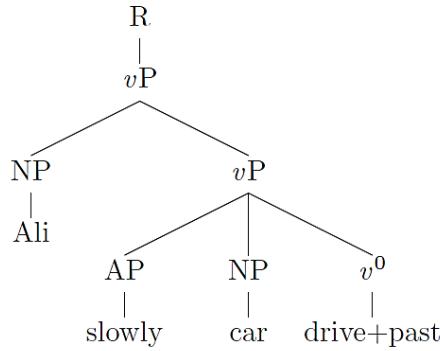
that adverb. Due to the fact that both of the clauses in (80) are uttered in an all-new context, one cannot appeal to information structural reasons to account for the variable parsing in (80a) and (80b). The only difference between these two utterances is the fact that *yavaş* ‘slow’ in (80a) is a low adverb, and *maalesef* ‘unfortunately’ in (80b) is a high adverb. Considering the variation in the syntactic residing site of high and low adverbs, and employing the account posited in Chapter 2, one may naturally account for the variation in the prosodic constituency of the two utterances in (80).

Below is a stepwise illustration of the mapping procedure for the utterance in (80a).

(81) *Source syntax of (80a):*



maptree of (80a):



Operations of prosodic constituent formation for (80a)

- a. MATCH (*clause and phrase*)
[(Ali)_φ ((slowly)_φ (car)_φ drive+PST)_φ]_t
- b. PARSE to ω (*EXHAUSTIVITY*)
[((Ali)_ω)_φ (((slowly)_ω)_φ ((car)_ω)_φ (drive+PST)_ω)_φ]_t
- c. Reduce φ (*NONREC*)
[((Ali)_ω)_φ ((slowly)_ω (car)_ω (drive+PST)_ω)_φ]_t
- d. Combine ω (*BIN-MAX*)⁵¹
[((Ali)_ω)_φ ((slowly)_ω (car drive+PST)_ω)_φ]_t

⁵¹ Note that at the last step of constituency formation that is shown in (81d) in the main text illustrates the parsing that is observed in the Figure 6 in the main text. This is the preferred constituency under neutral contexts. However, a constituency such as the one given in (i) below is also possible especially in fast speech.

(i) [(Ali)_ω)_φ ((slowly car)_ω (drive+PST)_ω)_φ]_t

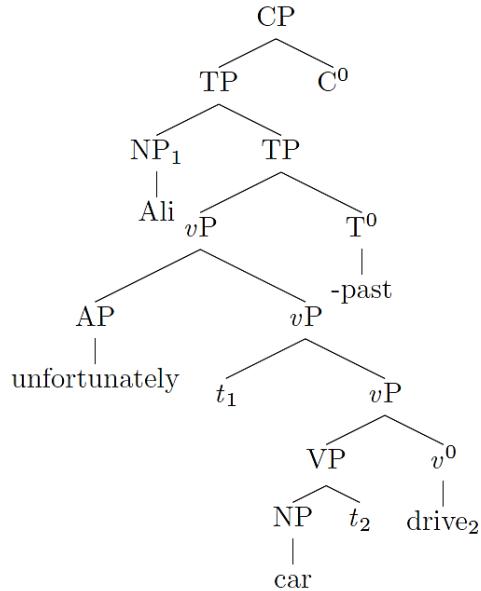
However, it must be noted that the parsing that is presented in (i) is a marked case – at least in my dialect. The fact that the combination of (slowly)_ω and (car)_ω into a single ω is dispreferred may be related to the fact that the NP projection of *car* in the *maptree* representation does not dominate the AP projection of *slowly*, and vice versa. This lack of dominance relation in the *maptree* representation may be the source of the degraded mono-worded parsing of these two constituents. For a similar observation, with similar consequences on the interpretation, see the discussion of the example given in (34) in the main text.

As seen in the tree diagrams above, the adverb, which is a constituent of the VP in the source syntax, is represented as a daughter of the non-maximal v^P in the *maptree*. This is due to the fact that all the projections of V^0 , including the phonologically empty V^0 itself, are pruned. Since the dominating node of the VP adverb is pruned, the adverb is represented as a constituent of the next dominating node that has a phonological exponent. In this case, the next dominating node is the non-maximal v^P . Each daughter of the ternary v^P in the *maptree* representation above is parsed as contained within a single φ , which corresponds to the immediate mother of the v^0 . This is illustrated in the schematic representation in (81a). The subject NP *Ali* is parsed as a separate φ as the maximal v^P in the *maptree* does not match with a φ due to the *structural distance condition* (see (26) in §2.2). After each exponent within each φ is parsed to an ω as shown in (81b), the recursive layers of the string are reduced as a result of the condition against recursivity of the prosodic constituents in Turkish (i.e. NONREC that is given in (4c) §1.2.4). After the recursive- φ reduction step, the final- φ is rendered as bearing two ω s, one of which is the low adverb. The ω that corresponds to the low adverb is also the leftmost- ω within the final- φ . Therefore, it is the prosodic head both at the level of φ and at the level of ι . Since the resulting structure of the stepwise derivation in (81), i.e. (81d), is also the constituency that is observed in (80a), I conclude that this derivation naturally captures the constituency of (80a).

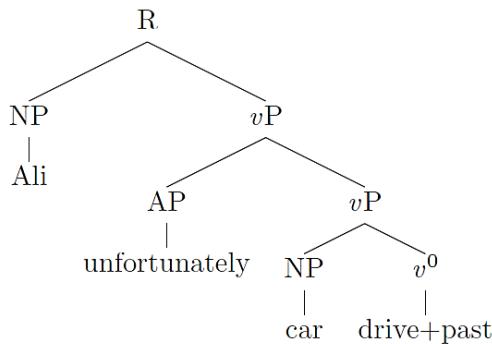
Now, let us turn to the case of high adverbial. Below is a stepwise illustration of the mapping procedure for the utterance in (80b).⁵²

⁵² Notice that in the source syntactic representation of (80b) the subject resides in spec, TP when it is followed by a high adverb (cf. İşsever 2008). Also note that the adverb *maalesef* ‘unfortunately’ could possibly adjoin to a higher projection in the tree, yet, such a difference would not affect the current analysis.

(82) *Source syntax of (80b):*



maptree of (80b):



Operations of prosodic constituent formation for (80b)

- a. MATCH (*clause and phrase*)
[(Ali)_φ (unfortunately)_φ ((car)_φ drive+PST)_φ]_ι
- b. PARSE to ω (*EXHAUSTIVITY*)
[((Ali)_ω ((unfortunately)_ω)_φ (((car)_ω)_φ (drive+PST)_ω)_φ]_ι

- c. Reduce φ (*NONREC*)
 $[((\text{Ali})_\omega)_\varphi ((\text{unfortunately})_\omega)_\varphi ((\text{car})_\omega (\text{drive+PST})_\omega)_\varphi]_i$

As seen in the tree diagrams above, the high adverb, which is outside the VP in the source syntax is represented as a daughter of the vP in the *maptree*. If the syntactic relations that are depicted in the *maptree* in (82) is what is relevant to the parser, then one expects there to be three independent φ s that match with three XPs in that *maptree*. First φ corresponds to the subject NP, the second φ corresponds to the adjunct AP, and the third φ corresponds to the non-maximal vP that mothers the bare object NP and the verbal complex. Notice that the maximal vP, which immediately dominates the AP and the non-maximal vP is not subject to the parser as a result of the *structural distance condition*. The result of φ -formation is illustrated in (82a). Afterwards, each exponent within each φ is typed as an ω as shown in (82b), and the recursive layers of the string are reduced as a result of NONREC. After the recurring φ s are deleted, the final- φ is rendered as bearing two ω s one of which is the object NP. The ω that corresponds to the object is also the leftmost- ω within the final- φ . Therefore, the ω that corresponds to the object is the prosodic head both at the level of φ and at the level of i . As depicted in the final step of derivation in (82c), the high adverb is parsed as outside the final- φ , which renders the φ of the high adverb as a non-final- φ . Since the resulting structure of the stepwise derivation in (82), i.e. (82c), is also the constituency that is observed in (80b), I conclude that this derivation naturally captures the constituency of (80b).

This section focused on generating prosodic heads at the level of φ and i , i.e. the leftmost ω s of bi-worded φ s. In summary, the nature of the syntactic input and the steps of the prosodic constituent formation that have been proposed in Chapter 2 naturally capture the variable nuclear prominence and prosodic constituency for various syntactic configurations in Turkish.

3.3 *Chapter summary*

In this chapter, I discussed the acoustic properties of prosodic heads in Turkish at the level of φ and i . I described the prosodic headedness in Turkish at the level of φ and i , and suggested an account that predicts the

distribution of φ -level and ι -level heads based on the account that was advanced in Chapter 2. Additionally, I discussed boundary tones in relation to heads at the level of φ and ι . In the context of ι -level heads, I presented examples from neutral contexts as well as focus-background contexts.

With respect to the level of φ , the head of a mono-worded φ is the only ω that is in that φ . The head of a bi-worded φ is the leftmost ω in that φ in Turkish. With respect to the level of ι , the head of an ι is the head of the rightmost φ (i.e. the final- φ) of that ι in Turkish. In bi-worded φ s, the head ω (nucleus or not) displays a high plateau that is relatively higher than the non-head ω that follows it. The area that follows the nucleus (i.e. the non-head ω of the final- φ of an ι) displays the lowest F0 and is always flat. Both for the levels of ι s and φ s, the prosodically prominent unit is an ω .

The account that I have advanced to generate Turkish prosodic structure is capable of predicting not only the position of nuclear prominence in neutral contexts, but also in information structurally marked contexts. Additionally, by utilising the account proposed in Chapter 2, a number of dissimilar syntactic structures in which the nuclear prominence appears to vary are naturally accounted for.

4

The clause and ι

In Match theory, the largest narrow syntactic object that is suggested to match with a prosodic constituent is *the clause*. In a nutshell, a clause is a narrow syntactically generated object that is derived as a result of concatenating smaller atomic constituents such as phrases. Semantically, unlike the majority of sub-clausal constituents (i.e. phrases), clauses are endowed with a propositional content, which is encoded by a subject and a predicate. Although the properties of clauses are semantically dissimilar to the properties of phrases, in narrow syntax, a clause is just another maximal projection (i.e. XP). In other words, a phrase and a clause cannot be distinguished by appealing to their categorial syntax, as they are all XPs. The “clause”, as a syntactic object, is somehow a compositionally defined domain. Just as the subjecthood or objecthood of an NP is defined compositionally, as part of the structure that they are contained within, the clausehood of a CP or an equivalent clausal projection is defined in relation to the structure that they project. As such, clausehood cannot be referred to as an inherent property of any syntactic projection. In terms of their external syntax, only those clauses that are “undominated” are dissimilar to other sub-clausal phrases that are dominated. Such clauses are called “root clauses”. In addition to root clauses, there are other kinds of clauses such as embedded clauses (finite or non-finite), adjunct clauses, coordinated clauses, small clauses, embedded root clauses, clauses that bear illocutionary force, and clauses that lack illocutionary force.

The largest prosodic object that is suggested to match with a syntactic constituent is the intonational phrase (ι).⁵³ ι is the prosodic category type that dominates the prosodic constituents of the category type phonological

⁵³ Here, I ignore the prosodic category type “utterance” (u), which is hierarchically higher than ι , for two reasons. Firstly, it is suggested to correspond to objects of discourse; therefore I do not consider it as a category that is mapped directly from narrow syntax. Secondly, the category u is not a well-defined and universally attested category.

phrase (φ) in the prosodic hierarchy. Acoustically, ι s bear ‘stronger’ boundaries on the edges of the strings that they encompass, when contrasted with φ -boundary phenomena. Some of the acoustic cues to identify an ι are the following: (i) ι -level boundary tones, which are marked with “%” (e.g. L%, H%, HL%, LH%, etc.), (ii) final syllable duration (e.g. final syllables longer than φ -final syllables), (iii) (longer) pauses (e.g. presence of (longer) pauses on ι edges, as opposed to φ edges), (iv) pitch reset (e.g. change in the pitch register, or discontinuing downstep), (v) prosodic headedness and the directionality of the prosodic heads (e.g. left headed ι s, as opposed to right headed φ s). In Turkish, the cues that are mentioned in (i), (ii), (iii) and (v) are the cues that mark the edges of ι s (Kan 2009, Özge & Bozşahin 2010, Güneş 2014, Güneş & Çöltekin 2015).

Given that clausehood is considered as a property of syntax to which the prosodic parser is sensitive, and given that there is a large variation in the syntactic (and semantic) behaviour of the numerous types of clauses, the generalisation that “clauses match with ι s” (e.g. as MATCHCLAUSE predicts) has the potential to be too coarse-grained, and as such may fail to accurately describe the variance in how diverse types of clauses mentioned above are prosodically mapped across languages. In this chapter, I discuss some of the issues that arise if one follows the assumption that the “clause”, as a syntactic primitive, is the trigger for ι -formation. Using evidence from Turkish, in §4.1.1 I show that not all clauses correspond to ι s, and, in §4.1.2, I show that not all ι s correspond to clauses. Based on these observations, I conclude that clausehood (on its most simple, vague description) cannot directly be responsible for ι -formation – a conclusion that has already been pointed out by numerous studies on ι -formation (Downing 1970, Nespor & Vogel 1986, Selkirk 1986; 2005; 2011, Dehé 2007; 2014, Truckenbrodt 2005; 2014, and others). Based on the conclusions of this chapter and the discussion in Chapter 5, I will conclude, in Chapter 6, that only those syntactic clauses and phrases that are performed as speech acts are mapped as ι s in the prosodic structure.

4.1 Problems with MATCHCLAUSE

This section provides evidence that we must re-examine the idea that ‘clauses’ in syntax match with ι s in prosody. Based on a number of cross-linguistic phenomena and the observations presented in this chapter, I conclude that MATCHCLAUSE cannot be responsible for all cases of ι -formation.⁵⁴ This conclusion necessitates a refinement of the description of what a *clause* is in syntax, or what MATCHCLAUSE targets.

Consider Selkirk’s (2005, 2009, 2011) mapping rule for the prosodic category ι in Match theory.

(83) MATCHCLAUSE:

A clause in syntactic constituent structure must be matched by a constituent of a corresponding prosodic type, call it ι , in the phonological representation.

Similar to the issues we faced in the discussion of MATCHWORD in Chapter 2, MATCHCLAUSE is ambiguous due to the fact that the definition of a clause is rather elusive. Semantically, one may refer to any structure that has propositional content and involves predication as a clause. As such, it is impossible to pinpoint the syntactic category type that corresponds to this semantic notion of a clause, as small clauses, vPs (assuming the VP-internal subject hypothesis), TPs, and CPs are all semantically saturated at various

⁵⁴ Note that this book investigates only those configurations in which ι -formation is *obligatory*. Those ι s that are stylistically promoted (Selkirk 2005) are disregarded. To give an example of stylistic promotion, consider the variation in the prosodic category type of the prosodic correlate of the parenthetical adverbial *probably* below:

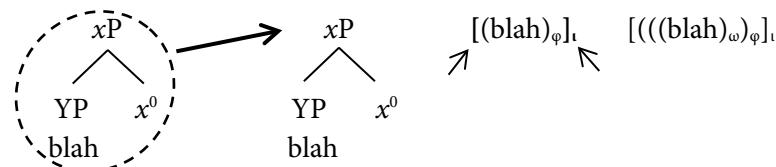
- (i) a. John (*probably*) $_{\varphi}$ kissed Mary.
- b. John [*probably*] $_{\iota}$ kissed Mary.

James Griffiths and Craig Sailor (p.c.) stated that the sentences in (i) have the same interpretation in their dialects of English. Mark de Vries and Jan-Wouter Zwart (p.c.) confirmed that this is also the case in the Dutch counterparts of the sentences in (i). Therefore, I consider the variation in the prosodic category type of the prosodic constituent that contains the parenthetical above as an instance of stylistic *shift* (a stylistic promotion from φ -hood to ι -hood). Since the interpretation does not change in such environments, and since almost all prosodic category types may be stylistically promoted, I exclude such occurrences in my description of the prosodic grammar.

points in the syntactic derivation. Syntactically, a clause is commonly described as a root or embedded CP.

In the discussion of MATCHPHRASE in Chapter 2, I stated that not all phrases are targeted by the operation of matching phrases with φ s. Those XPs that are not *visible* to MATCHPHRASE are roughly *root* CPs. Recall that in the *maptree* representations provided in Chapters 2 and 3, for the purposes of exposition, I simply added R_s (for R(oot)) to the top of *maptrees*. I assumed that R is the corresponding *maptree* node of ι s. In reality, R_s cannot be added to *maptrees* in this manner, as every node in the *maptree* must represent a node in the source syntactic tree. As such, R must be sourced from the projection of a syntactic head that is represented in the *maptree*, regardless of whether or not it is phonologically realised. As to what particular projection(s) in the source syntax is the corresponding projection of R, I remained ambivalent. The only thing that I assumed was that there is a projection at the root of a source syntactic tree representation, and this projection is not fully pruned regardless of whether or not it bears a phonological exponent after VI insertion. I stated that this special condition on the avoidance of pruning is due to the fact that the root of a syntactic tree is ‘special’ as it corresponds to a prosodic category type that is not φ : i.e. ι . The hypothetical tree representation below depicts the mapping algorithm that is assumed for mapping ι s, in which R is replaced with an unknown projection; xP.

- (84) a. *Source syntax* b. *maptree* c. MATCHxP d. PARSE to ω

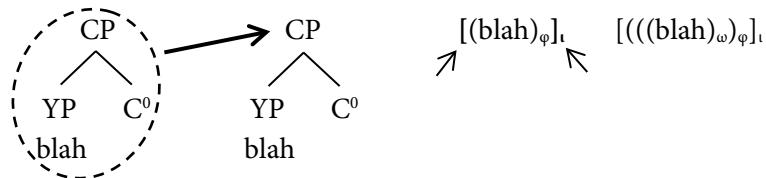


In (84), xP in the source syntax is the node that is mapped as an ι . Although x^0 does not have a phonological exponent, its projection is still represented in the *maptree*. The MATCH rule that is responsible for ι -formation applies only to this node on the *maptree*. The question here is what label this xP in (84) bears in the source syntax. In terms of mapping to prosody, Selkirk (2005,

2009, and 2011) assumes that a CP, in its loose syntactic sense, is the corresponding syntactic unit of ι .

In this section, following Selkirk (2005, 2009, 2011), I assume that this label is CP in its broad sense, i.e. any clausal structure regardless of whether or not it is at the root of the spelled-out syntactic constituent, or has an elaborated left periphery in the sense of Rizzi (1997). To illustrate, this section asks whether or not the hypothetical route of the ι -formation procedure that is illustrated in (85) is the correct way to account for syntactic structure-to- ι matching procedure. In (85), 'CP' in the *maptree* takes over the function of xP , and, as such, ι corresponds to CPs.

- (85) a. *Source syntax* b. *maptree* c. MATCHCP d. PARSE to ω



If CP is the source syntactic unit that corresponds to an ι , this indicates that as a maximal projection, CP is not subject to MATCHPHRASE, but MATCHCP, which dictates that CPs in syntactic constituency must match with ι s in prosodic constituency.

The question why specifically a CP, and not just another maximal projection, is selected by a MATCH rule may find an answer if we consider the properties of CPs. CPs are often the topmost, undominated projections of syntactic structures. So perhaps, this special property of 'undomination' is the reason why ι corresponds to CPs. Otherwise, one may suggest that CP simply displays a categorial feature (call it [+C]) that no other maximal projection displays, and that ι corresponds to those projections that are [+C].

At first glance, when a CP is assumed to be the *clause* in MATCHCLAUSE, then MATCHCLAUSE (or MATCHCP) seems to capture the ι -formation facts in a number of cases. Consider the utterances of speaker B in the following example:

- (86) A: Ne oldu?

'What happened?'

- B: [_{CP}Kedi elma ye-di.]
 [Kedi elma ye-di.] _{ι}
 cat apple eat-PST
 'The cat ate an apple.'

- B': [_{CP}Kedi elma ye-di], [_{CP}Köpek et ye-di.]
 [Kedi elma ye-di] _{ι} [Köpek et ye-di.] _{ι}
 cat apple eat-PST dog meat eat-PST
 'The cat ate an apple, the dog ate some meat.'

In (86) the speaker B utters a single clause in her turn, and this clause is parsed as an ι , as the schematic representation of the prosodic boundaries indicates. Speaker B' utters a stack of two clauses, each of which is parsed as an independent ι .

Note that it is not the surface string but the underlying syntactic information that is relevant in mapping clauses to ι s. For example, in a fragment answer such as B's in (87), we expect the fragmented sub-clausal XP (the direct object in this case) to be parsed as an ι due to the fact that it is underlyingly part of a clausal structure (Merchant 2001).

- (87) A: Kedi ne yedi?
-
- 'What did the cat eat?'

- B: [_{CP}~~Kedi~~ elma ye-di.]
 [elma] _{ι}
 cat apple eat-PST
 'An apple.'

Based on (87), one may still maintain that the parser seems to target only the surface properties of a string. As such, an XP, like *elma* 'apple' in (87B), may always be parsed as a φ . If this reasoning is followed, one may account for the ι -formation in (87) by appealing to the consequences of HEADEDNESS (Selkirk 1995a, 2003), which dictates that "any word pronounced in isolation

would have the prosodic properties of entities at all the levels of the Prosodic Hierarchy" (Selkirk 2003:471). In accordance with HEADEDNESS, the fragment in (87B) may be expected to be parsed at all levels of hierarchy including the *i*, since it is uttered in isolation. The *i*-formation in (87) may in fact be due to this condition and not due to the fact that the fragment is underlyingly a clausal structure and hence is conditioned by MATCHCLAUSE.

However, the data in (88) provide evidence that whether or not isolated, reduced clausal structures are parsed as *is*. In (88), the stranded phrases of the gapped structure of the leftmost CP are separated from the following string by an *i*-boundary, regardless of the fact that they are not uttered in isolation:

- (88) A: Kim ne yedi?
'Who ate what?'

B: [_{CP}Kedi elma ~~ye-di.~~] [_{CP}Köpek et ye-di.]
[Kedi elma], [Köpek et ye-di.],
cat apple eat-PST dog meat eat-PST
'The cat ate an apple, the dog ate some meat.'

Assuming that the reduced structures such as the ones in (87) and (88) are underlyingly root clauses, one may maintain the two generalisations that are implied in MATCHCLAUSE: (i) clauses match with *is* (as the corresponding syntactic units of *is* in (86-88) are [+C]), and (ii) undominated XPs match with *is* (as the corresponding syntactic units of *is* in (86-88) are underlyingly undominated CPs).

In this section, I discuss the validity of these two generalisations. I point out a number of cases where these two generalisations do not converge. Some of these structures are embedded CPs that do not match with *is*, undominated XPs that do not match with *is*, and undominated CPs that do not match with *is*. In short, I show that not all CPs match with *is*, and not all *is* correspond to a CP.

4.1.1 *Not all clauses match with *is**

In this section, I list a number of syntactically dominated and undominated clausal structures that do not correspond to *is* in the prosodic structure. Most of these structures are discussed in detail in Chapters 5 and 6. For the time being, I refer to the data from a descriptive point of view and do not provide any analysis as to how these structures are derived in syntax and mapped to the prosody.

The example in (89) illustrates a case of an embedded clause with non-finite morphology (in boldface). This nominalised embedded clause functions as the direct object of the matrix verb *söyle* ‘say’. The F0 plot is an illustration of the prosodic realisation of this clause together with its matrix clause (the clause that dominates the embedded CP). The F0 analysis indicates that the embedded nominalised clause is parsed as a φ and not *i*.

- (89) *Nominalised embedded clause as φ : non-finite complement clause*

$[\text{MATRIX-CP} \text{Aynur}$	$[\text{NOM-CP} \textbf{Ali-nin gel-diğ-i-ni}]$	Meray-a
$[$	$((\text{Aynur})_\omega)_\varphi$	$((\textbf{Ali-nin gel-diğ-i-ni})_\omega)_\varphi$
Aynur	Ali-GEN	come-NOM-3POSS-ACC Meray-DAT

telefon-da söyle-yecek.]
 $((\text{telefon-da})_{\omega\text{-N}} (\text{söyle-yecek.})_\omega)_\varphi]$,
 phone-LOC say-FUT
 ‘Aynur will tell Meray on the phone that Ali arrived.’

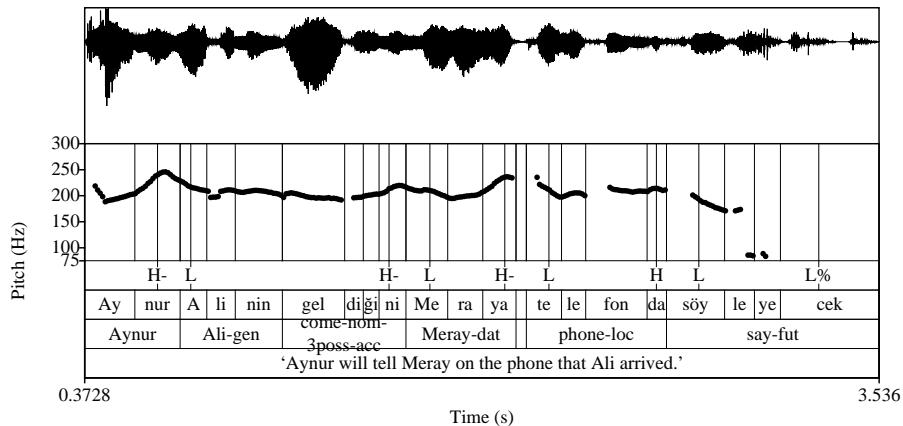


Figure 8. Embedded non-finite clause as a φ

The non-finite embedded clause in (89) is flanked by the subject *Aynur* on the left and the indirect object *Meraya* ‘to Meray’ on the right. Both the subject and the indirect object are parsed as φ s, as their right edge boundary tones (H-) indicate. The F0 level across the entire sentence is at the same interval, except for the post-nuclear verb. The F0 shows that the entire clausal complement is parsed as a single constituent at the level of ω (which is easily accounted for with the algorithm that is proposed in §2.2). The ω of the embedded clause bears L on its left edge and a φ -level H- tone on its right. Related to the H- boundary tone, the amount of rise on the right edge of the embedded clause is expected to be larger if it is parsed as an ι . We see that this is not the case. The amount of F0 rise on the right edge of the embedded clause is as large as those of the other φ s (if not smaller). Apart from boundary tonal properties, the final syllable duration of the embedded clause is similar to other φ edges.⁵⁵ The final syllable of the embedded clause is an open syllable and its duration is 100ms. Similar to this is the duration of the other φ in the clause that bears an open syllable (i.e. to that of the indirect object *Meraya*), which is 110ms. Additionally, no pauses are observed flanking the exponents of the embedded clause. In sum, none of the cues that

⁵⁵ In Turkish, ι -final syllables are significantly longer than φ -final syllables (Kan 2009, Güneş & Çöltekin 2015). However, syllable type (open vs. closed) plays a role in the durational variation. Accordingly, the average duration of: (i) ι -final closed syllables is 242ms, (ii) φ -final closed syllables is 206ms, (iii) ι -final open syllables is 181ms, and (iv) φ -final open syllables is 123ms (cf. Güneş & Çöltekin 2015). See Chapter 5 for a more detailed presentation of the acoustic properties of ι boundaries in Turkish.

indicate ι -formation in Turkish are found to mark the embedded clause in (89).

Additional evidence for the lack of ι -formation of embedded clauses such as the one in (89) comes from the fact that such embedded clauses may occur in the post-nuclear area of the matrix clause. This is shown below:

- (90) *Embedded non-finite clause as part of the post-nucleus*

[_{MATRIX-CP} Aynur Meray-a telefon-da söyle-yecek
 [((Aynur)_ω)_φ ((Meray-a)_{ω-N}) (telefon-da söyle-yecek
 Aynur Meray-DAT phone-LOC say-FUT
 [_{NOM-CP} Ali-nin gel-diğ-i-ni.]]
 Ali-nin gel-diğ-i-ni.)_ω)_φ]₁
 Ali-GEN come-NOM-3POSS-ACC
 'Aynur will tell Meray_F on the phone that Ali arrived.'

As stated in Chapter 3, the phonological segments that occur to the right of the nucleus in an ι must bear low levelled, flat F0 (and therefore must be parsed as within the post-nuclear ω) in Turkish. If the exponents of a syntactic structure are to be parsed as an independent ι , we expect them not to be parsed at the post-nuclear area of another ι . In such a case, a clash arises due to the fact that ι -hood requires ‘sentential prominence’ and free realisation of ι -level boundary phenomena; however, exponents that occur on the post-nuclear area are always parsed as ω s (i.e. as the only post-nuclear ω), or parts of ω s (as part of the only post-nuclear ω). To illustrate such a clash, consider (91B), in which the second CP is pronounced as part of the post-nuclear ω of the final- φ of the ι , which corresponds to the first CP:

- (91) A: Kim ne yedi?
‘Who ate what?’

B: [cp Kedi elma-yi ye-di], [cp Köpek et-i ye-di.]
 * [((Kedi)_ω)_φ ((elma-yi)_{ω-N}(ye-di köpek et-i ye-di.)_ω)_φ]₁
 cat apple-ACC eat-PST dog meat-ACC eat-PST
 ‘The cat ate the apple_F, the dog ate the meat.’

The prosodic realisation of the utterance in (91B) is ungrammatical due to the fact that the second clause, which is required to be parsed as an independent *i*, is pronounced as a sub- ω . This indicates that in Turkish those syntactic structures that must be parsed as independent *is* cannot occur in the post-nuclear area of another *i*. Since the embedded nominalised clause in (90) *can* occur in the post-nuclear area of the matrix *i*, I conclude that it is not required to match with an *i*.

The example below illustrates a case of an embedded clause with finite morphology. The embedded clausal structure is headed by the complementiser *diye*. The F0 plot is an illustration of the prosodic realisation of the exponents of this clause together with its matrix clause (the clause that dominates the embedded CP).

(92) *Finite embedded clause as part of a φ : finite complement*

$[_{CP_1} Meray$	$[_{CP_2} Onur$	$ev-e$	$gel-di$	$diye]$	$duy-mu\dot{s}.$
$((Meray)_\omega)_\varphi$	$((Onur)_{\omega-N}(ev-e$	$gel-di$	$diye$	$duy-mu\dot{s}.)_\omega)_\varphi]$	$_i$
Meray	Onur	home-DAT	arrive-PST	COMP	hear-EVD
'Meray heard that Onur arrived home.'					

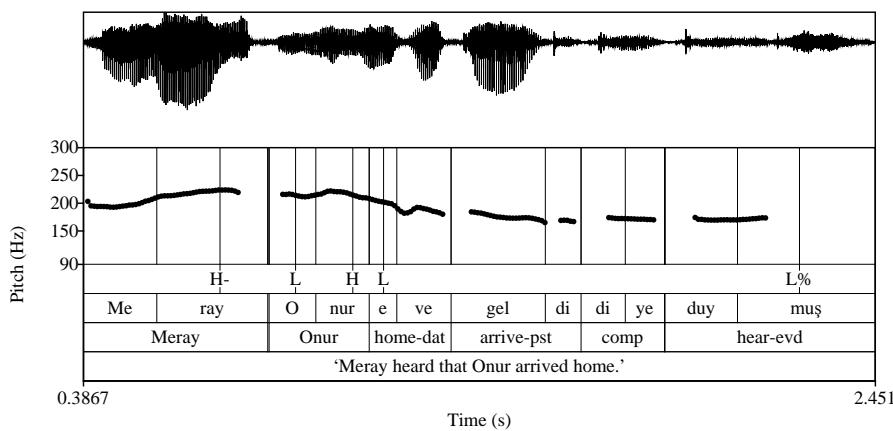


Figure 9. Finite embedded clause as part of a φ

The finite embedded clause in (92) has the matrix subject *Meray* on its left and the matrix verb *duymuş* 'hear.EVD' on its right. The subject of the

embedded clause (i.e. *Onur*) is the nucleus of the entire matrix clause. The subject of the matrix clause is the initial item of the entire string and it is parsed as a mono-worded φ , bearing H- on its right edge. The nuclear ω *Onur* bears L on its left edge and an ω -level H tone on its right edge. The rest of the embedded clause including the complementiser *diye* (i.e. the entire string *eve geldi diye*) is parsed together with the matrix verb *duymuş* as a single ω , which constitutes the post-nuclear ω . At the level of φ , the entire string is divided into two φ s, the leftmost of which contains the matrix subject, and the second of which contains the finite embedded clause and the matrix verb. There is only one ι in (92) and this ι consists of the matrix clause, including the embedded finite clause. Unlike the embedded clause that is discussed in (89), the finite embedded clause in (92) is not parsed as a separate φ , but it is parsed as contained within another φ .

Similarly to the case in (89), when the finite complement clause is linearly positioned to the right of the nucleus, it is parsed as part of the post-nuclear ω of the final- φ of the matrix clause's ι – something that is not expected from strings that correspond to us. This is shown in the schematic representation below, where the sentence-initial matrix subject, *Meray*, constitutes the nuclear ω :

(93) *Embedded finite clause as part of the post-nucleus*

[_{CP1} Meray [_{CP2} Onur ev-e gel-di diye] duy-muş.]
 [((Meray)_{ω-N} (Onur ev-e gel-di diye duy-muş.)_ω)₁]
 Meray Onur home-DAT arrive-PST COMP hear-EVD
 'Meray_F heard that Onur arrived home.'

In the case of (93), the entire matrix clause is parsed as a single φ . Within this φ there are two ω s. The leftmost ω , which consists of the focused matrix subject *Meray*, is the nucleus. The rightmost ω constitutes the post-nucleus and consists of all the constituents of the embedded finite clause plus the matrix verb. In this configuration, the embedded finite clause bears low and flat F0, and is pronounced as a sub- ω of the final- φ .

The example below illustrates a case of a finite clausal parenthetical, which is assumed to display undominated syntax (Reis 1995, De Vries 2007, Griffiths 2015a, 2015b, and others). The structure under investigation is a

comment clause that is interpolated into the clause that it modifies (hereafter, the *host*). Unlike other undominated finite clauses, the F0 analysis of (94) shows that the comment clause is parsed as a φ and not ι .

- (94) Undominated finite clause as φ : comment clauses

$[_{CP_1} Emre\text{-}ler]$	$[_{CP_2} yemin\text{ } ed\text{-}er\text{-im}]$	yeğen\text{-im}\text{-i}
[(Emre\text{-}ler) $_{\varphi}$	(yemin\text{ } ed\text{-}er\text{-im}) $_{\varphi}$
Emre\text{-PL}	swear	make-AOR-1SG

armağan-a boḡ-ar-lar.]
 (armağan-a_N boḡ-ar-lar.) $_{\varphi}$,
 gift-DAT overwhelm-AOR-PL
 'Emre (and his friends), I swear, overwhelm my nephew with gifts.'

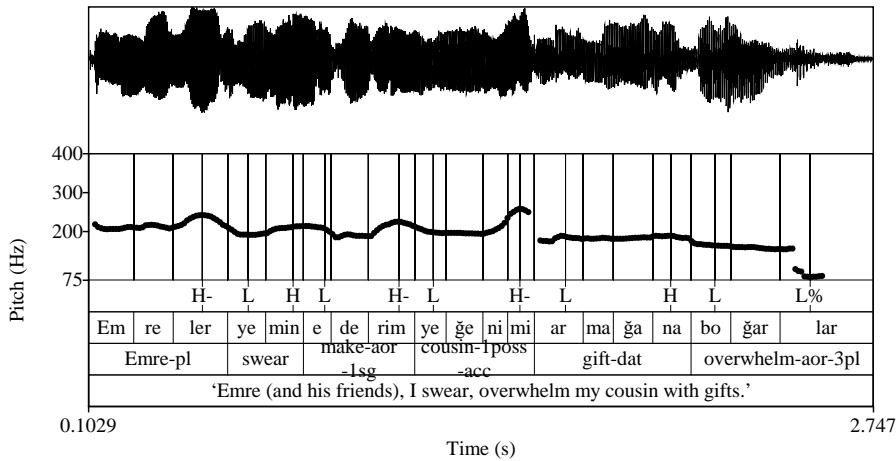


Figure 10. Undominated finite clause as φ : comment clause (pre-nuclear)

The utterance in Figure 10 bears a single ι . This ι is composed of four φ s, the first three of which are non-final and marked with $H\text{-}$ on their right edges. The word *armağana* 'to gifts' starts the final- φ and, as the head of the final- φ , this ω is also the head of the ι . There is one post-nuclear item, which is the host verb. Apart from the φ of the comment clause, all the other non-final- φ s contain only one ω . The comment clause, *yemin ederim*, bears two ω s, the leftmost of which is levelled higher (1 semitone (st) difference) than the

consequent ω .⁵⁶ In terms of final rise, all of the pre-nuclear φ s are similar. The amount of rise on the right edge of each non-final- φ is 1st, 2st, and 3st, respectively. Additionally, the final syllable durations of these three φ s are similar to the average φ -final syllable durations (for the first two φ s, which end with closed syllables, it is 180ms and 160ms, respectively; and 80ms for the last non-final- φ , which ends with an open syllable). In conclusion, the utterance in (94) is not parsed as an i , although it is a parenthetical (with undominated syntax) and a finite clause.

The fact that the comment clause can occur in the post-nuclear area of its host, as shown below, provides additional support for its prosodic integration, and the lack of obligatory i -formation.

(95) *A comment clause as part of the post-nucleus*

[_{CP1} Emre-ler	armağan-a	boğ-ar-lar	[_{CP2} yemin ed-er-im]
[((Emre-ler) $_{\omega}$) $_{\varphi}$	((armağan-a) $_{\omega\text{-N}}$) $_{\varphi}$	boğ-ar-lar	(yemin ed-er-im
Emre-PL	gift-DAT	overwhelm-AOR-PL	swear make-AOR-1SG
 yegen-im-i.]			
yegen-im-i.) $_{\varphi}$] $_{i}$			
nephew-3POSS-ACC			
'Emre (and his friends) overwhelm my nephew with gifts _F , I swear.'			

The last example that I discuss in this section is a case of a string of clauses, the second one of which is parsed as part of a φ . In this case, the two clauses that are stacked are coordinated, and not subordinated (at least in syntax) (Kornfilt 1997:109). These two clauses are strongly related to one another at the discourse level. I will descriptively call such cases *discourse embedding* (cf. Kehler 2002).

⁵⁶ Except for the mean F0 comparisons, semitones are used in the analyses. Justification for why semitones are used can be found in §5.3.1.3.

- (96) *Coordinated clause as a sub- ω : discourse embedding*

[_{CPI}Ali Aynur-u öp-tü] de
 [((Ali)_ω)_φ ((Aynur-u)_{ω-N} (öp-tü de
 Ali Aynur-ACC kiss-PST and]

[_{CP2}**ben-im** **kalb-im-i** **kır-dı.**]
ben-im **kalb-im-i** **kır-dı.)_ω**]_φ]
I-GEN heart-1POSS-ACC break-PST
‘Ali kissed Aynur, and that is why he brok-

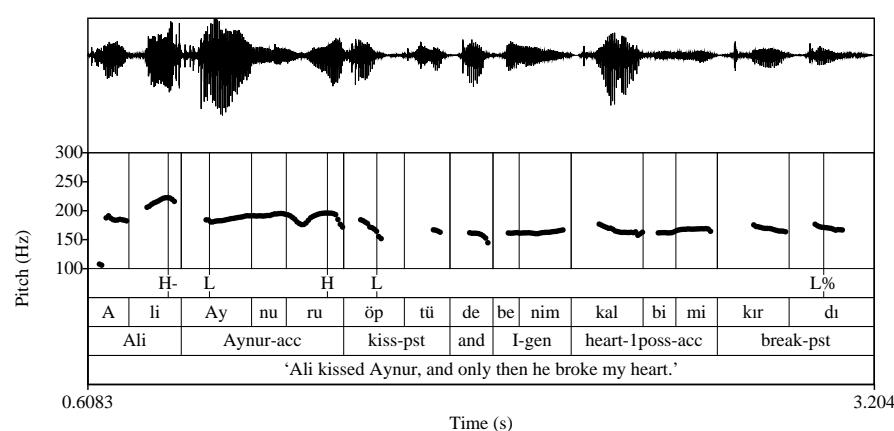


Figure 11. Coordinated clause as sub- ω : discourse embedding

I refer to the stacking of the two clauses as *discourse embedding* due to the close pragmatic relation between the meanings of these two independent clauses. The two clauses in the utterance in (96) express a cause-and-effect relation between the two propositions that are conveyed. Specifically, the first conjunct, “Ali kissed Aynur”, provides the reason why the speaker’s heart is broken, which is stated in the second conjunct. This interpretation is only possible in a context where both the speaker and the hearer share the knowledge of the fact that the speaker’s heart is broken. As such, from the perspective of information structure, the second conjunct is presupposed, whereas the first conjunct provides new information. A paraphrase of this utterance would be the following: “The reason why Ali broke my heart is the fact that he kissed Aynur”. As such, the truth of the proposition that is

conveyed in the second conjunct is contingent upon the truth of the first conjunct, which I descriptively interpret as showing that the second conjunct is pragmatically *bound* to the first conjunct.

As seen from the levelled and flat F0 pattern in (96), the second conjunct is not parsed as an independent *t*. Rather, the F0 of the second clause exhibits a continuation to the post-nuclear area of the first clause. When final syllable durations of the final syllables of the two conjuncts, both of which are open syllables, are compared, we see that the second conjunct exhibits a considerably longer duration than the first conjunct. The final syllable duration of the first conjunct (i.e. *.tü* in *öptü*) is 145ms. The final syllable duration of the second conjunct (i.e. *.di* in *kirdi*) is 280ms.⁵⁷

In this case, the second clause is not parsed as an independent prosodic unit (not even a φ), but it is parsed as a part of a φ (more specifically as part of the post-nuclear ω of the first clause). The fact that a clausal conjunct *can* occur in the post-nuclear area of another clause's *t* indicates that it is not required to be parsed as an independent *t*. Otherwise, similar to the effects of the parsing in (91), we expect the utterance in (96) to be illicit.

The data discussed in this section indicate that in Turkish: (i) Embedded clauses (regardless of whether they are finite (92) or not (90)) are not targeted by MATCHCLAUSE; as embedded clauses in Turkish are parsed either as φ s or parts of φ s. (ii) Certain cases of undominated (92), or coordinated (96) finite clauses are not targeted by MATCHCLAUSE. For the time being, I postpone any discussion of why and how these structures are not parsed as *ts*. Crucial to the issue of syntactic structure-to-*t* correspondence is the fact that not all clauses (on the working hypothesis that for the sake of MATCHCLAUSE, 'clause' equates with 'CP') match with *ts* in Turkish.

In the following section, I investigate the nature of *t*-to-syntactic structure correspondence and show that certain *ts* do not necessarily correspond to the exponents of clausal syntactic structures.

⁵⁷ One may wonder if a medial *t* boundary is potentially borne on the coordinator *de* and not on the final syllable of the first conjunct in Figure 11 in the main text. Even on this assumption, the durational value of the coordinator *de* (which is also an open syllable) confirms that there is not an *t* boundary aligned with it. The final syllable duration of the coordinator *de* in the particular case shown in Figure 11 in the main text is 140ms.

4.1.2 Not all *is* correspond to clauses

In this section, I discuss two cases of *i*-formation in which the segmental content of *is* does not correspond to clausal structures. Similar to those in the previous section, each of these structures is discussed in detail in Chapters 5 and 6. For the time being, I refer to the data from a descriptive point of view and do not provide any analysis as to how these structures are derived in syntax and mapped to the prosody.

The first example is shown in (97). This is a case of a non-clausal XP that is parsed as an *i*. The XP under discussion is an NP that functions as a vocative, which is interpolated to the middle field of the host.⁵⁸ The F0 plot is an illustration of the prosodic realisation of the vocative together with its host.

(97) *An i that corresponds to a non-clausal XP: vocative NPs*

Aynur: Evlilik hakkında ne düşünüyorsun?
 ‘What do you think about marriage?’

B: [CP Evlen-en-ler [NP Aynur] ömr-ü-nü yalan-lar-a_N
 [Evlilen-en-ler]_i [Aynur]_i [ömr-ü-nü yalan-lar-a_N
 marry-NOM-PL Aynur life-3POSS-ACC lie-PL-DAT
 ad-iyor.]
 ad-iyor.]_i
 devote-PROG
 ‘The married, **Aynur**, devote their lives to lies.’

⁵⁸ See Espinal (2013) and the references therein for the assumption that vocatives are non-clausal XPs (i.e. DPs or NPs).

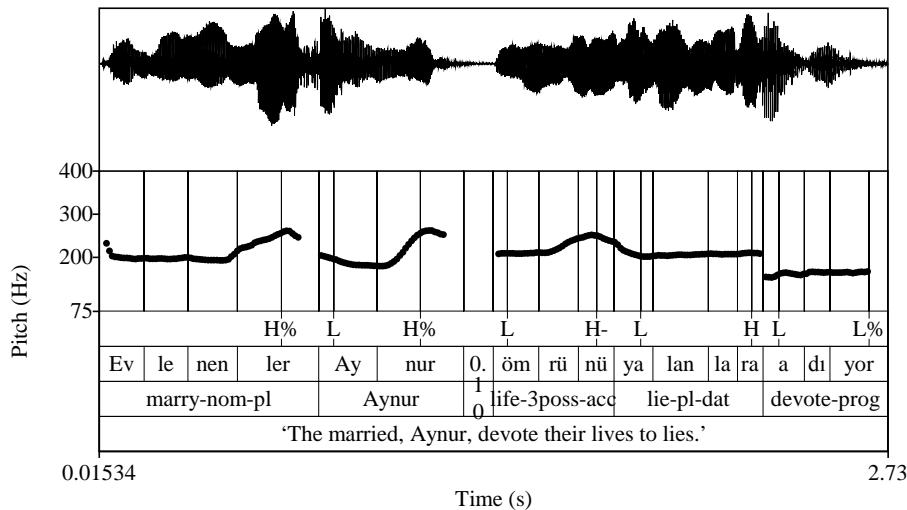


Figure 12. An *i* that corresponds to a non-clausal XP (vocative)

The F0 analysis indicates that the vocative NP is parsed as an *i*. The final syllable duration and the amount of final rise on the right edge of the vocative *Aynur* (290ms and 6st) and the pre-parenthetical host subject (280ms and 5st) indicate that the vocative is flanked with *is* that correspond to the constituents of its host on either side. The pitch level of the first and the second *i* is alike (211hz and 209hz, respectively). Additionally, the vocative is isolated from the following contour by an audible pause, which can be seen in the boundaries of the area on the F0 script. The duration of this pause is 100ms. The boundary of the constituent that is to the immediate left of the vocative bears a H%, which is also the boundary tone on the right edge of the vocative itself. The utterance in (97) bears three *is*. The first *i* corresponds to the host subject.⁵⁹ The second *i* corresponds to the host-medial vocative, and the last *i* corresponds to the rest of the host constituents. The fact that the host is divided into two *is* is not expected under normal circumstances. Here, the fact that it is divided into two *is* due to the interrupting *i* that belongs to the vocative.

⁵⁹ Notice that the *i*-level constituency in (97) involves another mismatch that is not predicted by MATCHCLAUSE. That is, the *i* that corresponds to the host subject is neither a clause, nor a parenthetical. In my discussion of such mismatches in §6.5, I suggest that they are a result of a prosodic well-formedness condition (i.e. NONREC). I refer the reader to §6.5 for a detailed presentation of this account.

When the post-nuclear distribution test is employed to see whether or not the post-nuclear F0 levelling seems to be available on the vocative, the resulting structure is not illicit. This is shown in the figure below:

(98) *The vocative in the post-nuclear area*

Aynur: Evlilik hakkında ne düşünüyorsun?
 ‘What do you think about marriage?’

B: [_{CP}Evlen-en-ler ömr-ü-nü yalan-lar-a_N ad-iyor
 marry-NOM-PL life-3POSS-ACC lie-PL-DAT devote-PROG

[_{NP}**Aynur.**]]
Aynur
 ‘The married devote their lives to lies, **Aynur**.’

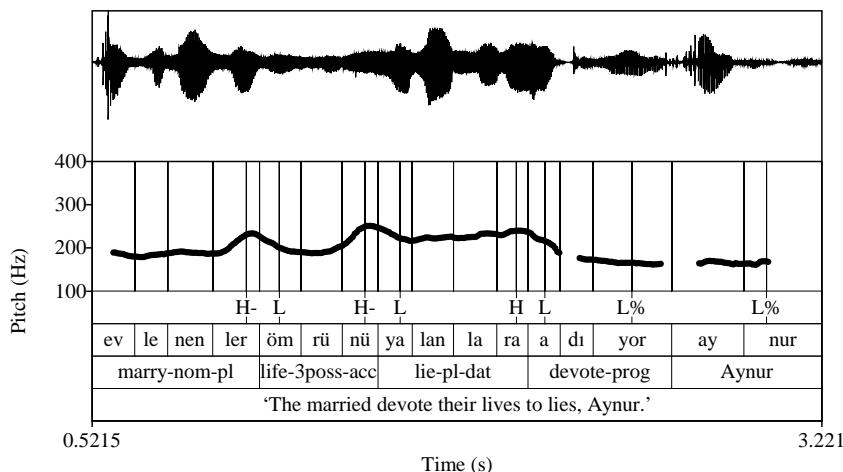


Figure 13. A host final vocative

The fact that the vocative is parsed as an *i* in the pre-nuclear area of its host, indicates that it must be parsed as an *i* everywhere else. However, as Figure 13 shows, the structure is licit when the vocative is pronounced as if it is a continuation to F0 levelling of the preceding post-nuclear area. Careful observation reveals that the vocative in (98) is parsed as an *i* of its own, although its F0 seems to be a continuation to the F0 of the preceding host

part. The fact that the vocative exhibits levelled F0 (similar to the post-nuclear area of its host) is the result of two succeeding L% tones. When one compares the durational values of the syllables in Figure 13, one sees that they both exhibit similar values to i-final syllables of Turkish. Particularly, the final syllable of the host (i.e. *.yor* in *adiyor*), and the final syllable of the vocative (i.e. *.nur* in *Aynur*) are closed syllables. This enables us to compare the durational values to understand whether they are similar to each other, and to the average i-final closed syllable duration in Turkish – which is 242ms according to the findings of Güneş & Çöltekin (2015). The final syllable duration of the host is 290ms. The final syllable duration of the vocative is 288ms. These values confirm that there is an i boundary on the final syllable of the host, and that the vocative is contained within a separate i. Based on this conclusion, the representation of the host-final vocative is the one below, in which the i of the vocative is separate from the i of the host i on the right edge.

- (99) [_{CP}Evlen-en-ler ömr-ü-nü yalan-lar-a_N ad-iyor
 [Evlen-en-ler ömr-ü-nü yalan-lar-a_N ad-iyor]_i
 marry-NOM-PL life-3POSS-ACC lie-PL-DAT devote-PROG
 [_{NP} **Aynur.**]]
 [**Aynur.**]_i
 Aynur
 ‘The married devote their lives to lies, **Aynur.**’

In support of this observation, no item that belongs to the host clause can occur to the right of the apparent post-nuclear vocative. In other words, when a vocative is pronounced similarly to the post-nucleus of its host, it must be linearly at the right periphery of the host.⁶⁰ The illicit order and prosodic constituency is given below:

⁶⁰ Recall from §4.1.2 that clauses that can occur in the post-nuclear area, such as the comment clause in (95) in the main text, can be followed by other items of that utterance.

