RADICAL DISCONTINUITY: SYNTAX AT THE INTERFACE

by

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ABSTRACT OF THE DISSERTATION

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In this dissertation, I examine discontinuous constituents in Ukrainian and Modern Greek and advance the Radical Discontinuity Hypothesis. I argue that discontinuous constituents in which an adjectival modifier surfaces in a distance from the noun it modifies do not result from splitting a single phrasal constituent by way of movement but are the product of long-distance concord. An adjectival modifier is base-generated at a distance from the noun and is licensed by agreement. I demonstrate that the Radical Discontinuity Hypothesis explains freedom of lexical item ordering in discontinuous constituents, complex cases of discontinuity that involve tripartitioning of the noun phrase, and contrasts in the availability of movement and discontinuity in similar syntactic environments.

While the order between lexical categories that form an agreement-based discontinuous constituent is free, functional categories always linearly precede the left-most lexical item associated with the discontinuous constituent. I claim that the surface distribution of

functional categories in discontinuous constituents is determined not in narrow syntax but in the course of linearization of syntactic structure at the interface with PF. I argue that the F-value ordering principle responsible for extended projection formation in narrow syntax (Grimshaw (2005)) also guides linearization of the hierarchical structure at PF. By establishing a correlation between the asymmetric c-command and the F-value based ordering of heads of an extended projection, I formulate the Mapping Constraint on Linearization (MCL) and offer a linearization algorithm that implements it. The MCL algorithm incorporates the F-value ordering principle into the LCA of Kayne (1994) and ensures that the F-value ordering relations are enforced in a linear string. The application of the MCL algorithm extends beyond the phenomenon of constituent discontinuity and is examined in relation to various movement transformations. The MLC algorithm restricts the output of both XP and head movement, accounts for the distribution of PP-modifiers and Genitive possessors in movement-based discontinuous constructions, and derives Determiner Spreading in Modern Greek.

I also examine locality restriction on movement and agreement in Ukrainian and demonstrate that agreement is constrained not in terms of intervention effects but in terms of agreement domains, which are distinct from PIC.

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All the shortcomings of this work are my own.

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Introduction

A basic operation Merge has been posited as the null hypothesis in the recent implementations of transformational grammar. Merge is minimally defined as "a primitive operation that takes *n* objects already constructed, and constructs from them a new object" (Chomsky (2005): 11). Two sub-cases of the operation Merge are distinguished. Given object A, External Merge combines object B that is not part of A with A. Given object A, Internal Merge, or Move, combines object B that constitutes part of A with A itself:

1.
  a) External Merge: [B [A]]
  b) Internal Merge: [B [A B]]

Ideally, to maintain the generality of the linguistic computational mechanism, Merge should be left unconstrained. The well-formedness of linguistic expressions should be defined not as the result of specific restrictions on Merge but as the result of external interface conditions: the conditions imposed by the sensorimotor system and the conditions imposed by the conceptual-intentional system.

Basic syntactic objects that are used in the process of linguistic computation are of two types: lexical categories and functional categories. Given the unconstrained nature of Merge, Merge should not differentiate between lexical and functional items and apply equally to both. Lexical and functional items, however, exhibit various asymmetries in relation to Merge. In particular, a complement of a lexical item can undergo Internal Merge (2a) while a complement of a functional item cannot (2b):

2.
   a) [B … X … [A$_{lexical}$ B]]
   b) * [B … X … [A$_{functional}$ B]]

A complement of the verb, for instance, can be topicalized by being raised to the left periphery of the clause while a complement of the determiner cannot. If the operation Merge is unconstrained, such differences should not exist.

The structural asymmetry in (2) is judged to be responsible for the fact that while the linear representation in (3a) is common cross-linguistically, the linear representation in (3b) is not:

3.
   a) <B … X …A$_{lexical}$ >, where B is the complement of A$_{lexical}$
   b) * <B … X …A$_{functional}$>, where B is the complement of A$_{functional}$

It is taken for granted that the linear representation in (3a) is derived from the underlying structural representation in (2a) and the linear representation in (3b) is derived from the underlying structural representation in (2b). This correspondence is the only possible option if the linearization process is purely structure driven. It presupposes, however, that ordering of all items takes place in the domain of structure building, thus placing the burden of ruling out (3b) on Merge. If, on the other hand, item ordering is determined in the course of the transfer of the syntactic object to the PF component of grammar, the operation Merge can be left simple and unconstrained. In the latter case, one can consider a possibility that the linear order in (3b) is not available while the structure in (2b) is indeed possible. This can occur if the structure in (2b) is mapped into Spell-Out not as (3b) but as (4):

4.   <A$_{functional}$ B … X … >

The linear order in (4) has been considered the output of obligatory pied-piping of functional categories in narrow syntax as in (5):

5. $[[A_{functional} B] \dots X \dots [A_{functional} B]]$

In other words, (4) has been derived by imposing a specific constraint on Merge.

In this dissertation, I set out to explore the hypothesis that unavailability of (3b) and availability of (4) are a consequence of an interface condition rather than a constraining condition on Merge. In particular, the relation between the functional categories and their complements has been argued to involve a principle of item ordering. Grimshaw's (2005) theory of extended projection centers around the idea that lexical categories stand in a special relation to the functional categories of relevant type, and this relation can be defined in terms of functional value (F-value) ordering. The label of each syntactic item is identified with two constants: categorial value and functional value. The first constant defines the domain to which the second constant applies. Thus, if A and B share the same categorial value and the F-value of A is higher than the F-value of B, A and B are ordered. Grimshaw (2005) argues that item ordering of this type underlies phrase structure:

6.
  a) $[_{DP} D [_{NP} N]]$
  b) * $[_{NP} N [_{DP} D]]$, *given that* D: {categorial value [nominal], functional value [5]}
                                    N: {categorial value [nominal], functional value [0]}

I extend this argument to claim that item ordering of this type is a more general condition. The F-value based ordering of items has to be enforced during the transfer of items from one linguistic component to the other, including linearization of items at PF.

More specifically, I offer a linearization algorithm that combines the structure driven principle of the Linear Correspondence Axiom (LCA) of Kayne (1994) with the F-value ordering principle of Grimshaw (2005). The LCA associates a hierarchical representation with the linear ordering by making use of the relation of asymmetric c-command between non-terminal nodes in a phrase marker. By establishing a correlation between the asymmetric c-command and the ordering of F-values inside an extended projection, I formulate a well-formedness condition on the linearization of syntactic structure: the Mapping Constraint on Linearization for Head-initial Languages (MCL-HI). The linearization algorithm based on the MCL-HI relies on the idea that extended projections can be identified uniquely in terms of feature sharing (see Pesetsky and Torrego (2007)). The F-value ordering condition applies only to those heads that share the categorial feature. Like the LCA, the MCL algorithm generates a maximal set of pairs of non-terminals that are characterized by the relation of asymmetric c-command. After this set is generated, the F-value ordering mechanism is activated. It reverses the order between those items in a pair that violate the F-value ordering condition. The output of this mechanism is then used to produce the linear ordering of items. As a result, the MCL algorithm ensures that the linear representation is always faithful to the F-value ordering principle. Consequently, the MCL algorithm rules out (3b) at the interface while leaving Merge unconstrained. Indeed, if in (2b), the F-value of $A_{functional}$ is higher than the F-value of B, as is the case with functional vs. lexical categories, and $A_{functional}$ and B share a categorial feature, the MCL algorithm maps (2b) at the PF interface not as (3b) but as (4).

In the case of complement fronting, the output of the Merge operation that pied-pipes functional categories in narrow syntax and the output of the Merge operation that does not pied-pipe those categories in narrow syntax but relies on the MCL linearization mechanism overlap. The role of the F-value based linearization is, therefore, obscured by an alternate derivational path that is available, given fully unconstrained nature of Merge. It does, however, become uniquely visible in the phenomenon known as constituent discontinuity. In a number of languages, an adjectival attributive modifier can surface not only immediately adjacent to the noun it modifies but also in a distance from the noun, separated from it by other linguistic material, thus forming a discontinuous constituent:

*Ukrainian***:**

7. **Velyku   Ivan   kupyv   kvartyru**
    big.F.SG.ACC John.NOM bought   apartment.F.SG.ACC[1]
    "John bought a BIG apartment."

Crucially, functional categories that belong to the discontinuous constituent in question surface either preceding the modifier or preceding the noun, depending on the order between the two:

Ukrainian:

8.
  a) **V novomu   Ivan   žyve   budynku**
      in new. M.SG.LOC John.NOM lives   building.M.SG.LOC
      "John lives in a NEW building."

  b) **V budynku   Ivan   žyve   novomu**
      in building. M.SG.LOC John.NOM lives   new.M.SG.LOC
      "As for the building John lives in, it is a NEW one."[2]

Modern Greek:

9.
   a) **Ena   megalo   agorase   aftokinito**
      a.N.SG.ACC big.N.SG.ACC bought.3.SG car.N.SG.ACC
      "He bought a BIG car."

   b) **Ena   aftokinito   agorase   megalo**
      a.N.SG.ACC car.N.SG.ACC bought.3.SG big.N.SG.ACC
      "He bought a big CAR."

There have been several attempts made to account for the distribution of functional categories in discontinuous constituents in terms of movement, resorting to various forms of syntactic pied-piping (see, for instance, Zabrocki (1984), Borsley and Jaworska (1988), Van Riemsdijk (1989), Corver (1990, 1992), Yearley (1993), Franks and Progovac (1994), Junghanns and Zybatow (1995), Androutsopoulou (1997, 1998), Sekerina (1997, 1999), Müller (1998), Fanselow & Čavar (2001, 2002), Bašić (2004), Bošković (2005), Franks (2007), Kučerova (2007), Pereltsvaig (2008); an overview of movement-based approaches to constituent discontinuity is provided in chapter 9). Discontinuous constituents, however, exhibit a wide range of rather complex distribution patterns that do not lend themselves easily to an account based on syntactic pied-piping and require rather complex and construction specific constraints. Alternatively, discontinuous constituents in (8)-(9) can be derived by applying Merge to lexical items, as long as the placement of functional categories in these constituents is the result of the interface linearization mechanism rather than syntactic pied-piping.

Indeed, discontinuous constituents in (8)-(9) fall under the general pattern in (2b), repeated below with a slight modification as (10):

10. $[A_{lexical} \ldots X \ldots [A_{functional} (A_{lexical})] \ldots]$

The fronted lexical item $A_{lexical}$ is merged at the edge of the domain to receive discourse prominence. The functional item $A_{functional}$ that belongs to the same extended projection as the fronted lexical item is mapped preceding this lexical item at PF driven by the F-value ordering mechanism, as in (11):

11. $<A_{functional} A_{lexical} \dots X \dots >$

Consequently, the theory of discontinuous constituents put forward in this dissertation rests on the idea that the surface distribution of lexical and functional items in discontinuous constituents is determined by two distinct mechanisms. The surface realization of lexical items is determined by Merge while the surface realization of functional items is determined by the interface linearization mechanism. Lexical items can be either Internally or Externally Merged at the edge of a given domain for the sake of pragmatic prominence. Their structural location carries conceptual-intentional import and is, therefore, preserved at the interface. Functional items, however, are linearized according to the F-value ordering constraint.

I illustrate the role linearization plays in determining the distribution of functional and lexical categories by examining discontinuous constituents in Ukrainian—a Slavic language that exhibits a diverse array of discontinuous constructions and combines rich overt agreement morphology with functionally simple nominal domain. I supplement my analysis of discontinuous constituents in Ukrainian with the data from Modern Greek.[3] Modern Greek shares with Ukrainian the diversity of discontinuous structures while also having multiple overt nominal functional categories. I focus exclusively on those discontinuous constituents the parts of which are related to each other in terms of

agreement. I examine agreement-based discontinuous constituents with the Radical Discontinuity Hypothesis (RDH) in mind: I claim that agreement-based discontinuous constituents do not map onto a phrasal constituent at any point in the derivation. The Radical Discontinuity Hypothesis follows from the postulate that agreement can be established between two items that are not adjacent to each other (Chomsky (2000, 2001)). As long as feature sharing is allowed to occur without structural adjacency, the items that can form a single phrasal constituent may be generated at a distance from each other, forming an abstract constituent through long-distance agreement rather than structural adjacency. Agreement-based discontinuous constituents are, therefore, analyzed in this dissertation not as the result of splitting a single phrasal constituent into several parts but as the result of long-distance concord. A modifier is base-generated at a distance from the noun it modifies and is licensed by agreement with the noun. I claim that the Radical Discontinuity Hypothesis can be maintained given the concept of agreement as feature sharing and the MCL linearization algorithm.

I start my analysis of discontinuous constituents by looking at the simplest form of discontinuity: a discontinuous bare NP that contains a single adjectival modifier separated from the noun it modifies. I, then, proceed to more complex discontinuous structures that involve reversal of basic adjective-noun order, discontinuity of constituents other than bare NPs, three-part constituent discontinuity, and various forms of embedding. I demonstrate at each step that more complex structures arise on the basis of the same priciples that are responsible for the simplest form of discontinuity in the

language and comply with the linearization mechanism based on F-value ordering. In this dissertation, I account for the following facts:

(1) Discontinuous constituents are characterized by an asymmetry in the distribution of functional and lexical categories. The distribution of functional categories is much more restricted than the distribution of lexical categories. Unlike the adjectival modifier, the preposition and the determiner cannot be separated from the associated noun:

Ukrainian:

12.
  a) Ivan   kupyv   velyku   kvartyru
  John.NOM   bought   big.F.SG.ACC   apartment.F.SG.ACC
  "John bought a big apartment."

  b) Velyku   Ivan   kupyv   kvartyru
  big.F.SG.ACC John.NOM   bought   apartment.F.SG.ACC
  "John bought a BIG apartment."

13.
  a) Ivan   žyve   bilja   školy
  John.NOM   lives   next-to   school.F.SG.GEN
  "John lives next to a school."

  b)* Bilja   Ivan   žyve   školy
  Next-to   John.NOM   lives   school.F.SG.GEN
  (*"John lives NEXT to a school."*)

Modern Greek:

14.
  a) Agorazi   megala   aftokinita
  buy.3.SG   big.N.PL.ACC car.N.PL.ACC
  "He buys big cars."

  b) Megala   agorazi   aftokinita
  big.N.PL.ACC buy.3.SG   car.N.PL.ACC
  "He buys BIG cars."

15.
  a) Agorase   to   aftokinito
  bought.3.SG the.N.SG.ACC car.N.SG.ACC
  "He bought the car."

b) * <u>To</u>　　　　　<u>agorase</u>　　<u>aftokinito</u>
the.N.SG.ACC bought.3.SG　car.N.SG.ACC

The order between the adjective and the noun can be changed while the order of functional categories is fixed. The preposition must precede the determiner and both must precede all other lexical categories associated with the same noun phrase:

Ukrainian:

16.
  a) **Ivan　　　žyve　　<u>bilja　velykoho</u>　　　<u>budynku</u>.**
     John.NOM　lives　next-to　big.M.SG.GEN　building.M.SG.GEN
     "John lives next to a big building."

  b) **Ivan　　<u>bilja　velykoho</u>　　žyve　<u>budynku</u>.**
     John.NOM　next-to　big.M.SG.GEN　lives　building.M.SG.GEN
     "John lives next to a BIG building."

  c) **Ivan　　<u>bilja　budynku</u>　　žyve　<u>velykoho</u>.**
     John.NOM　next-to　building.M.SG.GEN　lives　big.M.SG.GEN
     "As for the building John lives next to, it is a BIG one."

  d) * **Ivan　　<u>velykoho</u>　　žyve　<u>bilja　budynku</u>**
     John.NOM　big.M.SG.GEN　lives　next-to　building. M.SG.GEN

  e) * **Ivan　　<u>budynku</u>　　žyve　<u>bilja　velykoho</u>**
     John.NOM　building.M.SG.GEN　lives　next-to　big.M.SG.GEN

Modern Greek:

17.
  a) **<u>Se　ena</u>　　　<u>megalo</u>　　meni　　<u>spiti</u>**
     in　a.N.SG.ACC　big.N.SG.ACC　lives.3.SG　house.N.SG.ACC
     "He lives in a BIG house."

  b)* **<u>Ena</u>　　　<u>se　megalo</u>　　meni　　<u>spiti</u>**
     a.N.SG.ACC　in　big.N.SG.ACC　lives.3.SG　house.N.SG.ACC

  c)* **<u>Se　megalo</u>　　meni　　<u>ena</u>　　　<u>spiti</u>**
     in　big.N.SG.ACC　lives.3.SG　a.N.SG.ACC　house.N.SG.ACC

  d)* **<u>Ena</u>　　　<u>megalo</u>　　meni　　<u>se　spiti</u>**
     a.N.SG.ACC　big.N.SG.ACC　lives.3.SG　in　house.N.SG.ACC

(2) Not only can an adjectival modifier be separated from the noun it modifies, but a

degree word can also be separated from its adjective. This can result in a tripartitioning

of the noun phrase. The order of lexical items in a tripartite discontinuous constituent is

free:

Ukrainian:

18.
  a) Ivan   kupyv   duže   velyku   kvartyru
    John.NOM bought   very   big.F.SG.ACC apartment.F.SG.ACC
    "John bought a very big apartment."

  b) Duže   Ivan   velyku   kupyv   kvartyru
    very   John.NOM big.F.SG.ACC   bought   apartment.F.SG.ACC
    "John bought a VERY BIG apartment."

  c) Kvartyru   Ivan   duže   kupyv   velyku
    Apartment.F.SG.ACC   John.NOM   very   bought   big.F.SG.ACC
    "As for the apartment John bought, it is a VERY BIG one."

  d) Duže   Ivan   kvartyru   kupyv   velyku
    very   John.NOM apartment.F.SG.ACC bought   big.F.SG.ACC
    "As for an apartment John bought, it is a VERY BIG one."

Nominal functional categories, however, are required to surface before all lexical items,

including a degree adverb:

19.
  a) Ivan   žyve   bilja   duže   velykoji   školy
    John.NOM lives   next-to very   big.F.SG.GEN school.F.SG.GEN
    "John lives next to a very big school."

  b) * Duže   Ivan   velykoji   žyve   bilja   školy
    very   John.NOM big.F.SG.GEN   lives   next-to   school.F.SG.GEN

  c) * Duže   Ivan   bilja   velykoji   žyve   školy
    very   John.NOM next-to big.F.SG.GEN   lives   school.F.SG.GEN

  d) Bilja   duže   Ivan   velykoji   žyve   školy
    next-to   very   John.NOM big.F.SG.GEN   lives   school.F.SG.GEN
    "John lives next to a VERY BIG school."

Modern Greek:

20.

  a)   **O**   **Janis**   **meni**
      the.M.SG.NOM   John.NOM   live.3.SG
      <u>**se**   **ena**   **poli**   **megalo**   **diamerisma**</u>
      in   a.N.SG.ACC   very   big.N.SG.ACC   apartment.N.SG.ACC
      "John lives in a very big apartment."

  b) * <u>**Poli**</u>   **o**   **Janis**
      very   the.M.SG.NOM   John.NOM
      <u>**megalo**   **meni**   **se**   **ena**   **diamerisma**</u>
      big.N.SG.ACC   live.3.SG   in   a.N.SG.ACC   apartment.N.SG.ACC

  c) * <u>**Poli**</u>   **o**   **Janis**
      very   the.M.SG.NOM   John.NOM
      <u>**se ena**   **megalo**   **meni**   **diamerisma**</u>
      in   a.N.SG.ACC   big.N.SG.ACC   live.3.SG   apartment.N.SG.ACC

  d)   <u>**Se**   **ena**   **poli**   **o**</u>   **Janis**
      in   a.N.SG.ACC   very   the.M.SG.NOM   John.NOM
      <u>**megalo**   **meni**   **diamerisma**</u>
      big.N.SG.ACC   live.3.SG   apartment.N.SG.ACC
      "John lives in a VERY BIG apartment."

(3) Nouns can be modified not only by adjectives but also by PPs. However, in discontinuous noun phrases, nominal functional categories have different distribution in relation to adjectival and PP-modifiers. The determiner is required to precede the adjectival modifier but cannot precede the PP-modifier:

Modern Greek:

21.

  a)   **Sinandise** <u>**tin**   **psili**   **jineka**</u>
      met.3.SG   the.F.SG.ACC tall.F.SG.ACC   woman.F.SG.ACC
      "He met the tall woman."

  b) * <u>**Psili**</u>   **sinandise**   <u>**tin**   **jineka**</u>
      tall.F.SG.ACC   met.3.SG   the.F.SG.ACC woman.F.SG.ACC

  c)   <u>**Tin**   **psili**</u>   **sinandise**   **jineka**
      the.F.SG.ACC tall.F.SG.ACC met.3.SG   woman.F.SG.ACC
      "He met the TALL woman."

22.

a) **Sinandise**
met.3.SG
tin   **jineka**   **apo**   **to**   **sxolio**
the.F.SG.ACC woman.F.SG.ACC from   the.N.SG.ACC school.N.SG.ACC
"He met the woman from the school."

b) **Apo**   **to**   **sxolio**   **sinandise**
from   the.N.SG.ACC school.N.SG.ACC met.3.SG
tin   **jineka**
the.F.SG.ACC   woman.F.SG.ACC
"He met the woman FROM THE SCHOOL."

c) * **Tin**   **apo**   **to**   **sxolio**   **sinandise**
the.F.SG.ACC from   the.N.SG.ACC school.N.SG.ACC met.3.SG
jineka
woman.F.SG.ACC

Like the determiner, the preposition must precede the adjectival modifier which forms a

linear discontinuous constituent with the noun embedded inside a prepositional phrase.

However, a PP-modifier cannot be fronted when it modifies a noun phrase embedded

inside another prepositional phrase:

Modern Greek:

23.

a) **Me**   **tin**   **psili**   **stathike**   **jineka**
with   the.F.SG.ACC tall.F.SG.ACC stood.3.SG   woman.F.SG.ACC
"He stood with the TALL woman."

b) * **Tin**   **psili**   **stathike**   **me**   **jineka**
the.F.SG.ACC tall.F.SG.ACC stood.3.SG   with   woman.F.SG.ACC

c) * **Psili**   **stathike**   **me**   **tin**   **jineka**
tall.F.SG.ACC   stood.3.SG   with   the.F.SG.ACC tall.F.SG.ACC

24.

a) * **Me**   **tin**   **apo**   **to**   **sxolio**
with   the.F.SG.ACC from   the.N.SG.ACC school.N.SG.ACC
stathike   **jineka**
stood.3.SG   woman.F.SG.ACC
("He stood with the woman FROM THE SCHOOL.")

b) * <u>Me   apo   to   sxolio   stathike</u>
with   from   the.N.SG.ACC school.N.SG.ACC stood.3.SG
<u>**tin**   **jineka**</u>
the.F.SG.ACC   woman.F.SG.ACC

c) * <u>Apo   to   sxolio   stathike</u>
from   the.N.SG.ACC   school.N.SG.ACC stood.3.SG
<u>**me   tin**   **jineka**</u>
with   the.F.SG.ACC   woman.F.SG.ACC

(4) Unlike PP-modifiers, Genitive possessors can be fronted when embedded under a PP.

The preposition has to precede the possessor when the possessor is fronted:

Ukrainian:

25.
a) **Ivan   žyve   <u>bilja   školy   brata</u>**
John.NOM   lives   next-to school.F.SG.GEN   brother.M.SG.GEN
"John lives next to his brother's school."

b)* **Ivan   <u>brata</u>   žyve   <u>bilja   školy</u>**
John.NOM   brother.M.SG.GEN   lives   next-to school.F.SG.GEN

c) **Ivan   <u>bilja   brata</u>   žyve   <u>školy</u>**
John.NOM   next-to   brother.M.SG.GEN   lives   school.F.SG.GEN
"John lives next to his BROTHER's school."

(5) Locality restrictions on movement and on discontinuity are not always the same. In

some cases, extraction is allowed even though a similar discontinuity is blocked:

Ukrainian:

26.
a) **Ivan   zahubyv knyžku**
John.NOM   lost   book.F.SG.ACC
<u>**pro   sučasnu   arxitekturu**</u>
about contemporary.F.SG.ACC architecture.F.SG.ACC
"John lost a book about contemporary architecture."

b) <u>**Pro   sučasnu   arxitekturu**</u>
about contemporary.F.SG.ACC   architecture.F.SG.ACC
Ivan   zahubyv knyžku
John.NOM   lost   book.F.SG.ACC
"John lost a book ABOUT CONTEMPORARY ARCHITECTURE."

c) * <u>Pro sučasnu</u>   **Ivan**   **zahubyv**
about contemporary.F.SG.ACC   John.NOM   lost
knyžku   <u>arxitekturu</u>
book.F.SG.ACC architecture.F.SG.ACC
(*"John lost a book about CONTEMPORARY architecture."*)

d) <u>Pro sučasnu</u>   **Ivan**   <u>arxitekturu</u>   **zahubyv**   **knyžku**
about contemporary John.NOM   architecture   lost   book.F.SG.ACC
"John lost a book about CONTEMPORARY ARCHITECTURE."

27.

a) **Mykola**   **znaje**   **jaka**   **divčyna**
Michael.NOM   knows   which.F.SG.NOM   young-woman.F.SG.NOM
kupyla <u>červonu</u>   **mašynu**
bought   red.F.SG.ACC   car.F.SG.ACC
"Michael knows which young woman bought the red car."

b) <u>Červonu</u>   <u>mašynu</u>   **Mykola**   **znaje**
red.F.SG.ACC   car. F.SG.ACC   Michael.NOM   knows
jaka   **divčyna**   **kupyla**
which.F.SG.NOM girl.F.SG.NOM   bought
"As for the red car, Michael knows which young woman bought it."

c) * <u>Červonu</u>   **Mykola**   **znaje**
red.F.SG.ACC   Michael.NOM knows
jaka   **divčyna**   **kupyla**   <u>mašynu</u>
which.F.SG.NOM young-woman.F.SG.NOM   bought   car.F.SG.ACC
(*"As for a/the RED car, Michael knows which young woman bought one/it."* or
"Michael knows which young woman bought a/the RED car.")[4]

d) <u>Červonu</u>   **Mykola**   <u>mašynu</u>   **znaje**
red.F.SG.ACC   Michael.NOM car.F.SG.ACC   knows
jaka   **divčyna**   **kupyla**
which.F.SG.NOM girl.F.SG.NOM   bought
"As for the RED car, Michael knows which young woman bought it."

Whether discontinuity is possible depends on the lexical category of the item that

contains the lower part of the discontinuous constituent:

Ukrainian:

28.

a) <u>Novu</u>   **kupyv**   **Ivan**   <u>knyžku</u>
new.F.SG.ACC   bought   John.NOM   book.F.SG.ACC
"John bought a NEW book."

b) <u>**Novoju**</u>   **Ivan**   **buv**   **zadovolenyj**   <u>**robotoju**</u>
new.F.SG.INST   John.NOM   was   satisfied.M.SG.NOM   work.F.SG.INST
"John was happy with his NEW job."

c) * <u>**Novoho**</u>   **Ivan**   **zahubyv**   **knyžku**   <u>**profesora**</u>
new.M.SG.GEN   John.NOM   lost   book.F.SG.ACC   professor.M.SG.GEN
(*"John lost a book that belongs to the NEW professor."*)

d) * <u>**Ostannjoju**</u>   **Ivan**   **zadovolenoho**   <u>**kontrol'noju**</u>
last.F.SG.INST   John.NOM   satisfied.M.SG.ACC   test.F.SG.INST
zustriv   **studenta**
met   student.M.SG.ACC
(*"John met a student happy with the LAST test."*)

Availability of constituent discontinuity across the clausal boundary correlates with the

presence and the categorial status of the complementizer in the language:

Ukrainian:

29.

a) * <u>**Červonu**</u>   **Mykola**   **znaje ščo**   **Ivan**   **kupyv**   <u>**mašynu**</u>
red.F.SG.ACC   Michael.NOM   knows that   John.NOM   bought   car.F.SG.ACC
(*"Michael knows that John bought a/the RED car."* or
 "As for a/the RED car, Michael knows that John bought one/it.")

a) <u>**Červonu**</u>   **Mykola**   **xoče**   **kupyty**   <u>**mašynu**</u>
red.F.SG.ACC   Michael.NOM   wants   to-buy   car.F.SG.ACC
"Michael wants to buy a RED car." or
"As for a RED car, Michael wants to buy one."

I also account for Determiner Spreading in definite discontinuous DPs in Modern Greek,

preposition stranding, and preposition doubling.

I provide the following explanation for the facts listed above. (1) Nominal functional

categories are required to be base-generated next to the noun by the theory of extended

projection. Adjectives, however, are lexical categories and are not tied to the nominal

extended projection at the outset of the derivation. I adopt Baker's (2003) treatment of

adjectives as a default lexical category that can be generated in any syntactic position in

the clause as long as that position permits free adjunction. I further claim that an adjectival modifier base-generated at a distance from the noun it modifies is licensed by agreement with the noun in the same way as the adjectival modifier base-generated inside the noun phrase is. The agreement relation established between the noun and the adjectival modifier associates the adjective with the nominal extended projection through feature sharing, thus generating an agreement-based discontinuous constituent. Since the MCL linearization algorithm linearizes all the items according to their F-value based on their association with a particular extended projection, the agreement-based association of the long-distance adjectival modifier with the nominal extended projection determines the linearization of the nominal functional categories before the adjectival modifier. The F-value of all lexical items, however, is the same; therefore, these items can be re-ordered in relation to each other in the hierarchical structure and this re-ordering is maintained in the course of their linearization at PF.

(2) I argue that, like adjectives, adverbs can be generated in any position in the clause that permits adjunction and are licensed through relations they establish with other syntactic categories in narrow syntax. I follow Neeleman et al. (2004) in differentiating between lexical degree adverbs and functional degree heads and maintain that degree adverbs, like adjectives and other adverbs are adjuncts. While the key licensing relation for adjectives is the valuation of their φ-features, the key licensing relation for degree adverbs is the valuation of their degree feature. The linearization of the nominal functional categories before degree adverbs is, therefore, enforced by the same

mechanism of feature sharing that enforces linearization of the nominal functional categories before long-distance adjectival modifiers.

(3) The contrast in the distribution of the nominal functional categories in relation to adjectival and PP-modifiers is attributed to the structural differences between the two types of modification. The adjectival modifiers are associated with the nominal extended projection through agreement. The resulting feature sharing determines the linearization of the nominal functional categories preceding the long-distance modifier at PF. Since PP-modifiers do not establish any Agree relations with the noun phrase they modify, nominal functional categories cannot be linearized preceding the fronted PP-modifier and surface before the noun, as usual. While adjectival modifiers can be generated at a distance from the noun and foster relations with the noun through agreement, PP-modifiers can relate to the noun phrase only structurally, through direct merger and can be separated from the noun they modify only by way of movement. This explains why PP-modifiers cannot form a linear discontinuous structure with the noun phrase embedded inside another PP. Since the matrix PP is subject to restrictions on extraction, PP-modifiers remain trapped inside the matrix PP. The adjectival modifiers avoid violating the ban on extraction from the matrix PP by being base-generated outside of the PP and agreeing with the noun phrase from a distance.

(4) Unlike PP-modifiers, Genitive possessors relate to the possessed noun phrase through case assignment. I provide an account of Genitive possessor fronting by appealing to the theory of Predicate Inversion of Den Dikken (1995, 2006)). I argue that the relation

between the possessor and the possessee is mediated by the Relator head which takes a Possessor phrase as a complement. Possessor phrase is headed by the null preposition that assigns Genitive case to the possessor. Genitive possessor is extracted from the matrix PP by way of Predicate Inversion when the Genitive case assigning preposition incorporates into the Relator and the resulting Relator node incorporates into the matrix P. Fusion of the categorial features of the Genitive case assigning preposition and the matrix preposition, which results from incorporation, determines the linearization of the matrix preposition before the fronted Genitive possessor at PF. PP-modifiers cannot be extracted from the matrix PP because the overt preposition blocks the incorporation process that enables Predicate Inversion.

(5) Contrast in the availability of movement and constituent discontinuity in Ukrainian supports analysis of constituent discontinuity as long-distance concord. This contrast is naturally accounted for if movement and agreement are subject to different locality restrictions. I demonstrate that long-distance concord in Ukrainian is constrained in terms of agreement domains (see Bobaljik and Wurmbrand (2005)), rather than closest c-command. While an extended projection of the verb constitutes a locality domain for case assignment, an extended projection of the noun constitutes a locality domain for concord. I formulate the Directionality Parameter for Agreement (DPA) which links agreement blocking to the direction of feature value transfer. Nominal projections block concord because they do not allow feature values to be transferred from the goal to the probe while verbal projections block case assignment because they do not allow feature values to be transferred from the probe to the goal. Availability of discontinuity,

therefore, correlates with the categorial status of the head of the agreement domain. Discontinuous constituents cannot cross the clausal boundary when the clause is headed by a nominal-valued complementizer.

This dissertation is structured as follows. In chapter 1, I formulate the Mapping Constraint on Linearization (MCL) that guides mapping of items from a phrase marker onto a linear string at PF. I demonstrate that the MCL algorithm ensures obligatory pied-piping of functional categories at PF and restricts the output of illegitimate head and XP movement while leaving Merge unconstrained. In chapter 2, I turn to the analysis of basic discontinuous structures in Ukrainian and examine both linear (the modifier precedes the noun) and inverse (the modifier follows the noun) discontinuous NPs in the language. In chapter 3, I scrutinize discontinuous prepositional phrases in Ukrainian. I demonstrate that the contrasts in the distribution of the preposition and the adjectival modifier in discontinuous PPs in Ukrainian are predicted by the MCL linearization mechanism. In chapter 4, I consider the distribution of functional and lexical categories in discontinuous constituents in Modern Greek. Modern Greek has a richer system of nominal functional categories than Ukrainian and, thus, provides further evidence of dependencies between the distribution of functional categories in discontinuous constituents and the PF linearization mechanism. In this chapter, I also provide a comprehensive analysis of the phenomenon of Determiner Spreading in definite discontinuous DPs in Modern Greek and show that Determiner Spreading facts can be accounted for in terms of the linearization mechanism. In chapter 5, I examine the behavior of degree expressions in discontinuous contexts. The MCL algorithm provides

the correct linearization of both nominal and verbal extended projections which contain degree adverbs. In chapter 6, I consider the distribution of PP-modifiers and Genitive possessors. In chapter 7, I examine the contrasts between movement and discontinuity and formulate the Locality Constraint on Agreement and the Directionality Parameter which account for discontinuity blocking in a variety of contexts. In chapter 8, I turn to the issue of full interpretation and argue that full interpretation of long-distance adjectival modifiers is available without the recourse to a special syntactic mechanism, such as LF-lowering (see Bošković and Takahashi (1998)), once agreement information is taken as an input into semantic analysis. I illustrate the interpretation of discontinuous constituents using DRT of Kamp (1981) and demonstrate that the system of agreement as feature sharing provides a smooth transition from syntactic representation to semantic analysis. Finally, in chapter 9, I provide a brief overview of the movement-based approaches to discontinuity. I summarize all the findings in the conclusion.

Part One

Linearization Algorithm

Chapter 1. Extended Projections at PF

1.0 Introduction

In recent years, there has been a growing interest in the mechanism of linearization of the phrase structure at PF (see, for instance, Chomsky (2001, 2005), Fox and Pesetsky (2005), Nunes (1999, 2001, 2004), Kural (2005), Citko (2005), Richards (2006), Ko (2007), Kiss (2008) among others). Nevertheless, Kayne's Linear Correspondence Axiom (1994) remains as the most comprehensive and ambitious attempt to formalize the relation between the hierarchical structure and the linear representation of this structure at PF. The LCA associates a hierarchical representation with the linear ordering by making use of a relation of asymmetric c-command between non-terminal nodes in a phrase marker. It is, therefore, syntactic structure driven. Given the LCA, any restrictions on linear order that are observed on the surface, such as asymmetries in the freedom of distribution of functional and lexical categories, have to be realized as restrictions on structure building, i.e. restrictions on Merge.

In this chapter, I set out to explore a possibility of liberalizing the structure building mechanism by constraining the linearization mechanism. This can be achieved, I argue, by taking into account not only the purely structural, c-command based, relations that characterize phrase structure but also the feature content of the categories that constitute this phrase structure. In particular, the relations between the functional categories and their complements have been argued to involve a principle of item ordering. Grimshaw's

(1991, 2000, 2005) theory of extended projection centers around the idea that lexical

categories stand in a special relation to the functional categories of relevant type, and this

relation can be defined in terms of functional value (F-value) ordering. The label of each

syntactic item is identified with two constants: categorial value and functional value. The

first constant defines the domain to which the second constant applies. Thus, if A and B

have the same categorial value and the F-value of A is higher than the F-value of B, A

and B are ordered. Grimshaw (2005) argues that item ordering of this type underlies the

phrase structure. I extend this argument here and claim that item ordering of this type is a

more general condition. The F-value based ordering of items has to be enforced during

the transfer of items from one linguistic component to the other, including linearization of

items at PF.

More specifically, I offer a linearization algorithm that combines the structure driven

principle of the LCA of Kayne (1994) with the F-value ordering principle of Grimshaw

(2005). Grimshaw (2005) defines the principle of ordering of items within the extended

projection as the relation between a head and various projections of that head. The F-

value ordering condition can, however, be recast in terms of c-command as a relation

between heads rather than between heads and their projections. This can be done using

Kayne's (1994) notion of asymmetric c-command. By establishing a correlation between

the asymmetric c-command and the ordering of F-values inside an extended projection, I

incorporate the principle of ordering of F-values into the linearization algorithm. The

resulting Mapping Constraint on Linearization utilizes the information embodied both in

the phrase structure and in the relations between the items within it to produce a linearization at PF.

In section 1.1, I formulate the Mapping Constraint on Linearization for head-initial languages (MCL-HI) and introduce the MCL algorithm that guides mapping of items from a phrase marker onto a linear string at the interface with PF. In section 1.2, I examine the impact of the MCL algorithm on the spell out of various phrase markers generated both with and without movement transformations. I demonstrate that the MCL algorithm ensures linearization of functional categories before the lexical head in accordance with their F-values and restricts the output of illegitimate head movement while leaving Merge itself unconstrained. In order to provide linearization of syntactic structures with multiple adjuncts/specifiers, I revise the definition of asymmetric c-command. This allows me to maintain a more sparse syntactic structure. Finally, in section 1.3, I lay out the details of the computational mechanism that is used in this dissertation to analyze linguistic data. Following Chomsky (2000, 2001) and Pesetsky and Torrego (2007), I treat agreement as a long-distance relation that results in the unification of non-distinct features. The mechanism of feature unification is extended to include the unification of the categorial feature. I assume that a head of an extended projection establishes an agreement relation with its complement and, as the result of such agreement, the feature information inside the extended projection is shared, making the mechanism of feature percolation redundant. Agreement is, therefore, treated as a vehicle of extended projection formation. It ensures that any given extended projection is not only characterized by the consistency of the categorial feature values of its heads, but

is in fact associated with the same categorial feature. Each extended projection is thus

identified uniquely, making the linearization based on F-value ordering possible. In

section 1.4, I provide a summary of the chapter.

1.1 Mapping Constraint on Linearization

Kayne's Linear Correspondence Axiom (1994) associates a hierarchical representation

with the linear ordering by making use of the relation of asymmetric c-command between

non-terminal nodes in a phrase marker:

30. A non-terminal node X asymmetrically c-commands a non-terminal node Y iff
X c-commands Y and Y does not c-command X.

<div align="right">(Kayne (1994): 4)</div>

Kayne (1994) defines c-command in terms of the "first node up" rather than the "first

branching node up" and crucially relies on the distinction between a segment and a

category in order to accommodate movement transformations and adjunction. According

to Kayne (1994),

31. X c-commands Y iff X and Y are categories and X excludes Y and every category
that dominates X dominates Y.

<div align="right">(Kayne (1994): 16)</div>

He follows Chomsky (1986) in positing that X excludes Y if no segment of X dominates

Y. The relation of exclusion plays an important role in preventing a host node (a segment

of a category by definition) from c-commanding an adjunct. Kayne (1994) adheres to

the X-bar postulate that a complement of a head cannot itself be a head. His definition of

LCA, thus, relies on the assumption that a head must project a phrase in syntax and heads

and their phrases are distinct (each is a category). On the other hand, adjunction does not

result in the projection of a distinct category, causing a segmentation of a category. I

maintain key assumptions that underlie the LCA while formulating the constraint on

linearizations since such constraint is intended to interact with the LCA. The LCA

translates the relation of asymmetric c-command on non-terminals into a relation of

precedence on terminals by way of the relation of dominance:

32.   For a given phrase marker P with X and Y, non-terminals in P; T, a set of
terminals; d, the dominance relation between non-terminals and terminals; d(X),
the set of terminals that X dominates; d<Y,X>, a set of ordered pairs {<a,b>} such
that *a* is a member of d(Y) and *b* is a member of d(X); and A, a set of ordered pairs
<Yj Xj> such that for each j, Yj asymmetrically c-commands Xj -- d(A) is a linear
ordering of T.

<div align="right">(based on Kayne (1994): 5-6)</div>

The linear ordering of terminals generated by the LCA reflects the c-command relations

that characterize the phrase marker and is, therefore, structure preserving.

The approach to the linearization of phrase structure at PF proposed here crucially relies

on the notion of extended projection as developed in Grimshaw (2005). The concept of

extended projection centers around the idea that each lexical category forms an extended

projection with a set of relevant functional categories. An extended projection of a

lexical head includes both the projection of that lexical head and the functional shell that

surrounds it.   What keeps the entire extended projection together is the identity of the

categorial value of each head involved. If the lexical head in question is of the category

α, then all the functional heads that can form an extended projection with this lexical

head should be of category α as well.   Grimshaw (2005) defines the extended projection

in terms of the identity of category in the following way:

33.   X is a head of YP, and YP is a projection of X, iff:
a. YP dominates X
b. The categorial features of YP and X are consistent

c. There is no inconsistency of the categorial features of all nodes intervening between X and YP (where a node N intervenes between X and YP if YP dominates X and N, N dominates X).

(Grimshaw (2005): 4)

All the items that belong to the same extended projection stand in an ordering relation to each other expressed in terms of their functional value (or F-value). Lexical heads are the primary heads of the extended projection: they can form an extended projection even when the language foregoes any functional categories. They are, therefore, assigned 0 as their F-value. The F-value of the functional categories ranges from 1 to *ad infinitum* depending on the store of functional items of a given category in the Universal Grammar. Crucially, the F-values are universal, and the languages differ as to what functional categories their grammars include. In this respect, Grimshaw (2005) departs from Chinque's (1999) view that each language realizes the full set of universal functional categories. On Grimshaw's (2005) account, an individual language can include functional items that share a particular categorial value α and that have functional values 2, 4, 5 but omit all other functional items of the categorial type in question. What is important for the formation of an extended projection in a given language and ordering of items within that extended projection is not the absolute F-value of each functional head involved but a relative F-value of that head in relation to other heads. According to Grimshaw (2005), if X is a head of YP and YP is a projection of X, then either the F-value of X is lower than the F-value of YP, or the F-value of X is not higher than the F-value of YP.

Grimshaw (2005) defines the principle of ordering of heads within the extended projection as the relation between a head and various projections of that head. However,

the F-value ordering condition can be recast as a relation between heads rather than

between heads and their projections, using the notion of the perfect head of a projection.

Grimshaw (2005) differentiates between the head of a projection and the perfect head of a

projection:

34.   X is a perfect head of YP and YP is a perfect projection of X iff: X is a head of YP
and the F-value of X is the same as the F-value of YP.

(Grimshaw (2005): 5)

An extended projection, thus, consists of multiple perfect projections and contains

multiple perfect heads of those projections. DP, for instance, must contain at least two

perfect projections with two perfect heads: D and N. While N is a head of DP, it is also a

perfect head of NP:

35.   DP (nom, 3)

D (nom, 3)   NP (nom, 0)

N (nom, 0)
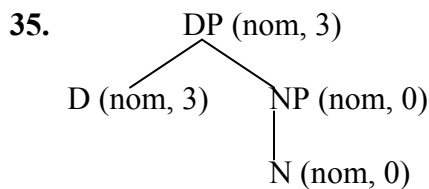
N is the head of DP since DP and N both share the same categorial value (nominal), DP

dominates N, and the F-value of DP (3) is higher than the F-value of N (0). N is the

perfect head of NP since NP and N share the same categorial value (nominal), NP

dominates N, and the F-value of NP is the same as the F-value of N (0).

The distinction between the extended projection and the perfect projection allows one to

define the relations within the extended projection not as a set of relations between a head

and various projections of that head but as a set of relations between heads:

36. Given a base-generated extended projection YP, if X is a head of YP and
the F-value of X is lower than the F-value of YP, then there exists another head Y,
such that the following holds:
   (a) X and Y share the same categorial feature;
   (b) Y is a perfect head of YP;
   (c) F-value of Y is higher than the F-value of X; and
   (d) Y asymmetrically c-commands X.

Consider, for instance, the phrase marker in (37), which contains an extended projection
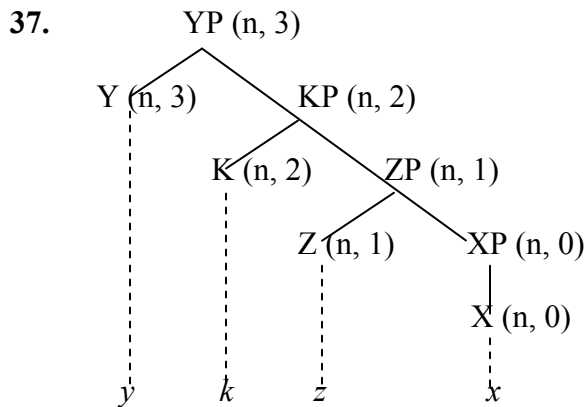
of X:

37.

According to Grimshaw's (2005) definition of extended projection, YP is an extended

projection of X since X and YP have the same categorial value (n), the F-value of X (0) is

not higher than the F-value of YP (3) and every node that dominates X and is dominated

by YP—ZP and KP—has the same categorial feature value as X and YP, and its F-value

is not higher than the F-value of YP and not lower than the F-value of X. On the same

grounds, X is also a head of KP and ZP. Similarly, K is a head of YP, and Z is a head of

KP and YP. In the phrase marker above, it does hold that for every given head and the

projection of that head, there exists another head in the phrase marker such that it is a

perfect head of the given projection, its F-value is higher than the value of the given head,

and it c-commands the given head. The relevant pairs of heads are <Y, K>, <Y, Z>, <Y,

X>, <K, Z>, <K, X>, <Z, X>.

As was demonstrated above, there exists a correlation between the F-values of the heads

X and Y of the base-generated extended projection and the relation of c-command

between them: if X has the same categorial feature as Y but a lower F-value, then it is

asymmetrically c-commanded by Y. Hence, a base-generated extended projection can be

described in terms of a set of ordered pairs $<Y_j, X_j>$ such that for each j, X_j and Y_j share

the same categorial feature, the F-value of X_j is not higher than the F-value of Y_j, and Y_j

asymmetrically c-commands X_j. The application of Kayne's LCA to this extended

projection will always produce a linear ordering such that a terminal that is dominated by

a non-terminal with a higher F-value will linearly precede a terminal that is dominated by

a non-terminal with a lower F-value as long as they are part of the same extended

projection. We, therefore, can formulate a constraint based on F-value ordering to guide

the mapping of items from a syntactic phrase marker onto a linear string:

38. **Mapping Constraint on Linearization for Head-initial Languages (MCL-HI):**
    For any pair of heads X and Y of an extended projection P such that X and Y share
    the same categorial feature, X excludes Y, and Y asymmetrically c-commands X,
    there exists a linear representation of terminals in P at PF such that the terminal
    dominated by Y linearly precedes the terminal dominated by X iff the F-value of X is
    not higher than the F-value of Y.

The clause of exclusion in Kayne's (1994) definition of asymmetric c-command serves to

extend the coverage of the LCA to include phrase markers generated by movement. The

clause of exclusion in the MCL-HI plays a similar role of allowing head movement to

occur inside the extended projection without violating the integrity of this extended

projection. A weaker clause of F-value ordering from Grimshaw's (2005) definition of

extended projection permits the MCL-HI to extend linearization to those terminals that

are dominated by non-terminals with equal F-value. Note, however, that the MCL-HI

does not impose an ordering relation on the heads with equal F-value, the ordering

relation in this case is structurally defined in the course of the extended projection formation.