- (100) [_{CP}Evlen-en-ler yalan-lar-a_N ad-iyor [_{NP}**Aynur**]
 * [Evlen-en-ler yalan-lar-a_N ad-iyor], [**Aynur**
 marry-NOM-PL lie-PL-DAT devote-PROG Aynur
 ömr-ü-nü.]
 ömr-ü-nü.],
 life-3POSS-ACC
 ‘The married, **Aynur**, devote their lives to lies.’

If the prosodic representation that I suggested in (99) is correct, then we can account for the illicit ordering in (100), by appealing to the fact that a host clause item (in this case the direct object *ömrüñü* ‘their lives’), which is supposed to map as part of the post-nuclear- ω of its *i*, is generated as part of a separate *i* (i.e. that of the vocative). As such, the data in (100) support the idea that vocatives in Turkish are parsed as *i* regardless of their linear distribution in the host, and regardless of the fact that they are not CPs.

The second example is given in (101). Similar to the case in (97), (101) illustrates a case of a non-clausal XP that is parsed as an *i*. The XP under discussion is an NP parenthetical (i.e. *aşik* ‘lover’) with an adjectival modifier (i.e. *romantik* ‘romantic’). This NP provides an exclamatory comment about the subject of the clause (i.e. *Ali*). Similar to the vocative, this parenthetical XP is also interpolated in the middle field of the host. The F0 plot shows the prosodic realisation of this exclamatory complex NP together with its host.

- (101) *An i that corresponds to non-clausal XPs: exclamatory NPs*

- [_{CP}Ali parti-de, [_{NP}**romantik aşık!**], Aylin'e evlenme
 [Ali parti-de], [**romantik aşık!**], [Aylin'e evlenme
 Ali party-LOC romantic lover Aylin-DAT marriage
 tekli et-miş.]
 tekli et-miş.],
 proposal make-EVD
 ‘Ali – **the romantic lover!** – has proposed to Aylin at the party.’

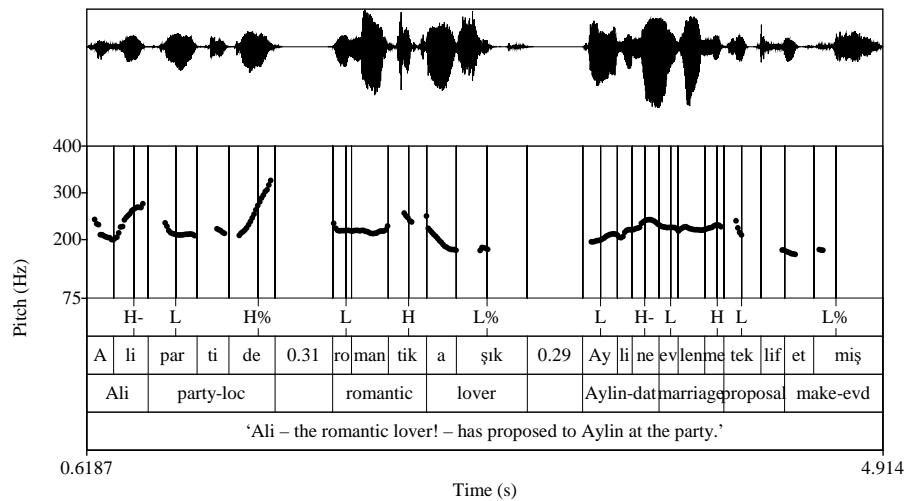


Figure 14. An *i* that corresponds to a non-clausal XP (exclamatory NP)

There are three *i*s in the utterance that is depicted in (101). The F0 that corresponds to the exponents of the exclamatory NP is clearly set off from the F0 contour of the surrounding host constituents. This isolation is marked with long pauses on both sides of the parenthetical (310ms on the left and 290ms on the right). Additionally, the host constituent that is to the immediate left of the parenthetical NP (i.e. *partide* ‘at the party’) bears an *i*-level right boundary tone: H%. The amount of F0 rise on the last syllable of *partide* is 9st. When compared to the F0 rise of the final syllable of the φ that precedes *partide* (i.e. to that of *Ali*), which is 4st, we see that the amount of final rise on the final syllable of *partide* is much larger than the φ-final rise of *Ali*. This indicates that the string that is on the left of the parenthetical (i.e. the host clause area that corresponds to *Ali partide*) is parsed as a separate *i* bearing a H% on its right edge. As seen by the tonal annotation, the parenthetical bears an *i*-level boundary tone. It bears a falling contour, which is demarcated by a L%. The second half of the host clause (the exponents that are linearly to the right of the parenthetical) is also equipped with a L% right edge tone, which marks the final *i* of the utterance in (101).

The test of post-nuclear distribution supports this observation, as the exclamatory parenthetical is banned from the post-nuclear area of its host. This is shown in (102):

(102) Exclamatory NP in post-nuclear position

- [_{CP}Ali parti-de Aylin'e evlenme teklif et-miş
 * [(Ali)_φ (parti-de)_φ (Aylin'e)_φ ((evlenme)_{ω-N} (teklif et-miş
 Ali party-LOC Aylin-DAT marriage proposal make-EVD
- [_{NP}**romantik aşık.**]]
romantik aşık.)_ω]_i
 romantic lover
 'Ali has proposed to Aylin at the party: **the romantic lover!**'

Recall that pronouncing the host-final vocative with a low levelled F0 in (97) did not yield in infelicitous reading. Unlike the host-final vocative, the exclamatory NP above is infelicitous if it is pronounced as a continuation to the lowered F0 of the preceding host domain. Vocatives are capable of being backgrounded, denoting given referents, which are always *addressees*. This property enables them to be recoverable from the situational context, and hence exhibit levelled F0 (as non-contrastive information can bear a low levelled F0 in Turkish). On the other hand, exclamatory NPs cannot bear low-levelled F0, since they express exclamation, which inherently bears new information.

At this point, one may perhaps relate the obligatory *i*-formation of such parenthetical NPs to the possibility that they are underlyingly clauses. It has been argued that certain appositive structures (those NPs that give additional information about their anchors) are underlyingly clausal structures (cf. Heringa 2011, Döring 2014, and the references in there). Particularly, attributive appositives, such as the one in (103), are underlyingly copular clauses, in which their subjects and the copulas are dropped (see Griffiths 2015b and Griffiths & Güneş 2014 for Turkish).

- (103) Aynur, **yakın arkadaş-ım**, ev-e gel-ecek.
 Aynur close friend-1POSS home-DAT come-FUT
 'Aynur, **my close friend**, will come home.'

The attributive appositive NP *yakın arkadaşım* 'my close friend' in (103) modified the subject of its host, i.e. *Aynur*. A set of properties of the

appositive NPs such as the one in (103) indicate that they are, in fact, a part of a clausal structure. For instance, attributive appositives are always parsed as *is* in Turkish (Griffiths & Güneş 2014 and Güneş & Çöltekin 2015). Moreover, they may exhibit a pronounced copula together with the parenthetical coordinator *ki* (104).⁶¹

- (104) Aynur, **ki yakın arkadaş-ı**m-dır, ev-e gel-ecek.
 Aynur PAR close friend-1POSS-COP home-DAT come-FUT
 ‘Aynur, **she is my close friend**, will come home.’

Additionally, attributive appositives may be targeted by speaker-oriented adverbs such as ‘probably’ or ‘unfortunately’ (105).

- (105) Aynur, **maalesef yakın arkadaş-ı**m, ev-e gel-ecek.
 Aynur unfortunately close friend-1POSS home-DAT come-FUT
 ‘Aynur, **unfortunately my close friend**, will come home.’

Going back to the case of the exclamatory NP in (101), we see that attributive appositives and exclamatory NPs resemble each other on the surface. However, closer observation reveals that apart from the fact that they are obligatorily parsed as *is*, there is no resemblance between attributive appositive clauses and exclamatory NPs.

First of all, unlike the attributive appositive, the exclamatory NP can display neither the clausal parenthetical marker *ki* nor a copula, without losing its original meaning of exclamation. The intended but unacceptable interpretation and the acceptable interpretation can be compared in the English translations in (106).

⁶¹ In the literature prior to Griffiths & Güneş (2014), the *ki*-clauses (i.e. the attributive appositive clauses that are discussed in (103-105) in the main text) were regarded as the finite version of non-restrictive relative clauses (Vaughan 1709, Underhill 1976, Erguvanlı 1981, Lehmann 1984, Bainbridge 1987, Çağrı 2005, and Kan 2009, among many others). Here, I follow Griffiths & Güneş (2014) and assume that the above mentioned *ki*-clauses exhibit a parenthetical syntax, and following Griffiths (2015b), I assume that *ki*-clauses adjoin to the main spine of their host via parenthetical adjunction. For a sample syntactic representation of a *ki*-clause, I refer the reader to §6.5. For the prosodic analysis of these structures, I refer the reader to §5.4.

- (106) Ali parti-de, **ki romantik aşık-tır**, Aylin'e
Ali party-LOC PAR romantic lover-COP Aylin-DAT
çicek al-mış.
flowerbuy-EVD
'Ali – **he is a romantic lover.** – bought flowers for Aylin at the party.'

Intended interpretation of (106):

'Ali – **the romantic lover!** – bought flowers for Aylin at the party.'

Secondly, unlike attributive appositives, exclamatory NPs cannot host speaker-oriented adverbs. This is shown in (107):

- (107) *Ali, **muhtemelen romantik aşık**, Aylin'e çicek al-mış.
Ali probably romantic lover-COP Aylin-DAT flower buy-EVD
'Ali – probably the romantic lover! – bought flowers for Aylin'

The data discussed in this section indicate that in Turkish, certain syntactic structures are parsed as *is*, and that these structures do not necessarily correspond to the exponents of clausal syntactic structures. We have seen that vocative NPs and exclamatory NPs are parsed as *is* in Turkish, regardless of the fact that they are not CPs. For the time being, I will ignore how these structures are mapped to the prosodic parser. Crucial to the issue of syntactic *i*-to-structure correspondence is the fact that not all *is* correspond to clauses in Turkish and vice versa.

4.2 *Chapter summary*

This chapter constituted a discussion on some of the issues that arise if one follows the assumption that “clause”, as an alleged syntactic primitive, is the trigger of *i*-formation. With empirical evidence from Turkish, §4.1.1 showed that not all clauses correspond to *is* (e.g. embedded clauses, and comment clauses), and §4.1.2 showed that not all *is* correspond to clauses. Based on these observations, I conclude that clausehood (with its vague description) cannot be directly responsible for *i*-formation, and MATCHCLAUSE is not

part of the algorithm of prosodic constituency formation in Turkish. This conclusion has already been hinted at by numerous studies on *i*-formation (Downing 1970; Nespor & Vogel 1986; Selkirk 1986, 2005, 2011; Dehé 2007, 2014; Truckenbrodt 2005, 2014; and others). In terms of syntax-prosody mapping and prosodic constituent formation at the level of *i*, the answer we can infer from this chapter is the fact that CP or the clause (with its broad description) is not the real source of *i*-formation. The question that we are left with is what the syntactic source of *i*-formation is.

What the examples of the sub-clausal correspondents of *is* discussed in this chapter have in common is that they function as parentheticals. This is arguably not coincidental. In the history of sentential phonology, the tendency to articulate parenthetical content in isolation from the rest of the host content has been well observed. The general assumption is that parentheticals are prosodically separated from the intonational contour of the host that they interpolate into (Nespor & Vogel 1986). The aim of the following section is to investigate the validity of this assumption. Looking into parenthetical structures to understand the mechanism behind the *i*-formation algorithm seems to be crucial. However, similar to the case of ‘the clause’, ‘the parenthetical’ as a syntactic notion is hard to define in formal syntactic terms. Similarly to their syntactic category description, we will see that the prosodic properties of parentheticals are equally elusive for the purpose of making generalisations in terms of syntax-prosody mapping.

Parentheticals and *t*

Parenthetical insertions do not belong to the syntactic core of a clause, yet they are still perceived as a part of that clause. Even though they make no contribution to the structure of their host, most parentheticals contribute to its meaning by providing additional information about it (Burton-Roberts 2006, Potts 2005). (108) lists some of the structures that are regarded as parentheticals, where the parentheticals are boldfaced (cf. De Vries 2007, Kaltenböck 2007, Dehé & Kavalova 2007).

(108) *Some parenthetical constructions*

a. *Non-restrictive relative clauses*

John, **who is my friend**, has brought a bottle of Scotch.

b. *Appositives (attributive)*

John, **a very clever person**, has brought a bottle of Scotch.

c. *Appositives (identificational)*

Big smoke, **i.e. London**, has a new mayor now.

d. *Comment clauses*

John, **I think**, has brought a bottle of Scotch.

e. *Interruptions (pragmatically isolated)*

The next issue is – **Please, take a seat!** – global warming.

f. Vocatives

This book, **my dear boy**, is about world famous dictators.

g. Epistemic adverbials

John will, **probably**, bring a bottle of Scotch.

h. Peripheral adverbial clauses

While I think that you have made good progress, I still think that you have a lot to do to finish this report.

i. and-parentheticals

When I get that card, **and I hope to receive it next week**, I will have a free pass to the entire building.

Among the parentheticals listed above, pragmatically isolated interruptions and vocatives are exceptional in the sense that they do not provide information about the clause into which they interpolate (the host). Therefore, such parentheticals are not only isolated from the semantic composition of their host, but they are also pragmatically isolated from the discourse content of their host. While interruptions are usually root clauses, vocatives are subclausal syntactic structures (NPs or DPs) (Hill 2013 and references therein). Appositives may be clausal or sub-clausal depending on whether or not they are attributive or identificational, respectively (Griffiths 2015b; Griffiths & Güneş 2014). Unlike central adverbials, epistemic adverbials and peripheral adverbial clauses exhibit parenthetical behaviour (Espinal 1991). For instance, while central adverbials may be embedded under certain verbs such as ‘believe’, peripheral adverbials cannot (Potts 2005). Comment clauses are considered as parentheticals because of the fact that they exhibit syntactic isolation (De Vries 2012) and speaker-oriented non-at-issue meaning (Griffiths 2015a). Like comment clauses, *and*-parentheticals are also syntactically isolated interpolations with non-at-issue meaning.

In relation to their marked syntactic and semantic behaviour, parenthetical insertions are often predicted to be prosodically isolated,

yielding interruptions in the intonation pattern of their host (Downing 1970, Nespor & Vogel 1986, Bolinger 1989, Truckenbrodt 1995, Selkirk 1981; 2005; 2009; 2011, Potts 2003; 2005, D’Avis 2005, Burton-Roberts 2006, Astruc-Aguilera & Nolan 2007, among others). These interruptions correspond to intonational phrases (*is*) in the prosodic structure (cf. Dehé 2014 and references therein). However, some studies such as Wichmann (2001), Peters (2006), Kaltenböck (2009), and also Dehé (2007, 2014), show that not all instances of parentheticals result in *i*-formation (in more theory neutral terms: *prosodic isolation*). Depending on various factors, such as the length of the inserted item (e.g. Dehé 2007, 2009; and Kaltenböck 2009) or the function of the parenthetical (Peters 2006, Dehé 2009, Dehé & Wichmann 2010), some parentheticals may be parsed as prosodically integrated, corresponding to prosodic constituents (or parts thereof) that are lower than an *i* – e.g. to a prosodic (sub)word (ω), or a phonological phrase (φ) – in the prosodic hierarchy given in §1.2.4, in this book.

The goal of this chapter is to establish a better understanding of the factors that lead to the presence (or absence) of *i*-formation, by investigating the prosody of parentheticals. To achieve this, I discuss the results of two studies on the prosodic behaviour of parentheticals. As part of the first study, which is reported in Güneş (2014) and in §5.3, an analysis is presented that concerns the prosodic behaviour of two parentheticals of epistemic stance in Turkish (*bence* ‘for me / I think’ and *yanılmiyorsam* ‘if I am not wrong’). A production experiment is conducted to investigate how these parentheticals are prosodically realised with respect to their different positions of interpolation. The results of this experiment are compared to the results of the second study, which is reported in Güneş & Çöltekin (2015) and in §5.4. In the second study, different kinds of sentence medial parentheticals are examined. A comparison of prosodically integrated and isolated clausal and sub-clausal parentheticals is presented. This comparison is discussed in §5.5. The discussion is accompanied by a review of the parenthetical-oriented rules of faithfulness of Match theory (Selkirk 2005, 2011) that are presented in §5.2; particularly MATCHCOMMAP and MATCHPARP (Güneş 2014 adapting Dehé’s (2014) AlignParP). Additionally, the extent to which a parenthetical’s pragmatic properties affect its prosodic properties is also discussed. §5.1 provides an introduction to the syntax of parentheticals and the prosodic accounts that incorporate parenthetical syntax as part of the

mapping algorithm. Based on the empirical observations presented in this chapter, I conclude that parenthetical syntax cannot directly be the trigger for *i*-formation in Turkish. In Chapter 6, I show that when one divides the parentheticals (and other non-parenthetical configurations) into those that bear illocutionary force and those that do not, one can predict the *i*-hood and φ -hood of these configurations straightforwardly.

5.1 *Integrated syntax account for parentheticals*

Dehé & Kavalova (2007) divide the syntactic approaches that attempt to account for the linear distribution of parentheticals into two groups, the *orphan* approach and the *syntactic integration* approach. The orphan approach assumes that parentheticals are derived in complete isolation to their host (Haegeman 1991, Espinal 1991, Peterson 1999), while the syntactic integration approach assumes that a syntactic connection of some kind persists between parentheticals and their hosts (Ross 1973, Emonds 1973, Corver & Thiersch 2002, D’Avis 2005, Potts 2005, De Vries 2007, Griffiths & Güneş 2014).

In terms of mapping to prosody, orphan approaches are implausible because the output of the syntax is the input to prosody (Dehé 2009, 2014). “If parenthetical and host are separate syntactic structures and linearisation is a matter of one of the interface modules, particularly if this is the interpretational module, prosodic theory does not have access to both the host and the parenthetical in the same mapping process” (Dehé 2009:576). Because the integration analysis provides an explanation for how parentheticals and their hosts are linearised, I follow Dehé (2009, 2014), and embrace an approach that favours the syntactic integration of parentheticals.⁶²

As for syntactic integration, due to their optionality and linear mobility, parentheticals are often analysed as adjuncts to the host syntactic structure. However, due to their semantic isolation (Potts 2005), and syntactic ‘invisibility’ (De Vries 2007), the concatenation of parentheticals must be ‘special’, i.e. dissimilar to regular ‘central’ adjunction. Potts (2005) accounts for their isolation with a syntactic feature called *COMMA*, which renders the

⁶² Also see Griffiths (2015b, §6.2) for syntactic arguments against the orphan approaches.

constituent that has this feature as isolated from the compositional semantics of its host. De Vries (2007) accounts for their isolation by appealing to a special merger operation called *par-Merge*. According to this account, the inputs of *par-Merge* are not syntactically dominated by the output (or any node dominating the output) of *par-Merge*.

In the following two sections, I review these two approaches. Although auxiliary to the main objectives of this book, I find it necessary to have a clear description of the syntactic nature of parenthetical interpolations. For a number of reasons that are discussed in §5.1.1 and §5.1.2, I conclude that *par-Merge* account is more feasible than the COMMA account.

5.1.1 Potts' syntactic COMMA feature

Potts (2005) argues that parentheticals are different from regular adjuncts because they bear a syntactic feature called *COMMA* (Potts 2005:98). *COMMA* “...is a signal to isolate the subtree it dominates intonationally, accounting for the ‘commas’ in print and the intonational boundary marks in speech” (Potts 2005:98). This feature functions as a semantic type-shifter and turns at-issue content into conventionally implied content. Here, the term ‘at-issue’ refers to the primary content of the discourse (i.e. the content of the host, the main proposition); and ‘conventional implicature’ (hereafter CI, which is a term rooted in Grice 1975) refers to an independent proposition that is secondary to the content of the host. CIs in this sense do not enter into a relation with the host in terms of the compositional semantics. Since CIs are of a different semantic type from their host, they are interpreted as an independent object of the discourse. In this way Potts accounts for the fact that unlike regular adjuncts, parenthetical adjuncts (or ‘supplements’ in his terms) show semantic independence (e.g. they cannot be semantically embedded under certain operators and they are strictly speaker-oriented). Prosodically, he states that “comma intonation is a central part of what makes supplements special” (Potts 2005:151). Accordingly, adverbs such as *luckily* in (109) are parenthetical adjuncts with a *COMMA* feature if they are prosodically set-off from their host (109a), and are regular adjuncts without a *COMMA* feature if they are prosodically integrated into the prosodic domain of their host (109b).

- (109) a. Willie, **luckily**, won the pool tournament.
 b. Willie luckily won the pool tournament.

(Potts 2005:139)

The only formal difference between (109a) and (109b) is prosodic: *luckily* is prosodically isolated in (109a) and integrated in (109b). For Potts, *luckily* is a speaker-oriented adverb (i.e. parenthetical) in (109a), and a verb-phrase modifier (central adverb) in (109b). On the parenthetical reading, Willie might have won only as a result of his skills. In the supposed central adverbial reading, Willie's victory was fortuitous.

Based upon the assumption that (109a) and (109b) exhibit dissimilar readings, Potts concludes that items with *comma intonation* (those that have the feature COMMA) display independent illocutionary force.

Crucially, contrary to what is reported in Potts (2005), James Griffiths and Craig Sailor (p.c.) stated that the sentences in (109) have the same interpretation, i.e. the parenthetical interpretation, in their respective dialects of English. Mark de Vries and Jan-Wouter Zwart (p.c.) confirmed that this is also the case in the Dutch counterparts of the sentences in (109). Therefore, I consider the variation in the prosodic category type of the prosodic constituents that contain speaker-oriented adverbs, such as the ones in (109), as instances of stylistic shift, particularly stylistic promotion (Selkirk 2005). In the case of (109), I treat both occurrences of *luckily* in (109) as instances of speaker oriented parenthetical adjuncts, and propose that *luckily* in (109a) is promoted from a φ to an i (see also footnote 54 in §4.1 in this book).⁶³

Another crucial point is that for Potts, illocutionary force is not conveyed by a syntactic projection such as Rizzi's (1997) 'ForceP'. If this were the case, all parentheticals would be dominated by a ForceP. For Potts, this is infeasible. In fact, he clearly states that parentheticals display the same syntax as regular adjuncts: the differences between them are due to their dissimilar semantic types (Potts 2005:195). The "independence" of parentheticals is solely compositional semantic.

Potts argues that parentheticals always display rightward adjunction, and that languages that do not allow rightward adjunction disallow COMMA bearing items (Potts 2005:106). He provides an example from Turkish to

⁶³ See §5.2.1 in this book for additional reasons to abandon the idea that parentheticalhood and comma intonation are directly correlated.

make this point, and argues that Turkish does not allow nominal appositives (a kind of supplement) because it does not allow rightward adjunction. However, Turkish *does* allow nominal appositives as supplements. This is illustrated with an example in (110), in which the supplementary material is boldfaced:

- (110) Can, **bir Mahler hayran-ı**, kalsık müziğ-i sev-er.
 Can a Mahler fan-POSS classical music-ACC like-AOR
 ‘Can, a **Mahler fan**, likes classical music.’

We can easily show that *bir Mahler hayrani* in (110) is a Pottsonian parenthetical with a test that is employed by Potts himself. The contrast in (112) shows that the appositives in (111) cannot be semantically interpolated as embedded under a ‘belief’ context as expected from CIs.

- (111) Ali Can-in, **bir Mahler hayran-ı**, kalsık müzik
 Ali Can-GEN a Mahler fan-POSS classical music
 sev-me-diğ-i-ne inan-iyor.
 like-NEG-NOM-POSS-DAT believe-PROG
 ‘Ali believes that Can, a **Mahler fan**, does not like classical music.’

(112) *Interpretation of (111):*

- a. Can is a Mahler fan, and Ali believes that Can does not like classical music.
- b. # Ali believes that Can is a Mahler fan, and that he does not like classical music.

Potts also extends this prohibition to Japanese (Potts 2005:107). However, Kawahara (2012) analyses the prosodic properties of appositives in Japanese, and observes that Japanese appositives are subject to prosodic isolation, and this, he claims, is due to the COMMA feature on the appositives in Japanese.

Additionally, there are parentheticals that appear not to exhibit illocutionary force (Griffiths & Güneş 2014, Griffiths & De Vries 2014, and Chapter 6 of this book). Such parentheticals (e.g. identificational appositives, comment clauses, and others) display the syntax of subclausal items and are

not utilised as speech acts. If ‘parenthetical status’ is always equated with COMMA (which is assumed to always create speech acts), then either these constructions cannot be ‘parentheticals’ in the strict sense or one must concede that Potts’ COMMA approach cannot extend to all of those constructions that have been traditionally described as ‘parentheticals’.

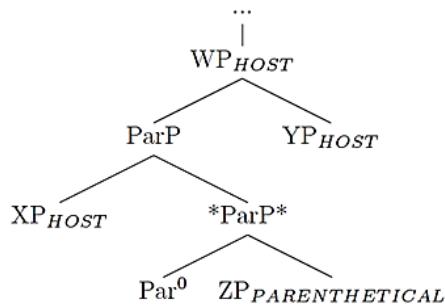
The assumption that COMMA has strict correlations with prosodic isolation yields incorrect predictions simply because it falls short in explaining the cases of prosodic integration of parentheticals in general.⁶⁴

5.1.2 *De Vries’ ParP*

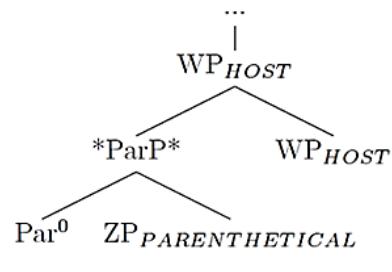
Like Potts, De Vries (2007, 2012) argues that parentheticals are syntactically connected to their host. To account for the well-known ‘independency’ properties of parentheticals, De Vries introduces a new type of syntactic merger, namely *par-Merge*. *Par-Merge* is different from regular merger operations in that the items that are *par-Merged* are not dominated by their output, i.e. *ParP(hrse)*. Thus any node that dominates *ParP* – which regularly merges with the host clause – does not dominate the nodes that are *par-Merged* either. This results in an absence of syntactic relations such as c-command. *Par-Merge* is restricted in that one of the inputs for *par-Merge* must be the functional head *Par*. *Par-Merge* instantiates two ways of merge, (i) coordination (113a), and (ii) adjunction (113b) (see Kluck 2011 for a discussion). In cases of parenthetical coordination, *Par⁰* comes with a specifier, whereas in cases of parenthetical adjunction, *Par⁰* comes without a specifier. The syntax of *ParP* is illustrated below. *ParP* in a syntactic structure tree is marked with ‘*’, which mark the maximal projections that are opaque (i.e. **ParP**).

⁶⁴ I refer the reader to Griffiths (2015b, §6.1) for additional arguments against Potts’ COMMA account.

- (113) a.
- parenthetical coordination*



- b.
- parenthetical adjunction*



With the assumption that a parenthetical insertion is always the sister of the syntactically ‘undominated’ Par^0 , De Vries aims to represent the semantic independence and syntactic invisibility of all parentheticals with the same syntax. As for the semantic relation of the parentheticals and their hosts, De Vries states that Par^0 functions as a discourse connector and the sister of Par^0 (i.e. the parenthetical) specifies / modifies the content of the constituents of the host or the host as a whole.

The success of the *par*-Merge approach rests in part on empirical evidence for the functional head *Par*. De Vries (2009) argues that certain parentheticals (such as appositives with an anchor) and their host clauses (or constituents thereof) stand in a *specification coordination* relation to one another. The fact that certain parentheticals are optionally introduced by linkers that are homonymous with regular Boolean coordinators provides empirical support for the existence of *Par* (Heringa 2011, Griffiths & Güneş 2014). Some of these parentheticals with overt coordinators are illustrated with the examples in (114).

- (114) a. The BBC, (**or**) **the Beeb**, starting broadcasting in 1922.
 b. Paul is interested in all music, (**but**) **especially jazz**.
 c. Henry, (**and**) **he is the poorest of us all**, bought the first round
 of drinks.
 d. Ben was, (**or**) **so Pete tells me**, late for his own wedding.

Unlike Potts' 'COMMA feature' account, the ParP approach does not necessarily assume prosodic isolation of parentheticals; however, it does make some predictions regarding their prosodic properties. Particularly, De Vries notes that ParP "in syntax *can* be used by the phonological component to start a new intonational phrase..." (De Vries 2012:14, my emphasis).

Additionally, unlike Potts' COMMA feature account, the ParP account is not endowed with any cross-linguistic limitations. For instance, appositives in Turkish, such as the attributive appositive in (110), were treated as anomalous in Potts' account. Turkish exhibits both attributive appositives and identificational appositives. The machinery that is provided by the ParP approach enables us to represent the distinction between the syntax of these two types of appositives. Particularly, identificational appositives underlyingly exhibit the syntax of parenthetical coordination, in which the *anchor* of the appositive (i.e. the host sub-constituent that the appositive specifies) is coordinated with the identificational appositive via the parenthetical coordinator Par^0 . Attributive appositives in Turkish exemplify an instance of parenthetical adjunction, in which the ParP that contains the appositive adjoins to the main spine of the host (cf. Griffiths 2015b).

To summarise, there are two main approaches to the syntax of parentheticals that are compatible with the syntax-prosody mapping in the current architecture of the grammar. First, there is Potts' 'COMMA feature' account, which triggers the semantic isolation of parentheticals and assumes regular syntactic adjunction. Second, there is De Vries' ParP approach, whose *par*-Merger operation yields syntactically *undominated* structures (hence starting a new c-command domain). Similarly to Dehé (2009, 2014), I adopt the ParP approach as a potential syntactic source of mapping parentheticals to prosody.

5.2 Prosodic accounts for parenthetical syntax

Traditionally, parentheticals are described as being prosodically ‘set-off’ from the surrounding parts of their host (Nespor & Vogel 1986:188–189). Accounts of prosodic isolation are based on the assumption that parentheticals are, in one way or another, interpreted as isolated from their host; hence they are prosodically isolated at the level of ι (Pierrehumbert 1980, Nespor & Vogel 1986:188, Selkirk 1986, Bolinger 1989:185, Truckenbrodt 1999, Gussenhoven 2004, Döring 2007, Kawahara 2012, *i.a.*).

However, some studies suggest that parenthetical insertions do not necessarily exhibit prosodic isolation. The *prosodic integration* of parentheticals demonstrates that non-syntactic rules may override the one-to-one mapping of syntax to prosody.⁶⁵

In theory neutral terms, parentheticals are predicted to be prosodically isolated because they are syntactically and semantically marked (Selkirk 1984, 2005; Nespor & Vogel 1986:188, 2007; Pierrehumbert 1980, 1987; Astruc-Aguilera & Nolan 2007; Kawahara 2012, among many others). In terms of prosodic structure theory, parentheticals are prosodically isolated if they are parsed as *is* (Selkirk 2011, Dehé 2014). While any ι -level cue on a parenthetical is regarded as an indicator of prosodic isolation, any non- ι -level cue (e.g. any φ -level cue or cues of lower categories in the hierarchy) is regarded as an indicator of prosodic integration.

The following two subsections present two approaches that attempt to account for the generalised prosodic behaviour of parenthetical structures. Both of these approaches assume an integrated syntactic account of parentheticals, in which the syntactic derivation of the parenthetical is, in one way or another, marked. The first account is Selkirk’s (2005, 2009, 2011), which assumes that those parenthetical structures that exhibit Potts’ COMMA feature match with *is* (see §5.2.1). The second account revolves around the idea that syntactic structures that undergo *par-Merge* are parsed as *is* (Dehé 2009) (see §5.2.2).

⁶⁵ See Selkirk (2009, 2011) for cases where faithfulness constraints are overridden by prosodic markedness constraints. See also Kawahara (2012).

5.2.1 Selkirk's CommaP and MATCHCOMMA

A number of studies within the Prosodic Structure Theory appeal to the presence of the feature COMMA (Potts 2005) in a parenthetical syntactic structure as the trigger for *i*-formation of that structure (Selkirk 2005, 2009, 2011; Kratzer & Selkirk 2007, Kawahara 2012, Dehé 2009). Following Potts (2003), Selkirk (2005, 2009, 2011) states that supplementary items with a COMMA feature correspond to *is* in the prosodic structure. Any item that has the feature COMMA is characterised in syntax as a 'Comma Phrase'. 'Comma Phrase', in her terms, refers to a natural class that contains not only parentheticals, but also root clauses. The reasoning behind providing a single syntactic/semantic characterisation for both parentheticals and root clauses is based on the idea that "root sentences and supplements form a natural class in that they are both COMMA Phrases, and so are performed as distinct speech acts, and are set off by Intonational Phrase edges from what surrounds them" (Selkirk 2005:6). Generalizing the essence of syntactic isolation of parentheticals over all 'undominated' clauses, she claims that root clauses exhibit COMMA as well. Both root clauses and parentheticals are parsed as *is* due to MATCHCOMMAP, in which a CommaP corresponds to an *i* in the prosodic structure.⁶⁶ The scope and nature of MATCHCOMMAP is given in (115):

(115) MATCHCOMMA

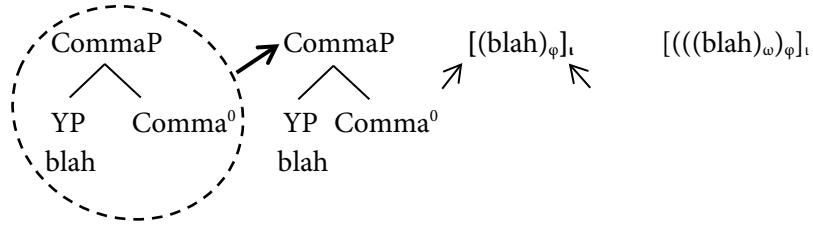
A CommaP in syntactic constituent structure must be matched by a constituent of a corresponding prosodic type, call it *i*, in the phonological representation.

Given the definition in (115), and given Selkirk's assumption that root clauses and parenthetical structures are headed by Comma⁰, MATCHCOMMAP predicts that root clauses and parentheticals correspond to *is* in the prosodic representation. If this is true, the route to generating *is* in the algorithm proposed in this book is shown below, where the CommaP in

⁶⁶ The mapping applies via the faithfulness constraint *Align R/L (CommaP, i)*. Since 'edge alignment' and MATCH both target the edges of a prosodic constituent with the boundary phenomena reserved for each prosodic category type, I simply use the updated version of the theory, i.e. MATCH (but see Dehé 2014 for the context of parentheticals, where MATCH is more often violated than Align R/L).

the source syntax survives pruning and is represented in the *maptree* as a node that corresponds to ι in the prosody.

- (116) a. *Source syntax* b. *maptree* c. MATCHCOMMAP d. PARSE to ω



Although Selkirk is correct that most parentheticals (i.e. ‘CI’ propositions) and ‘root’ clauses (with ‘at-issue’ propositions) exhibit semantic isolation insofar as both have separate effects on the discourse, her assumption that all CIs and root clauses bear a COMMA feature is conceptually infeasible.

According to Potts’ (2005:68) *parsetree interpretation* function, CIs are parasitic on at-issue propositions. This is because propositions that are composed of elements that bear COMMA can only be assigned a meaning if they are interpreted together with propositions that are composed of elements that do *not* bear COMMA (i.e. at-issue propositions). This is made clear by Potts’ (2005:68) interpretation function, which assigns meaning to types of propositions whose members *must* be a mix of both at-issue and CI propositions. Therefore, any theory (such as Selkirk’s) that adopts Potts’ model cannot viably propose that regular root clauses bear a COMMA feature. If this were true, root clauses would never be semantically interpretable, regardless of whether or not they contained parentheticals.

Because root clauses with at-issue meaning are inherently incapable of bearing COMMA, root sentences and parentheticals cannot form a natural class whose members display the feature COMMA (i.e. CommaP(hrases)), contrary to Selkirk’s (2005:6, 2009:14, 2011:452) claims.

In sum, the ι -formation observed with parentheticals cannot be unified under the same prosodic condition that applies to root clauses. If parentheticals have a prosodic correlate, then the rule for the ι -formation of parentheticals must be independent of the rule for the ι -formation of undominated root clauses. For root clauses, I will hereafter use a modified version of Selkirk’s (2009, 2011) MATCHCLAUSE, in which clauses with

ForceP (Rizzi 1997) – more specifically Force_{ILL}P – are mapped as prosodically isolated (see Chapter 6). In the remainder of this chapter, for parentheticals, I follow a version of Dehé (2009), where *par*-Merged constituents map as *is*. Below, I describe Dehé’s rule of mapping ParP-to-*i*, which I modify as MATCHPARP in Match-Theoretic terms.

5.2.2 MATCHPARP

Dehé (2009) approaches the prosodic properties of parentheticals in terms of Prosodic Structure Theory, and, as far as I know, is the first to apply Selkirk’s idea of Comma Phrase mapping to naturally occurring conversations in English. Investigating non-restrictive relative clauses, clausal parentheticals, and comment clauses, Dehé (2009) evaluates the truth of the assumption that parentheticals are parsed as prosodically isolated. She concludes that not all parentheticals form *is*. She states that the presumed general mapping algorithm of ‘map-parenthetical-to-*i*’ can be overridden by non-syntactic constraints such as prosodic weight or length. Longer parentheticals are isolated, whereas shorter parentheticals may be integrated. Regardless of whether long or short, comment clauses tend to be integrated. Based upon these observations, she adopts De Vries’ ParP approach to the syntax of parentheticals, and Selkirk’s Comma Phrase mapping approach to outline an indirect access account of the prosody of parentheticals.

Noting that the primary content of the CommaP and ParP is more or less the same (i.e. the parenthetical), and with Selkirk’s assumption that CommaP is mapped as an *i* in the prosody, Dehé concludes that the content of ParP must also correspond to an *i*. Therefore, she suggests a novel interpretation of the left and right edge alignment constraints of Selkirk (2005), which is reserved for parentheticals: Align R (ParP, *i*) and Align L (ParP, *i*). These conditions on faithfulness can be added to the current version of Match theory, as MATCH (ParP, *i*).⁶⁷

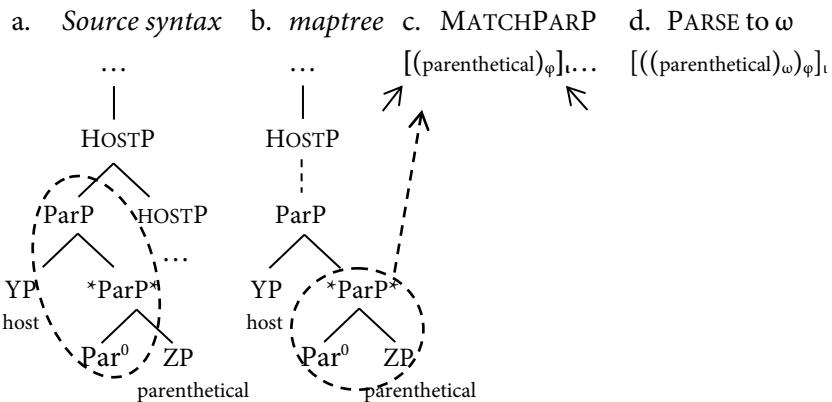
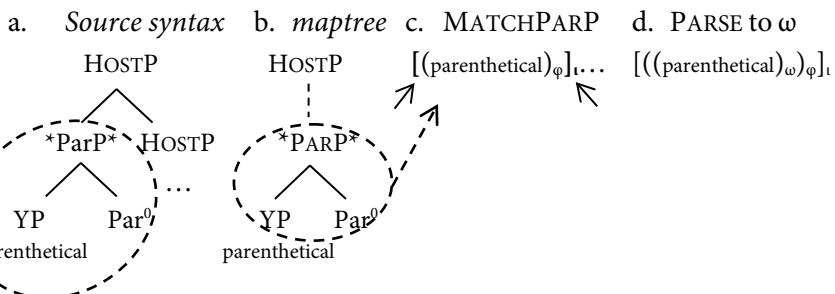
⁶⁷ See Dehé (2014) for a critical comparison of Match and Alignment constraints in mapping ParP, which concludes that Alignment constraints seem to be more efficient in most of the cases of English parentheticals.

- (117) MATCHPARP (modified from Dehé's 2009 *Align ParP*):

The ParP in syntactic constituent structure must be matched by a constituent of a corresponding prosodic type, call it *t*, in the phonological representation.

In addition to the reasons listed against MATCHCOMMA, MATCHPARP seems to be better suited to cross-linguistic data, as it can account for the cases where parentheticals exhibit marked differences from non-parenthetical clauses and phrases (such as the differences between restrictive relative clauses and non-restrictive relative clauses in English). If MATCHPARP is adopted, then any structure, regardless of whether or not it exhibits clausal syntax, is predicted to match with *t* as long as it is dominated by ParP.

Given the definition in (117), MATCHPARP predicts that parentheticals correspond to *t*s in the prosodic representation. Unlike MATCHCOMMA, MATCHPARP does not make any predictions about the prosodic realisation of root clauses (or CPs in general). If MATCHPARP is operative, then the route to generating *t*s for parentheticals in the algorithm proposed in this book comes in two forms: (i) mapping the parenthetical constituent of the coordinator Par⁰, and (ii) mapping the parenthetical constituent of an adjunct ParP. In both of these cases, based on the condition given in (117), the ParP in the source syntax avoids pruning regardless of whether or not its head is phonologically realised, and is represented in the *maptree* as a node that corresponds to *t* in the prosodic representation. This is because the relevant Match rule specifically refers to ParP (i.e. MATCHPARP). In such a case, ParP, as a narrow syntactic projection, becomes *relevant* to the operations at PF. The steps of mapping from ParP is given in (118), in which (i) illustrates a hypothetical case of mapping from the parenthetical coordination, and (ii) from the parenthetical adjunction.

(118) *Mapping via MATCHPARP*(i) **Parenthetical coordination**(ii) **Parenthetical adjunction**

Notice that the parenthetical coordination version of ParP in the source syntax dominates a constituent of the host (i.e. YP) in its specifier position in (118i). The host constituent that is parenthetically coordinated to the parenthetical is called the *anchor*. Although the anchor is coordinated to the parenthetical, it is not contained within the i that corresponds to the ParP in the prosodic representation. In §5.3 and §5.4 we will see that this is in line with the empirical observations. As experimental results will demonstrate in §5.3 and §5.4, those i s that are formed in the presence of certain parentheticals never contain a constituent of their host (not even their anchors). However, in the hypothetical case given in the *maptree* in (118i)

the maximal ParP branches to the host-YP and non-maximal ParP. If every projection of Par⁰ on the *maptrees* were visible for *i*-formation, then one would predict that the *i* that corresponds to the parenthetical projection contained not only the exponents of the parenthetical-ZP in (118i), but also the anchor (in this case: the host-YP), as both ZP and YP are immediately dominated by the ParP in the *maptree* representation in (118i). Based on the empirical observations, and with the assumption that MATCHPARP is the trigger for *i*-formation, one must assume that in structures such as (118i), it is the sister of Par⁰ that is the target for MATCHPARP.

The question is what condition limits the application of MATCHPARP to only those XPs that are the sisters of Par⁰ in a *maptree*.

One answer could be to restate MATCHPARP as the following: “The *sister of ParP* in syntactic constituent structure must be matched by a constituent of a corresponding prosodic type, call it *i*, in the phonological representation.” However, such a restatement would not be consistent with the other Match rule; i.e. MATCHPHRASE, which states that projections themselves (and not their sisters) are the target for the parser.

Another way would be to delimit the *visibility* of the projections on the *maptree*, so that only the non-maximal ParP is visible to the parser for *i*-formation in such hypothetical structures such as the one in (118i). Recall from §2.2 that the *structural distance condition* limits the visibility of certain projections to the parser. Accordingly, a non-minimal syntactic projection in a *maptree* representation can only be matched with a φ if this syntactic node is directly branching to a head in that *maptree*. I have proposed this condition to predict the prosodic constituent formation at the level of φ . If MATCHPARP is the trigger for *i*-formation, it should be the case that the structural distance condition applies not only to φ -formation, but also to *i*-formation. As such, ParP on the *maptree* in (118i) is predicted not to be parsed into an *i*, with the assumption that it is not *visible* to the parser. Following this, the exponents of the daughters of the non-maximal ParP in (118i) are predicted to be contained within a single *i*, as the non-maximal ParP on the *maptree* directly branches to Par⁰, and therefore fulfils the *structural distance condition*. Since there is only one level of ParP in the *maptree* of the parenthetical adjunction example in (118ii), which is directly branching to Par⁰, the *structural distance condition* is trivially fulfilled.

If MATCHPARP is responsible for *t*-formation of parenthetical structures, then another condition must be responsible for the *t*-formation of root clauses. One may find it redundant to appeal to two distinct sources of *t*-formation, simply because the output is always an *t*. It is theoretically more parsimonious to employ only one condition to generate each prosodic category type. However, I see no reason why many-to-one mapping would be dispreferred in Prosodic Structure Theory. This is a phenomenon that is often observed in other modules of the grammar. In syntax, for instance, dissimilar verbs project the same ‘VP’ label.

In the remainder of this chapter, I test the hypothesis that MATCHPARP is one of the sources for *t*-formation, particularly, for the cases when the input syntactic structure is a parenthetical. The following sections present two studies that investigate the prosodic properties of a number of clausal and subclausal parentheticals in Turkish. If the result of the studies shows that all parentheticals, regardless of their internal syntax, are parsed as *is*, then the conclusion will be that MATCHPARP is operative, and there must be a different mechanism that yields *t*-formation of root clauses. However, the conclusion that is drawn from the observations in this chapter will be the opposite. We will see that some parentheticals are parsed as *φs* (or parts thereof) and some are parsed as *ts*, and that MATCHPARP is not an active rule of the prosodic grammar of Turkish. Based on the discussion in Chapter 6, I will conclude that only those syntactic clauses and phrases that are performed as speech acts are matched with *ts* in the prosodic structure.

5.3 Case study 1

To investigate whether mono-worded parentheticals are parsed as *φs* (and are hence prosodically integrated), or *ts* (and are hence prosodically isolated), I conducted a speech production experiment. A conditional clause with an epistemic function (*yanīlmıyorsam* ‘if I am not wrong’) and an adverbial with mitigative function (*bence* ‘for me’) were the target parentheticals. In what follows, the design of the study and the set-up of the experiment are presented.

5.3.1 The study

To begin with, I shall ensure that the structures that we are investigating exhibit the semantic and syntactic properties of parentheticals.

Bence ‘for me’ takes the form of an adverb, which is derived via the attachment of the adverbialising derivational suffix -CA to the first person singular pronoun *ben* ‘I’. *Yanılmıyorsam* ‘if I am not mistaken’ takes the form of a conditional adverbial. Considering the morphological properties and surface resemblance of *bence* and *yanılmıyorsam* to regular adjuncts, one might argue that these forms might be instances of regular adjunction, and that they may not have parenthetical syntax (and semantics). However, in this section, I provide evidence for the parenthetical status of *bence* and *yanılmıyorsam*.

The term parenthetical does not comprise a homogeneous group of syntactic structures. Consequently, tests to identify parentheticalhood vary. For example, syntactic tests such as the ones that investigate c-command relations mostly apply to parentheticals that are clauses (e.g. comment clauses or clausal interpolations). Syntactic cues aside, one may also appeal to some semantic tests to identify parentheticals. These tests generally refer to the semantic properties of parentheticals; such as speaker-orientation, non-at-issuehood, and semantic unembeddability.

Bence

As shown in (119) and (120), *bence* displays striking dissimilarities with central adverbials. While a morphologically similar central adverbial, *gizlice* ‘secretly’ in (119), can easily be targeted by B’s generic opposition, *bence* in (120) cannot. This test, which is often used to identify the non-at-issue content of parentheticals (Faller 2002, Potts 2005, Matthewson et al. 2007, Amaral et al. 2008), shows that *bence* bears non-at-issue content.

- (119) A: Ali gizlice okul-a git-ti.
 Ali secretly school-DAT go-PST
 ‘Ali secretly went to school.’
- B: Bu doğru değil. (Ali gizlice okula gitmedi.)
 ‘That is not true. (Ali did not secretly go to school.)’

- (120) A: Ali **bence** okul-a git-ti.
 Ali for.me school-DAT go-PST
 ‘**In my opinion**, Ali went to school.’

- B: # Bu doğru değil. (Ali **sence** okula gitmedi.)
 ‘That is not true. (**In your opinion**, Ali did not go to school.)’

Additionally, the linear distribution of a central adverbial is more limited to that of *bence*. While *bence* can scope inside an embedded clause from outside the embedded clause (121b), a central adverbial cannot (121a). Similarly, while *bence* can scope over the matrix content (121b’), central adverbials cannot (121a’). In other words, unlike *bence*, central adverbials exhibit locality restrictions.

- (121) a. * Gizlice Aylin Ali-nin okul-a_N git-tiğ-i-ni
 secretly Aylin Ali-GEN school-DAT go-NOM-3POSS-ACC
 düşün-dü.
 believe-PST
 Intended interpretation: ‘Aylin believed that Ali secretly went to school.’
- a’. * Aylin_N Ali-nin gizlice okul-a git-tiğ-i-ni
 Aylin Ali-GEN secretly school-DAT go-NOM-3POSS-ACC
 düşün-dü.
 believe-PST
 Intended interpretation: ‘It is Aylin who secretly believed that Ali went to school.’

- b. **Bence** Aylin Ali-nin okul-a_N git-tiğ-i-ni
 for.me Aylin Ali-GEN school-DAT go-NOM-3POSS-ACC
 düşün-dü.
 believe-PST
 ‘**In my opinion**, it is to school that Aylin believed that Ali went.’
- b'. Aylin_N Ali-nin **bence** okul-a git-tiğ-i-ni
 Aylin Ali-GEN for.me school-DAT go-NOM-3POSS-ACC
 düşün-dü.
 believe-PST
 ‘**In my opinion**, it is Aylin who believed that Ali went to school.’

Another central adverbial that is derived with the suffix -CA marks the agent of verbs with passive voice (e.g. *Ahmet-çe* ‘by Ahmet’). A comparison of this kind of central adverbial with *bence* shows that while the central adverbial phrase (*onlarca*) shows Condition B effects of Reinhart’s (1976) (122a), *bence* does not exhibit Condition B effects (122b). This shows that *bence* does not establish C-command relations with elements that are contained within the host.

- (122) a. Onlar_i onlar-ca_{*i/k} ödüllendir-il-di-ler.
 they they-BY reward-PASS-PST-PL
 ‘They_i were rewarded by them *_{i/k}.’
- b. Ben_i **bence_i** bu iş-i sen-den hızlı yap-acağ-im.
 I for.me this task-ACC you-ABL fast do-FUT-1SG
 ‘**In my opinion**, I will do this task faster than you.’

Semantically, *bence* indicates “the view point of a person” (Göksel & Kerslake 2005:191) and the speaker’s commitment to the truth of a statement (ibid.194). This property alone is a strong semantic indication of the parenthetical nature of *bence*. In addition, the interpretation of (123), which

is given in (124), shows that *bence* cannot be embedded under ‘believe’, which shows that it exhibits the semantic behaviour of items with CI content.

- (123) Can Leyla-yı **bence** gazete-de gör-düg-ü-ne inan-ıyor.
 Can Leyla-ACC for.me paper-LOC see-NOM-3POSS-DAT believe-PROG
 ‘Can believes that he saw, **in my opinion**, Leyla in the paper.’