The application of the mapping constraint based on the F-value ordering can be demonstrated using the following basic phrase marker:
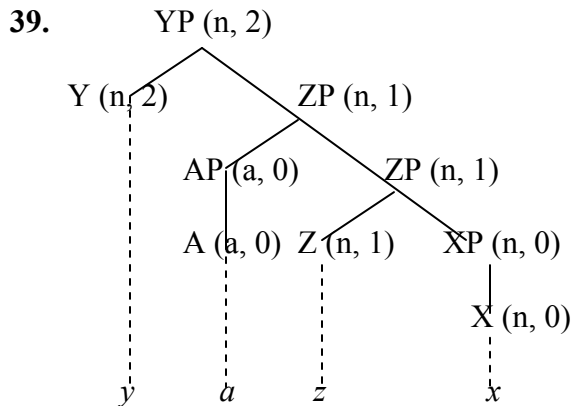
39.

```
            YP (n, 2)
           /        \
      Y (n, 2)      ZP (n, 1)
       |          /        \
       |      AP (a, 0)     ZP (n, 1)
       |        |          /       \
       |      A (a, 0)  Z (n, 1)   XP (n, 0)
       |        |        |           |
       |        |        |         X (n, 0)
       |        |        |           |
       y        a        z           x
```

According to Grimshaw's (2005) definition of extended projection, YP is an extended projection of X since X and YP have the same categorial value (n), the F-value of X (0) is not higher than the F-value of YP (2) and every node that dominates X and is dominated by YP has the same categorial features as X and YP and the F-value of all intervening nodes is not higher than the F-value of YP and not lower than the F-value of X.   Since the phrase marker above is an extended projection unaffected by movement transformations, it is expected that for every pair of heads in the phrase marker such that the first member of the pair and the second member of the pair share the same categorial feature, whenever the F-value of the second member of the pair is lower than the F-value of the first member of the pair, the former is asymmetrically c-commanded by the latter. The pairs in question are: <Y, Z>, <Y, X>, and <Z, X>. The LCA, being applied to this phrase marker, produces a total linear ordering of the set of terminals that this phrase

marker dominates. A maximal set of pairs of non-terminals based on the relation of asymmetric c-command that the phrase marker contains—{<Y, AP>, <Y, A>, <Y, Z>, <Y, XP>, <Y, X>, <AP, ZP>, <AP, Z>, <AP, XP>, <AP, X>, <Z, X>}—corresponds to the following set of pairs of terminals: {<y, a>, <y, z>, <y, x>, <a, z>, <a, x>, <z, x>}. The union of all members of this latter set gives the following total linear ordering: y > a > z > x.

The set of pairs of non-terminals generated by the LCA complies with the MCL-HI since for every pair of non-terminals in the set, the members of which share the same categorial feature, it holds that whenever the second non-terminal in the pair excludes the first non-terminal in the pair and is asymmetrically c-commanded by it, the F-value of the second non-terminal of the pair is not higher than the F-value of the first non-terminal. The relevant pairs are <Y, Z>, <Y, XP>, <Y, X>, <Z, X> . Consequently, there exists a linear representation at PF that corresponds to this phrase marker such that the terminal dominated by the first non-terminal of each pair in question linearly precedes the terminal dominated by the second non-terminal of the pair: y >> z >> x. Such linear representation is generated by the LCA: y > a > z > x. Unlike the LCA, the MCL-HI does not produce a total linear ordering on its own: it imposes no ordering on the terminal dominated by the non-terminals AP and A since these non-terminals do not share the categorial feature with the rest of the non-terminals in the phrase marker and, therefore, are not part of the extended projection in question. The coverage of the MCL-HI is, thus, narrower than the coverage of the LCA. The set of pairs of non-terminals to which the MCL-HI applies forms a subset of the set of pairs of non-terminals that serve as an input

for linear mapping by the LCA. The MCL-HI, therefore, constitutes a well-formedness condition on the linearization of the terminals of a given phrase marker and is intended to supplement the LCA rather than replace it.

A specific method of combining the F-value ordering constraint with the standard linearization procedure of LCA has the potential of determining what happens at PF. On the one hand, the MCL-HI can act as a markedness condition that blocks any linear order that violates F-value ordering. On the other hand, it can play a more active role at PF by determining the linear order. The implementation of MCL-HI proposed here is conceived as a linearization mechanism that ensures that the linear representation is faithful to the F-value ordering principle. It is, therefore, a more aggressive generative mechanism than a markedness filter. As it will be demonstrated further, this implementation of MCL-HI not only allows us to enforce faithfulness to the F-value ordering at spell-out but also provides means to block linearization of phrase markers that contain instances of movement transformations deemed illegitimate. These movement tranformations have been banned in narrow syntax by imposing restrictions on Merge. By adopting the MCL-HI, one can allow Merge to remain unconstrained.

The MCL algorithm, offered below, combines the F-value ordering constraint with the linearization mechanism of LCA. Like the LCA, it generates a maximal set of pairs of non-terminals that are characterized by the relation of asymmetric c-command. After this set has been generated, the F-value ordering mechanism is activated. The output of this mechanism is then used to produce the linear ordering of items:

40. MCL Algorithm (based on MCL-HI)

stage 1:   Generate a maximal set M of pairs of non-terminals $\langle Y_j \; X_j \rangle$ of a given phrase marker P such that for every j, Y_j asymmetrically c-commands X_j.

stage 2:   Generate set M' identical to set M except that every pair of non-terminals $\langle Y, X \rangle$ in M such that X and Y share the same categorial feature, X is a head, X excludes Y, and the F-value of X is higher than the F-value of Y is replaced with the pair $\langle X, Y \rangle$; and every pair of non-terminals $\langle Z, X \rangle$ in M such that Z and X do not share the same categorial feature and $\langle Y, Z \rangle$ is also in M is replaced with the pair $\langle X, Z \rangle$.

stage 3:   Generate a set R of pairs of terminals in P such that for every j, $\langle y_j, x_j \rangle$ is in R iff $\langle Y_j, X_j \rangle$ is in M' and Y_j dominates y_j and X_j dominates x_j in P and there is no Z such that X_j dominates Z and Z dominates x_j in P and $\langle Y_j, Z \rangle$ or $\langle Z, Y_j \rangle$ is in M'.
Generate linear representation for P by taking the union of R, where y precedes x iff $\langle y, x \rangle$ is in R.

At stage 1, the MCL algorithm generates a maximal set M of pairs of all non-terminals such that the first member of the pair asymmetrically c-commands the second member of the pair. The first stages of the LCA and of the MCL algorithms, therefore, overlap. At stage 2, the MCL algorithm scans the set of pairs of non-terminals generated at the stage 1 and verifies that they comply with the condition on F-value ordering. Whenever the F-value ordering condition is violated by a pair in the set M, the pair that violates the F-value ordering is replaced with a pair with the same members that does not violate this ordering. The new set of ordered pairs is then used to produce linearization of the syntactic structure.

Consider, for example, the structure in which the lexical item (NP) appears higher in the tree than its functional shell (DP), having been relocated in narrow syntax, and is separated from the functional head that belongs to its extended projection (D) by other lexical material that does not belong to its extended projection (VP):

41.   [$_{VP}$ NP [$_{VP}$ V [$_{DP}$ D ~~NP~~]]]

The MCL algorithm generates the following set M of ordered pairs of non-terminals such that the first member of each pair asymmetrically c-commands the second member of the pair: {<NP, VP>, < NP, V>, < NP, DP>, < NP, D>, <V, D>}. It then verifies whether all the pairs in M comply with the F-value ordering requirement. By definition, this requirement applies only to those pairs of non-terminals in which the second member of the pair is a head, the non-terminals belong to the same extended projection, and exclude each other. The second member of the pair must be a head to qualify for the ordering requirement because the F-value ordering relation is defined as the relation between a head of an extended projection and other nodes associated with this projection rather than simply a relation between various nodes (compare Grimshaw's (2005) definition of extended projection as a relation between a head and its projections). Only those nodes that share the same categorial feature are associated with the same extended projection and are therefore subject to F-value ordering (see section 1.3 for a detailed discussion of feature sharing). Finally, following the LCA, the clause of exclusion extends the coverage of the algorithm to adjuncts. In M, only the ordering statement <NP, D> violates the F-value ordering requirement. Indeed, the F-value of a functional item is always higher than the F-value of a lexical item, the second member of the pair <NP, D> is a head, and both members belong to the same extended projection. Note that the ordering statement <NP, DP> does not violate the F-value ordering requirement because the second member of the pair is a phrase while the ordering statement <NP, V> does not violate the F-value ordering requirement because the two nodes do not belong to the same extended projection. Consequently, at stage 2, the pair <NP, D> is replaced with the pair

<D, NP>, which enforces the correct ordering of items in terms of their F-value and subsequently ensures that the terminal dominated by the functional head D is mapped so that it linearly precedes the terminal dominated by the lexical item NP.

Following the LCA, the linearization of phrase markers by the MCL algorithm is based on the sum of all c-command relations in a phrase marker. An adjustment of one ordering statement (<NP, D> in our case), therefore, requires an adjustment of all the other ordering statements that are affected by this adjustment. This is done automatically by reversing the order between the c-commanded head of the original pair that undergoes alteration at stage 2 and all the nodes that intervene between this head and the first member of the original pair. Crucially, this automatic reordering targets only those non-terminals that do not belong to the same extended projection with the members of the altered pair, since the ordering of the items that are part of the same extended projection is taken care by the F-value ordering requirement. Consequently, in relation to (41), the MCL algorithm also alters the ordering between the c-commanded head of the pair <NP, D> and the head V that intervenes between NP and D but does not belong to the nominal extended projection. The pair <V, D> is therefore replaced with the pair <D, V>. The linearization of the heads of a given extended projection is harmonized in this way with the rest of the structure, and as a result, the terminal dominated by D is linearized preceding the terminal dominated by V.

Finally, at stage 3, the newly derived ordering statements are used to produce the linearization of the terminals in the phrase marker. The final stage of the MCL algorithm

differs from the LCA by relying on the first relevant dominance relation rather than a sum of all dominance relations to derive a linearization statement for a c-commanded member of each pair. To illustrate, in (41), VP, a projection of V, dominates the same terminal that is dominated by D. However, since VP also dominates D, D rather than VP is used to determine the linearization of this terminal. The application of the MCL algorithm is exemplified in more detail in the sections that follow.

The MCL algorithm, as formulated in this chapter, applies only to head-initial languages. The MCL-HI constraint, on which it is based, translates F-value ordering into linear precedence at PF. Incorporation of the F-value ordering principle into the linearization mechanisms, however, has a potential to account for the directionality of headedness in different languages by parametrizing the linearization mechanism rather than syntactic structure. While in head-initial languages F-value ordering of heads of an extended projection is translated at the interface with PF into the relation of precedence, in head-final languages, it is translated into the relation of succession. Both head-initial and head-final languages, therefore, could be viewed as structurally non-distinct, consistently employing left-hand adjunction. Note that the MCL algorithm enforces a particular order only between heads of an extended projection rather than between all the items within the extended projection. Complements, specifiers, and adjuncts are subject to c-command-based linearization. This is precisely what is needed to capture the linear order of items in head-final languages. The implementation and details of the MCL-HF, however, remain outside the scope of this dissertation.   I also leave open for further research the analysis of mixed languages.

1.2 The MCL Algorithm and Syntactic Structure

The extended projection that has not been affected by movement transformations does

not violate the F-value ordering principle and is trivially linearized at PF. The MCL

algorithm and the LCA produce the same linearization. Movement transformations can,

however, alter the ordering of items within any given extended projection and can incur

the violation of F-value ordering principle. In this section, I examine in more detail how

movement transformations affect extended projections and how the MCL algorithm

handles a variety of syntactic structures generated through both Move and Merge. Two

types of movement can affect the distribution of non-terminals inside an extended

projection: XP movement and head movement. When either type of movement occurs, it

alters the c-command relations inside the extended projection and, therefore, interacts

with the linearization constraint.

1.2.1 XP Movement

To illustrate the interaction between the MCL algorithm and movement, consider the

phrase marker in (42), which contains an instance of XP movement that violates F-value

ordering:

42.

VP (v, 0)

NP (n, 0)   VP (v, 0)

N (n, 0) V (v, 0)   DP (n, 1)

D (n, 1)   NP

n   *v*   *d*
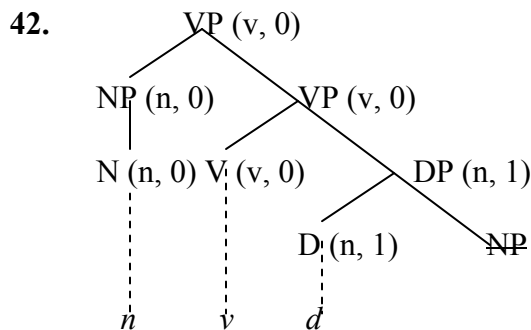
The phrase marker in (42) is a more elaborated version of the structure in (41), discussed

in the previous section. It is the result of extracting NP out of its own extended

projection DP and adjoining it higher in the tree to another extended projection VP. This

extraction results in the fragmentation of the extended projection in narrow syntax.

When the MCL algorithm is applied to this phrase marker, the following set M of ordered

pairs of non-terminals, such that the first member of each pair asymmetrically c-

commands the second member of the pair, is generated: {<NP, VP>, <NP, V>, <NP,

DP>, <NP, D>,<V, D> }. In (42), NP c-commands VP since it is not dominated by VP

(only by a segment of VP) and the first node that dominates NP dominates VP. On the

other hand, VP does not c-command NP since it does not exclude NP. Hence, the pair

<NP, VP> is added to the set of pairs of non-terminals characterized by asymmetric c-

command, as in the LCA. At stage 2, the MCL algorithm verifies that every pair in the

set M complies with the requirement that the F-value of the second non-terminal in each

pair is not higher than the F-value of the first non-terminal of the pair. By definition, this

requirement only applies to non-terminals that share the categorial feature and exclude

each other. The set M contains the pairs <NP, DP> and <NP, D> which do not comply

with this requirement.   However, as discussed previously, the second member of the pair

is a head only in the pair <NP, D>. Hence, at stage 2, the pair <NP, D> is replaced with

the pair <D, NP>, which complies with the F-value ordering requirement. In addition,

the pair <V, D> is replaced with the pair <D, V> since V and D do not share the same

categorial feature and the set M contains the pair <NP, V>. The modified set of pairs of

non-terminals M' is generated (with replacements marked in bold typeface): {<NP, VP>,

<NP, V>, <NP, DP>, **<D, NP>, <D, V>**}. At stage 3, the set M' is mapped onto a

corresponding set R of pairs of terminals {<n, v>, <d, n>, <d, v>}. The pair <NP, DP> does not affect the mapping of the set M' onto the set R and the pair <n, d> is not included in R since there is a non-terminal D such that DP dominates D and D dominates d and <D, NP> is in M'. The same applies to the pairs <NP, VP>. The union over the set R gives a total linear ordering of all terminals in the phrase marker: d>n>v. Consequently, whenever a movement operation separates the lexical item from the functional items with which it forms an extended projection in the narrow syntax, the MCL algorithm linearizes the functional items preceding this lexical item, restoring thus at PF the F-value ordering which defines the relations between lexical and functional heads.

Note, however, that the linear representation generated by the MCL algorithm above corresponds to two distinct phrase markers: (1) the phrase marker formed by NP extraction in which the functional shell of NP is stranded in narrow syntax and is linearized preceding this NP at PF, and (2) the phrase marker in which the entire extended projection of the noun is relocated in narrow syntax via DP movement. Compare the linearization of the phrase marker in (42) with the linearization of (43):

43.   VP (v, 0)

  DP (n, 1)   VP (v, 0)

D(n,1) NP(n,0) V(v,0)   ~~DP~~

         N (n, 0)

 d   *n*   *v*
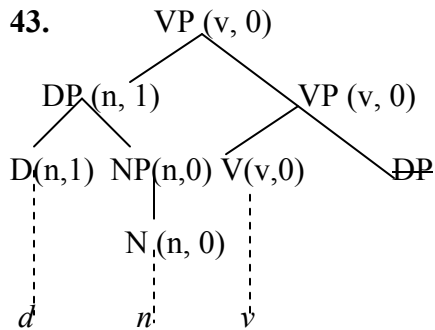
When the phrase marker in (43) is linearized, the MCL algorithm generates the following set of pairs: {<D, N>, <DP, VP>, <DP, V>}. No substitutions take place at stage 2 since the only pair in which the members share the same categorial feature is <D, N> and it complies with the F-value ordering requirement.   The linear order produced for (43), d>n>v, is the same as the one produced when the phrase marker in (42) is linearized. This is a departure from the key assumption of the LCA that there is a one-to-one correspondence between the phrase structure and its linear representation. Note, however, that the structural redundancy of this sort has been generally resolved by imposing restrictions on Merge. Given the MCL, there are two possible ways in which Merge can be constrained to eliminate the structural redundancy in question. One could ban extraction of the XP from its own extended projection in the narrow syntax by imposing the requirement to pied-pipe functional categories, as has been generally assumed. As a result, the phrase marker in (42) could not be generated and the redundancy is avoided. Alternatively, one could require that only the smallest XP possible is dislocated. In this case, the functional categories could not be pied-piped in narrow syntax and could be linearized preceding the dislocated lexical XP at PF. In this case, only the phrase marker in (42) could be generated, forestalling redundancy. If, however, as we assume here, it is desirable to leave Merge unconstrained, the structural redundancy of the sort encountered in (42) and (43) should be permitted, with each particular choice of movement transformation guided by some interface condition. I consider some of these options in more detail in chapters 3 and 4.

So far, we have examined the extraction of an XP out of its own projection. Consider now the phrase marker in (44), which contains an XP that is dislocated to the left and adjoined to its own extended projection:
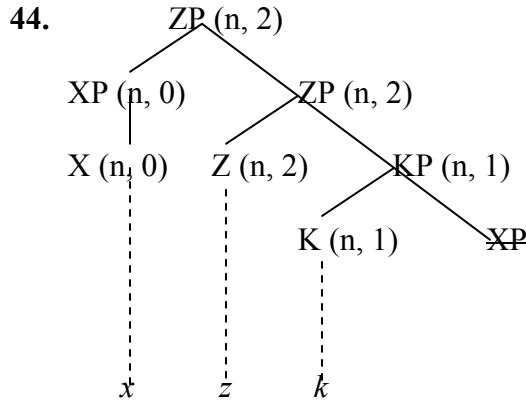
44.

At stage 1, the MCL algorithm generates a set M of ordered pairs of non-terminals where the first member of the pair asymmetrically c-commands the second member of the pair: {<XP, ZP>, <XP, Z>, <XP, KP>, <XP, K>,<Z, K>}. The set M contains the pairs <XP, Z> and <XP, K> which do not comply with the F-value ordering requirement. The pair <XP, ZP> is exempted from the F-value ordering requirement since ZP does not exclude XP, and the pair <XP, KP> is exempted since KP is not a head. At stage 2, the pairs <XP, Z> and <XP, K> are replaced with the pairs <Z, XP> and <K, XP>, which comply with the F-value ordering requirement. The pair <Z, K> is not replaced with the pair <K, Z> even though the set M contains the pair <XP, Z>, since Z and K share the same categorial feature. The modified set of pairs M'—{<XP, ZP>, <Z, K> , **<Z, XP>**, <XP, KP>, **<K, XP>**}—is mapped at stage 3 onto a set R of pairs of terminals: {<z, k>, <z, x>, <k, x>}. Although the pair <XP, ZP> is in the set M', it does not affect the content of the set R since the node Z intervenes between the terminal z and the non-terminal ZP and the pair <Z, XP> is in M'. The set R provides a total linear ordering of the terminals in the

phrase marker: $z > k > x$. This ordering of terminals, however, corresponds to the ordering of terminals in the same phrase marker that has not been affected by XP movement. The adjunction of the category to its own extended projection, therefore, has no effect on linear order at PF. Consequently, the MCL algorithm restricts the output of XP movement. It predicts, for instance, that the post-position of the determiner cannot occur in the noun phrase as the result of the NP movement and adjunction of the NP to its own DP. The reordering of the noun and the determiner can only occur as the result of head movement, as the next section demonstrates. It does appear, however, that in some languages, such as Creoles and West-African languages, NP might be moving into the specifier of the determiner-like item, causing reordering between the determiner and the noun. Given the MCL algorithm, the evidence of this sort could indicate that the determiners which permit NP movement into their specifier either are lexical rather than functional items in these languages or they do not form an extended projection with the noun phrase in question. Further comparative investigation of the determiners that allow movement of the noun phrase into their specifier and those that don't is needed to determiner the validity of this prediction.

Note that the dislocation of the XP and its adjunction to its own extended projection is vacuous only when the extended projection does not contain any adjuncts. When the extended projection contains adjuncts, the dislocation of the XP causes linear reordering of items which creates an impression of the extraposition of the adjunct. Consider the phrase marker in (45), which contains an adjunct PP. The perfect projection of X is dislocated to the left and is adjoined to its own extended projection, as before:
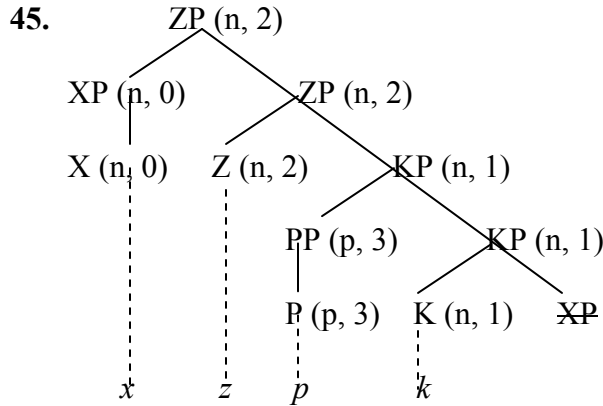
45.

ZP (n, 2)

XP (n, 0)   ZP (n, 2)

X (n, 0)   Z (n, 2)   KP (n, 1)

PP (p, 3)   KP (n, 1)

P (p, 3)   K (n, 1)   ~~XP~~

x   *z*   *p*   *k*

At stage 1, the MCL algorithm generates a set M of ordered pairs of non-terminals where

the first member of the pair asymmetrically c-commands the second member of the pair:

{<XP, ZP>, <XP, Z>, <XP, KP>, <XP, K>, <XP, PP>, <XP, P>, <Z, K>, <Z, PP>, <Z,

P>, <PP, KP>, <PP, K>}. The set M contains the pairs <XP, Z> and <XP, K> which do

not comply with the F-value ordering requirement and are replaced with the pairs <Z,

XP> and <K, XP>. The pair <Z, K>, however, is not replaced with the pair <K, Z> since

Z and K share the same categorial feature. The pairs <XP, P> and <Z, P> are not

replaced either since the members of each pair do not share the categorial feature.

Finally, the pair <PP, K> is replaced with the pair <K, PP> because PP and K do not

share the same categorial feature and <XP, K> is also in M. The modified set of pairs

A'—{<XP, ZP>, **<Z, XP>**, <XP, KP>, **<K, XP>**, <XP, PP>, <XP, P>, <Z, K>, <Z, PP>,

<Z, P>, <PP, KP>, **<K, PP>**}—is mapped at stage 3 onto a set R of pairs of terminals:

{<z, k>, <z, x>, <k, x>, <x, p>, <z, p>, <k, p>}. The set R provides a total linear

ordering of the terminals in the phrase marker: z > k > x > p . Consequently, as the result

of the application of the MCL algorithm, the adjunct appears to be extraposed. As will be

demonstrated in chapter 6, stranding of PP-modifiers as the result of noun topicalization

can explain the distribution of PP-modifiers in discontinuous structures in Ukrainian

without positing a special mechanism of extraposition.

1.2.2 Head Movement

Consider now the result of the application of the MCL algorithm to the phrase marker in

(46), which contains an instance of head movement:

46.

YP (n, 2)

Y (n, 2)   ZP (n, 1)

Z (n, 1)   XP (n, 0)

X(n, 0)   Z(n, 1)   X

y   x   z

Whenever one head is adjoined to another head as the result of head movement within a

single extended projection, the relation of asymmetric c-command between the two heads

is reversed. The reversal occurs because, after the head movement has taken place, the

host head does not exclude the incorporated head: a segment of the host head dominates

the incorporated head. Thus, at stage 1, the MCL algorithm produces the following set M

of ordered pairs of non-terminals where the first member of the pair asymmetrically c-

commands the second member of the pair: {<Y, Z>, <Y, X>, <Y, XP>, <X, Z>}. X c-

commands Z since it is not dominated by Z (only by a segment of Z) and the first node

that dominates X dominates Z. On the other hand, Z does not c-command X since it does

not exclude X. Hence, the pair <X, Z> is added to M. At stage 2, the MCL algorithm

verifies that every pair in M complies with the F-value ordering requirement. Although

the pair <X, Z> violates F-value ordering, the head Z in this pair does not exclude the

head X and the F-value ordering requirement does not apply. This is part of the

mechanism of accounting for head movement within the LCA, which the MCL algorithm

adopts. The set M' generated at stage 2 is, therefore, identical to the set M generated at

stage 1. At stage 3, the MCL algorithm generates the following set R of pairs of

terminals: {<y,z>, <y,x>, <x,z>}. The union over the set R produces a total linear

ordering y>x>z, where the incorporated head precedes the head into which it

incorporated. Consequently, the MCL algorithm licenses linearization of a phrase marker

that contains head movement.

The MCL algorithm also licenses phrase markers that contain more complex cases of

head-movement. In the phrase marker in (47), the head X first adjoins to the head K and

then the head K incorporates into the head Z, carrying the head X with it:
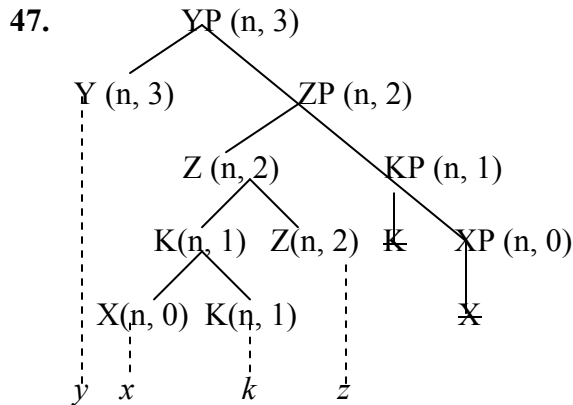
47.

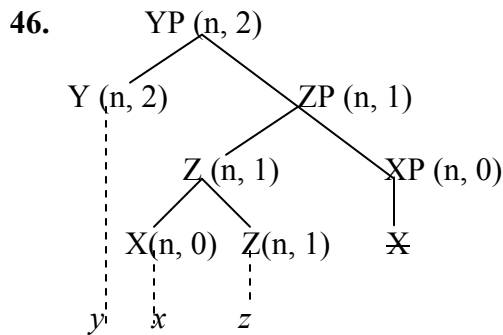At stage 1, the MCL algorithm generates the following set of ordered pairs of non-

terminals where the first member of the pair asymmetrically c-commands the second

member of the pair: {<Y, X>, <Y, K>, <Y, Z>,<Y, KP>,<Y, XP>, <X, K>, <X, Z>, <X,

XP>, <K, Z>, <K, XP>, <Z, XP>}. Even though in the pairs <X, Z>, <X, K>, and <K,

Z> the F-value of the second member of the pair is higher than the F-value of the first

member of the pair, the exclusion clause is violated and the F-value ordering requirement

does not apply. At stage 2, the set M is mapped onto a set M' without any alterations. At

stage 3, a set R of pairs of terminals is generated on the basis of the set M': {<y,x>,

<y,k>, <y,z>, <x,k>, <x,z>, <k,z>} The union over the set R results in a total linear

ordering of terminals involved: y > x > k > z. Consequently, each incorporated head is

linearized preceding the head into which it is incorporated.

So far, we examined only the instances of legitimate head movement that comply with

Travis's (1984) Head Movement Constraint (see also Baker (1988)). In each case, the

lower head is adjoined to the higher head and there is no other head of the same extended

projection that intervenes. Travis's (1984) Head Movement Constraint, however, is

formulated in terms of government—a notion that is no longer considered theoretically

viable. The MCL algorithm derives achieves similar result without the recourse to the

notion of government. Consider, for instance, the phrase marker in (48), which contains

an instance of an illegitimate head movement. In (48), the head X that undergoes

incorporation into the head Z skips an intervening head K:
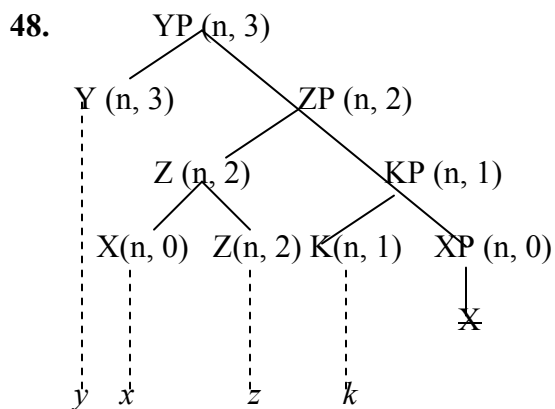
48.

At stage 1, the MCL algorithm generates the following set M of ordered pairs of non-terminals, in which the first member of the pair asymmetrically c-commands the second member of the pair: {<Y, Z>, <Y, X>, <Y, KP>, <Y, K>, <Y, XP>, <X, Z>, <X, K>, <X, XP>, <Z, K>, <Z, XP>}. At stage 2, the algorithm replaces the pair <X, K> that violates the F-value ordering requirement with the pair <K, X>, which respects this requirement. Although the pair <X, Z> also violates F-value ordering, the node Z does not exclude the node X, and no replacement is made. The MCL algorithm generates a set M' that is identical to the set M except for a single replacement: {<Y, Z>, <Y, X>, <Y, KP>, <Y, K>, <Y, XP>, <X, Z>, **<K, X>**, <X, XP>, <Z, K>, <Z, XP>}. At stage 3, the algorithm generates the following set R of pairs of terminals: {<y, z>, <y, x>, <y, k>, <x, z>, <z, k>, <k, x>}. This set, however, cannot be linearized because it contains a contradictory entailment. Since the pairs <k, x> and <z, k> are in the set, it follows by transitivity that z precedes x . However, the set contains the pair <x, z> which requires x to precede z. As a result, no linear ordering can be produced. Consequently, the MCL algorithm rules out the possibility of linearization for the phrase markers that contain an instance of head movement that skips an intervening head node. In this respect, the MCL algorithm differs from LCA. The LCA provides linear ordering for a phrase marker in (48).

There is one more type of illegitimate head movement to consider. The head X can first adjoin to the head K, and then the head K can move out and adjoin to the head Z without pied-piping the head X:

49.

YP (n, 3)

Y (n, 3)   ZP (n, 2)

Z (n, 2)   KP (n, 1)

K(n, 1)   Z(n, 2) K(n, 1)   XP (n, 0)

X(n,0)   K̶   X̶

y   *k*   *z*   *x*
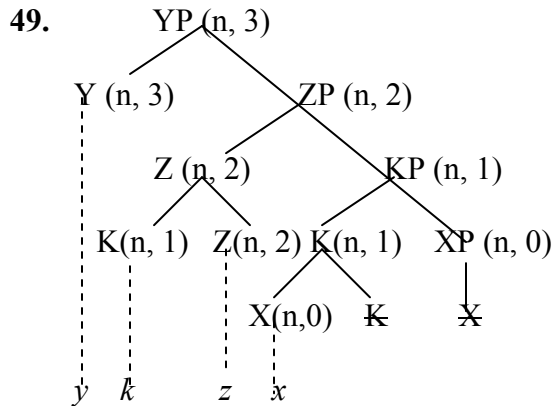
This type of head movement involves relocation of a segment of the category rather than the whole category. Kayne (1994) rules out this sort of movement by imposing a prohibition for a segment to participate in c-command. C-command is restricted to categories by definition. This restriction ensures that the LCA fails to generate a linearization whenever a segment is relocated. It provides no ordering statement for K in (49). Alternatively, the relocation of the segment of a category can be blocked by positing that the linearization algorithm fails whenever it generates a statement <K, K>. Under the assumption that a head cannot precede itself and therefore cannot asymmetrically c-command itself, the ban on the statement of this type is expected. This way of eliminating the dislocation of a segment of a category does not require implementing special mechanism for keeping track of segments.

1.2.3 *Multiple Adjunction*

Kayne's (1994) LCA places a ban not only on the dislocation of a segment of a category but also on multiple adjunction. Since the MCL algorithm is based on the LCA linearization mechanism, the ban on multiple adjunction is inherited by it as well.

Consider, for instance, the phrase marker in (50) (modeled on fig. (8) in Kayne (1994)), which contains multiple head adjuncts and embodies a standard analysis of cliticization:
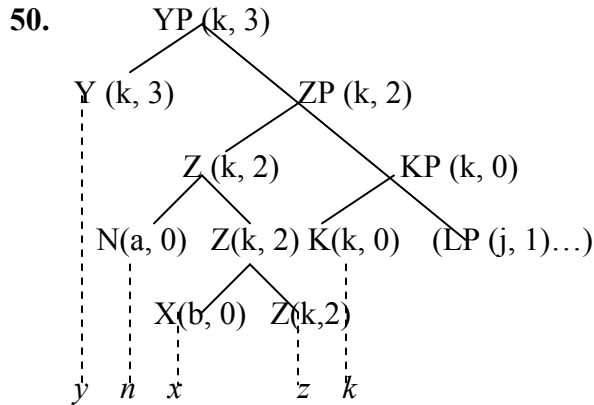
50.

At stage 1, the MCL algorithm generates a set M of ordered pairs of non-terminals where the first member of the pair asymmetrically c-commands the second member of the pair: {<Y, N>, <Y, X>, <Y, K>, <Y, Z>,<Y, KP>, <N, Z>, <N, K>, <X, K>, <X, Z>, <Z, K>}. None of the pairs in this set violates the F-value ordering requirement. Hence, at stage 2, the set M is mapped onto a set M' without any alterations, and the MCL algorithm is predicted to produce the same linear ordering as the LCA. At stage 3, the set R of pairs of terminals is generated on the basis of set M': {<y, n>, <y, x>, <y, k>, <y, z>, <n, z>, <n, k>, <x, k>, <x, z>, <z, k>}. The union over the set R, however, does not provide a total linear ordering of terminals involved since the terminals n and x are not ordered in relation to each other. These two terminals remain unordered because the non-terminals that dominate them mutually c-command each other. The non-terminal N c-commands the non-terminal X since it is not dominated by the category Z but only by a segment of this category and the first non-terminal that dominates N, ZP, also dominates X. The same applies to the non-terminal X in relation to the non-terminal N.

Like the LCA, the MCL algorithm also rules out multiple XP adjunction:

51.

KP (n, 1)

XP (i, 0)   KP (n, 1)

X (i, 0)   NP (j, 0)   KP (n, 1)

N(j, 0) K (n, 1)   Y(n, 0)

x   *n*   *k*   *y*
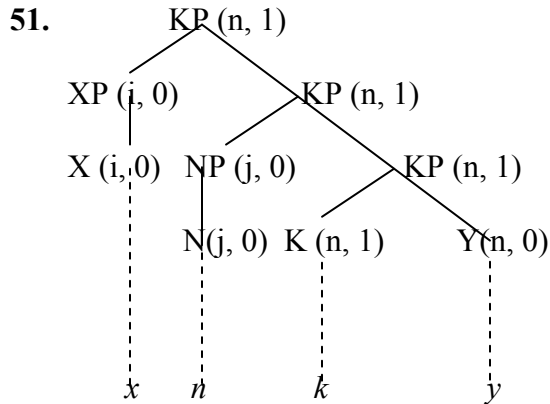
The head marker in (51) cannot be linearized since the set M contains both the pair <XP, N> and the pair <NP, X>, which give rise to two contradictory ordering statements: <x, n> and <n, x>. Consequently, the MCL algorithm does not provide a linearization for phrase markers that contains multiple XP adjuncts either.

Kayne (1994) maintains that specifiers are adjuncts and the prohibition on multiple adjunction reflects the X-bar theoretic prohibition on a category having more than one specifier. However, in recent years, it has been argued that multiple adjunction and multiple specifiers provide a better way of accounting for a variety of phenomena cross-linguistically (Grewendorf and Sabel (1999), Ura (2000), Richards (2001), among others). The availability of multiple adjunction also allows one to maintain a standard analysis of cliticization possibly involving multiple instances of adjunction to the same head. It is, therefore, desirable to make the MCL algorithm compatible with cases of multiple adjunction. This can be done by revising the definition of asymmetric c-command:

52. Asymmetric c-command (revised):
A non-terminal node X asymmetrically c-commands a non-terminal node Y iff
(a) X c-commands Y, and Y does not c-command X, and there is no Z such that X and Y are dominated by different segments of Z and a segment of Z contains X and not Y, or
(b) X c-commands Y, and Y c-commands X, and there is Z such that X and Y are dominated by different segments of Z and a segment of Z contains Y and not X

Note that a more complex definition of asymmetric c-command in (52) allows one to simplify phrase structure while a simpler definition of c-command of Kayne (1994) requires positing multiple functional heads the sole purpose of which is to host adjuncts, one per head (see Cinque (1999)). The trade off is, therefore, between a more elaborate phrase structure and a more elaborate definition of asymmetric c-command. Since our goal here is to simplify phrase structure, we will opt for the revised definition of asymmetric c-command. Given this definition of asymmetric c-command, the MCL algorithm produces correct linear ordering for the cases of multiple head and XP adjunction. Note, however, that the MCL algorithm is also compatible with the structures that require multiple adjuncts to be supported but individual functional heads.

Consider once again the phrase marker that contains an instance of multiple head adjunction:

53.
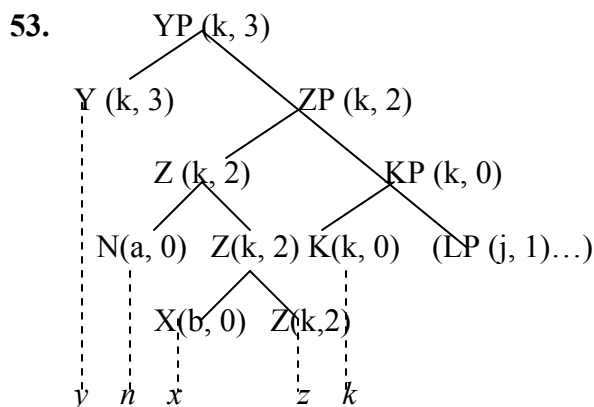
Given the revised definition of asymmetric c-command, at stage 1, the MCL algorithm

generates the following set of ordered pairs of non-terminals: {<Y, N>, <Y, X>, <Y, K>,

<Y, Z>,<Y, KP>, <N, X>, <N, Z>, <N, K>, <X, K>, <X, Z>, <Z, K>}. The pair <N, X>

is added to this set since even though N and X mutually c-command each other, there is Z

such that N and X are dominated by different segments of Z and a segment of Z contains

X and not N. As before, none of the pairs in this set violates the F-value ordering

requirement. Hence, at stage 2, the set M is mapped onto a set M' without any

alterations. At stage 3, a set R of pairs of terminals is generated on the basis of the set

M': {<y, n>, <y, x>, <y, k>, <y, z>, <n, x>, <n, z>, <n, k>, <x, k>, <x, z>, <z, k>}. The

union over the set R produces a total linear ordering of the terminals in (53): y>n>x>z>k.

Given the revised definition of asymmetric c-command, the MCL algorithm also provides

linearization for a phrase marker which contains an instance of multiple XP adjunction:
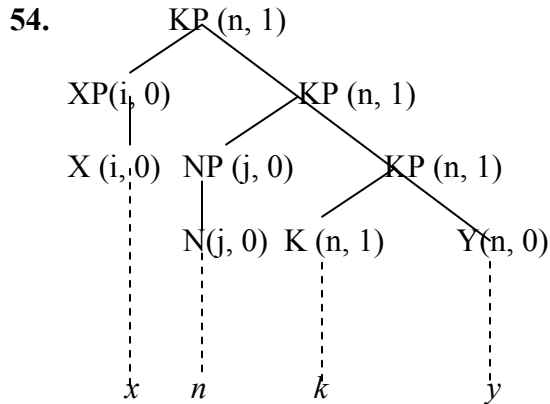
54.

At stage 1, the MCL algorithm generates the following set of ordered pairs of non-

terminals: {<XP, KP>, <XP, NP>, <XP, N>, <XP, K>,<XP, Y>, <NP, KP>, <NP, K>,

<NP, Y>}. This set no longer includes the pair <NP, X> since even though NP c-

commands X and X does not c-command NP, there is KP such that NP and X are

dominated by different segments of KP and a segment of KP contains NP and not X. The

pair <XP, N>, however, remains in the set since there is no segment of KP that contains

XP and not N. At stage 3, a set R of pairs of terminals is generated: {<x, k>, <x, n>, <x,

y>, <n, k>, <n, y>}. This set results in a total linear ordering: x>n>k>y. Consequently,

by adopting a revised definition of asymmetric c-command we can simplify phrase

structure by admitting multiple adjuncts/specifiers.

1.3 Linearization at PF and Agreement

The MCL algorithm proposed in this dissertation requires that each extended projection is

identified uniquely within a given syntactic structure. For this, it relies on the idea that an

extended projection is characterized by all heads that constitute it having the same

category feature. There exists a long-standing tradition within Transformational

Grammar to implement categorial distinctions in terms of features. In particular, verbs,

nouns, and adjectives have been differentiated in terms of two distinct binary features +/-

N (nominal) and +/-V (verbal) since Chomsky (1970) (see Jackendoff (1977), Muysken

(1983), Holmberg (1986), Reuland (1986), Abney (1987) for various implementations of

the categorial features). In line with this tradition, Grimshaw (2005) represents categorial

value of an item in terms of the features "nominal" and "verbal." The categorial feature

is valued as "nominal" in nouns and other nominal functional categories and as "verbal"

in verbs and other verbal functional categories. Given the requirement that the categorial

features of all the heads of a given extended projection are consistent, the functional

categories valued as nominal can form an extended projection with the noun while the

functional categories valued as verbal cannot, and vice versa. However, any given

extended projection is not identified uniquely in relation to other extended projections in the same structure when only the value of the categorial feature is taken into account. All nominal extended projections are headed by the items that have the categorial feature valued as nominal. The uniqueness of each extended projection, therefore, has to be defined in terms of the relations between the items inside any given extended projection, rather than the categorial feature value, and these relations need to be formally encoded for the MCL algorithm to operate properly. One can identify an extended projection uniquely by appealing to agreement as a syntactic process that affects features. This can be accomplished by formalizing agreement as a mechanism of feature valuation and feature unification.

Chomsky (2000, 2001) defines agreement as the relation that is established between a probe β and a goal α where β has uninterpretable inflectional features and α has interpretable ones and β c-commands α. The presence of uninterpretable features on the probe makes it syntactically active and is crucial for initiating agreement. When the features are matched, the uninterpretable features delete. Uninterpretable features must be deleted for the syntactic structure to be interphase-interpretable as a whole, each of its components contributing to interpretation. Interpretability, however, is a semantic notion that is not syntactically motivated, and thus the role it plays within narrow syntax remains stipulative. Chomsky (2001) provides syntactic motivation for the notion of uninterpretability of features by introducing the concept of feature valuation. Uninterpretable features are those that enter the derivation without value. Their values are determined through agreement.

Although Chomsky (2001) introduces the concept of feature valuation into the system, the success of the derivation is identified with eliminating all the uninterpretable features from the derivation. The operation Spell-Out removes the uninterpretable features from the derivation and transfers the derivation to the phonological component. This introduces unnecessary complications into the system. Since uninterpretability of features is defined in terms of the lack of value, the distinction between uninterpretable and interpretable features that existed prior to valuation disappears after agreement takes place. The operation Spell-Out is thus expected to take place shortly after the uninterpretable features have been assigned values, presumably while their unvalued status is still retained in the memory. One can avoid the complications that the dual definition "uninterpretable/unvalued" induces by dispensing with the notion of interpretability of features. If the features fall only into two distinct categories—valued and unvalued—the success of the derivation can be defined in terms of feature valuation. At the first sight, this introduces unnecessary redundancy into the system. Agreement does not simplify the information content of the syntactic structure but proliferates it by creating redundant feature pairs throughout the structure. This apparent imperfection can be eliminated by defining agreement in terms of feature unification and feature sharing rather than feature checking, as suggested by Pesetsky and Torrego (2007).[5]

Pesetsky and Torrego (2007) propose that when agreement takes place between an unvalued probe feature F on a head H at syntactic location β (F_β) and a goal feature F at location α (F_α), the output is a single feature F shared by two locations. Pesetsky and

Torrego (2007) utilize a notation from the HPSG literature to represent this concept of agreement:

55. F[73] .... F[73] ...F *val*[73] ... F[73]

A feature that is accompanied by a numeric value (which I will refer to as a feature index) has participated in agreement with another feature of the same type. The value of the feature is represented as a prefix before the square brackets and is marked only on the instance that derives its value from the lexicon. Finally, a feature that has not yet been valued is represented by means of an empty pair of brackets: F[ ]. Pesetsky and Torrego (2007) use the term *instance* to refer to a feature-location pair of the feature that has undergone agreement and the term *occurrence* to refer to features that have not undergone agreement. On this view of agreement, valuation of features does not introduce new valued occurrences of the features into the derivation but converts distinct occurrences of a particular feature into instances of the same feature. Consequently, it performs the same operation that deletion of unvalued features is intended to perform. The unvalued (uninterpretable) features are eliminated from the derivation after agreement. This allows one to simplify the derivational mechanism significantly and paves the way for unique identification of extended projections in terms of feature sharing.

The mechanism of feature valuation applies straightforwardly to agreement in φ-features, conceived in Chomsky (2000, 2001) as a feature matching operation. Case, however, is modeled in Chomsky (2000, 2001) as an asymmetric relation, following George and Kornfilt's (1981) thesis that structural case is a reflex of agreement. It is treated as an

uninterpretable singleton feature generated on the noun the deletion of which—via ancillary feature checking—is dependent on φ-feature agreement being established between the verb and the noun.[6] Pesetsky and Torrego (2001, 2004) depart from Chomsky's (2000, 2001) concept of case and model case, Nominative case in particular, as an independently unifiable uninterpretable Tense feature on D. The difficulty in implementing case in general as an independently unifiable feature resides in the special status of case within the syntactic system as a whole. Unlike φ-features, case is not inherently specified on any given lexical head. In some sense, it is a by-product of the very process of derivation and reflects a number of correlated factors, such as φ-feature agreement, theta-role assignment, structural configuration involved, etc. Since the distribution of case is not a primary concern of this project, I will err on the side of simplification and will treat case as an agreement feature on a par with gender and number. However, following Chomsky's (2000) model, I will constrain case checking by stipulating that the case feature differs from φ-features by not being able to probe and activate the process of feature unification. Nouns then cannot act as probes, even though they carry an unvalued case feature, because their phi-features set is valued in the lexicon. Consequently, nouns can only act as goals. The case feature of the noun is checked after an agreement relation with the noun is initiated by another item. This implementation of case is equivalent to the ancillary checking of case in Chomsky (2000, 2001). Ancillary feature checking implies that agreement affects all the features associated with a given syntactic node simultaneously. An unvalued feature can establish an agreement relation between two syntactic nodes and all the features of these two nodes eligible for unification are unified as the result of agreement. Thus, an agreement relation

initiated by unvalued φ-features triggers unification not only of φ-features but also of case. This unification process is constrained in terms of consistency, or non-distinctness, of the features involved in unification. Two gender features cannot be unified if the value of one of these features is masculine and the value of the other is feminine. Similarly, two case features cannot be unified if the value of one feature is nominative and of the other accusative.

The mechanism of ancillary unification of case feature can be extended to include the unification of the categorial feature as well. Two categorial features can be unified when the items that carry these features stand in an agreement relation and the value of these features is non-distinct. Therefore, I assume that a head of an extended projection must establish an agreement relation with its complement, which it c-commands, and as the result of such agreement the feature information that is carried by these two nodes is unified and shared. The mechanism of agreement is, thus, treated as a vehicle of extended projection formation. It ensures that any given extended projection is not only characterized by the consistency of the categorial feature values of its heads, but is in fact associated with the same categorial feature. Categorial features of all the heads of an extended projection are turned into instances of a single categorial feature through agreement. Each extended projection can, therefore, be identified uniquely as a syntactic item all heads of which share the same categorial feature.

Let's define precisely the process of agreement as feature unification which results in feature valuation and feature sharing. Since agreement is an act of feature unification

that converts an occurrence of a feature into an instance of the feature, the assignment of

the same index to the features that enter into agreement records the event of feature

unification and feature sharing. For feature unification to take place the following

conditions should hold:

56. Feature Unification:
Two occurrences of feature F, F_X and F_Y, are converted into two instances of
feature *F* by assigning to each resulting instance of *F* an index *i*, F_X *[i]* and F_Y *[i]*
iff either
(a) Y is a perfect projection of X, or
(b) X and Y stand in an agreement relation and F_X and F_Y are non-distinct

57. Agreement:
  a) X and Y, two nodes of a given phrase marker P, stand in an agreement relation in
  P iff X is a probe, Y is a goal, X c-commands Y, and no agreement barrier
  intervenes between X and Y.
  b) X is a probe and Y is a goal iff the feature templates of X and Y both have an
  occurrence of feature F, and F_X is unvalued.