- (124) *Interpretation of (123):*

- (i) My opinion is this: Can believes that he saw Leyla in the paper.
- (ii) # Can believes that it is my opinion that he saw Leyla in the paper.

In light of these observations, I conclude that *bence* is a speaker-oriented peripheral adverbial. Cross-linguistically, similar forms with the same function as *bence* are referred to as parentheticals. Among these, clause medial *volgens mij* in Dutch (Schelfhout 2006:149, Aikhenvald 2007), and *a mi parecer* in Spanish (Cardinaletti & Starke 1999, Suñer 2003:352, Camacho 2006:548) can be listed. Additionally, the majority of the studies on this topic analyse peripheral / high adverbials as parenthetical adjunctions and syntactically / semantically dissimilar to regular adjunctions. Among these, one can list Jackendoff (1972), Reinhart (1983), Haegeman (1984, 1991), Espinal (1991), Cinque (1999), Rooryck (2001), Huddleston & Pullum (2002), Potts (2003, 2005), Astruc-Aguilera & Nolan (2007), D’Avis et al. (2007), and Bonami & Godard (2008).

Yanılmıyorsam

As stated in the previous section, at-issue meaning can be denied with a generic expression. However, non-at-issue content cannot be denied in the same manner (Potts 2005). Therefore, the contrast in (125-126) indicates that *yanılmıyorsam* exhibits non-at-issue content and is dissimilar to central conditional adverbial clauses. Since non-at-issue meaning is associated with parentheticalhood, the data below support the assumption that *yanılmıyorsam* is a parenthetical.

- (125) A: Ali para ver-ir-se-m okul-a gid-er.
 Ali money give-AOR-1SG school-DAT go-AOR
 ‘If I give (him) money, Ali will go to school.’
- B: Bu doğru değil. (Ali para vermezsen okula gider.)
 ‘That is not true.
 (If you do not give (him) money, Ali will go to school.)’
- (126) A: Ali **yanıl-mı-yor-sa-m** okul-a git-ti.
 Ali mistaken-NEG-PROG-COND-1SG school-DAT go-PST
 ‘**If I am not mistaken**, Ali went to school.’
- B: # Bu doğru değil. (Ali yanlışlıyorsan okula gitmedi.)
 ‘That is not true. (If you are not mistaken, Ali did not go to school.)’

Moreover, while the coordination of two central adverbial clauses is allowed, the coordination of a central adverbial clause and *yanılmıyorum* is not. This is shown in (127).

- (127) a. Mine dinli-yor-sa ve Ali bil-mi-yor-sa,
 Mine listen-PROG-COND and Ali know-NEG-PROG-COND
 Ahmet çok kız-acak.
 Ahmet very get.angry-FUT
 ‘If Mine is listening and if Ali does not know (this), (then)
 Ahmet will get very angry.’
- b. * Mine dinli-yor-sa ve **yanıl-mı-yor-sa-m**,
 Mine listen-PROG-COND and mistaken-NEG-PROG-COND-1SG
 Ahmet çok kız-acak.
 Ahmet very get.angry-FUT
 Intended interpretation: ‘If Mine is listening and **if I am not wrong**, Ahmet will get very angry.’

While central conditional clauses such as (128a) can be paraphrased as (128b) or (128c), this is not favoured for *yanılmiyorsam* (129b, c).

- (128) a. **Eğer ödev-in-i yap-ar-sa-n,**
 if homework-2POSS-ACC do-AOR-COND-2S
 Ali san-a şeker ver-ecek.
 Ali you-DAT candy give-FUT
 ‘If you do your homework, Ali will give you a candy.’
- b. **Ne zaman ödev-in-i yap-ar-sa-n,**
 what time homework-2POSS-ACC do-AOR-COND-2S
 Ali san-a şeker ver-ecek.
 Ali you-DAT candy give-FUT
 ‘Whenever you do your homework, Ali will give you a candy.’
- c. **Ödev-in-i yap-ma-n koşulu-nda,**
 homework-2POSS-ACC do-NOM-2S condition-LOC
 Ali san-a şeker ver-ecek.
 Ali you-DAT candy give-FUT
 ‘On the condition that you do your homework, Ali will give you a candy.’
- (129) a. **Eğer yanıl-mı-yor-sa-m,**
 if mistaken-NEG-PROG-COND-1SG
 Ali san-a şeker ver-ecek.
 Ali you-DAT candy give-FUT
 ‘**If I am not wrong**, Ali will give you a candy.’

- b. # Ne zaman yanıl-mı-yor-sa-m,
 what time mistaken-NEG-PROG-COND-1SG
 Ali san-a şeker ver-ecek.
 Ali you-DAT candy give-FUT
 ‘**Whenever I am not wrong**, Ali will give you a candy.’
- c. # Yanıl-ma-ma-m koşul-u-nda,
 mistaken-NEG-NOM-1SG condition-POSS-LOC
 Ali san-a şeker ver-ecek.
 Ali you-DAT candy give-FUT
 Intended interpretation: ‘**On the condition that I am not wrong**, Ali will give you a candy.’

As Condition C effects show, *yanılmiyorsam* exhibits parenthetical syntax. While central adverbial clauses are subject to Condition C, *yanılmiyorsam* escapes such effects.

- (130) a. * O_i, Ali_i hakkında iyi konuş-ur-sam,
 he Ali about good speak-AOR-COND
 Ayşe-ye evlenme teklif ed-ecek.
 Ayşe-DAT marriage proposal make-FUT
 * ‘He_i, if I say nice things about Ali_i, will propose to Ayşe.’
- b. O_i, Ali_i hakkında yanıl-mı-yor-sa-m,
 he Ali about wrong-NEG-PROG-COND-1SG
 Ayşe-ye evlenme teklif ed-ecek.
 Ayşe-DAT marriage proposal make-FUT
 ‘He_i, **if I am not wrong about Ali_i**, will propose to Ayşe.’

Semantically, similarly to *bence*, *yanılmiyorsam* cannot be embedded under verbs like ‘believe’. Compare the embedded and un-embedded interpretations of (131) in (132).

- (131) Su Ali-yi **yanıl-mı-yor-sa-m** gazete-de
 Su Ali-ACC wrong-NEG-PROG-COND-1SG paper-LOC
 gör-düğ-ü-ne inan-iyor.
 see-NOM-3POSS-DAT believe-PROG
 ‘Su believes that she saw, **if I am not wrong**, Ali in the paper.’

- (132) *Interpretation of (131):*

- (i) Su believes that she saw Ali in the paper, but I may be wrong that she believes this.
- (ii) # Su believes that she saw Ali in the paper and that this is the case unless I am wrong.

To summarise, *bence* and *yanılmiyorsam* are not cases of regular adjunction. I assume that they are parentheticals that adjoin to the spine of the host clause via *par-Merge*. They are detached from the compositional meaning of host proposition. This is observed in their semantic unembeddability and unavailability for direct falsification. Additionally, both of these forms show dissimilarities to regular adjuncts, but similarities to peripheral adjuncts. Noting that peripheral adjuncts / adverbials are often considered as instances of parentheticals, I conclude that *bence* and *yanılmiyorsam* are parenthetical adjuncts.

5.3.1.1 *Stimuli*

Each parenthetical was ordered in three different positions in the host. These positions were: clause-initial (e.g. pSOV, pSVO, etc. where p = parenthetical), medial (SpOV, SpVO, etc.) and final (SOVp, OVSp, etc.). The host contained three *accentless* words other than the parenthetical: one transitive verb (*yedi* ‘ate’) and two Noun Phrases, one as the subject (*Yumak*), and the other one as the direct object (*mamayı* ‘the food’).⁶⁸

Changing the order of the host constituents ensured that the parentheticals were compared to arguments in a particular linear position

⁶⁸ See Kamali (2011), and §3.1 of this book for more on the accented and accentless words in Turkish.

rather than those with a particular thematic role. Additionally, such a variation in the word order facilitated a comparison of the parentheticals only to the host arguments, which was the intended comparison in this experiment.

Among the six permutations of SOV order, verb initial orders were not included (i.e. VSO and VOS). The reason for this was to keep the duration of experiment as short as possible to avoid loss of attention.

108 utterances can be obtained from the permutation of various orders. Due to the requirement that nuclear prominence be absent from the post-verbal area of the final- φ (Güneş 2013a, b), some orderings did not allow felicitous readings. For this reason, the number of target utterances (hereafter *tokens*) decreased from 108 to 48 (48 tokens x 7 speakers = 336 tokens).

In order to obtain different orders with respect to the nucleus, an eliciting question was asked before each token. Some of the target tokens and their eliciting questions are given below.⁶⁹

(133) *Samples of target tokens (all-new context – SOV order)*

A: Ne ol-du?

What COP-PST

‘What happened?’

B: **Yanılmıyorsam** Yumak mama-y_{1N} ye-di. (*initial*)
 mistake-NEG-PROG-COND-1SGYumak food-ACC eat-PST
 ‘**If I am not wrong**, Yumak ate the food.’

B: **Bençem** Yumak mama-y_{1N} ye-di. (*initial*)
 I-ADV Yumak food-ACC eat-PST
 ‘**I think**, Yumak ate the food.’

B': Yumak **yanılmıyorsam** mama-y_{1N} ye-di. (*medial*)
 Yumak mistake-NEG-PROG-COND-1SGfood-ACC eat-PST
 ‘Yumak, **if I am not wrong**, ate the food.’

⁶⁹ For a complete list of target utterances with eliciting questions for case study 1, see appendix A.

B': Yumak **ben-ce** mama-y_{1N} ye-di. *(medial)*
 Yumak I-ADV food-ACC eat-PST
 'Yumak, **I think**, ate the food.'

B'': Yumak mama-y_{1N} ye-di **yanyl-m-iyor-sa-m.** *(final)*
 Yumak food-ACC eat-PST mistake-NEG-PROG-COND-1SG
 'Yumak ate the food, **if I am not wrong**.'

B'': Yumak mama-y_{1N} ye-di **ben-ce.** *(final)*
 Yumak food-ACC eat-PST I-ADV
 'Yumak ate the food, **I think**.'

The position of nucleus was varied in order to ensure that all arguments and parentheticals occurred in the pre-nuclear and post-nuclear areas in all word orders that were analysed. For each order, 2 questions were asked: (i) "Who ate the food?" for the subject as the nucleus, and (ii) "What did Yumak eat?" for the object as the nucleus. For the SOV order, two additional questions were asked: (i) "What happened?" for the default distribution of the nucleus (Güneş 2013b, Özge 2012), and (ii) "What did Yumak do with food?" for the verb as the nucleus.

5.3.1.2 Methodology

The experiment was conducted with 7 native speakers of standard Turkish (4 male and 3 female, all students at the University of Groningen). The mean age of the participants was 31.5 years at the time of the experiment (ranging between 25-35). All of the participants volunteered to participate. The following subsections provide the details of the experiment followed by its results.

For the diagnostics of the prosodic boundary phenomena on the levels of φ and i, the cues that are described in Kan (2009) and Kamali (2011) were employed (see §3.1 for details). For the identification of i-level constituency, right boundary tones were investigated. The final syllable duration of the parentheticals was compared to the arguments in the corresponding conditions. The final syllable of the parentheticals was expected to be longer

than the final syllable of the arguments if the parentheticals are marked by a T% on their right edge. In Turkish, these tones are H% or L%. The segmental makeup of the final syllables of all items was also considered. Among the φ group, one argument contained an open final syllable (i.e. the object *mamayı* ‘the food’), and the other argument ended with a closed syllable (i.e. the subject *Yumak*). Similarly, one of the parentheticals contained an open final syllable (*bence*) while the other contained a closed final syllable (*yanılmıyorum*). Such a distribution ensured a balanced comparison of the final syllable durations of arguments and parentheticals ending with different syllable types.

To avoid possible perturbations on the F0 contour, words containing sonorants were favoured. Additionally, unlike the two arguments, both of the parentheticals exhibited accented non-finally stressed syllables due to the pre-stressing negation marker in *yanılmıyorum* and the point-of-view marker in *bence*.

	H*L		H*L
(134) a.	(yanıl-m-ıyor-sa-m) _ω	b.	(ben-ce) _ω
	mistake-NEG-PROG-COND-1SG		I-ADV
	‘If I am not wrong’		‘for me’

However, the accent on these parentheticals was not expected to pose a problem in a comparison of accentless arguments and the accented parentheticals, since, regardless of the location of the accent, all constituents were assumed to bear a right edge / boundary tone (i.e. a H- in the case of the arguments and presumably H-, H% or L% in the case of parentheticals). For the case of H-, the presence of a non-final accent does not affect edge tones (Kamali 2011, İpek & Jun 2013). Only the use of boundary or edge tones was investigated. The use of ωs with non-peripheral accent therefore does not pose a problem for the analysis.

Both the exploratory statistics and the descriptive analysis of this study targeted the identification of *t* and φ-level phenomena using tonal categories (T- and T%) and durational properties (final syllable duration) of target tokens.

A context text and eliciting question were presented before each token was presented aurally. Context texts, questions, and tokens were presented on a computer screen as PowerPoint slides. The figure below presents an example of the slides used in the experiment.

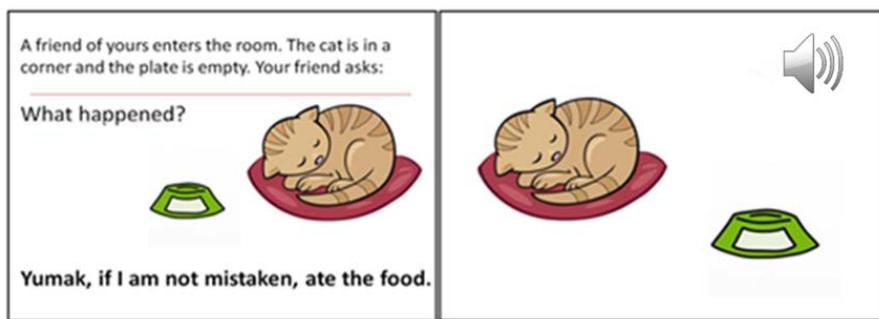


Figure 15. LEFT, a sample slide with ‘context’, ‘eliciting question’, and ‘target utterance’ (translated from Turkish). RIGHT, a sample slide with the eliciting question embedded as an audio track

Contextual information was added to obtain a natural discourse condition for the target utterance. The eliciting question was also presented in each slide so that the target utterance could be elicited as a turn in the conversation. Additionally, each pair of slides contained pictures relevant to context. In all slides, orthographic conventions of Turkish were followed. As we will see in §5.3.2, although the parentheticals are flanked by the commas in the orthography, this did not influence the results, and the parentheticals exhibited prosodic integration.

First, when shown the first one of each slide-pair, participants read the context text, eliciting question, and token silently (not aloud). Participants were asked to memorise the target token that was presented in the first slide. Next, the second slide of the relevant pair was presented. The second slide functioned as the prompting slide and contained the same eliciting question that was presented in the first slide, this time as an audio track. Upon hearing the eliciting question on the second slide, participants uttered the target token that was presented in the first slide. By employing this method of elicitation, participants did not read aloud any target token, and the tokens were elicited as if they were answers to questions in a dialogue.

48 target tokens and 43 fillers ($48+43 = 91$ slide-pairs for each participant (4 of which were practice slides), 87 utterances \times 7 speakers = 637 utterances in total) were randomly ordered. Among the fillers, 21 of them exhibited various parentheticals in different contexts and 22 of them exhibited clauses without parenthetical insertions. Clauses without parentheticals had the same context texts and root clause constituents as the test tokens - *Yumak* as the subject, *mamayı* 'the food' as the object, and *yedi* 'ate' as the verb. The participants returned to a slide-pair whenever they were uncertain about the manner in which they uttered a particular token (e.g. when there was a non-linguistic interruption or whenever they thought that they sounded unnatural). Time spent for reading each slide was controlled by the participants. The duration of each session was approximately 30 minutes. After viewing the 44th slide-pair, each participant took a break. The recordings took place in an audio studio at the University of Groningen.

5.3.1.3 Data processing

Utterances were recorded with Adobe Audition 3.01. The amplitude values of the sound were normalised and the background noise was eliminated to filter out any potential non-speech sound interference. Each token was then extracted and transferred to PRAAT 5.3.02 (Boersma & Weenink 2011). Using PRAAT, all octave jumps were eliminated. For all speakers, pitch interval was kept constant (ceiling 400hz, floor 75hz). In the statistical F0 analysis, only the semitone values were used (semitones re 100hz). By this method, variations such as the gender difference of the speakers were avoided. This is because the relational, rather than absolute, value of a semitone (st) permits one to accurately compare the F0 across speakers of different gender and depth of voice. All tokens were parsed to their syllable, word, and clause boundaries. The parsing procedure was carried out in two steps: first, all boundaries were manually parsed in PRAAT by a non-Turkish speaker, and then each syllable boundary was verified by a native speaker of Turkish (myself). The detailed control of the syllable boundaries was undertaken with close reference to spectrograms, formant values, and waveforms. Durational and F0 values were statistically analysed in R (R Development Core Team 1993-2011).

5.3.1.4 Statistical analyses

The general F0 trends were analysed using generalised additive models (GAMs) using the MGCV package (Wood 2000) in R. All models I report are zero-intercept models. The estimates of the model parameters correspond to the expected value of the response variable for the respective group of the explanatory variable. For the final syllable durations, generalised mixed-effect models using LME4 (Bates et al. 2013) were fit where the speaker and final syllable type (closed or open) were included as random effects. While reporting syllable duration results, the model estimate along with their standard errors (SE) and associated t-statistics were presented. For the plots presented in the Figures 20 and 21, the time values were normalised such that the time span of each parenthetical is equal to one. Simple (treatment) contrasts were used, where the object was the base group. I report results from ‘intercept-only’ random effect. I report standard errors and t-scores for fixed effects, and the estimated standard deviation of the random effects. Pitch values (in semitones; st re 100hz) and the prosodic properties of initial, medial, and final host arguments were compared to those of parentheticals in corresponding positions. Hertz (hz) was employed in individual F0 scripts.

5.3.2 Results and discussion

This section reports the results of the first study. The results are presented in two main parts. In the first part, the results of the experiment that investigates the properties of *yanılmıyorsam* and *bence* are reported. In the second part, these results are compared to the F0 analysis of a number of other (parenthetical and non-parenthetical) structures. The part that reports the experimental results of *yanılmıyorsam* and *bence* is also split into two. In the first half, sample F0 contours of a number of target tokens are analysed as representative of the entire data set. In the F0 analysis section, only the tokens with *yanılmıyorsam* are presented. In the second part of the section on *yanılmıyorsam* and *bence*, the statistical analysis is presented. This part reports the results of the statistical analysis of all tokens (including the cases of *bence*). The following subsection provides the F0 description of sample tokens that contain *yanılmıyorsam* in initial, medial, and final positions in the host.

5.3.2.1 *Yanilmuyorsam* and *Bence*

F0 description

The figure below presents a sample of the tokens with *yanilmuyorsam* in the initial position of an SOV ordered host.⁷⁰

- (135) **Yanil-m-iyor-sa-m** Yumak mama-*yı_N* ye-di.
 mistake-NEG-PROG-COND-1SG Yumak food-ACC eat-PST
 ‘If I am not wrong, Yumak ate the food.’

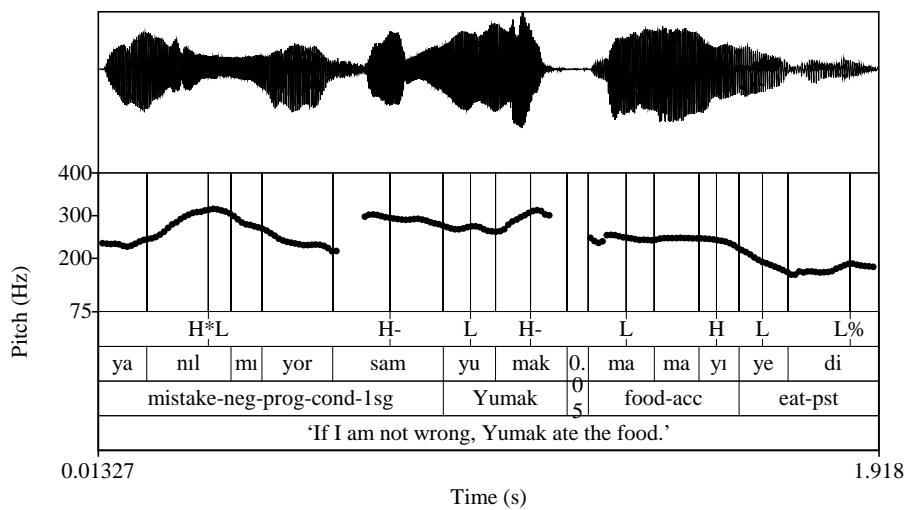


Figure 16. A sample of *yanilmuyorsam* in initial position⁷¹

The eliciting question for this utterance is “What happened?” The object, *mamayı* ‘the food’, is the nucleus, as it occupies its canonical position (immediately preceding the verb). The subject, *Yumak*, bears a pre-nuclear rise. The verb *yedi* ‘ate’ exhibits a low-level flat F0, which fits the description of *a post-nuclear levelling*. The clause-initial parenthetical exhibits a rise that is interrupted by an accent (*H*L*) that is triggered by the pre-accenting negation morpheme *-mA*. There are three φs in this utterance – two non-

⁷⁰ Only one sample F0 description of *bence* (medial) is presented here. For the prosodic parsing properties of *bence*, the reader is referred to the statistical analysis part of this subsection.

⁷¹ The data presented in this section was elicited from female speakers. The data in Figures 16 and 17 were elicited from speaker B.U., and the data in Figures 18 and 19 were elicited from speaker S.Y.

final- φ s as the pre-nuclei (parenthetical and subject), and one final- φ , which contains the nucleus (the object) followed by the post-nuclear item (the verb). The amount of rise on the right edge of the parenthetical and the subject is 3st and 2st, respectively. The final syllable duration of both of the pre-nuclear items is 190ms.

As seen in Figure 16, the clause-initial parenthetical bears a φ -level pre-nuclear rise on its right-edge rather than an i -level boundary tone. The parenthetical (271hz) in Figure 16 is pronounced at similar F0 level in comparison to the subject (281hz).

The sample in Figure 16 does not exhibit a pause on the right edge of the parenthetical. However, in the entirety of the data, in addition to i -edges, pauses were observed at other junctures within the utterances, especially at the juncture of φ s (i.e. the pause between the pre-nuclear subject and the nuclear object in Figure 16). While pauses demark prosodic constituency, it is evident that this strategy is not employed to distinguish the category type i from the category type φ . Güneş & Çöltekin (2015) provides quantitative evidence from Turkish that reinforces this conclusion (see §5.4).

The figure below represents a clause-medial *yanılmıyorum* within a clause with SOV order, as an answer to “What did Yumak do with the food?” The host verb is the nucleus of the entire i .

- (136) Yumak **yanıl-m-iyor-sa-m** mama-yı ye-di_N.
 Yumak mistake-NEG-PROG-COND-1SGfood-ACC eat-PST
 ‘Yumak, **if I am not wrong**, ate the food.’

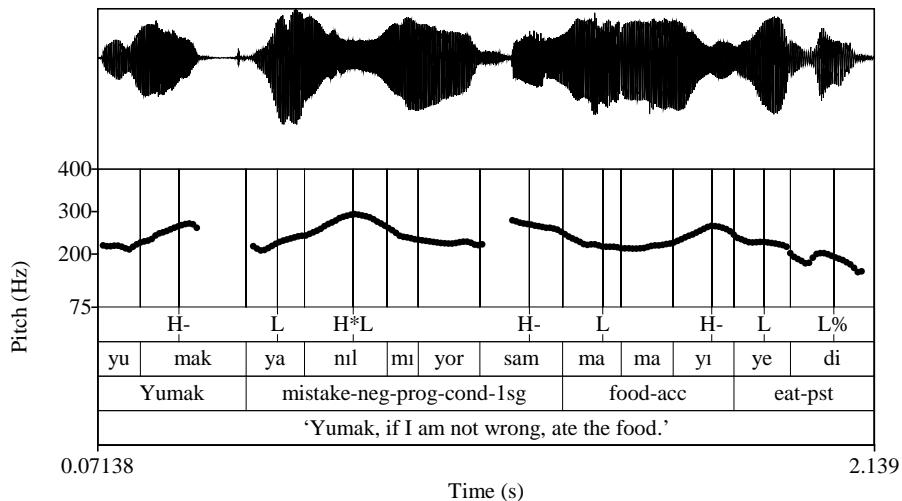


Figure 17. A sample of *yanilmuyorsam* in medial position

In Figure 17 the parenthetical interpolates between the pre-nuclear object and subject. The parenthetical exhibits the accent (H^*L) as well as a φ -edge tone, H^- . The host *i* is composed of four φ s: three non-final- φ s (one for the initial subject, one for the medial parenthetical, and the one for the immediately pre-verbal object), and one final- φ that contains only one ω (the verb). The final syllable durations of the three pre-nuclear φ s are 230ms, 210ms, and 120ms, respectively. The amount of rise on the right edges of the three pre-nuclear φ s is 2st, 2st, and 3st, respectively. Importantly, all of the H^- tones are on a similar scale (between 256-260hz), which is also the case throughout the data. In other words, the data analysed in this study did not exhibit F0 *declination* throughout the *i* (t'Hart et al. 1990).

As for the pitch level, Figure 17 shows that the parenthetical is the same level as the surrounding non-final- φ s. The final rise of the φ that was adjacent to the nucleus was often higher than the final rise of the preceding pre-nuclear φ s, confirming the observations of İpek & Jun (2013).

The figure below illustrates a sample of a clause-final *yanilmuyorsam* in a host with OSV order. The eliciting question for this token was “Who ate the food?” The host subject is the nucleus of the entire string.

- (137) Mama-yi Yumak_N ye-di yanil-m-iyor-sa-m.
 food-ACC Yumak eat-PST mistake-NEG-PROG-COND-1SG
 ‘Yumak ate the food, if I am not wrong.’

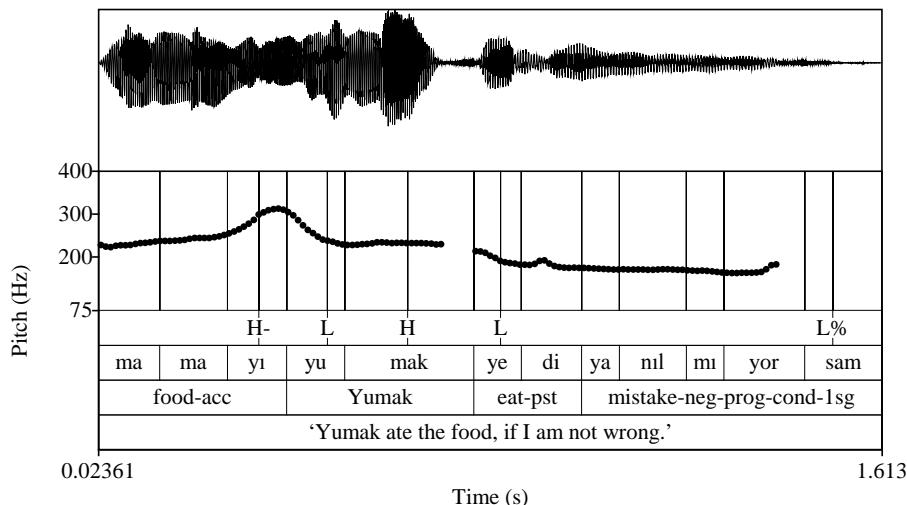


Figure 18. A sample of *yanilmiyorsam* in final position

In Figure 18, the pre-nuclear object receives a H- (final syllable duration is 110ms and the amount of rise on the H- is 3st). The subject, being the nucleus, bears a high plateau throughout the ω . The verb exhibits a low-level flat F0. This time, the parenthetical does not bear an accent and maintains the low level F0 that was introduced by the previous post-nuclear item. This shows that the clause-final parenthetical is prosodically integrated as part of the final- φ of its host i .

This pattern of integration is different from the cases of non-final interpolations mentioned above: i.e. the parenthetical is not parsed as an independent φ , but it is embedded in the post-nuclear area of the final- φ of its host- i , together with the other post-nuclear host items. As such, the post-nuclear parenthetical is integrated into a hierarchically lower constituent (i.e. into a φ). The same pattern is observed for the clause final interpolations of *bence*.

The mean F0 of the parenthetical in Figure 18 is 169hz. When this is compared to the mean F0 of the other post-nuclear element (the verb, in this case), there seems to be a difference between the two post-nuclear items, as

the mean F0 of the post-nuclear verb is 186hz. The verb bears higher F0 because of the transmission from a high level F0 retained from the nuclear plateau to a low level F0 introduced on the first syllable of the post-nuclear element. Particularly, the verb is the first post-nuclear element. Therefore, its first syllable retains the effects of the high level F0 of the preceding plateau.

The last case discussed in this subsection is the sample F0 description of clause-medial *bence*. I refer the reader to the statistical analysis part of this subsection, for the prosodic properties of *bence* in initial, medial and final position. The figure below illustrates a sample of a clause-medial *bence* that is interpolated into a host with SOV order. This host is uttered in all-new context, in which the nucleus is the object *mamayi*.

- (138) Yumak **ben-ce** mama-yi_N ye-di.
 Yumak I-ADV food-ACC eat-PST
 'Yumak, **I think**, ate the food.'

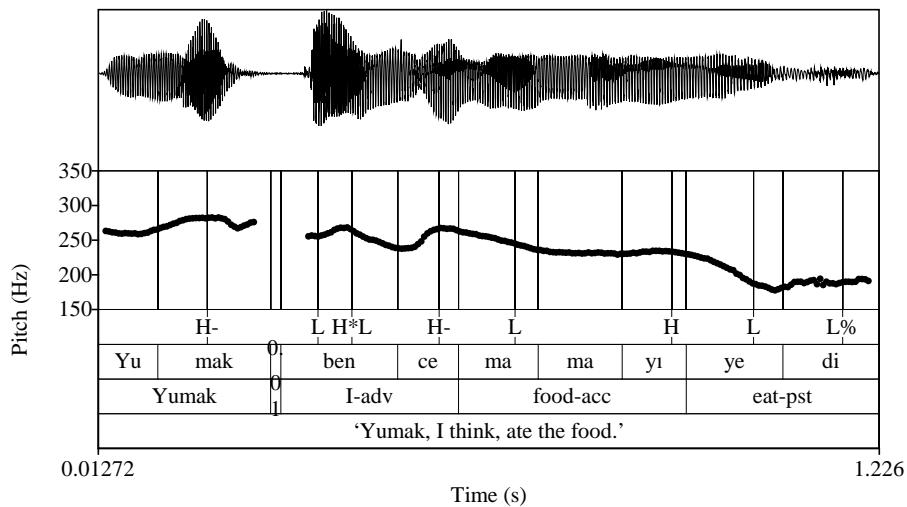


Figure 19. A sample of *bence* in medial position

In Figure 19, the parenthetical adverbial *bence* interpolates between the pre-nuclear object and subject. Similar to *yanilmuyorsam*, *bence* exhibits the accent (H*L), this time due to the pre-accenting derivational suffix -CA. Additionally, similarly to the case of the clause-medial *yanilmuyorsam*, the clause-medial *bence* above exhibits a φ-edge tone, H-. The host *t* is composed

of three φs: two non-final-φs (one for the initial subject, and one for the medial parenthetical), and one bi-worded final-φ. The final-φ consists of an ω that corresponds to the direct object *mamayı*, and an ω that corresponds to the verb *yedi*. Since the ω of *mamayı* is the leftmost ω in its φ, it is the head of that φ, and since *mamayı* is the head of the final-φ, it is also the head of the entire i (i.e. the nucleus). The final syllable durations of the non-final-φs are 175ms, and 95ms, respectively. At first glance, this durational difference may seem rather large. This is because the final syllable of the subject (i.e. *Yumak*) is a closed syllable, whereas the final syllable of *bence* is an open syllable. The amount of rise on the right edges of both of the non-final-φs is 1st. Similar to the case of clause-medial *yanılmiyorsam*, all of the H- tones are on a similar scale (between 255-270hz), which is also the case throughout the data. Therefore, the pitch level in Figure 19 shows that the parenthetical adverbial *bence* is at the same level as the preceding non-final-φ.

Statistical analyses

In reporting the exploratory statistical analysis, I return to discussing the results for both *yanılmiyorsam* and *bence*. The plots in Figure 20 display the general F0 trends of *bence* in clause-initial (before nucleus), medial (before and after nucleus) and final (after nucleus) position, respectively. The dashed lines in Figure 20 and Figure 21 represent two lines of Standard Error (SE) above and below the fitted values (solid line). In both Figure 20 and Figure 21, the pitch values in semitones do not represent the actual values. 0st represents 14.75st in actual pitch (the average of all female speakers) and is set as an intercept (the estimated mean of all pitch). Values lower than 0st represent the values lower than 14.57st, and means higher than 0st represent the mean of the actual pitch points that are higher than 14.75st.

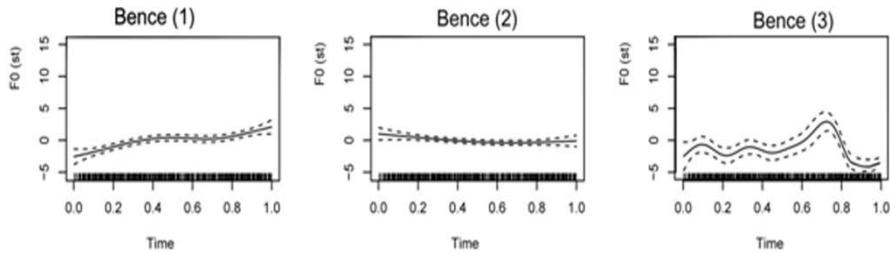


Figure 20. Plots of the generalised additive model of F0 values of *bence*, in clause-initial (1), clause-medial (2) and clause-final positions (3)⁷²

All the instances of clause-initial *bence* exhibit a rising pattern. Clause-initial *bence* is uttered at an interval between 0st and 5st. Clause-final *bence*, on the other hand, is lower than the F0 values of the other positions; between -5st and 0st.

Figure 21 reports the F0 trends of *yanılmiyorsam* in clause-initial (before nucleus), medial (before and after nucleus), and final (after nucleus) positions.

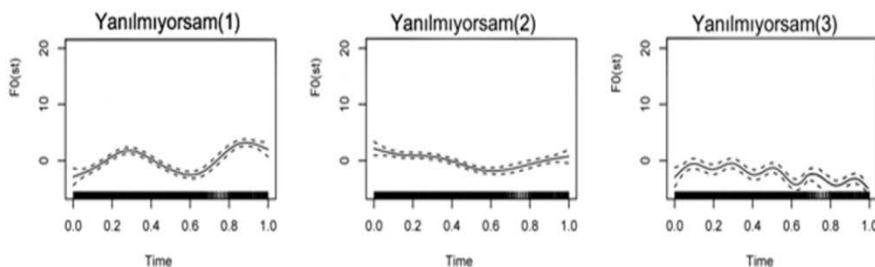


Figure 21. Plots of the generalised additive model of F0 values of *yanılmiyorsam*, in clause-initial (1), clause-medial (2) and clause-final positions (3)

The parentheticals in Figure 20 and Figure 21 exhibit similar properties in similar positions. The clause-initial *bence* and *yanılmiyorsam* exhibit a low

⁷² The wavy pattern on the 3rd position (post-nuclear area) is due to the ‘creaky voice’ of low-frequency. For the same reason, there was an unnaturally steep rise towards the end of the post-nuclear items (regardless of the noise reduction process and killing octave jumps). The statistical outliers of Figure 20 and Figure 21 were amended in these plots for a better representation.

start on the left edge and a high end on the right edge. Note that in all cases of clause-initial interpolation both of the parentheticals are pre-nuclear, and in all cases of clause-final interpolation, both of the parentheticals are post-nuclear. Clause-medial parentheticals may be pre-nuclear or post-nuclear, depending on the context. The H*L in the middle of both parentheticals in all positions is due to the existence of accent.

With respect to clause-medial parentheticals, pitch flow is rather flat for both of the parentheticals, which makes them resemble a nucleus. Yet, a parenthetical cannot constitute the only the nucleus of its host *i*, as the target tokens were controlled so that the parentheticals are not pronounced as the nucleus of their host *i*.

The generalised pitch values for both of the clause-medial parentheticals seem to be inconsistent with the actual F0 contours. The reason for this is that clause-medial parentheticals occurred both before and after nucleus depending on their distribution with respect to the nucleus of their host *i*. Therefore, a distinction solely based upon the order of constituents is not sufficiently accurate to interpret the actual prosodic realisation. For a more reliable representation of the F0 curve of the clause-medial parentheticals, it is essential to consider the prosodic constituency of the host *i* itself. The picture becomes clear when the clause-medial parentheticals (and also the host arguments) are analysed separately, as either pre-nuclear or post-nuclear items. Figure 22 shows the pitch means of both parentheticals in pre-nuclear and post-nuclear areas.⁷³

⁷³ In figures 22, 23, and 24, the bars represent 95% confidence intervals.

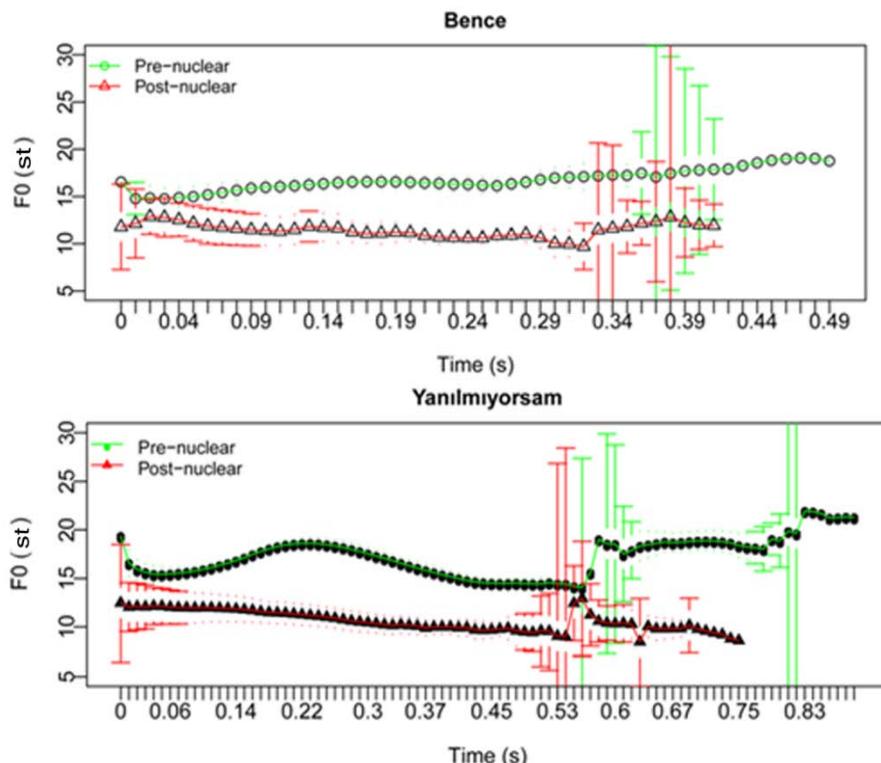


Figure 22. Descriptive F0 plots of pre- and post-nuclear *bence* (top), and *yanilmiyorsam* (bottom)

Figure 22 confirms the findings in Figure 20 and Figure 21 for pre-nuclear parentheticals.⁷⁴ In contrast to the level of their pre-nuclear counterparts, the level of post-nuclear parentheticals is noticeably lower (post-nuclear: between 10-15st, pre-nuclear: between 15-20st). This difference is expected since the non-final- φ s are levelled higher than the non-head part of the final- φ s.

Additionally, while post-nuclear parentheticals bear low-level flat F0, pre-nuclear parentheticals exhibit a rising pattern. The low level flat pitch is typical for the post-nuclear area. The non-final accent on the parentheticals seems to disappear in the post-nuclear position.

⁷⁴ The standard errors that are seen in the graph for *bence* are due to the F0 perturbation on the /c/ sound. The standard errors that are seen in the graph for *yanilmiyorsam* are due to the F0 perturbation on the /s/ sound.

To compare the properties of host arguments with parentheticals, let me present the mean pitch values of the subject and object. Figure 23 illustrates subject and object in pre- and post-nuclear positions, as well as the nuclear position.⁷⁵

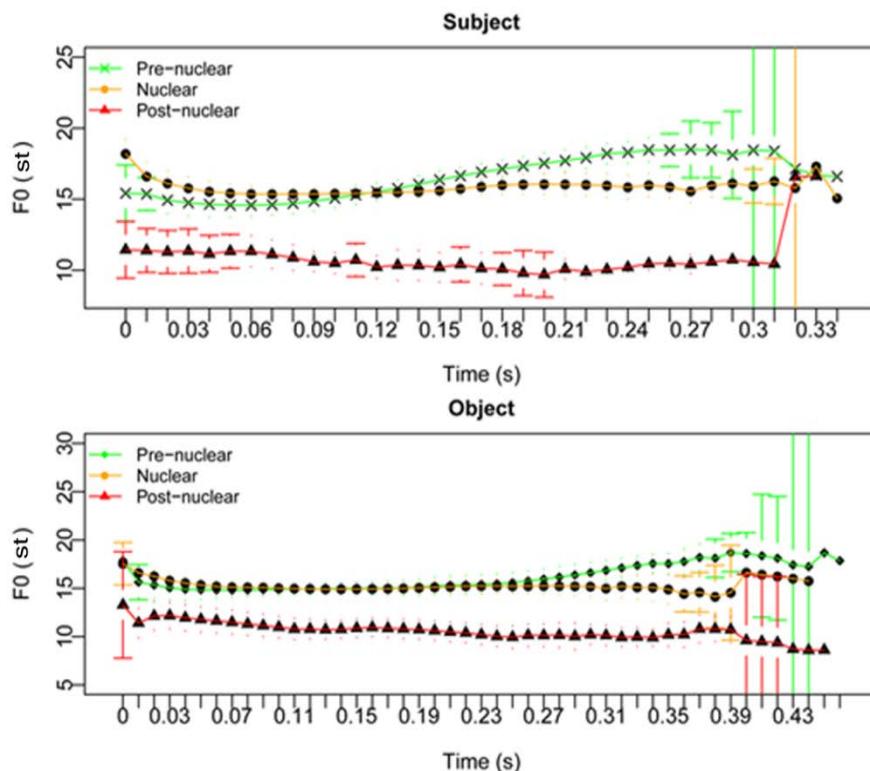


Figure 23. Descriptive F0 plots of subject (top) and object (bottom) in all positions

Just as with post-nuclear parentheticals, both subjects and objects exhibit a low-level flat F0 when post-nuclear (between 10st-15st). Similarly, pre-nuclear subjects and objects seem to be uttered in a higher F0 level (between 15-20st) than their post-nuclear correlates. The nuclear plateau on the subject and the object supports the findings in previous studies (Kamali 2011, Güneş 2013a; b, İpek & Jun 2013). Each of the pre-nuclear host arguments exhibits a rising terminal.

⁷⁵ The standard errors that are seen in the graphs for the subject and the object are due to the durational variation across the speakers and tokens.

Figure 24 presents the average contours of all constituents (including parentheticals) in pre-nuclear and post-nuclear positions.⁷⁶

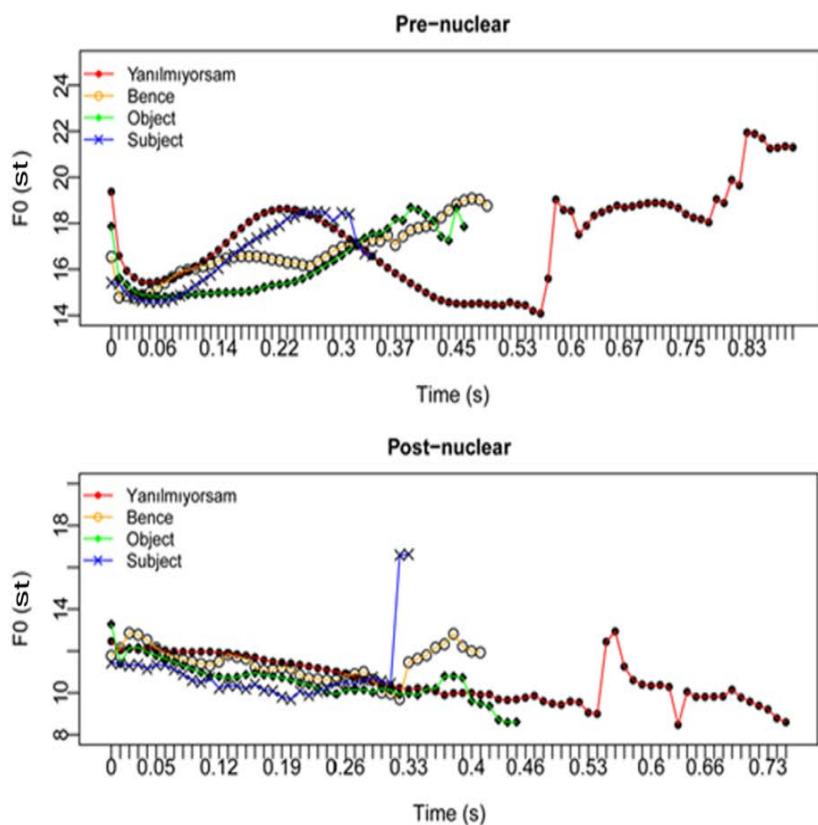


Figure 24. Descriptive F0 plots of pre-nuclei (top), and post-nuclei (bottom)

The F0 trends of all constituents in pre-nuclear position are alike. All arguments and parentheticals are at the same level (an interval between 15st-20st), and with the same F0 – a low start and a rising terminal. Similarly, the mean F0 of the post-nuclear constituents resemble each other. Particularly, all post-nuclear arguments and parentheticals bear a low-level flat F0 (an interval between 10st-15st). Figure 24 clearly illustrates that the pre-nuclear / post-nuclear asymmetry in the prosodic realisation of the host arguments extends to that of the parenthetical insertions.

⁷⁶ In Figure 24, standard errors are not plotted.

So far, the statistical analysis of pitch contours and tonal variation has been presented. I now move on to compare and discuss the differences in the pitch level and durational properties of all constituents. In what follows, I present the statistical results of the final syllable durations for all speakers.⁷⁷

The table below presents the estimates of a comparison of the arguments and the parentheticals that were obtained with the linear mixed model fit by REML.

Parameter	Estimate	SE	t
Intercept(arguments)	0.16	0.01	13.56
Parentheticals	0.01	0.01	1.37

Table 1. Estimates of the final syllable durations of arguments vs. parentheticals, for all positions and for all orders

At first glance, the estimated final syllable duration of the parentheticals seems to be 10ms longer than the estimated final syllable duration of the arguments. However, careful examination reveals that this conclusion is not valid since the confidence values of this estimation are very low (standard error values are 0.01 for both cases) and the difference is not significant.

The table below presents the estimates of a comparison of the final syllable durations of the subject and the object to *yanılmiyorsam* and *bence* for all speakers and all positions.

Parameter	Estimate	SE	t
Intercept(<i>Yanılmiyorsam</i>)	0.24	0.010	22.83
Object	-0.13	0.013	-9.51
Subject	-0.02	0.010	-2.00
Bence	-0.11	0.014	-7.63

Table 2. Estimates of the final syllable durations of subject, object, *yanılmiyorsam*, and *bence*, for all orders

⁷⁷ In Turkish, phonological vowel length can be contrastive. However, the words analysed in the current experiment are composed of syllables with ‘short’ vowels. Therefore, phonological vowel length is irrelevant in the analysis.

The final syllable duration of *yanılmıyorsam* is very close to the duration of the final syllables in the subject cases. Similarly, the final syllable duration of *bence* is found very similar to the duration of the final syllables in the object cases. Thus, it seems that in terms of their final syllable duration, the subject *Yumak* and *yanılmıyorsam* form a natural class, and the object *mamayı* ‘the food’ and *bence* form a natural class. This grouping, I claim, is due to the syllable type of the items that are compared. Specifically, both the subject *Yumak* and *yanılmıyorsam* end with a closed syllable (in this case .CVC), while both the object *mamayı* and *bence* end with open syllables (in this case .CV). I conclude that the difference in final syllable duration of the items tested is not decisive for categorially distinguishing between arguments and parentheticals. Instead it seems that φs that end with an open syllable roughly have a mean duration of 120ms, and the φs that end with a closed syllable roughly exhibit a mean duration of 220ms.

These findings are in line with the findings of Güneş & Çöltekin (2015), who report that the mean duration of the φ-final closed syllables in their control set is 206ms, and the mean duration of the φ-final open syllables in their control set is 123ms. According to their results, both open and closed, *t*-final syllable durations are significantly longer than all φ-final syllables (ibid.15). Particularly, they found that the mean duration of *t*-final closed syllables are 242ms, and that the mean duration of *t*-final open syllables is 181ms. In sum, the data show that the parentheticals tested here exhibit the final syllable duration of φs and not *ts*.⁷⁸

To summarise: in this section, the exploratory statistical analysis has been presented and discussed. The parenthetical insertions tested in the experiment do not exhibit prosodic isolation. Host arguments were found to pattern similarly to the parentheticals in corresponding positions. Thus, the results of this study illustrate that the parentheticals under examination

⁷⁸ One may point out that the vowel and consonant identity (as much as syllable type) may have durational effects in English (Van Son & Van Santen 1997). The syllables compared here contain vowels and consonants with different identities. Therefore, any conclusions drawn on a durational analysis then should not be permissible. This is a valid point for stress-timed languages. Van Son & Van Santen (ibid.) find that vowel and consonant identity has an effect in durational variation if they interact with a stressed syllable (e.g. they are stressed or adjacent to a stressed syllable). However, Turkish is not stress-timed (Konrot 1981, Inkelaas & Orgun 2003). Thus, such an effect is less likely to be observed. That φ and *t* boundary durations are significantly different regardless of vowel/consonant identity is supported with a larger data-set by Güneş & Çöltekin (2015). Yet, a study on Turkish syllable length, which tests the vowel/consonant identity, is crucial for more reliable conclusions.

behave identically to host arguments with respect to their prosodic category type: both are parsed as φ s within the i of their host when pre-nuclear, and are parsed as a part of the final- φ of their host when post-nuclear.

The following section compares the results that are reported in this section to the F0 analysis of a number of other structures with and without parentheticals.

5.3.2.2 *A comparison to other is and other parentheticals*

In the previous section, we have seen that *bence* and *yamılmıyorsam* exhibit neither i -level boundary phenomena, nor the properties of a nucleus. At this point, one might argue that comparing the parenthetical pitch contour to the pitch contour of a nucleus of a larger i is not a reliable method of comparison. The reason for this is that the prosodic phrasing properties that we observe on i s with three ω s may not be the same as the prosodic patterns that we observe on i s with a single ω . One could maintain that for the comparison to be valid, the constituents that are compared should contain the same amount of ω s.

This subsection section compares the prosodic properties of *bence* and *yamılmıyorsam* to the properties of other cases of i -formation and other parentheticals. The configurations that I discuss in this subsection are the following cases. (i) A non-parenthetical mono-worded i ending with a L%, and an i ending with a nucleus where the H% is located on the periphery of the i -final nucleus. (ii) A prosodically isolated clause-medial mono-worded parenthetical with a L%, and a H%. (iii) A prosodically integrated parenthetical with multiple ω s. Noting that some parentheticals are prosodically isolated regardless of how short they are, and some are integrated regardless of how long they are, I conclude that the number of ω s in a prosodic unit is irrelevant to the manner of parsing in Turkish (c.f. Güneş & Çöltekin 2015).