58. Non-distinctness:
Two occurrences of the same feature are non-distinct iff either both of them have
the same value or one of them is unvalued

The process of feature unification is constituent based. Each feature is part of a set of

features: a feature template. Whenever one occurrence of feature F from template T_X

initiates an agreement relation with another occurrence of F from template T_Y, all the

features in the templates involved are matched and unified if non-distinct. I assume that

both the case feature and the categorial feature are unified in the ancillary manner.

Agreement is constrained not only in terms of c-command but also in terms of agreement

domains. A projection of the head of an agreement domain constitutes a barrier for

agreement. Locality restrictions on agreement are discussed in detail in chapter 7. In

addition, feature unification is defined not only for the act of agreement but also for the

act of projection; namely, the act of a head X projecting its perfect projection XP. The

features on the perfect projection of X are unified with the features of X and are

understood as instances of the same feature rather than distinct occurrences of the feature.

This is generally taken for granted in the theory of bare phrase structure since a perfect

projection of the head is a copy of this head (Chomsky (1995a)).

To illustrate the mechanism of feature unification and its consequences for the process of

item linearization at PF, consider how agreement affects various types of features. Each

item in the lexicon is associated with two kinds of information: structural information and

agreement information. Structural information reflects the potential of syntactic items to

form an extended projection in narrow syntax and consists of the categorial feature and

the F-value. Agreement information reflects the potential of syntactic items to interact

with each other in narrow syntax and varies from category to category. I limit the

agreement features considered to number, gender, and case since I am primarily

interested in agreement within the nominal domain. Hence, in the notational system

adopted here, a feminine singular noun in the lexicon will be associated with the

following feature template: {cat(nom[ ]), gen(fem[ ]), num(sg[ ]), case([ ])), F(0)}, where

cat(nom[ ]) stands for a categorial feature valued as nominal in the lexicon; gen(fem[ ])

stands for a gender feature that is valued as feminine in the lexicon; num(sg[ ]) stands for

a number feature that is valued as singular in the lexicon; and case([ ]) stands for a case

feature that is not valued in the lexicon. The prefix before the parentheses indicates the

type of the feature, the prefix before the square brackets indicates the value that the

feature has in the lexicon, empty square brackets indicate that the feature has not

undergone agreement in narrow syntax, and F stands for F-value. I assume the following

set of arbitrarily chosen F-values:

59.   P: F(7)   C: F(7)
         D: F(5)   T: F(5)
         N: F(0)   v: F(3)
         A: F (0)   V: F (0)

All lexical heads are assigned the F-value of (0). The F-value of functional heads reflects

their hierarchical place within an extended projection that they form. Note that F-values

are distinct from features. They do not participate in agreement and unification since

they reflect the status of any given node within a phrase structure rather than relations

between individual items in narrow syntax as agreement features do. The entry for the

verb will be simplified and will not include any purely verbal information, such as, for

instance, tense: {cat(verb[ ]), F(0)}. The categorial feature of the verb is valued as verbal

in the lexicon and is unified with the categorial feature of the functional categories that

form an extended projection with the verb as the result of agreement between these

categories in purely verbal types of information. Verbal functional categories carry

unvalued φ-features and a valued case feature in addition to the categorial and F-value

information. The case feature is valued as accusative on v and as nominative on T. The

entry for v is {cat(verb[ ]), gen([ ]), num([ ]), case(acc[ ])), F(3)}. The entry for T is

{cat(verb[ ]), gen([ ]), num([ ]), case(nom[ ])), F(5)}. Finally, I take the adjective to be a

fully underspecified lexical category: {cat([ ]), gen([ ]), num([ ]), case([ ])), F(0)}. It is

not valued in the lexicon for any agreement features, nor for its categorial feature and has

to have these features valued in narrow syntax. The feature values on the adjective are,

therefore, fully defined only in narrow syntax through the relation with other syntactic

categories. The underspecified nature of the adjective is intended to reflect its status as a

default lexical category (compare Baker (2003)) (see chapter 2 for further discussion of the syntactic status of adjectives).

When an agreement relation is established between the verbal head and the noun phrase, both the φ-features and the case feature are valued. The value for gender and number is specified in the template of the NP and the value for case is specified in the template of v. These values are shared by the noun and the verb as the result of agreement:

60.   v: {cat(verb[ ]), gen([33]), num([25]), case(acc[40])), F(3)}
        NP: {cat(nom[ ]), gen(fem[33]), num(sg[25]), case([40])), F(0)}

The categorial feature is differently valued on the verbal head and on the noun phrase; consequently, this feature is not unified. Since linearization process is formulated in terms of the categorial feature, the MCL algorithm will correctly treat the noun phrase and the verbal phrase as two distinct extended projections even though the φ-features and case feature of these items are unified.

Nominal functional categories such as determiners and, in some languages, prepositions (see chapter 3 for a detailed discussion of prepositions in Ukrainian) are not valued for their φ-features in the lexicon and are, therefore, also subject to agreement. I assume that agreement between the preposition and the noun phrase is minimally distinct from that between the functional verbal head and the noun phrase and also results in case assignment. The value for gender and number is specified in the NP template and the value for case is specified in the feature template of the preposition. These values are shared by both the noun and the preposition as the result of agreement:

61. P: {cat(nom[13]), gen([33]), num([25]), case(loc[40])), F(7)}
NP: {cat(nom[13]), gen(fem[33]), num(sg[25]), case([40])), F(0)}

However, while the categorial feature values of the noun and of the verb are distinct and no categorial feature unification takes place, the categorial feature values of the preposition and the noun are the same and, therefore, non-distinct. Non-distinctness of two categorial features results in feature unification under agreement. The categorial feature unification reflects the fact that the preposition and the noun form a unique extended projection under agreement. The MCL algorithm will, therefore, correctly enforce a proper F-value ordering between these two items in the course of linearization of the syntactic structure at PF.

Similarly, the φ-features of the adjective are not valued in the lexicon and are valued in narrow syntax through agreement with the noun. While the gender and the number features of the adjective are valued in the course of agreement, the case feature of the noun and the adjective is unified but not valued because the noun is underspecified for case in the lexicon. Since the categorial feature of the adjective is underspecified and, therefore, non-distinct from the categorial feature of the noun, the categorial features of the noun and the adjective are unified in the course of agreement as well:

62. AP: {cat([22]), gen([33]), num([25]), case([40])), F(0)}
NP: {cat(nom[22]), gen(fem[33]), num(sg[25]), case([40])), F(0)}

The unification of the categorial feature of the adjective and the noun reflects the fact that adjectives, albeit not being heads of the extended nominal projection, are tightly associated with this extended projection as the result of agreement. The behavior of adjectives in discontinuous constituents examined in the remainder of this dissertation

demonstrates that such association affects the distribution of nominal functional categories in relation to adjectival phrases.

1.4 Summary

In this chapter, I offered a new type of linearization algorithm that combines the structure driven principle of the LCA of Kayne (1994) with the F-value ordering principle of Grimshaw (2005). The LCA associates a hierarchical representation with the linear ordering by making use of the relation of asymmetric c-command between non-terminal nodes in a phrase marker. By establishing a correlation between the asymmetric c-command and the F-value based ordering of heads of an extended projection, I formulated a well-formedness condition on the linearization of syntactic structure: the Mapping Constraint on Linearization for Head-initial Languages (MCL-HI). The implementation of the MCL-HI proposed here is conceived as a linearization algorithm which ensures that the linear representation is faithful to the F-value ordering principle. Like the LCA, the MCL algorithm generates a maximal set of pairs of non-terminals that are characterized by the relation of asymmetric c-command. After this set is generated, the F-value ordering mechanism is activated. The output of this mechanism is then used to produce the linear ordering of items. The MCL algorithm, as formulated in this chapter, applies only to head-initial languages. The MCL-HI constraint, on which it is based, translates F-value ordering into linear precedence at PF. This, however, has the potential to account for variation in the directionality of headedness in different languages by parametrizing the linearization mechanism rather than syntactic structure. While in head-initial languages F-value ordering of heads of the extended projection is

translated at the interface with PF into the relation of precedence, in head-final languages, it is translated into the relation of succession. The implementation of this idea is left for further research.

The impact of the MCL-HI constraint on the linearization of syntactic structure was illustrated by examining the linearization of extended projections that have been affected by movement transformations. Whenever a movement operation separates the lexical item from the functional items with which it forms an extended projection in the narrow syntax, the MCL algorithm linearizes the functional items preceding this lexical item, thus restoring at PF the F-value ordering which defines the relations between lexical and functional heads. The MCL algorithm, therefore, restricts the output of both XP movement and head movement. It licenses only those instances of head movement within the extended projection that comply with Travis's (1984) Head Movement Constraint while producing no linearization for the structures that violate this constraint. Travis's (1984) Head Movement Constraint is formulated in terms of government—a notion that is no longer considered theoretically viable. The MCL algorithm achieves similar result without the recourse to government. Kayne's (1994) LCA does not admit syntactic structures with multiple adjuncts or specifier. However, it was argued that multiple adjunction and multiple specifiers provide a better way of accounting for a variety of phenomena cross-linguistically. I revised the definition of asymmetric c-command of Kayne (1994) in order to enable the MCL algorithm to linearize structures with multiple adjuncts. The revised definition of asymmetric c-command offered in this chapter allows one to maintain a more sparse syntactic structure.

The MCL algorithm relies on the idea that an extended projection can be identified uniquely within a syntactic structure. To achieve this, I appealed to agreement as a syntactic process that involves feature valuation and feature sharing, as proposed by Pesetsky and Torrego (2007). On this view of agreement, valuation of features does not introduce new valued occurrences of the features into the derivation but converts distinct occurrences of a particular feature into instances of the same feature. I adopted Chomsky's (2000, 2001) mechanism of ancillary feature checking and posited that agreement affects all the features associated with a given syntactic node simultaneously. An unvalued feature establishes an agreement relation between two syntactic nodes and all the features of these two nodes eligible for unification are unified as the result of agreement. As a result, two categorial features can be unified when the items that carry these features stand in an agreement relation with each other and the values of these features are non-distinct. I assumed that a head of an extended projection establishes an agreement relation with its complement and, as the result of this agreement, the feature information inside the extended projection is shared, making the mechanism of feature percolation redundant. Agreement is, therefore, treated as a vehicle of extended projection formation. It ensures that any given extended projection is not only characterized by the consistency of the categorial feature values of its heads, but is in fact associated with the same categorial feature. Each extended projection is thus identified uniquely as a syntactic item all heads of which share the same categorial feature.

Part Two

Discontinuous Constituents

Chapter 2. Constituent Discontinuity as Long-distance Concord

2.0 Introduction

The term *discontinuous constituent* is used to denote any interrupted sequence of items in

a linear string that could otherwise be considered a single phrasal constituent in the

language:

63. *Ukrainian*:
  a) **Ivan**   **kupyv**   <u>**velyku**</u>   <u>**kvartyru**</u>
      John.NOM   bought   big.F.SG.ACC   apartment.F.SG.ACC
      "John bought a big apartment"

  b) <u>**Velyku**</u>   **Ivan**   **kupyv**   <u>**kvartyru**</u>
      big.F.SG.ACC   John.NOM bought   apartment.F.SG.ACC
      "John bought a BIG apartment"

Thus, in (63b), the adjective separated from the noun it modifies by other syntactic

material forms a discontinuous constituent with this noun. The term *discontinuous*

constituent is an oxymoron from the point of view of the standard concept of

constituency, which is rooted in the theory of phrase structure and requires structural

adjacency between all items that form a constituent. However, the items within a phrasal

constituent are characterized not only by purely structural syntactic relations but also by

non-structural syntactic relations such as agreement. Chomsky (2000, 2001) dissociates

agreement from structural adjacency. Merge and Agree are posited as two independent

operations of grammar. Merge establishes structural adjacency between the items it

applies to while Agree establishes feature sharing between the items it applies to (in the

implementation of agreement proposed in Pesetsky and Torrego (2007) and adopted

here). Since feature sharing does not require structural adjacency, a modifier can in principle be base-generated at a distance from the noun and enter into an agreement relation with this noun while not being adjacent to it. In this chapter, I argue that constituent discontinuity in (63b) is indeed the result of long-distance concord between the adjectival modifier, base-generated at a distance from the noun it modifies, and the noun rather than the product of movement transformations that split a phrasal constituent into two parts.

In section 2.1, I examine discontinuous constituents from the point of view of the syntactic relations between the parts of the discontinuous constituent. The parts of a discontinuous constituent can stand in an agreement relation to each other (A-type discontinuity) or in an operator-variable relation to each other (O-type discontinuity). I advance the Radical Discontinuity Hypothesis and claim that A-type discontinuous constituents are licensed by long-distance concord and do not map onto a phrasal constituent at any point in the derivation. In section 2.2, I adopt Baker's (2003) treatment of adjectives as a default lexical category that can be generated in any syntactic position in the clause as long as that position permits free adjunction and argue that both in (63a) and in (63b) the adjectival modifier is base-generated in the location in which it is spelled out, either as an adjunct inside the noun phrase or as an adjunct inside the verb phrase. An adjectival modifier base-generated at a distance from the noun it modifies is licensed by agreement with the noun in the same way as the adjectival modifier base-generated inside the noun phrase. In section 2.3, I examine the derivation of basic linear discontinuous constituents in Ukrainian, i.e. discontinuous constituents in which the

adjective precedes the noun. In section 2.4, provide a brief overview of the information structure of the utterances in Ukrainian and discuss the pragmatic aspects of discontinuous constituents. In section 2.5, I examine the mechanism of noun-adjective reordering, which generates inverse discontinuous constituents. In section 2.5, I provide the summary of the chapter.

2.1 Typology of Discontinuous Constituents

A standard concept of syntactic constituency is rooted in the theory of phrase structure and requires adjacency between all the items that form a constituent. The items that form a single constituent, however, relate to each other not only in terms of structural adjacency but also in terms of non-structural syntactic relations such as agreement or operator-variable relation, as the data in (64) show:

64.
   a) *Ukrainian***:**

Ivan	**červonu**	**kupyv**	**mašynu**
John.NOM	red.F.SG.ACC	bought	car.F.SG.ACC

"John bought a RED car"

   b) *Modern Greek***:**

O	Janis	**megala**	**agorazi**	**mila**
the.M.SG.NOM	John.NOM	big.N.PL.ACC	buys	apple.N.PL.ACC

"John buys BIG apples"

   c) *French***:**

Combien	**as-tu**	**lu**	**de livres**?
How-many	have-you	read	of books

"How many books have you read?

(Obenauer (1976), Butler & Mathieu (2004):2)

   d) *Mohawk***:**

Ka nikáyʌ	**wa-há-kʌ-'**	**(ne)**	**kwéskwes**?
Which	FACT-MsS/ZsO-see-PUNC	NE	pig

"Which pig did he see?"

(Baker (1996):158)

In a discontinuous constituent in (64a) and (64b), the parts of the interrupted sequence stand in an agreement relation to each other: they share case and φ-features. I will refer to the discontinuous constituents of this type as A-type discontinuous constituents. In a discontinuous constituent in (64c) and (64d), the parts of the interrupted sequence stand in an operator-variable relation to each other.   I will refer to this type of discontinuity as the O-type.

The two types of discontinuous constituents are not distributed equally across languages. Compare, in this respect, the following data from Ukrainian and French (see Obenauer (1976, 1983), Mathieu (2002, 2004b), Butler & Mathieu (2004) for studies of discontinuous constituents in French):

Ukrainian:

65.
   a) **Ivan**   **<u>červonu</u>**   **rozbyv**   **<u>tarilku</u>**
      John.NOM   red.F.SG.ACC   broke   plate.F.SG.ACC
      "John broke the RED plate"

   b) **<u>Skil'ky</u>**   **propalo**   **<u>knyžok?</u>**
      How-many   disappeared book.PL.GEN
      "How many books disappeared?"

French:

66.
   a) *<u>Une belle</u>   **j'ai**   **trouvé** **<u>chemise</u>**
      a   beautiful I have   found   shirt
      "I have found a BEAUTIFUL shirt"

   b) **<u>Combien</u>**   **as-tu**   **lu**   **<u>de livres?</u>**
      How-many   have-you read   of   books
      "How many books have you read?

                                                 (Matheiu (2004b): 94)

While Ukrainian exhibits both A-type and O-type discontinuity, French appears to have only O-type discontinuity. A-type and O-type discontinuous constituents vary not only in terms of their distribution across languages but also in terms of their properties. A-type discontinuous constituents in Ukrainian allow re-ordering of the parts of the discontinuous constituent while O-type discontinuity in French requires a fixed order:

Ukrainian:

67.
a) **Ivan** **_červonu_** **rozbyv** **_tarilku_**
John.NOM red.F.SG.ACC broke plate.F.SG.ACC
"John broke the RED plate"

b) **Ivan** **_tarilku_** **rozbyv** **_červonu_**
John.NOM plate.F.SG.ACC broke red.F.SG.ACC
"As for the plate John broke, it is a/the RED one"

French:

68.
a) **Combien** **as-tu** **lu** **de livres?**
How-many have-you read of books
"How many books have you read?

b) * **De livres** **as-tu** **lu** **combien?**
of books have-you read how-many

A-type discontinuity is not blocked by other operators, such as negation. O-type discontinuity is subject to intervention effects:

Ukrainian:

69.
a) **Ivan** **_červonu_** **ne rozbyv** **tarilku**
John.NOM red.F.SG.ACC not broke plate.F.SG.ACC
"John did not break the RED plate"

b) **Ivan** **_tarilku_** **ne rozbyv** **_červonu_**
John.NOM plate.F.SG.ACC not broke red.F.SG.ACC
"As for the plate John did not break, it is a/the RED one"

French:

70. *__Combien__   n'   __as-tu__   __pas__   __lu__   __de livres__?*
How-many   NEG   have-you   not   read   of   books
"How many books have you not read?

<div align="right">(Mathieu (2004b): 97-98)</div>

The differences in distribution and different properties of A-type and O-type

discontinuous constituents warrant considering these two types of discontinuity

independently of each other.

One of the difficulties in providing a uniform analysis for different types of discontinuous

constituents resides in the availability of hybrid types of discontinuous constituents.

O-type discontinuous constituents in the languages that also have A-type discontinuity

exhibit many properties of A-type discontinuous constituents. For instance, parts of the

O-type discontinuous constituent in Ukrainian can be re-ordered and are not sensitive to

intervening operators:

Ukrainian:

71.
  a) Ivan   __jaku__   __rozbyv__   __tarilku__?
      John.NOM   which.F.SG.ACC   broke   plate.F.SG.ACC
      "What kind of a plate did John break?"

  b) Ivan   __tarilku__   __rozbyv__   __jaku__?
      John.NOM   plate.F.SG.ACC   broke   which.F.SG.ACC
      "As for a/the plate John broke, which kind is it?"

72.
  a) Ivan   __jaku__   __ne__   __rozbyv__   __tarilku__?
      John.NOM   which.F.SG.ACC   not   broke   plate.F.SG.ACC
      "WHICH plate didn't John break?"

  b) Ivan   __tarilku__   __ne__   __rozbyv__   __jaku__?
      John.NOM   plate.F.SG.ACC   not   broke   which.F.SG.ACC
      "As for the plate John did not break, which one is that?"

Note, however, that discontinuous constituents in (71) and (72) are of a hybrid type: they are both O-type and A-type discontinuous constituents. The parts of the discontinuous constituent in (71) and in (72) stand both in an operator-variable and in an agreement relation to each other. According to Mathieu (2004a, b), French also has a discontinuous construction that combines adjectival modification with a *de* copular structure, even though this construction is not accepted by all speakers of the language (Depréz, p.c.):

French:

73.
  a) <u>**Le   grand**</u>, **je   veux** <u>**de café   latte**</u>**!**
     The   tall   I   want   of café   latte
     "I want the TALL café latte (i.e. not the small one)."

                                                                    (Mathieu (2004a): 325)

  b) <u>**Une   belle,**</u>   **j'ai**   **trouvé** <u>**de chemise**</u>
     a   beautiful   I have   found   of   shirt
     "I have found a BEAUTIFUL shirt (i.e. not a horrible one)."

  c) * <u>**Une   belle,**</u>   **j'ai**   **pas**   **trouvé** <u>**de chemise**</u>
     a   beautiful   I have   not   found   of   shirt
     (*"I have not found a BEAUTIFUL shirt."*)

                                                                    (Mathieu (2004b): 101)

This construction shares properties with the O-type discontinuous constituents rather than the A-type. In order to provide an accurate account of how the A-type and O-type properties interact in hybrid types of discontinuous constituents, one should first understand the properties of each type of discontinuity in isolation.

In this dissertation, I focus exclusively on the A-type discontinuity. I examine A-type discontinuous constituents in Ukrainian and Modern Greek with the following hypothesis in mind:

74. Radical Discontinuity Hypothesis (RDH)
     A-type discontinuous constituents do not map onto a phrasal constituent at any point
     in the derivation.

This is a major departure from the standard treatment of discontinuous constituents as

regular phrasal constituents that are split into several parts as the result of movement

transformations (see Zabrocki (1984), Borsley and Jaworska (1988), Van Riemsdijk

(1989), Corver (1990, 1992), Yearley (1993), Franks and Progovac (1994), Junghanns

and Zybatow (1995), Androutsopoulou (1997, 1998), Sekerina (1997, 1999), Fanselow &

Čavar (2001, 2002), Bašić (2004), Bošković (2005), Franks (2007), Pereltsvaig (2008)).

Since in Government and Binding Theory (Chomsky (1981)) agreement-based relations

have been subordinated to purely structural relations, this was the only option available.

Both case-assignment and concord could occur only when the items were structurally

adjacent to each other (stood in the specifier-head relation to each other). Chomsky

(2000, 2001), however, dissociates agreement from structural adjacency. Agreement can

be established between the items that are structurally non-adjacent to each other. Merge

and Agree are posited as two independent operations of grammar. Merge establishes

structural adjacency between the items to which it applies while Agree establishes feature

sharing between the items it applies to (see chapter 1, section 1.3, for a discussion of

Pesetsky and Torrego's (2007) concept of agreement as feature sharing which is adopted

here). The Radical Discontinuity Hypothesis follows from the postulate that agreement

can be established between two items that are not adjacent to each other. As long as

feature sharing is allowed to occur without structural adjacency, the items that can form a

single phrasal constituent may be generated at a distance from each other, forming an

abstract constituent through long-distance concord rather than structural adjacency. As a

result, they do not map onto a single phrasal constituent at any point in the derivation. Since A-type discontinuity is the only type of discontinuity considered here, I will use the term discontinuous constituent to refer to the A-type discontinuous constituents, unless noted otherwise.

2.2 Long-distance Concord: Syntactic Considerations

The existence of abstract constituents that result from long-distance concord rather than structural adjacency of parts rests on the assumption that adjectives are not required to be generated locally, in the immediate vicinity of the noun they modify. In this respect they differ both from nominal arguments of the verb and from functional categories. Unlike arguments, they are not bound by the theta-theory and are not required to be generated in theta positions (see Hale & Keyser (1993) for a structural treatment of theta role assignment and argumenthood, Baker (2003) for linking theta-role binding to nominal properties). Unlike nominal functional categories, adjectival modifiers are not bound to the noun by the theory of extended projection either (see Grimshaw (2005) on locality of extended projections). Syntactically, adjectival modifiers have long been analyzed as adjuncts (see, for instance, Sproat and Shih (1988, 1991), Bernstein, (1991), Lamarche (1991), Valois (1991), Baker (2003); see, however, Abney (1987), Kayne (1994), Alexiadou (2001), Den Dikken (2006) for alternative treatments of adjectives). Baker (2003) argues that the ability of adjectives to act as bare adjuncts results from their uniqueness as a lexical category, distinct from either verbs or nouns. Verbs are prototypical predicates of natural language and their categorial status is defined in terms of having a specifier. The prototypical function of nouns is to refer. Their categorial

status is, therefore, defined in terms of having a criterion of identity, formalized by Baker (2003) as a referential index. Adjectives are defined in negative terms as neither having a specifier nor a referential index. Since they don't have a specifier, they cannot appear in predicative environments without the support of a predicative head, which is often marked on the surface with a copula. Since they don't have a referential index, they cannot appear in an argument position. Adjectives can appear only in those syntactic environments that do not require either a specifier or a referential index. Adjunction is one such environment.   It follows from Baker's (2003) theory of lexical categories that the categorial nature of each lexical item determines the environment in which it is generated. The distribution of verbs and nouns is rigidly structured in terms of the argument relations between them. In comparison, adjectives are relatively free and can be generated in a variety of environments.

I adopt Baker's (2003) treatment of adjectives as a default lexical category that can be generated in any syntactic position in the clause as long as that position permits free adjunction. Furthermore, I claim that both in a regular noun phrase in (75a) and in the discontinuous noun phrases in (75b-c) the modifier is generated in the position in which it is spelled out:

75. *Ukrainian*:
   a) **Ivan**   **kupyv**   **velyku**   **kvartyru**
      John.NOM   bought   big.F.SG.ACC   apartment.F.SG.ACC
      "John bought a big apartment"

   b) **Ivan**   **velyku**   **kupyv**   **kvartyru**
      John.NOM   big.F.SG.ACC   bought   apartment.F.SG.ACC
      "John bought a BIG apartment"

c) **Velyku**   **Ivan**   **kupyv**   **kvartyru**
big.F.SG.ACC   John.NOM   bought   apartment.F.SG.ACC
"John bought a BIG apartment"

In (75a), the modifier is adjoined directly to NP while in (75b-c) it is adjoined higher in the tree to the verbal projection, either vP or TP. Both vP and TP are standard sites for adjunction, so a modifier should be allowed to adjoin there. An adjectival modifier base-generated at a distance from the noun it modifies is licensed by agreement with the noun in the same way as the adjectival modifier base-generated inside the noun phrase is. In both cases, agreement is needed to value the features of the modifier and ensure full interpretation (see chapter 8 for a discussion of the semantic analysis of discontinuous constituents). Given the long-distance nature of agreement in general (Chomsky 2000, 2001), valuation of the features of the modifier should in principle be available both in (75a) and in (75b-c) as long as the modifier c-commands the noun and the noun is located in the same agreement domain with the modifier (see chapter 7 for a detailed discussion of agreement domains).

Consider the phrase marker in (76), which represents the structure of the sentence in (75a). Note that this and all subsequent phrase markers are intended as an illustration of the key phenomena discussed and not as a comprehensive analysis of the overall syntactic structure of the sentence. I, therefore, posit the minimum of movement transformations and phrase structure needed to derive the phrase markers in question and omit irrelevant finer details whenever possible. I also assume that Ukrainian noun phrases are bare NPs that do not project any functional structure. This somewhat simplified treatment of NPs in Ukrainian is resorted to for the purposes of exposition to

draw a contrast between the distribution of lexical and functional items in discontinuous constituents. It is justified given that the language does not have overt determiners. I remain agnostic throughout this dissertation as to whether the languages without determiners project a DP layer (compare Cinque (1999) and Grimshaw (2005)). I discuss the distribution of discontinuous DPs in chapter 4 on the basis of Modern Greek—a language with a range of overt determiners.

76.

Iván
John.NOM
"John bought a big apartment"

kupyv **velyku** **kvartyru**
bought big.F.SG.ACC apartment.F.SG.ACC
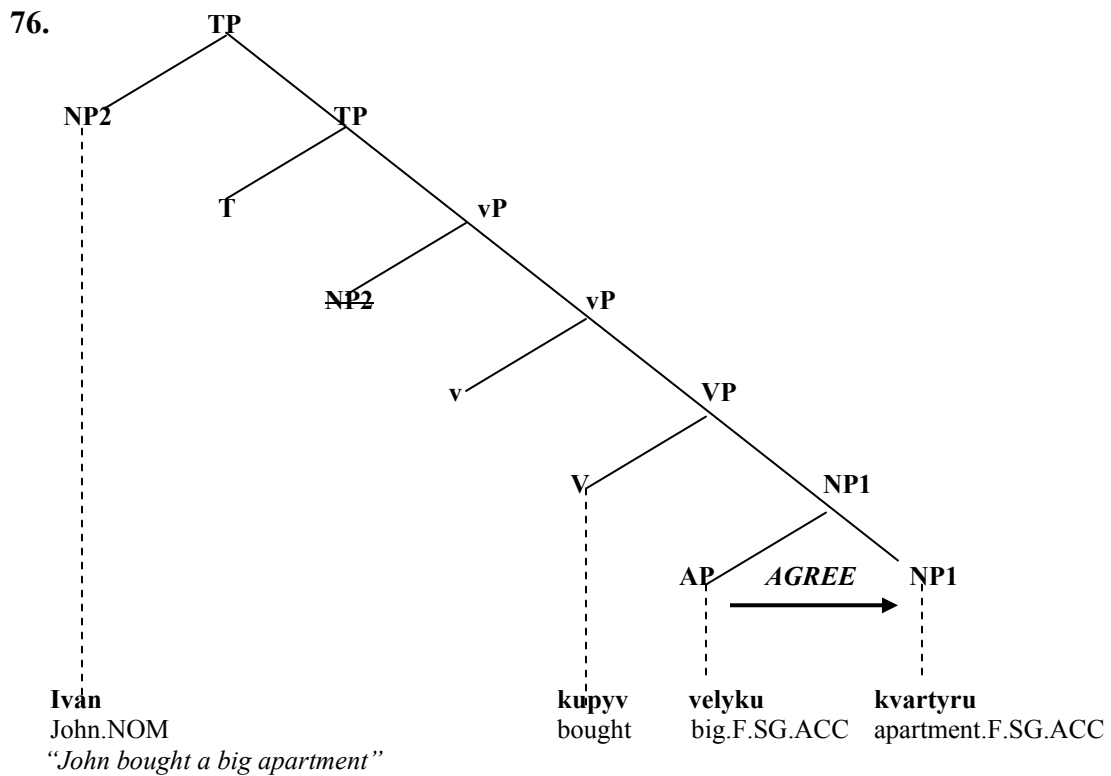
The syntactic nodes in the phrase marker in (76) are associated with the following simplified feature templates. The notation system is discussed in detail in chapter 1, section 1.3. the F-values in the templates below are assigned for the purposes of illustration only and are not intended as a statement of the true F-value of these items in the Universal Grammar:

77.   NP2: {cat(nom[ ]), gen(masc[ ]), num(sg[ ]), case([ ])), F(0)}
　　　　 NP1: {cat(nom[ ]), gen(fem[ ]), num(sg[ ]), case([ ])), F(0)}
　　　　 v:　 {cat(verb[ ]), gen([ ]), num([ ]), case(acc[ ])), F(3)}

V: {cat(verb[ ], gen([ ]), num([ ]), case([ ]), F(0)}
AP: {cat([ ]), gen([ ]), num([ ]), case([ ])), F(0)}
T: {cat(verb[ ]), gen([ ]), num([ ]), case(nom[ ])), F(5)}

There are three key agreement interactions that take place in (76). The index numbers in square brackets are chosen at random and track agreement relations that have been established, thus differentiating between two instances or two occurrences of a given feature:

78.

a) *Adjectival modification:*
    AP: {cat([5]), gen([10]), num([15]), case([20])), F(0)}
    NP1: {cat(nom[5]), gen(fem[10]), num(sg[15]), case([20])), F(0)}

b) *Case assignment by v:*
    v: {cat(verb[3]), gen([10]), num([15]), case(acc[20])), F(3)}
    NP1: {cat(nom[5]), gen(fem[10]), num(sg[15]), case([20])), F(0)}

c) *Case assignment by T:*
    T: {cat(verb[3]), gen([25]), num([30]), case(nom[35])), F(5)}
    NP2: {cat(nom[7]), gen(masc[25]), num(sg[30]), case([35])), F(0)}

Adjective, v, and T each have unvalued φ-features. These features have to be valued in narrow syntax in order for these syntactic items to be licensed and for the derivation to succeed. C-command requirements are satisfied and agreement can be established. Since feature unification affects all non-distinct features in the feature templates of the items that stand in an agreement relation with each other in narrow syntax, the case features and the categorial features are unified when non-distinct (see chapter 1, section 1.3, for a detailed discussion of the implementation of agreement mechanism used here).

Consider now the phrase marker in (79), which represents the structure of the sentence in (75b):

79.

TP

NP2   TP

T   vP

AP   vP   *AGREE*

N̶P̶2̶   vP

v   VP

V   NP1

Ivan	**velyku**	**kupyv**	**kvartyru**
John.NOM	big.F.SG.ACC	bought	apartment.F.SG.ACC

"John bought a BIG apartment"
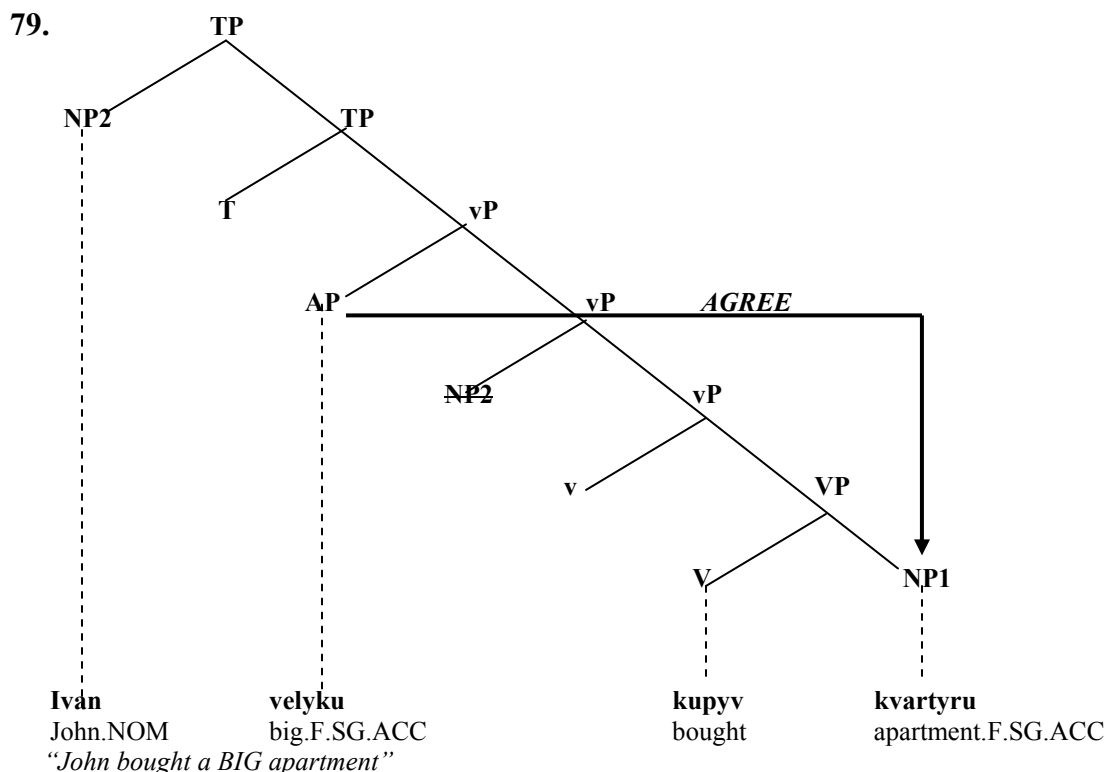
In (79), the adjective is generated as an adjunct to vP rather than to NP. Given the long-distance nature of agreement, the adjective should, in principle, be able to establish an agreement relation with the noun it c-commands even when it is not adjoined directly to it. In (79), the adjective, adjoined to vP, c-commands NP1 and establishes an agreement relation with this NP. It is, therefore, licensed in this location through agreement with NP1 in essentially the same way as it is licensed in (76) where it is adjoined directly to this NP. Base-generation of the adjective at a distance from the noun and long-distance concord that licenses such base-generation produce a basic discontinuous noun phrase in Ukrainian. Since there are no pre-existing syntactic obstacles for positing the existence of long-distance modification. Long-distance modification can only be questioned on semantic grounds. A modifier in order to comply with the principle of full interpretation (Chomsky (1986, 1995b)) has to be interpreted in relation to the noun it modifies. In

chapter 8, I demonstrate that such interpretation is available once agreement information is taken as an input into semantic analysis**.**

2.3 Linear Discontinuous Noun Phrases

I refer to discontinuous constituents in which the modifier surfaces before the noun it modifies as *linear discontinuous constituents*. In the previous section, I argue that in linear discontinuous constituents the modifier is generated at a distance from the noun and is licensed by long-distance concord. I exemplify this claim by looking at the structure in which the modifier is generated as a vP adjunct and surfaces between the subject and the verb in a simple transitive sentence. In Ukrainian, the long-distance modifier can, however, appear either before the subject of the sentence or after it:

80.
   a) **Ivan**   **velyku**   **kupyv**   **mašynu**
   John.NOM   big.F.SG.ACC bought   car.F.SG.ACC
   "John bought a BIG car"

   b) **Velyku**   **Ivan**   **kupyv**   **mašynu**
   big.F.SG.ACC John.NOM   bought   car.F.SG.ACC
   "John bought a BIG car"

If EPP on T is universally strong, as posited in Chomsky (1995b) and argued for in Alexiadou and Anagnostopoulou (1998), both in (80a) and (80b) the subject could be located in the specifier of TP with the modifier adjoined higher to TP. Kuroda (1988), Bailyn (2004), Miyagawa (2005), and others, however, argue that in scrambling languages the EPP feature on T can be satisfied by items other than the subject. If this is the case, then the sentence in (80b) can be derived without raising the subject to T. The modifier generated as a TP adjunct could satisfy the universal EPP on T.

Consider the phrase marker in (81), which represents the structure of the sentence in (80b) under the optional subject raising analysis:

81.

```
                    TP
                   /  \
                 /      \
               AP        TP
               ¦        /  \
               ¦       T    vP
               ¦           /  \
               ¦         NP2   vP
               ¦          ¦    / \
               ¦          ¦   v   VP
               ¦          ¦   ¦   / \
               ¦          ¦   ¦  V   NP1
               ¦          ¦   ¦  ¦    ¦
            Velyku      Ivan  kupyv  mašynu
            big.F.SG.ACC John.NOM bought car.F.SG.ACC
              "John bought a BIG car."
```
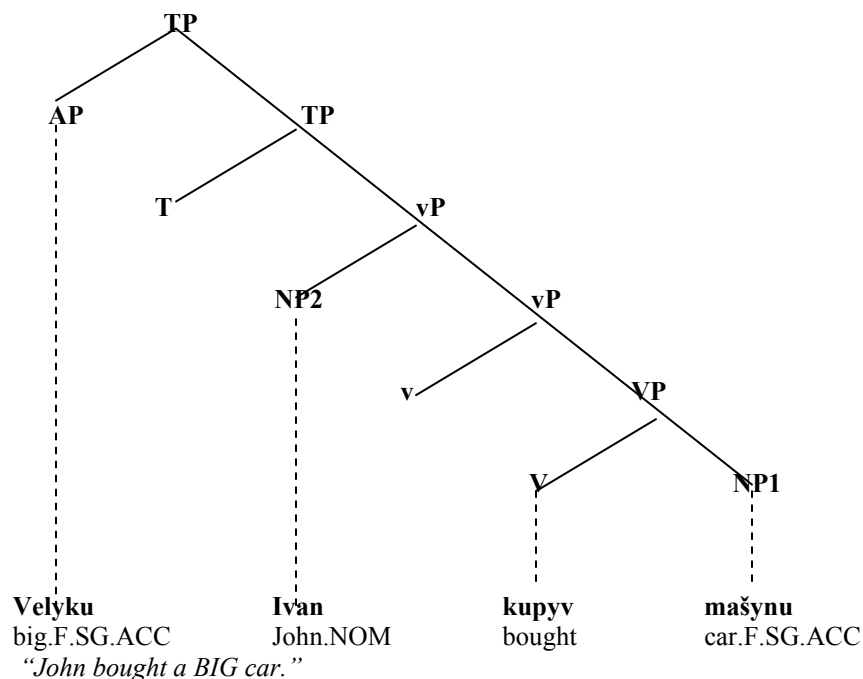
In the phrase marker in (81), the subject of the sentence is not raised to T but remains in its in situ position inside the vP. Note that the subject does not cause intervention effects and allows the agreement between the modifier and the object to go through. As is argued in chapter 7, items located within the same agreement domain are equidistant to a probe and several paths for agreement are available. I will return to this point at the end of this section.

Further support for locating the subject in (80b) inside the vP comes from the availability of the subject-verb reordering in the sentences with discontinuous direct objects:

82.
  a) **Velyku**   **kupyv**   **Ivan**   **mašynu**
      big.F.SG.ACC bought   John.NOM   car.F.SG.ACC
      "John bought a BIG car"

b) Kupyv   velyku   Ivan   mašynu
bought   big.F.SG.ACC John.NOM   car.F.SG.ACC
"John bought a BIG car"

The sentence in (82a) differs minimally from the sentence in (80b): the verb precedes

rather than follows the subject. This difference can be easily accounted for by positing

that the verb in (82a) raises to T, as shown in the phrase marker in (83):

83.

Velyku   kupyv   Ivan   mašynu
big.F.SG.ACC bought   John.NOM   car.F.SG.ACC
"John bought a BIG car"
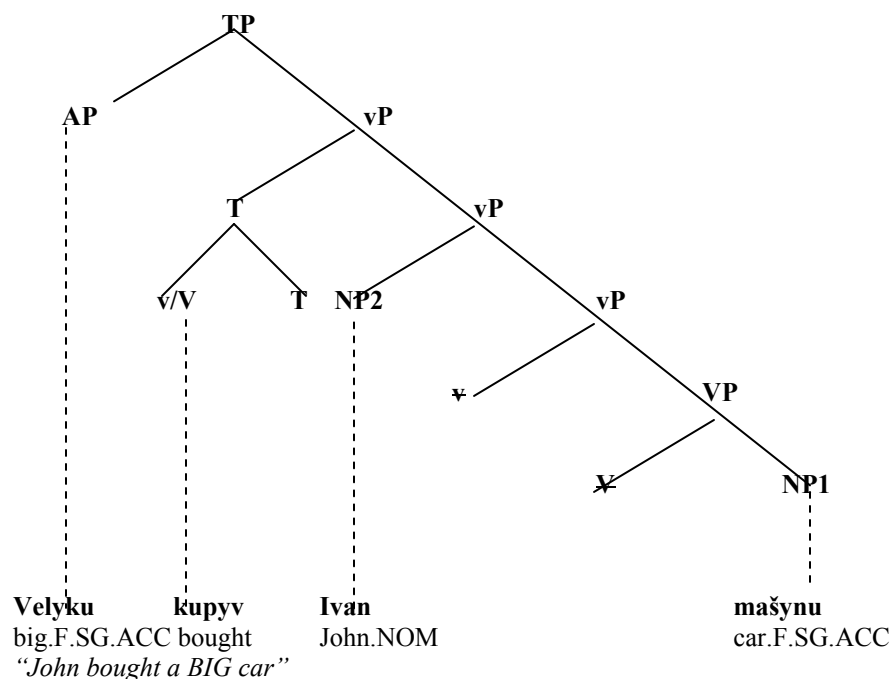
The availability of re-ordering between the verb and the subject favors, even though it

does not necessarily prove, the analysis of (80b) whereby the subject remains in its in situ

position. If EPP on T has a universal force, the sentence in (82b) can be derived from

(82a) by further raising of the verb to C. If EPP on T does not have a universal force or

can be satisfied by verb raising to T, the sentence in (82b) can be derived with fewer

syntactic transformations by assuming that the modifier adjoins to vP with the verb

remaining in T. I will leave this and other fine details of the derivations open for debate.

So far we looked only at the cases of direct object discontinuity. Discontinuity in

Ukrainian, however, is not restricted to direct objects. It is independent of the syntactic

function of the item and is also possible for subjects, indirect objects, and PP adjuncts:

84.
  a) **Trojandy**   **vysokyj**   **kupyv**   **xlopec.**
     roses.PL.ACC   tall.M.SG.NOM   bought   boy.M.SG.NOM
     "As for roses, a TALL boy bought them."

  b) **Trojandy**   **Ivan**   **vysokij**   **podaruvav**   **divčyni.**
     roses.PL.ACC   John.NOM   tall.F.SG.DAT   gave   girl.F.SG.DAT
     "As for roses, John gave them to a TALL girl"

  c) **Ivan v velykij**   **žyve**   **kavartyri**
     John in big.LOC   lives   apartment.LOC
     "John lives in a BIG apartment"

Subject discontinuity in Ukrainian is not restricted by the type of the main verb either.

The subjects of both unaccusative and ergative verbs can be made discontinuous:

85.
  a) **Malen'ka**   **propala**   **kiška**
     Small.F.SG.NOM   disappeared cat.F.SG.NOM
     "The SMALL cat disappeared"

  b) **Malen'kyj**   **plače**   **xlopčyk**
     Small.M.SG.NOM   cry.PRS young-boy.M.SG.NOM
     "A SMALL boy is crying"

  c) **Malen'kyj**   **plyve**   **korablyk**
     Small.M.SG.NOM   swim.PRS toy-boat.M.SG.NOM
     "A SMALL toy-boat is floating"

Not only the subject of an intransitive verb, but also the subject of the transitive verb can

be made discontinuous, as (84a) demonstrates. The availability of discontinuity with

various types of subjects and other arguments indicates that the modifier can enter into φ-

feature agreement with the noun independent of its syntactic function.

Consider, in this respect, the sentences in (86):

86.

   a) <u>**Velyki**</u>   **kupyv**   **xlopec**   <u>**trojandy**</u>

      big.PL.ACC   bought   boy.M.SG.NOM   roses.PL.ACC

      "The boy bought BIG roses"

   b) <u>**Velykyj**</u>   **kupyv**   <u>**xlopec**</u>   **trojandy**

      big.M.SG.NOM bought   boy.M.SG.NOM roses.PL.ACC

      "As for the OLDER boy, he bought ROSES"

The phrase marker in (87) represents the structure that could in principle correspond to both sentences in (86). The difference between the sentences in (86) manifests itself not in different structural relations between the items but in different agreement relations between them:

87.
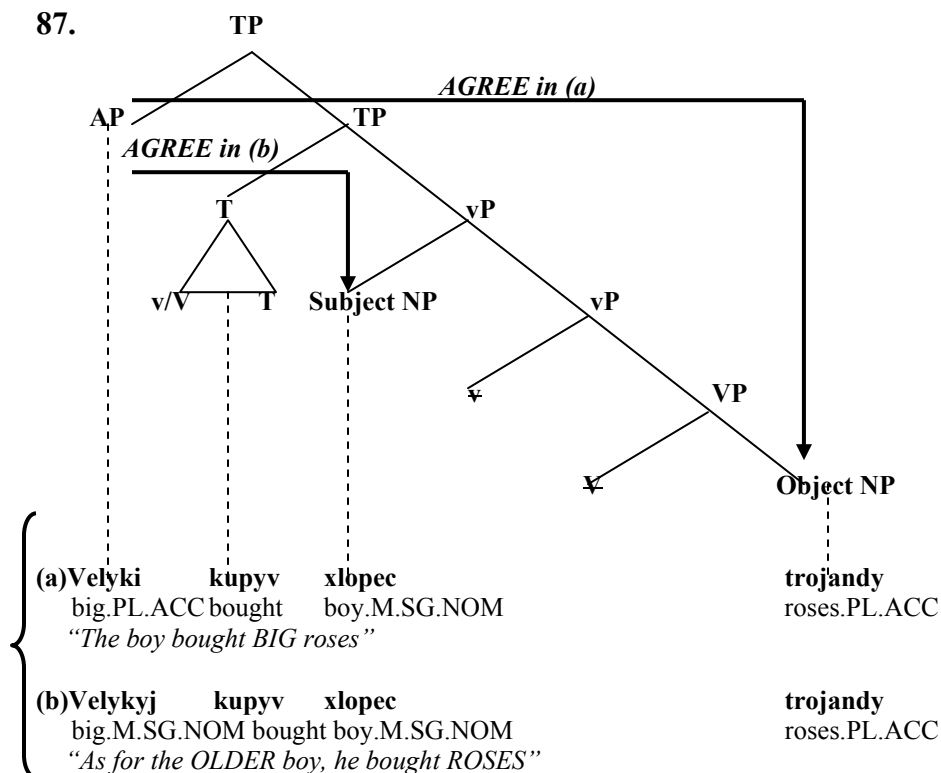
In (87), the adjective is adjoined to TP and c-commands both the subject NP and the object NP. Since, as discussed in chapter 7, agreement is not subject to intervention effects, both the subject and the object qualify as targets for agreement. The sentence in

(86a) results from the long-distance concord between the modifier and the object NP while the sentence in (86b) is the result of the long-distance concord between the modifier and the subject NP. As long as agreement relations in any given language are not required to be licensed under adjacency similar structural configurations can correspond to different sets of agreement relations.

Note that in (86b), the discontinuous subject is interpreted as a topic of the utterance. However, a long-distance modifier of the subject can also be focused. When this happens, the direct object is raised to the left periphery of the clause and acts as the topic of the sentence:

88.   **Trojandy   vysokyj   kupyv   xlopec**
       roses.PL.ACC   tall.M.SG.NOM bought   boy.M.SG.NOM
       "As for (the) roses, a TALL boy bought them"

The phrase marker in (89) represents the structure of the sentence in (88):

89.