In fragment answers, where only one constituent of a root clause is uttered, the fragment is the only candidate for the nucleus. (139B) is a fragment answer that was uttered by one of the female subjects, and Figure 25 presents its F0.

- (139) *A mono-worded non-parenthetical i*

- A: Araba Aynur'un biliyorum, ama bisiklet kimin?
I know the car belongs to Aynur, but whose bicycle is this?
- B: $[(\text{Emre-ler-in.})_{\omega \cdot N}]_i$
Emre-PL-GEN
'(It is) Emre (and his friend)'s.'

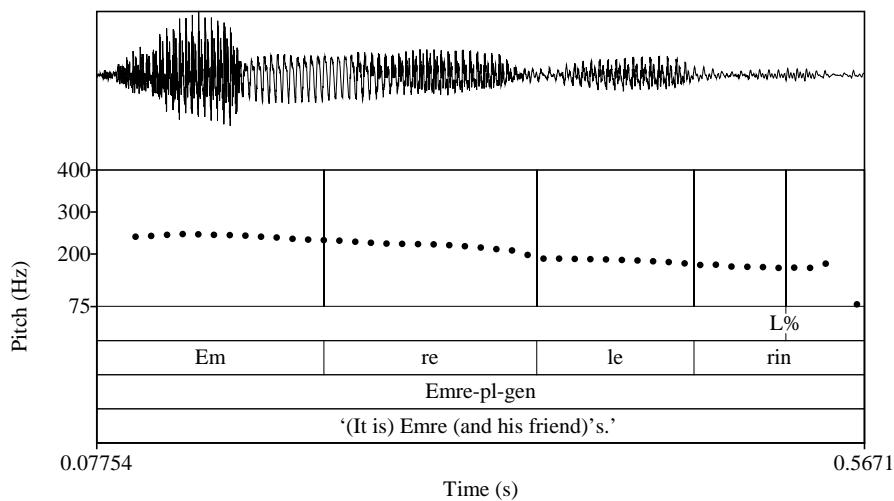


Figure 25. A sample F0 of a mono-worded non-parenthetical *i* (fragment answer)

As Figure 25 illustrates, the fragment answer is on the same pitch level as the nuclei of the tokens presented so far (between 12st-19st). Moreover, the fragment answer bears a flat F0 that is typical for nuclei with accentless ω s. Therefore, I conclude that the fragment answer in (139) is a final- φ with only one ω . Thus, the mono-worded *is* are parsed into a single φ . The lowering that is observed on the last two syllables of the fragment answer in Figure 25 is an effect of the right *i*-boundary tone 'L%'.

The example in Figure 25 shows that mono-worded utterances can constitute their own *is*. Therefore, the mono-worded parentheticals in the data could potentially bear the prosodic properties of a fragment answer – i.e. they could exhibit the properties of an *i* that is composed of only a

nucleus. However, although they are obviously integrated when post-nuclear, both *yanılmiyorsam* and *bence* exhibit a rising terminal in the pre-nuclear area. The mono-worded *i* discussed above, on the other hand, exhibits a falling terminal. Therefore, the acoustic properties of the two are hard to compare. The comparison of a mono-worded *i* with a rising terminal and these parentheticals should provide a better interpretation of the data. A string of mono-worded fragment answers with continuation intonation would be best suited to our aims here, yet such strings are extremely marked and rather unnatural considering the nature of fragmentation.⁷⁹

Another source of data that suits our purposes comes from a string of clauses that end with a nucleus. Even though each clause contains more than one ω , since the *i* is terminated with a nucleus, we can compare the ‘on-nucleus *i*-edge’ (i.e. the edges of those *i*s that end with an ω that is the nucleus of that *i*) with a rising terminal to our pre-nuclear parentheticals (which could also potentially bear an on-nucleus *i*-edge with a rising terminal). Compare Figure 26 to the pre-nuclear parentheticals in §5.3.2.1.⁸⁰

(140) *i* with H%

- A: Kim ne yiyor?
 ‘Who is eating what?’

⁷⁹ The context for such a data can be as in (i):

- (i) A: Where did Bill go? Who did Mary kiss? What are you reading?
 B: ? To school. John. A book.

I am not sure whether this marked interpretation arises from the heavy load in processing or some unknown syntactic reason.

⁸⁰ The tokens that are discussed in this subsection were elicited as part of the second study that is reported in §5.4 of this book. The analysis of these tokens in the current study is limited to an analysis of their actual F0. The observations discussed here and the conclusions drawn from these two forms are supported by statistical analysis in §5.4 of this book, as well as Güneş & Çöltekin (2015).

B: [CP₁ Münire menemen-e_N] [CP₂ Neriman yağlama-ya_N
 Münire omelette-DAT Neriman yağlama-DAT

dadan-iyor.]

pick.at-PROG

‘Neriman picks at the *yağlama*, Münire the omelette.’

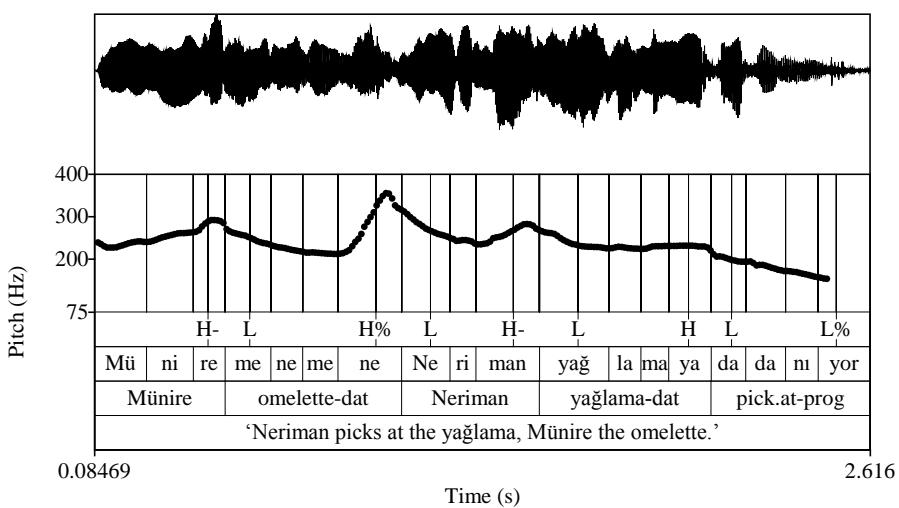


Figure 26. A sample F0 of an *i* with H% (on-nucleus H%)

Both of the clauses in (140) exhibit dual focus, first as the answer to ‘*who*’ and second as the answer to ‘*what*’. Figure 26 shows that in both of the clauses (the first of which exhibits the gapping of the shared verb), the initial focus is parsed as a pre-nucleus (a mono-worded non-final-φ) and the focused item that is linearly at the second position is parsed as the nucleus (a mono-worded final-φ). However, the nuclear contour is more visible in the second clause, as a post-nuclear item follows it. In the first clause, due to the gapping of the verb, the second focus (also being the nucleus) is the last item in its clause (and hence in its *i*).⁸¹

In this sample, the *i*-final nucleus (i.e. the nucleus of the first *i*) is what concerns us, as it exhibits a H% without post-nuclear lowering. The question of interest is whether there is a difference between the amount of rise of a

⁸¹ See Güneş (2013a) for a discussion on the prosodic realisation of the dual focus structures in Turkish.

H% that is on a post-nuclear item, and a H% that is aligned on a nucleus. If there is a difference in the amount of rise, we expect it to be less on the ‘on-nucleus’ H%, and more on the ‘post-nucleus’ H%, as the level of F0 starts lower in the case of post-nucleus H%. The amount of rise from the penultimate syllable to the final difference in the ‘on-nucleus’ condition (i.e. *menemene* ‘to the omelette’ in Figure 26) is 6st, and the final syllable duration is 200ms. The conclusions of Güneş & Çöltekin (2015) state that there is actually no difference in the amount of rise when the H% is on the nucleus, or on the post-nucleus. Therefore, comparing the H on the right edge of a pre-nuclear parenthetical to the H% on the post-nuclear edge of an i is not problematic since the values are expected to be similar if the mono-worded pre-nuclear parentheticals are prosodically isolated exhibiting an on-nucleus H%.

The sample in (141) illustrates an instance of a prosodically isolated mono-worded clause-medial parenthetical.⁸² The parenthetical is an imperative clause, where only the morphologically complex verb is pronounced (*buyrun* ‘go ahead!’). It is an interruption that functions as a speech act.

- (141) *Prosodically isolated clause-medial mono-worded parenthetical with L%: pragmatically isolated interruption*

Boya-lar – **buyrun_N!** – araba-yla yali-ya_N yollan-ıyor.
 paint-PL go.ahead-2PL car-INST house-DAT be.sent-PROG
 ‘The paints – **go ahead!** – are sent to the house by car.’

⁸² All parentheticals discussed here exhibit parenthetical behaviour when tests to identify parentheticalhood are applied.

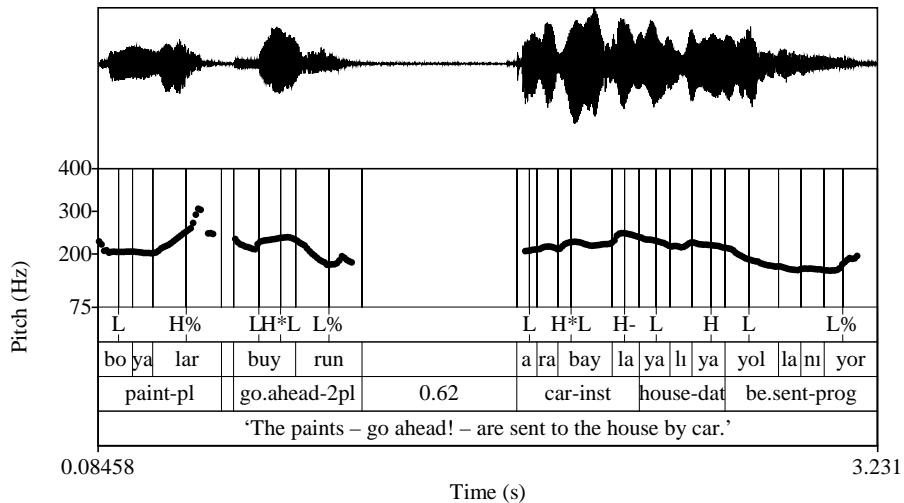


Figure 27. A sample of a prosodically isolated mono-worded clause-medial (pre-nuclear) parenthetical (pragmatically isolated interruption)

The token in (141) was presented in a context where the speaker is a renovator, and the addressee is a client, who wants to renovate her house. At a point in a conversation about the delivery of the paints, the speaker offers tea to the client interrupting her own turn with the exclamation: *Buyrun!* ‘Go ahead!’. The interruption is relevant to the situation (i.e. offering tea) but not the conversation (i.e. delivering the paint). The interruption in Figure 27 exhibited L on its left edge and a steep fall immediately after the accent on the lexically stressed ω-initial syllable. The right edge of the interruption is marked with L%, and the final syllable duration is 280ms. Similarly, the pre-parenthetical host item (the subject *boyalar* ‘the paints’) exhibits H%, and the amount of rise is 5st. and the final syllable duration is 270ms.⁸³

Such interruptions are disallowed if they are generated within the post-nuclear area of their host *i*. This is observed in (142), where the *Layerness Constraint*, which prevents φs from dominating i's (Nespor & Vogel 1986, Selkirk 1986, Selkirk 1995b, *i.a.*), prohibits the clausal interruption from being intonated as an *i* and contained within the final-φ simultaneously.

⁸³ In Figure 27, the final F0 rise of the entire utterance (i.e. on the second L%) is due to the pitch perturbation that arises with the friction on the /r/ sound that ends the word *yollanyor*. Since this area exhibits an audible fall, I annotate this edge with L%.

- (142) * [(Boya-lar)_φ (araba-yla)_φ (yali-ya_N yollan-ir – **buyrun!**)_φ].
 paint-PL car-INST house-DAT be.sent-PROG go.ahead-2PL
 ‘The paints are sent to the house by car – **go ahead!**’

As for the prosodic isolation of the interruption, it is not surprising to observe a falling F0. Such structures are interruptions not only to the host syntactic structure but also to the host discourse structure. Thus, they do not necessitate the use of continuation rise, which typically marks a continuation to the pragmatically relevant discourse. Figure 27 shows that some instances of mono-worded parentheticals are indeed parsed as *is*, which are composed of only a nucleus.

The next case of parenthetical insertion, which is shown in (143), is an instantiation of a clausal interruption. In this case, the interruption is pragmatically integrated to the content of the host; it provides background information regarding the state of the subject at the time of the event.

- (143) *Prosodically isolated clause-medial mono-worded parenthetical with H%: pragmatically integrated interruption*

Evren, **uyu-yor-du**, Aylin-le ilgili
 Evren sleep-PROG-PST Aylin-INST about
 manalı deyim-ler_N mirıldan-dı.
 meaningful statement-PL murmur-PST
 ‘Evren, (**and he was**) **sleeping**, murmured interesting statements
 about Aylin.’

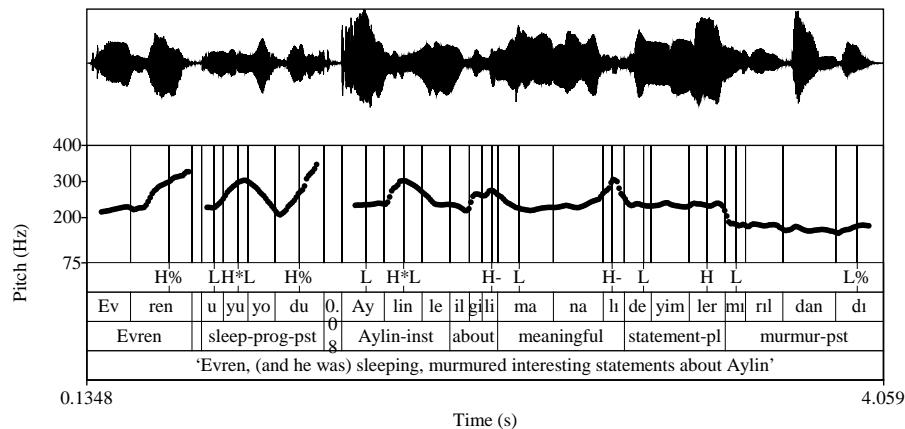


Figure 28. A sample of a prosodically isolated, mono-worded, clausal, medial (pre-nuclear) parenthetical (pragmatically integrated interruption)

The parenthetical *uyuyordu* 'he was sleeping' exhibits a H% together with a medial H*L. Similarly, the host item that precedes the parenthetical (the subject *Evren*) bears a H%. The amount of rise for both edges is 5st. The final syllable duration of the parenthetical is 240ms, which is considerably longer than the average φ-final open syllable duration. The final syllable duration of the pre-parenthetical host item is 300ms, which is longer than the average φ-final closed syllable duration. In sum, Figure 28 exhibits three *i*s; the first isolates the parenthetical from the pre-parenthetical section of the host, second isolates the parenthetical itself from the rest of the host, and the last bears a L% marking the termination of discourse. The parenthetical bears a rising terminal, indicating discourse continuation. That the parenthetical in (143) is prosodically isolated is further supported with its unavailability in the post-nuclear area of its host *i* (144).

(144) *Prosodically isolated interruption in the post-nuclear area*

- * [(Evren)_φ (Aylin-le ilgili)_φ (manalı)_φ
 Evren Aylin-INST about meaningful
 (deyim-ler_N mirildan-dı **uyu-yor-du.**)_φ]_t
 statement-PL murmur-PST sleep-PROG-PST
 'Evren murmured interesting statements about Aylin, (**and he was**)
sleeping.'

Recall the F0 analyses of pre-nuclear (initial and medial) *yanılmiyorsam* (see Figure 16 for initial and Figure 17 for medial *yanılmiyorsam*), where *yanılmiyorsam* exhibited φ edges. The amount of rise on the edges of the *yanılmiyorsam* was 3st for the initial *yanılmiyorsam* and 2st for the medial *yanılmiyorsam* and the final syllable durations were 190ms and 210ms, respectively, which was similar to the average of φ-final closed syllable duration. This duration is considerably shorter than the final syllable duration of the isolated parenthetical in Figure 28. This contrast confirms that *yanılmiyorsam* and *bence* are parsed as φs. It also shows that not all pragmatically integrated parentheticals are also prosodically integrated. Why the parenthetical in (144) bears isolation as opposed to the cases of *bence* and *yanılmiyorsam* is further discussed in Chapter 6.

So far, we have seen that no matter how short it is, a prosodic unit may be parsed as an *t* in the prosodic hierarchy, and that there may be mono-worded *ts*. This is an indication that the length of a syntactic structure (i.e. the amount of ws in it) does not cause a variation in the prosodic category type of that item in Turkish. The concessive phrase in (145) further supports this observation. In this case, a bi-worded clause-medial (pre-nuclear) parenthetical exhibits prosodic integration.

- (145) Prosodically integrated bi-worded parenthetical (concessive phrase)

Alev-ler, **alın-an önlem-ler-e rağmen,**
flame-PL taken-NOM caution-PL-DAT despite

yalılı-lar-1 duman-a_N boğ-du.
household-PL-ACC smoke-DAT engulf-PST

'The flames, **despite the precautions**, engulfed the household in smoke.'

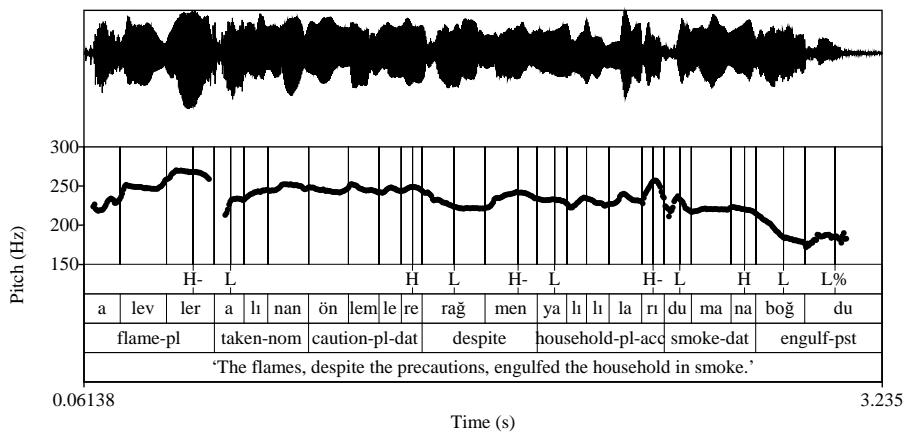


Figure 29. A sample of a prosodically integrated bi-worded clause-medial parenthetical (concessive phrase)

The parenthetical in (145) is a post-positional phrase headed by *rağmen* 'despite' and it contains three words. The F0 in Figure 29 indicates that the parenthetical is parsed as a φ , which is marked with a H- (the amount of rise on its edge is 2st and the final syllable duration is 200ms). In addition, the two non-final words in the parenthetical (*alınan* 'taken', and *önlemere* 'cautions') are parsed as a single ω , which is levelled higher than the area that follows it, and therefore the prosodic head of that φ . As for the pre-parenthetical host area, we see that the subject is parsed as another φ bearing a H- (the amount of rise is 1st, and final syllable duration is 190ms). The phrasing that we observe on the parenthetical in (145) is typical to non-final- φ s that contain more than one ω (see Güneş & Çöltekin 2015). Thus, the

sample in (145) shows that parentheticals that are composed of more than one morpho-syntactic word may exhibit prosodic integration.

In sum, the fact that mono-worded parentheticals do not exhibit the properties of a nucleus is not related to the length of the parentheticals in question. In light of this data, one may conclude that the variation in the size of the parentheticals and the host arguments that are compared herein does not invalidate the comparison that is undertaken in the current study. This conclusion is quantitatively supported by Güneş & Çöltekin (2015) and §5.4 of this book.

5.3.2.3 *Interim discussion*

So far, I have shown that parentheticals of various syntactic form and pragmatic function may exhibit various prosodic properties. Particularly, a parenthetical conditional clause (*yanılmıyorum*), and a parenthetical adverb with an epistemic function (*bence*) were observed to exhibit prosodic integration. Additionally, each one of the finite clausal interruptions – (141) and (143) – exhibited prosodic isolation. Finally, a phrasal parenthetical (a postpositional phrase) exhibited prosodic integration (145).

The question that arises at this juncture is whether there is a pattern in the isolation and integration of these parentheticals. Considering the prosodic integration of *bence* and the parenthetical in (145), one may argue that phrasal parentheticals might be parsed as φs as a result of MATCHPHRASE. As a rule of faithfulness, we can prematurely rephrase this as the following: MATCHPHRASE is active in Turkish, whereas MATCHPAPR is not. However, there are cases that conflict with this claim. Recall the case of vocatives that is discussed in §4.1.2, which is repeated below, together with the F0 analysis.

- (146) *An i that corresponds to a non-clausal XP: vocative NPs*

Aynur: Evlilik hakkında ne düşünüyorsun?
 ‘What do you think about marriage?’

B: [CP Evlen-en-ler [NP Aynur] ömr-ü-nü
 [Evlen-en-ler]_t [Aynur]_t [ömr-ü-nü
 marry-NOM-PL Aynur life-3POSS-ACC

yalan-lar-a_N ad-iyor.]
 yalan-lar-a_N ad-iyor._t
 lie-PL-DAT devote-PROG
 'The married, **Aynur**, devote their lives to lies.'

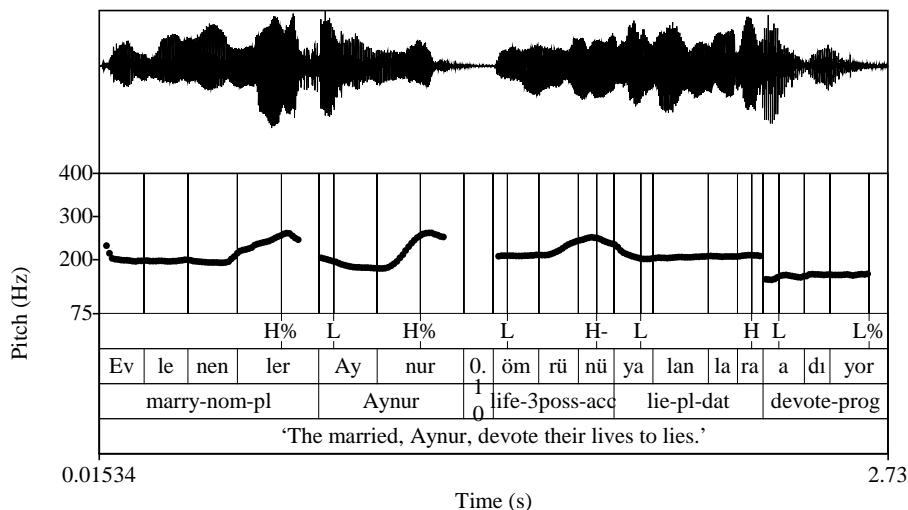


Figure 30. A sample of a mono-worded vocative (pre-nuclear)

The final syllable duration and the amount of final rise on the right edge of the vocative *Aynur* (290ms and 6st) and pre-parenthetical host subject (280ms and 5st) indicate that the vocative is flanked by *t* boundaries. The pitch level of the first and the second *t* is alike (211hz and 209hz, respectively). Additionally, the vocative is separated from the following contour by an audible pause, which can be seen in the boundaries of the area on the F0 script. The boundary of the constituent that is to the immediate left of the vocative bears a H%, which is also the boundary tone on the right edge of the vocative itself. The utterance in (146) bears three *t*s. The first *t* corresponds to the host subject. The second *t* corresponds to the host-medial vocative, and the last *t* corresponds to the rest of the host constituents. The fact that the host is divided into two *t*s is not expected under normal

circumstances. Here, the fact that it is divided into two is due to the interrupting *i* that encompasses the vocative.

Considering the isolation of the parentheticals in (141) and (143), one may conclude that clausal parentheticals may be parsed as is, which is predicted if MATCHCP or MATCHPAPR (or both) operate in Turkish. However, there are cases that conflict with this assumption. Recall the case of comment clauses that was discussed in Chapter 4, which is repeated below together with its F0 analysis.

- (147) *A φ that corresponds to a clausal parenthetical: comment clauses*

$[\text{CP}_1 \text{Emre-ler}$	$[\text{CP}_2 \text{yemin ed-er-im}]$	yeğen-im-i
$[(\text{Emre-ler})_\varphi (\text{yemin ed-er-im})_\varphi (\text{yeğen-im-i})_\varphi$		
Emre-PL	swear	make-AOR-1SG nephew-1POSS-ACC

armağan-a bog-ar-lar.]
 (armağan-a_N bog-ar-lar.)_φ
 gift-DAT overwhelm-AOR-3PL
 ‘Emre (and his friends), I swear, overwhelm my nephew with gifts.’

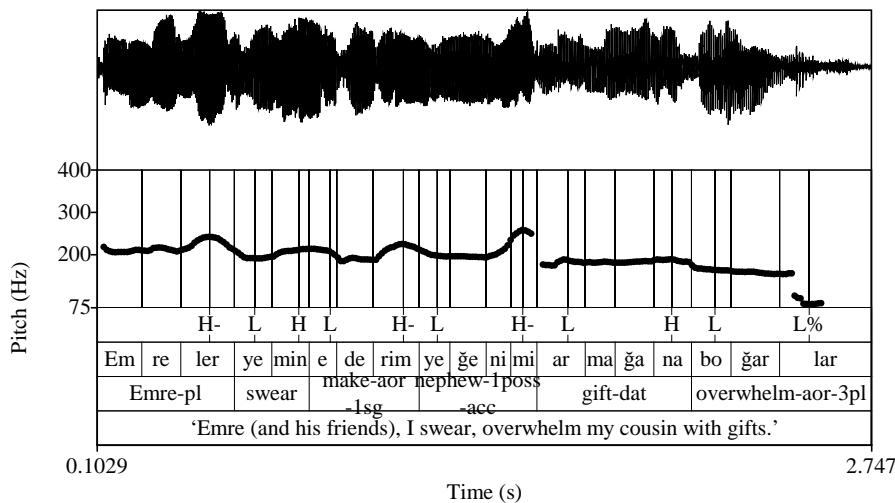


Figure 31. Undominated finite clause as φ : comment clause (pre-nuclear)

The utterance in Figure 31 bears a single *i*. This *i* is composed of four φs, the first three of which are non-final, and marked with H- on their right edge. The word *armağana* ‘to.gifts’ starts the final-φ and, as the head of the final-φ, it is also the head of the *i*. There is one post-nuclear item, which is the host verb. Apart from the φ of the comment clause, all the other non-final-φs contain only one ω. The comment clause, *yemin ederim*, bears two ωs, the leftmost of which is levelled higher (1st difference) than the consequent ω. In terms of final rise, all of the pre-nuclear φs are similar. The amount of rise on the right edge of each non-final-φ is 1st, 2st, and 3st, respectively. Additionally, the final syllable durations of these three φs are similar to the average φ-final syllable durations (for the first two φs, which end with closed syllables, it is 180ms, and 160ms, respectively; and 80ms for the last non-final-φ, which ends with an open syllable). In conclusion, the utterance in (147) is not parsed as an *i*, although it is a parenthetical (with undominated syntax) and it is a finite clause.

To summarise, the results of this study indicate that not all parentheticals are parsed as *is* in Turkish. These results entail that one must abandon the idea that MATCHPARP is the trigger for *i*-formation in Turkish when the input syntactic structure is ParP. As such, why are some parentheticals parsed as *is* and some are parsed as φs? It may be the case that this observation is due to the interaction of two distinct conditions on *i*-formation: i.e. the interaction of MATCHCP and MATCHPARP. In other words, the internal syntax of a parenthetical (i.e. whether or not it is an XP or a clause) may interact with its external syntax (i.e. whether or not it is a parenthetical or not) in the process of mapping to prosody. For a better understanding of this issue and to assess the feasibility of these suggestions, a comparison of clausal and non-clausal parentheticals and clausal and sub-clausal non-parenthetical constituents becomes crucial. The next experiment is designed to test exactly this. In case study 2, the prosodic behaviour of a larger set of parenthetical data is compared to non-parenthetical clauses and phrases.

5.4 Case study 2

Similar to the study reported in the previous section, the study that is reported in this section focuses on Turkish.⁸⁴ Two related issues are addressed here. First, we examine the extent to which the prosodic structure of Turkish validates the predictions of universal syntax-prosody mapping theories, with respect to *i*-formation. Second, we aim for a better understanding of the cross-linguistic factors that lead to prosodic isolation / integration of parentheticals.

These issues were addressed in the previous section and in Güneş (2014), which discussed the results of the production experiment on two parentheticals of Turkish (*yanılmiyorsam* ‘if I am not mistaken’, and *bence* ‘for me’ or ‘I think’) that was described in §5.3. The results of this production experiment demonstrated that (i) no significant difference pertains between the final rise of pre-nuclear parentheticals and pre-nuclear arguments, (ii) both post-nuclear arguments and post-nuclear parentheticals exhibit low and flat F0, (iii) parentheticals are pronounced at similar pitch intervals to arguments in corresponding positions, and (iv) boundary tones on the edges of parentheticals and preceding host constituents are φ -level tones. Based on these results, it was concluded that *yanılmiyorsam* and *bence* are parsed as φ s and not *is*, and thus display prosodic integration.

This section investigates whether the conclusions of the previous section (and hence Güneş 2014) are supported by results that are garnered from testing on an expanded data set. To achieve this, we conducted a production experiment to examine the prosodic behaviour of a number of sentence-medial, pre-nuclear Turkish parentheticals of different lengths, syntactic forms, and pragmatic functions. The following subsections provide the details of the experiment followed by its results.

5.4.1 The study

In this experiment, the prosodic properties of parentheticals and surrounding host (non-)constituents were compared to corresponding φ and

⁸⁴ The experiment that is reported in this section was reported in Güneş & Çöltekin (2015), written in collaboration with Çağrı Çöltekin. For this reason, I employ first person plural to refer to both of the authors of this paper.

i boundaries within and across root clauses that do not contain parentheticals. Pre-boundary lengthening of syllables, the F0 values on the edges of constituents (boundary tones), and the distribution of pauses were investigated. In what follows, the design of the stimuli and the set-up of the experiment are presented.

5.4.1.1 Stimuli

Stimuli were drawn from two sets: control and test utterances. The control contained two subsets: one for φ boundaries and the other for *i* boundaries. All target utterances contained accentless words alone. To as high a degree as possible these words were also devoid of obstruents, especially in the areas that were the target of our analysis (i.e. the edges of the analysed items). The total number of sentences processed was 704 (176 sentences x 4 speakers).⁸⁵

5.4.1.2 Control set and testing set

Control set

There were two groups in the control set: a φ -boundary group and an *i*-boundary group. For the φ boundary, there were 48 target utterances in total (VP-adverbial case: 14, argument case: 34). For the *i* boundary, there were 45 cases in total (mono-worded final- φ : 21, bi-worded final- φ : 24). In total, there were 372 cases present in the control set (93 x 4 speakers). The majority of the control cases contained more than one target boundary (e.g. 148b).

φ boundaries in the control

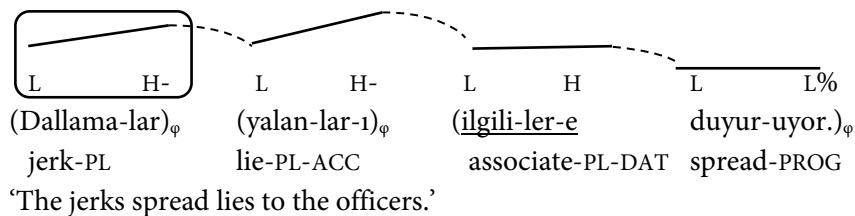
Only those elements that were parsed as non-final- φ s (those φ s that are pre-nuclear) were included for φ -boundaries in the control. Because the non-final- φ that immediately precedes the nucleus bears a higher H- than the preceding non-final- φ s (İpek & Jun 2013), we included in the control only those non-final- φ s that are non-adjacent to the final- φ in our analysis. We

⁸⁵ For a complete list of utterances analysed in case study 2, see appendix B.

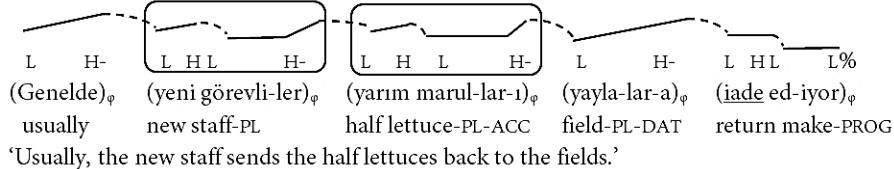
did this in order to eliminate unnecessary variation for the statistical analysis.

For the F0 analysis of the pre-nuclear final rise, we employed two kinds of non-final- φ s: (i) φ s with the single word, and (ii) φ s with two or more words. Unlike the mono-worded φ s (148a), bi-worded φ s display a ‘head vs. non-head’ distinction (148b). Heads of φ s in Turkish are marked by a higher pitch register and an H tone on the right edge, while the non-head bears F0 lowering (cf. Kamali 2011, and Chapter 3 of this book).

- (148) a. *Control set for φ boundaries (mono-worded argument) (φ -ar)*⁸⁶



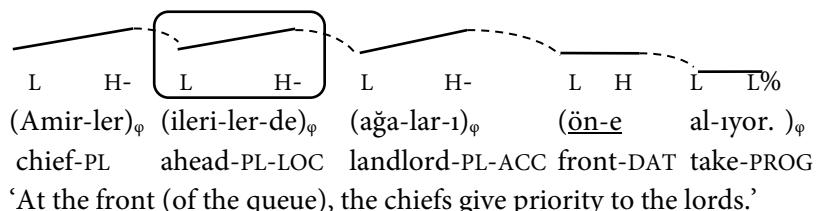
- b. *Control set for φ boundaries (bi-worded arguments) (φ -ar)*



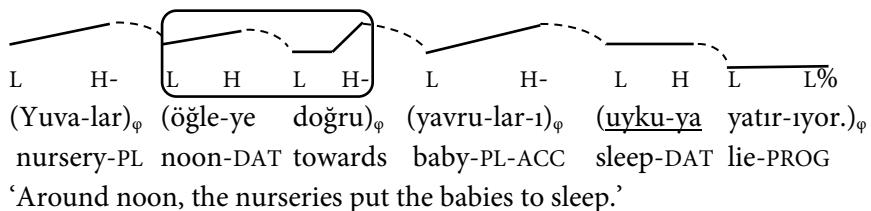
As I stated in §5.1, parentheticals are frequently analysed as syntactically adjoined to their host. Bearing this in mind, VP-adverbs such as in (149) were also included in the control, so that instances of regular adjunction and parenthetical could be compared.

⁸⁶ Rounded rectangles mark the analysed constituents.

- (149) a. *Control set for φ boundaries (mono-worded VP-adverb) (φ-app)*



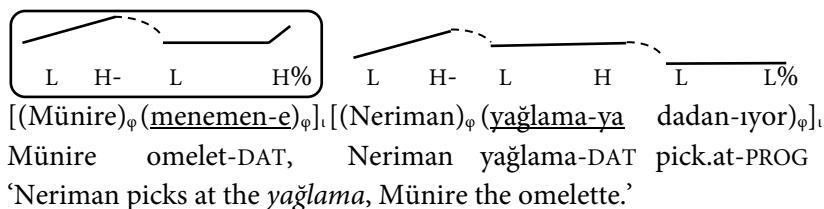
- b. *Control set for φ boundaries (bi-worded VP-adverb) (φ-app)*



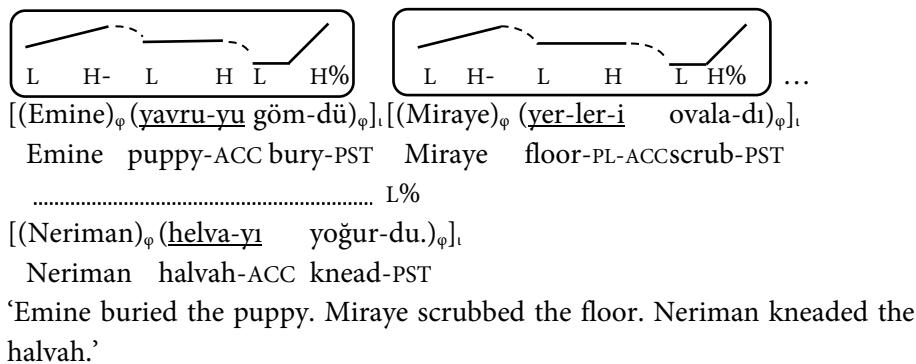
t boundaries in the control

We utilised strings of consecutive clauses for *t* boundaries in the control. Only clauses that bear continuation intonation (comma rise; H%) were included. To analyse the F0 values of the right edge boundaries, and control the steepness of the final rise, a setting similar to that in (149) was employed. In this case, the final-φ (i.e. the φ that is headed by the nucleus) of each non-final clause was either mono-worded (i.e. the nucleus alone) or bi-worded (i.e. the nucleus and a following ω with low-levelled F0). Mono-worded and bi-worded final-φs enjoyed equal representation in the control. The two conditions are illustrated in (150).

- (150) a.
- Control set for i (i-n) boundaries (mono-worded final-φ)*



- b.
- Control set for i (i-pn) boundaries (bi-worded final-φ)*

**Test set**

The test set was split into *verbal* (clausal) and *XP* parentheticals.⁸⁷ The test set was composed solely of sentence-medial pre-nuclear parentheticals that were not in the immediately pre-nuclear position. *Mono-worded* parentheticals and *bi-worded* parentheticals were equally represented.

⁸⁷ Originally, the test set contained a third group of parentheticals: '*in-between*' parentheticals. This group was comprised of *amalgamations*, i.e. those constructions like *John is going to I think it is Chicago on Sunday* (Kluck 2011). Since it is unclear where the syntactic and prosodic boundaries lie in such structures, they were not included in the analysis. They were instead used as fillers. The prosodic phrasing of these forms requires future inquiry.

Clausal (verbal) parentheticals

Verbal parentheticals are clausal parentheticals that contain a finite verb. The test set was comprised of 31 parentheticals. This set contained four subsets, where each subset contained at least 5 utterances. These subsets were:

- (151) a. *Comment clauses (com) (8 utterances)*

Bünyamin, **büyük oranla doğru-dur**, yeğen-i-ni
Bünyamin large extent true-COP.AOR nephew-3POSS-ACC

Meray-a_N ayarlı-yor-muş.

Meray-DAT set.up-PROG-EVD

‘Bünyamin, (**it**) is **probably true**, is setting his nephew up with Meray.’

- b. *Finite non-restrictive relative clauses (finnon) (5 utterances)⁸⁸*

Maymun-lar, **ki yabani-dir-ler**, lider-ler-i-ne
monkey-PL PAR wild-COP.AOR-PL leader-PL-3POSS-DAT

boyun_N eğ-er-ler.

neck bend-AOR-PL

‘Monkeys, **and they are wild**, obey their leaders.’

⁸⁸ Recall that in §4.1.2, I stated that in the literature prior to Griffiths & Güneş (2014), the *ki*-clauses (i.e. the attributive appositive clauses, such as the one in (151b) in the main text) were regarded as the finite version of the non-restrictive relative clauses in Turkish (Vaughan 1709, Underhill 1976, Erguvanlı 1981, Lehmann 1984, Bainbridge 1987, Çağrı 2005, and Kan 2009, among many others). Here, I follow Griffiths & Güneş (2014), and assume that the above mentioned *ki*-clauses exhibit a parenthetical syntax, and following Griffiths (2015b), I assume that *ki*-clauses adjoin to the main spine of their host via parenthetical adjunction. These forms constitute *attributive appositives* (c.f. Griffiths & Güneş 2014). However, in the main text above, and throughout the discussion in case study 2, I refer to these structures as *finite non-restrictive relative clauses* (i.e. *finnon*). This is simply because the experiment for case study 2 was carried out before Griffiths & Güneş (2014), Griffiths (2015b). To retain a connection with the terminology that is used in Güneş & Çöltekin (2015), I refer to the *ki*-parentheticals that are discussed in this chapter as *finnon*. However, for their underlying structure, I assume a parenthetical syntax that is dissimilar to non-restrictive relative clauses in languages like English. See §6.5 for a syntactic representation of such as clause.

- c. *Finite adverb-like parentheticals (adfin) (13 utterances)*
 Maymun-lar, **yıl-lar** **iler-ler**, yavru-lar-1
 monkey-PL year-PL pass.by-AOR infant-PL-ACC
 yuva-lar-a_N göm-er-ler.
 den-PL-DAT bury-AOR-PL
 ‘Monkeys, (**and**) **the years pass by**, bury the infants in their dens.’
- d. *Pragmatically isolated interruptions (inter) (5 utterances)*
 Mama-yı, **yan-a** **doğru** **eğil-in**, bebeğ-e
 food-ACC side-DAT towards bend-IMP baby-DAT
 biberon-la_N ver-iyor-lar.
 nursing.bottle-INST give-PROG-PL
 ‘They give the food – **lay down on your side!** – to the baby from a nursing bottle.’

In (151), verbal parentheticals are divided according to surface structure. Verbal parentheticals can also be split across another dimension: *pragmatic function*. This split is binary – either verbal parentheticals are *pragmatically integrated* to their host (151a-c), or they are pragmatically *isolated* from their host (151d). Unlike pragmatically integrated parentheticals, which contribute to the discourse structure containing their host, pragmatically isolated parentheticals contribute only to the situational context in which the host is uttered. To illustrate, consider (151d), where the speaker is a doctor, the addressee is a patient in the setting of a hospital. Here, the interruption is relevant to the situation (i.e. the doctor’s examination of the patient) but not the topic of conversation (i.e. how to feed a baby). Among pragmatically integrated parentheticals, comment clauses, e.g. (151a), exhibit a different semantic-pragmatic relation when compared to other pragmatically integrated clausal parentheticals, e.g. (151b) and (151c). They are even more integrated than the other parentheticals (Reis 2000, Asher 2000, Dehé & Wichmann 2010, and Dehé 2014). This difference is due to the circumstance that comment clauses present the speaker’s mental disposition about the validity of the truth of the host proposition. In this sense, their

“communicative value is roughly equivalent to an adverbial...” (Reis 2000:9). “A true integrated reading (= Reinhart’s ‘speaker-oriented’ reading)” (*ibid.*12) of comment clauses, results in prosodic integration across languages (Reis 2000 for German, Reinhart 1983, Dehé & Wichmann 2010, and Dehé 2014) for English).

XP parentheticals

Different types of subclausal constituents comprised the test set of XP parentheticals (or *phrasal parentheticals*). The test set was comprised of 26 XP parentheticals. This set contained four subsets, where each subset contained at least 5 utterances. These subsets were:

- (152) a. *Mitigative adverbials (admit) (5 utterances)*

Memur-lar, **anla-dığ-im** **kadariyla**,
officer-PL understand-NOM-1SG.POSS as.far.as

alan-lar-da bela_N ari-yor.
arena-PL-LOC trouble seek-PROG

‘The officers, **as far as I understand**, are looking for trouble in the fields.’

- b. *Nominal appositives (identificational) (appo) (6 utterances)*

Emir-i, **yegen-im-i**, araba-yla
Emir-ACC nephew-ACC car-INST

oyun-a_N götür-üyör-lar.
play-DAT tale-PROG-PL

‘They take Emir, **my nephew**, to the play by car.’

- c. *Post-positional (peripheral) adverbials (adper) (10 utterances)*

Alev-ler, **alin-an** **önlem-ler-e** **raigmen**,
flame-PL taken-NOM caution-PL-DAT despite

yalılı-lar-i duman-a_N boğdu.
 household-PL-ACC smoke-DAT engulf-PST
 ‘The flames, **despite the precautions**, engulfed the household in
 smoke.’

d. *Vocatives (voca) (5 utterances)*

Koyun-lar-i, **değerli yöre-miz-in** yerli-ler-i,
 sheep-PL-ACC dear region-1PL.POSS-3GEN local-PL-3POSS

ağıl-lar-i-na yeni-ler-le_N yolla-r-1Z.
 barn-PL-3POSS-DAT new-PL-INST send-AOR-1PL
 ‘We send the cows, (**you**) **dear locals of our region**, to their
 barns with the new ones.’

Similarly to (151), XP parentheticals can be divided according to their level of pragmatic integration. (152a-c) are pragmatically integrated, while vocatives – such as (152d) – are isolated.

5.4.1.3 *Methodology*

Four female speakers of standard Turkish participated in the experiment. All speakers were university graduates. At the time of the recording, the ages of the speakers were 32, 32, 37, and 55, respectively from speaker one to four. All the speakers except the first were monolingual speakers of Turkish. The first speaker was recorded in a sound-proof audio studio through an external microphone using the software program Adobe Audition 3.01, at the University of Groningen. The other three speakers were recorded using an Olympus digital voice recorder (WS-812) in Turkey. The recordings of the last three speakers took place in rooms with minimal background noise. At the time of recording, only the experimenter and the participant occupied the room. Before the experiment began, four sets of training slides were presented to ensure that the participants were familiar with the experimental procedure. The training material was repeated multiple times if necessary. The experiment lasted approximately 45 minutes.

5.4.1.4 Data elicitation and processing

Target utterances were presented to the participants as MS PowerPoint slides on a screen. Each slide contained three parts. First was the context section, where an imaginary context was described so that the participant could utilise her knowledge of information structure to produce the target utterance in a more natural manner. Second was the elicitation question, which fixed the position of the nucleus in the target utterance. Third was the target utterance. All the standard orthographic conventions of Turkish were employed in the context section, eliciting question, and the target utterance. The utterances were elicited via a role-playing game. The subjects read the context, the question, and the target answer (not out loud). Then, the experimenter (the first author) read aloud the eliciting question. The subjects then employed the target sentence as an answer to the experimenter's question. Throughout the experiment, this procedure was repeated to elicit the same target whenever necessary (in cases of extraneous interruption, etc.).

The sound files of each speaker were processed using Adobe Audition 3.01. The amplitude values of the sound were normalised and the background noise was eliminated (via 'noise reduction') to filter out any potential non-speech sound interference. After the noise reduction process, each target utterance was extracted and transferred to PRAAT 5.3.02. Using PRAAT, all octave jumps were eliminated. For all speakers, pitch interval was kept constant (ceiling 400hz, floor 75hz). In the statistical analysis of the F0, similar to case study 1, only the semitone values were used (semitones re 100hz). All utterances were parsed to their syllable, word, and sentence boundaries. The parsing procedure was carried out in three steps: first all syllable, word, and utterance boundaries were manually parsed in PRAAT by a non-Turkish speaker, and then verified by a native speaker of Turkish. The detailed control of the syllable boundaries was undertaken with close reference to the spectrograms, formant values, and waveforms. All word and sentence boundaries were then manually re-aligned with their corresponding syllable boundaries. Pauses were also parsed.

5.4.1.5 Statistical analyses

Duration and F0 values of all utterances were analysed in R. We used linear mixed-effect models for analysing the data. All analyses were performed using lme4 package (Bates et al. 2013). In the presentation of the analyses that follow, we present fixed effect parameters of each model with associated standard error (SE) and t-statistic. All models we report are zero-intercept models. As a result, the estimates of the model parameters correspond to the expected value of the response variable for the respective group of the explanatory variable. Depending on the model, we also included one or more random effects to account for variation that arose due to factors such as speaker, relevant syllable type and the length of the item.

Speaker variation is a commonly observed source of variation in the results. Therefore, *speaker* was included as a random effect in all the models that are reported.

Another source of variation is the *length* of the items tested (the number of syllables per item). *Length* was also included as a random effect in all models reported here to avoid the length-related variation in the results. In all results reported below, we used a five-level categorial variable representing the length of the phrase where items with one, two, three syllables form the first three category, and items four to six (inclusive) syllables and items with seven or more syllables form the last two categories. The category decision was based on inspection of effect of the length on syllable durations in the entire data set.

Finally, dissimilarity in duration persists between open and closed syllables. To eliminate potential interference due to syllable type, we included *syllable type* as a random effect in all models where the response is the syllable duration (i.e. the cases of final lengthening).

For all cues, we only report results from ‘intercept-only’ random effect.⁸⁹ We report standard errors and t-scores for the fixed effects, and the estimated standard deviation of the random effects. We also graphically present point estimates of cue values (e.g. final syllable duration) and plus and minus one standard error interval around the estimate for each category.

⁸⁹ In our experiments inclusion of random slopes neither improved the model fit nor affected the parameter estimates substantially. Hence, we present the intercept-only random effects for the sake of simplicity and consistency.

Box-plots are presented to provide an impressionistic view of the general trends. For more conclusive and reliable observations, the results of the models that are fitted are considered.

5.4.2 *Results*

The results section is divided into four parts. Firstly, final syllable duration of the target tokens is presented. Secondly, the distribution and duration of pauses before and after the target constituents are reported. Next, i -final and φ -final F0 rise values are compared to the final rise that is observed on the edges of target parentheticals of the test set. Lastly, to test the F0 properties of left-edge boundaries, the F0 lowering on the left edges of target tokens (initial lowering) are reported.

5.4.2.1 *Final lengthening*

The segmental makeup of syllables may have an effect on the results when we generate the estimates of final syllable durations. Particularly, open (in our data .CV) and closed (in our data .CVC) syllable values may be consistently different across different prosodic category types. The results show that this is indeed the case when we compare the mean values of the open and closed final syllables of i s and φ s in the control. The mean duration of i -final open syllables is 181ms, while the mean duration of φ -final open syllables is 123ms. Similarly, the mean duration of i -final closed syllables is found 242ms, while the mean duration of φ -final closed syllables is 206ms. As a result, although there is a consistent difference between the duration of open and closed syllables (where open syllable duration is shorter than closed syllable duration), the categorial variation persists: i.e. i -final syllables are longer than φ -final syllables, regardless of the syllable type. Particularly, open i -final syllables are longer than open φ -final syllables and closed i -final syllables are longer than closed φ -final syllables. When designing the stimuli, the segmental properties and the syllable type distribution of the final syllables are not controlled, and, in the analysis, syllable type is included as a random factor to avoid any polluting effect.

Parentheticals vs. φ and t

The final syllable duration of the parentheticals is compared to the final syllable duration of the φ and t in the control. Figure 32 presents the final syllable duration averages for all types. The solid horizontal line denotes the mean word-final syllable duration for all words, both in control and target sentences. The dashed horizontal line represents the overall mean of all syllable durations. Shading indicates the type of the phrase: white is t, darker grey is φ (as represented with the capital symbol <Φ> in all figures), darkest grey is verbal parentheticals, and light grey is XP parentheticals.

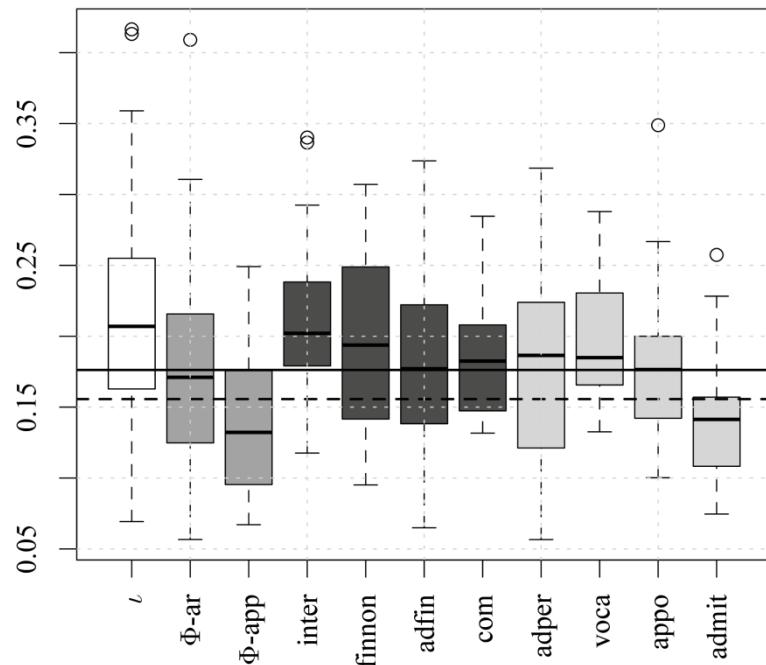


Figure 32. Final syllable duration of the parentheticals, φ and t boundaries

As Figure 32 shows, the averages of the final syllable duration for some parentheticals are closer to t, the final syllable duration of which is higher than the average word-final syllable duration. While φ-final syllable duration values are around average, φ-app (low adverbs) exhibits markedly shorter

final syllables.⁹⁰ A similar variation is observed in parenthetical type *admit* (mitigative adverbials). Figure 32 also indicates a difference between verbal and XP parentheticals (the former having longer final syllables). Among the verbal parenthetical group, *inter* (pragmatically isolated interruptions) bears substantially longer final syllables; more than the *i*-final syllable duration. Among the XP parenthetical group, another pragmatically isolated parenthetical, *voca* (vocatives), exhibits the longest final syllables; as long as (if not longer than) *i*-final syllable duration. As reported here and in the following subsections, the groups *voca* and *inter* behave dissimilarly to their group-mates. Particularly, the box-plots for all cues report that *voca* is substantially different from the other XP parentheticals and *inter* is substantially different from the verbal parentheticals. This variation could be a source of misleading results for linear mixed-effect models, as all estimates are calculated relatively. For this reason, the tokens of *voca* and *inter* were not included in any of the linear mixed-effect models. For all cues, the cases of *voca* and *inter* are only discussed based upon the average values that are reported in box-plots.

Figure 33 and Table 3 present the parameter estimates of a linear mixed-effect model fit with random intercepts for *length* (as the total number of syllables of each chunk), *speaker*, and *syllable type*, where the predictor is the general phrase types, ‘parenthetical’, ‘intonational phrase’, and ‘phonological phrase’.

⁹⁰ The results of other tests, in the current experiment, indicate that VP-adverbs in the φ -control group are different from the arguments of the same group. We observed that in all cues, the φ -app cases show weaker boundaries than the φ -ar cases. That Turkish prosodic structure marks VP-adverbs differently to arguments is a very interesting observation, in terms of syntax-prosody mapping of adjunction and adjuncts. Yet, a more elaborate investigation that specifically focuses on this distinction is required for comprehensive conclusions to be drawn.

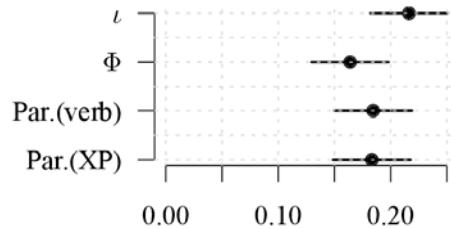


Figure 33. Estimates of the final syllable durations (in seconds) of ι , φ , verbal parenthetical and XP parenthetical

	Estimate	SE	t value
Fixed effects			
ι	0.216	0.034	6.281
φ	0.164	0.034	4.776
Par.(verbal)	0.184	0.035	5.331
Par.(XP)	0.183	0.035	5.290
Random effects s.d.			
Length	Intercept 0.0024		
Speaker	Intercept 0.0082		
Syl. type	Intercept 0.0480		

Table 3. Estimates of the final syllable durations (in seconds) of ι , φ , verbal and XP parenthetical

ι shows the longest final syllables. φ s exhibit the shortest final syllables, and two groups of parentheticals are in-between these two extremes, being slightly closer to φ s than ι s. There does not seem to be a difference in the final syllable length values of the verbal and XP parentheticals – both exhibit φ -like durations.

Figure 34 and Table 4 present a model fit to the same data with a more detailed grouping of parentheticals and phonological phrases, which reveals some differences between the verbal and XP parentheticals.

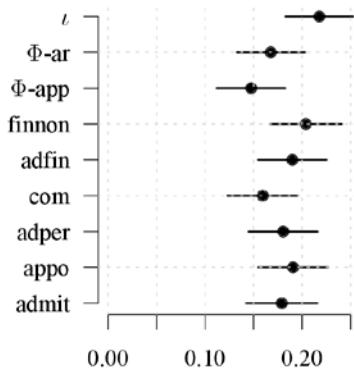


Figure 34. Estimates of the final syllable durations with all parenthetical types

	Estimate	SE	t value
Fixed effects			
ι	0.218	0.035	6.216
$\varphi\text{-ar}$	0.168	0.035	4.801
$\varphi\text{-app}$	0.147	0.035	4.171
finnon	0.204	0.037	5.542
adfin	0.190	0.036	5.348
com	0.159	0.036	4.408
adper	0.180	0.036	5.060
appo	0.191	0.036	5.283
admit	0.179	0.037	4.866
Random effects s.d.			
Length	Intercept	0.0046	
Speaker	Intercept	0.0082	
Syl. type	Intercept	0.0487	

Table 4. Estimates of the final syllable durations with all parenthetical types

With respect to the control set, a large difference pertains between ι -final and φ -final syllable durations. ι -final syllables are *long* and φ -final syllables are *short*. The final syllables of some parentheticals are dissimilar in duration to both ι -final and φ -final syllables: they are neither long nor short (*finnon* and *adfin* among the verbal parentheticals, and *appo* among the XP parentheticals). Among the XP parentheticals, the final syllable durations of

adper and *admit* are very close to the φ category, as well as *com*, which is in the group of verbal parentheticals. Nevertheless, final syllable of verbal parentheticals endures for slightly longer than its XP parenthetical counterpart.

Thus, the ordering of the tested items in terms of their final syllable duration is as follows:

- (153) $t > \text{verbal parenthetical} \approx \text{XP parenthetical} > \varphi$

Pre-parenthetical host boundaries vs. φ and t

To see if the part of the host that linearly precedes the parenthetical insertion is isolated or not, the final syllable duration of the pre-parenthetical host item is compared to the final syllable duration of the φ and t in the control data. Figure 35 compares pre-parenthetical host-final syllable duration classified for each parenthetical type with the last syllables of φ and t .

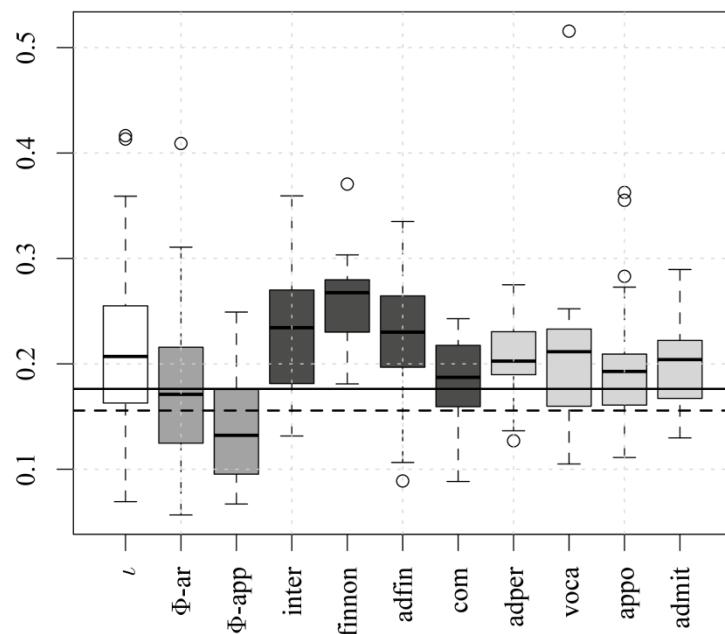


Figure 35. Final syllable duration of φ and t boundaries and the pre-parenthetical host-clause part for all parenthetical types

The pre-parenthetical final syllable duration is as long as or longer than *t* boundaries in the case of verbal parentheticals. The host part that precedes XP parentheticals is shorter than the overall duration of verbal parenthetical cases and closer to \emptyset -final syllables. As before, speaker and syllable type and the length of the analysed item cause systematic variation in the results presented in Figure 35. Therefore, we fit a model where length, speaker and syllable type are included as random effects. Figure 36 and Table 5 present the results.

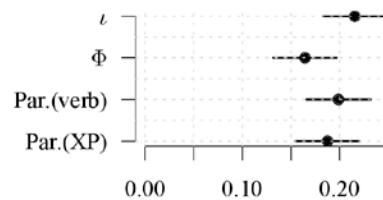


Figure 36. Estimates of the final syllable durations of *t*, \emptyset , and pre-parenthetical host syllable durations before verbal parenthetical and XP parenthetical

	Estimate	SE	t value
Fixed effects			
<i>t</i>	0.216	0.033	6.548
\emptyset	0.164	0.033	5.010
Par.(verbal)	0.199	0.033	6.018
Par.(XP)	0.188	0.033	5.664
Random effects s.d.			
Length	Intercept	0.0000	
Speaker	Intercept	0.0059	
Syl. type	Intercept	0.0461	

Table 5. Estimates of the final syllable durations of *t*, \emptyset , and pre-parenthetical host syllable durations before verbal parenthetical and XP parenthetical

Figure 36 and Table 5 provide results closer to those observed with final syllable duration. The duration of pre-parenthetical syllables lies between the

duration of the final syllables of φ and i . Again, a difference in duration between verbal and XP parentheticals is observed – this time in a more pronounced way. Pre-verbal parenthetical host-final syllable duration is closer to i -final syllable duration, while pre-XP parenthetical host-final syllable duration is closer to the φ -final syllable duration.

The parameter estimates of the detailed model including all the sub-groups of the control and the test are presented in Figure 37 and Table 6.

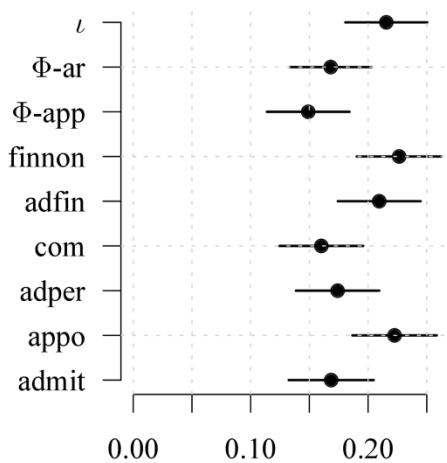


Figure 37. Estimates of the final syllable durations of i , φ and pre-parenthetical host syllable durations for detailed parenthetical types

	Estimate	SE	t value
Fixed effects			
<i>t</i>	0.216	0.035	6.180
φ -ar	0.168	0.035	4.831
φ -app	0.149	0.035	4.231
finnon	0.226	0.036	6.253
adfin	0.209	0.035	5.939
com	0.160	0.036	4.494
adper	0.174	0.035	4.904
appo	0.223	0.036	6.191
admit	0.169	0.036	4.655
Random effects s.d.			
Length	Intercept 0.0004		
Speaker	Intercept 0.0060		
Syl. type	Intercept 0.0489		

Table 6. Estimates of the final syllable durations of *t*, φ and pre-parenthetical host syllable durations for detailed parenthetical types

The results of the detailed model in Figure 37 and Table 6 support the earlier model's conclusions, but with some exceptions. Although pre-verbal parenthetical syllable duration is longer than pre-XP parenthetical duration, and closer to *t*-final syllable duration, the host part that immediately precedes *com* has the shortest difference, being closer to XP parenthetical and φ -final syllable duration. A similar behaviour is observed for the host part that precedes XP-parenthetical *appo*, which is, this time, closer to *t*-final syllable duration.

In sum, on average, the final syllable duration values before parentheticals are in between *t*-final and φ -final syllable durations. The ordering of the tested items in terms of their final syllable duration is shown below:

- (154) $t \approx$ pre-verbal-par. host > pre-XP-par. host > φ

5.4.2.2 Pauses

Number and duration of the pauses before and after the parentheticals are compared to the number and duration of the pauses before and after φ s and i s in the control. Figure 38 presents a logarithm of the duration of the pauses before (left) and after (right) the indicated phrase types. This graph only presents the durations where a pause occurred. The rate of pauses after indicated types is analysed and presented separately.

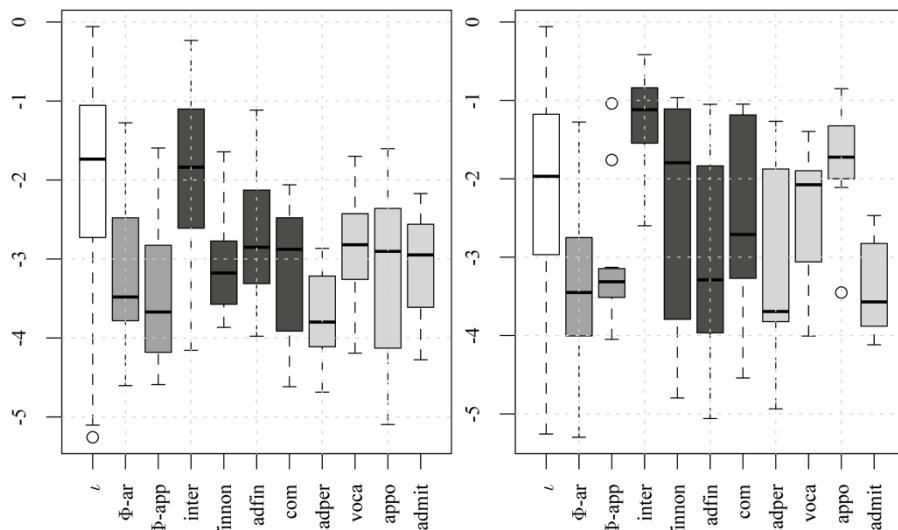


Figure 38. Duration (in log scale) of the pauses before (left) and after (right) each type

The first impression we get from Figure 38 is that pauses occur both before and after all phrases of interest. For all parentheticals, the general tendency is that the pauses before the tested items are shorter than the pauses that come after. The pauses that occur before and after the interruptions are the longest in duration. The pauses that come after the appositives are the longest among XP parentheticals. Pauses surrounding i s are considerably longer than the pauses that surround φ types.

Pause duration results are in line with the final syllable duration values; i > parenthetical > φ . Parenthetical types show a large variation among themselves. Within the parentheticals there is a verbal parenthetical > XP parenthetical ordering, especially in the cases of pauses that follow

parentheticals. Excluding the set of *inter* (i.e. pragmatically isolated interruptions), the pauses that come before parentheticals seem to be closer in duration to the pauses that come before φ types.

We fit two more models as before, this time predicting the pauses on the sides from the phrase types. We include *speaker* and the item *length* as the random variables. The model in Figure 39 and Table 7 estimates the pause durations in the occurrences before the four main groups.

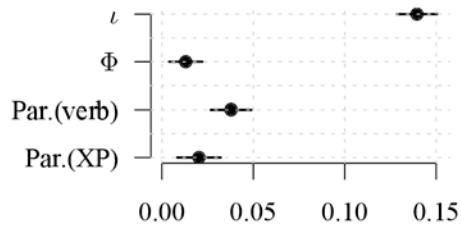


Figure 39. Estimates of the duration of the pauses that occur before *i*, φ , verbal and XP parenthetical

	Estimate	SE	t value
Fixed effects			
<i>i</i>	0.139	0.011	12.583
φ	0.013	0.009	1.423
Par.(verbal)	0.038	0.011	3.399
Par.(XP)	0.020	0.012	1.695
Random effects s.d.			
Length	Intercept	0.0051	
Speaker	Intercept	0.0089	

Table 7. Estimates of the duration of the pauses that occur before *i*, φ , verbal and XP parenthetical

The model fit on the pauses that are observed before the phrases show that pauses that follow *i* are remarkably longer than the others. Pre-*i* pause duration is followed by pre-verbal parenthetical pause duration, which is followed by the duration of pauses that come before XP parentheticals. Pre- φ pause duration is the shortest.

The model presented in Figure 40 and Table 8 below present the estimates of pause duration in the occurrences after *i*, φ , verbal parenthetical and XP parenthetical.

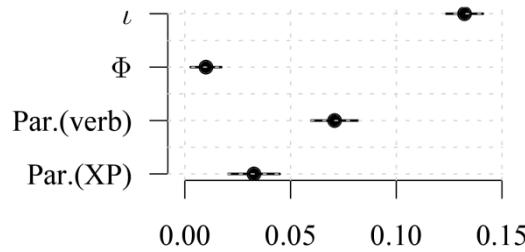


Figure 40. Estimates of the duration of the pauses that occur after *i*, φ , verbal and XP parenthetical

	Estimate	SE	t value
Fixed effects			
<i>i</i>	0.140	0.009	15.382
φ	0.010	0.007	1.420
Par.(verbal)	0.068	0.012	5.636
Par.(XP)	0.036	0.013	2.867
Random effects s.d.			
Length Intercept	0.0000		
Speaker Intercept	0.0066		

Table 8. Estimates of the duration of the pauses that occur after *i*, φ , verbal and XP parenthetical

Pauses that occur on the right edge of the analysed items support the previously attested order, i.e. *i* > verbal parenthetical > XP parenthetical > φ . This time the differences are clearer, and the estimates of the parameters are more certain. The results of this model show that pauses that occur after the parentheticals that were tested are longer than the pauses that occur before them. For completeness, Figure 41 and Table 9 present estimates of detailed model parameters for pause durations before and after the phrase types.

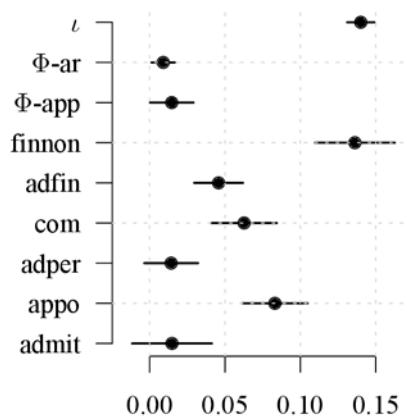
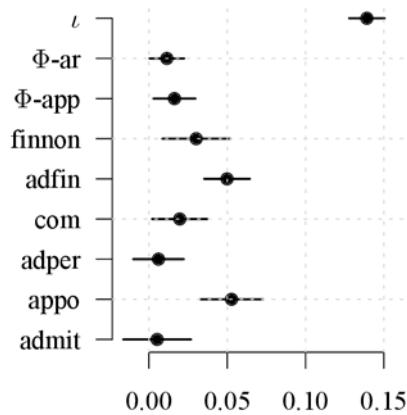


Figure 41. Estimates of the duration of the pauses that occur before (left) and after (right) all types

	Before			After		
	Estimate	SE	t value	Estimate	SE	t value
Fixed effects						
t	0.139	0.011	12.315	0.140	0.009	15.473
φ-ar	0.011	0.011	1.040	0.009	0.008	1.158
φ-app	0.016	0.013	1.215	0.015	0.014	1.017
finnon	0.030	0.022	1.397	0.136	0.026	5.142
adfin	0.050	0.015	3.422	0.046	0.016	2.825
com	0.020	0.018	1.114	0.063	0.022	2.886
adper	0.006	0.016	0.378	0.014	0.018	0.801
appo	0.053	0.020	2.645	0.083	0.022	3.829
admit	0.005	0.022	0.242	0.015	0.026	0.560
Random effects s.d.						
Length	Intercept	0.0061		0.140		
Speaker	Intercept	0.0089		0.009		

Table 9. Estimates of the duration of the pauses that occur before (left) and after (right) all types

The detailed models support the above conclusions, with the previously observed outliers. Now, we focus on the number of times the pauses occur, rather than focusing on their duration. Figure 42 presents the number of pauses before and after each phrase type.

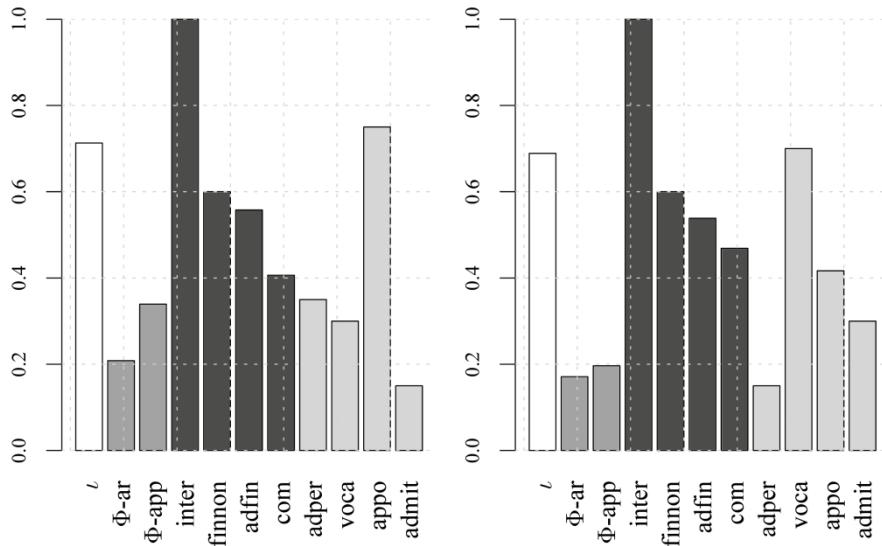


Figure 42. The number of pauses before (left) and after (right) constituents for all types

The results of the distribution of the pauses that occur before and after the items analysed showed a similar ordering to the results of the duration of the pauses. Among the parenthetical set, *inter* (i.e. pragmatically isolated interruptions) and *voca* (i.e. vocatives) exhibit the highest number of pauses on their right edge, which is at least as many as the pauses that come after ι boundaries. When we compare the verbal parentheticals to XP parentheticals (excluding *inter* and *voca*), we see that verbal parentheticals exhibit higher occurrences of pauses, which were also longer.

Pauses on the both sides of φ boundaries are shorter and fewer in number. The pauses surrounding the XP parentheticals are closer to φ boundaries in duration and distribution. However, in contrast to their right edge, appositives exhibit a higher amount of pauses on their left edge. The ordering is shown in (155):

- (155) $\iota > \text{verbal parenthetical} > \text{XP parenthetical} > \varphi$

In addition to the ordering we observed in (155), another conclusion of this subsection is that the pauses that come before each parenthetical type are

shorter and fewer in number, whereas the pauses that come after each type are longer and more in number.

5.4.2.3 Final rise

The amount of rise of the final syllables of φs and i s in the control data is compared to the amount of rise of the final syllables of each parenthetical in the test data. In the case of i -final rise, the set ' i ' is divided into two groups; (i) on nucleus- i ($i-n$), where the i -final item itself is the nucleus and the i ends with a high plateau, and (ii) post-nucleus i boundary ($i-pn$), where the i -final φ is more than one word and the right edge is after the nucleus.

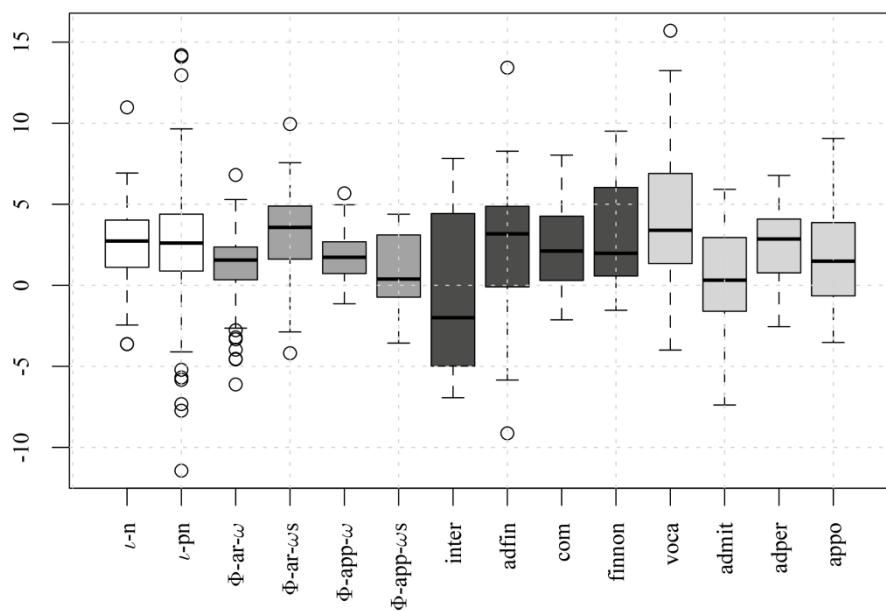


Figure 43. The amount of rise in the final syllables

The box plot in Figure 43 represents the difference between the mean pitch value of final and penultimate syllables for all types. The first impression we get from these graphs is again similar to the previous cues. The set of φs shows the least amount of final rise. Within the set of parentheticals, verbal parentheticals seem to show a higher rise in comparison to XP parentheticals. Again, *inter* exhibits a very different trend than the other

verbal parentheticals. Specifically, it exhibits the lowest degree of pitch difference, which indicates in most cases there is no rise but a fall indicating a low boundary, L%. This becomes more visible when the individual F0 contours of *inter* are examined. The other exceptional case within the set of XP parentheticals was *voca*. Similarly to the results obtained from the previous cues, *voca* exhibits a variation in its group and bears a higher final rise. Excluding the type *inter*, the final rise of is and verbal parentheticals are alike. Similarly, excluding the type *voca*, the final rise of φ s and XP parentheticals are close to each other.

We observe that some variation in the case of *i* exists based on whether *i* shares its last word/syllable with the last syllable of the nucleus (*i-n*), or whether it follows the nucleus (*i-pn*). Accordingly, *i-n* bears a smaller magnitude of final rise in comparison to *i-pn*. This variation is expected when one takes into consideration the transmission from the low levelled pitch level of the post nuclear area to the H% boundary that is triggered by comma intonation. The same variation is also observed in the cases of φ -final rise. Specifically, the phonological phrases that bear only one word (φ -ar- ω) show a smaller magnitude of final rise, whereas phonological phrases that contain more than one word (φ -ar- ω) exhibit higher rise. This variation is due to the difference in the pitch register across the head and non-head parts of the φ s that contain more than one word.

We also fit a model that takes length as well as the speaker variation as random effects (against systematic pitch-range variation due to speakers). First, a model that only distinguishes *i*, φ , and two main parenthetical subdivisions is presented in Figure 44 and table 10.

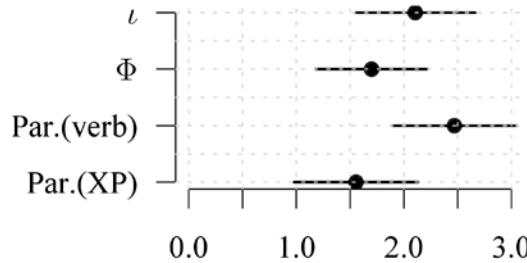
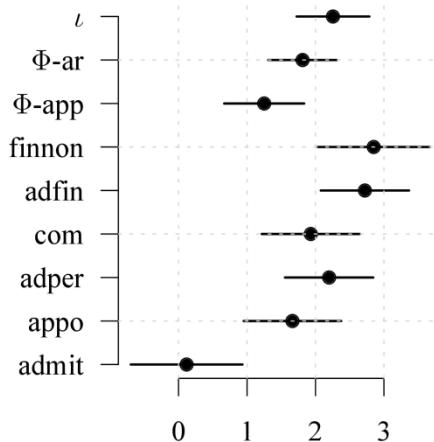


Figure 44. Estimates of the final F0 rise of i , φ , verbal parenthetical and XP parenthetical

	Estimate	SE	t value
Fixed effects			
i	2.106	0.557	3.782
φ	1.700	0.519	3.275
Par.(verbal)	2.469	0.577	4.277
Par.(XP)	1.556	0.576	2.700
Random effects s.d.			
Length Intercept	0.6159		
Speaker Intercept	0.7905		

Table 10. Estimates of the final F0 rise of i , φ , verbal parenthetical and XP parenthetical

All phrase types indicate a rise from the penultimate syllable to the final syllable. Verbal parentheticals show the highest rise, followed by i , XP parentheticals, and φ , with a rather small difference between the XP parentheticals and φ . This supports a ‘verbal par > i > XP par $\geq \varphi$ ’ ordering that was attested for the previously discussed cues. The model below shows the case of detailed grouping:

**Figure 45.** Estimates of the amount of the final F0 rise for all types

	Estimate	SE	t value
Fixed effects			
ι	2.255	0.531	4.246
$\varphi\text{-ar}$	1.811	0.503	3.601
$\varphi\text{-app}$	1.250	0.584	2.140
finnon	2.850	0.822	3.467
adfin	2.721	0.645	4.221
com	1.931	0.716	2.698
adper	2.199	0.645	3.409
appo	1.663	0.712	2.337
admit	0.117	0.816	0.144
Random effects s.d.			
Length	Intercept	0.5007	
Speaker	Intercept	0.7907	

Table 11. Estimates of the amount of the final F0 rise for all types

The main trend is similar to the results above. Although the majority of verbal parentheticals exhibit high rise (which is higher than the *t* condition), comment clauses diverge and exhibit a rise that is closer to the φ condition. The ordering of the four major groups in terms of the final rise is shown in (156):

- (156) verbal par > i > XP par ≈ φ

5.4.2.4 Initial lowering

In the control, the mean F0 of the initial syllable of the φ, where the L is observed, is subtracted from the mean F0 of the final syllable of the preceding φ, where the H- is observed. The same procedure is also applied to i boundaries. Note that in this condition only the non-initial φs and is are calculated - i.e. those cases in which it is possible to compare the initial F0 values of the target units to the final F0 values of the items that precede these target units. In φ cases, sentence-initial syllables are excluded. In i cases, only the i-initial syllables of the non-initial sentences are analysed.

In the test set, the mean F0 of the initial syllable of the parentheticals is subtracted from the mean F0 of the final syllable of the host (non-) constituent that immediately precedes the parenthetical. The graph in Figure 46 presents the mean difference of initial lowering.

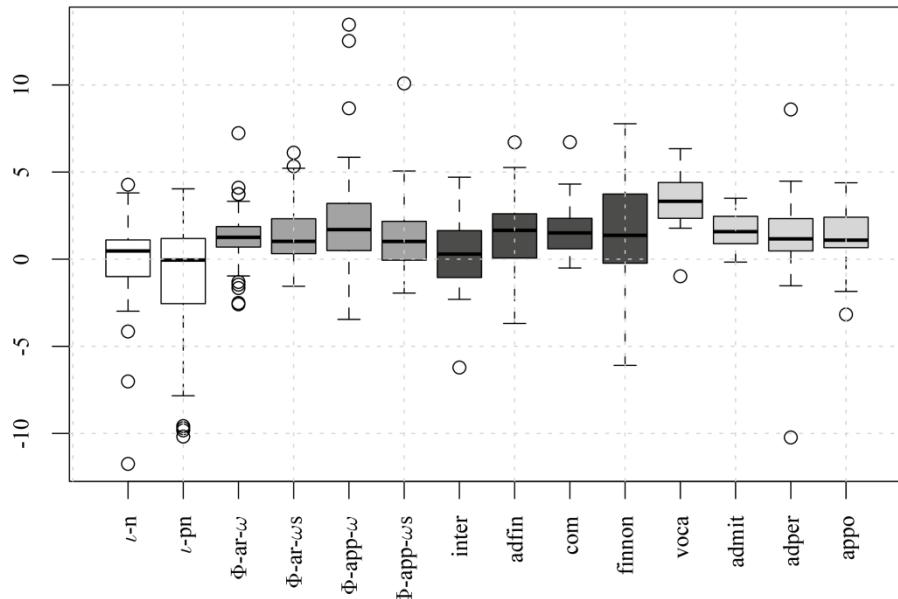


Figure 46. The difference of the mean F0 of the initial syllables of the target units, and the mean F0 of the final syllables of the items that immediately precede these target units

The graph shows a degree of lowering for all groups. However, there does not seem to be a consistent difference across all types. In fact, the figure shows that for all types, the initial fall values are between 1 and 2 semitones for all cases.

Figure 47 and Table 12 presents the results we obtain, when we investigate initial lowering with a model with four groups (also including the *i-n/i-pn* distinction):

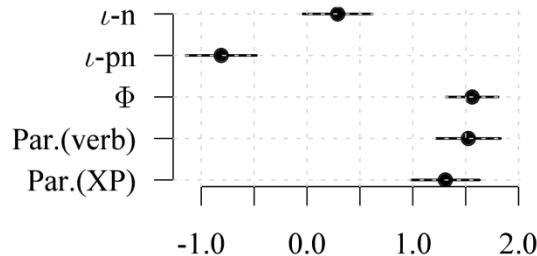
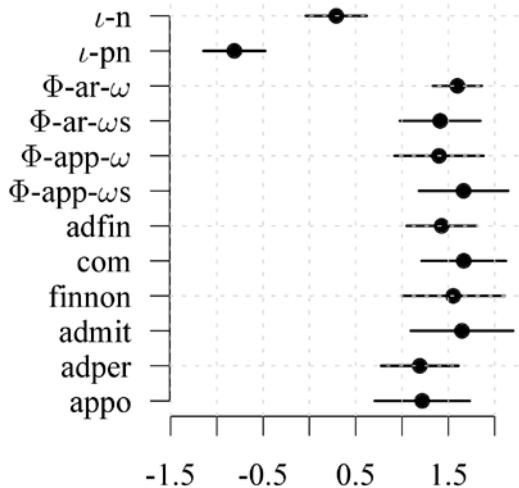


Figure 47. Estimates of initial lowering for i -n, i -pn, verbal parenthetical, XP parenthetical, and φ

	Estimate	SE	t value
Fixed effects			
i-n	0.290	0.328	0.886
i-pn	-0.811	0.333	-2.438
φ	1.561	0.246	6.349
Par.(verbal)	1.525	0.304	5.024
Par.(XP)	1.308	0.323	4.052
Random effects s.d.			
Length	Intercept	0.0000	
Speaker	Intercept	0.4084	

Table 12. Estimates of initial lowering for i -n, i -pn, verbal parenthetical, XP parenthetical, and φ

While the base level (i -n) shows the least differences in pitch, the post-nuclear i (i -pn) shows the most. The initial syllable of the i that follows i -pn exhibits a higher F0 than the final syllable of the preceding i , which bears a H% tone. This could be due to two factors. Either the rise on the right edge of i -pn cases is not as high, or the i s that succeed the i s that end with a post-nuclear area start higher (e.g. higher than the right edge of i -pn cases) and not low. The φ -initial F0 level is almost the same as verbal and XP parentheticals. φ s, verbal parentheticals, and XP parentheticals exhibit substantial lowering on their left edges, which is considerably lower than both of the i -initial cases. The last model below shows the case when we apply the model to all subgroups.

**Figure 48.** Estimates of the initial lowering of all sub-types

	Estimate	SE	t value
Fixed effects			
<i>i</i> -n	0.290	0.328	0.883
<i>i</i> -pn	-0.811	0.334	-2.432
φ -ar- ω	1.598	0.264	6.048
φ -ar- ω s	1.412	0.435	3.250
φ -app- ω	1.399	0.480	2.913
φ -app- ω s	1.664	0.480	3.464
adfin	1.428	0.379	3.769
com	1.667	0.455	3.661
finnon	1.553	0.554	2.805
admit	1.647	0.554	2.975
adper	1.192	0.417	2.857
appo	1.218	0.512	2.378
Random effects s.d.			
Length	Intercept	0.0000	
Speaker	Intercept	0.4080	

Table 13. Estimates of the initial lowering of all sub-types

We observe that the difference between φ types is not substantial, and that all subtypes of parentheticals resemble the φ condition. The information we

gather from initial lowering is not sufficient to attribute these tendencies to left edge marking, since we cannot be sure if the difference is a result of the variation in the low start on the left of the constituents, or the higher / lower end on the right edge of the preceding items of the corresponding constituents.

Considering the initial lowering results, one cannot conclude that there is a pitch reset in the case of parentheticals. Nor can we conclude that left edge F0 is employed to mark a difference between the left edges of φ s and i s in Turkish. Precisely how to generalise over these results is not yet clear to us, and hence must remain an issue for further research.

5.4.2.5 *Interim discussion*

The tables below present a summary of the results of the study presented in §5.4. Table 14 lists the properties of the verbal parentheticals, and the XP parentheticals. It depicts the acoustic properties of left and right edges of target tokens in the test set.

Type of measure	Edge type	<i>Parenthetical type</i>	
		Verbal	XP
<i>Final syllable duration</i>	Right	$< i, > \varphi$	$< i, > \varphi$
<i>Pre-par. syllable duration</i>	Left	$= i$	$< i, \approx \varphi$
<i>Pause duration (before)</i>	Left	$\approx i$	$< i, >/\approx \varphi$
<i>Pause duration (after)</i>	Right	$\approx i$	$< i, > \varphi$
<i>The amount of final rise</i>	Right	$> i$	$< i, \approx \varphi$
<i>The amount of initial lowering</i>	Left	-	-

Table 14. Summary of the results with main groups of parentheticals

Table 14 presents the results in terms of the prosodic category (φ or i) to which the sub-types of parentheticals are closest. In Table 15, the results are grouped in two: (i) left edge cues and (ii) right edge cues. The acoustic properties of certain parentheticals were different from their categorisation in the tests set. Particularly, certain verbal parentheticals (e.g. comment clauses) exhibited properties similar to XP parentheticals, and certain XP

parentheticals (e.g. appositives) exhibited properties closer to verbal parentheticals. Any sub-type of parentheticals that does not pattern with the other members of its group is italicised in the table below.

	Type of measure	φ	ι
Right edge	Final rise	admit, appo, adper, <i>com</i>	finnon, adfin
	Final syllable duration	admit, appo, adper, <i>com</i>	finnon, adfin
	Pause length after	admit, adper	finnon, adfin, com, <i>appo</i>
Left edge	Pre-par. final syllable duration	admit, adper, <i>com</i>	finnon, adfin, <i>appo</i>
	Pause length before	admit, adper, <i>com</i>	finnon, adfin, <i>appo</i>
	Initial lowering	-	-

Table 15. Summary of the results of the fitted models with subgroups of parentheticals

The orderings of the parenthetical types with respect to ι and φ boundaries encode two important observations. First, the majority of the verbal parentheticals exhibit ‘stronger’ boundaries that are similar to ι edges. Second, the majority of the XP parentheticals exhibit ‘weaker’ boundaries that are similar, if not identical to, φ edges. This dichotomy both supports and conflicts with previous theories of syntax-prosody mapping. That the majority of finite clausal parentheticals are parsed closer to ι s supports the idea of clause-to- ι mapping. It also supports the assumption that parenthetical structures are prosodically isolated. However, XP parentheticals exhibit properties closer to φ -hood (i.e. they show prosodic integration).

Mapping appears to be overridden in two ways in Turkish. First, Turkish parentheticals are shown to exhibit instances of both prosodic isolation and integration. This indicates that syntactic isolation does not trigger prosodic constituent formation. More important is to prosodically mark the clausehood and phrasehood of the target syntactic structures. Thus, regardless of whether they are extra-sentential or not, root clauses are parsed as ι s, and structures that do not exhibit the properties of root clausehood tend to be parsed as φ s.

More important than constituent-to-constituent mapping (and consequently syntactic isolation) is pragmatic relation. If a parenthetical is pragmatically isolated then it is parsed as an *i*, regardless of its syntactic type or level of syntactic isolation. This was observed with vocatives and pragmatically isolated interruptions, which exhibit longer final syllables, and longer pauses on their right edge.⁹¹ The final syllable of the host part that immediately precedes them is also longer than XP parentheticals in the test set, and *qs* in the control set. Final rise values also provide evidence of their *i*-hood. While vocatives exhibit the highest magnitude of final rise (H%), interruptions exhibited the lowest values of final pitch rise, which is even lower than the *qs* in the control group. We claim that this is due to a low tone that marks the right edge of the intonation phrase (L%). It is not surprising to observe a falling intonation instead of a rising comma intonation in such cases. Since pragmatically isolated interruptions are not related to the content of the discourse, and since they are, in fact, interruptions not only to the host syntactic structures but also to the host discourse structure, they do not necessitate the use of comma intonation, which typically marks a continuation of the ongoing discourse. Therefore, we conclude that pragmatically isolated parentheticals such as clausal interruptions and vocatives are parsed as *is* regardless of their syntactic properties.

In a similar way, the semantic / pragmatic properties of comment clauses override their syntactic properties in mapping to prosody, resulting in them being parsed as *qs* and not *is*. In this case, we observe that when a parenthetical presents the speaker's stand towards the truth of the entire host proposition, then it is prosodically integrated regardless of its syntactic makeup. This observation about Turkish comment clauses is also made in other languages (Reinhart 1983, Reis 2000, Dehé & Wichmann 2010, Dehé 2014, among others).

Another parenthetical type that does not seem to follow the generalisation made in this study is the case of identificational appositives (*appo*). We observe that these appositives exhibit stronger isolation cues

⁹¹ See Göksel & Pöchtrager (2013) for various prosodic realisations of a wider range of prosodically isolated vocatives in Turkish. One should note that the types of vocatives investigated by these authors are not the same as the ones that are analysed here. These authors investigate non-interpolating vocatives that convey meanings such as surprise, calling, checking for identity, and so on (ibid.92).

especially on their left edge. This is not surprising considering the linear position of these appositives and the way they modify their anchors. The identificational appositives that are tested in this study are constituent-modifying parentheticals, which must immediately linearly follow their anchors (Griffiths & Güneş 2014).⁹² Functionally, they provide an alternative referent for their anchor, while, syntactically, they and their anchors share the same projection (*ibid.*). Their linear position and the syntactic-semantic similarity with their anchor forces a stronger prosodic boundary in the juncture of the appositive and its anchor, which acts as a parser that separates these syntactic-semantic likes. One can envisage this as a prosodic strategy that ensures that Richards' (2001) *Distinctness Condition on Linearisation*, or some condition similar to it, is satisfied. However, the presence of a stronger left edge boundary does not create total prosodic isolation of such appositives, as they do not exhibit *i*-level properties on their right edge. That they are parsed as *φs* is further supported by Griffiths & Güneş (2014). These authors note that while prosodically isolated parentheticals such as attributive appositives cannot occupy the nucleus of their hosts (i.e. *finnon* in this experiment), identificational appositives (i.e. *appo* in this experiment) can. Similarly, while parentheticals that are parsed as *is* cannot occupy the post-nuclear area of their host-*i*, identificational appositives can. In this respect, identificational appositives exhibit the same prosodic properties as their anchors, and as other arguments of their host. Therefore, we consider such appositives to be parsed as *φs*, but with a strong left edge.

Our results show that pauses are employed to mark the edges of both *φ* and *i*. However, the duration of the pauses displays variation. While verbal parentheticals exhibit similar values to the edges of *is*, XP parentheticals are closer to the pauses surrounding *φs*. Note that in all cases a pause that precedes a parenthetical is shorter than the pause that follows it.

If one considers such a change in the duration of the pauses as a category defining cue, then this variation may be accounted for in a number of ways in terms of prosodic structure theory. First, although their prosodic category type matches with their syntax (XP to *φ* and clause to *i*), parentheticals

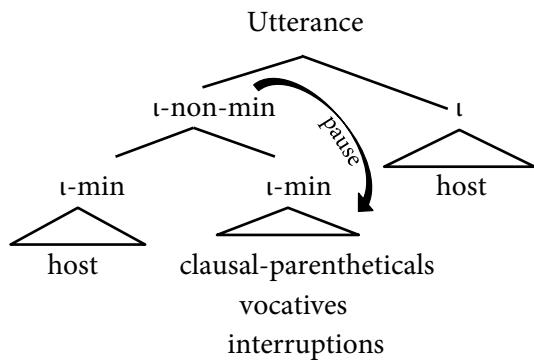
⁹² In English, identificational appositives optionally bear “namely”, as in “My best friend, *namely John*, is late”. In Turkish, instead of “namely” an Arabic loan *yani* is optionally used. For a detailed syntactic analysis of *yani* parentheticals, see Griffiths & Güneş (2014).

inherit some properties from their paratactic nature. The resulting prosodic form may be represented as a hybrid prosodic category type, which has slightly stronger boundaries than their already existing correlates, call it “ φ_{PAR} ” for XP parentheticals, and “ t_{PAR} ” for clausal parentheticals, where the hierarchical order of types is $\varphi < \varphi_{\text{PAR}} < t_{\text{PAR}} < t$.

Alternatively, instead of postulating a new category type, one can analyse the variation in the pause duration on the right edges as an indication of prosodic recursion, where the prosodic unit created by recursion is marked by a greater degree of boundary strength than the right edge of a non-recursive prosodic constituent.

In Güneş & Çöltekin (2015), we provided an account that favours the second alternative. To illustrate this, we postulated the structure in (157) for clausal parentheticals, interruptions and vocatives.

(157) Prosodic phrasing of clausal parentheticals (recursive account)

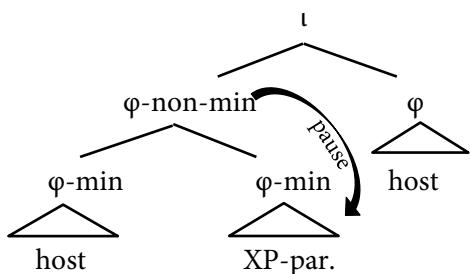


The structure in (157) is a recursive prosodic structure in which the non-terminal prosodic type $\iota\text{-non-min}$ displays a marked right edge. This prominence is realised on the right edge of the parenthetical, which is the right-branching daughter of $\iota\text{-non-min}$. The structural position of the parenthetical in (157) thus explains why pause durations before the parenthetical are shorter than those that occur after the parenthetical: the former marks the edge of a minimal prosodic projection, while the latter marks the edge of a prosodic unit built from self-similar units (in this case, the self-similar units are *is*).

XP parentheticals also exhibit pauses on their right edge, yet these pauses are not as long as the pauses observed in the ι boundary condition, even

though they are longer than the pauses that linearly precede XP parentheticals. In fact, the pauses observed after XP parentheticals are longer, but still closer to the duration of the pauses that follow φ boundaries. Keeping in mind that XP parentheticals are also similar to the φ condition in terms of final syllable lengthening, final rise, and pre-parenthetical host-final syllable durations, we claim that sentence-medial XP parentheticals are not the immediate daughters of any ι (neither an ι -non-min, nor an ι -min). For XP-parentheticals, Güneş & Çöltekin (2015) postulated the structure in (158).

(158) Prosodic phrasing of XP parentheticals (recursive account)



Like (157), (158) is a recursive structure. Again, recursion explains the disparate durations of the pauses on each side. The only difference between (157) and (158) is that in (157), the non-terminal unit created by recursion is a φ , whereas in (158) it is an ι . Thus, we expect – and do observe – that the right edge of φ -non-min displays the properties of a φ -boundary, albeit one that is more prominent than the boundary observed on an ‘atomic’ φ on its right edge.

The argument advanced in Güneş & Çöltekin (2015) accords with the idea of recursive prosodic levels, where the more recursive layers there are, the stronger the boundaries are marked (Kawahara 2012, Itô & Mester 2012). What is novel about their argument is the claim that recursion is only encoded in pause duration, and that other cues, together with the duration of pauses, are employed only to mark a prosodic unit as an ω or φ or ι . Güneş & Çöltekin (2015) state that such a recursive account of pause duration is more adequate, noting that a non-recursive model cannot explain the data

adequately since it would predict equal boundary strength on both edges of any category.

Although Güneş & Çöltekin's proposal seems to coherently account for the data, it conflicts with a crucial property of Turkish prosodic grammar. As I have extensively discussed in Chapter 2 of this book, recursive prosodic constituent formation is highly disfavoured in Turkish. This has been evidenced with the prosodic constituency of a number of syntactic structures with varying forms and functions. If recursion, in line with the analysis proposed in Chapter 2, is banned in Turkish prosodic grammar, then the proposal set forth in Güneş & Çöltekin (2015) cannot hold.

Additionally, Güneş & Çöltekin's (2015) proposal to account for the variable pause duration suffers from a lack of syntactic correspondence. Particularly, recursive prosodic representations that are suggested for the levels of both i and φ represent medial parentheticals and the first section of their hosts as the immediate constituents of a larger prosodic unit – i.e. i -*non-min* for the level of i , and φ -*non-min* for the level of φ . If this were true, in terms of correspondence to syntax, one must assume that there is a syntactic category that immediately dominates the parenthetical, and the first section of its host. As such, this projection should correspond to i -*non-min* and φ -*non-min* in the prosodic structure. One may suggest that ParP is the projection that immediately dominates both the first part of the host clause and the parenthetical in cases of parenthetical coordination (see (118i) in §5.2). However, this ParP cannot be the correlate of any non-min projection, as it cannot be targeted by the parser due to the *structural distance condition*. For the parenthetical adjunction case that is illustrated in (118ii), the ParP dominates only the parenthetical content. Similar to the case of parenthetical coordination, there is no matching projection of the parenthetical adjunction case that is eligible to correspond to the φ -*non-min* and i -*non-min* above.

I believe that to be able to consider the variability in the duration of the pauses as a phonological cue in the prosodic grammar of Turkish, additional empirical support is crucially necessary. If further research with extraneous evidence suggests that pause duration categorially marks other structural properties than just the distinction between φ s and i s, then the pause-related findings of the current study should be revisited. For the time being, I do not consider the durational variation in the results of the pause values as a

phonological cue that marks the relations other than φ -hood and ι -hood in the prosodic structures of Turkish.

The following section involves a discussion of the results of the study 1 and study 2 from the point of view of syntax-prosody correspondence.

5.5 Summary and discussion of the results

Utilizing established cues for ι and φ constituency, this study investigated whether parentheticals exhibit prosodic isolation (as ι s) or prosodic integration (as φ s or parts thereof) in Turkish. The results of the first production experiment demonstrate that the two parentheticals that were tested – *bence* ‘for me’ and *yanılmiyorsam* ‘if I am not wrong’ – are parsed similarly to subclausal constituents (i.e. as φ s when pre-nuclear and as parts of φ s when post-nuclear) in Turkish.

Prosodic properties of these parentheticals are compared to other parentheticals with various syntactic configurations and pragmatic functions, which are investigated in the second experiment. According to the exploratory results, when grouped in terms of their surface properties, phrasal and clausal parentheticals are parsed as ι s or φ s. With this regard, syntactic undomination (i.e. parenthetical syntax) cannot constitute the primary source of the prosodic isolation of parentheticals in Turkish, and MATCHPARP is not part of the algorithm of prosodic constituency formation.

In terms of prosodic markedness, the length of a parenthetical seems to affect its prosodic category in *intonation languages* such as English (Dehé 2014), but not in Turkish. Shorter parentheticals (with two syllables) may be parsed as ι s, and longer parentheticals (with nine syllables) may be parsed as φ s. Similarly, the linear position of parentheticals does not seem to operate on the prosodic parsing of parentheticals in Turkish.

Table 16 lists the prosodic category types of the parentheticals described in the two case studies in §5.3 and §5.4. *Yanılmiyorsam* is listed as a clausal parenthetical (epistemic conditional) and *bence* is listed as a phrasal parenthetical (epistemic adverbial):⁹³

⁹³ The reader should note that the studies from which the conclusions are drawn are exploratory studies with few participants. For more conclusive statements, further research is required.