Trojandy   vysokyj   kupyv   xlopec
roses.PL.ACC tall.M.SG.NOM bought   boy.M.SG.NOM
"As for(the) roses, a TALL boy bought them."
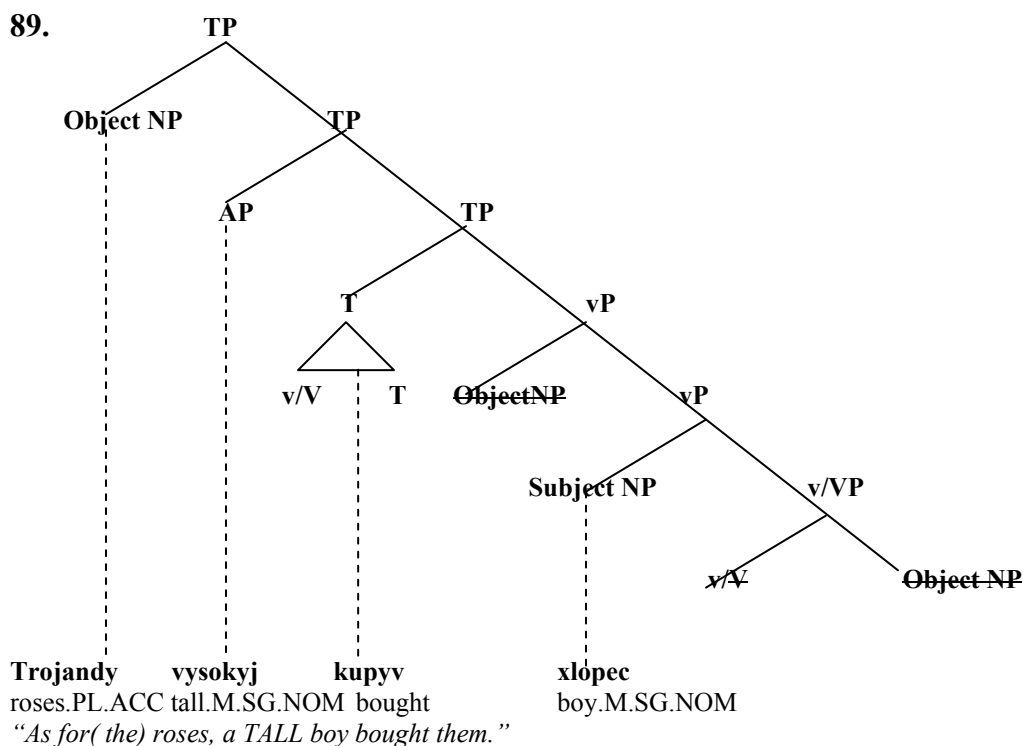
If the adjectival modifier adjoined to TP can satisfy the EPP feature on T, fronting of the direct object cannot be motivated by the universal EPP. It has been proposed that optional movement can be constrained in terms of its effect on outcome (see Fox (2000), Chomsky (2001), Reinhart (2006)). An optional movement is licensed only if it changes the informational-structural properties of the syntactic output. Fukui (1993), Kuroda (1988), Saito (1989, 1992, 2004), Saito and Fukui (1998) and Takano (1998), however, argued that scrambling in Japanese is an instance of movement that is fully optional and semantically vacuous. It is an instance of a PF-operation that has no visible LF effects. Ishihara (2000) and Miyagawa (2001, 2003, 2005, 2006) countered this view by demonstrating that most instances of scrambling in Japanese, even though semantically vacuous, are linked to the changes in the information structure of the utterance and, therefore, fall under the constraint on optional movement. Given this constraint on optional operations in syntax, the reordering of arguments as well as the distribution of long-distance modifiers in discontinuous constituents are expected to correlate with the changes in the information structure of the utterance in Ukrainian.

2.4 Discontinuous Constituents and Information Structure

Arguments of the verb can be freely reordered in an utterance in Ukrainian, and all orders are possible. The ordering of items in an utterance, however, is not random. It reflects the discourse functions of various items. Ukrainian, therefore, belongs to the group of the so-called discourse configurational languages (see Kiss, ed (1995) for an overview of the properties of discourse configurational languages). In Ukrainian, as in other Slavic languages, the items in an utterance are arranged from left to right in terms of the given

and new information (compare Mathesius (1939), Adamec (1966), Kovtunova (1976),

Švedova (1980), Babby (1980), Yokoyama (1986), Sgall et al. (1986)). The items that

carry new information appear closer to the end of an affirmative utterance while the items

that carry contextually salient information appear closer to the beginning of the utterance:

90. **-Xto** **kupyv** **cju** **mašynu?**
Who.NOM   bought   this.F.SG.ACC car.F.SG.ACC
"Who bought this car"

     -Cju **mašynu** **kupyv** **Ivan.**
This.F.SG.ACC   car.F.SG.ACC   bought   John.NOM
"JOHN bought this car"

In the second sentence of (90), *this car* appears at the beginning of the utterance since it

constitutes information that is available in the context at the time the sentence is uttered.

John appears at the end of the utterance since it constitutes information that is new in the

current context.

However, the items that add new information to the discourse can also appear in the

middle and at the beginning of the utterance in Ukrainian:

91. -Xto **kupyv** **cju** **mašynu?**
Who.NOM   bought   this.F.SG.ACC car.F.SG.ACC
"Who bought this car"

  a) **-Cju** **mašynu** **kupyv** **Ivan**
This.F.SG.ACC   car.F.SG.ACC   bought   John.NOM
"JOHN bought this car"

  b) **-Ivan** **kupyv** **cju** **mašynu**
John.NOM   bought   this.F.SG.ACC   car.F.SG.ACC
"It was JOHN who bought this car"

  c) **-Cju** **mašynu** **Ivan** **kupyv**
this.F.SG.ACC   car.F.SG.ACC   John.NOM   bought
"As for this car, it was JOHN who bought it."

The placement of the item that adds new information to the context is determined by how this information relates to the discourse at hand. In (91a), *John* contributes information which is not linked in any relevant way to previous discourse. The hearer is simply informed that the car was bought by John. In (91b-c), *John* also contributes new information to the discourse, but this information must be related to the discourse at hand, and its contextual relevance must be known to the interlocutors. The sentences in (91b-c) thus presuppose a set of alternative buyers of the car and single out John as the actual buyer.

There are two distinct ways of partitioning an utterance from the point of view of its pragmatic import. First of all, an utterance can be divided into focus and ground. Focus constitutes information that is new in the given context and is added to the discourse at hand. Ground consists of the information that is shared by the interlocutors, is presupposed, and forms a backdrop for the new information that is added (see Halliday (1967), Chomsky (1971, 1976), Jackendoff (1972), Chafe (1976), Prince (1986), Steedman (1991)). Alternatively, one can partition an utterance into topic and comment. Topic is contextually salient information that constitutes the main concern of the utterance while comment constitutes information that is predicated of the topic. The sentences, from this perspective, are said to be about the topic (see Halliday (1967), Stalnaker (1978), Reinhart (1982), Brown & Yule (1983), Gundel (1988)). Although both approaches to partitioning an utterance assume binarity of information structure, they produce distinct outcomes since they single out different items (either focus or topic) as the key vehicle of discourse structure. Vallduví (1992) conflates the two distinct ways

of partitioning an utterance and posits a hierarchical tripartite information structure, according to which, an utterance consists of focus and ground. Ground, in its turn, is partitioned into two parts: a link and a tail. A link is the most salient information in the ground that anchors the utterance to the discourse at hand. The concept of a link, therefore, overlaps with the traditional concept of topic, even though it is no longer connected to the concept of "aboutness" that was essential for defining a topic.

Vallduví (1992, 1994) builds his system of information packaging on the basis of Heim's (1982) File Change Semantics. He posits that each utterance comes with instructions of how information should be added to the discourse. A link singles out a card to which the focus information is added according to the instructions provided in the tail. In Vallduví (1992, 1994), the term "link" describes both the function which a particular part of an utterance performs and names this part of the utterance. I would like, however, to keep both notions apart. Therefore, I will, use the term "link" only when I want to emphasize the function of the item in the process of discourse update and will use the more traditional term "topic" to indicate the salient part of the ground that functions as a link. Thus, the sentence in (91a) has the following information structure:

92. **[[Cju   mašynu]$_{topic}$ [kupyv]$_{tail}$]$_{ground}$ [Ivan]$_{focus}$**
   this.F.SG.ACC   car.F.SG.ACC   bought   John.NOM
   "JOHN bought this car"

The topic links the sentence to the discourse at hand while the focus constitutes the contribution of the utterance to the discourse. As (92) shows, topics appear at the left edge of an utterance in Ukrainian while focus appears at the right edge of the utterance.

It has also been noticed that not all sentences add new information to the discourse in the same way. Some contributions to the discourse are cumulative while other contributions are contrastive (see Halliday (1967), Chafe (1976), Dik (1980), Lambrecht (1994)). Semantically, focus has been analyzed in terms of identification function. Cumulative focus instantiates some variable or parameter that is left underspecified in the context while contrastive focus performs identification with exclusion. Theories vary as to the precise implementation of contrastive focus. The key intuition, however, is that contrastive focus involves an identification operation that is performed over a closed set of individuals, scales, or propositions. Focus singles out a subset of individuals or values of which the predicate holds. Such identification creates a complement set of which the predicate does not hold: hence, it involves contrast based on exclusion (see Szabolcsi (1981a-b, 1983a), Kenesei (1986), Rooth (1985, 1996), Von Stechow (1991), Krifka (1991, 1992), Schwarzschild (1999) for various alternative implementations). Zubizarreta (1998) defines contrastive focus as a negation of the value assigned to a variable in the context. Contrastively focused items introduce an alternative value:

93.   John is wearing a RED shirt today (*not a blue shirt*). (Zubizarreta (1998): 7)

The sentences with contrastive focus are, on her account, expected to have either an overt or a covert negative tag. Erteschik-Shir (1997), on the other hand, differentiates between two related notions: contrastive focus and restrictive focus. The restrictive focus selects an individual from the contextually specified, or restrictive, set without contrasting this individual to any other specific individual in the set.   In the case of the contrastive focus, the restrictive set contains only one other value or individual. The restrictive focus is, therefore, a broader notion that encompasses the contrastive focus.

Discontinuous constituents have been consistently analyzed in terms of topic and focus features. It has been argued that topic and focus features assigned to various items inside a single constituent are checked in different locations by different subpart s of the constituent resulting in its partitioning (for different instantiations of this idea see, for instance, Fanselow & Čavar (2002) and Androutsopoulou (1997, 1998); a review of movement-based approaches to discontinuity is given in chapter 9). However, in linear discontinuous constituents in Ukrainian, when the adjective is focused, the noun is backgrounded rather than topicalized, so attributing discontinuity to the presence of two pragmatic features with opposite values is prone to undergenerate. Pereltsvaig (2008), along the lines of Vilkuna (1989), assumes that dislocation of an item to the left edge of an utterance is triggered by checking of the contrastive feature, distinct from the interpretable focus feature, assigned separately, thus associating linear discontinuous constituents in affirmative utterances with contrast. Bošković (2005), however, points out that discontinuity does not necessarily involve contrast, or negation of an alternative value. The adjectival modifier in discontinuous constituents can be pronounced with varying degree of phrasal prominence and is contrastive only when it is used with emphatic stress. Indeed, the notion of contrastive focus, understood as a negation of an alternative value, is far too narrow to describe all the uses associated with discontinuous constituents. Bošković's (2005) observation that discontinuity is not necessarily related to contrastive focus can, however, be accounted for by appealing to the concept of restrictive focus introduced in Erteschik-Shir (1997). The modifier in linear discontinuous constituents is associated with the more general restrictive function rather than its specific instantiation—contrastive focus.

In linear discontinuous constituents in Ukrainian, a modifier is indeed interpreted

restrictively rather than necessarily contrastively. It requires the presence of some salient

set of alternatives in discourse that are differentiated according to the property supplied

by the modifier. Compare, for instance, the interpretation of the sentences in (94):

94.
  a) **[Ivan   polyv]**$_{ground}$ **[červoni   trojandy]**$_{focus}$
     John.NOM   watered   red.PL.ACC   rose.PL.ACC
     "John watered the red roses"

  b) **[Červoni]**$_{focus}$ **[Ivan   polyv   trojandy]**$_{ground}$
     red.PL.ACC   John.NOM   watered rose.PL.ACC
     "John watered the RED roses"

The sentence in (94a) can have either of two available readings: (1) there were only red

roses planted in the garden (a non-restrictive use of the modifier) and (2) there were both

red and non-red roses planted in the garden (a restrictive use of the modifier). The

sentence in (94b), however, has only one reading available: it presupposes that there were

both red and non-red roses planted in the garden. The restrictive reading of this kind is

obligatory for the modifier in (94b). Note that when the discourse context in question

contains only two kinds of roses, red and white, the modifier could be assigned a

contrastive focus interpretation, which constitutes an instantiation of the restrictive focus

within the information structure proposed by Erteschik-Shir (1997).

Vallduví (1992, 1994) incorporates the notion of contrastive focus into his information

packaging schemata by arguing that the set or scale over which the value is defined is

part of the ground of the utterance while the specification of the value is the focus.

Contrastive focus, therefore, is a complex phenomenon that has a layered internal

structure. The focus value is supplied by the lexical item that receives contrastive focus

while the set/scale that forms the ground is provided by the discourse context. Because

of its complex nature, contrastive focus acts as a link in the information structure of the

utterance even though it adds new information to the context. Consider in this respect

once again the data in (91b-c). It shows that, like topics, contrastive/restrictive foci in

Ukrainian are aligned with the left edge of the utterance. The information structure of the

utterances in (91b-c) is marked up in (95):

95.

   a) **[Ivan]**_{focus}   **[kupyv**   **cju**   **mašynu]**_{ground}
      John.NOM   bought   this.F.SG.ACC car.F.SG.ACC
      "It was JOHN who bought this car"

   b) **[Cju**   **mašynu]**_{topic}   **[Ivan]**_{focus}   **[kupyv]**_{tail}
      this.F.SG.ACC car.F.SG.ACC   John.NOM   bought
      "As for this car, it was JOHN who bought it."

John constitutes a contrastive/restrictive focus of the utterance both in (95a) and in (95b).

In (95a), it appears at the left-edge of the utterance. In (95b), while also being aligned

with the left-edge of the utterance, *John* is preceded by another link—a topic of the

utterance. Since both topics and contrastive/restrictive foci are aligned with the left edge

of an utterance and share the property of being links, we can conclude that the ordering of

items in an utterance in Ukrainian is defined in relation to the function of a given item as

a link rather than its specific status as either a topic or a contrastive/restrictive focus. We,

therefore, can formulate a generalization regarding information ordering in Ukrainian

affirmative utterances, given that such utterances constitute a single discourse update

unit:

96.   Links are left-aligned

The ordering of links at the left edge of the utterance reflects the degree of salience of

items in the common ground.

Vallduví's (1992, 1994) treatment of contrastive focus can be extended to all instances of

restrictive focus discussed by Erteschik-Shir (1997) and can be applied to discontinuous

constituents in Ukrainian. As argued at the beginning of this chapter, the adjectival

modifier in Ukrainian can be generated either inside the noun phrase or at a distance from

it, at the left-edge of some syntactic domain, forming a discontinuous constituent with the

noun. Alignment of the long-distance modifier with the left-edge of a prosodically

significant syntactic domain is translated into restrictive interpretation at the interface and

the long-distance modifier is analyzed as a link to the discourse at hand. It follows from

this view that what matters for determining the pragmatic import of a particular item in

an utterance is its relative position in relation to other items in an utterance and intonation

assignment rather than an absolute site of its generation/landing. I assume that the

assignment of the restrictive interpretation to the modifier in linear discontinuous

constituents is the result of the alignment between the intonation structure of the

utterance in Ukrainian and the syntactic structure (compare Zubizarreta (1998),

Zubizarreta and Vergnaud (2006)). The intonation-to-syntactic structure mapping

determines the realization of the information structure of the utterance. Alignment plays

an important role in this mapping. Therefore different sites of adjunction of a long-

distance modifier are not associated in this dissertation with different fixed pragmatic

projections, as is often assumed within the theory of extended left periphery argued for in

Rizzi (1997). Rather, the syntactic structure provides a template for intonation

assignment and information structure mapping. This working hypothesis is taken for

granted in this dissertation and is not argued for further because a detailed study of all the

nuances of the information structure of Ukrainian is beyond the scope of this research

project. The choice of this approach over others, however, determines certain key aspects
of the syntactic analysis employed here. In particular, I forego positing multiple Topic
and Focus projection and assume that adjunction of various items at the left edge of
certain syntactic domains is read as pragmatic information at the interface, mediated by
intonation-to-syntactic structure mapping.[7]

2.5 NP Discontinuity and Inversion

Discontinuous constituents in Ukrainian are characterized by free noun-adjective order.

The adjectival modifier can appear either preceding or following the noun:

97.
  a) **Velyku**   **Ivan**   **kupyv**   **mašynu**
   big.F.SG.ACC   John.NOM   bought   car.F.SG.ACC
   "John bought a BIG car"

  b) **Mašynu**   **Ivan**   **kupyv**   **velyku**
   car.F.SG.ACC   John.NOM   bought   big.F.SG.ACC
   "As for the car John bought, it is a BIG one"

As expected, reordering of lexical items that form a discontinuous constituent alters the

information structure of an utterance. While in (97a) the modifier is left-aligned in the

utterance and acts as a link to the discourse at hand, in (97b) the noun is interpreted as the

topic of the utterance and links the utterance to the discourse. I refer to discontinuous

constituents in which the modifier follows the noun as *inverse discontinuous constituents*.

The syntactic mechanism of noun-adjective reordering deserves some attention. I assume

that nouns are always generated in their theta-positions and are dislocated by way of

movement. Two alternative analyses of noun-adjective reordering are possible. The

modifier can be generated inside the noun phrase followed by the extraction of the noun,

as illustrated in (98). The discontinuity here results from the sub-extraction of the noun

phrase from its own extended projection. The sub-extraction strands the rest of the

extended noun phrase, including the modifier.

98.

```
                        TP
                       /  \
          Object NP       TP
             ┊           /  \
             ┊    Subject NP    TP
             ┊        ┊        /  \
             ┊        ┊       T        vP
             ┊        ┊      /|\      /  \
             ┊        ┊    v/V  T  Object NP    vP
             ┊        ┊     ┊                  /  \
             ┊        ┊     ┊        Subject NP     v/VP
             ┊        ┊     ┊                      /   \
             ┊        ┊     ┊                    v/V       Object NP
             ┊        ┊     ┊                             /      \
             ┊        ┊     ┊                           AP        Object NP
             ┊        ┊     ┊                           ┊
          Mašynu    Ivan   kupyv                      velyku
          car.      John.  buy.                       big.
          F.SG.ACC  NOM    PST                        F.SG.ACC
```
"As for the car John bought, it is a BIG one."
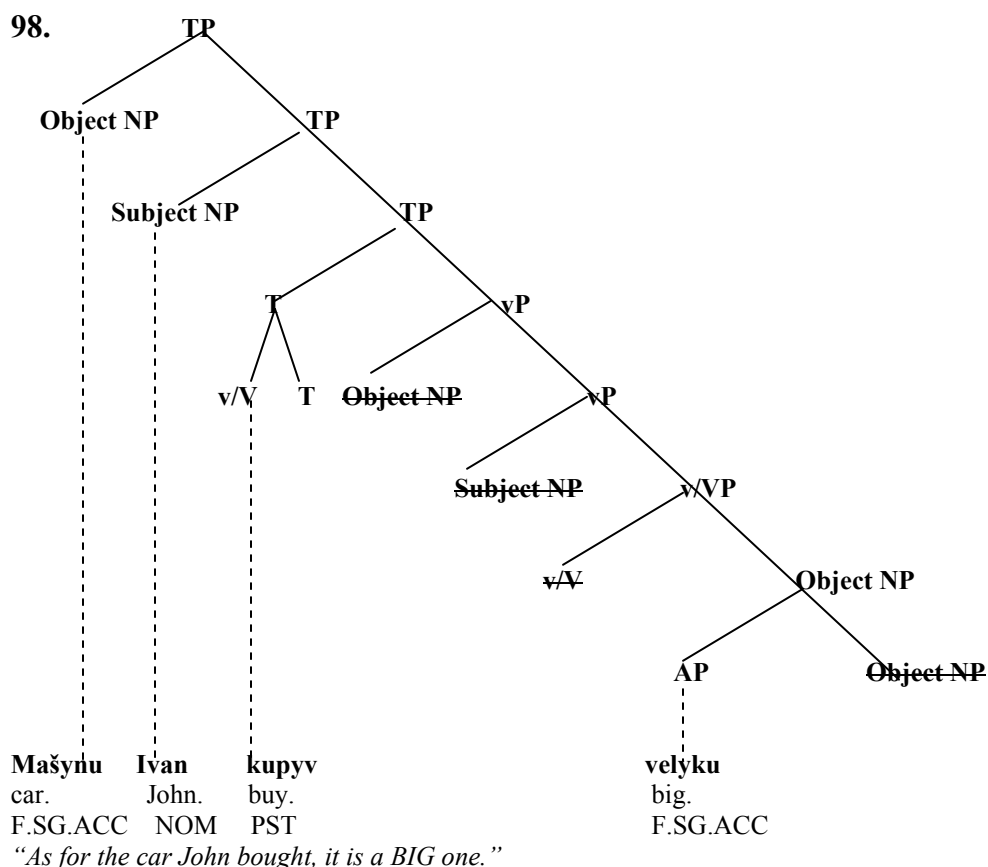
This analysis of noun adjective reordering is appealing from the point of view of its

structural simplicity. The inverse discontinuous noun phrase is generated from a

corresponding regular modified noun phrase through a simple extraction. This account,

however, is theoretically problematic when attributive modification is treated as

adjunction of the modifier directly to NP. Fronting of the noun phrase that strands a

modifier in (98) results in the dislocation of a segment of the category rather than the

whole category, and is ruled out by the MCL algorithm.

Alternatively, the modifier can be generated at a distance from the noun phrase, forming

a linear discontinuous structure, prior to the fronting of the noun phrase, as in (99).

Under this analysis, the discontinuity in both (97a) and (97b) arises from the same

source—modification at a distance—while fronting of the noun phrase is part of the

regular process of pragmatic item re-ordering in the clause:

99.

Mašynu	Ivan	kupyv	velyku
car.	John.	buy.	big.
F.SG.ACC	NOM	PST	F.SG.ACC

"As for the car John bought, it is a BIG one."
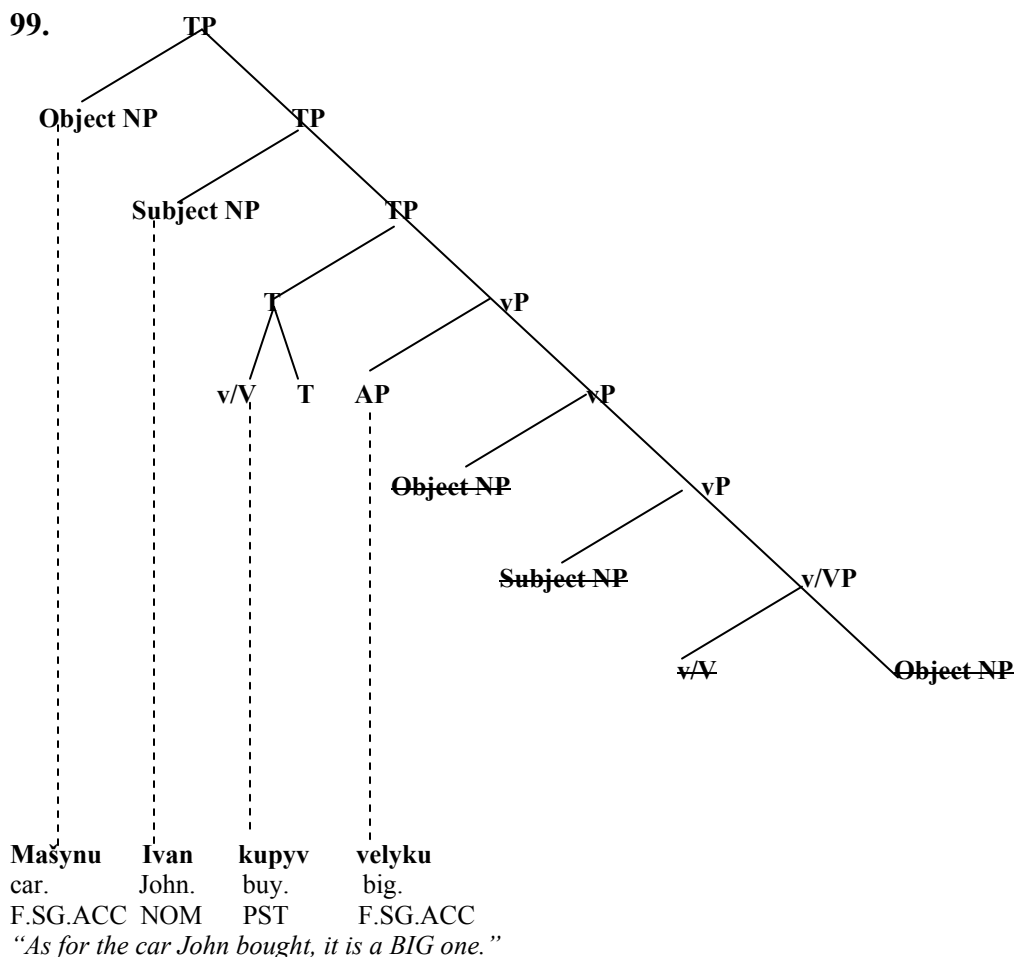
In (99), the entire NP is fronted, not just a segment of it, thus presenting no problem from

the point of view of the linearization algorithm.

The extraction based analysis of an inverse discontinuous noun phrase can be rescued if

adjectival modification is treated not as the result of direct adjunction of the modifier to

the NP but as the result of the modifier adjoining to some functional head that is located

above the NP. Under this analysis of attributive modification, an adjectival modifier is
not adjoined directly to the NP, and thus NP can potentially be extracted from the larger
nominal extended projection, leaving the modifier behind. Consider the phrase marker in
(100):

100.

Mašynu   Ivan   kupyv   velyku
car.   John.   buy.   big.
F.SG.ACC NOM   PST   F.SG.ACC
"As for the car John bought, it is a BIG one."
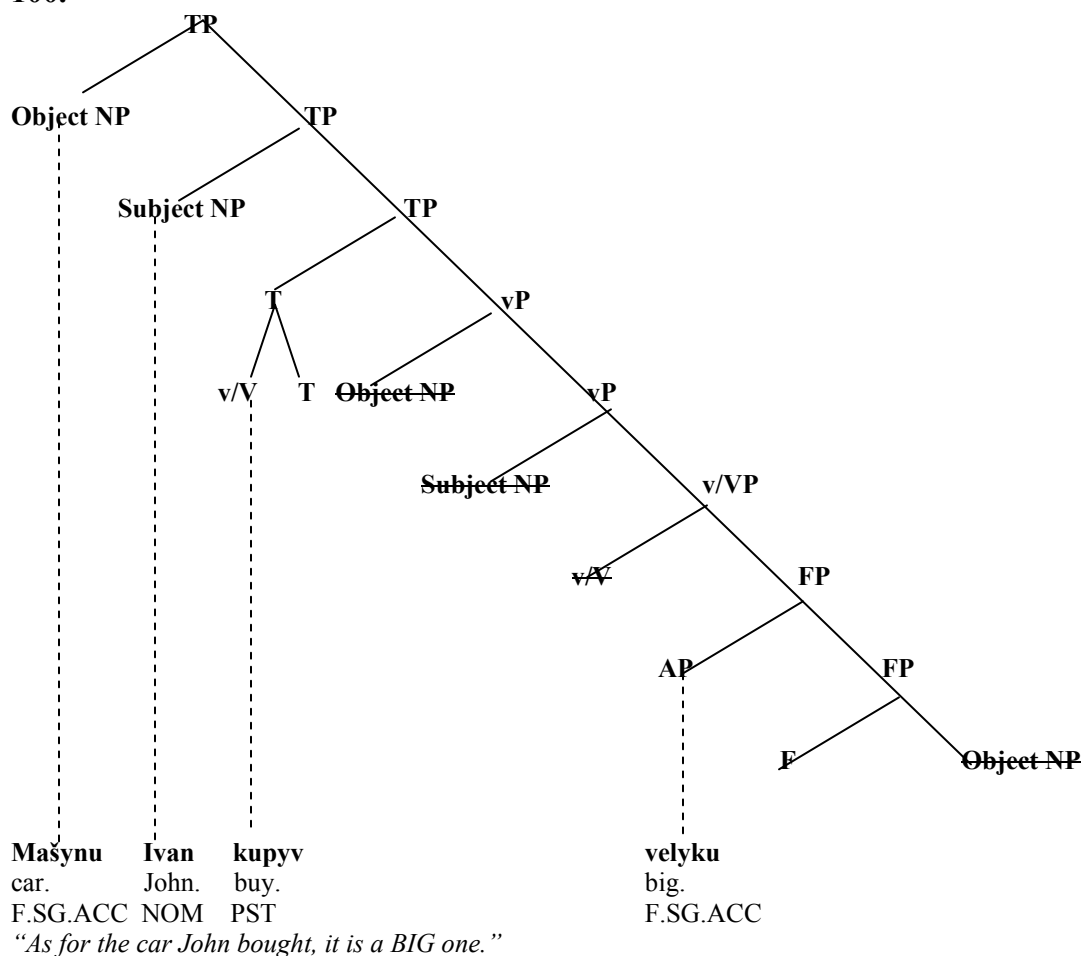
The phrase-marker in (100) represents inverse discontinuity as the process of noun phrase
extraction with the modifier adjoined to a functional head above the NP. It does not
present a problem from the point of view of category fragmentation. The whole NP
rather than its segment is fronted.

Indeed, there is a respectable tradition of treating adjectival modifiers not as NP adjuncts but as specifiers of various functional projections that occur above the noun (see for instance, Crisma (1990), Cinque (1995), Scott (2002), Laenzlinger (2000, 2005)). This treatment of adjectives has been inspired by adjective ordering restrictions: "big red house" vs. * "red big house." The obligatory hierarchical ordering of adjectives inside the noun phrase is attributed to the hierarchical ordering of the nominal functional projections. Functional projections are ordered in relation to each other as the result of selection (see for instance, Crisma (1990), Cinque (1995), Scott (2002), Laenzlinger (2000, 2005)). Since attributive adjectives in some languages can appear both pre-nominally and post-nominally, post-nominal position of adjectives is analyzed as the result of N-raising (see Crisma (1990) and Cinque (1995)). Given the N-raising hypothesis, associating adjectives with distinct hierarchically fixed functional categories makes strong predictions as to the order of adjectives post-nominally. The order of adjectives in languages that are characterized by the post-nominal placement of adjectives is predicted to be the same as the order of adjectives in the languages that are characterized by the pre-nominal placement of adjectives. This is true for some languages. However, according to Sproat and Shih (1988), other languages exhibit a mirror image ordering of post-nominal adjectives. Even more problematic in this respect are mixed languages such as French, Italian, and Spanish, which allow both pre-nominal and post-nominal placement of attributive modifiers. Post-nominal adjectives in these languages can either replicate the expected pre-nominal order or can reverse it (see Lamarche (1991)). Cinque (1995) argues that such apparent violation of expected adjective orders post-nominally can be attributed to the use of predication. As

Laenzlinger (2005) points out, however, the rightmost adjectives in *une voiture italienne magnifique* ("a beautiful itallian car") and *une fusée américaine énorme* ("a huge american rocket") in French behave as regular attributive modifier rather than predicates. To account for variation in post-nominal adjective orders, Laenzlinger (2005) has to resort to a combination of head-movements and XP movements that feed into each other, which complicates this type of analysis.

Main evidence in support of treating attributive adjectival modifiers as NP adjuncts and deriving inverse discontinuity from linear discontinuity comes from Modern Greek. If inverse discontinuity were derived by means of NP extraction from the regular noun phrase in Modern Greek, (101b) should be fine, which is not the case:

101.
   a) **Agorase   to   megalo   diamerisma**
      bought.3.SG the.N.SG.ACC big.N.SG.ACC apartment.N.SG.ACC
      "He bought the big apartment."

   b)* **To   [NP diamerisma]   agorase   [DP megalo t]**
       the.N.SG.ACC   apartment.N.SG.ACC bought.3.SG   big.N.SG.ACC
       (*"He bought the big APARTMENT."*)

In (101b), NP is extracted from DP while the determiner is linearized preceding this NP at PF (see chapter 4 for a detailed discussion of the linearization of DPs and chapter 1 for the linearization algorithm). The unavailability of (101b) suggests that either extraction of NP out of it own extended projection is impossible in Modern Greek, or the modifier in (101a) is adjoined directly to NP and the extraction in (101b) is blocked because of the ban on dislocating a segment of a category, as in (98). Further examination of Modern Greek data reveals that the failure of (101b) is more likely to be due to the ban on

dislocating a segment of a category than to the ban on extraction from extended noun phrases:

102.

   a)   **Agorase**   **<u>to</u>**   **<u>megalo</u>**   **<u>to</u>**   **<u>diamerisma</u>**
        bought.3.SG the.N.SG.ACC big.N.SG.ACC the.N.SG.ACC apartment.N.SG.ACC
        "He bought the BIG apartment."

   b)   **<u>To</u>**   **<u>diamerisma</u>**   **agorase**   **<u>to</u>**   **<u>megalo</u>**
        the.N.SG.ACC apartment.N.SG.ACC bought.3.SG the.N.SG.ACC big.N.SG.ACC
        "He bought the big APARTMENT. "

Kariaeva (2003) argues that modifier in (102a) is generated in the left periphery of the extended noun phrase outside of the DP and enters into agreement with the entire DP rather than the NP. This results in Determiner Spreading (see chapter 4, section 4.4, for a detailed discussion). Crucially, the modifier in (102a) is not generated as an NP adjunct, and the DP is free to be extracted from its own extended projection, as in (102b). Thus, inversion is achieved without generating a linear discontinuous constituent.

Note, however, that Determiner Spreading is triggered by generating the modifier at a distance from the noun it modifies. Even though such distance is minimal and the modifier is located inside the extended projection of the noun phrase in (102a), the presence of Determiner Spreading can be viewed as a form of discontinuity understood as long-distance concord. Moreover, linear discontinuity does feed inverse discontinuity in Modern Greek when more than one modifier is present:

103.

   a)   **O**   **Janis**   **agorase**
        the.M.SG.NOM   John.NOM   bought.3.SG
        <u>to</u>   **<u>megalo</u>**   **<u>to</u>**   **<u>kokkino</u>**   **<u>to</u>**   **<u>aftokinito</u>**
        the   big.N.SG.ACC the   red.N.SG.ACC the   car.N.SG.ACC
        "He bought the big red car"

b) **To aftokinito**   **o Janis**   **to megalo**
the car.N.SG.ACC   the John.NOM   the big.N.SG.ACC
agorase   **to   kokkino**
bought.3.SG   the big.N.SG.ACC
"He bought the big red car"

While the modifier *red* in (103b) could in principle be located in the left periphery of the

extended noun phrase, the modifier *big* is located outside of the extended noun phrase

under the analysis proposed here that views linear discontinuity as the result of long-

distance concord.

The analysis of inverse discontinuity as being derived from linear discontinuity predicts

that the languages that have inverse discontinuous constituents also have corresponding

linear constituents. This is indeed the case in both Ukrainian and Modern Greek, which

constitute the core of our study. There are, however, languages that have what looks like

inverse discontinuous structures without having the equivalent linear discontinuous

structure. German is a case in point:

104.
  a) **Autos**   **besitzt** **er**   **nur**   **schnelle.**
    cars   owns   he   only   fast
    "As for cars, he owns only fast ones."

  b)* **Nur   schnelle** **besitzt** **er**   **Autos.**
    Only   fast   owns   he   cars

<div align="right">(Fanselow & Čavar (2002): 14)</div>

Van Riemsdijk (1989) offers an analysis of this construction in terms of N' extraction

from its own maximal projection followed by partial regeneration of the functional super-

structure over the extracted item. The regeneration mechanism is needed to account for

the lexicalization of the indefinite determiner together with the extracted NP and

determiner doubling which otherwise is not available in the language:

105.
  a) <u>**Eine Lösung**</u>   **hat**   **er**   <u>**eine bessere**</u>   **als**   **ich.**
  A   solution   has   he   a   better   than   I
  "As for solutions, he has a better one than I"

  (Van Riemsdijk (1989):107)

106.
  a) <u>**Einen Wagen**</u>   **hat**   **er sich noch**   <u>**keinen**</u>   **leisten können**
  A   solution   has   he REFL et   none   afford could
  "As for cars, he has not been able to afford one yet"

  b) * <u>**Einen**</u>   <u>**keinen**</u>   <u>**Wagen**</u>
  c) * <u>**Keinen**</u>   <u>**einen**</u>   <u>**Wagen**</u>

  (Van Riemsdijk (1989):106)

Note, however, that the construction in (104)-(106) has properties that are distinct from the discontinuous constituents in Ukrainian and Modern Greek. Discontinuous constituents, examined in this dissertation, have three key properties: (1) freedom of lexical item ordering (linear and inverse discontinuous constituents); (2) lack of excess (parts of a discontinuous constituent always add up to a single well-formed constituent); and (3) strict functional value hierarchy (functional categories are strictly ordered in relation to lexical categories and to each other)—these properties of discontinuous constituents are discussed in great detail in the remainder of the dissertation. German constructions in (104)-(106) lack all three properties. The order between discontinuous parts cannot be reversed, as (104) demonstrates. The two parts cannot be added to form a single constituent, as (106) shows. Finally, the ordering between functional and lexical items is not maintained across a discontinuous structure: a determiner/quantifier appears between a noun and a modifier, as (105) shows. I, therefore, conclude that German does not have A-type discontinuity that results from modification at a distance. What appear to be examples of inverse discontinuous constituents in the language belong to a set of phenomena distinct from the one analyzed here under the heading of A-type

discontinuity. Van Riemsdijk (1989) treats this construction as a form of partitive

construction in the language. Ukrainian has similar discontinuous partitive structures

(107b), which exist alongside agreeing forms (107a). The distribution of these partitive

structures, however, is less productive in Ukrainian than in German and is limited to

paucal numerals:

107.
  a) **Spidnyci**   **Marička**   **kupyla** **lyše**   **try**
     Skirts.ACC Mary.NOM   bought only   three.ACC
     "As for the skirts, Mary bought only three of them."

  b) **Spidnyc**   **Marička**   **kupyla** **lyše**   **try**
     Skirts.GEN Mary.NOM   bought only   three.ACC
     "As for skirts, Mary bought only three."

The discontinuous structure in (107b), like the German counterpart in (104)-(106), does

not have a corresponding linear form and does not add up to a single constituent:

108.
  a) * **Marička**   **kupyla** **lyše**   **try**   **spidnyc**
     Mary.NOM   bought only   three.ACC skirts.GEN
     (*"Mary bought only three skirts."*)

  b) * **Lyše**   **try**   **Marička**   **kupyla** **spidnyc**
     Only   three.ACC Mary.NOM   bought   skirts.GEN
     (*"Mary bought only THREE skirts."*)

Availability of the partitive discontinuous structure alongside regular discontinuous

constituents in Ukrainian and the difference in properties of these two discontinuous

structures point to their distinct origin. Examination of the partitive-type structures

remains beyond the scope of this dissertation, but see Fanselow (1988), Van Riemsdijk

(1989), Tappe (1989), Fanselow & Čavar (2001, 2002) for the discussion of the German

data and House (1982), Franks and House (1982), and Pereltsvaig (1998, 2008) for the

discussion of the construction with paucal numerals in Russian. I conclude that the

German data cannot serve as sufficient evidence that inverse A-type discontinuous

constituents do not involve an intermediary stage of linear discontinuous constituent

formation.

2.5 Summary

In this chapter, I examined different types of discontinuous constituents. I observed that

discontinuous constituents differ in terms of the non-structural relations that exist

between parts of a discontinuous constituent. The parts of a discontinuous constituent

can stand in an agreement relation to each other (A-type discontinuous constituents) or in

an operator-variable relation to each other (O-type discontinuous constituents). A-type

and O-type discontinuous constituents vary not only in terms of their distribution across

languages but also in terms of their properties. I concluded that the differences between

these two types of discontinuous constituents warrant to study them separately. I

advanced the Radical Discontinuity Hypothesis (RDH): a claim that A-type

discontinuous constituents do not result from splitting a single phrasal constituent into

several parts by way of movement but are the product of long-distance concord.

To substantiate this claim, I adopted Baker's (2003) treatment of adjectives as a default

lexical category that can be generated in any syntactic position in the clause as long as

that position permits free adjunction. I claimed that in a discontinuous constituent an

adjectival modifier is base-generated at a distance from the noun it modifies and is

licensed by agreement with the noun in the same way as the adjectival modifier base-

generated inside the noun phrase is. In both cases, agreement values the features of the

modifier and ensures full interpretation of the modifier. I examined the derivation of

basic linear discontinuous constituents in Ukrainian and observed that the choice between

vP and TP as sites for adjunction of a long-distance adjectival modifier does not play any

specific pragmatic function. Following Zubizarreta (1998), I assumed that some

mechanism of the intonation-to-syntactic structure mapping determines the information

structure of the utterance. Alignment plays an important role in this mapping. I therefore

posited that base-generation of long-distance modifiers at the left-edge of prosodically

significant syntactic domains marks them as links to the discourse state at hand and is

translated into some form of restrictive interpretation at the interface. As a result, I chose

to forego positing multiple Topic and Focus projections and assumed that adjunction

itself is sufficient to produce a needed configuration for intonation-to-syntactic structure

mapping.

I also examined the mechanism of noun-adjective re-ordering that gives rise to inverse

discontinuous constituents. Two alternative analyses of noun-adjective reordering are

possible. The adjectival modifier can be generated inside the noun phrase followed by

the extraction of the noun, or the adjectival modifier can be generated at a distance from

the noun phrase, forming a linear discontinuous structure, prior to the fronting of the

noun phrase. The extraction-based account is theoretically problematic when attributive

modification is treated as adjunction of the adjectival modifier directly to NP, since it

requires the dislocation of a segment of the category rather than the whole category, and

is ruled out by the MCL algorithm. This problem does not arise when the inverse

discontinuous noun phrase is derived from the linear discontinuous noun phrase. In this

case, the modifier is base-generated at a distance from the noun phrase, and the entire NP is fronted, not just a segment of it. Crucially, generating the modifier as an adjuncts to some functional projection inside the extended noun phrase licenses noun phrase fronting and can be viewed as a form of discontinuity. The analysis of inverse discontinuous constituents as being derived from linear discontinuous constituents predicts that the languages that have inverse discontinuous constituents also have corresponding linear constituents. German presents a challenge to this conclusion. However, I questioned whether what appears to be examples of inverse discontinuous constituents in German belong to a set of phenomena analyzed here under the heading of A-type discontinuity. I concluded that the German data cannot serve as sufficient evidence that inverse A-type discontinuous constituents do not involve an intermediary stage of linear discontinuous constituent formation.

Chapter 3. Discontinuous PPs

3.0 Introduction

Discontinuous constituents are characterized by an asymmetry in the distribution of

different categories. The distribution of the preposition in Ukrainian discontinuous noun

phrases, for instance, is much more restricted than the distribution of the adjectival

modifier. Unlike the adjective, the preposition cannot be separated from the associated

noun:

109.
   a) Ivan   kupyv   velyku   kvartyru
   John.NOM   bought   big.F.SG.ACC   apartment.F.SG.ACC
   "John bought a big apartment"

   b) Velyku   Ivan   kupyv   kvartyru
   big.F.SG.ACC John.NOM   bought   apartment.F.SG.ACC
   "John bought a BIG apartment"

110.
   a) Ivan   žyve   bilja   školy
   John.NOM   lives   next-to   school.F.SG.GEN
   "John lives next to a school"

   b)* Bilja   Ivan   žyve   školy
   Next-to   John.NOM   lives   school.F.SG.GEN
   (*"John lives NEXT to a school"*)

In Ukrainian, the preposition and the adjective also differ as to the rigidity of the ordering

in relation to the noun. While the adjective can easily be reordered in relation to the noun

it modifies, the order between the preposition and the noun is rigid. :

111.
   a) Velyku   Ivan   kupyv   kvartyru
   big.F.SG.ACC John.NOM   bought   apartment.F.SG.ACC
   "John bought a BIG apartment"

   b) Kvartyru   Ivan   kupyv   velyku
   apartment.F.SG.ACC John.NOM   bought   big.F.SG.ACC
   "As for the apartment John bought, it is a BIG one"

112.

   a)   **Ivan**   **žyve**   <u>**bilja**   **školy**</u>
        John.NOM   lives   next-to   school.F.SG.GEN
        "John lives next to a school"

   b) * Ivan   **žyve**   <u>**školy**   **bilja**</u>
        John.NOM   lives   school.F.SG.GEN   next-to

These ordering restrictions apply to prepositions not only inside a regular, coherent

constituent but also in a discontinuous constituent. The order between the adjective and

the noun in a discontinuous constituent is not fixed, while the order between the

preposition, on the one hand, and the adjective and the noun, on the hand, is. In the

discontinuous noun phrase in (113), the preposition has to surface before the leftmost

lexical element of the discontinuous constituent:

113.

   a)   **Ivan**   <u>**bilja**   **velykoho**</u>   **žyve**   <u>**budynku.**</u>
        John.NOM   next-to   big. M.SG.GEN   lives   building.M.SG.GEN
        "John lives next to a BIG building"

   b)   **Ivan**   <u>**bilja**   **budynku**</u>   **žyve**   <u>**velykoho.**</u>
        John.NOM   next-to   building. M.SG.GEN   lives   big.M.SG.GEN
        "As for the building John lives next to, it is a BIG one"

   c) * Ivan   <u>**velykoho**</u>   **žyve**   <u>**bilja**   **budynku**</u>
        John.NOM   big. M.SG.GEN   lives   next-to   building. M.SG.GEN

   d) * Ivan   <u>**budynku**</u>   **žyve**   <u>**bilja**   **velykoho**</u>
        John.NOM   building. M.SG.GEN   lives   next-to   big. M.SG.GEN

The preposition cannot be re-ordered in relation to any lexical categories that are

associated with the extended projection it belongs to.

In this chapter, I argue that the differences in the distribution of the preposition and the

adjective in discontinuous constituents in Ukrainian reflect more general differences

between lexical and functional categories. Grimshaw (2005) attributes the rigidity of the

order between the functional and lexical categories that belong to the same extended

projection to the F-value ordering requirement. When a phrase structure is generated, all

items that share the same categorial value have to be ordered according to their F-values,

with items that have a higher F-value c-commanding items that have a lower F-value.

The distribution of prepositions in discontinuous constituents demonstrates that the

principle of F-value ordering is enforced not only within a hierarchical structure but also

in a linear string. I claim that contrast in the distribution of adjectives and prepositions in

discontinuous constituents is determined by the MCL linearization mechanism, which

enforces the F-value ordering principle at the interface with PF. Since the F-value of all

lexical items is the same, these items can be re-ordered in relation to each other in the

hierarchical structure and the re-ordering is maintained in the linear representation at PF.

The F-value of functional categories, however, is higher than that of lexical categories.

Whenever the F-value ordering of functional categories is violated as the result of various

merger operations that take place in narrow syntax, the F-value ordering principle is

reapplied in the course of the transfer of syntactic structure to PF. I demonstrate that the

MCL linearization algorithm proposed in chapter 1 allows one to maintain a theory of

discontinuous constituents that treats discontinuity, including PP discontinuity, as the

result of long-distance agreement between the noun and its modifier while ensuring the

correct ordering of functional and lexical categories at PF.

In section 3.1, I present arguments in defense of the underlying structural representation

for a discontinuous PP in which the preposition forms an extended projection with the

noun in narrow syntax while the modifier is generated at a distance from the PP. In

section 3.2, I demonstrate that even though the modifier is generated higher in the tree
than the preposition, the MCL algorithm ensures that the preposition is spelled out
preceding the modifier at PF. In section 3.3, I examine the derivation and linearization of
inverse discontinuous PPs in Ukrainian. Finally, in section 3.4, I demonstrate that
preposition doubling, which has been taken as supporting evidence for Distributed
Deletion approach to discontinuity, should be analyzed as an instance of apposition.
Otherwise, the preposition cannot be doubled in discontinuous PPs as it cannot be
doubled in regular PPs.