	Type of parenthetical	Prosodic category
Phrasal	Vocatives	t
	Epistemic adverbials	φ
	Peripheral adverbials	φ
	Identificational appositives	φ
	Concessive phrases	φ
Clausal	Interruptions (pragmatically isolated)	t
	Interruptions (pragmatically integrated)	t
	Comment clauses	φ
	Attributive appositives	t
	Epistemic conditionals	φ

Table 16. Summary of the results of the studies 1 and 2

A syntax-prosody mapping theory that ignores ParP as a source of t-information seems to be incapable of predicting the prosodic parser in Turkish. This is especially clear with vocatives. As XPs, they are expected to be faithfully parsed as φs as per MATCHPHRASE, yet they are parsed as ts. If one assumes that MATCHPARP is operating in the prosodic grammar of Turkish, then one may conclude that as a *par*-Merged structure, vocatives – regardless of the fact that they are not clausal – are faithfully parsed as ts.

Yet MATCHPARP is insufficient for different reasons. If the sister of Par⁰ is to be parsed as an t in all occurrences of *par*-Merge, then how come not all parentheticals are rendered as ts?

We have seen that the integration of parentheticals is not due to the rules of prosodic well-formedness (e.g. their length does not affect their prosody). Their integration and isolation must be due to their syntactic properties. However, their clausal or phrasal syntax do not seem to be related either. If

that were the case, one would expect all phrasal parentheticals to be parsed as *φs* and all clausal parentheticals to be parsed as *is*. Table 16 shows that this is not the case. For example, vocatives are not clausal but they are *is*, and comment clauses and epistemic conditionals are clausal but they are *φs*.

In a comparison of the validity of the predictions of the theories that adopt MATCHCP and MATCHPARP, it seems that neither of these theories are sufficient. In other words, neither clausehood nor parentheticalhood yields *i*-formation in the prosodic structure in a systematic way.

Although the data cannot be captured by theories that adopt these two rules, *i*-formation and *φ*-formation are not completely random, either. There is one last idea that I have not entertained yet, which captures the distribution of *is*. It is related to the pragmatic properties of syntactic units.

Recall that vocatives as XPs are parsed as *is*, and not as *φs*, which conflicts with MATCHPHRASE. But, recall also that vocatives are pragmatically isolated units of discourse. I have referred to pragmatic isolation in terms of whether or not the semantic content of a parenthetical syntactic structure is related to the content of the proposition conveyed by its host. In this sense vocatives are pragmatically isolated. But their pragmatic isolation may be sourced from another property of vocatives: i.e. from the fact that vocatives are employed to commit speech acts (Hill 2013, and the references therein), and they “reflect an aspect of the locutionary act” (Austin 1962:94–107 as cited in McCawley 1998:752). It may be the case that a vocative is parsed as an *i* not because it is a parenthetical, but because it functions as a speech act that is distinct from the act that the host is used to commit.

If this speculation is on the right track, then, for architectural concerns, one must assume that speech acts are syntactically encoded and prosody, mapping from syntax, parses the syntactic projection that encodes the speech act property as *is*. Syntactic structures with a speech act function are suggested to be dominated by ForcePs in syntax (Rizzi 1997). Following this, one may assume that vocatives are dominated by ForcePs.

Chapter 6 is a reconsideration of all the examples discussed in Chapters 4 and 5, from the point of view of the idea that (a version of) ForceP in syntax matches with *is* in prosody. I shall show that this idea sufficiently accounts for the seemingly inconsistent data facts, and more.

6

Illocutionary force and ι

Chapters 4 and 5 demonstrated that clausehood and syntactic undomination (together with parenthetical syntax) cannot by themselves be a direct trigger for obligatory ι -formation. Illocutionary force that is encoded in a syntactic structure is another potential source of ι -formation that is suggested in the literature (Downing 1970, Kan 2009, Selkirk 2009, 2011, Bagchi 2011, Moraes 2011, Truckenbrodt 2014, Güneş 2014). The current chapter entertains the idea that ι corresponds to syntactic units that are employed to perform speech acts (i.e. those structures that exhibit illocutionary force).

In pragmatics, *illocutionary force* is introduced as part of speech act theory (Austin 1962, Searle 1975), and it relates to the notion of ‘illocutionary acts’. In a nutshell, an illocutionary act is a speech act that is performed with a certain intentional point, such as to ask or answer a question, to give information, to warn or command, to announce a verdict or to claim something, etc. The intention of the speaker by performing an illocutionary act constitutes the ‘force’ behind the expression of these speech acts. This force is called ‘illocutionary force’. To illustrate, consider the example from Bierwisch (1980) below:

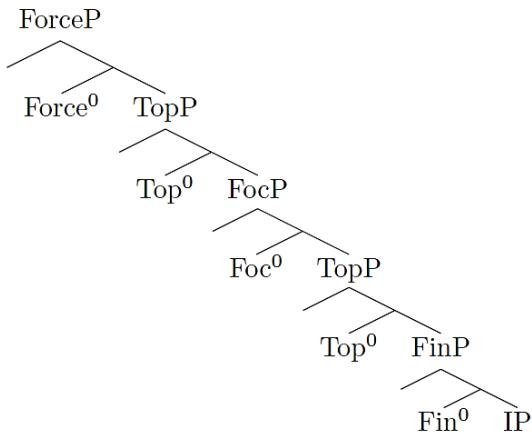
- (159) I will be there before you.

Depending upon the context, the utterance above may function to make a promise, a prediction, a warning, or a remark. Each of these meanings refers to distinct speech acts that are performed with distinct illocutionary forces. “What these speech acts have in common is called their propositional content, and what they differ in is called their illocutionary force” (Bierwisch 1980). The propositional content of an utterance is semantically distinct from its illocutionary force. A propositional content involves the compositional interpretation of the meaning of syntactic structures, whereas illocutionary force, as a pragmatic notion, is independent of the narrow

semantic compositionality of an utterance. As shown in (159), while the propositional meaning of an utterance may remain constant, its illocutionary force may vary. This behaviour provides evidence that illocutionary force is distinct from the compositional semantic meaning of utterances. In this chapter, which focuses on illocutionary force, particular attention will be paid to investigate the presence and absence of illocutionary force that is paired with syntactic structures. Thus, I will not be concerned with specific intentions of speakers, by performing each speech act. In other words, I will investigate whether certain syntactic structures exhibit illocutionary force, ignoring what particular illocutionary point (assertion, declaration, question, promise, prediction, exclamation, claim, order, etc.) each one of these structures makes.

In syntax, illocutionary force is associated with the mood (sentence type) and the discourse-related properties of sentences. As such, the syntactic encoding of illocutionary force is usually related to clausehood (i.e. to those syntactic structures that express propositions and are hence CPs). Illocutionary force as a syntactic notion is suggested to be part of the *split-CP* that is proposed by Hoekstra (1993), Müller & Sternefeld (1993), Rizzi (1997) and Cinque (1999). These authors suggest that the CP domain is endowed with a number of semantic and pragmatic properties each of which should be represented with separate maximal projections in a syntactic tree. Among these authors, Luigi Rizzi's work stands out as the prime promoter of the '*split-CP*' hypothesis. Rizzi implements the idea that those projections that are suggested to comprise the CP domain of a clause (i.e. the left periphery) encode semantically relevant information that is interpretable at LF. Some of these projections are TopP (a projection to which topicalised XPs move), FocP (a projection that hosts focused items and WH-phrases), FinP (a projection that marks finiteness), and ForceP (a projection that types the clause in accordance with the nature of the illocutionary force and the act that is performed via externalizing that clause). A schematic representation of a typical periphery of a clause under the split-CP hypothesis is given below:

- (160) *Left-periphery of a clause (Rizzi 1997)*



Among these projections, ForceP is assumed to be the top-most one, i.e. the projection that is at the root of a tree representation. As one of the projections that are suggested to replace the CP, ForceP is directly associated with clausehood, as it is assumed to encode illocutionary force and clause type. For Rizzi (1997), ForceP occupies the left periphery of *clauses*. Similarly, for Selkirk (2009) ForceP stands for an illocutionary *clause*.

It is true that in most occurrences, utterances with a propositional content exhibit illocutionary force and a clausal syntax. However, neither clausehood nor propositionality of an utterance can be directly associated with illocutionary force. From a semantic/pragmatic point of view, we have seen in (159) that propositional meaning of a clause is independent of its illocutionary point. In addition to this, from a syntactic point of view, a number of studies show that only one aspect of the Rizzian ForceP has a direct relation with clausehood, which is the *sentential force* (Chierchia & McConnell-Ginet 1990, Zanuttini & Portner 2003, Kan 2009, Potsdam 2011, Kluck 2011, and Coniglio & Zegrean 2012, among others). These studies suggest that ForceP should be divided into a *sentential force projection* (Force_{SENTP}), which types the clause (i.e. sets the mood of that clause), and *illocutionary force projection* (Force_{ILLP}), which indicates that the clause is performed as a speech act of a certain type.

Force_{ILLP} heads all of those syntactic structures that are used as speech acts. In this sense, it also heads the clauses that display mood and that are

'typed' as declarative, interrogative, etc. However, unlike Force_{SENTP}, Force_{ILLP} is not necessarily related to clausehood, as there are syntactically non-clausal discourse units that are employed to perform speech acts (Potsdam 2011, Bayer & Obenauer 2011, Güneş 2014, and Trotzke & Viesel 2014).

For the separation of Force_{ILLP} and Force_{SENTP}, consider the following: a clause such as "Is there any coffee?" may be employed to ask a question or to indicate the speaker's desire to drink coffee. When it is employed to ask a question, its sentence mood, which is interrogative, matches with its illocutionary force, which is asking a question. However, when it is employed to indicate that the speaker wants to drink some coffee (e.g. similar to an assertion such as "I would like to drink some coffee"), then the sentence mood is still going to be an interrogative (as syntactically indicated by the polar question formation), whereas its illocutionary force is going to be an assertion. Such a mismatch can only be predicted in a *split-ForceP* analysis, if one wants to retain the meaning of the speech acts as represented in the syntax.

The separation of sentence typing and illocutionary force indicating functions that are associated with ForceP, engenders the possibility that there exist (i) phrases that are headed by Force_{ILLP}, (ii) phrases that are not headed by Force_{ILLP}, (iii) clauses that are headed by Force_{ILLP}, and (iv) clauses that are not headed by Force_{ILLP}. In this book, following those studies that suggest the *split-ForceP* hypothesis in syntax, I claim that Force_{ILLP} is independent of the sentential mood indicating projection of a clause. Hence, illocutionary force bearing non-clausal syntactic structures may be found in natural languages.

In prosody, as discussed in Chapter 4, MATCHCLAUSE is suggested as the trigger for *i*-formation, in which syntactic clauses are matched with *i*s. For Selkirk (2009, 2011), there are two distinct versions of MATCHCLAUSE: *Match (illocutionary clause, i)* and *Match (clause, i)*.⁹⁴ The inputs for Match (illocutionary clause, *i*) (hereafter *MATCHFORCE*) are syntactic Force Projections (ForcePs, Rizzi 1997), while the inputs for Match (clause, *i*) (hereafter *MATCHCP*) are *all* clauses, regardless of whether or not they

⁹⁴ In the latest version of MATCHCLAUSE, Selkirk states that the ForceP can be seen as the Pottian COMMAP (Selkirk 2011:452). For the reasons listed in Chapter 5, I ignore this correlation and assume that ForceP is unrelated to the feature COMMA.

display an elaborated left periphery. Selkirk states that cross-linguistically MATCHFORCE may be universal, whereas MATCHCP is certainly not. Turkish, for example, supports this claim. In Turkish, MATCHCP is not utilised, and clauses without an illocutionary force are mapped as φ s (Kan 2009), which indicates that they are treated like regular XPs and are targeted by MATCHPHRASE.

In Chapter 4, we have already discarded the validity of MATCHCLAUSE, together with its predictive power in accounting for *i*-formation. In this chapter, I focus on the idea of generating *is* as a result of MATCHFORCE.

Employing ForceP in its Rizzian sense, Selkirk (2009, 2011) presumes that syntactic structures that bear illocutionary force are clausal structures. Therefore, she assumes that MATCHFORCE matches *clauses* with illocutionary force with *is*. She even refers to this condition as *Match illocutionary clause-to-i* (rather than Match illocutionary force-to-i). However, if the claims of those studies that suggest that illocutionary force is independent of clausehood (and therefore clausal syntax) are on the right track, then *Match illocutionary clause-to-i* will be insufficient, as it cannot account for those syntactic structures that are non-clausal but that exhibit illocutionary force (e.g. those structures that are discussed in §6.4 of this book). For this reason, it would be incorrect to refer to a syntactic structure that bears ForceP as an illocutionary *clause*. In the light of this distinction, together with the split-ForceP hypothesis, I modify Selkirk's MATCHFORCE as follows:

(161) MATCHFORCE_{ILL}:

Force_{ILL}P in syntactic constituent structure must be matched by a constituent of a corresponding prosodic type, call it *i*, in the phonological representation.

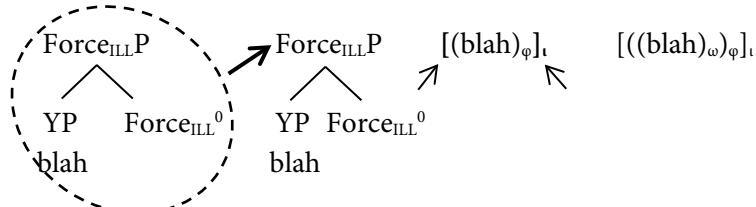
I claim that Force_{ILL}P dominates all syntactic structures that are used to commit speech acts, regardless of whether or not these structures are clausal. While the hypothesis that clauses that are utilised as speech acts are parsed as *is* has already been confirmed cross-linguistically (Kan 2009, Selkirk 2009, 2011, Truckenbrodt 2014), the idea that non-clausal syntactic structures may exhibit Force_{ILL}P and may therefore be parsed as *is* has not been previously entertained. This study provides evidence in support of the assumption that

non-clausal Force_{ILL}Ps exist in natural language, the *i*-formation of which is predicted if MATCHFORCE_{ILL} in (161) holds.

Given the definition in (161), and given the assumption that all syntactic structures (clausal or not) may bear Force_{ILL}P, MATCHFORCE_{ILL} predicts that any structure that bears Force_{ILL}P corresponds to an *i* in the prosodic representation. As such, not only root clauses, or certain clausal parentheticals, but also those non-clausal structures that are parsed as *is* can be accounted for, if they exhibit illocutionary force.

If MATCHFORCE_{ILL} is adopted, then the route to generate *is* in the algorithm proposed in this book is shown below, where a Force_{ILL}P in the source syntax survives pruning and is represented in the *maptree*. This particular projection survives the pruning process regardless of whether or not it bears a phonological exponent. This special status is due to the fact that the content of MATCHFORCE_{ILL} renders Force_{ILL}P *relevant* to the parsing operations at PF.

- (162) a. *Source syntax* b. *maptree* c. MATCHFORCE_{ILL} d. PARSE to ω



If the rule in (161) and the route in (162) are correct, then the only syntactic correlate of an *i* is Force_{ILL}P in Turkish. The consequence of such an assumption is that the integrated parentheticals that are discussed in Chapter 5 (in §5.3.2 and §5.4.2) are not dominated by Force_{ILL}P. Therefore, they are subject to MATCHPHRASE. Similarly, prosodically isolated parentheticals are predicted to be dominated by Force_{ILL}P, and therefore they are the targets of MATCHFORCE_{ILL}. If the application of MATCHFORCE_{ILL} is the reason for *i*-formation, then the prosodic properties of the parentheticals discussed in Chapter 5 can be accounted for without appealing to their parenthetical syntax – in other words, without appealing to an operation such as MATCHPARP. If the rule in (161) makes the correct predictions, then both MATCHCLAUSE and MATCHPARP become irrelevant to the algorithms of *i*-formation.

The list below is an item-by-item recap of the main points and assumptions of this section:

- Propositionality and clausehood are directly related to one another. But illocutionary force is not directly related to propositionality and clausehood.
- Force_{ILLP} is a syntactic projection that is independent of Force_{SENTP}, therefore, Force_{ILLP} is also independent of clausal syntax.
- Clauses that are performed as independent speech acts exhibit Force_{ILLP}.
- Clauses that are not performed as independent speech acts lack Force_{ILLP}.
- Non-clausal syntactic structures that are performed as independent speech acts exhibit Force_{ILLP}.
- Non-clausal syntactic structures that are not performed as independent speech acts lack Force_{ILLP}.
- If the exponents of the syntactic structures that are performed as speech acts correspond to *is* in the prosodic structure, then the syntactic correlate of such *is* is the illocutionary force projection in syntax (i.e. Force_{ILLP}).
- Any syntactic structure with a Force_{ILLP} is parsed as an *i* in the prosodic structure.
- If Force_{ILLP} is the syntactic input for *i*-formation, then it is not pruned, regardless of whether or not it bears a phonologically realised head.

In this chapter, I regroup the syntactic structures that have been discussed in Chapters 4 and 5 into two: (i) those syntactic structures with Force_{ILLP}, and (ii) those syntactic structures without Force_{ILLP}. If (161) is correct, then all of the structures in (i) are predicted to be parsed as *is*, and the structures in (ii)

are predicted to be parsed as φ s, or sub- φ s, akin to XPs, regardless of whether or not they are clausal, parenthetical, or sub-clausal.

In §6.1, I discuss the cases of clauses that are performed as speech acts and show that such clauses are always parsed as is . In §6.2, I discuss the cases of clauses that are not employed to perform speech acts, and I conclude that whether parenthetical or not, such clauses do not match with is in Turkish. In §6.3, I show that only those sub-clausal syntactic units that are not performed as an independent speech act are parsed as φ s. In §6.4, I focus on those sub-clausal syntactic constituents that are performed as speech acts and conclude that similar to the clauses that are Force_{ILL}P_s, phrases that are Force_{ILL}P_s correspond to is . In §6.5, discuss a case of syntax-prosody mismatch at the level of i . These cases involve sentence medial Force_{ILL}P_s, which are mapped as is that are recursively contained within the is of the dominating Force_{ILL}P. I claim that since Turkish prosodic grammar does not allow recursive prosodic constituents, such recurring is are repaired to achieve prosodic well-formedness. I propose that the mismatch is the result of this repair operation that is triggered by the condition on prosodic well-formedness, i.e. NONREC. Section 6.6 is the summary of this chapter.

6.1 *Clauses with illocutionary force*

This section discusses clauses that are parsed as is . I list a number of tests to show that these clauses exhibit Force_{ILL}P (i.e. they are performed as speech acts). I first discuss the cases of non-parenthetical root clauses, and then focus on parenthetical clauses.

Recall the case of clausal coordination in Chapter 4 example (86), in which both of the root clause conjuncts are parsed as is . This example is repeated below:

(163) A: Ne oldu?

'What happened?'

B: [_{CP}Kedi elma ye-di.]
[Kedi elma ye-di].
cat apple eat-PST
'The cat ate an apple.'

B': [_{CP}Kedi elma ye-di], [_{CP}Köpek et ye-di].
[Kedi elma ye-di], [Köpek et ye-di].
cat apple eat-PST dog meat eat-PST
'The cat ate an apple, the dog ate some meat.'

Both of the root clauses in B' exhibit an assertive point in terms of their illocutionary force. It is known that certain speaker-oriented peripheral adverbials (i.e. speech act modifiers), such as *probably*, *unfortunately*, *honestly*, etc., modify syntactic structures whose propositional content is asserted. The example below shows that both of the conjuncts of this coordination can be modified by such adverbials.

(164) **Maalesef** kedi elma ye-di,
 unfortunately cat apple eat-PST

ve **muhtemelen** köpek et ye-di.
and probably dog meat eat-PST
'**Unfortunately**, the cat ate an apple, and **probably**, the dog ate some meat.'

Interpretation of (164):

It is unfortunate that the cat ate an apple, and it is probable that the dog ate some meat.

Additionally, assertions can also be targeted by certain other parentheticals such as comment clauses (e.g. *sanırmı* 'I guess', and *eminim* 'I am sure'), speech act modifiers (e.g. *açıkçası* 'frankly'), or certain speaker-oriented discourse elements such as *after all*, and *at the end of the day* (Turkish: *alt*

tarafı). Below is an example in which the conjoined clauses are modified by a comment clause and a speaker-oriented discourse element, respectively:

- (165) Kedi, **san-ır-im**, elma ye-di,
 cat guess-AOR-1SG apple eat-PST
 ve köpek, **alt tarafi**, et ye-di.
 and dog bottom side-POSS meat eat-PST
 ‘The cat, I guess, ate an apple, and the dog, after all, ate some meat.’

Interpretation of (165):

I guess that the cat ate an apple, and after all, all that the dog ate was some meat.

Let us see if the assertive force of the fragment answer in (87) (which is repeated in (166) below) is also preserved:

- (166) A: Kedi ne yedi?
 ‘What did the cat eat?’
 B: [cp ~~Kedi~~ elma ~~ye-di~~.]
 [elma].
 cat apple eat-PST
 ‘An apple.’

Similar to the conjoined root clauses given in (163), the fragment answer in (166) exhibits assertive force, as it can be modified by speech act adverbials (167) and speaker-oriented discourse elements (168):

- (167) A: Kedi ne yedi?
‘What did the cat eat?’
- B: **Maalesef**, elma.
unfortunately apple
‘**Unfortunately**, an apple.’

Interpretation of (167B):
It is unfortunate that the cat ate an apple.

- (168) A: Kedi ne yedi?
‘What did the cat eat?’
- B: **Alt taraf-1**, elma.
bottom side-2POSS apple
‘**After all**, an apple.’

Interpretation of (168B):
In the end of the day, all the cat ate was an apple.

The fact that these root clauses are also parsed as *ts* accords with the idea that their illocutionary force indicating function is responsible for such a prosodic labeling – i.e. the prediction of MATCHFORCE_{ILL}.

The second case of *ts* corresponding to clauses involves parenthetical clauses that are parsed as *ts*. I list a number of tests to show that these clauses exhibit Force_{ILLP} (i.e. they are performed as speech acts).

The first example that I discuss is attributive appositives, which are called *ki*-parentheticals in Turkish (cf. Griffiths & Güneş 2014). These clausal parentheticals are introduced by the morpheme *ki*, and they provide extra information about their anchors. In most cases, they resemble sub-clausal constituents on the surface. However, just like the fragment answers discussed above, they exhibit underlyingly clausal syntax. In the literature, such parentheticals have been referred to as non-restrictive finite relative clauses (Kan 2009 and the references therein). However, Griffiths & Güneş (2014) argue that these structures are not concatenated via relativisation, rather they are integrated into the host syntax via parenthetical merge. These

parentheticals were included in the stimuli of the second experiment that was reported in Chapter 5 of this book, in which they were referred to as *finite non-restrictive relative clauses (finnon)*, like in traditional accounts. The results of this experiment show that *ki*-parentheticals are parsed as *is*. An example of such a parenthetical is given below (which is a repetition of the example (151b) in Chapter 5 of this book, with additional *i* boundaries):

- (169) [Maymun-lar]_i [ki **yabani-dir-ler**]_i [lider-ler-i-ne
 monkey-PL PAR wild-COP-PL leader-PL-2POSS-DAT
 boyun eğ-er-ler.]_i
 neck bend-AOR-PL
 ‘Monkeys, **and they are wild**, obey their leaders.’

Similar to the cases of root clauses discussed above, the content of *ki*-parentheticals may be modified by a speech act adverbial:

- (170) Maymun-lar **ki maalesef** **yabani-dir-ler** lider-ler-i-ne
 monkey-PL PAR unfortunately wild-COP-PL leader-PL-2POSS-DAT
 boyun eğ-er-ler.]_i
 neck bend-AOR-PL
 ‘Monkeys, **and unfortunately they are wild**, obey their leaders.’

Interpretation of the parenthetical in (170):
 It is unfortunate that monkeys are wild.

Additionally, *ki*-parentheticals may also be modified by comment clauses, which confirms their assertive speech act status, and that they bear Force_{ILLP}.

- (171) Maymun-lar **ki san-ır-im** **yabani-dir-ler**
monkey-PL PAR guess-AOR-1SG wild-COP-PL

lider-ler-i-ne boyun eğ-er-ler.
leader-PL-2POSS-DAT neck bend-AOR-PL
‘Monkeys, **and, I guess, they are wild**, obey their leaders.’

Interpretation of the parenthetical in (171):
I guess that monkeys are wild.

Interpretation of the host in (171):
I guess that monkeys obey their leaders.

The interpretation of (171) shows that the comment clause can only scope over the assertion made by the *ki*-parenthetical and not the assertion made by the host. This supports the conclusion that *ki*-parentheticals are employed to perform speech acts, specifically assertions.

The next case of clausal parentheticals under discussion again comes from the stimuli of the studies that were reported in Chapter 5 of this book. In this case, the clausal parenthetical is a pragmatically integrated interruption, in which the interruption provides extra information about the propositional meaning of its host. The F0 contour of such an interruption has been described and discussed in the first study reported in Chapter 5, in example (143). The prosody of a larger set of pragmatically integrated interruptions were quantitatively analysed in the second experiment (grouped under *adfin*), where they were observed to be parsed as *is*. An example of one of the interruptions discussed in Chapter 5, example (143), is repeated below, with the addition of *i*-level constituency:

- (172) [Evren], [uyu-yor-du], [Aylin-le ilgili manali
 Evren sleep-PROG-PST Aylin-INST about meaningful
 deyim-ler mirildan-di.],
 statement-PL murmur-PST
 ‘Evren, (**and he was**) **sleeping**, murmured interesting statements
 about Aylin.’

The interruption in (172) provides information about the condition in which the subject of the host (*Evren*) murmured certain things about Aylin. Accordingly, Evren was asleep when he murmured about Aylin. As such, the information that “Evren was asleep” is performed as a speech act whose illocutionary point is to make an assertion about the situation in which Evren took part in the murmuring event. If this parenthetical bears assertive force, then one should be able to modify it with a speech act adverbial, or with a comment clause. Both of these predictions are borne out, as the examples in (173), and (174) show.

- (173) Evren [maalesef uyu-yor-du], Aylin-le ilgili
 Evren unfortunately sleep-PROG-PST Aylin-INST about
 manali deyim-ler mirildan-di.
 meaningful statement-PL murmur-PST
 ‘Evren, (**and**) **unfortunately (he was)** **sleeping**, murmured interesting
 statements about Aylin.’
- (174) Evren [san-ir-im uyu-yor-du],
 Evren guess-AOR-1SG sleep-PROG-PST
 Aylin-le ilgili manali deyim-ler mirildan-di.
 Aylin-INST about meaningful statement-PL murmur-PST
 ‘Evren, (**and**) **I guess (he was)** **sleeping**, murmured interesting
 statements about Aylin.’

In (173) the peripheral adverbial *maalesef* modifies the parenthetical interruption, if it is parsed within the *i* of that parenthetical. Under such a

prosodic constituency, a reading where the adverbial modifies the host cannot be licit:

- (175) *Interpretation of the parenthetical in (173):*

It is unfortunate that Evren was sleeping when he murmured.

Interpretation of the host in (173):

- # It is unfortunate that Evren murmured interesting statements about Aylin.

A similar situation occurs with the scope of the comment clause in (174). When it is prosodically parsed within the *i* of the interruption, it can only scope over the parenthetical and not the host proposition. This is shown below:

- (176) *Interpretation of the parenthetical in (174):*

I guess that Evren was sleeping when he murmured.

Interpretation of the host in (174):

- # I guess that Evren murmured interesting statements about Aylin.

As the scope judgements indicate, the pragmatically integrated interruptions that were discussed in Chapter 5 can be targeted by assertive force modifiers. Therefore, I conclude that pragmatically integrated clausal parenthetical interruptions bear independent illocutionary force. If MATCHFORCE_{ILL} is operative, then one may conclude that the *i*-formation observed with such interruptions is due to the fact that they are Force_{ILL}Ps.

The last case of clausal parentheticals that are parsed as *is* are the pragmatically isolated interruptions that were discussed in studies 1 and 2 in Chapter 5. In this case, the content of the interruption is completely irrelevant to the content of the host clause, as well as the host discourse. The interruption is not related to the discourse meaning of its host, but to the situational context at the time of the utterance. Below is an example of such a pragmatically isolated clausal interruption, repeated from Chapter 5, example (141), in which *i*-level constituency is indicated.

- (177) [Boya-lar], [**buyrun!**], [araba-yla yalı-ya yollan-ir.]_i
 paint-PL go.ahead-2PL car-INST house-DAT be.sent-PROG
 ‘The paints – **go ahead!** – are sent to the house by car.’

The utterance in (177) is supposed to be uttered in a context in which the speaker talks about the delivery of the paints, and simultaneously offers some tea to the hearer. The interruption is in the form of an imperative, with which the speaker requests the hearer have a glass of tea that is offered by the speaker. In this sense, this parenthetical not only interrupts the host clause, but also the host discourse. Although pragmatically dissimilar to the interruption case discussed in (172), in terms of their speech act status, both of these interruptions bear illocutionary force, which is independent of their host (i.e. in compositional semantic terms they are parentheticals).

Unlike the cases discussed so far in this section, the interruption in (177) is not an assertion but a request. Modifiers of such a speech act differ from those that modify assertions. The marker *please* stands out as one of the most commonly used speech act modifiers of requests (Searle 1975, Sifianou 1999, Safont 2005, Martínez-Flor 2009, among others). If the interruption in (177) is a request which is independent of the act of asserting the host proposition, then the use of *please* to modify this interruption should not yield in infelicitous readings. The interpretation of (178), in which *please* is uttered as within the *i* of the interruption, indicates that this prediction is borne out.

- (178) Boya-lar [**lütfen buyrun!**], araba-yla yalı-ya yollan-ir.
 paint-PL please go.ahead-2PL car-INST house-DAT be.sent-PROG
 ‘The paints – **please, go ahead!** – are sent to the house by car.’

Interpretation of the parenthetical in (178):

I would like you to go ahead (and get some tea for yourself).

Interpretation of the host in (178):

I would like the paints to be sent to the house by car.

Additionally, such requests can be modified by a parenthetical that conventionally states that the speaker is making a request – a parenthetical

such as “I make a request.” Such a parenthetical is often used to modify requests in Turkish, and is often translated into English as ‘please’. The interpretation judgements of (179) indicate that such a parenthetical scopes over only the request, and in this case the request is a clausal parenthetical interruption.

- (179) Boya-lar [bu^yrun, rica ed-er-im!], yali-ya
paint-PL go.ahead-2PL request make-AOR-1SG house-DAT

yollan-ır.
be.sent-PROG

‘The paints – **please, go ahead!** – are sent to the house.’

Interpretation of the parenthetical in (179):

I request that you go ahead (and get some tea for yourself).

Interpretation of the host in (179):

I request that the paints be sent to the house.

To conclude, all of the root clauses and parenthetical clauses discussed in this section are performed as speech acts and hence exhibit illocutionary force. The fact that they are parsed as *i*s in the prosodic structure accords with the predictions of a mapping theory that adopts MATCHFORCE_{ILL}.

The next section discusses the cases of parenthetical and non-parenthetical clausal structures that lack illocutionary force, considering the prosodic category type that they bear.

6.2 *Clauses without illocutionary force*

This section discusses the clauses that are parsed as \emptyset s. I list a number of tests to show that these clauses lack Force_{ILLP} (i.e. they are *not* performed as speech acts). I first discuss syntactically embedded clauses and discourse level embedded clauses. I then focus on epistemic parenthetical clauses.

The first two examples that I discuss in this section are syntactically embedded finite and non-finite clauses that are parsed as \emptyset s. I list a number

of tests to show that these clauses lack Force_{ILLP} (i.e. they are *not* performed as speech acts).

The example below (repeated from the example (89) in Chapter 4, §4.1.1) contains an embedded nominalised clause. We have seen that such clauses are parsed as φ s and not is .

(180)	$[\text{MATRIX-CP} \text{ Aynur} \quad [\text{NOM-CP} \text{ Ali-nin} \quad \text{gel-diğ-i-ni}] \quad \text{Meray-a}$
	$[(\text{Aynur})_\varphi \quad (\text{Ali-nin} \quad \text{gel-diğ-i-ni})_\varphi \quad (\text{Meray-a})_\varphi$
	Aynur Ali-GEN come-NOM-3POSS-ACC Meray-DAT

telefon-da söyle-yecek.]
 (telefon-da_N söyle-yecek.)_φ]_i
 phone-LOC say-FUT
 ‘Aynur will tell Meray on the phone **that Ali arrived.**’

If we apply the speech act modifier test to the utterance in (180), we see that the peripheral adverbial cannot bear narrow scope over the content of the embedded clause. This is observed in the interpretation judgements of (181):

(181)	$\text{Aynur} \quad \text{maalesef} \quad \text{Ali-nin} \quad \text{gel-diğ-i-ni} \quad \text{Meray-a}$
	Aynur unfortunately Ali-GEN come-NOM-3POSS-ACC Meray-DAT
	 söyle-yecek. say-FUT
	‘Aynur will tell Meray that unfortunately Ali arrived. ’

Interpretation of the embedded clause in (181):

It is unfortunate that Ali arrived.

Interpretation of the matrix clause in (181):

It is unfortunate that Aynur will tell Meray that Ali arrived.

The fact that the speech act modifier *maalesef* cannot narrowly scope over the propositional content of the embedded clause indicates that the embedded clause is not performed as an independent speech act.

In confirmation of this observation, a comment clause cannot target the propositional content expressed by the embedded clause in (180). This is observed in the interpretation judgements of (182):

- (182) Aynur **san-ır-im** **Ali-nin** **gel-diğ-i-ni**
 Aynur guess-AOR-1SG Ali-GEN come-NOM-3POSS-ACC

 Meray-a söyle-yecek.
 Meray-DAT say-FUT
 ‘Aynur will tell Meray **that Ali, I guess, arrived.**’

Interpretation of the embedded clause in (182):

I guess that Ali arrived.

Interpretation of the matrix clause in (182):

I guess that Aynur will tell Meray that Ali arrived.

These tests show that the nominalised complement clause in (180) lacks an illocutionary force projection. In line with this observation, and in line with the predictions of a Match theory that adopts MATCHFORCE_{ILL}, it is not parsed as an *i*. I have stated that those XPs that are not Force_{ILL}P are parsed as φ s as they are subject to MATCHPHRASE. As an XP that is not a Force_{ILL}P, the embedded nominalised clause in (180) is also parsed as a φ , as discussed in Chapter 4, §4.1.1.

The fact that nominalised clauses in Turkish are parsed as φ s and not *is* has been observed in Kan (2009). Similar to the findings presented here, Kan concludes that nominalised relative clauses lack an illocutionary force projection and this is the reason why they do not match with *is*.

The next case of embedded clauses that are parsed as φ s is the case of the finite complement clauses that was discussed in Chapter 4. The example below (repeated from the example (92) in Chapter 4) indicates that the finite complement clause is parsed as a φ (see Chapter 4 for the details of the empirical observations on its prosodic category type).

- (183) [_{CP1}Meray [_{CP2}Onur ev-e gel-di diye]
 [(Meray)_φ ((Onur)_{ω-N} (ev-e gel-di diye
 Meray Onur home-DAT arrive-PST COMP

duy-muş.]
 duy-muş.)_ω)_φ]_i
 hear-EVD
 ‘Meray heard that Onur arrived home.’

If we apply the tests of speech act and comment clause modification to the utterance in (183), we see that neither the peripheral adverbial (184), nor the comment clause (185), can bear narrow scope over the content of the finite embedded clause. Consider the interpretation judgements of (184) and (185):

- (184) Meray **maalesef** Onur ev-e gel-di diye duy-muş.
 Meray unfortunately Onur home-DAT arrive-PST COMP hear-EVD
 ‘Meray heard, **unfortunately**, that Onur arrived home.’

Interpretation of the embedded clause in (184):

It is unfortunate that Onur arrived home.

Interpretation of the matrix clause in (184):

It is unfortunate that Meray heard that Onur arrived home.

- (185) Meray **san-ır-ım** Onur ev-e gel-di diye
 Meray guess-AOR-1SG Onur home-DAT arrive-PST COMP
 duy-muş.
 hear-EVD
 ‘Meray heard, **I guess**, that Onur arrived home.’

Interpretation of the embedded clause in (185):

I guess that Onur arrived home.

Interpretation of the matrix clause in (185):

I guess that Meray heard that Onur arrived home.

Similar to the conclusions drawn for nominalised subordination, the tests show that the finite complement clause in (183) lacks an illocutionary force projection. As predicted on the current approach, such finite embedded clauses are mapped to *qs*, or parts thereof, but not *ts*.

In summary, regardless of whether or not they bear finite morphology, syntactically embedded clauses discussed here lack illocutionary force, and as such, they are not parsed as *ts*.

The next set of data involves discourse level embedding (see Chapter 4). This is a case of clausal coordination, in which the contents of the conjunct clauses are strongly related to one another. In fact, the felicity of the second conjunct is dependent on the expression of the first clause. This example (the example in (96) in Chapter 4, §4.1.1) is repeated below:

- (186) [_{CP1}Ali Aynur-u öp-tü] de [_{CP2}**ben-im** ((Ali)_ω)_φ ((Aynur-u)_{ω-N} (öp-tü de **ben-im** Ali Aynur-ACC kiss-PST and I-GEN
kalb-im-i kır-dı.]
**kalb-im-i kır-dı.)_ω)_φ]_i
 heart-1POSS-ACC break-PST
 ‘Ali kissed Aynur_F, and **that is why he broke my heart.**’**

Here, since *Aynur* in the first conjunct is focused, the speaker’s heart is broken because it is Aynur that Ali kissed. With this reading, the content of the second conjunct is given (i.e. it is assumed to be mutually known by the speaker and the hearer). In the discussion of this example in Chapter 4, §4.1.1, it was observed that the second conjunct is prosodically integrated into the final-*φ* of the first conjunct. This is also depicted in the prosodic representation in (186).

If the predictions of MATCHFORCE_{ILL} hold, then the second conjunct clause in (186) must lack an illocutionary force projection, as it is not obligatorily parsed as an *t*. If such a clause lacks Force_{ILLP}, then it should not

be able to be targeted by any speech act adverbial or a comment clause. The interpretation in (187a) and (187b) show that this is indeed the case.

- (187) a. * [_{CP1}Ali Aynur-u öp-tü]
 Ali Aynur-ACC kiss-PST
 de [_{CP2}**maalesef** **ben-im** **kalb-im-i** **kir-di.**]
 and unfortunately I-GEN heart-1POSS-ACC break-PST
 ‘Ali kissed Aynur_F, and **unfortunately that is why he broke my heart.**’

Intended interpretation of the second conjunct in (187a):
 It is unfortunate that (he) broke my heart.

- b. * [_{CP1}Ali Aynur-u öp-tü]
 Ali Aynur-ACC kiss-PST
 de [_{CP2}**san-ır-im** **ben-im** **kalb-im-i** **kir-di.**]
 and guess-AOR-1SG I-GEN heart-1POSS-ACC break-PST
 ‘Ali kissed Aynur_F, and, **I guess, that is why he broke my heart.**’

Intended interpretation of the second conjunct in (187b):
 I guess that (he) broke my heart.

This test indicates that the second conjunct is not employed to perform a speech act. If the split-ForceP hypothesis that is contemplated in this chapter is correct, then such a distribution falls out naturally, as it is predicted that there are clausal structures that lack an illocutionary force projection (i.e. there may be root clauses without a Force_{ILLP}). Prosodically, as a syntactic structure that lacks an illocutionary force projection, the second conjunct in (186) is expected not to be parsed as an *i* if current approach, which adopts MATCHFORCE_{ILL}, is correct. As the F0 analysis of this utterance in Figure 11 in §4.1.1 illustrates, the second conjunct is indeed not parsed as an *i*.

Another case of discourse embedding is given below. Similar to the previous example, (188) contains two coordinated clauses. The second

conjunct clause is presupposed. In contrast to the previous example, the first conjunct in (188) is not an assertion but a question.

- (188) Aynur hastane-ye mi git-ti de **hastalık kap-tı?**
Aynur hospital-DAT Q go-PST and illness catch-PST
Lit.: 'Did Aynur go to hospital **and she caught an illness?**'
'Is it because she went to the hospital that Aynur caught an illness?'

Compare the two English translations of (188). In the literal translation to English, the entire utterance seems to be under the scope of the question operator – i.e. lit: 'Did Aynur go to hospital? And did Aynur catch an illness?' However, the actual reading indicates that this is not the case. The first conjunct is within the scope of the question operator, while the second conjunct serves to restrict the possible worlds in which an answer to the question can be provided. The second conjunct does not constitute a restrictor in terms of the semantic compositionality of the utterance. Rather it provides a restriction via the discourse. In other words, the sentence in (188) is equivalent to the expression of the sequentially ordered speech acts in (189) below (I give the example in English):

- (189) [_{ASS}Aynur caught an illness.] [_{QUEST}Did she catch it at the hospital?]

In terms of its sentential force ($\text{Force}_{\text{SENTP}}$), the second conjunct in (188) is more like a declaration than a question, while the first conjunct is a question, as the presence of the question particle indicates. The question that needs to be answered is the following: although it has the form of a declarative, is it possible that the second conjunct is employed to perform a speech act of assertion?

If the answer is 'yes', then, in terms of its prosody, we predict that the utterance in (188) exhibits two *is*, each one of which contains one of the conjoined clauses. In terms of its semantic/pragmatic properties, if the answer is 'yes', the situation would be rather extraordinary, since in such a case we would have a coordination of an interrogative and an assertion. It is known that the conjunction of two speech acts is only possible if the illocutionary force of each conjunct is the same (Krifka 2001). Therefore, it is

unlikely that (188) is an utterance where an interrogative and assertion is coordinated.

If the answer is ‘no’, then, in terms of its prosody, we predict that the utterance in (188) exhibits a single *i*, which contains both of the conjuncts, and which is mapped from the illocutionary force projection of the first conjunct. In terms of its semantic/pragmatic properties, if the answer is ‘no’, then we predict that the only speech act that is performed is a question.

Let us first discuss the prosodic properties of the two clauses in (188). The F0 of this utterance is given in the figure below.

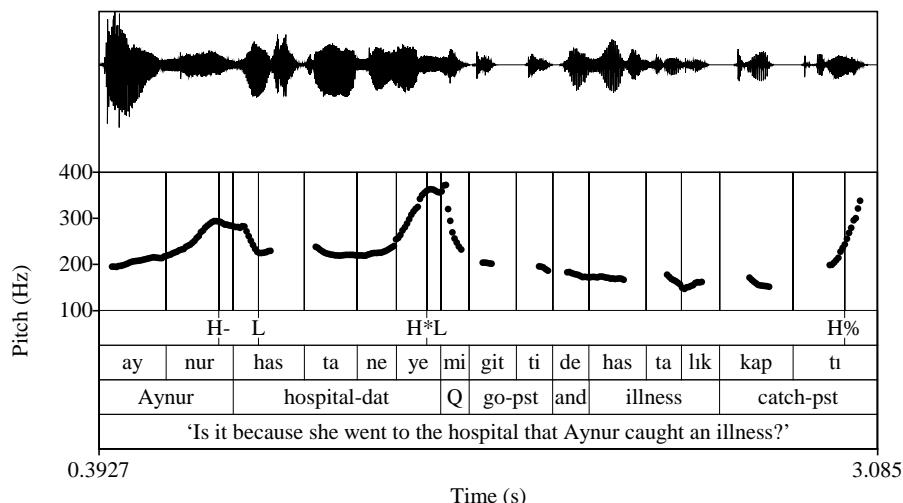


Figure 49. F0 of the utterance in (188)

As seen from the levelled and flat F0 pattern in the figure above, the second conjunct is not parsed as an independent *i*. Rather, the F0 of the second clause exhibits a continuation to the post-nuclear area of the first clause. When the tonal annotation is considered, we see that the second clause is not parsed as an independent prosodic unit (not even a φ), as it does not exhibit any φ -level boundary tones.⁹⁵ This indicates that the second conjunct is parsed as a part of a φ (more specifically as part of the post-nuclear ω of the first conjunct). The entire utterance is terminated with a high boundary at the level of *i*, H%. Note that the rising terminal is due to the ‘question

⁹⁵ The accent (H*L) on the nuclear word is due to the pre-accenting question particle.

intonation'. Thus, although the second conjunct is not a question, it hosts the boundary tone of the *i* of the first conjunct. Therefore, the second conjunct provides a continuation to the question intonation of the first conjunct.

The fact that a conjunct of clause level coordination *can* occur in the post-nuclear area of the other conjuncts's *i* indicates that it is not required to be parsed as an independent *i*. The prosodic constituency of this utterance is given below:

- (190) $[(\text{Aynur})_\varphi ((\text{hastane-ye mi})_{\omega\text{-N}} (\text{git-ti de } \text{hastalık kap-} \text{ti?})_\omega)_\varphi]_i$
 Aynur hospital-DAT Q go-PST and illness catch-PST
 'Is it because she went to the hospital that **she caught an illness?**'

In Chapters 4 and 5, I claimed that some syntactic structures that attach to the right periphery of a clause are mapped as *is*, even if, on the surface, they exhibit a continuation to the levelled F0 of the host clause that they attach to. One of these cases was where a vocative is the rightmost item in an utterance. I claimed that such structures are *is*, regardless of the fact that they exhibit a low levelled flat F0. I supported my claim with the fact that no element of the host clause can be linearised to the right of a post-nuclear vocative, and that the final syllable of the host part and the final syllable of the vocative are longer, resembling *i*-final syllable duration.

For the prosodic constituency of structures such as (186) and (188), one may claim that just as is the case with the peripheral vocatives, the second conjunct might be an *i* with a low levelled F0. If one adopts this claim, then the *i*-level constituency and *i*-level boundary tonal distribution for (188) might possibly look like the structure that is given below.

- | | |
|----|----|
| L% | H% |
| | |
- (191) [Aynur hastane-ye_N mi git-ti]_i [de **hastalık kap-*ti?***]_i
 Aynur hospital-DAT Q go-PST and illness catch-PST
 'Is it because she went to the hospital that **she caught an illness?**'

Intonationally, such an argument finds superficial support, as the second conjunct exhibits a levelled flat F0 as a continuation to the post-nuclear area of the first conjunct, which resembles the F0 of the vocative.

Information structurally, I suggested that the low levelled flat F0 that is observed on final vocatives is due to the fact that vocatives can be *given*, as their referents (i.e. the addressee) are always established in the situational context. Similar to such vocatives, I stated that the second conjuncts of utterances like (188) are presupposed. Therefore, it is possible that they exhibit a low levelled flat F0 because such clauses are also given.

One may further support the claim that the second conjunct in (188) is an independent *i*, by appealing to the fact that just as with the host-final vocative case, the second conjunct in (188) cannot be succeeded by any constituent of the first conjunct. This is shown below:

- (192) * Aynur git-ti mi de **hastalı^k** **kap-tı** hastane-ye?
 Aynur go-PST Q and illness catch-PST hospital-DAT
 'Is it because she went to the hospital that **she caught an illness?**'

However, a structure such as (192) may be ungrammatical for independent syntactic reasons. I claim that this is indeed the case. Particularly, I claim that (192) is not felicitous because of the fact that (192) exhibits unequal extraction out of a coordinate structure island, where a constituent of only the first conjunct moves to the right periphery of the second conjunct. This is against the *coordinate structure constraint* (cf. Ross 1967). Consequently, the fact that (192) is unacceptable cannot be used as an argument in favour of the notion that the second conjunct in (188) is an *i*.

Furthermore, if the independent *i*-formation account were the correct one, then the purported *i*-formation on the second conjunct could only be possible if the second conjunct exhibited a Force_{ILLP}. We will see below that this is not the case, which weakens the point of the independent *i*-formation analysis of (188).

If the second conjunct in (188) were a Force_{ILLP}, then peripheral adverbials and comment clauses should be able to modify the second conjunct. The example in (193) is an instantiation of a configuration where a peripheral adverbial is inserted in between the coordinator and the second conjunct.

- (193) * Aynur hastane-ye mi git-ti de **maalesef**
Aynur hospital-DAT Q go-PST and unfortunately

hastalık kap-tı?

illness catch-PST

'Is it because she went to the hospital that **she unfortunately caught an illness?**'

Intended reading of the second conjunct in (193):
Unfortunately, Aynur caught an illness.

As the felicity judgement indicates, a peripheral adverbial cannot modify the second conjunct in isolation. Below is an instantiation of a configuration where a comment clause is inserted in between the coordinator and the second conjunct.

- (194) * Aynur hastane-ye mi git-ti de **san-ır-ım**
Aynur hospital-DAT Q go-PST and guess-AOR-1SG

hastalık kap-tı?

illness catch-PST

'Is it because she went to the hospital that **she, I guess, caught an illness?**'

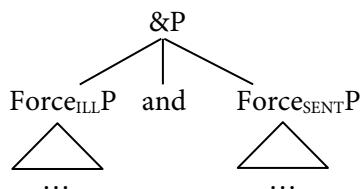
Intended reading of the second conjunct in (194):
I guess that Aynur caught an illness.

Similar to the case of peripheral adverbial, (194) shows that a comment clause cannot target the second conjunct. All of these facts indicate that the second conjunct is not performed as an assertion, and hence does not bear a Force_{ILLP} of its own. Therefore, the answer to the question that we posed above is 'no'; the second conjunct is not an assertion, and it is not parsed as an *i* of its own. Thus, the prosodic representation in (190) is correct for (188).

This conclusion finds further support from prosodic boundary phenomena. Recall from §5.4.2.1 in this book that the average duration of *i*-final open syllables in Turkish is 181ms (cf. Güneş & Çöltekin 2015). The final syllables of both the first conjunct (i.e. *.ti* in *gitti*) and the second conjunct (i.e. *.ti* in *kaptı*) in Figure 49 above are open, which enables us to make a direct comparison. The final syllable duration of the first conjunct is 126ms.⁹⁶ The final syllable duration of the second conjunct is 291ms. The durational values confirm that while there is an *i* boundary on the right edge of the second conjunct, there is no acoustic sign of an *i* boundary on the right edge of the first conjunct. This conclusion conflicts with the assumptions of the ‘independent *i* account’ of (188).

Syntactically, if the second conjunct is not a speech act, then we have an issue in terms of the syntax of such coordination. Particularly, it appears that the law of coordination of likes (Williams 1981) is violated in (186) and (188), as two semantically unlike structures – i.e. a speech act and a non-speech act – are coordinated:⁹⁷

- (195) *Syntax of coordination for discourse embedding (cases such as (186) and (188) - (first attempt)*

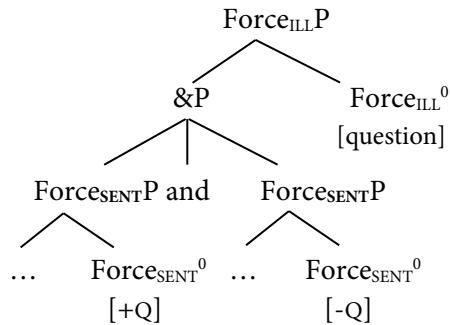


To avoid this issue, I suggest that the level of coordination is $\text{Force}_{\text{SENT}}\text{P}$, and that a $\text{Force}_{\text{ILL}}\text{P}$ dominates both of the conjuncts. This representation accords with the empirical facts, and is also consistent with the law of coordination of likes. A hypothetical representation of such coordination is depicted below:

⁹⁶ One may wonder if a potential *i* boundary may be on the coordinator *de* and not on the final syllable of the first conjunct in Figure 49 in the main text. Even on this assumption, the durational value of the coordinator *de* (which is also an open syllable) confirms that there is not an *i* boundary in this area. The final syllable duration of the coordinator *de* is 120ms.