3.1 Structural Considerations

Discontinuous noun phrases are analyzed in chapter 2 as the result of base generating the
modifier at a distance from the noun phrase. In order to maintain a uniform hypothesis
regarding the nature of agreement-based discontinuity, a discontinuous prepositional
phrase should also be analyzed as resulting from the base generation of the modifier at a
distance from the prepositional phrase as in (115). However, in a linear discontinuous
PP, a preposition is not allowed to surface together with the noun it case-marks. It has to
appear preceding the fronted modifier:

114.

a) **Ivan**   **žyve**   **v   velykij**   **kvartyri**
   John.NOM   lives   in big.F.SG.LOC   apartment.F.SG.LOC
   "John lives in a big apartment"

b) * **Ivan**   **velykij**   **žyve**   **v   kvartyri**
   John.NOM   big.F.SG.LOC   lives   in apartment.F.SG.LOC

c) **Ivan**   **v   velykij**   **žyve**   **kavartyri**
   John.NOM   in big.F.SG.LOC   lives   apartment.F.SG.LOC
   "John lives in a BIG apartment"

The linear order in (114b) is ungrammatical even though it directly corresponds to the structural representation in (115):

115.

Ivan	velykij	žyve	v	kvartyri
John.NOM	big.F.SG.ACC	live.PRS	in	apartment.F.SG.ACC

"John lives in a BIG apartment"
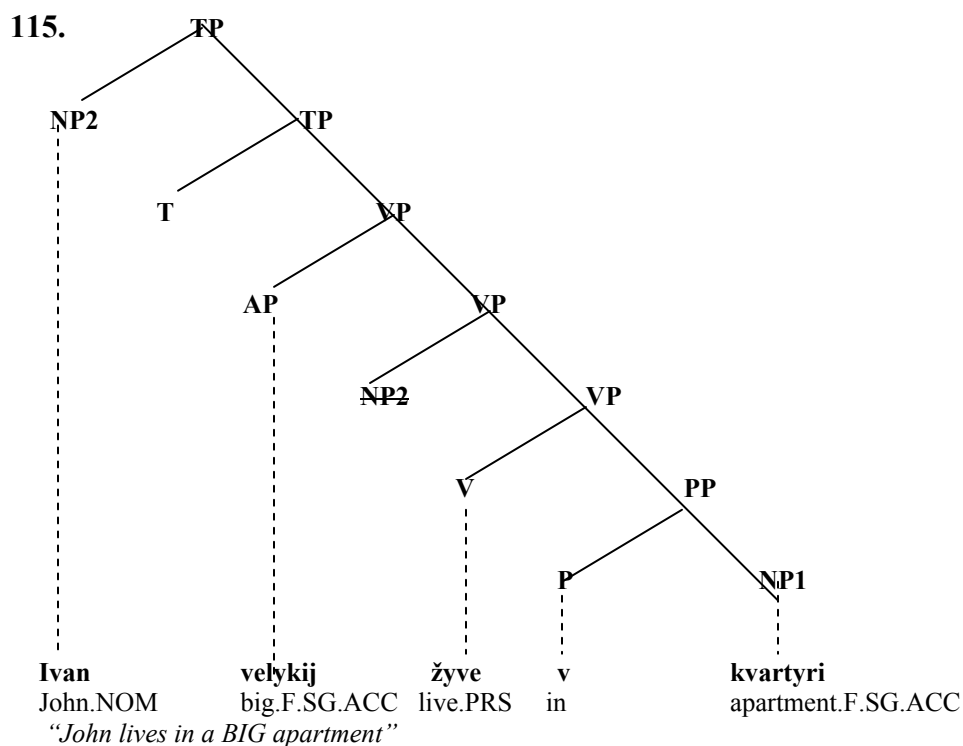
The phrase marker in (115) is based on the premise that the preposition is generated in the immediate vicinity of the noun. The local generation of the preposition is forced by the theory of extended projection. Grimshaw (2005) argues that prepositions do not form extended projections of their own and are best analyzed as nominal functional heads. The class of prepositions, however, is rather diverse cross-linguistically, and items that are thought of as prepositions can exhibit characteristics that range from lexical to functional and from nominal to verbal (see, for instance, Jackendoff (1977), Koster (1985), Abney (1987), Van Riemsdijk (1990), Hestvick (1991), Zwarts (1995), Zeller (2001)). Therefore, it is important to examine in more detail the behavior of prepositions in any given language before determining their syntactic status.

In Ukrainian, prepositions have clearly marked characteristics of a nominal functional

category. They form a closed class of syntactic items, take only one kind of complement,

and are inseparable from their complement (cf.: Abney (1987)). Unlike in English, a

preposition in Ukrainian can take only a nominal complement:

116.
  a) **Vin**   **pryjšov** **pislja** **večeri**
      He.NOM came   after   dinner.F.SG.GEN
      "He came after the dinner"

  b) * **Vin**   **pryjšov** **pislja** **večerja**   **zakinčylasja**
      He.NOM came   after   dinner.F.SG.NOM ended
      ("He came after the dinner was over")

A preposition cannot be used to introduce a clause unless a pronominal item is inserted.

The pronominal item is case-marked by the preposition:

117.
  a) **Vin**   **pryjšov** **jak** **večerja**   **zakinčuvalasja**
      He.NOM came   as   dinner.F.SG.NOM was-ending
      "He came after the dinner was over"

  b)* **Vin**   **pryjšov pislja jak večerja**   **zakinčuvalasja/ zakinčylasja**
      He.NOM came   after as dinner.F.SG.NOM was-ending/ended

  c) **Vin**   **pryjšov pislja toho**   **jak večerja**   **zakinčylasja**
      He.NOM came   after that.GEN as dinner.F.SG.NOM ended
      "He came after the dinner was over"

The presence of this pronominal item, which acts as an anchor for a clause, is optional in

Ukrainian when preposition is not present:

118.
  a) **Vin**   **oholosyv** **ščo**   **večerja**   **zakinčylasja**
      He.NOM announced that   dinner.F.SG.NOM ended
      "He announced that the dinner was over"

  b) **Vin**   **oholosyv** **te**   **ščo**   **večerja**   **zakinčylasja**
      He.NOM announced that.ACC that   dinner.F.SG.NOM ended
      "He announced the fact that the dinner was over"

It demonstrates that prepositions in Ukrainian are non-ambiguous as to their nominal rather than verbal status.

Unlike lexical categories, functional categories are inseparable from their complement. Prepositions in Ukrainian cannot be separated from the associated noun:

119.

  a) **Ivan**   **žyve**   <u>**bilja**   **školy**</u>
     John.NOM   lives   next-to   school.F.SG.GEN
     "John lives next to a school"

  b)* <u>**Bilja**</u>   **Ivan**   **žyve**   <u>**školy**</u>
      Next-to   John.NOM   lives   school.F.SG.GEN

This cannot be attributed to purely phonetic factors since the items in question are phonetically heavy enough to present a problem for an account that claims that prepositions are not prosodic words and require phonetic cliticization. Prepositions in Ukrainian cannot be stranded in a wh-context either:

120.

  a) * **Škola**   <u>**jaka**</u>   **Ivan**   **žyve**   <u>**bilja**</u>
       School.F.SG.NOM   which.F.SG.NOM   John.NOM   lives   near

  b) * **Škola**   <u>**jakoji**</u>   **Ivan**   **žyve**   <u>**bilja**</u>
       School.F.SG.NOM   which.F.SG.GEN   John.NOM   lives   near

  c) **Škola**   <u>**bilja   jakoji**</u>   **Ivan**   **žyve**
     School.F.SG.NOM   near   which.F.SG.GEN   John.NOM   lives
     "School which John lives next to"

In this respect, prepositions in Ukrainian behave as functional rather than lexical items. They are, therefore, expected to be generated in the vicinity of the noun as part of the extended nominal projection.

In determining the viability of the structural representation in (115), one should also consider whether agreement between the modifier and the noun is available when the noun is embedded inside the PP. Secondary predicates in Ukrainian provide independent evidence that agreement with the noun embedded inside a PP is indeed possible in the language. Secondary predicates in Ukrainian obligatorily agree with the subject of the sentence in φ-features and either agree with the subject in case or surface in the default instrumental:

121.

  a) **Studenty**   **povernulysja**   <u>**rozdjahnuti**</u>
     students.PL.NOM   returned.PST.PL.REFL   undressed.PL.NOM
     "The students returned undressed"

  b) **Studenty**   **povernulysja**   <u>**rozdjahnutymy**</u>
     students.PL.NOM   returned.PST.PL.REFL   undressed.PL.INST
     "The students returned undressed"

  c) ***Studenty**   **povernulysja**   <u>**rozdjahnutyx**</u>
     students.PL.NOM   returned.PST.PL.REFL   undressed.PL.GEN

Quantifiers, such as *bahato* ("many"), take Genitive NP complements in Ukrainian. Secondary predicates in sentences with quantified subjects show obligatory agreement in φ-features with the noun and are case-marked in the sentences with agreeing main predicates as Nominative and in the sentences with non-agreeing main predicates as Genitive (see Franks (1995): 278-279 for a discussion of related facts in Polish):

122.

  a) **Bahato studentiv**   **povernulysja**   <u>**rozdjahnuti**</u>
     Many   students.PL.GEN   returned.PL.PST.REFL   undressed.PL.NOM
     "Many students returned undressed"

  b) **Bahato studentiv**   **povernulosja**   <u>**rozdjahnutyx**</u>
     Many   students.PL.GEN   returned.PST.SG.N.REFL   undressed.PL.GEN
     "Many students returned undressed"

What is crucial for our purpose here is the fact that in sentences with non-agreeing

primary predicates, secondary predicates agree in case directly with the complement of

the quantifier rather than with the entire quantified noun phrase, which is assumed to

carry covert Nominative morphology.

Quantifier *bahato* ("many"), when used partitively, takes a PP rather than an NP

complement. The overt preposition *z* ("from") assigns Genitive case to its complement.

If a preposition blocked the visibility of its complement from outside of the PP, one

would expect the second type of agreement pattern not to be available for partitive

subjects in the language. This is not the case:

123.
  a) **Bahato z   studentiv   povernulysja   <u>rozdjahnuti</u>**
     Many   from   students.PL.GEN returned.PL.PST.REFL undressed.PL.NOM
     "Many of the students returned undressed"

  b) **Bahato z   studentiv   povernulosja   <u>rozdjahnutyx</u>**
     Many   from   students.PL.GEN returned.PST.SG.N.REFL undressed.PL.GEN
     "Many of the students returned undressed"

Consequently, on the basis of secondary predication in the sentences with partitive

subjects, we can conclude that a preposition does not block agreement between an

adjectival modifier located outside of the PP and the NP that is a complement of the

preposition. We can also maintain that the preposition does not block agreement between

the long-distance modifier and the noun embedded inside the PP in (115).

Agreement involved in secondary predication and in long-distance adjectival

modification should, however, be differentiated from agreement between a subject and a

primary predicate. As the data in (124) show, primary predicates cannot agree with either

the PP or its complement. Subject-predicate agreement is not available even when the PP

is not embedded under a quantifier:

124.

a)	V	kimnati	bulo	xolodno
	In	room.F.SG.LOC	was.N.SG	cold.O/E

"It was cold in the room."

b) *	V	kimnati	bula	xolodna/ij
	In	room.F.SG.LOC	was.F.SG	cold.F.SG.NOM/LOC

Baker (2003) argues that subject-predicate agreement is intimately linked to case-

assignment. Since the predicate in (124) does not case mark the PP in subject position, it

cannot agree with this PP. Note that both a secondary predicate in (122b) and (123b) as

well as the long-distance modifier in (114c) have their case feature valued in the course

of agreement. Case valuation, thus, licenses long-distance adjectival agreement.

To summarize, we have reviewed evidence that the structural representation of PP

discontinuity in (115) is a viable structural representation for a discontinuous

prepositional phrase in Ukrainian both from the point of view of the theory of extended

projection and from the point of view of agreement. The preposition in the language has

to be generated immediately preceding the noun as part of a well-formed nominal

extended projection while the adjective can be generated at a distance from the PP and

still enter into agreement with the noun embedded inside the prepositional phrase. In the

next section, I demonstrate that the preposition does not surface where it is generated due

to the restriction imposed on the process of linearization by the principle of the F-value

ordering. The MCL linearization algorithm that implements this restriction provides the

correct surface distribution of the preposition in discontinuous prepositional phrases in

Ukrainian.

3.2 Linear Discontinuous PPs

Given the arguments presented above, the phrase marker in (115), repeated below as

(126), represents the structure of the sentence in (114c), repeated below as (125):

125. **Ivan** <u>**v**</u>　<u>**velykij**</u>　　***žyve***　<u>**kavartyri**</u>
　　　John　in　big.LOC　　lives　　apartment.LOC
　　　"John lives in a BIG apartment"

126.


```
                          TP
          NP2                 TP
                        T          VP
                     AP              VP
                         NP2             VP
                              V              PP
                                       P           NP1

Ivan            velykij        žyve    v           kvartyri
John.NOM        big.F.SG.ACC   live.PRS in         apartment.F.SG.ACC
"John lives in a BIG apartment"
```
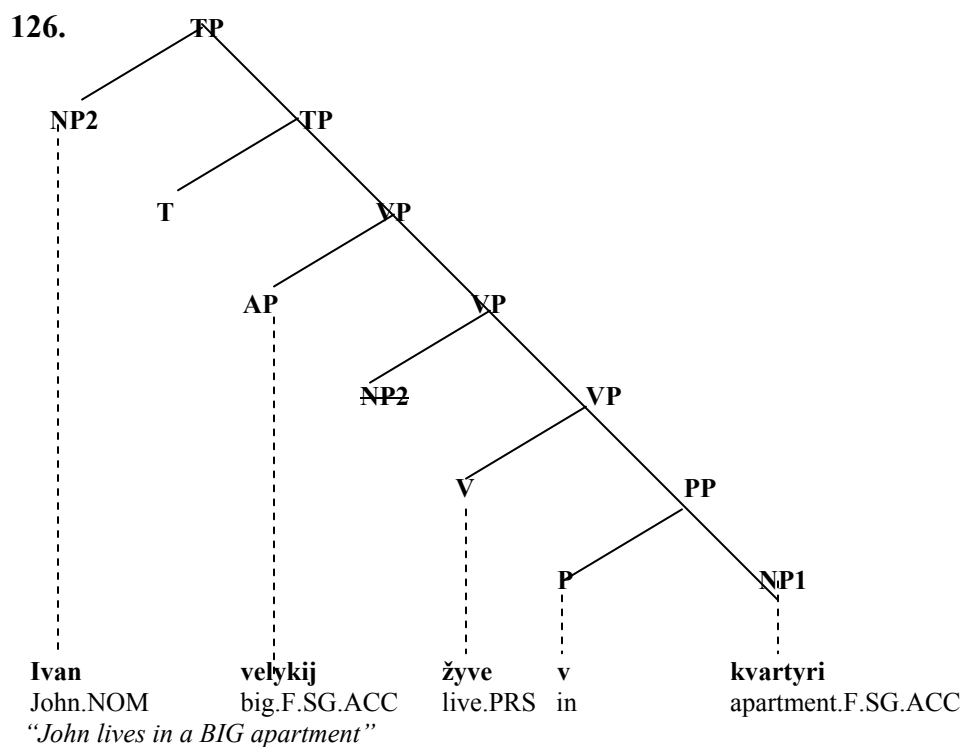
Several key agreement relations are established in narrow syntax among the syntactic

nodes in (126):

127.
　a) *Case assignment by P:*
　　　P: {cat(nom[5]), gen([10]), num([15]), case(loc[20])), F(7)}
　　　NP1: {cat(nom[5]), gen(fem[10]), num(sg[15]), case([20])), F(0)}

b) *Case assignment by T:*
T: {cat(verb[ ]), gen([25]), num([30]), case(nom[35])), F(5)}
NP2: {cat(nom[ ]), gen(masc[25]), num(sg[30]), case([35])), F(0)}

The φ-features of P and T are not valued in the lexicon. They initiate agreement relations with the respective noun phrases. Since feature sharing is a bi-directional process, the case feature of each noun is valued as well. As a result of such valuation, the subject of the sentence that enters into an agreement relation with T surfaces with overt Nominative morphology and the complement of P surfaces with overt Locative morphology. Since the preposition is a nominal functional category in Ukrainian, the categorial feature values of P and NP1 are non-distinct and the categorial features of the two items are unified. The values of the categorial features of T and NP2, however, are distinct, and the categorial features of these two items are not unified in the course of case assignment.

The adjectival modifier that is generated at a distance from the prepositional phrase also has its features valued in narrow syntax through agreement with the noun:

128. *Concord with the Noun:*
AP: {cat([5]), gen([10]), num([15]), case([20])), F(0)}
NP1: {cat(nom[5]), gen(fem[10]), num(sg[15]), case([20])), F(0)}

As a result of the agreement relation initiated by the φ-features of the AP, the categorial features of NP1 and AP are unified as well. The output of both the structure building and the agreement operations that take place in narrow syntax is then handed over to the linearization component of grammar. The MCL linearization algorithm formulated in chapter 1 linearizes all the items according to their F-value based on their association with a particular extended projection. At the outset of the derivation the adjective is not linked to the nominal extended projection. However, as the result of agreement with the

noun, it becomes associated with the nominal extended projection through the unification of its categorial feature with the categorial feature of the noun. This agreement-based association determines the linearization of the preposition before the long-distance modifier.

Consider the application of the MCL algorithm to the phrase marker in (126). At stage 1, the MCL algorithm generates a set M of ordered pairs of non-terminals such that the first member of each pair asymmetrically c-commands the second member of the pair {<NP2, TP>, <NP2, T>, <NP2, AP>, <NP2, A>, <NP2, VP>, <NP2, V>, <NP2, PP>, <NP2, P>,<NP2, NP1>, <NP2, N1>, <T, AP>, <T, A>, <T, V>, <T, PP>, <T, P>, <T, NP1>, <T, N1>, <AP, VP>, <AP, V>, <AP, PP>, <AP, P>, <AP, NP1>, <AP, N1>, <V, P>, <V, NP1>, <V, N1>, <P, N1>}. In this phrase marker, AP c-commands VP since it is not dominated by VP (only by a segment of VP) and the first node that dominates AP dominates VP. On the other hand, VP does not c-command AP since it does not exclude AP. Hence, the pair <AP, VP> is added to the set of pairs of non-terminals characterized by asymmetric c-command. The same applies to NP2 and TP. At stage 2, the MCL algorithm verifies that every pair in the set M complies with the requirement that the F-value of the second non-terminal in each pair is not higher than the F-value of the first non-terminal of the pair. By definition, this requirement applies only to those pairs of non-terminals in which the second member of the pair is a head, the non-terminals share the same categorial feature, and exclude each other. The set M contains the pair <AP, P> that does not comply with this requirement:

129. AP: {cat(nom[5]), gen([10]), num([15]), case([20])), F(0)}
P: {cat(nom[5]), gen([10]), num([15]), case(loc[20])), F(7)}

At stage 2, this pair is replaced with the pair <P, AP>, which complies with the F-value ordering requirement.

Following the LCA, the linearization of phrase markers by the MCL algorithm is based on the sum of all c-command relations in a phrase marker. An adjustment of one ordering statement (<AP, P> in our case), therefore, requires an adjustment of all the other ordering statements that are affected by this adjustment. This is done automatically by reversing the ordering between the c-commanded head of the original pair of the non-terminals that undergo reordering and all the nodes that intervene between this head and the first member of the affected pair. Crucially, this automatic reordering targets only those items that do not belong to the same extended projection with the members of the affected pair, since the ordering of the items that are part of the same extended projection is taken care by the F-value ordering requirement. As a result, the pair <V, P> is replaced with the pair <P, V> because V and P do not share the same categorial feature and the set M contains the pair <AP, V>.

At stage 3, the modified set of pairs of non-terminals M'—{<NP2, T>, <NP2, AP>, <NP2, A>, <NP2, VP>, <NP2, V>, <NP2, PP>, <NP2, P>,<NP2, NP1>, <NP2, N1>, <T, AP>, <T, A>, <T, V>, <T, PP>, <T, P>, <T, NP1>, <T, N1>, <AP, VP>, <AP, V>, <AP, PP>, **<P, AP>,** <AP, NP1>, <AP, N1>, **<P, V>,** <V, NP1>, <V, N1>, <P, N1>}—is mapped onto a corresponding set of pairs of terminals R: {<Ivan, velykij>, <Ivan, zhyve>, <Ivan, v>, <Ivan, kvartyri>, <velykij, zhyve>, <v, velykij>, <velykij, kvartyri>, <v, zhyve>, <zhyve, kvartyri>, <v, kvartyri>}. The pair <AP, PP> does not affect the

mapping of the set M' onto the set R and the pair <velykij, v> is not included in R since there is a non-terminal P such that PP dominates P, and P dominates *v* ("in"), and <P, AP> is in M'. As discussed in chapter 1, linearization statements are derived by the MCL algorithm on the basis of the first relevant dominance relation rather than the cumulative sum of all dominance relations in the phrase marker. The ordering statement <P, AP> suffices to derive a linearization statement for P and AP. It overwrites all other ordering statements that might affect the linearization of these two items. Similarly, the pair <AP, VP> does not contribute the pair <velykij, v> to the set R since P intervenes and takes over the ordering responsibilities. The union over the set R gives a total linear ordering of all terminals in the phrase marker: *Ivan > v > velykij > zhyve > kvartyri*. This linear ordering corresponds to the grammatical sentence in (125). Consequently, even though in narrow syntax, the preposition is generated in the vicinity of the noun as part of the nominal extended projection, it is linearized preceding the modifier. The MCL algorithm maps the preposition immediately preceding the modifier in order to maintain the F-value ordering relation in the linear representation.

3.3 Inverse Discontinuous PPs

Discontinuous prepositional phrases in Ukrainian, like discontinuous noun phrases in the language, are characterized by a free noun-adjective order. The adjectival modifier can appear either preceding or following the noun. The preposition, however, always appears preceding the leftmost item of a discontinuous constituent:

130.

a) **Bilja   novoji**   **Ivan**   **žyve**   **školy**
   Next-to new.F.SG.GEN   John.NOM   live   school.F.SG.GEN
   "John lives next to a NEW school"

b) * <u>**Novoji**</u>   **Ivan**   *žyve* <u>**bilja** **školy**</u>
  new.F.SG.GEN John.NOM lives next-to school.F.SG.GEN

c) <u>**Bilja** **školy**</u>   **Ivan**   *žyve* <u>**novoji**</u>
  Next-to school.F.SG.GEN John.NOM lives new.F.SG.GEN
  "As for the school John lives next to, it is a NEW one"

d) * <u>**Školy**</u>   **Ivan**   *žyve* <u>**bilja** **novoji**</u>
  school.F.SG.GEN John.NOM lives next-to new.F.SG.GEN

As argued in the previous section, the distribution of the preposition in discontinuous constituents is the result of the application of the F-value ordering principle at PF. The MCL algorithm ensures that the preposition is spelled-out preceding both the noun and the modifier independent of their order relative to each other since its F-value is higher than the F-value of either the noun or the modifier. The order between the noun and the modifier, however, is not the result of the linearization mechanism since both items, as lexical categories, have the same functional value (0). It is, thus, determined only by the various Merge operations that take place in narrow syntax.

Given the discussion in chapter 2, noun-adjective inversion can take place only if the modifier is generated as an adjunct to some projection above the NP rather than adjoined directly to NP. Whether adjunction occurs inside the extended noun phrase or outside of the nominal extended projection does not affect inversion and the application of the MCL linearization mechanism. I will assume that linear discontinuity feeds inverse discontinuity in Ukrainian, leaving open the possibility that the modifier in (130c) is generated inside the PP as an adjunct to some functional projection above the NP. The inverse discontinuous PP in (130c) can, therefore, be assigned the following structural representation:

131.

TP

NP1   TP

N1   NP2   TP

N2   T   VP

V   T   AP   VP

A   ~~NP2~~   VP

~~V~~   PP

P   ~~NP1~~

školy	Ivan	žyve	novoji	bilja
school	John	lives	new	near
.F.SG.GEN	.NOM		.F.SG.GEN	

"As for the school John lives next to, it is a NEW one."
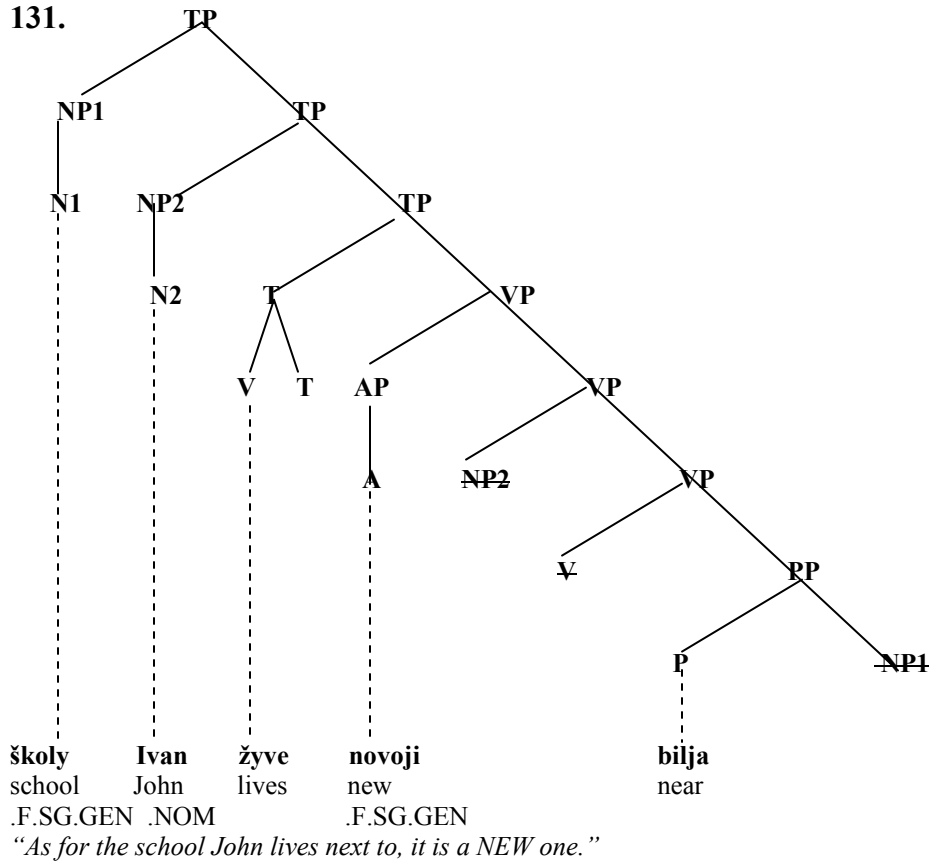
Consider the application of the MCL algorithm to the phrase marker in (130). At stage 1, the MCL algorithm generates a set M of ordered pairs of non-terminals such that the first member of each pair asymmetrically c-commands the second member of the pair:

{<NP1, NP2>, <NP1, N2>, <NP1, TP>, <NP1, T>, <NP1, V>, <NP1, AP>, <NP1, A>, <NP1, VP>, <NP1, PP>, <NP1, P>, <NP2, TP>, <NP2, T>, <NP2, V>, <NP2, AP>, <NP2, A>, <NP2, VP>, <NP2, PP>, <NP2, P>, <T, AP>, <T, A>, <T, PP>, <T, P>, <V, T>, <V, AP>, <V, A>, <V, PP>, <V, P>, <AP, VP>, <AP, PP>, <AP, P>. The set M contains the pairs <NP1, P> and <AP, P> that do not comply with the F-value ordering requirement:

132. NP1: {cat(nom[5]), gen(fem[10]), num(sg[15]), case([20])), F(0)}
    AP: {cat([5]), gen([10]), num([15]), case([20])), F(0)}
    P: {cat(nom[5]), gen([10]), num([15]), case(GEN[20])), F(7)}

At stage 2, these pairs are replaced with the pairs <P, NP1> and <P, AP>, which comply with the F-value ordering requirement. The pair <NP1, A>, however, is not altered since the F-value of the noun and the adjective is the same and therefore "not higher." The MCL algorithm thus allows re-ordering of the noun and the modifier in narrow syntax when the NP is topicalized. In addition, the pairs <V, P>, <T, P>, and <NP2, P> are replaced with the pairs <P, V>, <P, T>, and <P, NP2> since the members of these pairs do not share the same categorial feature and the set M contains the pairs <NP1, V>, <NP1, T>, and <NP1, NP2>. At stage 3, the modified set of pairs of non-terminals M' is mapped onto a corresponding set of pairs of terminals R: {<shkoly, Ivan>, <shkoly, zhyve>, <shkoly, novoji>, <bilja, shkoly>, <Ivan, zhyve>, <Ivan, novoji>, <bilja, Ivan>, <zhyve, novoji>, <bilja, zhyve>, <bilja, novoji>}. The union over this set gives a total linear ordering of all terminals in the phrase marker: *bilja > shkoly > Ivan > zhyve > novoji*. This linear ordering corresponds to the grammatical sentence in (130c). Consequently, the MCL algorithm correctly permits reordering of the noun and the modifier when they are part of a discontinuous PP. Since the preposition is mapped at PF in relation to all the lexical items that are associated with the extended nominal projection it belongs to, it is predicted to occur preceding these items regardless of the relative order between them.

Given the unconstrained nature of Merge assumed here, one should also allow the topicalization of the entire PP rather than the NP embedded inside it. Under the analysis of inverse discontinuity that assumes the topicalization of the entire PP, the sentence with an inverse discontinuous PP in (130c) can be assigned structural representation in (133):

133.

TP

PP   TP

NP2   TP

N2   T   VP

V   T   AP   VP

A   NP2   VP

V   PP

bilja školy	Ivan	žyve	novoji
next-to school	John	lives	new
.F.SG.GEN	.NOM		.F.SG.GEN

"As for the school John lives next to, it is a NEW one."
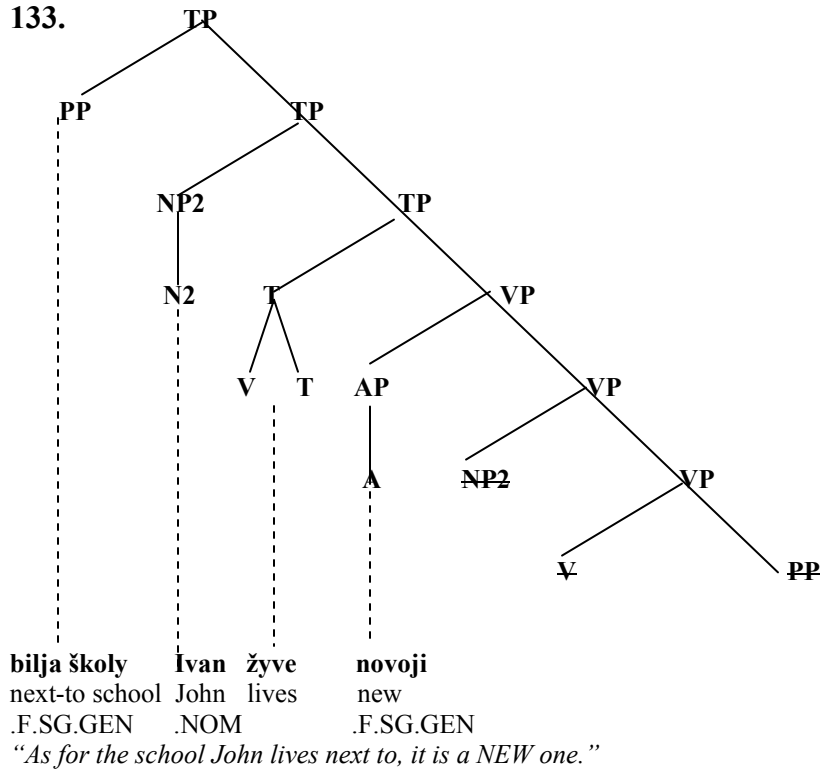
The MCL algorithm provides a correct linearization of the phrase marker in (133) as well. At stage 1, it generates a set M of ordered pairs of non-terminals such that the first member of each pair asymmetrically c-commands the second member of the pair: {<PP, NP2>, <PP, N2>, <PP, TP>, <PP, T>, <PP, V>, <PP, AP>, <PP, A>, <PP, VP>, <NP2, TP>, <NP2, T>, <NP2, V>, <NP2, AP>, <NP2, A>, <NP2, VP>, <T, AP>, <T, A>, <T, PP>, <T, P>, <V, T>, <V, AP>, <V, A>, <AP, VP>. The set M does not contain any pairs that do not comply with the F-value ordering requirement. The set M' that is identical to the set M is mapped onto the following set R of pairs of terminals: {<(bilja shkoly), Ivan>, <(bilja shkoly), zhyve>, <(bilja shkoly), novoji>, <Ivan, zhyve>, <Ivan, novoji>, <zhyve, novoji>}. The union over this set gives a total linear ordering of all terminals in the phrase marker: *bilja > shkoly > Ivan > zhyve > novoji*. This linear ordering corresponds to the grammatical sentence in (130c). Hence, the MCL algorithm

provides correct linearization irrespective of whether the language dislocates a bare NP or

an entire extended projection of the noun phrase.

It is possible that languages do have a choice as to whether dislocate a noun phrase or a

prepositional phrase that contains it. This choice is reflected in the co-existence of two

ways of asking a question regarding the location of an object:

134.
 a) **De**   **znaxodyt'sja**   **cja**   **knyžka?**
   Where located.REF   this.NOM   book.NOM
   "Where is this book located?"

 b) **Na** **čomu**   **znaxodyt'sja**   **cja**   **knyžka?**
   on   what   located.REF   this.NOM   book.NOM
   "What is this book located on?"

In (134a), the entire location is queried while in (134b) the question is intended to

identify a specific object on which the book is located. The choice of the question is

determined by the pragmatic factors. The first question indicates that the speaker does

not know anything about the location of the book while the second question signals that

the speaker has partial information about the location of the book. Therefore, the first but

not the second question can be answered as in (135):

135. **Cja**   **knyžka**   **v** **sumci**
   this.F.SG.NOM   book.F.SG.NOM   in bag.F.SG.LOC
   "This book is in the bag."

A similar choice should in principle be available in the case of topicalization as well.

One should be able to topicalize a noun phrase without its prepositional shell, guided by

the needs of discourse update.

The analysis of inverse discontinuous PPs, which relies on the extraction of the noun phrase from the PP followed by the linearization of the preposition preceding the noun, has an additional advantage of suggesting a possible alternative analysis for the phenomenon of preposition stranding (see Hornstein and Weinberg (1981), Chomsky (1981), McCloskey (1986), Baltin and Postal (1996), Merchant (2001), Abels (2003), Almeida and Yoshida (2007), Stjepanović (2008)). Preposition stranding is not available in Ukrainian but is known to occur in other languages. Consider, for instance, preposition stranding in English:

136.   What is this book about?

Given the analysis of inverse discontinuous PPs that relies on the extraction of the noun phrase from the prepositional phrase, the sentences with and without preposition stranding can be assigned the same underlying structural representation cross-linguistically. Whether preposition stranding occurs or not depends on the lexical properties of the preposition in any given language rather than the presence of an additional syntactic mechanism. The MCL algorithm predicts that the preposition stranding can occur either when the complement taking preposition is a lexical rather than a functional item in the language, or when it is of a distinct category from its complement. When it is a lexical item, its F-value is (0) and it is, therefore, linearized in its in situ position. Alternatively, when it is of a distinct category from its complement, no categorial feature sharing can take place. The preposition again will be lexicalized in its in situ position since the stranded preposition is mapped at PF preceding its complement only when it shares the categorial feature with its complement. The lack of feature sharing can be attributed to the lexical properties of the preposition as well. A

preposition that is not a nominal but a verbal category in the language is predicted to fail

having its categorial feature unified with the categorial feature of the nominal

complement. I leave these and other possibilities of accounting for preposition stranding

cross-linguistically open for further research.

3.4   Preposition Distribution and Distributed Deletion

While prepositions cannot be stranded in Ukrainian, they can be doubled:

137.

a) **Bilja   školy   Ivan   žyve   novoji**
next-to   school.F.SG.GEN   John.NOM   lives   new.F.SG.GEN
"As for the school John lives next to, it is a NEW one."

b) **Bilja   školy   Ivan   žyve,   bilja   novoji**
next-to   school.F.SG.GEN   John.NOM   lives   next-to   new.F.SG.GEN
"John lives next to a school, the new one."

The availability of preposition doubling in sentences like the one in (137b) has been

argued to support the Distributed Deletion approach to discontinuous constituents

developed in Fanselow & Čavar (2001) (see chapter 9 for a detailed discussion of this

approach). Since, according to this approach, there are two or more full copies of the PP

in the structural representation of a discontinuous PP, two or more copies of the

preposition are present in the structure and can optionally be spelled out. The difference

between the sentences in (137), therefore, amounts to how the material within the same

structural representation is deleted:

138.

a) **Bilja   školy   Ivan   žyve   novoji**
next-to   school.F.SG.GEN   John.NOM   lives   new.F.SG.GEN
"As for the school John lives next to, it is a NEW one."

[PP bilja   ~~novoji~~   školy]   Ivan   žyve   [PP ~~bilja~~   novoji   ~~školy~~]

b) **Bilja** **školy** **Ivan** **žyve,** **bilja** **novoji**
next-to school.F.SG.GEN John.NOM lives next-to new.F.SG.GEN
"John lives next to a school, the new one."

[PP **bilja** ~~novoji~~ **školy**] **Ivan žyve** [PP **bilja** **novoji** ~~školy~~]

In (138a) one copy of the preposition is deleted while in (138b) both copies of the

preposition survive.

Preposition doubling, however, is fully acceptable only when the noun is ordered before

the modifier and deteriorates when the order between the noun and the modifier is

reversed. There is no deterioration when the preposition is not doubled:

139.
  a) **Ivan** **bilja** **školy** **žyve,** *(||) **bilja** **novoji**
    John.NOM next-to school.F.SG.GEN lives next-to new.F.SG.GEN
    "John lives next to a school, the new one."

  b)?? **Ivan** **bilja** **novoji** **žyve,** *(||) **bilja** **školy**
    John.NOM next-to new.F.SG.GEN lives next-to school.F.SG.GEN
    "John lives next to the new one, a school."

140.
  a) **Ivan** **bilja** **školy** **žyve** **novoji**
    John.NOM next-to school.F.SG.GEN lives new.F.SG.GEN
    "As for the school John lives next to, it is a NEW one."

  b) **Ivan** **bilja** **novoji** **žyve** **školy**
    John.NOM next-to new.F.SG.GEN lives school.F.SG.GEN
    "John lives next to a NEW school."

The deterioration in acceptability does not follow if the sentences in (139) have the same

structural representation. Furthermore, consideration of the intonation pattern of the

constructions with and without preposition doubling as well as the interpretative

differences between them raise doubts as to the advisability of a uniform structural

analysis of the construction with and without preposition doubling. The sentences with

preposition doubling exhibit properties typical of appositive construction (see Delorme and Dougherty (1972), Emonds (1979), Stuurman (1983), Quirk et al. (1985), Haegeman (1991), Meyer (1992), Doron (1992, 1994), Acuña-Fariña (1999), De Vries (2006), Dehé and Kavalova (2007)). This is not the case with discontinuous constituents.

The sentences with preposition doubling require an intonation contour that consists of two prosodic units, which is characteristic of an appositive construction, rather than the smooth contour that discontinuous constituents have. The construction with preposition doubling is grammatical only when the second PP in (139), which constitutes its own prosodic domain, is set off by a heavy pause that marks a prosodic boundary. Prosodic differences correlate with the interpretative differences. In apposition, the two parts are asymmetric: the first part, the anchor, is used referentially and the second part, the apposition, provides further information about the entity to which the anchor refers. Apposition is interpreted as an afterthought, clarifying possible confusion. This is indeed the interpretation required for the sentences with preposition doubling in (139). I, therefore, maintain that the sentences in (137), repeated below as (141), are structurally distinct:

141.

a) **Bilja** [NP **školy]** **Ivan** **žyve** [AP **novoji]**
next-to   school.F.SG.GEN   John.NOM   lives   new.F.SG.GEN
"As for the school John lives next to, it is a NEW one."

b) [PP **Bilja** **školy]** **Ivan** **žyve,** [PP **bilja** **novoji** pro]
next-to school.F.SG.GEN   John   lives   next-to new.F.SG.GEN
"John lives next to a school, the new one."

(141a) contains a single, albeit discontinuous, PP constituent. (141b) has two distinct PP constituents. The second PP is headed by a null noun. This explains the prosodic

differences between these two constructions. While in (141a), the modifier and the overt

noun are related through agreement, in (141b) the two PPs are related anaphorically.

Since sentences where the anaphoric element precedes its antecedent are marked, the

deterioration of the acceptability of preposition doubling in the sentences where the

modifier precedes the noun is explained:

142.
  a) **Ivan**   **bilja**   **[_{AP} novoji]**   **žyve**   **[_{NP} školy]**
     John.NOM next-to   new.F.SG.GEN   lives   school.F.SG.GEN
     "John lives next to a NEW school."

  b)? **Ivan**   **[_{PP} bilja**   **novoji** pro]   **žyve,**   **[_{PP} bilja**   **školy]**
     John.NOM next-to new.F.SG.GEN   lives   next-to school.F.SG.GEN
     "John lives next to the new one, a school."

In (142b), the anaphoric null noun precedes the overt antecedent. There is no null noun

in (142a) and thus there is no deterioration in acceptability.

Given the mechanism of Distributed Deletion and the fact that noun and adjective can be

spelled out freely in any copy of the constituent, one would expect to see the same

freedom in the surface distribution of the preposition across all the available structural

locations of the preposition, all else being equal. This is not the case. The preposition

has to be spelled out obligatorily in the leftmost fragment. Sentences where the

preposition is spelled out in the lower copy only are ungrammatical:

143. * <u>Školy</u>   **Ivan**   **žyve**   <u>**bilja**   **novoji**</u>
     school.F.SG.GEN John.NOM lives   next-to new.F.SG.GEN
     (*"As for the school John lives next to, it is a NEW one."*)

     [_{PP} ~~bilja   novoji~~   školy] **Ivan**   **žyve** **[_{PP} bilja   novoji   ~~školy~~]**

This does not follow from the theory of Distributed Deletion and has to be stipulated.

Maintaining such stipulation is particularly challenging given the claim that the

preposition in the lower copy can in principle be spelled out when the preposition in the upper copy is spelled out as well. Finally, if the spell out of the preposition in several locations is allowed, Distributed Deletion predicts that preposition can be spelled in each of the three fragments of the tripartite noun phrase in (144a) (see chapter 5 for a detailed discussion of tripartite discontinuous PPs). This is not the case. In fact, this leads to ungrammaticality:

144.
  a) * **Bilja   duzhe Ivan bilja   vysokoji   stojit' bilja   žinky**
    Next-to very   John next-to   tall.F.SG.GEN stands next-to woman.F.SG.GEN
    ("John stands next to a VERY TALL woman.")

  [PP bilja duzhe ~~vysokoji žinky~~] Ivan [PP bilja ~~duzhe~~ vysokoji ~~žinky~~]
      stojit' [PP bilja ~~duzhe vysokoji~~ žinky]

  b) **Bilja   duzhe Ivan   vysokoji   stojit'   žinky**
    Next-to very   John.NOM   tall.F.SG.GEN stands   woman.F.SG.GEN
    "John stands next to a VERY TALL woman."

  [PP bilja duzhe ~~vysokoji žinky~~] Ivan [PP ~~bilja duzhe~~ vysokoji ~~žinky~~]
      stojit' [PP ~~bilja duzhe vysokoji~~ žinky]

The ungrammaticality of (144a), however, is predicted on our account since it cannot be generated by means of apposition. The degree adverb cannot form a constituent with the preposition and a null noun.

Finally, Distributed Deletion also makes wrong predictions as to whether the preposition can be separated from the rest of the noun phrase in discontinuous constituents. As discussed at the outset of this chapter, in Ukrainian the preposition cannot be separated from the noun it is associated with. There are, however, no theory internal constraints that prevents separating the preposition from the rest of the noun phrase given the mechanism of Distributed Deletion:

145. * <u>**Bilja**</u>   **Ivan**   **žyve**   <u>**novoji**</u>   <u>**školy**</u>
next-to   John.NOM   lives   new.F.SG.GEN   school.F.SG.GEN
(*"John lives NEXT to the new school."*)

[PP bilja ~~novoji školy~~] Ivan žyve [PP ~~bilja~~ novoji školy]

There is a disagreement in literature on discontinuous constituents in Russian whether

preposition can appear in isolation in a discontinuous constituent or not. Sekerina (1997)

claims that in Russian preposition must appear adjacent to some part of its complement

and cannot be isolated. Pereltsvaig (2008) admits that in most cases prepositions cannot

appear separated from the rest of the noun phrases; however, she points out that there are

some instances when separating the preposition is indeed possible. She cites the

following example:[8]

146.   <u>**Protiv**</u>   **on**   **vystupal**   <u>**sovetskoj vlasti,**</u>   **a**   **ne**   **za (neë)**
against   he   demonstrated   Soviet   regime   and   not   for (it)
"He demonstrated AGAINST the Soviet regime and not FOR it."
                                                                                    (Pereltsvaig (2008): 34)

Pereltsvaig (2008) takes the data in (146) as evidence that prepositions in Russian can in

principle be freely separated from the rest noun phrase and claims that the data in (146)

support the Distributed Deletion approach to discontinuity. The data in (146), however,

cannot be used to form a generalization about the behavior of prepositions in Russian in

general since the item *protiv* is ambiguous in Russian between a purely functional and a

lexical status. It is often used without a complement:

147.
  a)   **Ja**   **golosovala**   **ne**   **protiv**   **a**   **za.**
          I.NOM   voted   not   againt   but   for
          "I voted not against but for."

  b)   **Kto**   **protiv?**
          who.NOM   against
          "Who is against it?"

c) Ty   ne   protiv?
You.NOM   not   against
"You don't mind, do you?"

Ukrainian also has items that are ambiguous between their functional and lexical status.

These ambiguous items are often used in isolation when they are analyzed as a lexical

category. They, however, require to be adjacent to the noun when they act as functional

heads. For instance, the same item, when used as a preposition, has to be adjacent to the

noun in (148a-b) but, when used as an adverb, can stand alone in (148c):

148.
  a) Ivan   žyve   blyzko školy
      John.NOM   lives   near   school.F.SG.GEN
      "John lives near the school."

  b) * Blyzko   Ivan   žyve   školy
      Near   John.NOM   near   school.F.SG.GEN

  c) Ivan   žyve   blyzko
      John   lives   nearby
      "John lives nearby."

The Russian example belongs to this group of data. *Protiv* in (146) can be isolated

because it is reanalyzed as an adverb (compare Franks (2007)).

The reanalysis that takes place in (146) can be conceived along the lines of Hornstein and

Weinberg (1981) and Chomsky (1981). *Protiv* in (146) is reanalyzed as an adverb and

the adverb+verb complex case marks the noun. Note that Russian has a productive

construction where the case assigning properties of the verb are changed due to the

presence of another item in the clause. Negation in Russian licenses Genitive case on the

complement of the verb which otherwise assigns Accusative (see Babby (1980), Brown

(1999)):

149.

a) **Ivan**   **kupil**   **galstuk**
John.NOM   buy.PST   book.F.SG.ACC
"John bought a tie."

b) *** Ivan**   **kupil**   **galstuka**
John.NOM   buy.PST   book.F.SG.GEN

c) **Ivan**   **ne**   **kupil**   **galstuka**
John.NOM   not   buy.PST   book.F.SG.GEN
"John did not buy a tie."

Similarly, the adverbial preposition and the verb jointly case mark the argument in (146), creating a false impression that a functional item can be isolated in a discontinuous constituents from other lexical categories that are associated with this constituent.

3.5 Summary

In this chapter, I examined the properties and provided analysis for discontinuous prepositional phrases in Ukrainian. Discontinuous PPs in Ukrainian are characterized by an asymmetry in the distribution of the adjective and the preposition. The distribution of the preposition is much more restricted than the distribution of the adjective. Unlike the adjective, the preposition cannot be separated from the associated noun and the order between the noun and the preposition cannot be changed. I argued that the differences in the distribution of the adjective and the preposition in discontinuous constituents follow from more general differences between lexical and functional categories and are the direct outcome of the application of the linearization mechanism that respects the F-value ordering principle. I also demonstrated that the MCL linearization algorithm proposed in chapter 1 allows one to maintain a theory of discontinuous constituents that treats discontinuity, including PP discontinuity, as the result of long-distance concord between

the noun and its modifier. In Ukrainian, the preposition has to be base-generated next to the noun, because prepositions have clearly marked characteristics of a nominal functional category in the language. They form a closed class of syntactic items, take only one kind of complement, and are inseparable from their complement. At the outset of the derivation the adjective is not linked to the nominal extended projection and can be base-generated at a distance from the noun. However, the adjective becomes associated with the nominal extended projection through agreement. Secondary predicates in Ukrainian provide independent evidence that agreement with the noun embedded inside a PP is indeed possible in the language. Since the MCL linearization algorithm linearizes all the items according to their F-value based on their association with a particular extended projection, the agreement-based association of the long-distance adjectival modifier with the nominal extended projection determines the linearization of the nominal function categories before the adjectival modifier.

In Ukrainian, discontinuous prepositional phrases, like discontinuous noun phrases, are characterized by a free noun-adjective order. The adjectival modifier can appear either before or after the noun. The preposition, however, always appears preceding the leftmost item of a discontinuous constituent. Since the F-value of all lexical items is the same, these items can be re-ordered in relation to each other in the hierarchical structure and this re-ordering is maintained in the course of their linearization at PF. Given the unconstrained nature of Merge assumed here, the adjective and the noun can be re-ordered either by fronting the entire PP or by fronting the NP embedded inside it. When the bare NP is topicalized, the preposition is linearized preceding this NP at PF. It is

possible that languages do have a choice as to whether to dislocate a noun phrase or a prepositional phrase that contains it. The analysis of inverse discontinuous PPs that relies on the extraction of the noun phrase from the PP followed by the linearization of the preposition before the noun has an additional advantage of providing an explanation for the phenomenon of preposition stranding. Whether preposition stranding occurs or not in any given language depends on the lexical properties of the preposition in this language. Given the MCL algorithm, preposition stranding is predicted to occur in those cases when the complement taking preposition is a lexical rather than a functional category in the language and/or the categorial feature sharing between the preposition and its complement does not take place because the two are distinct categories.

The availability of preposition doubling constructions has been argued to support the Distributed Deletion approach to discontinuity developed in Fanselow & Čavar (2001). Consideration of the intonation pattern of the discontinuous constructions with and without preposition doubling as well as the interpretative differences between them raise doubts as to the advisability of a uniform structural analysis of the constructions with and without preposition doubling. I, therefore, maintain that these discontinuous constructions are structurally distinct: the construction without preposition doubling contains a single, albeit discontinuous, PP constituent while the construction with preposition doubling has two distinct PP constituents. The second PP is headed by a null noun. I also review evidence that prepositions can be separated from the noun in Russian and argue that this happens only when the prepositional item is ambiguous between a functional and lexical status and can be used intransitively.

Chapter 4: Discontinuous DPs

4.0 Introduction

Discontinuous constituents in Modern Greek are characterized by the same asymmetry in

the distribution of functional and lexical categories as discontinuous constituents in

Ukrainian. Modern Greek, however, has a richer nominal functional domain and it,

therefore, provides further evidence of dependencies between the distribution of

functional categories and the PF linearization mechanism. In particular, the distribution

of the determiners in Modern Greek demonstrates that the asymmetries discussed in

relation to the distribution of the preposition in Ukrainian are of a general nature and are

not confined to a single functional category. The distribution of determiners in

discontinuous constituents in Modern Greek is also subject to restrictions (see

Androutsopoulou (1994, 1995, 1997, 1998), Alexiadou and Wilder (1998), Kolliakou

(1998, 2003, 2004), Giannakidou and Stavrou (1999), Devine and Stephens (2000),

Panagiotidis (2000), Alexiadou (2001, 2006), Kariaeva (2003), Mathieu (2004a), Campos

and Stavrou (2004), Ntelitheos (2004), Mathieu and Sitaridou (2005), Ioannidou and Den

Dikken (2008), Lekakou and Szendrői (2008) on various studies of the Modern Greek

DP). In Modern Greek, the modifier can easily be separated from the head noun while

the determiner cannot:

150.
   a) **Agorazi   megala   aftokinita**
      buy.3.SG big.PL.ACC car.PL.ACC
      "He buys big cars."

   b) **Megala   agorazi   aftokinita**
      big.PL.ACC buy.3.SG   car.PL.ACC
      "He buys BIG cars."

151.

   a) **Agorase**   **<u>to</u>**   **<u>aftokinito</u>**
       bought.3.SG the.N.SG.ACC car.N.SG.ACC
       "He bought the car."

   b) * **<u>To</u>**   **agorase**   **<u>aftokinito</u>**
       the.N.SG.ACC bought.3.SG   car.N.SG.ACC

This parallels the distribution of the preposition in Ukrainian.

Functional and lexical categories in Modern Greek also differ as to the rigidity of the

order between them. The order between a noun and an adjective can be changed while

the order between a noun and a determiner cannot:

152.

   a) **Agorazi**   **<u>megala</u>**   **<u>aftokinita</u>**
       buy.3.SG   big.PL.ACC   car.PL.ACC
       "He buys big cars."

   b) **Agorazi**   **<u>aftokinita</u>**   **<u>megala</u>**
       buy.3.SG   car.PL.ACC   big.PL.ACC
       "He buys big cars."

153.

   a) **Agorase**   **<u>to</u>**   **<u>aftokinito</u>**
       bought.3.SG   the.N.SG.ACC   car.N.SG.ACC
       "He bought the car."

   b) * **Agorase**   **<u>aftokinito</u>**   **<u>to</u>**
       bought.3.SG   car.N.SG.ACC   the.N.SG.ACC

Similarly, the order between lexical categories across a discontinuous constituent can be

reversed while the order between functional and lexical categories cannot be changed. In

the discontinuous noun phrase in (154), the indefinite article *ena* ("a") has to precede

both the noun and the modifier while the order between the noun and the modifier can be

reversed:

154.

a) <u>**Ena**</u>　　　　<u>**megalo**</u>　　　<u>**agorase**</u>　　　<u>**aftokinito**</u>
　　a.N.SG.ACC　big.N.SG.ACC　bought.3.SG　car.N.SG.ACC
　　"He bought a BIG car."

b) <u>**Ena**</u>　　　　<u>**aftokinito**</u>　　<u>**agorase**</u>　　　<u>**megalo**</u>
　　a.N.SG.ACC　car.N.SG.ACC　bought.3.SG　big.N.SG.ACC
　　"He bought a big CAR."

c) * <u>**Megalo**</u>　　　<u>**agorase**</u>　　　<u>**ena**</u>　　　　<u>**aftokinito**</u>
　　big.N.SG.ACC　bought.3.SG　a.N.SG.ACC　car.N.SG.ACC

d) * <u>**Aftokinito**</u>　　<u>**agorase**</u>　　　<u>**ena**</u>　　　　<u>**megalo**</u>
　　car.N.SG.ACC　bought.3.SG　a.N.SG.ACC　big.N.SG.ACC

Not only is the order between functional and lexical categories in a discontinuous

constituent rigid, the order between functional categories is rigid as well. In Modern

Greek, the order between the preposition and the determiner cannot be altered in a

discontinuous structure. The preposition must precede the determiner and both must

precede the first lexical item of the discontinuous NP:

155.

a) <u>**Se　ena**</u>　　　　<u>**megalo**</u>　　　<u>**meni**</u>　　<u>**spiti**</u>
　　in　a.N.SG.ACC　big.N.SG.ACC　lives.3.SG　house.N.SG.ACC
　　"He lives in a BIG house."

b)* <u>**Ena**</u>　　　　<u>**se　megalo**</u>　　<u>**meni**</u>　　<u>**spiti**</u>
　　a.N.SG.ACC　in　big.N.SG.ACC　lives.3.SG　house.N.SG.ACC

c)* <u>**Se　megalo**</u>　　<u>**meni**</u>　　<u>**ena**</u>　　　　<u>**spiti**</u>
　　in　big.N.SG.ACC　lives.3.SG　a.N.SG.ACC　house.N.SG.ACC

d)* <u>**Ena**</u>　　　　<u>**megalo**</u>　　　<u>**meni**</u>　　<u>**se　spiti**</u>
　　a.N.SG.ACC　big.N.SG.ACC　lives.3.SG　in　house.N.SG.ACC

Consequently, in Modern Greek, functional categories can neither be reordered in

relation to each other nor in relation to lexical categories they are associated with.

The distribution of determiners in discontinuous constituents in Modern Greek is particularly interesting since the definite article in the language is subject to an optional process of Determiner Spreading (DS) (see references above). In discontinuous DPs, Determiner Spreading is allowed only when the DP is definite. Moreover, Determiner Spreading is optional in linear definite discontinuous DPs and is obligatory in inverse definite discontinuous DPs:

156.
   a)   **<u>Ena</u>**   **<u>megalo</u>**   **<u>agorase</u>**   **<u>diamerisma</u>**
       a.N.SG.ACC big.N.SG.ACC bought.3.SG apartment.N.SG.ACC
       "He bought a BIG apartment."

   b)* **<u>Ena</u>**   **<u>megalo</u>**   **<u>agorase</u>**   **<u>ena</u>**   **<u>diamerisma</u>**
       a.N.SG.ACC big.N.SG.ACC bought.3.SG a.N.SG.ACC apartment.N.SG.ACC

157.
   a)   **<u>Ena</u>**   **<u>diamerisma</u>**   **<u>agorase</u>**   **<u>megalo</u>**
       a.N.SG.ACC   apartment.N.SG.ACC bought.3.SG big.N.SG.ACC
       "He bought a big APARTMENT."

   b)* **<u>Ena</u>**   **<u>diamerisma</u>**   **<u>agorase</u>**   **<u>ena</u>**   **<u>megalo</u>**
       a.N.SG.ACC apartment.N.SG.ACC bought.3.SG a.N.SG.ACC big.N.SG.ACC

158.
   a)   **<u>To</u>**   **<u>megalo</u>**   **<u>agorase</u>**   **<u>diamerisma</u>**
       the.N.SG.ACC big.N.SG.ACC bought.3.SG   apartment.N.SG.ACC
       "He bought the BIG apartment."

   b)   **<u>To</u>**   **<u>megalo</u>**   **<u>agorase</u>**   **<u>to</u>**   **<u>diamerisma</u>**
       the.N.SG.ACC big.N.SG.ACC bought.3SG the.N.SG.ACC apartment.N.SG.ACC
       "He bought the BIG apartment."

159.
   a)* **<u>To</u>**   **<u>diamerisma</u>**   **<u>agorase</u>**   **<u>megalo</u>**
       the.N.SG.ACC   apartment.N.SG.ACC bought.3.SG big.N.SG.ACC

   b)   **<u>To</u>**   **<u>diamerisma</u>**   **<u>agorase</u>**   **<u>to</u>**   **<u>megalo</u>**
       the.N.SG.ACC apartment.N.SG.ACC bought.3.SG the.N.SG.ACC big.N.SG.ACC
       "He bought the big APARTMENT."

The indefinite article thus behaves in discontinuous contexts exactly as expected of a functional category given our analysis of the distribution of the preposition in discontinuous PPs in Ukrainian. It is always mapped before all other lexical categories that belong to the same noun phrase. It cannot be doubled inside a single noun phrase. Any doubling of the indefinite article signals the presence of an appositive construction and is possible only when the modifier follows the noun. Inverse discontinuity is available in indefinite noun phrases even though determiner doubling is not. In contrast, the behavior of the definite determiner—in particular, its ability to be doubled and obligatory nature of determiner doubling in inverse definite discontinuous constructions—requires additional explanation.

In sections 4.1 and 4.2, I examine the distribution of the indefinite article in both linear and inverse discontinuous DPs in Modern Greek and show that the distribution of the indefinite article is similar to the distribution of the preposition in Ukraine and is fully captured by the MCL linearization algorithm. In section 4.3, I demonstrate that the MCL algorithm handles correctly not only those cases of discontinuity that involve a single functional category, such as a preposition in Ukrainian or an indefinite article in Modern Greek, but also the cases that involve several nominal functional categories. In particular, I examine the linearization of a discontinuous PP that also contains a determiner. Finally, in section 4.4, I turn to the phenomenon of Determiner Spreading. Following Kariaeva (2003), I analyze Determiner Spreading as the result of agreement in definiteness between the modifier and the DP rather than the NP. I argue that functional information in the language is represented as a correlation between the feature

information and the F-value associated with it. Whenever definiteness spreads in the

course of agreement, the F-value associated with it spreads as well. As a result, the

adjective carries both its own lexical F-value and the F-value associated with the

definiteness feature. The availability of two F-values of the feature template of the

adjective that underwent agreement in definiteness explains the complex distribution of

the determiner in definite discontinuous noun phrases.

4.1 Linear Discontinuous DPs

The distribution of the indefinite article in discontinuous noun phrases in Modern Greek

mirrors that of the preposition in Ukrainian. The indefinite article cannot be separated

from the lexical items and has to appear preceding the left-most item of a discontinuous

noun phrase[9]:

160.
   a) **Agorase**   **ena**   **megalo**   **diamerisma**
      bought.3.SG   a.N.SG.ACC   big.N.SG.ACC   apartment.N.SG.ACC
      "He bought a big apartment."

   b) * **Ena**   agorase   **megalo**   **diamerisma**
      a.N.SG.ACC bought.3.SG   big.N.SG.ACC   apartment.N.SG.ACC

   c) * **Megalo**   agorase   **ena**   **diamerisma**
      big.N.SG.ACC   bought.3.SG   a.N.SG.ACC apartment.N.SG.ACC

   d) **Ena**   **megalo**   agorase   **diamerisma**
      a.N.SG.ACC   big.N.SG.ACC   bought.3.SG   apartment.N.SG.ACC
      "He bought a BIG apartment."

DP discontinuity in Modern Greek should, therefore, be analyzed on a par with PP

discontinuity in Ukrainian: it is the result of base-generating the modifier at a distance

from the DP. The surface distribution of the indefinite article is determined by the

linearization algorithm at PF. Hence, the sentence in (160d), which contains a legitimate

discontinuous indefinite DP, should be assigned the structural representation in (161):

161.

Megalo		agorase	ena	diamerisma
big.N.SG.ACC		buy.PST	a.N.SG.ACC	apartment.N.SG.ACC

"He bought a BIG apartment."
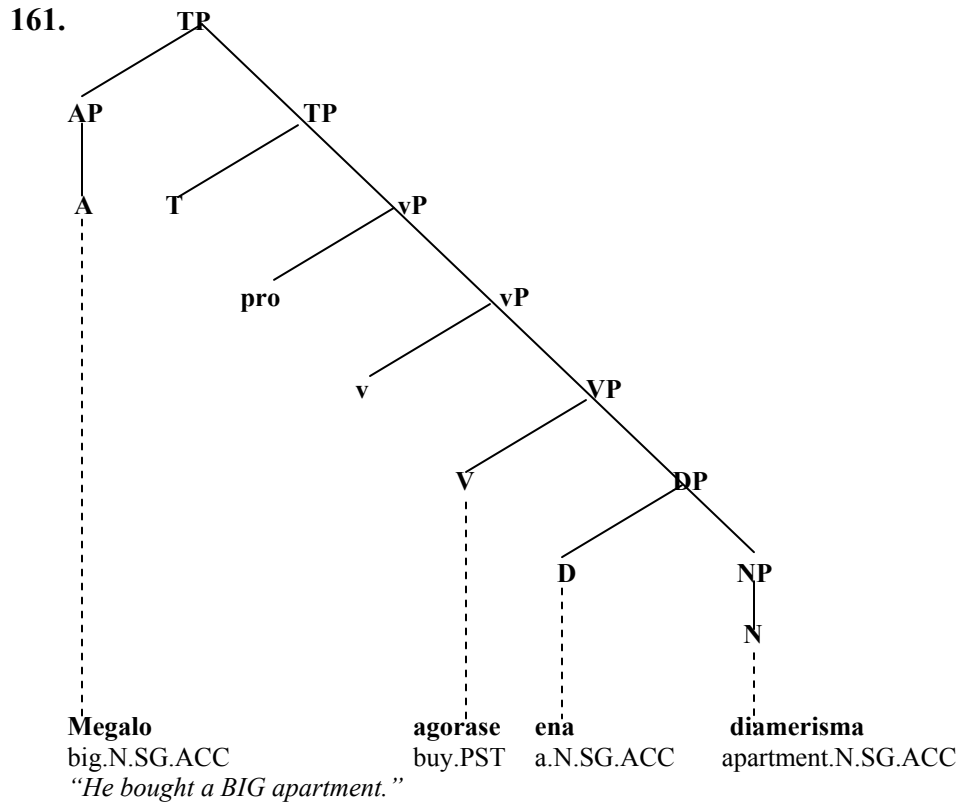
The indefinite article is generated as part of the extended projection of the noun. The

adjectival modifier, being a lexical item, is generated in its spell out location at a distance

from the determiner phrase. I assume that it is generated adjoined to the TP to satisfy the

EPP on T, as discussed in chapter 2. I, however, leave open a possibility that it is

generated as vP adjunct, if EPP on T is satisfied by pro. The adjective is associated with

the nominal extended projection in narrow syntax as the result of agreement. As usual, I

assume the minimum of movement transformations necessary to generate a structurally

sound clause, given the mechanism of long-distance agreement. The MCL algorithm

that applies at the interface with PF ensures that the surface distribution of all the items in

the phrase marker in (161) obeys the F-value ordering requirement at that level.

Consider the application of the MCL algorithm to the phrase marker in (161). At stage 1, the MCL algorithm generates a set M of ordered pairs of non-terminals such that the first member of each pair asymmetrically c-commands the second member of the pair: {<T, AP, TP>, <AP, T>, <AP, pro>, <AP, vP>, <AP, v>, <AP, VP>, <AP, V>, <AP, DP>, <AP, D>, <AP, NP>, <AP, N>, <T, pro>, <T, v>, <T, VP>, <T, V>, <T, DP1>, <T, D1>, <T, NP1>, <T, N1>, <pro, vP>, <pro, v>, <pro, VP>, <pro, V>, <pro, DP>, <pro, D>, <pro, NP>, <pro, N>, <v, V>, <v, DP>, <v, D>, <v, NP>, <v, N>, <V, D>, <V, NP>, <V, N>, <D, N>}. I treat *pro* as a syntactic category that does not undergo any displacement and remains in its in situ position (see Kučerova (2008)). At stage 2, the MCL algorithm verifies that every pair in M complies with the F-value ordering requirement. The set M contains the pair <AP, D>, which does not comply with this requirement:

162. AP: {cat([5]), gen([10]), num([15]), case([20])), F(0)}
  D: {cat(nom[5]), gen([10]), num([15]), case([20])), F(5)}

At stage 2, this pair is replaced with the pair <D, AP>, which complies with the F-value ordering requirement. In addition, the pairs <pro, D>, <v, D>, and <V, D> are replaced with the pairs <D, pro>, <D, v> and <D, V>. At stage 3, the modified set of pairs of non-terminals M' is mapped onto a corresponding set of pairs of terminals R: <megalo, agorase>, <ena, megalo>, <megalo, diamerisma>, <ena, agorase>, <agorase, diamerisma>, <ena, diamerisma>}. The union over the set R gives a total linear ordering of all terminals in the phrase marker: *ena > megalo > agorase > diamerisma*. This linear ordering corresponds to the grammatical sentence in (160d) containing a discontinuous DP. Consequently, the MCL algorithm provides a correct linearization both for the

preposition in Ukrainian and for the indefinite article in Modern Greek. It, thus, captures the uniform behavior of these two functional categories in discontinuous constituents.

4.2 Inverse Discontinuous DPs

Discontinuous DPs in Modern Greek, like discontinuous prepositional phrases in Ukrainian, permit noun adjective re-ordering. The adjectival modifier can appear either preceding or following the noun in an indefinite DP in Modern Greek. The indefinite article always appears preceding the leftmost item of a discontinuous constituent, regardless of the order between them:

163.
  a) **Ena   megalo   agorase   aftokinito**
     a.ACC   big.ACC   bought.3.SG car.ACC
     "He bought a BIG car."

  b) **Ena   aftokinito   agorase   megalo**
     a.ACC   car.ACC   bought.3.SG   big.ACC
     "He bought a big CAR."

  c) * **Aftokinito   agorase   ena   megalo**
     car.ACC   bought.3.SG   a.ACC   big.ACC

Since we are operating under the hypothesis that either the extended projection as a whole or the smallest XP within that extended projection can be dislocated, there are two possible derivations for (163b). Either the NP itself is dislocated to the left with the article mapped before this NP at PF or the entire DP is dislocated in narrow syntax. As we demonstrated in chapter 3, the MCL algorithm provides a correct linearization under either of these analyses. In chapter 3, we suggested that the choice as to which item to dislocated is determined by pragmatic factors. Leftward dislocation of the noun phrase in Modern Greek is associated with narrow focus assignment (see Tsimpli (1995)) and

determines how the dislocated item is used in the process of discourse update (compare

the discussion in chapter 2, section 2.4). Note, however, that determiners play an

important role in the process of discourse update and determine how the discourse

referent is introduced (see Heim (1981), Vallduví (1992), Erteschik-Shir (1997)). It is,

therefore, reasonable to assume that the entire DP, rather than the embedded NP, is

dislocated. Hence, I associate noun-adjective inversion in Modern Greek with the DP

rather than the NP movement. I also, continue to treat inverse discontinuity as derivative

of linear discontinuity, keeping in mind that the modifier can be generated inside the

extended noun phrase as long as it is not generated as an adjunct to the projection that is

being dislocated, in this case, the DP. I leave the issue of determining more precisely the

location of the modifier open for further research. The phrase marker in (164) represents

the structure of the sentence in (163b):

164.

ena aftokinito agorase megalo
a   car   bought big
.N.SG.ACC   .3.SG   .N.SG.ACC
"He bought a big CAR."

Consider the application of the MCL algorithm to the phrase marker in (164). At stage 1, the MCL algorithm generates a set M of ordered pairs of non-terminals such that the first member of each pair asymmetrically c-commands the second member of the pair generated by the MCL algorithm: {<D, N>, <DP, TP>, <DP, T>, <DP, v/V>, <DP, AP>, <DP, A>, <DP, pro>, <DP, vP>, <DP, VP>, <T, AP>, <T, A>, <T, pro>, <T, VP>, <v/V, T>, <v/V, AP>, <v/V, A>, <v/V, pro>, <v/V, VP>, <AP, vP>, <AP, VP>, <pro, vP>, <pro, VP>}. This set does not contain any pairs that violate the F-value ordering requirement. The F-value of DP is higher than the F-value of AP, as required:

165. DP: {cat(nom[5]), gen(fem[10]), num(sg[15]), case([20])), F(5)}
AP: {cat([5]), gen([10]), num([15]), case([20])), F(0)}

No alterations are made at stage 2, and at stage 3, the set of pairs of non-terminals M' that is identical to M is mapped onto a corresponding set of pairs of terminals R: {<(ena, aftokinito), agorase>, <(ena, aftokinito), megalo>, <agorase, megalo>}. The union over this set gives a total linear ordering of all terminals in the phrase marker: *ena > aftokinito > agorase > megalo*. It corresponds to the grammatical sentence in (163b), which contains a discontinuous inverse DP. Consequently, the MCL algorithm correctly permits re-ordering of the noun and the modifier not only when they are part of a discontinuous NP and PP but also when they are part of a discontinuous DP.

4.3 Preposition-Determiner Stacking

Prepositions in Modern Greek exhibit the same distribution as prepositions in Ukrainian. They cannot appear isolated from other categories that are associated with the nominal extended projection and have to surface in the left-most position of a discontinuous constituent:

166.

  a) **Meni   se   megala   diamerismata**
  live.3.SG   in   big.N.PL.ACC apartment.N.PL.ACC
  "He lives in big apartments."

  b) * **Se   meni   megala   diamerismata**
       in   live.3.SG big.N.PL.ACC   apartment.N.PL.ACC

  c) **Se   megala   meni   diamerismata**
  in   big.N.PL.ACC   live.3.SG apartment.N.PL.ACC
  "He lives in BIG apartments."

The distribution of the preposition in Modern Greek appears, therefore, to be subject to

the same principles as the distribution of the preposition in Ukrainian. However, because

Modern Greek has overt determiners, the derivation of the PPs in the language warrants

additional consideration. Whenever a preposition and a determiner co-occur inside a

linear discontinuous noun phrase they are both mapped preceding the modifier and are

ordered in relation to each other in exactly the same way as they are ordered inside a

regular noun phrase:

167.

  a) **Meni   se   ena   megalo   diamerisma**
  live.3.SG   in   a.N.SG.ACC   big.N.SG.ACC apartment.N.SG.ACC
  "He lives in a big apartment."

  b) **Se ena   megalo   meni   diamerisma**
  in a.N.SG.ACC big.N.SG.ACC   live.3.SG   apartment.N.SG.ACC
  "He lives in a BIG apartment."

  c) * **Ena   se   megalo   meni   diamerisma**
       a.N.SG.ACC   in   big.N.SG.ACC   live.3.SG   apartment.N.SG.ACC

  d) * **Se   megalo   meni   ena   diamerisma**
       in   big.N.SG.ACC   live.3.SG a.N.SG.ACC   apartment.N.SG.ACC

  e) * **Ena   megalo   meni   se   diamerisma**
       a.N.SG.ACC   big.N.SG.ACC   live.3.SG   in   apartment.N.SG.ACC

Since the determiner and the preposition are ordered in relation to each other in terms of their F-value, with the F-value of the preposition being higher than the F-value of the determiner, the MCL algorithm is expected to provide the correct linearization of these functional items in a discontinuous construction.

More specifically, the sentence in (167b) is associated with the structural representation in (168):

168.

megalo   meni   se   ena   diamerisma
big.N.SG.ACC   live.3.SG in   a.N.SG.ACC   apartment.N.SG.ACC
"He lives in a BIG apartment."
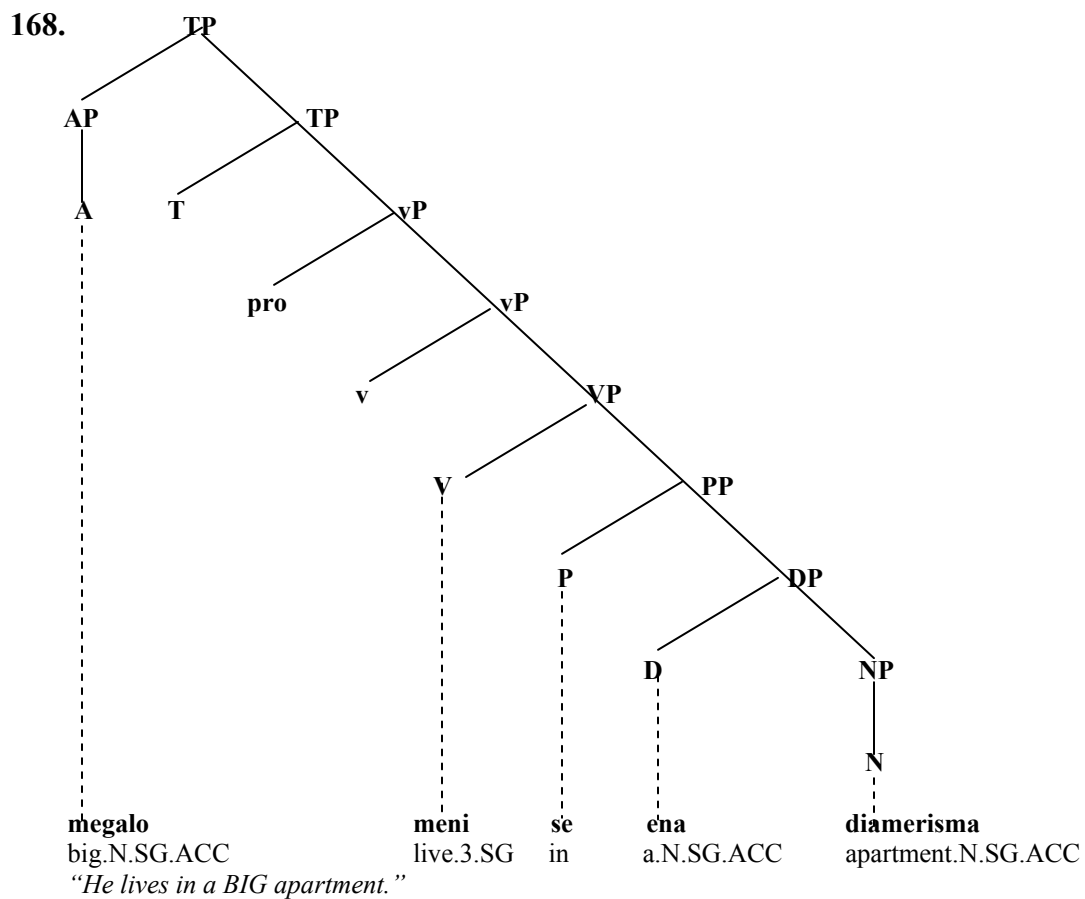
Both the preposition and the determiner form an extended projection with the noun. They are ordered in accordance with their F-values, with the preposition appearing higher in the tree than the determiner. The modifier is generated in a higher position, adjoined to vP. The MCL algorithm applies in the usual manner. At stage 1, it generates a set M

of ordered pairs of non-terminals such that the first member of each pair asymmetrically c-commands the second member of the pair: {<AP, TP>, <AP, T>, <AP, pro>, <AP, vP>, <AP, v>, <AP, VP>, <AP, V>, <AP, PP>, <AP, P>, <AP, DP>, <AP, D>, <AP, NP>, <AP, N>, <T, pro>, <T, v>, <T, VP>, <T, V>, <T, PP>, <T, P>, <T, DP>, <T, D>, <T, NP>, <T, N>, <pro, vP>, <pro, v>, <pro, VP>, <pro, V>, <pro, PP>, <pro, P>, <pro, DP>, <pro, D>, <pro, NP>, <pro, N>, <v, V>, <v, PP>, <v, P>, <v, DP>, <v, D>, <v, NP>, <v, N>, <V, P>, <V, DP>, <V, D>, <V, NP>, <V, N>, <P, D>, <P, NP>, <P, N>, <D, N>}. At stage 2, the MCL algorithm checks whether each pair in the set generated at stage 1 complies with the F-value ordering requirement. The set M contains the pairs <AP, P> and <AP, D> that violate this requirement:

169. AP: {cat([5]), gen([10]), num([15]), case([20])), F(0)}
P: {cat(nom[5]), gen([10]), num([15]), case(loc[20])), F(7)}
D: {cat(nom[5]), gen([10]), num([15]), case([20])), F(5)}

At stage 2, these pairs are replaced with the pairs <P, AP> and <D, AP>, which do comply with the F-value ordering requirement. In addition, the pairs <T, P>, <pro, P>, <v, P>, <V, P>, <T, D>, <pro, D>, <v, D>, and <V, D> are replaced as well . Crucially, the members of the pair <P, D> are not reordered since this pair complies with the F-value ordering requirement. As a result, the order between the preposition and the determiner in the discontinuous constituent is kept the same as in a regular PP. At stage 3, the modified set of pairs of non-terminals M' is mapped onto a corresponding set of pairs of terminals R: {<megalo, meni>, <se, megalo>, <ena, megalo>, <megalo, diamerisma>, <se, meni>, <ena, meni>, <meni, diamerisma>, <se, ena>, <se, diamerisma>, <ena, diamerisma>}. The union over the set R gives a total linear ordering of all terminals in the phrase marker: *se > ena > megalo > meni > diamerisma*. This

corresponds to the grammatical sentence in (167b). Consequently, the MCL algorithm linearizes both the preposition and the determiner immediately preceding the modifier, while at the same time preserving the original order between them. An inverse discontinuous PP is derived in the same way as an inverse discontinuous DP, with the order between the preposition and the determiner maintained in the linear representation.

4.4 DP Discontinuity and Determiner Spreading

The class of determiners in Modern Greek is not homogeneous and the two core determiners, the definite article and the indefinite article, show different behavior patterns in the language. In particular, only the definite article is subject to Determiner Spreading in Modern Greek (see Androutsopoulou (1994, 1995), Alexiadou and Wilder (1998), Kolliakou (1998, 2003, 2004), Alexiadou (2001, 2006), Kariaeva (2003), Campos and Stavrou (2004), Mathieu (2004), Ntelitheos (2004), Ioannidou and Den Dikken (2008), Lekakou and Szendrői (2007, 2008)). The term Determiner Spreading refers to the co-occurrence of several tokens of the same determiner inside a single noun phrase. The term "polydefinites" is also used to refer to the noun phrase with several definiteness markers:

170. **to**   **megalo**   **to**   **vivlio**
the.N.SG.NOM big.N.SG.NOM the.N.SG.NOM book.N.SG.NOM
"the BIG book"

Determiner Spreading is found in a number of languages, but the details vary substantially from language to language. In Modern Greek, Determiner Spreading is optional in definite noun phrases and is prohibited in indefinite ones:

171.

   a)   **to**   **megalo**   **vivlio**
      the.N.SG.NOM   big.N.SG.NOM   book.N.SG.NOM
      "the big book"

   b)   **to**   **megalo**   **to**   **vivlio**
      the.N.SG.NOM   big.N.SG.NOM   the.N.SG.NOM   book.N.SG.NOM
      "the BIG book"

172.

   a)   **ena**   **megalo**   **vivlio**
      a.N.SG.NOM   big.N.SG.NOM   book.N.SG.NOM
      "a big book"

   b)* **ena**   **megalo**   **ena**   **vivlio**
      a.N.SG.NOM   big.N.SG.NOM   a.N.SG.NOM   book.N.SG.NOM

In addition, definite noun phrases without Determiner Spreading allow only pre-nominal placement of modifiers. This restriction is lifted, however, whenever more than one determiner is present:

173.

   a) * to   **vivlio**   **megalo**
      the.N.SG.NOM   book.N.SG.NOM   big.N.SG.NOM

   b)   **to**   **vivlio**   **to**   **megalo**
      the.N.SG.NOM   book.N.SG.NOM   the.N.SG.NOM   big.N.SG.NOM
      "the big BOOK"

Indefinite DPs, on the other hand, allow post-nominal placement of modifiers even though there is no Determiner Spreading:

174. **ena**   **vivlio**   **megalo**
      a.N.SG.NOM   book.N.SG.NOM   big.N.SG.NOM
      "a big BOOK"

Any doubling of the indefinite article is possible only under apposition.

The same restrictions can be observed in discontinuous noun phrases in Modern Greek.

Only definite discontinuous DPs allow more than one determiner:

175.

   a) * <u>Ena</u>   <u>megalo</u>   <u>agorase</u>   <u>ena</u>   <u>milo</u>
           a.N.SG.NOM   big.N.SG.NOM   bought.3.SG   a.N.SG.NOM   apple.N.SG.NOM

   b)* <u>Ena</u>   <u>milo</u>   <u>agorase</u>   <u>ena</u>   <u>megalo</u>
           a.N.SG.NOM apple.N.SG.NOM   bought.3.SG   a.N.SG.NOM big.N.SG.NOM

176.

   a) <u>To</u>   <u>megalo</u>   <u>agorase</u>   <u>to</u>   <u>milo</u>
           the.N.SG.NOM big.N.SG.NOM   bought.3.SG   the.N.SG.NOM apple.N.SG.NOM
           "He bought the BIG apple."

   b) <u>To</u>   <u>milo</u>   <u>agorase</u>   <u>to</u>   <u>megalo</u>
           the.N.SG.NOM apple.N.SG.NOM   bought.3.SG   the.N.SG.NOM big.N.SG.NOM
           "He bought the big APPLE."

Moreover, it is optional to have two definite determiners in a linear discontinuous noun

phrase but it is necessary to have two in inverse discontinuous structures:

177.

   a) <u>To</u>   <u>megalo</u>   <u>agorase</u>   <u>milo</u>
           the.N.SG.ACC big.N.SG.ACC   bought.3.SG   apple.N.SG.ACC
           "He bought the BIG apple."

   b) <u>To</u>   <u>megalo</u>   <u>agorase</u>   <u>to</u>   <u>milo</u>
           the.N.SG.NOM big.N.SG.NOM   bought.3.SG   the.N.SG.NOM apple.N.SG.NOM
           "He bought the BIG apple."

178.

   a)* <u>To</u>   <u>milo</u>   <u>agorase</u>   <u>megalo</u>
           the.N.SG.ACC   apple.N.SG.ACC bought.3.SG   big.N.SG.ACC

   b) <u>To</u>   <u>milo</u>   <u>agorase</u>   <u>to</u>   <u>megalo</u>
           the.N.SG.NOM apple.N.SG.NOM   bought.3.SG   the.N.SG.NOM big.N.SG.NOM
           "He bought the big APPLE."

Consequently, the distribution of the definite article in discontinuous constituents in

Modern Greek is different from that of other functional categories in Modern Greek and

Ukrainian and requires additional explanation.

Determiner Spreading can be approached from two perspectives: it can be analyzed either as the result of agreement between the noun and the modifier that extends beyond basic φ-feature agreement or it can be viewed as the result of a more complex noun phrase architecture. Agreement-based approaches have been developed predominantly to explain determiner doubling facts in the Semitic languages. Ritter (1991), Siloni (1997), and Borer (1999) derive determiner doubling in Hebrew by appealing to agreement in definiteness between the modifier and the noun. Crucially, determiner doubling in the Semitic languages is obligatory and does not trigger freedom of constituent order inside the noun phrase. Given the optional nature of determiner doubling in Modern Greek and definiteness/indefiniteness contrasts, none of the approaches proposed for the Semitic data is directly transferable to Greek. Several structure-based approaches have been developed to account for the Greek facts. These approaches either introduce additional structural nodes into the DP architecture to host multiple determiners and appeal to XP movement to explain the freedom of constituent order (see Androutsopoulou (1994, 1995), Alexiadou and Wilder (1998), Ioannidou and Den Dikken (2008)), or posit the existence of two distinct DPs, one of which contains a null noun or ellipsis (see Devine and Stephens (2000), Mathieu (2004a), Ntelitheos (2004), Lekakou and Szendrői (2008)). Kariaeva (2003) offers an agreement-based analysis of Determiner Spreading in Modern Greek that makes several structural assumptions about the noun phrase architecture, thus accounting for the optional nature of DS in the language. The account of Determiner Spreading in discontinuous DPs in Modern Greek proposed here will be based on Kariaeva (2003).

Kariaeva (2003) argues that the extended noun phrase is divided into two distinct

domains: a DP internal domain, studied in great detail since Abney (1987), and a DP

external domain—the equivalent of a Left Periphery for the noun phrase (compare

Szabolcsi (1983, 1994), Horrocks and Stavrou (1987), Rizzi (1997), Ihsane (2003),

Laenzlinger (2000, 2005)).[10] According to Kariaeva (2003), the presence of the

articulated Left Periphery of the noun phrase in Modern Greek is responsible for

Determiner Spreading facts. A modifier in Modern Greek can be base generated either

inside the DP or outside the DP, in the Left Periphery of the Noun Phrase:

179.
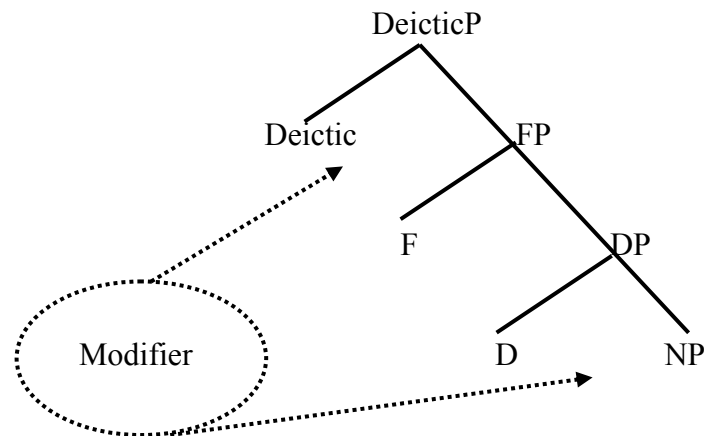
While regular DP internal modifiers agree with the noun in gender and number, focused

DP external modifiers have to agree with the entire DP in definiteness as well as in

gender and number (see chapter 7, sections 7.3 and 7.6, for a detailed discussion of the

locality constraint on agreement that prevents agreement with an NP contained inside a

DP for a probe located outside of the DP). The expanded agreement in φ-features with

the DP creates the effect of Determiner Spreading. The site of the generation of the

modifier correlates with the pragmatic function it plays. Attributive modifiers that are

generated inside the DP and are not accompanied by Determiner Spreading in regular

definite noun phrases are interpreted as pragmatically neutral while attributive modifiers

that are generated in the left periphery of the noun phrase, and hence are accompanied by Determiner Spreading in regular definite noun phrases, are interpreted as restrictive modifiers. The lack of Determiner Spreading in indefinite noun phrases results from the fact that the indefinite article in Modern Greek is not a true determiner but a quantifier and does not trigger the definiteness agreement and therefore does not cause indefiniteness spreading. Both Determiner Spreading and the freedom of constituent order in definite and indefinite noun phrases are analyzed as the result of pragmatic re-ordering of items inside the noun phrase, using the nominal Left Periphery.

The agreement in definiteness that happens in Modern Greek when a modifier is generated outside of the DP can be formalized in two distinct ways. Kariaeva (2003) opts for a structural solution. Kariaeva (2003) assumes that the determiner and the modifier form a constituent prior to entering into agreement with the DP:

180.
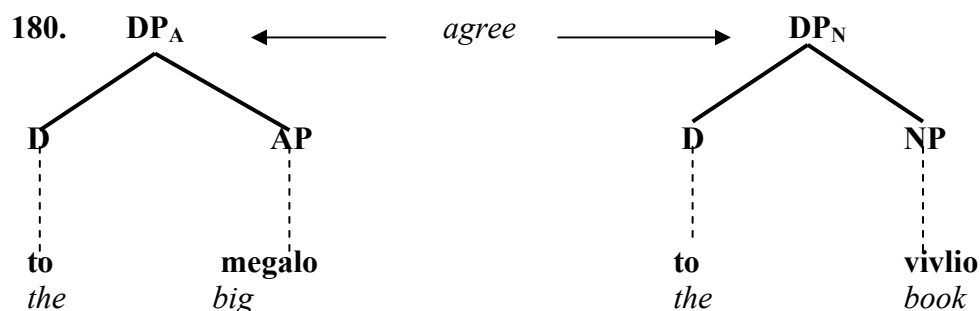
A theoretical concern, however, is that adjectival DPs of this sort do not occur independently in the language outside of the Determiner Spreading context. This type of supplementary phrase marker is entirely context dependent and, therefore, requires a substantial degree of look ahead to be generated. In this section, I will demonstrate that one can achieve the same determiner spreading effect by appealing to agreement alone without the need to generate supplementary structures. If in Modern Greek definiteness

is an agreement value on a par with number and gender values, all nominal items can be

formalized as containing a feature that can be valued as either definite or indefinite

(compare Hazout (1990), Siloni (1997), Borer (1999), Danon (2001, 2008), who treat

definiteness as an agreement feature in Hebrew). Let's call this feature, somewhat

arbitrarily, a referential feature since definiteness and indefiniteness values play

important role in how discourse referents are introduced into the common ground

(compare also Longobardi (1994)). For the sake of uniformity, I will assume that all

nominal categories are assigned this feature. The referential feature is valued as

indefinite on nouns and as definite on definite determiners while it is left unvalued on

adjectives:

181. A: {cat([ ]), gen([ ]), num([ ]), case([ ]), ref([ ]), F(0)}
D: {cat(nom[ ]), gen([ ]), num([ ]), case([ ]), ref(def[ ]), F(5)}
N: {cat(nom[ ]), gen(fem[ ]), num(sg[ ]), case([ ]), ref(indef[ ]), F(0)}

I will not provide arguments in support of positing a referential feature as a locus of

definiteness or the distribution of this feature across categories proposed in (181) since

my goal here is more modest: to demonstrate how a mechanism of agreement can be used

to account for Determiner Spreading facts in Modern Greek provided that definiteness is

encoded as feature value on nouns, adjectives, and determiners (for arguments in support

of definiteness as a feature the reader is referred to the literature on Hebrew cited above).

Consider agreement between various items inside the noun phrase. When an adjective

agrees with an NP, its referential feature is valued as indefinite by way of feature

unification and feature sharing:

182. AP: {cat([5]), gen([10]), num([15]), case([20]), ref([25])}
NP: {cat(nom[5]), gen(fem[10]), num(sg[15]), case([20]), ref(indef[25])}

When it agrees with a DP, its referential feature is valued as definite.

183. AP: {cat([5]), gen([10]), num([15]), case([20]), ref([30])}
     DP: {cat(nom[5]), gen([10]), num([15]), case([20]), ref(def[30])}

Let's posit, then, that in Modern Greek, the referential feature that is valued as definite is

spelled out at the PF interface as the definiteness marker, while a referential feature that

is valued as indefinite remains null on the surface (recall that in indefinite noun phrases,

the determiner node is headed by a quantifier *ena*, which is a substantive category rather

than a spell-out of the indefiniteness feature on the determiner node). This derives

Determiner Spreading by means of a regular syntactic process of agreement.

The agreement-based analysis of Determiner Spreading explains presence of Determiner

Spreading in discontinuous noun phrases:

184. **To   megalo   agorase   to   milo**
the.N.SG.NOM big.N.SG.NOM bought.3.SG the.N.SG.NOM apple.N.SG.NOM
"He bought the BIG apple."

Since discontinuity results from the base generation of the modifier at a distance from the

noun phrase, the modifier in discontinuous noun phrases is expected to enter into

agreement with the entire DP rather than with the NP and thus undergo agreement in

definiteness in definite discontinuous noun phrases. The indefinite discontinuous noun

phrase and the definite discontinuous noun phrase can, therefore, be associated with the

same syntactic structure. Consider the phrase marker in (185), which represents the

structure of the definite discontinuous noun phrase in (184). In (185), the modifier is

generated at a distance from the definite determiner phase, in the same location in which

it is generated in the corresponding indefinite discontinuous determiner phrase. In the

narrow syntax, it enters into agreement with the entire determiner phrase and has its φ-

features valued.

185.

```
            TP
          /    \
        AP      TP
        |      /  \
        A     T    vP
        |         /  \
        |       pro   vP
        |            /  \
        |           v    VP
        |               /  \
        |              V    DP
        |                  /  \
        |                 D    NP
        |                       |
        |                       N
        |                       |
     megalo    agorase    to    milo
```

megalo   agorase   to   milo
big.N.SG.ACC   bought.3.SG   the.N.SG.ACC   apple.N.SG.ACC
"He bought the BIG apple."

Given the agreement-based approach to definiteness spreading, the referential features of

the definite determiner and the modifier are unified as part of agreement in φ-features:

186. AP: {cat([5]), gen([10]), num([15]), case([20]), ref([30])}
     DP: {cat(nom[5]), gen([10]), num([15]), case([20]), ref(def[30])}

Since the AP is associated with the definiteness value as a result of this agreement, the

referential feature that is valued as definite in two locations is spelled out at PF as

definiteness markers in these locations, producing the effect of Determiner Spreading, as

in (184).

Determiner Spreading, however, is optional in linear definite discontinuous noun phrases

in Modern Greek:

187. <u>To</u>   **megalo**   agorase   <u>milo</u>
     the.N.SG.NOM big.N.SG.NOM   bought.3.SG apple.N.SG.NOM
     "He bought the BIG apple."

The optional nature of Determiner Spreading cannot be attributed to the fact that the

modifier can agree either with the NP or with the DP in (185) and have its referential

feature valued in two distinct ways, as is the case in regular noun phrases according to

Kariaeva (2003). This is because in (185) the NP is embedded inside the DP, and DP

constitutes an agreement domain (see chapter 7 for a detailed discussion of agreement

domains). The NP is, therefore, not visible to a probe located outside the DP, only DP as

a whole is accessible for agreement. Moreover, discontinuous noun phrases without

Determiner Spreading differ from regular definite noun phrases without Determiner

Spreading. In regular DPs, the lack of Determiner Spreading correlates with a

pragmatically neutral interpretation of the modifier. In discontinuous DPs, the modifier

is interpreted restrictively with and without Determiner Spreading. The optional nature

of Determiner Spreading in discontinuous DPs cannot, therefore, be attributed to distinct

structural locations of the modifier in discontinuous DPs with and without Determiner

Spreading. Discontinuous noun phrases with and without Determiner Spreading should

be associated with the same syntactic structure, in which the modifier is generated at a

distance from the DP and enters into agreement with the entire DP rather than the NP, as

in (185).

The optional nature of Determiner Spreading in definite discontinuous noun phrases in

Modern Greek can, however, be explained by appealing to a special correlation that

exists between a functional feature value, such as definiteness, and the F-value associated

with it. Each functional category is associated with a unique feature content (compare

Chomsky (1995b), Hegarty (2005)). Thus, the structural status of the definite article is

encoded in the lexicon in terms of its F-value while the feature content of the definite

determiner is represented in terms of the valuation of its referential feature:

188. D: {ref(def[ ]), F(5)}

Since the feature-to-F-value correlation is a stable relation in grammar, one would expect

the F-value of the syntactic node to reflect the presence of a particular functional feature

value in the feature template of this node. In Modern Greek, the D head is associated

with the definiteness value of the referential feature and a corresponding F-value of (5).