⁹⁷ Immaterial to the current discussion is whether or not coordination is binary or ternary branching. I use ternary branching simply for expository reasons.

- (196) *Syntax of coordination for discourse embedding (cases such (188) (final version)*



The representation in (196) accounts for the fact that such utterances are cases of coordination. Additionally, it also accounts for the fact that the second conjunct is devoid of an assertive Force_{ILL}P. Prosodically, the entire utterance is parsed as a single ι , as there is only one Force_{ILL}P. The second conjunct is a part of this ι , as it is dominated by the only existing Force_{ILL}P. The illocutionary point (meaning) of this Force_{ILL}P is a question, which matches with the Force_{SENT}P of the first conjunct (which bears a [+Q] feature). For this reason, the entire utterance (including the second conjunct) exhibits question intonation. The representation in (196) also captures the fact that a constituent of the first conjunct cannot appear in the right periphery of the second conjunct: as such a movement violates the coordinate structure constraint.

In summary, the prosodic constituency of discourse level embedding can be accounted for by MATCHFORCE_{ILL}. Regardless of whether or not they are clausal conjuncts, certain clauses are not parsed as ι s as they do not bear an independent illocutionary force.

The last case that I discuss in this section is epistemic parenthetical clauses, in particular comment clauses. We have seen in Chapters 4 and 5 that comment clauses are parsed as φ s (or parts thereof). Below is an exemplar (repeated from the example (93) in Chapter 4):

- (197) [_{CP1}Emre-ler [_{CP2}**yemin** **ed-er-im**] yeğen-im-i
 [(Emre-ler)_φ (**yemin** **ed-er-im**)_φ (yeğen-im-i)_φ]_t
 Emre-PL swear make-AOR-1SG nephew-1POSS-ACC
 armağan-a boğ-ar-lar.]
 (armağan-a_N boğ-ar-lar.)_φ]_t
 gift-DAT overwhelm-AOR-3PL
 ‘Emre (and his friends), I **swear**, overwhelm my nephew with gifts.’

It is likely that such clausal structures are devoid of a Force_{ILLP}. I list a number of tests to show (i) that these clauses lack Force_{ILLP} (i.e. they are *not* performed as speech acts), and (ii) that they are parentheticals (i.e. they are syntactically disconnected to their host).

As for comment clauses and epistemic conditionals (hereafter: *epistemic parentheticals*), neither MATCHPHRASE nor MATCHPARP is sufficient to account for their prosodic integration. I claim that both of these parentheticals are prosodically integrated due to a common property; namely that they indicate the epistemic stance of the speaker towards the validity of the at-issue proposition. Their epistemic function yields a non-saturated clausal structure (a clause without a Force_{ILLP}).⁹⁸ This property comes out only under *par*-Merge (i.e. when they are used to convey the epistemic stance of the speakers). When they exist in non-parenthetical environments they obligatorily denote at-issue meaning rather than conventionally implied secondary meaning. Compare (a) to (b) below, both for English and Turkish.⁹⁹

- (198) a. Ben mertçe yemin ed-iyor-um.
 I bravely swear make-PROG-1SG
 ‘I bravely swear.’

⁹⁸ Conditional clauses in Turkish exhibit mixed behaviour in terms of their finiteness morphology (Kornfilt 1996, 2007). Although it has clausal properties in its internal syntax, the epistemic conditional that is discussed here lacks the illocutionary force observed with other parenthetical conditional clauses (Haegeman 2006).

⁹⁹ That comment clauses, which bear finite morphology in Turkish, do not exhibit a Force_{ILLP} evidences that finiteness, and root clausehood are distinct properties in the clausal syntax. See Nikolaeva (2007) for a cross-linguistic discussion on the correlation of the two.

- b. * Ali, **mertçe yemin ed-er-im**, sen-i parti-ye
 Ali, bravely swear make-AOR-1SG you-ACC party-DAT
 davet ed-ecek.
 invitation make-FUT
 * 'Ali, I **bravely swear**, will invite you to the party.'

The variation in the judgements in (198a) and (198b) indicates that when the verb *yemin etmek* 'to swear' is employed as the main predicate, it can host a speaker oriented modifier, i.e. *mertçe* 'bravely'. However, as seen in (198b), when it is used as the predicate of a comment clause, then it cannot host such adverbials. The same holds for other verbs that are employed in comment clauses, as the examples in (199) and (200) illustrate.

- (199) a. San-a sadece / zoraki inan-iyor-um.
 you-DAT only / hardly believe-PROG-1SG
 'I only / hardly believe you.'
- b. * Ali, **sadece / zoraki inan-iyor-um**, parti-ye gel-me-yecek.
 Ali only / hardly believe-PROG-1SG party-DAT come-NEG-FUT
 * 'Ali, so I only/hardly believe, is not coming to the party.'
- (200) a. İki kilo ol-duğ-un-u kabaca tahmin et-tim.
 two kilo be-NOM-POSS-ACC roughlyguess make-PST
 'I roughly guess that it is 2 kilos.'
- b. * Ali, **kabaca tahmin ed-iyor-um**, parti-ye gel-me-yecek.
 Ali roughlyguess make-PROG-1SG party-DAT come-NEG-FUT
 * 'Ali, so I roughly guess, is not coming to the party.'

Given the data above, I descriptively state that verbs like *believe*, *guess*, and *swear* can be the verbs of root clauses only if they are at-issue. Verbs like *swear* and *claim*, which may be employed in comment clauses, usually function as performatives when they are at-issue. Performatives, by nature, must always be at-issue, while epistemicity tends to be a part of secondary meaning (Nuyts 2000, Faller 2002, Papafragou 2006). The conclusion that I

draw here accords with Papafragou's (2006) conclusion, who states that verbs of epistemic modality "are not illocutionary force indicators themselves" (ibid.:1696).

While their exhibition of undominated syntax and semantic detachment provides a clear indication that they are *par*-Merged, epistemic parentheticals differ from other clausal parentheticals insofar as they are not used to commit speech acts. The content that is conveyed via such parentheticals is locally dependent on the discourse unit that surrounds them (i.e. the host). I claim that such semantic dependence is reflected in the syntax of epistemic clausal parentheticals, resulting in the absence of an illocutionary force projection.

As such, epistemic parentheticals are instantiations of clauses that are not headed by Force_{ILL}P. Hence, they are not targeted by MATCHFORCE_{ILL}. Just like phrasal structures (including phrasal parentheticals), they are targeted by MATCHPHRASE.

Dehé (2014) makes a similar correlation with the epistemicity of comment clauses and their prosodic integration in English (Dehé & Wichmann 2010, Dehé 2009). She concludes that the prosodic integration of comment clauses that display an epistemic function is the rule rather than the exception. The cross-linguistic similarity in the prosodic integration of comment clauses with epistemic function (Crystal 1969, Wichmann 2001, Reis 2000, Peters 2006, Dehé & Wichmann 2010, Dehé 2007; 2009; 2014) indicates that MATCHPHRASE universally applies to all clauses with epistemic function, and types them as φ s or parts of φ s. Like comment clauses, epistemic conditionals are also parsed as φ s (or parts thereof), as they also lack Force_{ILL}P.

To conclude, all of the clauses and parenthetical clauses discussed in this section are *not* performed as speech acts and hence lack illocutionary force. The fact that they are *not* parsed as *is* in the prosodic structure is in line with the consequences of a prosodic theory of Turkish that adopts MATCHFORCE_{ILL}. The following two sections discuss the cases of phrasal structures that exhibit and lack illocutionary force, considering the prosodic category type that they bear.

6.3 Phrases without illocutionary force

This section discusses the cases of XPs that are parsed as φ s. I list a number of tests to show that these XPs lack Force_{ILLP} (i.e. they are *not* performed as speech acts).

An obvious case of sub-clausal XPs that lack an illocutionary force is the default φ -formation of XP arguments of root clauses. Chapters 2 and 4 have already provided a detailed discussion of how sub-clausal XPs are parsed as φ s as a consequence of adopting MATCHPHRASE.

In addition to regular sub-clausal XPs, certain extra-clausal XPs may also be devoid of a Force_{ILLP}, which results in them being parsed as φ s. To illustrate this, I discuss two cases of parenthetical XPs that are parsed as φ s. The first case is the case of identificational appositives (Heringa & De Vries 2008, Griffiths & Güneş 2014, Griffiths 2015b), and the second case is the case of peripheral adverbials.

Unlike attributive appositives (i.e. the Turkish *ki*-parentheticals discussed in Chapter 5 – *finnon* in case study 2), identificational appositives (*appo* in case study 2) are not underlyingly clauses, rather they are NPs that lack a clausal syntax as well as an illocutionary force (Griffiths & Güneş 2014). Such identificational appositives are introduced to the host by certain parenthetical markers such as *i.e.* / *namely* in English or *yani* in Turkish. I call those appositives that are introduced by *yani* as *yani*-XPs.

Yani-XPs are subclausal constituents preceded by *yani*, where *yani* is pronounced as part of the phonological phrase that contains the XP that follows it. Like *ki*, the parenthetical particle *yani* can be optionally dropped without yielding any change of meaning in the structure. A *yani*-XP provides an *identification* (Heringa 2011) or *reformulation* (Ruhi 2009) of the constituent (the *anchor*) it immediately linearly follows.¹⁰⁰

¹⁰⁰ Note that I concentrate only on the identificational modification function of *yani* here. For other functions of *yani*, see Ruhi (2009).

- (201) a. Altıgen, **yani altı kenarlı şekil**, Satürn-ü simgele-r.
hexagon i.e. six sided shape Saturn-ACC symbolise-AOR
‘A hexagon, **i.e. a shape with six sides**, symbolises Saturn.’
- b. Büyük elma, **yani New York**, beş ilçe-den oluşur.
big apple i.e. New York five borough-ABL consist.of-AOR
‘The Big Apple, **i.e. New York**, consists of five boroughs.’

In the results of the study 2 that is reported in Chapter 5 of this book, we have seen that *yani*-XPs (referred to as *appo* in the results) exhibit the properties of a φ . All of the *yani*-XPs that were examined in the study 2 lacked an overt *yani*. An example from the experiment, together with its prosodic constituency, is given below.

- (202) [(Emir-i) $_{\varphi}$ (**yeğen-im-i**) $_{\varphi}$ (araba-yla) $_{\varphi}$ ((oyun-a) $_{\omega-N}$
Emir-ACC nephew-1POSS-ACC car-INST play-DAT
(götür-üyor-lar.) $_{\omega}$] $_{\iota}$
take-PROG-PL
‘They take Emir, **my nephew**, to the play by car.’

The fact that *yani*-XPs are parsed as φ s is a strong indication that they are not Force_{ILL}XPs. This idea is further supported by their unavailability to host speech act modifiers. The examples below show that *yani*-XPs are not performed as speech acts, as they cannot be directly modified by speaker-oriented adverbs (203), or comment clauses (204).

- (203) * Emir-i, **maalesef** **yeğen-im-i**, oyun-a götür-dü.
Emir-ACC unfortunately nephew-1POSS-ACC play-DAT take-PST
‘He took Emir, **unfortunately my nephew**, to the play.’

Intended interpretation of yani-XP in (203):
Unfortunately, Emir is my nephew.

- (204) * Emir-i, **san-ır-im** **yeğen-im-i**,
 Emir-ACC guess-AOR-1SG nephew-1POSS-ACC
 oyun-a götür-dü.
 play-DAT take-PST
 'He took Emir, **I guess my nephew**, to the play.'

Intended interpretation of yani-XP in (204):
 I guess that Emir is my nephew.

Another case of φ -formation of a parenthetical XP that lacks illocutionary force is the case of peripheral adverbials. In §5.3 and §5.4, I demonstrated that peripheral adverbials (as referred to as *adper* in study 2) in Turkish are subject to MATCHPHRASE. Below is an example of such an adverbial phrase, with the schematic representation of its prosodic constituency.

- (205) [(Alev-ler) $_{\varphi}$ (**alın-an** **önlem-ler-e** **rağmen**) $_{\varphi}$
 flame-PL taken-NOM caution-PL-DAT despite
 (yalılı-lar-ı) $_{\varphi}$ ((duman-a) $_{\omega\text{-N}}$ (boğ-du.) $_{\omega}$) $_{\varphi}$] $_i$
 household-PL-ACC smoke-DAT engulf-PST
 'The flames, **despite the precautions**, engulfed the household in
 smoke.'

The concessive phrase in (205) is introduced by the post-position *rağmen*. Similar to *yani*-XPs, the adverbial phrase in (205) cannot host speaker-oriented adverbs (206), or comment clauses (207). This is shown in the examples below:

- (206) * Alev-ler **maalesef** **alın-an** **önlem-ler-e** **rağmen**
 flame-PL unfortunately taken-NOM caution-PL-DAT despite
 yalılı-lar-1 duman-a boğ-du.
 household-PL-ACC smoke-DAT engulf-PST
 ‘The flames, **unfortunately despite the precautions**, engulfed the
 household in smoke.’

Intended interpretation of the peripheral adverbial in (206):
 Unfortunately, precautions were taken.

- (207) * Alev-ler **san-ır-im** **alın-an** **önlem-ler-e**
 flame-PL guess-AOR-1SG taken-NOM caution-PL-DAT
rağmen yalılı-lar-1 duman-a boğ-du.
 despite household-PL-ACC smoke-DAT engulf-PST
 ‘The flames, **I guess, despite the precautions**, engulfed the
 household in smoke.’

Intended interpretation of the peripheral adverbial in (207):
 I guess that precautions were taken.

The fact that XP parentheticals are parsed as φ s indicates that undomination does not result in i -formation in Turkish (in other words, it does not affect the prosodic category of an exponent). The fact that the parentheticals that are discussed in this section are not Force_{ILL}P_s is consistent with the fact that they are parsed as φ s. If MATCHFORCE_{ILL} is the only condition of faithfulness that triggers i -formation in Turkish, then such XPs fall outside the scope of MATCHFORCE_{ILL}, and are therefore subject to MATCHPHRASE.

Although not very common, it is possible to find instances of sub-clausal constituents that are Force_{ILL}P_s. If the assumptions of MATCHFORCE_{ILL} are correct, then one expects these XPs be parsed as *is*. The next section discusses some instances of such *is*.

6.4 Phrases with illocutionary force

This section discusses the cases of parenthetical XPs that are parsed as *is*. I provide a number of tests to show that these structures exhibit Force_{ILL}P (i.e. they are performed as speech acts). Both of these cases are parenthetical XPs; vocatives and exclamatory XPs, respectively.

We have seen in Chapter 5 that vocatives are not parsed as *φs* but as *is*, regardless of the fact that they are non-clausal. Below is an example of a clause medial vocative, whose prosodic properties were discussed in Chapter 5:

- (208) Aynur: Evlilik hakkında ne düşünüyorsun?
 ‘What do you think about marriage?’

B:	[_{CP} Evlen-en-ler [_{NP} Aynur] ömr-ü-nü yalan-lar-a _N
	[Evlen-en-ler] _i [Aynur] _i [ömr-ü-nü yalan-lar-a _N
	marry-NOM-PL Aynur life-3POSS-ACC lie-PL-DAT
	ad-iyor.]
	ad-iyor.] _i
	devote-PROG
	‘The married, Aynur , devote their lives to lies.’

In this section, I claim that vocatives are prosodically isolated not because of MATCHPARP, but because of MATCHFORCE_{ILL}. Pragmatically, it is known that vocatives are used to commit speech acts (Hill 2013 and the references therein). They reflect an aspect of the *locutionary act* (Austin 1962:94–107 as cited in McCawley 1998:752). Syntactic structures with a speech act function are dominated by Force_{ILL}P_s, therefore vocatives are Force_{ILL}P_s. In this sense, vocatives are an instantiation of non-clausal syntactic structures that are headed by Force_{ILL}P_s. For this reason, just as with any other Force_{ILL}P, they are subject to MATCHFORCE_{ILL}, and are parsed as *is*.

The illocutionary point of a vocative is not to assert a proposition. In a nutshell, among its various uses, a vocative is a call (Levinson 1983:71) to the addressee, or a way of nominating the addressee (Osenova & Simov 2003). Since it is not an assertion, one cannot apply tests such as speaker-oriented

adverbial and comment clause modification. However, if a vocative performs the act of nominating a hearer via uttering their name, then, in such a dialogue, the hearer should be able to verify or deny the consequences of this act of nomination. Consider the example below:

- (209) **Miray**: Evlilik hakkında ne düşünüyorsun?
 ‘What do you think about marriage?’

B: Evlen-en-ler **Aynur** ömr-ü-nü yalan-lar-a ad-iyor.
 marry-NOM-PL Aynur life-3POSS-ACC lie-PL-DAT devote-PROG
 ‘The married, **Aynur**, devote their lives to lies.’

Miray: Ben Aynur değilim. / Benim adım Aynur değil.
 ‘I am not Aynur. / My name is not Aynur.’

In (209) *Miray* asks a question to speaker B, and the speaker B uses a vocative as part of their answer. However, the name that the speaker B uses in the vocative (i.e. *Aynur*) is not the real name of the speaker. As a result of this erroneous act of nomination, *Miray* is able to coherently reject the nomination. If there were not such an act, *Miray*'s objection would be anomalous or out of context.

The next case of XPs that are parsed as *is* is an example from Chapter 4, an exclamatory NP. Similar to the case of vocatives, exclamatory NPs have the properties of parentheticals when they are linearised as part of another clause. Below is an instance of such a parenthetical (repeated from (101) with *i*-level boundaries):

- (210) [_{CP}Ali parti-de, [_{NP}**romantik aşık!**], Aylin'e evlenme
 [Ali parti-de], [**romantik aşık!**], [Aylin'e evlenme]
 Ali party-LOC romantic lover Aylin-DAT marriage
 tekli̯ et-mi̯ş.]
 tekli̯ et-mi̯ş.],
 proposal make-EVD
 ‘Ali – **the romantic lover!** – has proposed to Aylin at the party.’

Already indicated by their name, exclamatory NPs are employed to perform the act of exclamation. This act is marked with an exclamation mark in orthography, and with a tune of exclamation intonation in prosody. In addition to their exclamation intonation (usually equipped with a rise and a following sharp fall), such NPs are flanked by *i*-level boundary tones on both ends, which isolates them from the utterance chunks that surround them.

In this section, I have shown that certain sub-clausal syntactic structures that are parsed as *is* also exhibit independent illocutionary force. This observation is consistent with the predictions of MATCHFORCE_{ILL}, which requires any syntactic structure that displays Force_{ILLP} (regardless of whether or not it is clausal) to be parsed as an *i*.

Each of the structures discussed in this section was a parenthetical. It is an interesting question whether or not all sub-clausal Force_{ILLP}s are always parentheticals in nature. The claims of this chapter, coupled with the split ForceP analysis, create the possibility that non-parenthetical XPs such as PPs or DPs or APs may also bear Force_{ILLP}s. So far, I have not encountered such structures in Turkish. However, from Germanic, a candidate for such Force_{ILLP}s could be the case of multiple focus constructions. Selkirk (2005) suggests that in such constructions, each focused phrase is parsed as an independent *i* in English. Related to this, Truckenbrodt (2014) suggests that each focus expresses a separate claim (hence a separate speech act), which requires that each focused XP is parsed as *i* in English and German. It may perhaps be the case that their status as *is* is triggered because each narrowly focused XP is also a Force_{ILLP} in these languages. Further research is required to test the validity of this speculation and the plausibility of the claim that Force_{ILLP} can dominate non-parenthetical XPs.

6.5 *is* that do not correspond to Force_{ILLP}s

So far in this section I have discussed the correspondence between *is* and Force_{ILLP}s from a syntax-oriented point of view. In other words, I investigated whether or not the exponents of those syntactic structures that are Force_{ILLP} correspond to *is*. In this section, I change perspective and discuss whether or not the content of *is* always corresponds to those syntactic structures that are Force_{ILLP}. If there are no *is* that correspond to syntactic

structures other than Force_{ILLP}, then one may conclude that there is ‘perfect’ syntax-prosody correspondence (where each Force_{ILLP} corresponds to an *i*) and prosody-syntax correspondence (where each *i* corresponds to a Force_{ILLP}) in Turkish. If there are *is* that corresponds to the syntactic structures other than Force_{ILLP}, then there must be other conditions that cause such mismatches in terms of prosody-syntax correspondence.

In this subsection, I discuss a particular case from Turkish where ‘perfect’ prosody-syntax correspondence is not achieved. I treat conditions on prosodic well-formedness as responsible for such cases of mismatch. The configurations to which I refer are those clauses with host-medial Force_{ILLPs}, where the pre-parenthetical part of the host clause is parsed as an independent *i*.

Consider the example below:

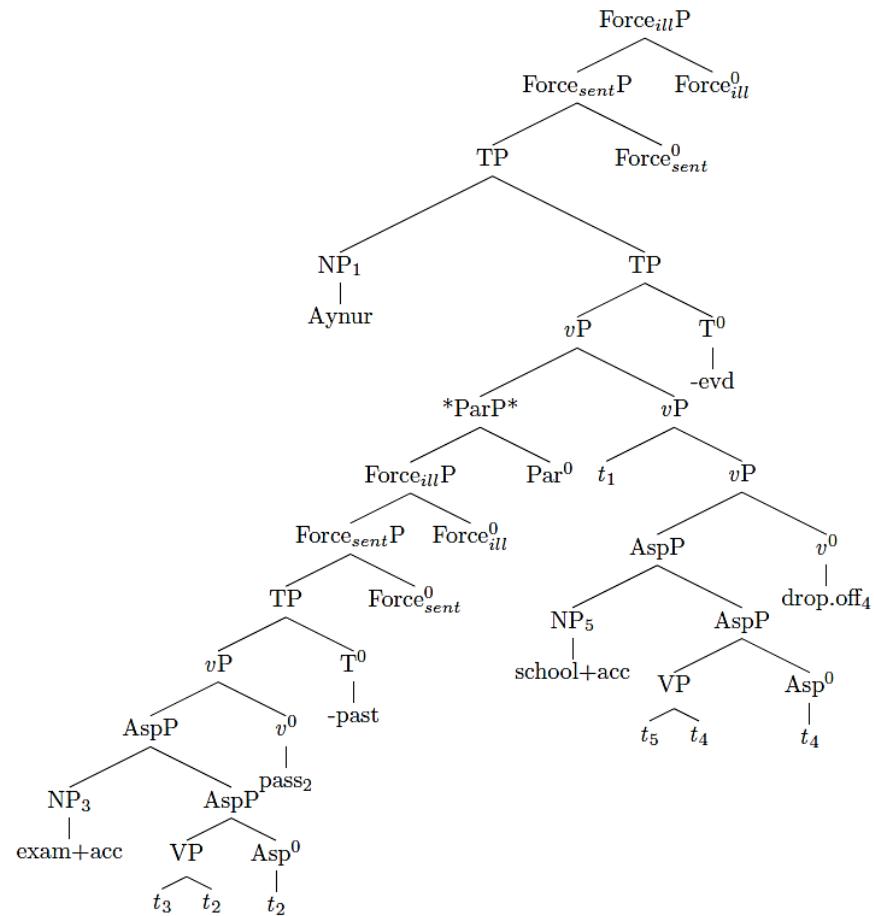
- (211) [Force_{ILLP} Aynur [Force_{ILLP} **sınav-i** **geç-ti**] okul-u
 [((Aynur)_ω)_φ]_i [((sınav-i)_ω (geç-ti)_ω)_φ]_i [((okul-u)_ω
 Aynur exam-ACC pass-PST school-ACC
 bırak-mış.]
 (bırak-mış.)_ω)_φ]_i
 drop.off-EVD
 ‘Aynur, **and she had passed the exam**, has dropped off from the
 school.’

The parenthetical clause in the example above is an attributive appositive (a *ki*-clause with *ki* dropped) that bears an illocutionary force of assertion (Griffiths & Güneş 2014). In terms of its syntactic relation to the host, the attributive appositive is integrated to the syntax of the host via parenthetical adjunction (cf. De Vries 2006:20 for Dutch, and Griffiths 2015b for *ki*-parentheticals in Turkish). In terms of its prosodic category type, we have seen in Chapter 5 that such parentheticals are parsed as *is* (it was the category *finnon* in the testing set of case study 2 in §5.4).

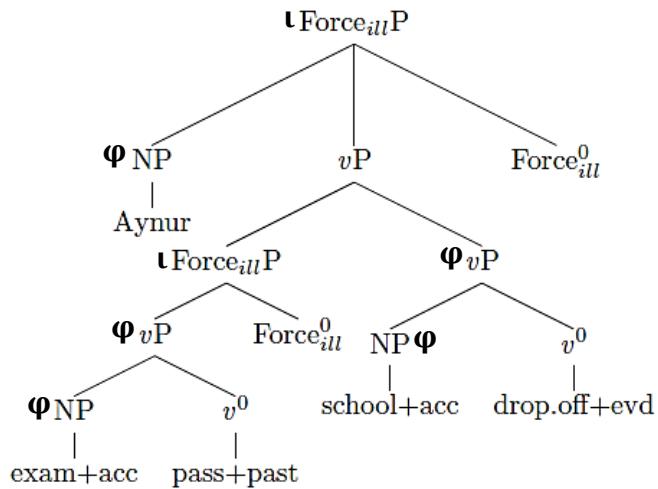
The prosodic constituency in (211) is problematic in terms of whether or not each *i* corresponds to a Force_{ILLP}. There are three *is* in (211), however only one *i* (the *i* that corresponds to the exponents of the attributive appositive) exhaustively dominates the exponents of a Force_{ILLP}. The

leftmost *t* corresponds to the subject NP of the host (i.e. *Aynur*), and the rightmost *t* corresponds to the predicate of the host (i.e. ‘school-ACC drop.off-EVD’). Neither of these syntactic units constitutes a Force_{ILL}P on their own, but the exponents of them correspond to independent *ts*. I claim that this mismatch is due to a prosodic well-formedness condition that is operating in Turkish; namely NONREC.

Let me first illustrate the steps of mapping. Below I list the source syntax, and the *maptree* of (211), in which the illocutionary force projections survive pruning due to the fact that these projections are ‘relevant’ to the parser as the content of the condition on *t*-formation (i.e. MATCHFORCE_{ILL}) refers to the Force_{ILL}P.

(212) *Source syntax of (211):*

maptree of (211):



In the representation above, Force_{ILL}P_s survived pruning as the exponents that each Force_{ILL}P dominates are parsed as within their corresponding *ts*. Neither ParP nor Force_{SENT}P are represented in the *maptrees* as they are not visible to the parser.

As for the eligibility of *maptree* projections to be parsed as φ s, the *structural distance condition* (as described in (26) in §2.2) prevents the maximal *vP* that branches to the non-maximal *vP* and Force_{ILL}P from being matched with a φ , as this *vP* is not a terminal node itself, and does not dominate an X^0 . Force_{ILL}P_s are matched with *ts* as a result of MATCHFORCE_{ILL}. Below is the list of operations to form prosodic constituency.

(213) *Operations of prosodic constituent formation for (211):*

- a. MATCH (*Force_{ILL}P and phrase*)
 - [$(Aynur)_\varphi [((exam-ACC)_\varphi \text{pass+PST})_\varphi]_t ((school-ACC)_\varphi \text{drop.off-EVD})_\varphi]$

- b. PARSE to ω (EXHAUSTIVITY)

$$[((Aynur)_{\omega})_{\varphi} [(((exam-ACC)_{\omega})_{\varphi} (pass+PST)_{\omega})_{\varphi}], (((school-ACC)_{\omega})_{\varphi} (drop.off-EVD)_{\omega})_{\varphi}]_{\iota}$$
- c. Reduce φ (NONREC)

$$[((Aynur)_{\omega})_{\varphi} [((exam-ACC)_{\omega} (pass+PST)_{\omega})_{\varphi}], ((school-ACC)_{\omega} (drop.off-EVD)_{\omega})_{\varphi}]_{\iota}$$

For the levels of ω and φ , the derivational steps of faithfulness and prosodic well-formedness are capable of predicting the prosodic constituency that is given in (211). However, for the level of ι , these steps are incapable of generating the ι -level constituency that is given in (211). I claim that for such cases as (211), the last step of derivation that is given in (213c) is not the final step of the derivation. A representation such as the one in (213c) is infelicitous as it violates the prosodic well-formedness condition on NONREC. As seen in (213c), the ι that corresponds to the Force_{ILL}P of the host dominates the ι that corresponds to the Force_{ILL}P of the medial parenthetical. As such, (213c) exhibits recursive layering at the level of ι . Recall that Turkish does not allow recursive prosodic structures (see Chapters 2 and 3). Consequently, the derivation in (213) triggers a repair rule in order to avoid violation of NONREC for the level of ι .

Recall that in Chapter 2, I suggested that the recursive layering of φ s are avoided via a boundary reduction strategy (i.e. the rule *reduce φ*), which ‘deletes’ the recursive occurrences of φ s. When the ι s in (213c) and (211) are compared, it appears that the number of ι s is higher in (211) than in (213c). In particular, there are two ι s in (213c), and three ι s in (211). This is unexpected if a reduction strategy similar to that of φ -level (e.g. *reduce ι*) applies to the recursive ι s. Dissimilarly, it appears that to avoid violating NONREC, ι boundaries are *inserted*, and not deleted, as suggested by the number of ι s in (211).

Following this reasoning, I suggest that ι -level recursion is repaired with a rule that is different from the repair rule for the recursive φ s. I call this rule *insert ι* , which states that “add an ι boundary to the edges of each recurring layer of ι ”. Continuing the derivation in (213), I suggest that *insert ι* applies

when recursive ι s are generated as a result of MATCHFORCE_{ILL}. The complete steps of derivation that is proposed here, including *insert* ι , is listed below:¹⁰¹

- (214) *The complete set of operations of prosodic constituent formation for (211):*

- a. MATCH (*Force_{ILL}P and phrase*)
 $[(\text{Aynur})_\varphi [((\text{exam-ACC})_\varphi \text{ pass+PST})_\varphi]_\iota ((\text{school-ACC})_\varphi \text{ drop.off-EVD})_\varphi]_\iota$
- b. PARSE to ω (*EXHAUSTIVITY*)
 $[((\text{Aynur})_\omega)_\varphi [((\text{exam-ACC})_\omega)_\varphi (\text{pass+PST})_\omega]_\varphi ((\text{school-ACC})_\omega)_\varphi (\text{drop.off-EVD})_\omega]_\varphi$
- c. Reduce φ (*NONREC - φ*)
 $[((\text{Aynur})_\omega)_\varphi [((\text{exam-ACC})_\omega (\text{pass+PST})_\omega)_\varphi]_\iota ((\text{school-ACC})_\omega (\text{drop.off-EVD})_\omega)_\varphi]_\iota$
- d. Insert ι (*NONREC - ι*)
 $[((\text{Aynur})_\omega)_\varphi]_\iota [((\text{exam-ACC})_\omega (\text{pass+PST})_\omega)_\varphi]_\iota
[((\text{school-ACC})_\omega (\text{drop.off-EVD})_\omega)_\varphi]_\iota$

In (214d), the ι boundaries that are inserted to repair the recursive layers of (214c) are shaded with grey. The addition of these two boundaries yields a string of three ι s that are not contained within one another. Therefore, the violation to NONREC at the ι level is avoided. Notice that in (214d), the only ι that faithfully corresponds to a Force_{ILL}P is the ι that corresponds to the exponents of the parenthetical. The other ι s are generated as a result of both syntactic correspondence and prosodic well-formedness. For example, the left edge of the initial ι in (214d) corresponds to the left edge of the Force_{ILL}P of the host, which is a result of the correspondence rule MATCH. The right edge of this ι corresponds to the right edge of the φ of the subject. This ι -

¹⁰¹ Notice that although I have ordered the repair operation for the recursive ι s (i.e. *Insert* ι) as the final step in the derivation, I cannot see any empirical or conceptual reason to assign a designated order for ι -insertion. It could be the case that recurring ι s are repaired as soon as such offending structures are generated.

boundary is inserted as a result of the prosodic well-formedness rule (i.e. *insert i*), which is triggered to avoid a violation of NONREC-*i*. With the addition of the step depicted in (214d), one not only accounts for the number of *is* that is observed in (211), but also for the lack of syntax-prosody correspondence that is observed in the initial and the final *is*.

A reasonable question to ask is why a language would employ two different strategies to avoid recursion at different levels of its prosodic constituency. While a thorough answer cannot be provided here, one may speculate that this dichotomy stems from the sensitivity of the Match rules to the featural makeup of the corresponding syntactic projections of φ s and *is*. Particularly, the φ s that are generated as a result of MATCHPHRASE correspond to the *projections* of syntax. MATCHPHRASE is insensitive to the syntactic labels (i.e. TP, NP, vP, etc.) and the featural makeup of the heads of those projections that are to be mapped. On the other hand, those *is* that are generated as a result of MATCHFORCE_{ILL} have to correspond to a specific projection in the syntactic representation, specifically to the features of the head of that projection – i.e. a Force_{ILL}P. This was the reason why Force_{ILL}P_s survive pruning to begin with. I believe that this dichotomy may be the reason why recursive *is* and φ s are repaired differently.

The idea that *i*-reduction is the strategy that is employed in Turkish to avoid recursion at the *i* level cannot easily find empirical support due to the fact that recursive *is* are never observed in Turkish and that such anomalous *is* are only assumed to be generated at an intermediary step in the generation of prosodic constituents. However, independently of the theoretically motivated recursive *i* representations, we have seen that *is* cannot be reduced to a lower prosodic category type in other configurations either. Recall that in the discussion of vocatives in §4.1.2, we saw that a vocative (i.e. a phrase that is a Force_{ILL}P) cannot be pronounced as part of a φ in the post-nuclear area. The same holds for all parentheticals that are parsed as *is* (see §5.3.2 for more examples). The conclusion drawn from this is that in Turkish those syntactic units the exponents of which correspond to a Force_{ILL}P are *obligatorily* parsed as *is*. Regardless of whether or not such *is* constitute a recursive layer, their prosodic category type cannot be lower than an *i* in the prosodic hierarchy. This observation supports the generalisation that recurring *is* cannot be reduced for similar reasons.

6.6 Chapter summary

This chapter reconsidered the syntactic structures discussed in Chapters 4 and 5 in terms of whether or not they exhibit Force_{ILLP}. Chapter 4 concluded that clausal syntax cannot be directly responsible for *t*-formation. Chapter 5 concluded that parenthetical syntax cannot be directly responsible for *t*-formation. This chapter concluded that the presence or absence of an illocutionary force phrase in the syntactic input is responsible for *t*-formation. A number of structures in addition to the ones that were investigated in the two studies reported in Chapter 5 confirmed this conclusion. The table below summarises what has been discussed so far. The prosodic category of each syntactic structure discussed is listed below. This time, the structures are regrouped in terms of whether or not they bear illocutionary force.

	Syntactic structure	Prosodic category
✓	Clausal coordination	<i>t</i>
	Vocatives	<i>t</i>
	Interruptions (isolated)	<i>t</i>
	Interruptions (integrated)	<i>t</i>
	Exclamatory XPs	<i>t</i>
	Fragment answers	<i>t</i>
	Attributive appositives	<i>t</i>
✗	Comment clauses	φ
	Epistemic conditionals	φ
	Concessive phrases	φ
	Peripheral adverbials	φ
	Epistemic adverbials	φ
	Non-parenthetical XPs	φ
	Discourse embedding	φ
	Non-finite complements	φ
	Finite complements	φ
	Identificational appositives	φ

Table 17. Summary of the prosodic category of the structures that were analysed in Chapters 4 and 5

In summary, all the syntactic structures that are parsed as *is* in Table 17 are Force_{ILL}P; and therefore, they are subject to MATCHFORCE_{ILL}. This dichotomy provides evidence that compositional semantic ‘independence’ (i.e. secondary propositionness) of parentheticals cannot be directly correlated with clausehood. Nor should it be taken as an indication of the presence of illocutionary force (unlike Potts and Selkirk’s assumptions), as there are parentheticals that lack the properties of illocutionary force bearing structures. Independence from the semantic compositional structure of the host is not always directly related to the function of committing speech acts. A syntactic structure may be independent from the compositional semantic structure of their host but may still be incapable of functioning as a speech act (and is therefore devoid of Force_{ILL}P in syntax). Epistemic parentheticals can be considered as an example for such cases.

The findings of this chapter support Kan (2009), Selkirk (2011) and Truckenbrodt (2014), in that syntactic structures that are used as speech acts are parsed as intonational phrases due to the fact that they are Force_{ILL}P. However, the arguments of the present chapter differ from these studies, in that in this chapter I claimed that not all parentheticals function as speech acts, and that not all Force_{ILL}P dominate a clausal structure.

In §6.5, I discussed a particular case from Turkish where ‘perfect’ prosody-syntax correspondence is not achieved at the level of *i*. These configurations involved clauses with host-medial Force_{ILL}P in which the pre-parenthetical part of the host clause is parsed as an independent *i*, regardless of the fact that it is not a Force_{ILL}P. I claimed that this mismatch is due to a prosodic well-formedness condition that is operating in Turkish; namely NONREC. In such configurations, the *i* that corresponds to the Force_{ILL}P of the host dominates the *i* that corresponds to the Force_{ILL}P of the medial parenthetical. As such, when syntactically integrated Force_{ILL}P are mapped, they yield in a recursive layering at the level of *i*. Turkish does not allow recursive prosodic structures in the way that is described in NONREC. To avoid recursion, extra *i* boundaries are added to the edges of the recurring *i* (with the repair rule *insert i*). The boundary insertion strategy that is suggested to repair recursion at the level of *i* (i.e. *insert i*) is different from the strategy that is suggested to repair recursive φ s (i.e. reduce φ). For the *i* level, I suggested that recursion is repaired with the addition of boundaries,

whereas for the φ level, I suggested that recursion is repaired via the reduction of the recurring layers. I related this dichotomy to the fact that MATCHPHRASE is insensitive to the featural makeup of the syntactic constituents that are mapped, whereas MATCHFORCE_{ILL} is sensitive to the featural makeup of the heads of the syntactic constituents that are mapped. While φ s can be reduced to ω s or sub- ω s, i s cannot. The fact that i s cannot be pronounced as part of the post-nuclear area of their hosts (as an independent ω or a sub- ω) provides independent evidence in support of the idea that recurring i s cannot be reduced into a hierarchically lower prosodic category type.

Conclusion

This book is devoted to explicating and exploring the prosodic structure formation procedures that are active in Turkish. To achieve this, empirically attested prosodic constituency patterns of a number of syntactically diverse structures are compared and contrasted. Under the premises of the reverse Y-model of the grammar, in which phrase structures that are formed in the narrow syntactic module are shipped to the PF module, a stepwise description of the procedure of mapping from syntax to prosody is presented.

In Chapter 1, I list theoretical and empirical questions that this book aims to answer. Theoretically, these questions are concerned with the compositional and categorial nature of the syntactic information that is relevant to prosodic operations. Empirically, these questions are concerned with the mismatches between syntactic and prosodic constituents of all levels.

Let me address these questions to demonstrate the extent to which they have been answered in this book.

What is the structural nature of syntactic configurations that are relevant for prosodic operations?

In Chapter 2, I demonstrate that PF is sensitive only to a portion of the structures that narrow syntax creates. For instance, syntactic termini without a morphologically free-standing phonological exponent are ‘irrelevant’ for the purpose of prosodic constituency formation. Based on this observation, and for the ease of reference, an intermediary representation that depicts only those narrow syntactic elements that are relevant to the operations of PF is proposed. This *intermediary* structure, which does not denote a ‘true’ intermediary stage in computation, is called *maptree*. In a nutshell, *maptrees*

represent only those projections of syntax that exhibit (morphologically free-standing) phonological exponents (roughly representing the status of narrow syntactic trees after VI insertion). Relations such as headedness and the direction of branching are encoded in *maptree* representations (which are generated via *pruning* the narrow syntactic projections that are irrelevant for the operations that are applied at PF). In §2.3, revisiting the Tagalog data discussed in Richards (2010), a language that is genetically unrelated to Turkish, I provide cross-linguistic empirical support for the necessity of defining the prosody-related properties of narrow syntactic trees according to the algorithms that are partially encoded in the pruning rules that form *maptrees*.

One should note that the pruning procedure and the notion of *maptrees* in general are merely expository devices that help to straightforwardly depict the partial correspondence that is observed between syntactic and prosodic structures. As such, it is possible that one could refer to the relations between nodes that are depicted in *maptrees* without reducing VI-inserted syntactic trees, i.e. without pruning VI-inserted syntactic trees in the first place. For instance, a feasible alternative strategy for representing directly on VI-inserted trees the syntactic relations that *maptrees* depict is to instil greater syntactic sensitivity into correspondence rules like MATCHPHRASE and further complicate the structural distance condition (see §2.2). What is crucial is that, regardless of which strategy is adopted, one must endorse an algorithm that limits how much of a complex syntactic structure is ‘visible’ to the correspondence rules of prosody, in order to account for the fact that (i) narrow syntax is only partially represented in the prosodic structure and (ii) recourse to prosodic well-formedness constraints cannot adequately account for why the syntactic input to the prosody is so limited.

Additionally, unlike the trees of narrow syntax, prosodic constituency shows n-ary branching (e.g. the prosodic structure tree in (56) in §2.3). This deviation from binary branching to n-ary branching indicates that the dominance and containment relations of narrow syntax are not identically retained in prosodic constituency.

Furthermore, my discussion of *phonological word adjoiners* (PWAs) in Turkish (in §2.2) demonstrates that the distribution of PWAs can be only post-syntactically calculated. This is because their PWA status is set with respect to the structural relations of only those nodes with a phonological

exponent – in which certain morphemes, i.e. PWAs, must bear an ω boundary on their left. Particularly, I show that whether or not a PWA bears an ω boundary on its left edge (i.e. whether or not it is rendered as a suffix or a separate prosodic unit) depends on whether or not the projection of the phonological exponent on the left of this PWA dominates (branches to) another projection with a phonological exponent. A sample comparison of the source syntactic trees and the *maptrees* in (44) and (45) in §2.2.3 reveals that the structural condition on PWA formation can easily be defined in the *maptrees*.

I also claim that the structural distance of XPs to a head is another structural dependency to which prosody is sensitive. In §2.2, I describe this sensitivity as a condition on *structural distance*, which states that a prosodic category can be matched with a syntactic category, only if it is directly branching to X^0 , or if it is itself a terminus on the *maptree*. I show that when the structural distance is defined on the *maptree* representations it straightforwardly captures prosodic constituency in Turkish and Tagalog.

This book concludes that the prosodic grammars are sensitive to only a portion of the structural relations that are calculated in narrow syntax. As a result of this, a structural variation arises between the narrow syntactic and prosodic constituency.

Do parentheticals in syntax have a correlate in prosody? / What kind of parentheticals in syntax correspond to the phrases, words, or sub-words of prosody?

Based on the findings of two studies that are reported in Chapter 5, I conclude that parenthetical syntax does not exhibit a prosodic correlate in Turkish. The results of the production experiment in §5.3 demonstrate that the parentheticals *bence* ‘for me’, and *yanılmıyorum* ‘if I am not wrong’ are parsed similarly to subclausal constituents (i.e. as φ s when pre-nuclear and as parts of φ s when post-nuclear) in Turkish. The prosodic properties of these parentheticals are compared to other parentheticals with various syntactic properties and pragmatic functions, which are investigated in the second experiment – i.e. case study 2, which is reported in §5.4.

The results of case study 2 show that when grouped in terms of their surface properties, phrasal and clausal parentheticals are parsed as *is* or φ s.

Based on these results, I conclude that syntactic undomination (i.e. parenthetical syntax) cannot constitute the primary source of the prosodic isolation of parentheticals in Turkish, and MATCHPARP is not part of the algorithm of prosodic constituency formation. In terms of prosodic markedness, the length of a parenthetical is found not to affect its prosodic category in Turkish. Shorter parentheticals (with two syllables) may be parsed as *ts*, and longer parentheticals (with nine syllables) may be parsed as *qs*. Similarly, the linear position of parentheticals does not affect their prosodic behaviour in Turkish. For example, if a medial parenthetical exhibits prosodic integration, it is also found to be prosodically integrated in the initial and final positions of the host.

This book concludes that the pragmatic properties of a parenthetical are more important than constituent-to-constituent mapping. If a parenthetical is pragmatically isolated, it is parsed as an *t*, regardless of its syntactic type or level of syntactic isolation. This is observed with vocatives and pragmatically isolated interruptions. Similarly, the semantic/pragmatic properties of comment clauses overrode their syntactic properties, which cause them to be parsed as *qs* and not *ts*. Based on the observations of comment clauses, I conclude that when a parenthetical expresses a speaker's stand towards the truth of the host proposition, then it is prosodically integrated, regardless of its syntactic makeup. This observation about Turkish comment clauses confirmed the findings of studies on other languages (Reinhart 1983, Reis 2000, Dehé & Wichmann 2010, Dehé 2014, among others).

It is observed that identificational appositives, which bear the boundary phenomena of the prosodic category φ , exhibit stronger boundaries on their left edge (i.e. on the edge that is linearly adjacent to their anchor). I relate this to the linear position of these appositives with respect to their anchors, and suggest that to satisfy Richards' (2001) *Distinctness Condition*, or some condition similar to it, a stronger prosodic boundary at the juncture of the appositive and its anchor is inserted. This boundary, I claim, acts as a parser that separates these syntactic-semantic likes (in this case, these likes are identificational appositives and their anchors, the referents of which are identical).

In Chapter 6, reconsidering the syntactic structures discussed in Chapters 4 and 5 in terms of whether or not they exhibit Force_{ILLP}, I conclude that the presence or absence of an *illocutionary force projection* in the syntactic input

is responsible for the ι -formation of parentheticals in the prosodic structure. As such, any parenthetical that is not employed to perform a speech act is observed to be parsed as a φ , an ω , or a part thereof.

Do clauses in syntax have a correlate in prosody? / What kind of clauses in syntax correspond to the phrases, words, or sub-words of prosody?

§4.1.1 show that clauses do not exhibit a designated corresponding unit in prosody. This conclusion is based on the investigation of the prosodic properties of nominalised and finite embedded clauses, coordinated clauses (discourse embedding and regular conjunction), fragment answers, root clauses with gaps in them, and comment clauses in Turkish. Particularly, I show that: (i) Embedded clauses (regardless of whether they are finite (92) or not (90) in §4.1.1) are not targeted by MATCHCLAUSE, as embedded clauses in Turkish are parsed either as φ s or parts of φ s. (ii) Comment clauses (92) (regardless of the fact that they are parentheticals), and second clausal conjuncts of discourse embedding (96), are not targeted by MATCHCLAUSE, and are parsed as φ s (or parts thereof). (iii) Conjunct clauses of regular coordination (86B'), fragment answers (87B), and root clauses with gaps in them (88B) are observed to correspond to ι s. §4.1.2 show that ι is not designated as the corresponding prosodic category of clauses, as a number of non-clausal elements (i.e. vocatives and exclamatory NPs) are obligatorily parsed as ι s. Based on these observations, I conclude that clausehood (on the working hypothesis that for the sake of MATCHCLAUSE, ‘clause’ equates with ‘CP’) cannot be directly responsible for ι -formation, and MATCHCLAUSE is not part of the algorithm of prosodic constituency formation. This conclusion supports the claims of previous studies on ι -formation (Downing 1970; Nespor & Vogel 1986; Selkirk 1986, 2005, 2011; Dehé 2007, 2014; Truckenbrodt 2005, 2014).

Do phrases in syntax have a correlate in prosody?

Chapters 2 and 3 conclude that phrases in syntax correspond to φ s in prosody (with the exclusion of Force_{ILL}P_s). I show that MATCHPHRASE is able to capture the distribution of φ s, on the condition that the input narrow

syntactic structures are limited in the way that *maptrees* represent. I show that structurally distant XPs escape MATCH. I refer to this generalisation as the condition on *structural distance*. In a discussion of the Tagalog data from Richards (2010), I show that the *structural distance condition* and the mapping algorithm that applies to *maptrees* straightforwardly predict the φ -level constituency and the distribution of φ -level tones in Tagalog.

What is the syntactic correlate of prosodic words? / Do the words of prosody correspond to the phrases or sub-words of syntax?

Based on a number of empirical observations and theoretical discussion, in Chapter 2, I conclude that ω s in prosody do not correspond to a designated unit of syntax. I show that ω s sometimes correspond to XPs (16a), or a string of multiple XPs (8), and sometimes they correspond to syntactic heads (16a), or morpho-syntactic sub-words (10a). In §2.1, I list a number of problems for previous conceptions of MATCHWORD, which is a condition that is suggested by Selkirk (2009, 2011) to generate ω s as corresponding prosodic units of syntactic words. In §2.1.1, stating that the phonological exponents of syntactic structures cannot be bare lexical items, but rather phrases or morpho-syntactically complex heads, I conclude that lexical items are processed in the PF module only after they are assigned a structural role (a phrasal property) in narrow syntax. Therefore, the minimal syntactic unit that a prosodic parser can access is a projection (and its head).

In addition to the theoretical shortcomings of MATCHWORD, and the assumption that the ‘word’ is the syntactic correlate of ω s, I provide empirical evidence from Turkish to show that MATCHWORD is insufficient and unnecessary, and conclude that MATCHWORD is not part of the mapping algorithm. Given that ω s exist and that they are categorially distinct from φ s and ι s, I suggest that ω s are generated as a result of an operation (i.e. *Parse to ω*) that is triggered by a condition of prosodic well-formedness: i.e. EXHAUSTIVITY. Accordingly, after φ -level constituency is generated (after syntactic phrases match with φ s), all the segmental content that is flanked by φ boundaries is assigned ω -status.

In my account of ω -formation in Turkish, the order of prosodic constituent formation is reversed. First, φ s and ι s are generated, followed by ω s. Since ω -formation is not an operation that applies in order to maintain

faithfulness to syntax, the fact that there is no unique syntactic categorial correlate of an ω is irrelevant and not in conflict with the assumptions of my account. The correlate of an ω , in my account, is a prosodic unit (i.e. a string that is flanked by φ boundaries), and not a syntactic constituent. I show that the method of ω -formation that is proposed in this book straightforwardly captures the variable distribution of ω s in Turkish.

The fact that most ω s correspond to XPs of source syntax is considered as a ‘mismatch’ by a theory that assumes that prosodic words correspond to the units of syntax that are smaller than maximal projections. Such a theory would assume that MATCHWORD is responsible for ω -formation. Abandoning MATCHWORD, I claim that certain ω s may correspond to the exponents of XPs simply by the virtue of the fact that such ω s surface as a result of the reduction of the recurring φ s that encompass these ω s (via the repair rule *reduce* φ). As such, on my account, the prosodic constituents that are labelled as ω s, which are generated as a result of the prosodic well-formedness condition that demands exhaustive parsing, are predicted to correspond to XPs as a result of another prosodic well-formedness condition, i.e. a condition that demands non-recursive prosodic constituency in Turkish.