When, in the course of agreement, the referential feature is shared by the determiner and

the modifier, one might expect the F-value associated with this feature to be shared as

well. In other words, definiteness spread could be accompanied by F-value spread:
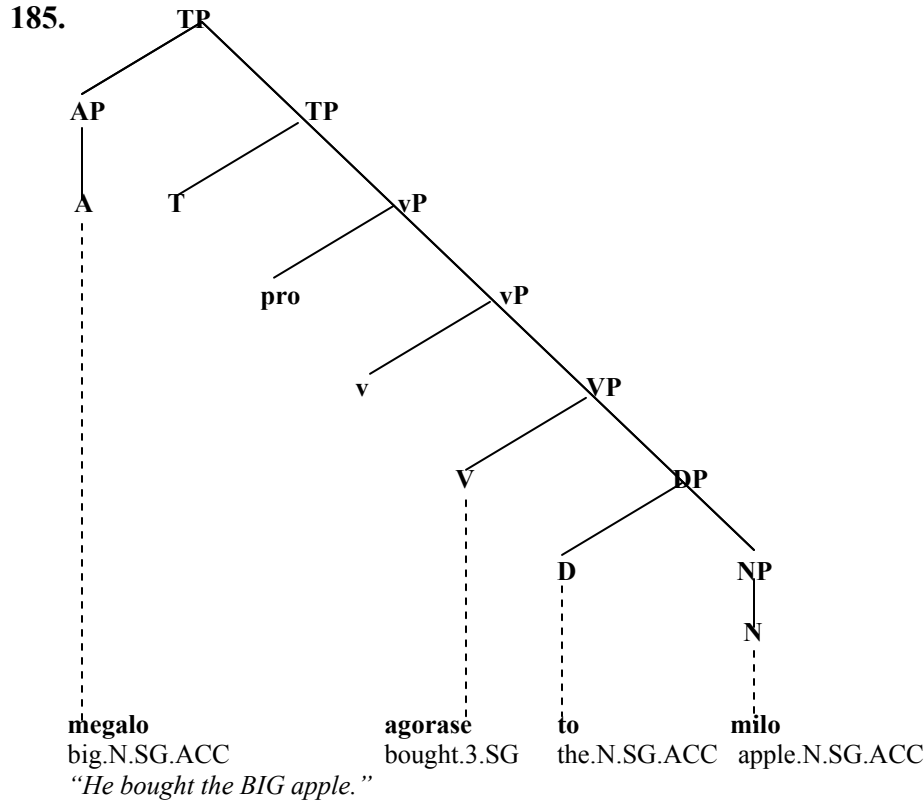
189. AP: {cat([5]), gen([10]), num([15]), case([20]), ref([30]), F({0, **5**})}◄——————
  DP: {cat(nom[5]), gen([10]), num([15]), case([20]), ref(def[30]), F(5)} ——

When the referential feature of the adjectival modifier is valued as definite through

agreement with the definite DP, the F-value associated with the definiteness value is

added to its set of F-values (see Grimshaw (2005) and chapter 3 for a discussion of other

cases when an item can be associated with several F-values).

Let's call this operation of F-value sharing Functional Type Raising. Functional Type

Raising maintains a stable correlation between a particular syntactic feature and a specific

F-value that this feature is associated with throughout the derivation. If a syntactic node

establishes an agreement relation with another syntactic node and, as a result, is

associated with the feature value that is linked to a higher functional value that it

currently has, its F-value is adjusted accordingly. Functional Type Raising can be

formally defined in the following way:

190. ***Functional Type Raising:***
Whenever a node A that has the F-value k and an unvalued occurrence of feature X stands in an agreement relation with the node B that has the occurrence of the feature X valued as x, the F-value m is added to the set of F-values of A, iff the x value of the feature X is associated in the language with the F-value m and m > k.

Functional type raising, thus, pairs feature content with the related F-values. If a feature value spreads across the syntactic structure through agreement, functional information associated with this value spreads as well.[11]

Given the Functional Type Raising, the MCL linearization algorithm correctly derives optionality of Determiner Spreading in linear discontinuous noun phrases in Modern Greek. Consider the application of the MCL linearization algorithm to the phrase marker in (185). At stage 1, the MCL algorithm generates a set M of ordered pairs of non-terminals such that the first member of each pair asymmetrically c-commands the second member of the pair {<AP, TP>, <A, T>, <AP, pro>, <AP, vP>, <AP, v>, <AP, VP>, <AP, V>, <AP, DP>, <AP, D>, <AP, NP>, <AP, N>, <T, pro>, <T, v>, <T, VP>, <T, V>, <T, DP1>, <T, D1>, <T, NP1>, <T, N1>, <pro, vP>, <pro, v>, <pro, VP>, <pro, V>, <pro, DP>, <pro, D>, <pro, NP>, <pro, N>, <v, V>, <v, DP>, <v, D>, <v, NP>, <v, N>, <V, D>, <V, NP>, <V, N>, <D, N>}. At stage 2, the MCL algorithm verifies that every pair in the set M complies with the F-value ordering requirement. Since the referential feature and the F-value spread from the DP to the long-distance modifier in the course of agreement, the AP in (185) is associated with two F-values instead of one, as in (191):

191. AP: {cat([5]), gen([10]), num([15]), case([20]), ref([30]), F({**0, 5**})}

I assume that the MCL algorithm is free to select either of the two F-values in (191) as an input for linearization. When linearization is performed with the higher of the two F-

values chosen for AP, the pair <AP, D> does not violate the F-value ordering

requirement:

192. AP: {cat([5]), gen([10]), num([15]), case([20]), ref([30]), F({0, **5**})}
D: {cat(nom[5]), gen([10]), num([15]), case([20]), ref(def[30]), F(5)}

In this case, no replacements are made at stage 2, and the set M' is mapped onto a

corresponding set of pairs of terminals R: <(to megalo), agorase>, <(to megalo), to>, <(to

megalo), milo>, <agorase, to>, <agorase, milo>, <to, milo>}. I assume that the feature

content is spelled out at this point in the derivation, with the referential feature being

lexicalized as a definiteness marker in both locations in which it is valued as definite.

The union over the set R gives a total linear ordering of all terminals in the phrase

marker: *to megalo > agorase > to > milo*. This linear ordering corresponds to a

grammatical sentence that contains a definite discontinuous DP with Determiner

Spreading in (184). Determiner Spreading, thus, results from the spell out of the

referential feature valued as definite in two locations.

Alternatively, linearization can be performed using the lower of the two F-values of the

modifier. Given the lower F-value of the AP, the pair <AP, D> does violate the F-value

ordering requirement and has to be replaced with the pair <D, AP>:

193. AP: {cat([5]), gen([10]), num([15]), case([20]), ref([30]), F({**0**, 5})}
D: {cat(nom[5]), gen([10]), num([15]), case([20]), ref(def[30]), F(5)}

In addition, the pairs <T, D>, <pro, D>, <v, D>, and <V, D> are replaced with the pairs

<D, T>, <D, pro>, <D, v> and <D, V>, as required. At stage 3, the modified set of pairs

of non-terminals M' is mapped onto a corresponding set of pairs of terminals R: <(to

megalo), agorase>, <to, (to megalo)>, <(to megalo), diamerisma>, <to, agorase>,

<agorase, diamerisma>, <to, diamerisma>}. The union over the set R gives a total linear ordering of all terminals in the phrase marker: *to > to megalo > agorase > diamerisma*. Since two tokens of the same definiteness marker appear adjacent to each other in a phonological string, one of them is deleted by a cross-linguistically common process of haplology. Note that agreement between AP and DP ensures the identity of both tokens of the definiteness marker since they are the spell-out of the same set of agreement features. The resulting linear representation contains a discontinuous DP without Determiner Spreading in (187). The optional nature of Determiner Spreading in Modern Greek can thus be attributed to F-value spreading and the possibility of linearizing the structure under either of the two F-values available for the AP modifier.

While optional in linear discontinuous DPs, Determiner Spreading is obligatorily enforced in inverse discontinuous DPs in Modern Greek:

194.

a)* **To**   **milo**   **agorase**   **megalo**
    the.N.SG.ACC   apple.N.SG.ACC bought.3.SG   big.N.SG.ACC

b) **To**   **milo**   **agorase**   **to**   **megalo**
    the.N.SG.NOM apple.N.SG.NOM bought.3.SG the.N.SG.NOM big.N.SG.NOM
    "He bought the big APPLE."

This is also predicted by the MCL algorithm. Consider the phrase marker in (195), which represents a structure of the inverse discontinuous determiner phrase. The MCL algorithm generates a set M of ordered pairs of non-terminals such that the first member of each pair asymmetrically c-commands the second member of the pair: {<D, N>, <DP, TP>, <DP, T>, <DP, v/V>, <DP, vP>, <DP, AP>, <DP, A>, <DP, pro>, <DP, VP>, <T,

AP>, <T, A>, <T, pro>, <T, VP>, <v/V, T>, <v/V, AP>, <v/V, A>, <v/V, pro>, <v/V, VP>, <AP, vP>, <AP, pro>, <AP, VP >, <pro, vP>, <pro, VP>}.

195.

to   milo   agorase   megalo
the apple bought   big
.N.SG.ACC .3.SG   .N.SG.ACC
"He bought a big APPLE."
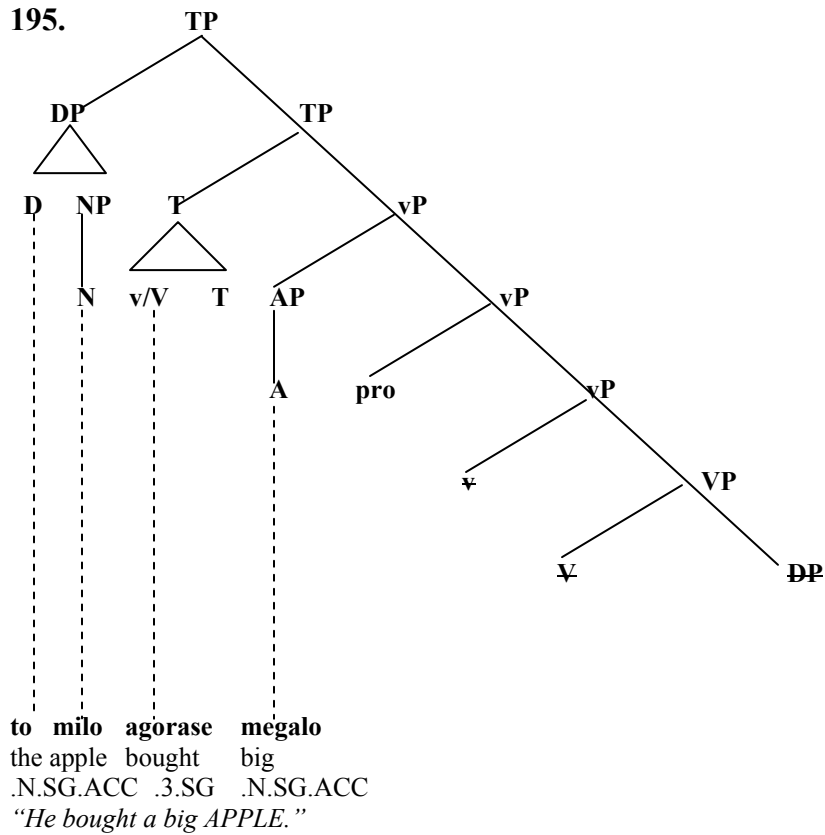
Since linear discontinuity feeds inverse discontinuity in (195), the modifier enters into agreement with the DP prior to the dislocation of this DP to the left periphery of the clause. As a result of this agreement, the referential feature and the F-value spread from the DP to the long-distance modifier, and the adjectival modifier is associated with two F-values rather than one:

196.   A: {cat([5]), gen([10]), num([15]), case([20]), ref([30]), F({**0, 5**})}

Again, the MCL algorithm is free to select either of the two F-values in (196) as an input for linearization. When linearization is performed with the higher of the two F-values chosen for the modifier, the set M generated at stage 1 does not contain any pairs that

violate the F-value ordering requirement. Since the F-value of A is the same as the F-value of the DP, the pair <DP, A> does not violate the F-value ordering requirement:

197.   DP: {cat(nom[5]), gen([10]), num([15]), case([20]), ref(def[30]), F(5)}
　　　A: {cat([5]), gen([10]), num([15]), case([20]), ref([30]), F({0, **5**})}

Therefore, no replacements are made at stage 2, and at stage 3 the set M' is mapped onto a corresponding set of pairs of terminals R: {<(to milo), agorase>, <(to milo), (to megalo)>, <agorase, (to megalo)>}. The union over this set gives a total linear ordering of all terminals in the phrase marker: *to diamerisma > agorase > to megalo*. Since the two tokens of the definiteness marker are not adjacent in the linear string, both are pronounced, resulting in the grammatical sentence in (194b), which contains an inverse discontinuous DP with Determiner Spreading. Consequently, the MCL algorithm correctly permits reordering of the noun and the modifier in an inverse definite discontinuous DP while enforcing Determiner Spreading.

Alternatively, linearization can be performed using the lower of the two F-values of the modifier. However, given the lower F-value of the modifier, the set M generated at stage 1 does not contain any pairs that violate the F-value ordering requirement either. Since the F-value of A is lower than the F-value of the DP, the pair <DP, A> does not violate the F-value ordering requirement:

198.   DP: {cat(nom[5]), gen([10]), num([15]), case([20]), ref(def[30]), F(5)}
　　　A: {cat([5]), gen([10]), num([15]), case([20]), ref([30]), F({**0**, 5})}

Therefore, no replacements are made at stage 2, and at stage 3 the set M' is mapped onto a corresponding set of pairs of terminals R: {<(to milo), agorase>, <(to milo), (to megalo)>, <agorase, (to megalo)>}. The union over this set gives a total linear ordering

of all terminals in the phrase marker: *to diamerisma > agorase > to megalo*. Since the

two tokens of the definiteness marker are not adjacent in the linear string, both are

pronounced, again resulting in the grammatical sentence in (194b), which contains a

discontinuous inverse DP with Determiner Spreading. In other words, while the presence

of two F-values in the feature template of the modifier that underwent agreement in

definiteness results in optional DS in linear discontinuous DP, DS in enforced in inverse

discontinuous DP irrespective of the availability of two F-values. This explains the

asymmetry observed in DS in two types of discontinuous determiner phrases.

The availability of Determiner Spreading in discontinuous DPs is, however, subject to

dialectal variation in Modern Greek. In some dialects of Modern Greek, Determiner

Spreading is obligatory in both linear and inverse definite discontinuous DPs (Alexiadou,

p.c.):

199.
   a) * **To**   **megalo**   **agorase**   **milo**
        the.N.SG.ACC big.N.SG.ACC   bought.3.SG   apple.N.SG.ACC

   b) **To**   **megalo**   **agorase**   **to**   **milo**
        the.N.SG.NOM big.N.SG.NOM bought.3.SG the.N.SG.NOM apple.N.SG.NOM
        "He bought the BIG apple."

This dialectal variation can easily be explained if the dialects that require obligatory

Determiner Spreading in linear discontinuous noun phrases either always utilize the

highest F-value associated with the syntactic item as an input into the linearization

algorithm or replace F(0)-value of the adjective with the F(5)-value of the determiner.

Thus, in the dialects, in which the adjective that underwent agreement in definiteness is

associated with two F-values, Functional Type-raising can be considered optional while

in the dialects, in which the adjective that underwent agreement in definiteness is associated only with the F(5)-value, Functional Type-raising is obligatory.

The mechanism of Functional Type-raising has a potential to provide an explanation for the data that have remained unaccounted for within other theories of Determiner Spreading (see Alexiadou and Wilder (1998), fn. 15). In Modern Greek, heavy complement taking adjectives can appear both before and after the noun and can form a discontinuous constituent with the noun. Unlike the regular light modifiers, however, they do not allow Determiner Spreading in linear definite discontinuous DPs while requiring Determiner Spreading in inverse definite discontinuous DPs:

200.

a) **Ton**   **iperifano**   **ja tin**   **kori**   **tou**
the.M.SG.ACC   proud.M.SG.ACC   for the   daughter   his
sinandise   **patera**
met.3.SG   father.M.SG.ACC
"He met the father PROUD FOR HIS DAUGHTER."

b) * **Ton**   **iperifano**   **ja tin**   **kori**   **tou**
the.M.SG.ACC   proud.M.SG.ACC   for the   daughter   his
sinandise   **ton**   **patera**
met.3.SG   the.M.SG.ACC   father.M.SG.ACC

201.

a) * **Ton**   **patera**   **sinandise**
the.M.SG.ACC   father.M.SG.ACC   met.3.SG
iperifano   **ja tin**   **kori**   **tou**
proud.M.SG.ACC   for the   daughter   his

b) **Ton**   **patera**   **sinandise**
the.M.SG.ACC   father.M.SG.ACC   met.3.SG
ton   **iperifano**   **ja tin**   **kori**   **tou**
the.M.SG.ACC   proud.M.SG.ACC   for the   daughter   his
"He met the FATHER proud of his daughter."

The contrast in the distribution of the determiners with light and heavy adjectival modifiers in discontinuous constituents can be derived within the theory of Determiner Spreading proposed here under the assumption that Functional Type-raising is blocked when the adjective has a complement. This could be due to a more complex internal structure of the AP and the presence of additional functional heads within this structure. Recall that the linearization of the linear discontinuous DPs in which the F-value of the adjective that underwent agreement in definiteness is (0) results in the lack of Determiner Spreading. However, the linearization of the inverse discontinuous DPs in which the F-value of the adjective that underwent agreement in definiteness is (0) forces Determiner Spreading. In (200) and (201), we observe precisely this distribution of the definiteness markers. I leave a more detailed examination of this analysis for further research.

4.5 Summary

The distribution of determiners in Modern Greek demonstrates that the asymmetries discussed in relation to the distribution of the preposition in Ukrainian are of a general nature and are not confined to a single functional category. Like in Ukrainian, in Modern Greek, the modifier can easily be separated from the head noun, while the determiner cannot. The order between the noun and the modifier can be changed, while the order between the noun and the determiner as well as the order between the determiner and the preposition cannot. The preposition must precede the determiner and both must precede the first lexical item of the discontinuous NP. The class of determiners in Modern Greek, however, is not homogeneous and the two core determiners, the definite article and the indefinite article, show different behaviors in the language. The indefinite article in

Modern Greek behaves in the same way as the preposition while the definite article is subject to optional doubling. In this chapter, I demonstrate that the MCL algorithm provides a correct linearization for the preposition and for the indefinite article in Modern Greek. It, thus, captures the uniform behavior of these two functional categories in discontinuous constituents. It also correctly permits re-ordering of the noun and the modifier while maintaining a fixed order between the preposition and the indefinite article.

The account of Determiner Spreading in discontinuous DPs in Modern Greek proposed here is based on Kariaeva (2003), who argues that modifiers generated outside of the DP in Modern Greek have to agree with the entire DP in definiteness as well as in gender and number. This expanded agreement in φ-features creates the effect of Determiner Spreading. The lack of Determiner Spreading in indefinite noun phrases results from the fact that the indefinite article in Modern Greek is not a true determiner but a quantifier and does not trigger the indefiniteness agreement and indefiniteness spreading. To implement this account of Determiner Spreading in terms of the system of agreement as feature sharing, I posit that in Modern Greek definiteness is an agreement value of the referential feature. This feature is valued as indefinite on nouns, as definite on definite determiners, and it is left unvalued on adjectives. When an adjective agrees with an NP, its referential feature is valued as indefinite. When it agrees with a DP, its referential feature is valued as definite. The agreement-based analysis of Determiner Spreading also explains the presence of Determiner Spreading in discontinuous noun phrases. Since discontinuity results from base-generating a modifier at a distance from the noun phrase,

the modifier in discontinuous noun phrases is expected to enter into agreement with the entire DP rather than with the NP and thus undergo agreement in definiteness in definite discontinuous noun phrases. The indefinite discontinuous noun phrases and the definite discontinuous noun phrases can, therefore, be associated with the same syntactic structure.

The optional nature of Determiner Spreading in definite discontinuous noun phrases in Modern Greek is explained by appealing to a correlation that exists between functional feature values, such as definiteness, and F-values. When, in the course of agreement, the referential feature of the DP is shared by the modifier, the F-value associated with this feature is shared as well. In other words, definiteness spread is accompanied by F-value spread (Functional Type-Raising). As a result, the adjective carries both its own lexical F-value and the F-value associated with the definiteness feature. The availability of two F-values in the feature template of the adjective that undergoes agreement in definiteness explains the complex distribution of the definiteness markers in definite discontinuous noun phrases. The MCL algorithm is free to select either of the two F-values as an input for linearization. The choice determines whether both instances of the definite referential feature are spelled out or not.

Chapter 5. Degree Adverbs and Tripartite Discontinuity

5.0 Introduction

In Ukrainian, not only can an adjectival modifier be separated from the noun it modifies,

but a degree word can also be separated from its adjective:

202.
  a) **Ivan**   **duže**   **vysokyj**
     John.NOM   very   tall.M.SG.NOM
     "John is very tall."

  b) **Duže**   **Ivan**   **vysokyj**
     very   John.NOM   tall.M.SG.NOM
     "John is VERY tall." or "John is VERY TALL."

This can result in a tripartitioning of a noun phrase when a degree word modifies a long-

distance attributive adjectival modifier:

203.
  a) **Ivan**   **kupyv**   **duže**   **velyku**   **kvartyru**
     John.NOM bought   very   big.F.SG.ACC apartment.F.SG.ACC
     "John bought a very big apartment."

  b) **Duže**   **Ivan**   **velyku**   **kupyv**   **kvartyru**
     very   John.NOM big.F.SG.ACC   bought   apartment.F.SG.ACC
     "John bought a VERY BIG apartment."

If degree words in Ukrainian are analyzed as functional heads that form an extended

projection with the adjectival modifier, their ability to form a discontinuous structure

with the adjective would not be expected. In section 5.1, following Neeleman et al.

(2004), I argue that degree items in Ukrainian fall into two groups: degree adverbs and

degree heads. Degree adverbs are lexical rather than functional items and can be

separated from the adjective in Ukrainian. Degree heads, used to form comparative and

superlative degrees of adjectives, are functional items that surface as prefixes and

suffixes on the adjective.

I examine the syntactic status of degree adverbs in Ukrainian in section 5.2 and argue

that, like adjectives, degree adverbs can be generated in any position in the clause that

permits adjunction and are licensed through relations they establish with other syntactic

categories in narrow syntax. While the key licensing relation for adjectives is the

valuation of their φ-features, the key licensing relation for degree adverbs is the valuation

of their degree feature. Following Baker's (2003) treatment of -*ly* adverbs as PPs, I argue

that –*o/e* degree adverbs in Ukrainian are nominal items derived from PPs. The adverb-

internal nominal element in Ukrainian lacks φ-feature content and cannot support

adjectival agreement. As a result, the adjectival φ-features are realized as a default -*o/e*

inflection on degree adverbs.

The nominal status of degree adverbs manifests itself in the asymmetry in the distribution

of nominal and verbal functional categories with respect to degree adverbs. In section

5.3, I examine the linearization of discontinuous prepositional phrases that contain a

degree adverb. In tripartite discontinuous PPs in Ukrainian, a preposition surfaces

preceding not only an adjective but also a degree adverb:

204.

   a) **Ivan**   **žyve**   **bilja**   **duže**   **velykoji**   **školy**
       John.NOM lives   next-to very   big.F.SG.GEN school.F.SG.GEN
       "John lives next to a very big school."

   b) * Duže **Ivan**   **velykoji**   **žyve**   **bilja**   **školy**
       very   John.NOM big.F.SG.GEN lives   next-to school.F.SG.GEN

   c) * Duže **Ivan**   **bilja**   **velykoji**   **žyve**   **školy**
       very   John.NOM next-to big.F.SG.GEN lives   school.F.SG.GEN

d) **<u>Bilja</u>** **<u>duže</u>** **Ivan** **<u>velykoji</u>** **žyve** **<u>školy</u>**
next-to very   John.NOM big.F.SG.GEN lives school.F.SG.GEN
"John lives next to a VERY BIG school."

I demonstrate that the linearization of the preposition preceding the degree adverb in

(204d) is enforced by the same mechanism of categorial feature sharing that enforces

linearization of the preposition preceding a long-distance adjectival modifier (compare

chapter 3). The categorial feature of the degree adverb in (204d) is unified with the

categorial feature of the adjective in the course of degree feature valuation. By

transitivity, the degree adverb is associated with the entire noun phrase and shares the

categorial feature both with the noun and with the preposition. Categorial feature sharing

feeds the linearization process as usual. Hence, the MCL algorithm provides a correct

linearization of the nominal functional categories with respect to degree adverbs in

Ukrainian.

In section 5.4, I examine the linearization of verbal functional categories with respect to

degree adverbs in Modern Greek. Since the categorial feature of a degree adverb is fixed

as nominal, it cannot be unified with the categorial feature of a verb which is valued as

verbal. Therefore, the process of degree feature valuation that takes place when a degree

adverb modifies a verb does not trigger categorial feature sharing. Our theory thus

correctly predicts free distribution of verbal functional categories with respect to degree

adverbs. Indeed, in Modern Greek, degree adverbs can appear both before and after a

future tense particle which obligatorily precedes verbs:

205.

a) **Aftos** **<u>tha</u>** **ipoferi** **<u>poli</u>**
He.NOM   will suffer.PRS.3.SG   very
"He will suffer very much"

b) Aftos   <u>poli</u>   <u>tha</u>   ipoferi
He.NOM   very   wil   suffer.PRS.3.SG
"He will suffer VERY MUCH"

The application of the MCL linearization algorithm to the structure of the sentence in

(205b) provides correct surface realization of the future tense particle with respect to the

degree adverb.

Finally, in section 5.5, I discuss multiple long-distance modification. It has been noticed

that multiple modification is often marked in discontinuous noun phrases (see Franks and

Progovac (1994), Sekerina (1997), and Bošković (2005)). Acceptability of multiple

modifiers in discontinuous constituents is, however, context-dependent. I, therefore, take

the restriction on multiple modification to be not a syntactic constraint but a constraint on

interpretation of long-distance modifiers.

5.1 Degree Expressions

Degree expressions in English have often been divided into two classes, based on their

behavior with respect to *much* support (see Bresnan (1973), Jackendoff (1977), Corver

(1997), Neeleman et al. (2004)). Degree expressions of the first class, such as *too* and

very, can modify an adjective directly but require *much* insertion when modifying other

categories:

206.   John is very fond of Mary. In fact, he is too *(much) so.

Degree expressions of the second class, such as *more* and *enough*, do not require *much*

support:

207.   John is more fond of Mary than Bill, but Peter is less (*much) so.

Neeleman et al. (2004) argue that degree expressions of the first class are functional

heads of the extended adjectival projection while degree expressions of the second class

are modifiers of the adjectival phrase. The two classes of degree expressions differ,

therefore, not only in terms of the *much* support but also in other respects that

differentiate functional and lexical categories in general. Only lexical degree expressions

can be combined with categories other than adjectives, can be stranded, and can be freely

re-ordered in relation to other lexical items. In this section, I argue that degree items in

Ukrainian can also be divided into two classes: degree adverbs and degree heads.

However, unlike in English, the class of lexical degree items in Ukrainian encompasses

the majority of free-standing degree expressions while the class of functional degree

items in Ukrainian consists only of degree heads that are used to form comparative and

superlative degrees of adjectives. Free-standing degree expressions such as *very* and *too*

pattern in Ukrainian in the same way as *more* and *enough*. As expected, they can be

separated from adjectives in Ukrainian, thus forming discontinuous constituents with

them.

Free-standing degree expressions in Ukrainian show a full range of lexical rather than

functional properties. Thus, for instance, they can modify not only an adjective but also a

verb. Crucially, they can modify a verb directly without the support of other adverbs:

208.
  a) **Ivan**   **duže**   **vysokyj**
       John.NOM   very   tall.M.SG.NOM
       "John is very tall."

  b) **Ivan**   **duže**   **perežyvaje**
       John.NOM   very   vorries
       "John worries very much."

209.

   a) **Ivan**   **<u>nadto</u>**   **<u>rozumnyj</u>**
      John.NOM   too   clever.M.SG.NOM
      "John is too clever."

   b) **Ivan**   **<u>nadto</u>**   **<u>starajet'sja</u>**
      John.NOM   too   tries
      "John tries too much."

210.

   a) **Ivan**   **<u>dostat'njo</u>**   **<u>zmučenyj</u>**
      John.NOM   enough   tired.M.SG.NOM
      "John is tired enough."

   b) **Ivan**   **<u>dostat'njo</u>**   **<u>straždaje</u>**
      John.NOM   enough   suffers
      "John suffers enough."

Degree adverbs that modify a verb have the same gross distribution as other types of

adverbs in the language:

211.

   a) **Ivan**   **<u>švydko</u>**   **<u>čytaje</u>**
      John.NOM   quickly   reads
      "John reads quickly."

   b) **Ivan**   **<u>harno</u>**   **<u>spivaje</u>**
      John.NOM   beautifully sings
      "John sings well."

They also exhibit standard adverbial morphology: –o/e affix.   One can, therefore,

conclude that free-standing degree expressions form a single syntactic class with other

adverbs in the language.

Being lexical items, degree adverbs in Ukrainian can be separated from an adjective they

modify, forming a discontinuous structure:

212.

a) **Ivan   duže   vysokyj**
John.NOM   very   tall.M.SG.NOM
"John is very tall."

b) **Duže   Ivan   vysokyj**
very   John.NOM   tall.M.SG.NOM
"John is VERY tall." or *"John is VERY TALL."*

213.

a) **Ivan   kupyv   duže   velyku   kvartyru**
John.NOM bought   very   big.F.SG.ACC   apartment.F.SG.ACC
"John bought a very big apartment."

b) **Duže   Ivan   velyku   kupyv   kvartyru**
very   John.NOM   big.F.SG.ACC   bought   apartment.F.SG.ACC
"John bought a VERY BIG apartment."

214.

a) **Ivan   nadto   rozumnyj**
John.NOM   too   clever.M.SG.NOM
"John is too clever."

b) **Nadto   Ivan   rozumnyj**
too   John.NOM   clever.M.SG.NOM
"John is TOO clever." or *"John is TOO CLEVER."*

215.

a) **Ivan   kupyv   nadto   velyku   kvartyru**
John.NOM bought   too   big.F.SG.ACC   apartment.F.SG.ACC
"John bought too big an apartment."

b) **Nadto   Ivan   velyku   kupyv   kvartyru**
too   John.NOM   big.F.SG.ACC   bought   apartment.F.SG.ACC
"John bought TOO BIG an apartment."

This contrasts with the behavior of functional items. Functional items, such as a

preposition and a determiner, cannot be separated from the rest of the constituent:

Ukrainian:

216.

a) **Ivan   žyve   bilja   školy**
John.NOM   lives   next-to   school.F.SG.GEN
"John lives next to a school."

b)* **Bilja** **Ivan** **žyve** **školy**
Next-to John.NOM lives school.F.SG.GEN

Modern Greek:

217.
a) **Meni** **sto** **sxolio**
lives.3.SG at-the.N.SG.ACC school.N.SG.ACC
"He lives at the school."

b)* **Se** **meni** **to** **sxolio**
at lives.3.SG the.N.SG.ACC school.N.SG.ACC

218.
a) **Agorase** **to** **aftokinito**
bought.3.SG the.N.SG.ACC car.N.SG.ACC
"He bought the car."

b)* **To** **agorase** **aftokinito**
the.N.SG.ACC bought.3.SG car.N.SG.ACC

As (216)-(218) show, nominal functional categories can form a discontinuous structure

with the noun neither in Ukrainian nor in Modern Greek.

In Ukrainian, degree adverbs can be separated not only from the adjective they modify

but also from the verb they modify:

219.
a) **Duže** **Ivan** **straždaje**
Very John.NOM suffers
"John suffers VERY MUCH."

b) **Nadto** **Ivan** **straždaje**
too John.NOM suffers
"John suffers TOO MUCH."

c) **Dostat'njo** **Ivan** **straždaje**
enough John.NOM suffers
"John suffers STRONGLY ENOUGH."

This is a property that characterizes other non-degree adverbs in the language as well:

220.

   a)   **<u>Švydko</u>**   **Ivan**   **<u>čytaje</u>**
       quickly   John.NOM   reads
      "John reads QUICKLY."

   b)   **<u>Harno</u>**   **Ivan**   **<u>čytaje</u>**
       beautifully   John.NOM   reads
      "John reads WELL."

The possibility of being separated thus supports the treatment of degree adverbs in

Ukrainian as lexical rather than functional items.

In addition, lexical items differ from functional items in terms of freedom of word order.

In Ukrainian, lexical items can be re-ordered with respect to each other while functional

items are rigidly ordered with respect to lexical items and each other. Thus, an adjectival

modifier can either precede or follow the noun it modifies, as in (221). This is not the

case with a preposition. The preposition is strictly ordered both with respect to the noun

and with respect to the modifier both in a regular continuous (222) and in a discontinuous

constituent (223), as discussed at length in chapter 3:

221.

   a)   **Ivan**   **<u>bilja</u>**   **<u>velykoho</u>**   **žyve**   **<u>budynku</u>**
      John.NOM   next-to big.M.SG.GEN   lives   building.M.SG.GEN
      "John lives next to a BIG building."

   b)   **Ivan**   **<u>bilja</u>**   **<u>budynku</u>**   **žyve**   **<u>velykoho</u>**
      John.NOM   next-to building.M.SG.GEN   lives   big.M.SG.GEN
      "As for the building John lives next-to, it is a BIG one."

222.

   a)   **Ivan**   **žyve**   **<u>bilja</u>**   **<u>velykoho</u>**   **<u>budynku</u>**
      John.NOM   lives   next-to big.M.SG.GEN   building.M.SG.GEN
      "John lives next to a big building."

b)* Ivan   **žyve**   <u>**velykoho**</u>   <u>**bilja**</u>   <u>**budynku**</u>
John.NOM   lives   big.M.SG.GEN   next-to   building.M.SG.GEN

c)* Ivan   **žyve**   <u>**velykoho**</u>   <u>**budynku**</u>   <u>**bilja**</u>
John.NOM   lives   big.M.SG.GEN   building.M.SG.GEN   next-to

223.
  a)* Ivan   <u>**velykoho**</u>   **žyve**   <u>**bilja**</u>   <u>**budynku**</u>
     John.NOM   big.M.SG.GEN   lives   next-to   building.M.SG.GEN

  b)* Ivan   <u>**budynku**</u>   **žyve**   <u>**bilja**</u>   <u>**velykoho**</u>
     John.NOM   building.M.SG.GEN   lives   next-to   big.M.SG.GEN

Degree adverbs, along with other adverbs, can also appear either preceding or following

the verb they modify, as one would expect of a lexical category:

224.
  a)   **Ivan**   <u>**duže**</u>   **straždaje**
     John.NOM   very   suffers
     "John suffers very much."

  b)   **Ivan**   **straždaje**   <u>**duže**</u>
     John.NOM   suffers   very
     "John suffers VERY MUCH."

225.
  a)   **Ivan**   <u>**švydko**</u>   **čytaje**
     John.NOM   quickly   reads
     "John reads fast."

  b)   **Ivan**   **čytaje**   <u>**švydko**</u>
     John.NOM   reads   quickly
     "John reads FAST."

In this respect, the distribution of degree adverbs contrasts with the distribution of verbal

functional categories. Compare the distribution of adverbs in (224)-(225) with the

distribution of a complementizer in Ukrainian in (226) and a future tense particle in

Modern Greek in (227):

226.
  a)   **Ivan**   **znaje**   <u>**ščo**</u>   **Mykola**   **pracjuje**
     John.NOM   knows   that   Michael.NOM   works
     "John knows that Michael is working."

b)* **Ivan**　　　**znaje**　　**pracjuje**　　**<u>ščo</u>**　　**Mykola**
　　　John.NOM　knows　works　　　　that　　Michael.NOM

227.

a) **O**　　　　　　**Janis**　　**<u>tha</u>**　**exi**　**pinasi**
　　the.M.SG.NOM　John.NOM　will　has　hungered
　　"John will get hunry (by then)."

b)* **O**　　　　　　**Janis**　　**exi**　**<u>tha</u>**　**pinasi**
　　　the.M.SG.NOM　John.NOM　has　will　hungered

Both the complementizer in Ukrainian and the future particle in Modern Greek are

required to precede all the verbal forms.

Unlike the preposition, degree adverbs can appear either preceding or following the noun

inside a discontinuous noun phrase:

228.

a) **<u>Duže</u>**　　**Ivan**　　**velyku**　　　**kupyv**　　**<u>kvartyru</u>**
　　very　　John.NOM　big.F.SG.ACC　bought　apartment.F.SG.ACC
　　"John bought a VERY BIG apartment."

b) **<u>Kvartyru</u>**　　　**Ivan**　　**<u>duže</u>**　　**kupyv**　　**velyku**
　　Apartment.F.SG.ACC　John.NOM　very　　bought　　big.F.SG.ACC
　　"As for the apartment John bought, it is a VERY BIG one."

Re-ordering of degree adverbs and adjectives is also possible[12]:

229.

a) ? <u>Velyku</u>　　　**Ivan**　　**<u>duže</u>**　　**kupyv**　　**<u>kvartyru</u>**
　　big.F.SG.ACC John.NOM　very　　bought　　apartment.F.SG.ACC
　　"John bought a very BIG apartment."

b) **<u>Kvartyru</u>**　　　**Ivan**　　**<u>velyku</u>**　　**kupyv**　　**<u>duže</u>**
　　Apartment.F.SG.ACC　John.NOM　big.F.SG.ACC bought　　very
　　"As for the apartment John bought, it is a very BIG one."

230.

a) ? <u>Velyku</u>　　　**Ivan**　　**<u>nadto</u>**　　**kupyv**　　**<u>kvartyru</u>**
　　big.F.SG.ACC John.NOM　too　　bought　　apartment.F.SG.ACC
　　"John bought an apartment which is too BIG."

b) <u>**Kvartyru**</u> **Ivan** <u>**velyku**</u> **kupyv** <u>**nadto**</u>
Apartment.F.SG.ACC John.NOM big.F.SG.ACC bought too
"As for the apartment John bought, it is too BIG."

The adjective and the degree adverb can also be re-ordered in predicative environments[13]:

231.
  a) **Ivan** <u>**duže**</u> <u>**vysokyj**</u>
     John.M.SG.NOM very tall.M.SG.NOM
     "John is very tall."

  b) <u>**Vysokyj**</u> **Ivan** <u>**duže**</u>
     tall.M.SG.NOM John.M.SG.NOM very
     "John is very TALL." or *"As for John's height, he is VERY tall."*

The distribution of degree adverbs in predicative environments contrasts with the

distribution of prepositions in similar environments. A preposition cannot be re-ordered

in relation to a noun even when PP is used predicatively:

232.
  a) **Ivan** **bilja** **(velykoho)** **budynku**
     John.NOM next-to (big.M.SG.GEN) building.M.SG.GEN
     "John is next to a (big) building."

  b) * Budynku **Ivan** **bilja** **(velykoho)**
     building.M.SG.GEN John.NOM next-to (big.M.SG.GEN)

The adjectival modifier is present in (232) to demonstrate that the ungrammaticality of

(232b) result from the re-ordering of the noun and the preposition rather than from the

fact that the preposition cannot be isolated from the rest of the noun phrase (see

discussion above). Consequently, degree adverbs can be reordered with respect to other

lexical categories, as expected of lexical rather than functional items.

Finally, nominal functional categories in Ukrainian show the same distribution with

respect to degree adverbs as with respect to adjectives and nouns, providing additional

testimony to the lexical rather than functional status of degree adverbs. The preposition

obligatorily precedes all lexical items in a discontinuous noun phrase, including degree

adverbs:

233.
    a)   **Ivan**   **žyve**   <u>**bilja**</u>   <u>**duže**</u>   <u>**velykoji**</u>   <u>**školy**</u>
          John.NOM lives   next-to   very   big.F.SG.GEN school.F.SG.GEN
          "John lives next to a very big school."

    b) * <u>**Duže**</u>   **Ivan**   <u>**velykoji**</u>   **žyve**   <u>**bilja**</u>   <u>**školy**</u>
          very   John.NOM big.F.SG.GEN   lives   next-to   school.F.SG.GEN

    c) * <u>**Duže**</u>   **Ivan**   <u>**bilja velykoji**</u>   **žyve**   <u>**školy**</u>
          very   John.NOM next-to big.F.SG.GEN lives   school.F.SG.GEN

    d) <u>**Bilja**</u>   <u>**duže**</u>   **Ivan**   <u>**velykoji**</u>   **žyve**   <u>**školy**</u>
          next-to   very   John.NOM big.F.SG.GEN   lives   school.F.SG.GEN
          "John lives next to a VERY BIG school."

All together, degree adverbs in Ukrainian exhibit three key properties of lexical

categories in the language. Like adjectival modifiers, degree adverbs can appear

separated from the word they modify by other lexical material, they can be re-ordered in

relation to other lexical items that pertain to the same (abstract) constituent, and they

have to be preceded by all the nominal functional categories in a discontinuous noun

phrase. Their distribution and morphology demonstrate that they form a lexical class

with other adverbs in Ukrainian.

5.2 Degree Adverbs and Agreement

It has long been noted that adverbs as a lexical category are closely affiliated with

adjectives (see, for instance, Bowers (1975), Emonds (1976, 1985), Larson (1987),

Abney (1987)). The affiliation between the two categories is not only derivational (most

of the adverbs, at least in Indo-European languages, appear to be derived from adjectives)

but also functional and structural. Adjectives primarily act as modifiers of nouns while

adverbs primarily act as modifiers of verbs and adjectives. This close affiliation between adjectives and adverbs has led a number of scholars to argue that adjectives and adverbs belong to the same syntactic category (see, for instance, Emonds (1976), Abney (1987), Baker (2003)). As maintained in previous chapters, adjectives can be base-generated in any position in the clause that permits adjunction. It is not the actual site at which they are generated but the relations that they enter into that license them in narrow syntax. Since degree adverbs in Ukrainian are also adjuncts, they are also expected to be generated in any position in the clause that permits adjunction and to be licensed in narrow syntax through the relations they establish with other lexical categories. While the key licensing relation for adjectives is the valuation of their φ-features, the key licensing relation for degree adverbs, I argue, is the valuation of their degree feature.

Positing degree as a distinct syntactic feature is needed to formalize the syntactic relations between degree adverbs and adjectives as well as degree adverbs and verbs, given that such relations can be non-local. That some type of syntactic relation between degree adverbs and the items they modify exists is evident from the distribution of nominal functional categories in relation to degree adverbs and adjectives, as the data in (233) show. Degree adverbs are associated with the adjectival phrase in the same way as adjectives are associated with the noun phrase and this association manifests itself in the same distribution of nominal functional categories in relation to adjectives as in relation to degree adverbs. This association has been modeled here as agreement. Syntactic agreement relation is often paralleled by some form of semantic relation that exists between the items that enter into agreement. Adjectives modify entities, and agreement

relations that are established between adjectives and nouns involve properties of entities.

Number, for instance, reflects the fact that some entities referred to by nouns can be

enumerated while others can't. Similarly, the degree feature can be argued to reflect the

fact that adjectives and verbs can be modified by degree adverbs only when they denote

properties and states that are gradable (see Cresswell (1977), Bierwisch (1989), Klein

(1980), Kennedy (1999), Kennedy and McNally (2005) for studies of degree as a

semantic primitive). The denotation of the adjective or the verb has to be associated with

a scale in relation to which the denotation of the degree adverb can be realized. Consider,

for instance, the following sentences that contain a degree adverb:

234.
  a) * Ivan   **duže**   **jde**
     John.NOM   very   goes
     (*"John walks very much."*)

  b) Ivan   **duže**   **xoče**
     John.NOM   very   wants
     "John wants it very much."

  c) Ivan   **duže**   **vysokyj**
     John.NOM   very   tall.M.SG.NOM
     "John is very tall."

The sentence in (234a) is ungrammatical because the degree adverb in this sentence is not

interpretable in the context of the verb: the verb in question is not a gradable predicate.

The failure to license the degree adverb in (234a) can be encoded formally by positing

that, in contrast to the verb *xoče* (wants) and the adjective *vysokyj* (tall), the verb *jde*

(goes) is not specified for a degree feature in the lexicon. It is not associated with the

scale needed to realize the denotation of the degree adverb:

235.
  a) jde: {cat(verb[ ])}
  b) xoče: {cat(verb[ ]), deg(grade[ ])}
  c) vysokyj: {cat([ ]), deg(grade[ ])}
  d) duže: {cat(nom([ ]), deg([ ])}

If degree adverbs are not valued for a degree feature in the lexicon, as in (235d), the

ungrammaticality of (234a) can be attributed to the degree feature of the adverb

remaining unvalued in narrow syntax:

236.
  a) duže: {cat(nom([1]), deg([ ])}
        jde: {cat(verb[3])}

  b) duže: {cat(nom([1]), deg([5])}
        xoče: {cat(verb[3]), deg(grade[5])}

  c) duže: {cat(nom([4]), deg([6])}
        vysokyj: {cat([4]), deg(grade[6])}

In (236 b-c), a degree feature of the degree adverb is valued through agreement with the

verb and adjective respectively.   Since the verb in (236a) is not specified for a degree

feature in the lexicon, no syntactic relation can be established between the degree adverb

and the verb, and the degree adverb remains unlicensed. For the sake of simplicity, I will

utilize a single value [gradable] for the [degree] feature. An adjective or a verb

associated with this feature in the lexicon will be treated as possessing scalar properties

and thus modifiable by degree expressions.

In (235d), the degree adverb *very* is represented with its categorial feature valued as

nominal. This contrasts with the status of the categorial feature of adjectives which is left

underspecified in the lexicon. The representation of the degree adverb in (235d) is

inspired by Baker's (2003) treatment of *-ly* and *-mente* adverbs as PPs rather than bare

APs. Following Dechaine and Tremblay (1996), Baker (2003) points out that the

derivational affixes used to form adverbs out of adjectives in at least some Indo-European

languages are nominal in nature: *-ly* in English comes from an Old English *lijk* 'body'

and *-mente* in Romance languages comes from Latin *mente*, the ablative form of 'mind'.

According to Baker (2003), the internal nominal structure is indispensable for forming an

adverb out of an adjective since the adjective can only apply to a category that has a

criterion of identity and cannot enter into a direct agreement with either the verb or

another adjective while the preposition acts as a theta-role assigner.

In Ukrainian, some adverbs are, indeed, transparently derived from prepositional phrases:

237.
   a) **PP:**

v	**perš-yj**	**raz**
in	first.M.SG.LOC	time.F.SG.ACC

   "for the first time"

   b) **ADV:**

   v-perš-e
   in-first-O/E
   "for the first time"

238.
   a) **PP:**

na	**nov-yj**	**lad**
on	new.M.SG.ACC	order.M.SG.ACC

   "in a new way, anew

   b) **ADV:**

   na-nov-o
   on-new-O/E
   "in a new way, anew"

The preposition is preserved in an adverb as a prefix on the adjectival root. By analogy

with the Germanic and Romance data, the -o/e morphology attached to the adjectival

roots in (237b) and (238b) could potentially be treated as a nominal remnant (compare

Caha and Medová (2007) for Czech). Ukrainian, however, has cases where the nominal

root is also preserved inside the prepositional adverb on a par with the adjectival root. If

-o/e affix were a nominal remnant, one would expect to see this affix disappear when the

overt nominal root is present in the adverb. This is not the case: the -o/e affix and the

nominal root co-exist inside the adverbial stem:

239.
  a) PP:
> **na švydk-u   ruk-u**
> on quick.F.SG.ACC hand.F.SG.ACC
> *"quickly, off-handedly"*

  b) ADV:
> **na-švydk-o-ruč**
> on-quick-O/E-hand
> *"quickly, off-handedly"*

It is, of course, possible to analyze the -o- morpheme in (239b) as a linking morpheme

that often appears in compounds in Ukrainian:

240.
  a) par-o-voz (par ("steam")**,** vozyty ("to drive, to transport")**,** viz ("cart"))
      "engine car"

  b) tepl-o-xod (teplo ("warm")**,** xodyty ("to walk")**,** xoda ("gait", "walking"))
      "steamboat"

Such infix could be treated as an independent derivational morpheme inserted on

phonological grounds. However, given that prepositional adverbs with and without the

overt nominal element surface with the same -o/e affix, the presence of the

phonologically motivated derivational infix is surprising when the nominal component is

not overtly present. Note, however, that the nominal root-form that appears in the

prepositional adverb in (239b) surfaces also in various cognates of the corresponding

noun *ruk-a* (hand) and is stripped of is φ-features:

241.

a) *Diminutive forms*: **ruč-(en')-k-a**
nominal root-diminutive suffix(es)-F.SG.NOM
"small (little) hand"

b) *Verbs*: **ruč-aty-sja**
nominal root-infinitival suffix-REFL
"to vouch, to testify"

do-ruč-aty
derivational prefix-nominal root-infinitival suffix
"to assign"

The morphological structure of the adverb in (239b) thus fully mirrors that of a full PP in (239a). The -o/e affix appears precisely where one would expect agreement morphology to appear on the underlying adjectival root, if the noun were fully inflected. Since the nominal root inside the prepositional adverb is stripped of its φ-features, I take the -o/e affix to be a default realization of the φ-features on the adjective (compare Tokarski (2001) on −o/e adverbs in Polish as old adjectival forms).