As another source of mismatch in Turkish, in §2.2 I demonstrate that given a certain distribution of PWAs, a single morpho-syntactic word is parsed as two separate ω s (one corresponding to the PWA and the other corresponding to the morpho-syntactic unit that is on the immediate left of that PWA). Building upon the generalisation of PWAs that is suggested in Kabak & Vogel (2001), I put forth an account that predicts the ω -formation of and around PWAs, which states that a PWA is rendered as a suffix only if its sister on the *maptree* is not a terminus.

As for the sources of mismatches between syntactic constituency and prosodic constituency, I discuss the role of prosodic grammar (and its conditions on well-formedness), and the nature of syntactic input in mapping, as the sources of mismatch between syntax and prosody.

I provide empirical evidence to suggest (i) that prosodic constituents are *faithful* to the structural relations that are attested on *maptree* representations, and (ii) that the conditions on the well-formedness of prosodic structures may result in the *deformation* of those prosodic structures that are generated as faithful to *maptrees*. As such, the empirical

findings of this book strengthen the premises of those theories that assume *indirect* and *limited* access to the narrow syntactic input.

With respect to the prosodic constituents that are generated and labelled in the prosodic structure as a result of conditions on prosodic well-formedness (i.e. those prosodic constituents that are recognised as *mismatches* to the syntactic input), this book lists a number of theoretical motivations, and provides empirical evidence to support the claim that the ω is a category that is generated as a result of the application of the prosodic well-formedness rule, *parse to ω* , which is activated when EXHAUSTIVITY is violated in Turkish. Another claim of this book is that certain occurrences of ι s are generated as a result of the application of the repair rule *insert ι* , which is activated when NONREC is violated at the level of ι (see §6.5). Similar to ω -formation, the fact that certain ι s are formed as a result of prosodic well-formedness conditions increases the likelihood that theories of indirect access, as described in §1.2.2, are on the right track.

Are there any cases where the intonational phrases of prosody correspond to the sub-clausal units of syntax? If so, then how can one predict the distribution of intonational phrases?

In Chapters 4 and 6, I discussed two cases in which syntactically sub-clausal units are parsed as ι s.

The first case is XPs that are employed to perform speech acts (i.e. vocatives and exclamatory NPs) (see §4.1.2). I consider such configurations of ι -formation not as cases of ‘mismatches’, but as cases of ‘perfect’ correspondence to syntax, as I assume that MATCHFORCE_{ILL} is the source for syntax-prosody correspondence at the level of ι . I provided evidence to support the claim that those structures that are employed to perform speech acts provide the syntactic input for ι -formation. I call the condition that triggers the formation of ι s that correspond to structures with an illocutionary force MATCHFORCE_{ILL} (see Chapter 6). This conclusion is in accordance with those studies who support the idea that clausal structures with an illocutionary force are mapped as ι s in the prosodic structure (e.g. Downing 1970, Kan 2009, Selkirk 2009, 2011, Bagchi 2011, Moraes 2011, Truckenbrodt 2014, Güneş 2014). Additionally, dissimilarly to the assumptions of the previous literature (except Güneş 2014), I provide novel

empirical evidence for the existence of sub-clausal structures that bear illocutionary force and that are parsed as *ts* (i.e. vocatives and exclamatory NPs). A major contribution of this book is to endorse the idea that there are non-clausal structures that bear illocutionary force (i.e. XPs that are employed to perform speech acts). Clausal or not, and parenthetical or not, any XP that is not Force_{ILL}P (and that does not violate the structural distance condition) is found to be mapped as a φ in the prosodic structure. Similarly, any Force_{ILL}P, regardless of whether or not it dominates a clausal structure, corresponds to an ι in the prosodic structure.

The second case concerns XPs that are linearly adjacent to a recurring ι in the prosodic representation (see §6.5). Particularly, these configurations involve clauses with host-medial Force_{ILL}P_s, in which the pre-parenthetical part of the host clause is parsed as an independent ι , regardless of the fact that it is not a Force_{ILL}P. I consider this kind of ι -formation as an instance of a mismatch, as the ι that corresponds to the XPs that are linearly adjacent to a recurring ι in the prosodic representation are never Force_{ILL}P_s themselves, and hence cannot be subject to MATCHFORCE_{ILL}. I claim that this mismatch is due to a prosodic well-formedness condition that is operative in Turkish; namely NONREC. In such configurations, the ι that corresponds to the Force_{ILL}P of the host dominates the ι that corresponds to the Force_{ILL}P of the medial parenthetical. As such, when syntactically integrated Force_{ILL}P_s are mapped, they yield in a recursive layering at the level of ι . To avoid violating NONREC, extra ι boundaries are added to the edges of the recurring ι (with the repair rule *insert i*). The boundary insertion strategy, as a repair rule, is different from the strategy that repairs recursive φ s (i.e. *reduce φ*). For the ι level, I suggest that recursion is repaired with the addition of boundaries, whereas for the φ level, I suggest that recursion is repaired via the reduction of the recurring layers. I relate this dichotomy to the fact that MATCHPHRASE is insensitive to the featural makeup of the syntactic constituents that are mapped, whereas MATCHFORCE_{ILL} is sensitive to the featural makeup of the heads of the syntactic constituents that are mapped. While φ s can be reduced to ω s or sub- ω s, ι s cannot. The fact that *ts* cannot be pronounced as part of the post-nuclear area of their hosts (as an independent ω or a sub- ω) provides independent evidence to support the idea that recurring *ts* cannot be reduced.

This book constitutes one of the few studies on sentence-level prosody that incorporate the notions of prosodic structure theory and Match theory from a derivational stand-point. In other words, architectural concerns aside, this study may be interpreted as a bridge towards those studies such as Richards (2014), which refer to the steps of prosodic constituency formation and syntactic derivation as steps of a continual procedure. In a similar vein, the account that is posited for PWAs in Turkish (in which certain morphemes, including the copula that carries tense morphemes, must bear an ω boundary on their left) can easily be reconciled with Richards' (2014) account of *affix-support* (in which the exponents of certain projections, including the Tense Phrase, must follow a prosodic boundary). As an addition to Richards' observations, I show for Turkish that PWAs (i.e. those morphemes that are subject to affix-support) emerge only in those environments where the sisters of potential PWAs are non-branching structures on *maptrees*. In cases where such morphemes exhibit branching sisters on *maptree* representations, these morphemes display the prosodic properties of regular affixation.

The majority of the empirical observations in this book are based on the analysis of data that are obtained via two experiments on Turkish, which are presented in Chapter 5. The data consist of various syntactic structures (clausal, phrasal, parenthetical, subordinated, root, fragmented, coordinated, copular, verbal, etc.) with various syntactic and pragmatic functions (focused, given, pragmatically integrated, and pragmatically isolated items, arguments, adverbs, parentheticals, etc.). This book is one of the few studies that provides an empirical analysis of such a wide variety of structures in Turkish by employing exploratory statistical techniques. As such, this book provides a number of novel observations on the prosody of Turkish, which will hopefully be used in the future to shed more light on our understanding of the prosodic grammar of Turkish and its interface with syntax.

With the refined syntactic input for mapping, and the improvements that are suggested for Match theory, this book attempts to provide a theoretical formulation of the correspondence between syntactic structures and prosodic structures. The cross-linguistic scope of this formulation is supported by an analysis of the Tagalog data. Needless to say, the theories advanced in this book should be tested against data from other languages.

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Appendix

A.

Case Study 1¹⁰²

- (1) SOV with parentheticals in three positions (initial, medial, final) and with different nuclear positions (default nucleus, Subject-nucleus, Object-nucleus, Verb-nucleus):

a. *Default-nucleus*

A: Ne ol-du?
what COP-PST
'What happened?'

B: Yanil-m-iyor-sa-m Yumak mama-y_{1N} ye-di. (*initial*)
mistake-NEG-PROG-COND-1S Yumak food-ACC eat-PST
'If I am not wrong, Yumak ate the food.'

B: Ben-ce Yumak mama-y_{1N} ye-di. (*initial*)
I-ADV Yumak food-ACC eat-PST
'I think, Yumak ate the food.'

B': Yumak yanil-m-iyor-sa-m mama-y_{1N} ye-di. (*medial*)
Yumak mistake-NEG-PROG-COND-1SG food-ACC eat-PST
'Yumak, if I am not wrong, ate the food.'

¹⁰² Fillers (the F0 analysis of some of which are reported individually in the main text throughout the book) are not included here.

- B': Yumak ben-ce mama-y_IN ye-di. (*medial*)
 Yumak I-ADV food-ACC eat-PST
 'Yumak, I think, ate the food.'
- B'': Yumak mama-y_IN ye-di yanil-m-iyor-sa-m. (*final*)
 Yumak food-ACC eat-PST mistake-NEG-PROG-COND-1SG
 'Yumak ate the food, if I am not wrong.'
- B'': Yumak mama-y_IN ye-di ben-ce. (*final*)
 Yumak food-ACC eat-PST I-ADV
 'Yumak ate the food, I think.'
- b. *Subject-nucleus*
- A: Mama-y_I kim ye-di?
 food-ACC who eat-PST
 'Who ate the food?'
- B: Yanil-m-iyor-sa-m Yumak_N mama-y_I ye-di. (*initial*)
 mistake-NEG-PROG-COND-1SG Yumak food-ACC eat-PST
 'If I am not wrong, Yumak ate the food.'
- B: Ben-ce Yumak_N mama-y_I ye-di. (*initial*)
 I-ADV Yumak food-ACC eat-PST
 'I think, Yumak ate the food.'
- B': Yumak_N yanil-m-iyor-sa-m mama-y_I ye-di. (*medial*)
 Yumak mistake-NEG-PROG-COND-1SG food-ACC eat-PST
 'Yumak, if I am not wrong, ate the food.'
- B': Yumak_N ben-ce mama-y_I ye-di. (*medial*)
 Yumak I-ADV food-ACC eat-PST
 'Yumak, I think, ate the food.'
- B'': Yumak_N mama-y_I ye-di yanil-m-iyor-sa-m. (*final*)
 Yumak food-ACC eat-PST mistake-NEG-PROG-COND-1SG
 'Yumak ate the food, if I am not wrong.'

- B'': Yumak_N mama-yi ye-di ben-ce. (*final*)
 Yumak food-ACC eat-PST I-ADV
 'Yumak ate the food, I think.'
- c. *Object-nucleus*
- A: Yumak ne-yi ye-di?
 Yumak what-ACC eat-PST
 'What did Yumak eat?'
- B: Yanıl-m-iyor-sa-m Yumak mama-yi_N ye-di. (*initial*)
 mistake-NEG-PROG-COND-1SG Yumak food-ACC eat-PST
 'If I am not wrong, Yumak ate the food.'
- B: Ben-ce Yumak mama-yi_N ye-di. (*initial*)
 I-ADV Yumak food-ACC eat-PST
 'I think, Yumak ate the food.'
- B': Yumak yanıl-m-iyor-sa-m mama-yi_N ye-di. (*medial*)
 Yumak mistake-NEG-PROG-COND-1SG food-ACC eat-PST
 'Yumak, if I am not wrong, ate the food.'
- B': Yumak ben-ce mama-yi_N ye-di. (*medial*)
 Yumak I-ADV food-ACC eat-PST
 'Yumak, I think, ate the food.'
- B'': Yumak mama-yi_N ye-di yanıl-m-iyor-sa-m. (*final*)
 Yumak food-ACC eat-PST mistake-NEG-PROG-COND-1SG
 'Yumak ate the food, if I am not wrong.'
- B'': Yumak mama-yi_N ye-di bence. (*final*)
 Yumak food-ACC eat-PST I-ADV
 'Yumak ate the food, I think.'

d. *Verb-nucleus*

- A: Yumak mama-yi ne yap-ti?
 Yumak food-ACC what do-PST
 ‘What did Yumak do with the food?’

- B: Yanıl-m-iyor-sa-m Yumak mama-yi ye-di_N. (*initial*)
 mistake-NEG-PROG-COND-1SG Yumak food-ACC eat-PST
 ‘If I am not wrong, Yumak ate the food.’

- B: Ben-ce Yumak mama-yi ye-di_N. (*initial*)
 I-ADV Yumak food-ACC eat-PST
 ‘I think, Yumak ate the food.’

- B': Yumak yanıl-m-iyor-sa-m mama-yi ye-di_N. (*medial*)
 Yumak mistake-NEG-PROG-COND-1SG food-ACC eat-PST
 ‘Yumak, if I am not wrong, ate the food.’

- B': Yumak ben-ce mama-yi ye-di_N. (*medial*)
 Yumak I-ADV food-ACC eat-PST
 ‘Yumak, I think, ate the food.’

- B'': Yumak mama-yi ye-di_N yanıl-m-iyor-sa-m. (*final*)
 Yumak food-ACC eat-PST mistake-NEG-PROG-COND-1SG
 ‘Yumak ate the food, if I am not wrong.’

- B'': Yumak mama-yi ye-di_N bence. (*final*)
 Yumak food-ACC eat-PST I-ADV
 ‘Yumak ate the food, I think.’

- (2) OSV with parentheticals in three different positions (clause initial, medial, final) with different nuclear positions (Subject-nucleus, Object-nucleus):

a. *Subject-nucleus*

A: Mama-yı kim ye-di?
 food-ACC who eat-PST
 'Who ate the food?'

B: Yanıl-m-ıyor-sa-m mama-yı Yumak_N ye-di. (*initial*)
 mistake-NEG-PROG-COND-1SG food-ACC Yumak eat-PST
 'If I am not wrong, Yumak ate the food.'

B: Ben-ce mama-yı Yumak_N ye-di. (*initial*)
 I-ADV food-ACC Yumak eat-PST
 'I think, Yumak ate the food.'

B': Mama-yı yanıl-m-ıyor-sa-m Yumak_N ye-di. (*medial*)
 food-ACC mistake-NEG-PROG-COND-1SG Yumak eat-PST
 'Yumak, if I am not wrong, ate the food.'

B': Mama-yı ben-ce Yumak_N ye-di. (*medial*)
 food-ACC I-ADV Yumak eat-PST
 'Yumak, I think, ate the food.'

B'': Mama-yı Yumak_N ye-di yanıl-m-ıyor-sa-m. (*final*)
 food-ACC Yumak eat-PST mistake-NEG-PROG-COND-1SG
 'Yumak ate the food, if I am not wrong.'

B'': Mama-yı Yumak_N ye-di ben-ce. (*final*)
 food-ACC Yumak eat-PST I-ADV
 'Yumak ate the food, I think.'

b. *Object-nucleus*

A: Yumak ne-yi ye-di?
 Yumak what-ACC eat-PST
 'What did Yumak eat?'

B: Yanil-m-iyor-sa-m mama-y_{1N} Yumak ye-di. (*initial*)
 mistake-NEG-PROG-COND-1SG food-ACC Yumak eat-PST
 'If I am not wrong, Yumak ate the food.'

B: Ben-ce mama-y_{1N} Yumak ye-di. (*initial*)
 I-ADV food-ACC Yumak eat-PST
 'I think, Yumak ate the food.'

B': Mama-y_{1N} yanil-m-iyor-sa-m Yumak ye-di. (*medial*)
 food-ACC mistake-NEG-PROG-COND-1SG Yumak eat-PST
 'Yumak, if I am not wrong, ate the food.'

B': Mama-y_{1N} ben-ce Yumak ye-di. (*medial*)
 food-ACC I-ADV Yumak eat-PST
 'Yumak, I think, ate the food.'

B'': Mama-y_{1N} Yumak ye-di yanil-m-iyor-sa-m. (*final*)
 food-ACC Yumak eat-PST mistake-NEG-PROG-COND-1SG
 'Yumak ate the food, if I am not wrong.'

B'': Mama-y_{1N} Yumak ye-di bence. (*final*)
 food-ACC Yumak eat-PST I-ADV
 'Yumak ate the food, I think.'

(3) SVO with parentheticals in three different positions (*initial*, *medial*, *final*) with Subject-nucleus:

A: Mama-y₁ kim ye-di?
 food-ACC who eat-PST
 'Who ate the food?'

B: Yanil-m-iyor-sa-m Yumak_N ye-di mama-y₁. (*initial*)
 mistake-NEG-PROG-COND-1SG Yumak eat-PST food-ACC
 'If I am not wrong, Yumak ate the food.'

- B: Ben-ce Yumak_N ye-di mama-yi. (*initial*)
 I-ADV Yumak eat-PST food-ACC
 'I think, Yumak ate the food.'
- B': Yumak_N yanil-m-iyor-sa-m ye-di mama-yi. (*medial*)
 Yumak mistake-NEG-PROG-COND-1SG eat-PST food-ACC
 'Yumak, if I am not wrong, ate the food.'
- B': Yumak_N ben-ce ye-di mama-yi. (*medial*)
 Yumak I-ADV eat-PST food-ACC
 'Yumak, I think, ate the food.'
- B'': Yumak_N ye-di mama-yi yanil-m-iyor-sa-m. (*final*)
 Yumak eat-PST food-ACC mistake-NEG-PROG-COND-1SG
 'Yumak ate the food, if I am not wrong.'
- B'': Yumak_N ye-di mama-yi ben-ce. (*final*)
 Yumak eat-PST food-ACC I-ADV
 'Yumak ate the food, I think.'

(4) OVS with parentheticals in three different positions (initial, medial, final) Object-nucleus:

- A: Yumak ne-yi ye-di?
 Yumak what-ACC eat-PST
 'What did Yumak eat?'
- B: Yanil-m-iyor-sa-m mama-yi_N ye-di Yumak. (*initial*)
 mistake-NEG-PROG-COND-1SG food-ACC eat-PST Yumak
 'If I am not wrong, Yumak ate the food.'
- B: Ben-ce mama-yi_N ye-di Yumak. (*initial*)
 I-ADV food-ACC eat-PST Yumak
 'I think, Yumak ate the food.'

- B': Mama-y_{1N} yanil-m-iyor-sa-m ye-di Yumak. (*medial*)
 food-ACC mistake-NEG-PROG-COND-1SG eat-PST Yumak
 'Yumak, if I am not wrong, ate the food.'
- B': Mama-y_{1N} ben-ce ye-di Yumak. (*medial*)
 food-ACC I-ADV eat-PST Yumak
 'Yumak, I think, ate the food.'
- B'': Mama-y_{1N} ye-di Yumak yanil-m-iyor-sa-m. (*final*)
 food-ACC eat-PST Yumak mistake-NEG-PROG-COND-1SG
 'Yumak ate the food, if I am not wrong.'
- B'': Mama-y_{1N} ye-di Yumak bence. (*final*)
 food-ACC eat-PST Yumak I-ADV
 'Yumak ate the food, I think.'

B.

Case Study 2¹⁰³

(1) CONTROL SET¹⁰⁴

i. Control set for φ boundaries

a. Mono-worded argument (φ -ar):

Nevriye yeğenine yağmurluğunu_N veriyor.

‘Nevriye is giving her raincoat_N to her nephew.’

Nevriye yeğenine yağmurluğunu veriyor_N.

‘Nevriye is giving_N her raincoat to her nephew.’

Gidenler beygire yuları_N bağlıyor.

‘Those that have gone are tying_N the rein to the horse.’

Gidenler beygire yuları bağlıyor_N.

‘Those that have gone are tying_N the rein to the horse.’

Nuriye yemeği yoğurda_N buluyor.

‘Nuriye is mixing the food with yoghurt_N.’

Nuriye yemeği yoğurda buluyor_N.

‘Nuriye is mixing_N the food with yoghurt.’

Mimarlar oyunu memura_N veriyor.

‘The architects pledge their votes to the civil servants_N.’

Mimarlar oyunu memura veriyor_N.

‘The architects pledge_N their votes to the civil servants.’

¹⁰³ Fillers, coordinated arguments and in-between parentheticals (the F0 analysis of some of which are reported individually in the main text throughout the book) are not included here.

¹⁰⁴ Boldface marks the syllables on the boundaries that are included in the analysis.

Beygirler yayaları yana_N yuvarlıyor.

‘The horses are tossing the pedestrians to the side of the road_N.’

Beygirler yayaları yana yuvarlıyor_N.

‘The horses are tossing_N the pedestrians to the side of the road.’

Maymunlar aynaya marulla_N vuruyor.

‘The monkeys are hitting the mirror with lettuce_N.’

Maymunlar aynaya marulla vuruyor_N.

‘The monkeys are hitting_N the mirror with lettuce.’

Evlenenler ömrünü yalanlara_N adıyor.

‘The married devote their lives to lies_N.’

Evlenenler ömrünü yalanlara adıyor_N.

‘The married devote_N their lives to lies.’

Ninem düğmeyi bileğine_N bağlıyor.

‘Nana ties the button to her wrist_N.’

Ninem düğmeyi bileğine bağlıyor_N.

‘Nana ties_N the button to her wrist.’

Milyonlar menemeni ayrana_N buluyor.

‘Millions add buttermilk_N to the omelette.’

Milyonlar menemeni ayrana buluyor_N.

‘Millions add_N buttermilk to the omelette.’

Bağımlılar yalayı alevlere_N boğuyor.

‘The addicts caused the house to burst into flames_N.’

Bağımlılar yalayı alevlere boğuyor_N.

‘The addicts caused_N the house to burst into flames.’

Ayrılanlar evlilere öneride_N bulunuyor.

‘Divorcees are making suggestions_N to the married couples.’

Ayrılanlar evlilere öneride bulunuyor_N.

‘Divorcees are making_N suggestions to the married couples.’

Dallamalar yalanları ilgililere_N duyuruyor.

‘The jerks spread lies to the officers_N.’

Dallamalar yalanları ilgililere duyuruyor_N.

‘The jerks spread_N lies to the officers.’

b. Bi-worded argument (φ -ar)

Öğlenleyin ayran gönüllü, yüreği yaralıya yağmurluğunu geri_N verecekmiş.

‘At lunch-time, (the one) who is affectionate gives his raincoat back_N to (the one) who is broken hearted.’

Yörede görevini bilen, ağır kanlıları evlerine geri_N yolluyor.

‘In this region, the dutiful ones send the lazy ones_N back to their homes.’

Genelde yeni görevliler yarımarulları yaylalara iade_N ediyor.

‘Usually, the new staff sends the halved lettuces back_N to the fields.’

Genelde yeni yorumlar uygulamalı deneyleri genel bilimlere yavan_N anlatıyor.

‘Usually, new comments inform the general sciences about applied experiments in a bland manner_N.’

Emirler oyaklı mendili yağız yiğide Mine’yle geri_N gönderiyor.

‘Emir is sending the laced napkin back_N to the brave man via Mine.’

c. Mono-worded VP-adverb (φ -app)

Nuriye arada yoğurdu yemeğe_N katıyor.

‘Nuriye, every once in a while, adds yoghurt to her food_N.’

Ninem demin düğmeyi bileğine_N bağıladı.

‘Nana, just now, has tied the button to her wrist_N.’

Mimarlar ileride oyunu memura_N verir.

‘In future, architects will pledge their votes to civil-servants_N.’

Alevler kendiliğinden uyuyanları dumana_N boğdu.

‘Flames spontaneously smother the sleepers in smoke_N.’

Müdavimler yalandan yenileri aralarına_N alıyor.

‘Regular customers feigning friendship_N with the newcomers.’

Muallimler yenilere derinliğine yayınlarını_N anlatıyorlar.

‘Teachers talk in-depth with the freshmen about the publications_N.’

Amirler ilerilerde ağaları önlere_N alıyor.

‘At the front (of the queue), the chiefs give priority_N to the lords.’

d. Bi-worded VP-adverb (φ -app)

Nebiye deminden beri yeğenine rüyalarını_N anlatıyordu.

‘For quite a while, Nebiye has been telling her dreams_N to her nephews.’

Amirler memurlara ömür billah görev_N vermezler.

‘The chiefs will never assign work_N to the civil-servants.’

Dilenenler ömürleri boyu aynasızlara manı_N oluyor.

‘The beggars obstruct_N the cops for their entire lives.’

Bağımlilar yalıyi boydan boyā alevlere_N boğuyor.
‘The addicts caused the house to entirely burst into flames_N.’

Ayrılar o gün bugündür evlilere öneride_N bulunuyor.
‘Since then, the divorcees are giving advice_N to the married couples.’

Yuvalar öğleye doğrū yavruları uykuya_N yatırıyor.
‘Around noon the nurseries put the babies to sleep_N.’

Emreler yeğenimi bayram boyu armağana_N boğarlar.
‘Throughout the holiday, Emre (and his friends) overwhelm my nephew with gifts_N.’

ii. Control set for *t* boundaries

a. *Mono-worded final-φ (t-n)* 21 case

Mineler ayvaları Meraya_N, Miraylar limonları Emineye_N, Armağan marulları yörelilere_N veriyor.

‘Mine gives the apples to Meray_N, Miray the lemons to Emine_N, and Armağan the lettuce to the locals_N.’

Emirler ayvaları Numana_N, Miraylar bağlara_N, Bünyamin yeğenlere_N, and Armağan Emineye_N veriyor.

‘Emir gives the apples to Numan_N, Miray to the gardens_N, Bünyamin to the nephews_N, and Armağan to Emine_N.’

Yenilen menemen_N, eleman ayran_N, Neriman enginar_N, yeniler yağılama_N yapardı.

‘The losers would prepare an omelette_N, the staff some buttermilk_N, Nerimen some artichoke_N, the new comers *yağlama*_N.’

Emine avluyu_N, Miryaye yerleri_N, Neriman yalayı_N, ve Gülin aralığı_N ovalıyor.

‘Emine is scrubbing the courtyard_N, Miraye the floor_N, Neriman the house_N, Gülin the entrance_N.’

Yaralları yuvalarına_N, yerelleri ilgililere_N, yakınları aramaya_N ve bulunanları güvenliğe_N yönlendirdiler.

‘(They) used to transfer the injured to their homes_N, the locals to the associates_N, the relatives for rescue_N, and the ones that are rescued to the security guards_N.’

Nuray arabayı galeriye_N, vergileri maliyeye_N verir, ardından galeriye geri_N gider.

‘Nuray sends the car to the showroom_N, the tax to the tax office_N, and then (she) goes back_N to the showroom.’

Nuraylar galeriye arabayı_N, yeğenler yaliya haliları_N, Emine Nurana ayranı_N, Yener naneyi_N, Nuran manava ulağı_N yolladı.

‘Nuray sent the car_N to the showroom, the nephews (sent) the carpets_N to the house, Emine (sent) the buttermilk_N to Nuran, the mints_N to Yener, Nuran (sent) the butler_N out to the greengrocer.’

Oyunlarda yeğenler yerlilere_N, yerliler yenilere güvenmiyor_N.

‘During the games, the nephews (do not trust) the locals_N, the locals do not trust_N the freshmen.’

Münire menemene_N, Neriman yağlamaya_N dadarıyor.

‘Neriman picks at the *yağlama*_N, Münire the omelette.’

b. Bi-worded final-φ (i-n) 24 case

Meray hamuru mayaya_N yoğurur, yağlamaya yoğurt_N yayar.

‘Meray kneads the dough with yeast_N, and then spreads yoghurt_N over the *yağlama*.’

Yeğenler arabaya_N oynar, sonra yerleri maviye_N boyar ardından yavruya menemen_N verirler.

‘The nephews play with cars_N, and then paint the floor blue_N, after that (they) feed the baby with some omelette_N.’

Yaralılar yuvalarına_N yollanır. Yuvalarında yaralılar muayeneye_N alınır. Yeğenlerine haber_N verilir, ama yeğenleri yaralıların yanlarına_N alınmaz.

‘The injured people are sent home_N. At home, they are examined_N. Their nephews are informed_N but not allowed to visit_N the injured.’

Ayrılar evlilerin aralarını_N buluyor. Ama evliler ayrılara yardım etmiyor_N.

‘The divorcees help the married couples to solve their issues_N. But the married do not help_N the divorcees.’

Emine yavrusunu_N gömdü, Miryaye yerlerini_N ovaladı, Neriman helvayı_N yoğurdu.

‘Emine buried the puppy_N, Miraye scrubbed the floor_N, and Neriman kneaded the halvah_N.’

Ameleler avluyu_N mermerler, elemanlar yerleri_N ovalar, ve yorulan menemene_N yumulur.

‘The workers cover the front yard_N with marble, the staff scrub the floor_N, and the tired ones eat some omelette_N.’

Emir oyununu_N yeğler. Meray yaliya_N yürüür. Uygar yeğenine_N uğrar. Ve Nermin oynayanları_N fotoğraflar.

‘Emir chooses to play_N. Meray walks home_N. Uygar visits his nephew_N. And Nermin takes pictures of the ones who play_N.’

Yağmurun boynu_N morardı. Yeğenler morluğu_N gördüler. Ardından bunu dillerine_N doladılar. Emir olayları_N duydu ve devreye_N girdi. Yeğenler de bi daha Yağmurla eğlenmediler_N.

‘Yağmur’s neck_N was bruised. The nephews saw the bruises_N. Then they started to gossip about it_N. Emir heard about this_N and took some action_N. So the nephews never made fun of Yağmur_N again.’

Meray eve_N döner, bu arada hediyeler_N ayarlanır, sonra Meraylorum
mumları_N yakar, sonra Emin bir dilek_N diler ve gelenler dans_N eder.

'Meray goes back home_N, meanwhile, the gifts_N are arranged, then
Meray lights the candles_N and then Emin makes a wish_N and guests
dance_N.'

(2) TEST SET¹⁰⁵

i. Verbal Parentheticals

a. *Comment Clauses (com) (8 utterances)*

Emreler, *yemin ederim*, yeğenimi armağana_N boğarlar.

'Emre (and his friends), I swear, overwhelm my nephew with gifts_N.'

Armağan, *inanılır gibi değil*, meyveleri yollara_N yayıyor.

'Armağan, it is unbelievable, is spreading fruits to the road_N.'

Veremliler, *malum*, yarılara gönüll_N bağlarlar.

'The patients with tuberculosis, it is obvious, have their hope_N on
tomorrows.'

Aynurlar, *yalan demiyorum*, halları yalıyan yayıylardı.

'Aynur was, I am not lying, spreading the carpets in the house_N.'

Bünyamin, *büyük oranla doğrudur*, yeğenini Meraya_N ayarlıymuş.

'Bünyamin, (it) is probably true, is setting his nephew up with
Meray_N.'

Aynur, *inan*, Burak'a ödün_N vermeyecek.

'Aynur, believe (me), will not compromise_N with Burak.'

Nevriye, *eminim*, yemeniyi Mine'ye_N verir.

'Nevriye, I am sure, will give the scarf to Jane_N.'

¹⁰⁵ Parentheticals are italicised.

Yenilenler, *benim yorumum*, yörelerine geri_N döner.

‘The losers, (this is) my view (on this), will go back_N to their own regions.’

b. Finite non-restrictive relative clauses (finnon) (5 utterance)

Aynurlar, *ki milyonlar biliyor*, yuvalarını maviye_N boyadılar.

‘Aynur (and her husband), which the millions know, painted their house blue_N.’

Meraylar, *ki duyanlar inanmıyor*, milyonlarını yeğenlerine_N veriyordu.

‘Meray, which (anybody) hearing (it) does not believe, used to give millions of her money to her nephews_N.’

Memurlar, *ki alanların yerlileri*, yayaları dumana_N boğdu.

‘The civil servants, who are the locals of the area, engulfed the pedestrians in smoke_N.’

Maymunlar, *ki yabanidirler*, liderlerine boyun_N eğerler.

‘The monkeys, and they are wild, obey_N their leaders.’

Nermin, *ki ayrılıyor*, evini Miray'a_N vermiş.

‘Nermin, who is going away, gave her flat to Miray_N.’

c. Finite adverb-like parentheticals (adfin) (13 utterance)

Neriman, *elinde bavullar vardı*, yeğenlerini Nuraylara_N uğurladı.

‘Neriman, (she had) some suitcases in her hand, sent off her nephews to Nuray's_N.’

Maliye, *olanlardan haberi olmalı*, nemaları memurlara_N yollamış.

‘The finance department, they must know what happened, transferred the interests to the civil servants_N.’

Nilay, *Emir beklemiyordu*, yarıyle yolları_N ayırmış.

‘Nilay, Emir was not expecting (this), parted the ways_N with her lover.’

Emir, *evindeydi*, elemanları görevden_N almış.
‘Emir, (he) was at home, relieved the staff from duty_N.’

Aynuru, *beni dinlediler*, yaliya geri_N gönderdiler.
‘They sent Aynur, (they) listened to me, back_N home.’

Evren, *uyuyordu*, Aylin’le ilgili manalı deyimler_N mirıldandı.
‘Evren, (he) was sleeping, murmured meaningful expressions_N about Aylin.’

Doğular, *beğen ya da beğenme*, marulu menemene_N doğrarlar.
‘The easterners, like (it) or not, chop (and put) lettuce in their omelette_N.’

Maymunlar, *yıllar ilerler*, yavruları yuvalara_N gömerler.
‘Monkeys, (and) the years pass by, bury the infants in their dens_N.’

Amiral, *gün gelecek*, ölümleri mayınlara_N bağlayacak.
‘The admiral, that day will come, will relate the deaths to the state of the mines_N.’

Ayran, *ne dersen de*, ameelerin yorgunluğunu_N alır.
‘The buttermilk, say what you will, relieves the tiredness_N of the workers.’

Amiraller, *yollar yarılansa da*, direnmeye devam_N ediyor.
‘The admirals, even when the roads are half taken, keep on_N resisting.’

Onur, *rengini beğeniyor diye*, Miray’ın arabayı elinden_N aldı.
‘Onur, just because (he) likes (its) color, deprived_N Miray of her car.’

Merayı *durumum uygun olacak* yalıda yaverler_N gibi yaşatırım.
‘I would make Meray live like the royals_N, (only if) I had better conditions.’

d. Pragmatically isolated interruptions (inter) (5 utterances)

Yayınlar – *yanağında menemen var* – yayaları oyunlarla_N uyarıyor.
‘The magazines – you have omelette on your cheek – warn the
pedestrians with games_N.’

Mamayı – *yana doğru eğilin!* – bebeğe biberonla_N veriyorlar.
‘They give the food – lay down on your side! – to the baby from a
nursing bottle_N.’

Nuray – *koyun!* – evini minimal_N yapacakmış.
‘Nuray – put (it over there)! – will decorate her house in a minimal
style_N.’

Boyalar – *buyrun!* – arabayla yahya_N yollanıyor.
‘The paints – go ahead! – are sent to the house_N by car.’

Ibrahim – *iyi ovala!* – yeğenlerine aylık_N bağladı.
‘İbrahim – rub (it) well! – has put his nephews on a salary_N.’

ii. XP parentheticals

a. Mitigative adverbials (admit) (5 utterances)

Amirler, *görünürde*, yorulanlara öneride_N bulundu.
‘The chiefs, apparently, made suggestions_N to the tired (people).’

Aynur, *yeminle*, bebeğe yağlı mama_N veriyor.
‘Aynur, with swear, give the baby fatty food_N.’

Meray, *duyduguma göre*, gelmeye bahane_N arıyorumuş.
‘Meray, to what I heard, is looking for an excuse_N to come.’

Ergenler, *bana göre*, dünyayı duygularıyla_N görüyorlar.
‘The adolescents, to my view, see the world through their emotions_N.’

Memurlar, *anladığım kadariyla*, alanlarda belaN arıyor.

'The officers, as far as I understand, are looking for troubleN in the fields.'

b. Nominal appositives (identificational) (appo) (6 utterances)

Borayı, *dayimin oğlunu*, ovalarda yillardırN görmüyorum.

'I have not seen Boray, i.e. my uncle's son, in the savanna for yearsN.'

Yaylaları, *büyüdüğüm yerleri*, bayrama yeğenlerimleN arayacağım.

'This holiday I will look for the plateaus, i.e. the place where I grew up, with my nephewsN.'

Muharrem, *mahalleye yeni gelen bir yakınım*, aileyle yollarıN ayırmış.

'Muhammed, i.e. an acquaintance who recently moved to the neighborhood, has parted waysN with the family.'

Nuri, *oğlum*, menemeni yoğurdaN bulamış.

'Nuri, i.e. my son, covers the omelette with yoghurtN.'

Emiri, *yeğenimi*, arabayla oyunaN götürüyorkar.

'They are taking Emir, i.e. my nephew, to the playN by car.'

Yereller Emineyi, *gelinimi*, yörede dillerineN dolamışlar.

'The locals in the neighborhood gossip aboutN Emine, i.e. my daughter-in-law.'

c. Post-positional peripheral adverbials (adper) (10 utterances)

Görevliler, *beklenen gibi*, yaralıları yerlerineN yönlendiriyor.

'The rescuers, as was expected, are directing the injured to their regionsN.'

Nuray, *bildiğin gibi*, oyali mendilleri iadeN ediyor.

'Nuray, as you know, is returningN the laced napkins.'

Elemanlar, *bunlar olurken*, mermerleri yerlere_N yayıyorlardı.
‘The staff, while these things were happening, were spreading marbles over the floor_N.’

Yeniler, *yıllar ilerlediğinde*, yerellere güven_N veriyordu.
‘The freshmen, as the years pass by, would inspire trust_N in the locals.’

Yerliler, *alanlar yerine*, düğünleri yaylalarda_N yaparlar.
‘The locals, instead of in the fields, carry out the wedding ceremonies on the plateau_N.’

Elemanlar, *yoğunluk oranına göre*, yollara bariyer_N koyuyorlar.
‘The staff, depending on the density ratio, set barriers_N on the roads.’

Alevler, *alınan önlemlere rağmen*, yalıtları dumana_N boğdu.
‘The flames, despite the precautions, engulfed the household in smoke_N.’

Alevler, *önlem almasına rağmen*, yalılıları uykuda_N yakaladı.
‘The flames, despite the fact that measures were taken, caught the residents in their sleep_N.’

Yereller, *ayrıyeten*, yenilere yerlerini_N veriyor.
‘The locals, furthermore, leave their seats_N to the new-comers.’

Vergiler, *temelde*, maliyeye geri_N verilir.
‘The taxes, basically, are sent back_N to the tax office.’

d. Vocatives (voca) (5 utterances)

Koyunları, *değerli yöremizin yerlileri*, ağlıklarına yenilerle_N yollarız.
‘We send the cows, (you) dear locals of our region, to their barns with the new ones_N.’

Bayrama, *bağrı yaralı yavrum*, nineni köyüne_N gömeceğiz.
‘On holiday, we, my sorrowful child, will bury your grandmother in
her village_N.’

Beygirler, *Emir*, yayaları yana_N yuvarlıyor.
‘The horses, Emir, toss pedestrians aside_N.’

Evlenenler, *Aynur*, ömrünü yalanlara_N adıyor.
‘Couples, Aynur, devote their lives to lies_N.’

Emirler, *narin meleğim*, yeğenimi armağana_N boğarlar.
‘Emir (and his friends), my fragile angel, overwhelm my nephew with
gifts_N.’

Samenvatting in het Nederlands

Dit boek is gewijd aan het onderzoeken en verklaren van de procedures die prosodische structuur genereren, in het bijzonder aan de hand van het Turks, en aan het bestuderen van deze procedures in relatie tot de syntaxis. Om dit te kunnen doen worden waargenomen prosodische constituentpatronen, afgeleid van een aantal syntactisch verschillende structuren, met elkaar vergeleken en tegen elkaar afgezet.

Beide casusstudies die in dit boek worden gepresenteerd zijn uitgevoerd met als doel het prosodische gedrag van parenthetische structuren te onderzoeken. Door de bijzondere syntactische en semantische eigenschappen van parentheses en door de speciale relatie die ze aangaan met de zin waarin ze ingevoegd zijn, bieden parenthetische structuren een zeer interessant gebied voor onderzoek naar de relatie tussen de syntactische module en andere modules van de grammatica. Het prosodische profiel van parenthetische structuren is niet minder interessant dan hun syntactische en semantische eigenschappen. Vaak wordt aangenomen dat parentheses in hun prosodie geïsoleerd zijn van de zin waarmee ze zijn verweven. Een aantal studies heeft echter aangetoond dat dit niet noodzakelijk het geval is voor alle parentheses (zie bijvoorbeeld Dehé 2014). Met hun bijzondere syntactische gedrag en hun onvoorspelbare prosodie vormen parentheses een interessant domein van onderzoek voor iedereen die de relatie tussen syntaxis en prosodie bestudeert. Dit boek geeft een samenhangende beschrijving van de configuraties waarbij parentheses prosodisch geïsoleerd of juist geïntegreerd zijn.

In Hoofdstuk 1 introduceer ik de theoretische achtergrond en geef ik de theoretische en empirische vragen die dit boek beoogt te beantwoorden. Hieronder herhaal ik deze vragen en vat ik de antwoorden samen die ze in dit boek gekregen hebben.

Wat zijn de structurele eigenschappen van de syntactische configuraties die relevant zijn voor prosodische operaties?

In hoofdstuk 2 toon ik aan dat PF ('Phonological Form') gevoelig is voor slechts een deel van de structuur die gecreëerd wordt door de syntactische module in enge zin ('narrow syntax'). Bij het bouwen van de prosodische constituentstructuur blijken bijvoorbeeld syntactische eindknopen zonder een vrijstaande fonologische exponent onzichtbaar te zijn. Gebaseerd op deze observatie stel ik een tussenliggende representatie voor die alleen die elementen van de syntaxis weergeeft die relevant zijn voor de operaties van PF. Deze tussenliggende structuur wordt *maptree* genoemd. Kort gezegd geeft *maptree* alleen die syntactische projecties weer die fonologische exponenten hebben; grofweg een weergave van een syntactische boomstructuur na insertie uit het lexicon ('VI insertion'). In paragraaf 2.3 heranalyseer ik data uit het Tagalog, beschreven in Richards (2010), en geef cross-lingüistisch bewijs voor de noodzaak van op prosodie gerichte representationele boomstructuren, zoals *maptrees*.

In tegenstelling tot de situatie voor syntactische boomstructuren geldt voor prosodische structuren geen beperking tot binaire vertakking. Deze potentie tot meervoudige vertakkingen en andere zaken geven aan dat dominantie- en omvattingsrelaties uit de kernsyntaxis niet precies worden behouden in de prosodische constituentstructuur.

Bovendien laat mijn discussie van zogenaamde *fonologische woordadjungeerders* (PWA's) in het Turks (§2.2) zien dat de distributie van PWA's alleen post-syntactisch berekend kan worden. De oorzaak is dat hun status als PWA's uitsluitend wordt bepaald in relatie tot elementen met een fonologische exponent.

Verder beweer ik dat de prosodie nog gevoelig is voor een andere structurele afhankelijkheid, namelijk de hiërarchische afstand tussen een XP en een hoofd. In §2.2 beschrijf ik deze gevoeligheid als een *structurele afstandsvoorraarde*, die vaststelt dat een prosodische categorie alleen in overeenstemming gebracht kan worden met een syntactische categorie als hij rechtstreeks uitmondt in een X° of zelf een eindknoop is in de *maptree*.

Dit boek concludeert dat het prosodische algoritme gevoelig is voor maar een deel van de syntactische structuur. Dientengevolge ontstaat een discrepantie tussen de syntactische en de prosodische constituentstructuur.

Hebben syntactische parentheses een prosodisch correlaat? / Welk soort parentheses corresponderen met de prosodische woordgroepen, woorden of woorddelen?

In hoofdstuk 5 concludeer ik dat syntactische parentheses in het Turks geen rechtstreeks prosodisch correlaat hebben. De uitslagen van het eerste productie-experiment in §5.3 tonen aan dat de geteste parentheses in het Turks hetzelfde geparsed worden als subclausale constituenten. De resultaten van de tweede casusstudie in §5.4 geven aan dat woordgroep- en zinsparentheses als *is* of *qs* ontleed worden op basis van hun oppervlakte-eigenschappen. Ik concludeer dat MATCHPARP geen deel vormt van het afbeeldingsalgoritme. Bovendien is er geen bewijs dat de lengte of de lineaire positie van een parenthetische constructie in het Turks de prosodische categorie zou kunnen beïnvloeden.

In dit boek wordt geconcludeerd dat een pragmatisch geïsoleerde parenthetische constructie altijd als een prosodische *t* wordt ontleed. Evenzo worden de syntactische eigenschappen van *comment clauses* in dit opzicht terzijde geschoven door hun semantische en pragmatische eigenschappen, met als gevolg dat ze de prosodische status van een *φ'* krijgen in plaats van een *t*.

Ik laat zien dat identifierende apposities, die als *φ's* worden ontleed, een sterkere prosodische grens vertonen aan de linkerkant. Ik relateer deze observatie aan de lineaire positie van zulke apposities met betrekking tot hun anker en stel voor dat de reden waarom een sterkere prosodische grens op het verbindingspunt van de appositie en zijn anker wordt gecreëerd is om aan de *Distinctness Condition* van Richards (2001) te voldoen.

In hoofdstuk 6 bekijk ik opnieuw de in hoofdstuk 4 en 5 besproken syntactische structuren om de vraag te beantwoorden of die structuren een Force_{ILLP}-projectie bevatten. Ik concludeer dat de aan- vs. afwezigheid van een projectie voor *illocutionary force* in de syntaxis verantwoordelijk zou moeten zijn voor het vormen van een prosodische *t* door parentheses. Daarom wordt elke parenthetische constructie die *niet* gebruikt wordt om een taaldaad uit te drukken als een prosodische *φ*, een *ω*, of een deel daarvan ontleed.

Hebben syntactische deelzinnen een prosodisch correlaat? / Welke soorten 'clauses' corresponderen met prosodische woordgroepen, woorden of woorddelen?

Paragraaf 4.1.1 laat zien dat zinnen geen vast prosodisch correlaat hebben. Deze conclusie is gebaseerd op een onderzoek van de prosodische eigenschappen van genominaliseerde en finiete bijzinnen, gecoördineerde zinnen (*discourse embedding* zowel als reguliere conjunctie), fragmentantwoorden, hoofdzinnen met lege plekken erin en *comment clauses* in het Turks.

Ik toon het volgende aan: (i) Omdat de Turkse bijzinnen als φ 's of als delen daarvan worden ontleed, kan MATCHCLAUSE daar geen betrekking op hebben. (ii) Hetzelfde geldt voor *comment clauses* en de tweede clausale conjuncten van structuren die ingebed zijn in de discourse. (iii) Conjunctzinnen in gewone coördinatiestructuren, fragmentantwoorden en hoofdzinnen die lege plekken bevatten corresponderen wel met ι 's. Paragraaf 4.1.2 laat zien dat ι niet per se een prosodisch correlaat van een deelzin is omdat een aantal elementen die categorisch geen zinnen zijn – zoals bijvoorbeeld vocatiefvormen of uitroepende naamwoordgroepen – noodzakelijk als ι 's ontleed worden. Op basis van deze observaties concludeer ik dat MATCHCLAUSE geen deel vormt van het prosodische ontledingsalgoritme.

Bestaat er een prosodisch correlaat van syntactische woordgroepen?

De uitkomst van de hoofdstukken 2 en 3 is dat syntactische woordgroepen met prosodische φ 's overeenkomen, met uitzondering van Force_{ILL}P's. Er wordt aangetoond dat MATCHPHRASE de distributie van φ 's kan verklaren op voorwaarde dat de toegang tot syntactische structuren beperkt wordt. Zoals hierboven besproken is er een structurele afstandsbeperking op het toepassen van MATCH.

Wat is het syntactische correlaat van prosodische woorden? / Komen de woorden van de prosodie overeen met de woordgroepen, woorden of woorddelen van de syntaxis?

In hoofdstuk 2 wordt geconcludeerd dat ω 's in de prosodie niet corresponderen met een vaste syntactische eenheid. Ik laat zien dat een ω soms overeenkomt met een woordgroep, soms met een reeks van woordgroepen en soms zelfs met een morfosyntactisch woorddeel. In paragraaf 2.1 bespreek ik een reeks van problemen voor bestaande formuleringen van MATCHWORD. Ik argumenteer in §2.1.1 dat de kleinste syntactische eenheid waar de prosodische parser toegang toe heeft een XP is en dat MATCHWORD geen deel uitmaakt van het afbeeldingsalgoritme. Omdat ω 's aantoonbaar wel een aparte prosodische categorie vormen, naast φ 's en de i 's, stel ik voor dat ze gegenereerd worden als resultaat van een prosodische welgevormdheidsvoorwaarde.

Paragraaf §2.2 bevat een discussie van PWA's, die ook een bron zijn van de besproken mismatch tussen syntaxis en prosodie. Voortbouwend op Kabak & Vogel (2001) stel ik voor dat PWA's alleen suffixen kunnen worden als hun structurele zuster in de *maptree* geen eindknoop is.

Vervolgens presenteert ik bewijs voor mijn voorstel dat (i) prosodische constituentstructuur slechts in beperkte mate *trouw* ('faithful') is aan syntactische representaties, en (ii) dat de welgevormdheidsvoorwaarden een deformatie van de beperkt trouwe prosodische structuren kunnen veroorzaken. Dit boek bevestigt en versterkt de vooronderstellingen van die theorieën die een *indirecte* en *beperkte* toegang tot syntactische input voor de prosodie postuleren.

Zijn er gevallen waarbij de intonatiegroepen van de prosodie corresponderen met de subclausale eenheden van de syntaxis? Zo ja, hoe kan dan de distributie van intonatiegroepen voorspeld worden?

Ik bespreek in hoofdstuk 4 en 6 twee gevallen waarbij syntactische subclausale eenheden als i 's worden ontleed.

De eerste betreft die XP's die gebruikt worden om een taaldaad uit te drukken (zie §4.1.2). Ik noem de conditie *MATCHFORCE_{ILL}* die het vormen van i 's teweeg brengt die corresponderen met een structuur die illocutionaire kracht bevat (zie hoofdstuk 6). Een belangrijke theoretische bijdrage van dit boek is dat er structuren bestaan die over illocutionaire kracht beschikken maar geen zinnen zijn. Onafhankelijk van zijn status (d.w.z. clausaal of niet clausaal, parenthesis of geen parenthesis) heeft iedere XP die géén Force_{ILL}P

is een φ als prosodisch correlaat. Evenzo krijgt iedere Force_{ILLP} de prosodische interpretatie van een ι .

Het tweede geval betreft die XP's die adjacent zijn aan een herhaalde ι in de prosodische representatie (§6.5). Voornamelijk betreft dit configuraties met een Force_{ILLP} die een host-zin onderbreken. Daarbij wordt het parenthetische deel van de gastheerzin als een aparte ι ontleed, zonder rekening te houden met het feit dat het op zich geen Force_{ILLP} is. Ik stel voor dat deze afwijking het gevolg is van een (in het Turks) opererende prosodische welgevormdheidsvoorwaarde, namelijk NONREC. Om het schenden van NONREC te voorkomen worden extra prosodische grenzen toegevoegd aan de flanken van de intrusie.

Met de voorgestelde beperkingen op de syntactische input voor de prosodie en de aanpassingen van de zogenaamde *Match*-theorie verschafft dit boek een gedetailleerde beschrijving en analyse van de *mapping* tussen syntaxis en prosodie. De cross-lingüistische validiteit van mijn theorie, die met name op basis van data uit het Turks is vastgesteld, wordt ondersteund door een analyse van toondistributie in het Tagalog. Vanzelfsprekend zal deze ook in andere talen getest moeten worden.

Biography

Güliz Güneş was born in Akşehir, Turkey on 11th August 1983. She received her BA in English Linguistics from Hacettepe University, Ankara in 2006. She received her MA (magna cum lade) in Linguistics from Bogazici University, Istanbul in 2010. During and after her MA degree she taught English at Beykent University, Istanbul, for two years. She became a PhD researcher in Linguistics at Rijksuniversiteit Groningen in 2011. From January to June 2013 Güliz was a Junior Specialist in Linguistics at the University of California, Santa Cruz.

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