Evidence in support of the treatment of -o/e affix as adverb internal default φ-feature morphology comes from the domain of verbal agreement. In Ukrainian, whenever the verb cannot agree in φ-features with the subject, it surfaces with the default -o/e morphology. This happens in the sentences that lack Nominative subjects (see Baker (2003) for details of an argument that -o is a default φ-feature morphology that appears on predicates in Russian when subject-verb agreement is not available):

242.

a) **Ivan   tut   buv**
John.NOM   here   was.M.SG
"John was here."

b) Ivana   tut   ne bul-o
  John.ACC   here   not   was.O/E
  "John was not here."

c) Na vulyci   bul-o   10   gradusiv
  On street.F.SG.LOC   was.O/E   10   degrees.PL.GEN
  "It was 10 degrees outside."

The copula in the sentence with an Accusative subject (242b) or with a PP in the subject

position (242c) does not agree in φ-features with the subject and hence does not case-

mark the subject. Since the copular verb does not stand in an agreement relation with the

noun, its φ-features are spelled out as default. Similarly, inside the prepositional adverb,

the adjectival φ-features are realized as default -o/e morphology since they cannot

establish φ-feature agreement with the nominal root that is stripped of its φ-features.

In Ukrainian, default -o/e affix that appears on adverbs is a variant of a standard neuter

singular Nominative inflection:

243.
  a) duž-e   horjač-e   sonc-e
    very   hot.N.SG.NOM   sun.N.SG.NOM

  b) nadzvyčajn-o   xolodn-e   molok-o
    extremely   cold.N.SG.NOM   milk.N.SG.NOM

While neuter singular Nominative forms are often utilized as default across languages,

the realization of the default can vary not only across languages but also inside a single

language, being relativized to specific groups of items. Standard Modern Greek, for

instance, utilizes the neuter plural Nominative affix -*a* as a default adverbial affix;

however, adverbs derived from certain groups of adjective (those ending in –*is* and -*es*)

preserve Classical Greek adverbial affix -*os* that originates from the Ablative form:

244.

 a) **arket-a** **kal-a**   **laxanik-a**
    quite good.N.PL.NOM vegetables.N.PL.NOM

 b) **kap-os** **kaliter-a**   **aftokinit-a**
    somewhat better.N.PL.NOM cars.N.PL.NOM

Neuter singular Nominative affixes –*i* and -*o* appears on degree adverbs such as *poli*

(very) and *ligo* (little), also being an exception to a more general rule of using neuter

plural φ-feature morphology as default in the language (see Mastronarde (1993), Holton

et al. (1997)).

Even though the type of φ-feature morphology used as a default adverbial morphology

varies, the very presence of the default φ-feature morphology on adverbs in both

Ukrainian and Modern Greek can be appealed to as evidence of the underlying nominal

structure of adverbial items in these languages. In the system of features adopted here,

the nominal status is encoded as a nominal valuation of the categorial feature of an item.

As will be shown further in this chapter, the nominal status of degree adverbs in

Ukrainian and Modern Greek causes an asymmetry in the distribution of nominal and

verbal functional categories with respect to the degree adverbs in these languages.

Nominal functional categories are always linearized preceding degree adverbs that are

part of an understood NP while verbal functional categories are not ordered with respect

to degree adverbs that modify the VP:

Ukrainian:

245.

 a)* **Duže** **Ivan** **bilja** **velykoji** **žyve** **školy**
   very John.NOM next-to big.F.SG.GEN lives school.F.SG.GEN
   (*"John lives next to a VERY BIG school."*)

b) **Bilja** **duže** **Ivan** **velykoji** **žyve** **školy**
next-to very John.NOM big.F.SG.GEN lives school.F.SG.GEN
"John lives next to a VERY BIG school."

Modern Greek:

246.
a) * Poli **o** **Janis**
very the.M.SG.NOM John.NOM
se ena **megalo** **meni** **diamerisma**
in a.N.SG.ACC big.N.SG.ACC lives apartment.N.SG.ACC

b) **Se ena** **poli** **o** **Janis**
in a.N.SG.ACC very the.M.SG.NOM John.NOM
megalo **meni** **diamerisma**
big.N.SG.ACC lives apartment.N.SG.ACC
"John lives in a VERY BIG apartment."

247.
a) **Aftos** **tha** **ipoferi** **arketa**
He.NOM will suffer enough
"He will suffer enough."

b) **Aftos** **arketa** **tha** **ipoferi**
He.NOM enough will suffer
"He will suffer ENOUGH."

The preposition in (245) and (246) must appear before the degree adverb while the future

tense particle is not ordered with respect to the degree adverb in (247) (see sections 5.3

and 5.4 for a detailed analysis of these contrasts). While the adverb-internal nominal root

affects the overall categorial status of adverbs and their relations with other syntactic

categories, the adverb-internal preposition does not appear to make any significant

contribution to the feature make up of adverbs. There is no evidence of adverb-internal

case checking, and degree adverbs share the distribution of lexical categories rather than

functional items. Consequently, I will assign the F-value of 0 to degree adverbs

assuming that the adverb internal preposition lacks feature content. The presence of the

preposition in the internal adverbial structure can, therefore, be motivated only on thematic grounds as the licenser of the nominal root, as in Baker (2003).

5.3 Degree Adverbs and Linearization of NPs

Since degree adverbs are adjuncts, they are expected to have approximately the same free distribution as adjectives. An adjective can be generated at a distance from the noun phrase and still enter into agreement relation with it, forming a discontinuous constituent. Similarly, I posit that a degree adverb can be generated at a distance from the adjectival phrase and still enter into an agreement relation with it, forming a discontinuous structure. It is, therefore, not surprising that Ukrainian has discontinuous constituents that are stretched across more than two fragments:

248. **Duže** **Ivan** **velyku** **kupyv** **kvartyru**
very John.NOM big.F.SG.ACC bought apartment.F.SG.ACC
"John bought a VERY BIG apartment."

The two agreement relations that form a discontinuous noun phrase in (248) are, however, distinct. The agreement relation established between the adjective and the noun involves φ-features:

249. AP: {cat([5]), gen([10]), num([15]), case([20]), deg(grade[30]), F(0)}
NP: {cat(nom[5]), gen([10]), num([15]), case([20])), F(0)}

The agreement relation established between the degree adverb and the adjective involves a degree feature:

250. AdvP: {cat(nom[5]), deg([30])), F(0)}
AP: {cat([5]), gen([10]), num([15]), case([20]), deg(grade[30]), F(0)}

Nevertheless, both agreement relations result in the unification of the categorial features of the noun, the adjective, and the degree adverb:

251. AdvP: {cat(nom[**5**]), deg([30])), F(0)}
AP: {cat([**5**]), gen([10]), num([15]), case([20]), deg(grade[30]), F(0)}
NP: {cat(nom[**5**]), gen([10]), num([15]), case([20])), F(0)}

First the categorial features of the adjective and the noun are unified as a result of the φ-feature agreement between them. Then the categorial features of the adjective and the degree adverb are unified as a result of the degree feature unification. The categorial feature of the degree adverb and the noun are shared by transitivity.

Given that the relation between the adjective and the noun and the relation between the degree adverb and the adjective result in feature sharing, nominal functional categories are predicted to behave in the same way with respect to degree adverbs as with respect to adjectives. This is, indeed, the case:

252.

  a) **Ivan** **žyve** <u>**bilja**</u> <u>**duže**</u> <u>**velykoji**</u> <u>**školy**</u>
    John.NOM lives next-to very big.F.SG.GEN school.F.SG.GEN
    "John lives next to a very big school."

  b) * <u>**Duže**</u> **Ivan** <u>**velykoji**</u> **žyve** <u>**bilja**</u> <u>**školy**</u>
    very John.NOM big.F.SG.GEN lives next-to school.F.SG.GEN

  c) * <u>**Duže**</u> **Ivan** <u>**bilja**</u> <u>**velykoji**</u> **žyve** <u>**školy**</u>
    very John.NOM next-to big.F.SG.GEN lives school.F.SG.GEN

  d) <u>**Bilja**</u> <u>**duže**</u> **Ivan** <u>**velykoji**</u> **žyve** <u>**školy**</u>
    next-to very John.NOM big.F.SG.GEN lives school.F.SG.GEN
    "John lives next to a VERY BIG school."

The preposition in (252) has to precede both the adjective and the degree adverb. The distribution of the preposition in (252) is the result of the application of the MCL algorithm to the structure within which the degree adverb, the adjectival modifier, and the noun all share the same categorial feature.

Consider the phrase marker in (253), which represents the structure of the sentence in (252d):

253.


```
                    TP
        AdvP              TP
        Adv      NP2            TP
                  N2      T          VP
                               AP        VP
                               A      NP2      VP
                                             V        PP
                                                   P       NP1
                                                              N1
        duže     Ivan     velykoji   žyve    bilja    školy
        very     John.NOM big.F.SG.GEN lives next-to  school.F.SG.GEN
```
"John lives next to a VERY BIG school."
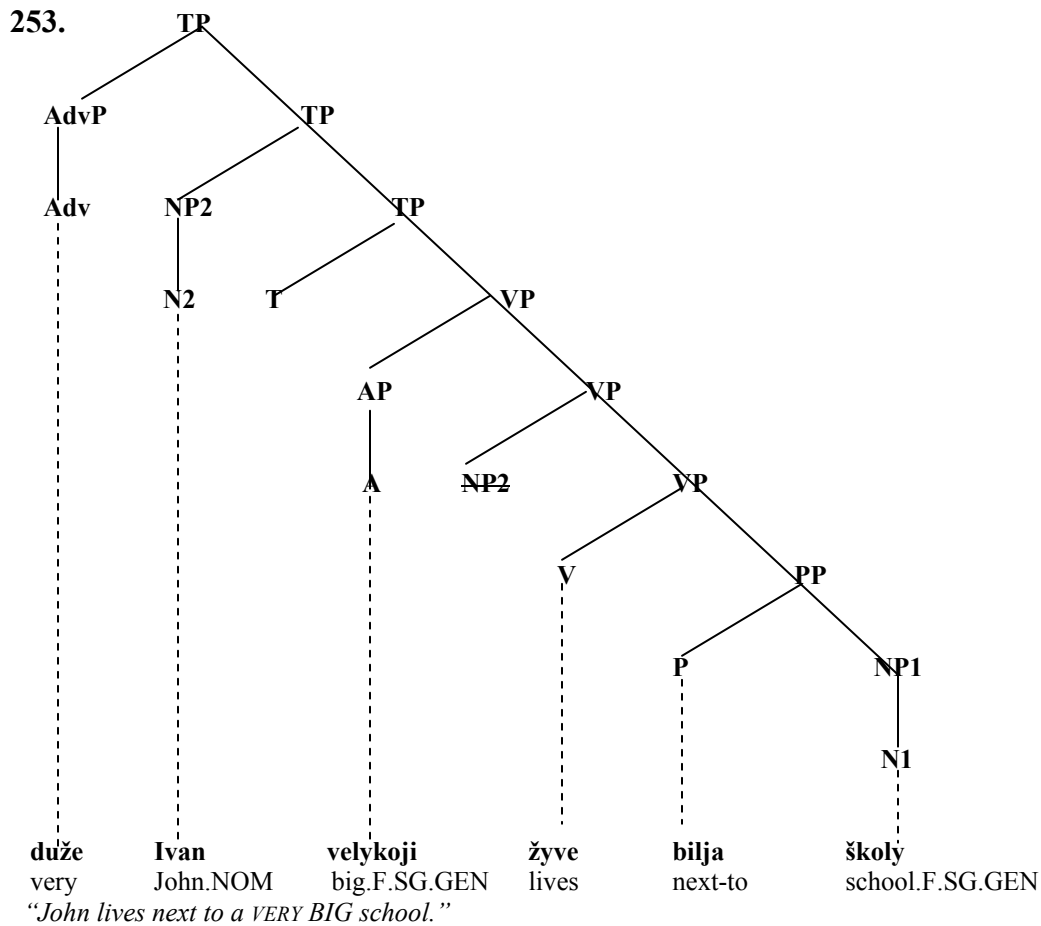
In (253), the adjectival modifier is associated with the nominal extended projection as a result of agreement between the modifier and the noun phrase:

254. AP: {cat([5]), gen([10]), num([15]), case([20]), deg(grade[30]), F(0)}
PP: {cat(nom[5]), gen([10]), num([15]), case(loc[20])), F(7)}
NP: {cat(nom[5]), gen([10]), num([15]), case([20])), F(0)}

Agreement between the modifier and the noun phrase results in categorial feature sharing, and this categorial feature is used as an input to the linearization algorithm. Similarly, the degree adverb in (253) enters into agreement with the adjectival modifier, triggering categorial feature sharing:

255. AdvP: {cat(nom[5]), deg([30]), F(0)}
  AP: {cat([5]), gen([10]), num([15]), case([20]), deg(grade[30]), F(0)}

By transitivity, the degree adverb shares the categorial feature with the entire extended

noun phrase.

Consider now the application of the MCL algorithm to the phrase marker in (253). At

stage 1, the MCL algorithm generates a set M of ordered pairs of non-terminals such that

the first member of each pair asymmetrically c-commands the second member of the pair

{<AdvP, NP2>, <AdvP, TP>, <AdvP, T>, <AdvP, AP>, <AdvP, A>, <AdvP, VP>,

<AdvP, V>, <AdvP, PP>, <AdvP, P>, <AdvP, NP1>, <AdvP, N1>, <NP2, TP>, <NP2,

T>, <NP2, AP>, <NP2, A>, <NP2, VP>, <NP2, V>, <NP2, PP>, <NP2, P>,<NP2, NP1>,

<NP2, N1>, <T, AP>, <T, V>, <T, PP>, <T, P>, <T, NP1>, <T, N1>, <AP, VP>, <AP,

V>, <AP, PP>, <AP, P>, <AP, NP1>, <AP, N1>, <V, P>, <V, NP1>, <V, N1>, <P,

N1>}. At stage 2, the MCL algorithm verifies that every pair in the set generated at stage

1 complies with the F-value ordering requirement. The set M contains the pairs <AdvP,

P> and <AP, P> that do not comply with this requirement:

256. AdvP: {cat(nom[5]), gen([10]), num([15]), case([20]), deg([30]), F(0)}
  AP: {cat([5]), gen([10]), num([15]), case([20]), deg(grade[30]), F(0)}
  P: {cat(nom[5]), gen([10]), num([15]), case(loc[20])), F(7)}

These two pairs are replaced with the pairs <P, AdvP> and <P, AP>, which do comply

with the F-value ordering requirement. In addition, the pairs <V, P>, <T, P>, and <NP2,

P> are replaced with the pairs <P, V>, <P, T>, and <P, NP2>, as required. At stage 3, the

modified set of pairs of non-terminals M' is mapped onto a corresponding set of pairs of

terminals: {<duzhe, Ivan>, <duzhe, velykoji>, <duzhe, zhyve>, <duzhe, shkoly>, <Ivan,

velykoji>, <Ivan, zhyve>, <Ivan, shkoly>, <bilja, duzhe>, <bilja, Ivan>, <bilja,

velykoji>, <bilja, zhyve>, <bilja, shkoly>, <velykoji, zhyve>, <velykoji, shkoly>,

<zhyve, shkoly>}. The union over this set gives a total linear ordering of all terminals in

the phrase marker: *bilja > duzhe > Ivan > velykoji > zhyve > shkoly*. This linear ordering

corresponds to the grammatical sentence in (252d), which contains a tripartite

discontinuous PP. Consequently, the MCL algorithm provides correct linearization of

nominal functional categories with respect to degree adverbs in Ukrainian.

Degree adverbs in Modern Greek have the same distribution as degree adverbs in

Ukrainian. They can form a discontinuous constituent with an adjective and when

separated from an attributive adjectival modifier cause tripartitioning of the noun phrase:

257.

a) **Ena   poli   o   Janis**
a.N.SG.NOM   very   the.M.SG.NOM John.NOM
megalo   agorase   diamerisma
big.N.SG.ACC   bought   apartment.N.SG.ACC
"John bought a VERY BIG apartment."

b) **Se   ena   poli   o   Janis**
in   a.N.SG.ACC very   the.M.SG.NOM John.NOM
megalo   meni   diamerisma
big.N.SG.ACC   lives   apartment.N.SG.ACC
"John lives in a VERY BIG apartment."

Both the determiner and the preposition are linearized in (257) preceding the degree

adverb as a result of the same PF mechanism that ensures linearization of the preposition

preceding degree adverbs in Ukrainian. Consequently, the distribution of lexical and

functional items in tripartite discontinuous noun phrases that are associated with two

distinct long-distance agreement relations receives the same analysis as the distribution of

functional and lexical items in discontinuous noun phrases that are associated with only

one long-distance relation.

5.4 Degree Adverbs and Linearization of VPs

In the previous section, we examined the distribution of nominal functional categories with respect to degree adverbs. Since the categorial feature of degree adverbs is fixed as nominal due to the adverb-internal nominal structure, the categorial feature of a degree adverb can undergo unification with the categorial feature of an adjective it modifies in the course of adverb-adjective agreement. The categorial feature unification takes place because the categorial feature of the adjective, being shared with the noun, is non-distinct from the categorial feature of the degree adverb. In the course of PF linearization, nominal functional categories are, therefore, required to precede both adjectives and degree adverbs. Our theory, however, makes different predictions as to the distribution of verbal functional categories in relation to degree adverbs that modify verbs. Since the categorial feature of a degree adverb is valued as nominal, it cannot be unified with the categorial feature of the verb when the degree adverb and the verb enter into an agreement relation triggered by the degree feature:

258. AdvP: {cat(nom[5]), deg([30]), F(0)}
V: {cat(verb[11]), deg(grade[30]), F(0)}

Linearization of functional categories depends on categorial feature sharing. Our theory, therefore, predicts that verbal functional categories are not required to be linearized preceding degree adverbs that modify verbs. This prediction is, indeed, borne out, as the data from Modern Greek show. The future tense particle *tha* always precedes the verb in Modern Greek. This is precisely what is expected of a functional verbal category:

259.
a) **Aftos** <u>**tha**</u> **ipoferi** **poli**
He.NOM will suffer very
"He will suffer very much."

b) * Aftos   ipoferi   <u>tha</u>   poli
He.NOM   suffer   will   very

When several verb forms are present, this particle is required to precede the highest verb

form in the clause:

260.
  a) Aftos   <u>tha</u>   pinai
  He.NOM   will   hunger
  "He will be hungry."

  b) Aftos   <u>tha</u>   exi   pinasi
  He.NOM   will   has   hungered
  "He will get hungry (by then)."

  c) * Aftos   exi   <u>tha</u>   pinasi
  He.NOM   has.3.SG.PRS will   hungered

If the categorial feature of a degree adverb were unified with the categorial feature of the

verb it modifies in the course of degree feature valuation, the future tense particle would

be expected to appear before the degree adverb when the degree adverb appears before all

other verb forms in the clause. A degree adverb, however, can appear both following

(261a) and preceding (261b-c) the future tense marker:

261.
  a) Aftos   tha   ipoferi   <u>poli</u>
  He.NOM   will   suffer.PRS.3.SG   very
  "He will suffer very much."

  b) Aftos   <u>poli</u>   tha   ipoferi
  He.NOM   very   wil   suffer
  "He will suffer VERY MUCH."

  c) <u>Poli</u>   aftos   tha   ipoferi
  very   he.NOM   will   suffer
  "He will suffer VERY MUCH."

This is precisely what is predicted by the MCL linearization algorithm, given that the

degree adverb is valued as nominal in the lexicon and cannot share the categorial feature

with the verb it modifies.

Consider the application of the MCL algorithm to the phrase marker in (262), which

represents the structure (maximally simplified) of the sentence in (261b), where the

degree adverb is generated in the left periphery of the clause and receives narrow focus

reading:
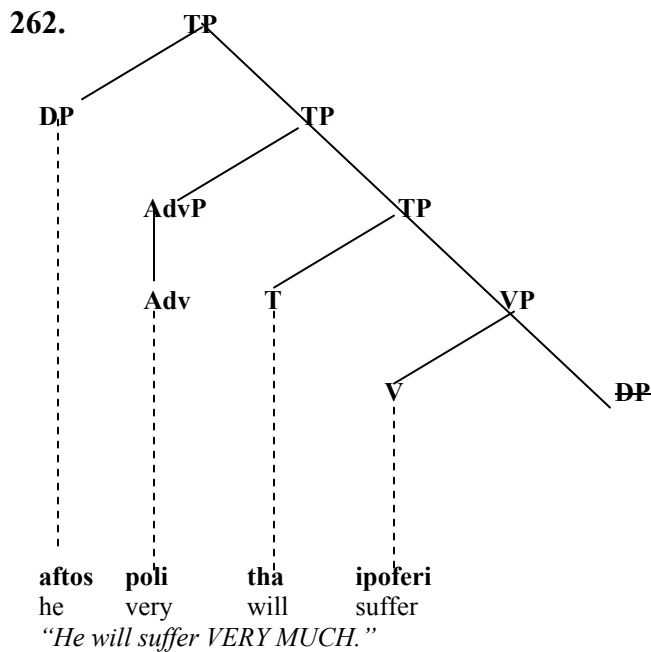
262.

aftos	poli	tha	ipoferi
he	very	will	suffer

"He will suffer VERY MUCH."

At stage 1, the MCL algorithm generates a set M of ordered pairs of non-terminals such

that the first member of each pair asymmetrically c-commands the second member of the

pair {<DP, AdvP>, <DP, Adv>, <DP, TP>, <DP, T>, <DP, VP>, <DP, V>, <AdvP, TP>,

<AdvP, T>, <AdvP, VP>, <AdvP, V>, <T, V>}. The set M does not contain any pairs

that violate the F-value ordering requirement. The pair <AdvP, T> does not violate F-

value ordering requirement since the members of the pair do not share the categorial

feature:

263. AdvP: {cat(nom[ ]), deg([30]), F(0)}
   T: {cat(verb[11]), gen([21]), num([31]), case(nom[41])), F(7)}

The categorial features of the degree adverb and the tense node are not shared because

the categorial features of the degree adverb and the verb cannot be unified at the time of

degree feature valuation:

264. AdvP: {cat(nom[ ]), deg([30]), F(0)}
   V: {cat(verb[11]), deg(grade[30]), F(0)}

Categorial feature unification fails since the two categorial features in (264) are distinct:

one feature is valued as nominal and another feature is valued as verbal. Since the degree

adverb and the tense node do not share the categorial feature, the set M generated by the

MCL algorithm does not undergo any alteration at stage 2. At stage 3, it is mapped onto

a corresponding set of pairs of terminals: {<aftos, poli>, <aftos, tha>, <aftos, ipoferi>,

<poli, tha>, <poli, ipoferi>, <tha, ipoferi >}. The union over this set gives a total linear

ordering of all terminals in the phrase marker: *aftos > poli > tha > ipoferi*. This linear

order corresponds to the grammatical sentence in (261b). Consequently, the MCL

algorithm provides a correct linearization of the tense particle with respect to the degree

adverb in Modern Greek.

5.5 Multiple Modification and Discontinuity

In Ukrainian, a noun phrase can stretch across three discontinuous parts when it contains

two long-distance agreement relations: one between an adjectival modifier and a noun

and another between a degree adverb and the adjectival modifier, as in (265b):

265.

a) Ivan   kupyv   <u>duže   velyku   mašynu</u>
John.NOM bought   very   big.F.SG.ACC   car.F.SG.ACC
"John bought a very big car."

b) <u>Duže   Ivan   velyku   kupyv   mašynu</u>
very   John.NOM   big.F.SG.ACC   bought   car.F.SG.ACC
"John bought a VERY BIG car."

The sentences which contain two long-distance adjectival modifiers are, however,

marked in Ukrainian, as in (266b):

266.

a) Ivan   kupyv   <u>velyku   červonu   mašynu</u>
John.NOM bought   big.F.SG.ACC   red.F.SG.ACC car.F.SG.ACC
"John bought a big red car."

b)??<u>Velyku   Ivan   červonu   kupyv   mašynu</u>
big.F.SG.ACC John.NOM   red.F.SG.ACC   bought   car.F.SG.ACC
(*"John bought a BIG, RED car."*)

There is no prohibition on either of the modifiers appearing in the position in which they

surface in (266b) as long as the other modifier is not present:

267.

a) <u>Velyku   Ivan   kupyv   mašynu</u>
big.F.SG.ACC John.NOM   bought   car.F.SG.ACC
"John bought a BIG car."

b) Ivan   <u>červonu   kupyv   mašynu</u>
John.NOM   red.F.SG.ACC   bought   car.F.SG.ACC
"John bought a RED car."

One could potentially attribute the unacceptability of (266b) to a ban on multiple long-

distance relations of the same kind. Note that (265b) involves two distinct long-distance

relations: valuation of φ-features and valuation of a degree feature. (266b), on the other

hand, involves two long-distance relations of the same kind: both relations result in

valuation of φ-features. In Ukrainian, however, multiple modification can be marked

even when one of the modifiers is generated locally and only one adjective modifies the noun from a distance:

268. ? <u>**Velyku**</u>   **Ivan**   **kupyv**   <u>**červonu**</u>   <u>**mašynu**</u>
     big.F.SG.ACC John.NOM   bought   red.F.SG.ACC car.F.SG.ACC
     (*"John bought a BIG red car."*)

If the markedness of (266b) is caused by the ban on multiple long-distance relations of the same kind, (268) should have been fully acceptable since it contains only one long-distance relation.

A similar restriction on multiple modification in discontinuous constituents have been observed by Franks and Progovac (1994) and Bošković (2005) for Serbo-Croatian and by Sekerina (1997) for Russian. Franks and Progovac (1994) follow Abney (1987) in treating NP as a complement of A and analyze discontinuity as the result of Remnant Movement: NP is sub-extracted from AP and the remnant AP is fronted (see chapter 9 for an overview of movement-based approaches to discontinuous constituents). They analyze the ban on multiple modification in discontinuous constituents as a ban on extracting AP from another AP (see Bošković (2005) for a critique of this analysis). Bošković (2005), on the contrary, assumes that APs are specifiers/adjuncts to NP in Serbo-Croatian and the ban on multiple modification in discontinuous constituents is due to the McGinnis's (1998) principle of Lethal Ambiguity. Multiple APs are equidistant from the probe that triggers extraction of APs out of NP and generates discontinuous constituents. Since they share the same features, presence of more than one AP causes Lethal Ambiguity and blocks extraction.

Sekerina (1997) also formulates the restriction on multiple modification in Russian as a

syntactic constraint on discontinuity (see Sekerina (1997): 186-188)). Pereltsvaig (2008),

however, argues that such constraint does not exist, and multiple adjectival modifiers are

possible in discontinuous constituents in Russian. She cites the following data as

evidence:

269.
  a) **<u>Velikolepnaja</u>**   **ved'**   **<u>narodnaja</u>** **<u>odezhda</u>** **byla**
      Excellent   EMPH folk   clothes   was
        "But we did use to have excellent folk costumes."

  b) **<u>Gotovye</u>**   **<u>kitajskie</u>** **byli**   **<u>xalaty</u>**
      Ready-made   Chinese   were   dressing-gowns
        "There were ready-made Chinese dressing-gowns."

                                                 (Pereltsvaig (2008): 31)

Bošković (2005) also notes that in certain contexts, multiple modification becomes

acceptable:

270.
  a) **<u>Lijepe</u>**   **je**   **on** **vidio** **<u>djevojke</u>**
      beautiful is   he   seen   girls
      "Beautiful girls, he saw."

  b) * **<u>Lijepe</u>**   **je**   **on** **vidio** **<u>visoke</u>** **<u>djevojke</u>**
      beautiful is   he   seen   tall   girls

  c) * **<u>Lijepe</u>**   **<u>visoke</u>** **je** **on** **vidio** **<u>djevojke</u>**
      beautiful   tall   is   he   seen   girls

                                            (Bošković (2005):12)

  d) A: I think that Marko said he saw ugly tall girls.
      B: Ma, ne, **<u>lijepe</u>**   **je** **on** **vidio** **<u>visoke</u>** **<u>djevojke</u>,** **ne** **ružne**
           no   beautiful is   he   seen   tall   girls   not   ugly
                                      (Bošković (2005): 27)

He attributes improvement of multiple modification in (270) to a special [+focus] feature

assigned to the fronted modifier in contrastive environments. The assignment of this

feature makes the fronted modifier distinct from other modifiers and enables its

extraction from the noun phrase. However, if multiple modification is permitted only when the overt contrast is present, as in (270d), the data in (269) cited by Pereltsvaig (2008) requires additional explanation since it does not involve overt contrast.

Given that the acceptability of multiple modifiers in discontinuous constituents is context-dependent, I take the restriction on multiple modification to be not a syntactic constraint but a constraint on the interpretation of multiple modifiers in discontinuous constituents. Nothing prevents long-distance multiple modifiers from being generated in narrow syntax. However, long-distance modifiers signal a particular process of common ground update. I conjecture that multiple modification is allowed in discontinuous constituents when only one of the modifiers adds new information to the common ground, and the information contributed by other modifiers is contextually available in some way. Note that what makes (270d) distinct from (270b) is not only the presence of overt contrast but also the fact that the modified noun phrase *tall girls* has already been introduced in the first utterance in (270d) and is available in the common ground when the second sentence is uttered. When the sentences are taken out of context, as (270b) is, one tends to interpret both modifiers as adding new information to the common ground. Even though prior context is not supplied in (269a), the modified noun phrase *folk costumes* refers to a particular kind of object. As Erteschik-Shir (1997) argues, kinds (generic cards) are always contextually available in common ground, making the sentence in (269a) acceptable on the same grounds as the sentence in (270d).

The sentence in (269b) is acceptable on similar grounds. Discontinuous constituents in Russian are associated with two types of intonation patterns: the intonation construction IC-2, which has only one intonation peak that is aligned with the item that receives narrow focus interpretation, and the intonation construction IC-5, which has one intonation peak aligned with a topicalized item and another aligned with the item that receives narrow focus (see footnotes 12 and 13, and Pereltsvaig (2008)). The sentence in (269b) is acceptable when assigned the intonation pattern IC-5, with the rising (topic) contour aligned with the first modifier, *gotovye* ("ready-made"), and the falling (focus) contour aligned with the second modifier, *kitajskije* ("Chinese"). Topicalization of this sort should be understood as some type of ordering relation which is usually established between two foci in a structure with a pair-list reading.[14] Assignment of the IC-2 intonation construction to the sentence in (269b), with the falling (focus) contour aligned with the first modifier and the second modifier de-accented and thus treated as part of the given information that constitutes the ground of the utterance, is less acceptable for the reasons explained in footnote 12. In either case, the intonation assignment distinguishes between the two modifiers on the grounds of new and given information. Note, however, that the sentence in (266b) cannot be rescued by assigning the IC-5 intonation contour to this sentence. This shows that not all adjectives are equally amenable to a pair-list ordering, or at least not in all contexts, causing observed deterioration in grammaticality.

Finally, Bošković (2005) notes that multiple modification is also acceptable in wh-contexts:

271. <u>**Koje**</u>   je Petar   <u>novo auto</u>   upropastio?
Which   is Peter   new   car   ruined
"Which new car did Peter ruin?."

<div align="right">(Bošković (2005): 27)</div>

This is expected since in wh-contexts the noun phrase always refers to contextually given information and constitutes part of the presupposition of the utterance while the wh-word singles out the part of the information that needs to be added to the common ground. Hence, Bošković's (2005) observation that, in discontinuous constituents with multiple modifiers, the modifiers have to be distinct is correct. The distinction, however, appears to be related to the old/new information rather than contrast. I will leave the investigation of all the details of this analysis of discontinuous constituents with multiple modifiers for further research.

5.6 Summary

In this chapter, I argued that free-standing degree expressions in Ukrainian show a full range of lexical rather than functional properties and form a single syntactic class with other adverbs in the language. Like adjectival modifiers, degree adverbs can appear separated from the word they modify by other lexical material and they can be re-ordered in relation to other lexical items that pertain to the same abstract constituent. I assumed that, like adjectives, degree adverbs can be generated in any position in the clause that permits adjunction and are licensed through relations they establish with other syntactic categories in narrow syntax. While the key licensing relation for adjectives is the valuation of their φ-features, the key licensing relation for degree adverbs is the valuation of their degree feature. I followed Baker (2003) in treating adverbs as PPs and argued that -o/e affix on adverbs in Ukrainian is a default realization of adjectival φ-features

triggered by the fact that adverb-internal nominal element in the language lacks φ-feature content and cannot support adjectival agreement.

In discontinuous noun phrases, degree adverbs have to be preceded by all the nominal functional categories. I claimed that the linearization of the nominal functional categories before degree adverbs is enforced by the same mechanism of categorial feature sharing that enforces linearization of the nominal functional categories before long-distance adjectival modifiers. The categorial feature of the degree adverb is unified with the categorial feature of the adjective in the course of degree feature valuation. As a result, the degree adverb is associated with the entire noun phrase and shares the categorial feature with all the nominal functional categories. The categorial feature unification is possible because the categorial feature of degree adverbs, fixed as nominal, is non-distinct from the categorial feature of other nominal categories. This is not the case when degree adverbs modify verbs. Since the categorial feature of degree adverbs is fixed as nominal, it cannot be unified with the categorial feature of verbs, which is valued as verbal. Therefore, the process of degree feature valuation that takes place when a degree adverb modifies a verb does not trigger categorial feature sharing. As a result, verbal functional categories are not ordered in relation to degree adverbs. In Modern Greek, degree adverbs can appear both before and after a future tense particle which obligatorily precedes verbs.

I also addressed the issue of multiple modification. While noun phrases in Ukrainian can stretch across three discontinuous parts when they contain two long-distance agreement

relations--one between an adjectival modifier and a noun and another between a degree adverb and the adjectival modifier—the sentences which contain two long-distance adjectival modifiers are often marked in the language. Acceptability of multiple modifiers in discontinuous constituents is, however, context-dependent. I, therefore, analyzed the restriction on multiple modification not as a syntactic constraint but as a constraint on the interpretation of long-distance modifiers. I conjectured that multiple modification is allowed in discontinuous constituents only when one of the modifiers adds new information to the common ground while the information contributed by other modifiers is already contextually available in some way.

Chapter 6: PP-modifiers and Possessors in Discontinuous Constructions

6.0 Introduction

In Ukrainian, nouns can be modified not only by adjectives but also by PPs and can be

accompanied by Genitive possessors. In regular noun phrases, PP-modifiers and

Genitive possessors appear to the right of the noun while adjectival modifiers appear to

the left of the noun:

272.
  a) **Ivan**   **prodav** <u>**novu**</u>   <u>**knyzhku**</u>
      John.NOM   sold   new.F.SG.ACC   book.F.SG.ACC
      "John sold a new book."

  b) **Ivan**   **prodav** <u>**knyzhku**</u>   **pro**   **suchasnu**   **literaturu**
      John.NOM   sold   book.F.SG.ACC about contemporary   literature
      "John sold a book about contemporary literature."

  c) **Ivan**   **prodav**   <u>**knyzhku**</u>   **brata**
      John.NOM   sold   book.F.SG.ACC   brother.M.SG.GEN
      "John sold his brother's book."

In discontinuous noun phrases, however, PP-modifiers and Genitive possessors have the

same surface distribution as adjectives and can appear either before or after the noun:

273.
  a) **Ivan**   <u>**velyku**</u>   **prodav**   <u>**kvartyru**</u>
      John.NOM   big.F.SG.ACC   sold   apartment.F.SG.ACC
      "John sold a BIG apartment."

  b) **Ivan**   <u>**kvartyru**</u>   **prodav**   <u>**velyku**</u>
      John.NOM   apartment.F.SG.ACC   sold   big.F.SG.ACC
      "As for an apartment John sold, it is a BIG one."

274.
  a) **Ivan**   **pro**   **sučasnu**   **literaturu**   **prodav** <u>**knyžku**</u>
      John.NOM about modern.F.SG.ACC   literature.F.SG.ACC sold   book.F.SG.ACC
      "John sold a book ABOUT CONTEMPORARY LITERATURE."

  b) **Ivan**   <u>**knyžku**</u>   **prodav** <u>**pro**</u>   **sučasnu**   **literaturu**
      John.NOM book.F.SG.ACC   sold   about modern.F.SG.ACC literature.F.SG.ACC
      "As for a book John sold, it is ABOUT CONTEMPORARY LITERATURE."

275.

a) **Ivan**   **brata**   **prodav**   **kvartyru**
John.NOM   brother.M.SG.GEN   sold   apartment.F.SG.ACC
"John sold his BROTHER's apartment."

b) **Ivan**   **kvartyru**   **prodav**   **brata**
John.NOM   apartment.F.SG.ACC   sold   brother.M.SG.GEN
"John sold his BROTHER's apartment."

Genitive possessors, like adjectival modifiers, can also form linear discontinuous

structures with the Possessed NP when the NP is embedded under a PP. The matrix

preposition must appear before the adjective and before the Genitive possessor. PP-

modifiers, however, cannot form a linear discontinuous structure with a noun phrase

embedded inside a prepositional phrase:

276.

a) **Ivan**   **bilja**   **velykoji**   **stojit'**   **mašyny**
John.NOM   next-to   big.F.SG.GEN   stands   car.F.SG.GEN
"John stands next to the BIG car."

b)* **Ivan**   **velykoji**   **stojit'**   **bilja**   **mašyny**
John.NOM   big.F.SG.GEN   stands   next-to   car.F.SG.GEN

277.

a) **Ivan**   **bilja**   **brata**   **stojit'**   **školy**
John.NOM   next-to   brother.M.SG.GEN   stands   school.F.SG.GEN
"John stands next to his BROTHER'S school."

b)* **Ivan**   **brata**   **stojit'**   **bilja**   **školy**
John.NOM   brother.M.SG.GEN   stands   next-to   school.F.SG.GEN

278.

a)* **Ivan**   **bilja**   **zi**   **školy**   **stojit'**   **žinky**
John.NOM   next-to   from   shool.F.SG.GEN   stands   woman.F.SG.GEN
(*"John stands next to the woman FROM THE SCHOOL."*)

b)* **Ivan**   **zi**   **školy**   **stojit'**   **bilja**   **žinky**
John.NOM   from   shool.F.SG.GEN   stands   next-to   woman.F.SG.GEN

PP-modifiers can be separated from the noun embedded inside a PP only when they

surface after the noun:

279.

a) **Ivan**   **bilja**   **mašyny**   **stojit'**   **velykoji**
John.NOM   next-to   car.F.SG.GEN   stands   big.F.SG.GEN
"As for a car John stands next to, it is a BIG one."

b) **Ivan**   **bilja**   **školy**   **stojit'**   **brata**
John.NOM   next-to   shool.F.SG.GEN   stands   brother.M.SG.GEN
"As for the school John stands next to, it is his BROTHER'S school."

c) **Ivan**   **bilja**   **žinky**   **stojit'**   **zi**   **školy**
John.NOM   next-to   woman.F.SG.GEN   stands   from   school.F.SG.GEN
"As for the woman John stands next to, it is a woman FROM THE SCHOOL."

In section 6.1, I examine the distribution of PP-modifiers in Ukrainian and in Modern

Greek. I attribute the contrast in the distribution of adjectival and PP-modifiers in these

languages to restrictions on the extraction from PPs. The adjectival modifiers avoid

violating the ban on extraction from the matrix PP by being base-generated outside of the

PP and agreeing with the noun phrase from a distance. PP-modifiers, however, do not

establish any Agree relation with the noun phrase they modify and can relate to this noun

phrase only structurally, through direct merger. PP-modifiers, therefore, can be separated

from the noun they modify only by way of movement. Since PP-modifiers cannot be

extracted from the matrix PP, they remain trapped inside.

In section 6.2, I turn to the analysis of Genitive possessors. Unlike PP-modifiers,

Genitive possessors relate to the possessee through case assignment. I provide an

account of Genitive possessor fronting by appealing to the theory of Predicate Inversion

of Den Dikken (1995, 2006)). I argue that the relation between the possessor and the

possessee is mediated by the Relator head which takes a Possessor phrase as a

complement. Possessor phrase is headed by the null preposition that assigns Genitive

case to the possessor. Genitive possessor is extracted from the matrix PP by way of

Predicate Inversion when the Genitive case assigning preposition incorporates into the

Relator head and the resulting Relator node incorporates into the matrix P. Fusion of the

categorial features of the Genitive case assigning preposition and the matrix preposition,

which results from incorporation, determines the linearization of the matrix preposition

before the fronted Genitive possessor at PF. PP-modifiers cannot be extracted from the

matrix PP because the overt preposition blocks the incorporation process that enables

Predicate Inversion. The analysis of Genitive possessor fronting offered in this chapter

also provides an account of PP-modifier stranding. PP-modifiers form a discontinuous

string with the noun they modify when the noun is extracted from the matrix PP it heads.

This strands the PP-modifier inside the matrix prepositional phrase while the matrix

preposition is linearized preceding the matrix noun phrase at PF.

6.1 PP-modifiers

In Ukrainian, nouns can be modified either by an adjective or by a PP. Both the adjective

and the PP have the same surface distribution in discontinuous NPs:

280.
   a) Ivan   novu   kupyv   knyžku
       John.NOM   new.F.SG.ACC   bought   book.F.SG.ACC
       "John bought a NEW book."

   b) Ivan   knyžku   kupyv   novu
       John.NOM   book.F.SG.ACC   bought   new.F.SG.ACC
       "As for the book John bought, it is a NEW one."

281.
   a) Ivan   pro   sučasnu   literaturu
       John.NOM   about   modern.F.SG.ACC   literature.F.SG.ACC
       kupyv   knyžku
       bought   book.F.SG.ACC
       "John bought a book ABOUT MODERN LITERATURE."

b) Ivan   knyžku   kupyv
John.NOM   book.F.SG.ACC   bought
pro   sučasnu   literaturu
about   modern.F.SG.ACC   literature.F.SG.ACC
"As for the book John bought, it is a book ABOUT MODERN LITERATURE."

Although the distribution of the adjectival modifier in (280) and the PP-modifier in (281) is the same, I claim that the sentences in (280) and (281) have different structures. The adjectival modifier is base-generated in its surface location and forms a discontinuous constituent with the noun. It can be base-generated at a distance from the noun phrase it modifies because it has unvalued φ-features and can agree with the noun even though it is not adjacent to it:

282. AP: {cat([5]), gen([10]), num([15]), case([20])), F(0)}
     NP: {cat(nom[5]), gen(masc[10]), num(sg[15]), case([20])), F(0)}

The PP-modifier, however, has all its φ-features valued projection internally and cannot initiate φ-feature agreement with the noun it modifies:

283. PP: {cat(nom[11]), gen([21]), num([31]), case(loc[41])), F(7)}
     NP: {cat(nom[5]), gen(masc[10]), num(sg[15]), case([20])), F(0)}

The relation between the noun and its PP-modifier can, therefore, be expressed only locally, through direct merger. A PP-modifier must thus be generated inside the noun phrase it modifies and can only be dislocated by way of movement. The PP-modifier in (281) does not, therefore, form an agreement-based discontinuous constituent with the noun phrase it modifies: it constitutes an example of extraction.

The structural differences related to adjectival and PP-modification do not show up overtly when the matrix noun does not have overt nominal functional categories. The structural differences are, however, visible on the surface when the matrix noun phrase

has overt functional categories associated with it. Thus, in Modern Greek, the determiner
has to appear preceding the adjectival modifier when the adjective is separated from the
noun it modifies. The determiner, however, appears before the noun when the PP-
modifier is fronted:

284.
   a) **Sinandise** **tin** **psili** **jineka**
   met.3.SG   the.F.SG.ACC   tall.F.SG.ACC   woman.N.SG.ACC
   "He met the tall woman."

   b) * **Psili** **sinandise** **tin** **jineka**
   tall.F.SG.ACC   met.3.SG   the.F.SG.ACC   woman.N.SG.ACC

   c) **Tin** **psili** **sinandise** **jineka**
   the.F.SG.ACC   tall.F.SG.ACC   met.3.SG   woman.N.SG.ACC
   "He met the TALL woman."

285.
   a) **Sinandise**
   met.3.SG
   tin **jineka** **apo** **to** **sxolio**
   the.F.SG.ACC   woman.F.SG.ACC   from   the.N.SG.ACC   school.N.SG.ACC
   "He met the woman from the school."

   b) **Apo** **to** **sxolio** **sinandise**
   from   the.N.SG.ACC   school.N.SG.ACC   met.3.SG
   tin **jineka**
   the.F.SG.ACC   woman.F.SG.ACC
   "He met the woman FROM THE SCHOOL."

   c) * **Tin** **apo** **to** **sxolio** **sinandise**
   the.F.SG.ACC   from   the.N.SG.ACC   school.N.SG.ACC   met.3.SG
   jineka
   woman.F.SG.ACC

This is precisely what is expected to happen if the displacement of the PP-modifier and
base-generation of the adjectival modifier at a distance from the noun are two distinct
processes. The long-distance adjectival modifier enters into agreement with the noun in
narrow syntax. The agreement associates the adjectival modifier with the noun phrase,

and the determiner is mapped preceding the long-distance adjectival modifier in the course of linearization at PF, as discussed in detail in chapter 4. Since the PP-modifier does not agree with the noun it modifies, the determiner cannot be mapped preceding the PP at PF, nor can it cause determiner spreading:

286. * <u>Tin</u>   **apo** **to**   **sxolio**   **sinandise**
the.F.SG.ACC from the.N.SG.ACC shool.N.SG.ACC meet.3.SG.PST
<u>**tin**   **jineka**</u>
the.F.SG.ACC woman.F.SG.ACC
(*"He met the woman FROM THE SCHOOL."*)

The determiner, therefore, surfaces before the noun after the PP-modifier is extracted.[15]

Similarly, in Ukrainian, the preposition has to appear preceding the adjectival modifier when the adjective is generated at a distance from the noun it modifies. The preposition, however, cannot appear preceding the PP-modifier when the latter is fronted:

287.
 a) **Ivan**   **stojit'** <u>**bilja** **vysokoji** **žinky**</u>
   John.NOM stands next-to tall.F.SG.GEN woman.F.SG.GEN
   "John stands next to a tall woman."

 b) **Ivan**   <u>**bilja** **vysokoji** **stojit'** **žinky**</u>
   John.NOM next-to tall.F.SG.GEN stands woman.F.SG.GEN
   "John stands next to a TALL woman."

288.
 a) **Ivan**   **stojit'** <u>**bilja** **žinky**   **zi** **školy**</u>
   John.NOM stands next-to woman.F.SG.GEN from school
   "John stands next to a woman from the school."

 b)* **Ivan**   <u>**bilja** **zi** **školy** **stojit'** **žinky**</u>
   John.NOM next-to from school stands woman.F.SG.GEN
   (*"John stands next to a woman FROM THE SCHOOL."*)

289.
 a) **Ključi**   **Ivan**   **poklav** <u>**na velyku**   **knyžku**</u>
   keys.PL.ACC John.NOM put on big.F.SG.ACC book.F.SG.ACC
   "As for the keys, John put them on the big book."

b) **Ključi** **Ivan** <u>**na**</u> <u>**velyku**</u> **poklav** <u>**knyžku**</u>
keys.PL.ACC John.NOM on big.F.SG.ACC put book.F.SG.ACC
"As for the keys, John put them on the BIG book."

290.

a) **Ključi** **Ivan**
Keys.PL.ACC John.NOM
poklav <u>**na knyžku**</u> **pro** **sučasnu** **literaturu**
put on book.F.SG.ACC about modern.F.SG.ACC literature.F.SG.ACC
"As for the keys, John put them on the book about contemporary literature."

b)* **Ključi** **Ivan**
Keys.PL.ACC John.NOM
<u>**na**</u> **pro** **sučasnu** **literaturu** **poklav** <u>**knyžku**</u>
on about modern.F.SG.ACC literature.F.SG.ACC put book.F.SG.ACC
(*"As for the keys, John put them on the book ABOUT MODERN LITERATURE."*)

The preposition appears preceding the long-distance adjectival modifier due to agreement

that is established between the adjectival modifier and the noun and subsequent

linearization at PF. Since the PP-modifier does not agree with the noun it modifies, the

preposition cannot be linearized before the PP. Note that heavy adjectival modifiers

with complements, which in regular noun phrases appear post-nominally, in

discontinuous PPs, have the same distribution as regular light adjectival modifiers and

not as PP-modifiers:

291.

a) **Ključi** **Ivan**
Keys.PL.ACC John.NOM
poklav <u>**na knyžku**</u> **napysanu** **joho** **bratom**
put on book.F.SG.ACC written his.INST brother.INST
"As for the keys, John put them on the book written by his brother."

b) **Ključi** **Ivan**
Keys.PL.ACC John.NOM
<u>**na**</u> **napysanu** **joho** **bratom** **poklav** <u>**knyžku**</u>
on written his.INST brother.INST put book.F.SG.ACC
"As for the keys, John put them on the book WRITTEN BY HIS BROTHER."

Therefore, phonetic weight cannot be considered a factor that rules out sentences in

(288b) and (290b).

In Modern Greek DPs, the determiner can surface before the matrix noun after the PP-

modifier has been extracted from the matrix noun phrase, as in (285b). In Ukrainian,

however, the preposition cannot appear before the matrix noun with the PP-modifier

fronted:

292.
   a) * Ivan   <u>zi   školy</u>   stojit' <u>bilja   žinky</u>
      John.NOM   from school.F.SG.GEN   stands   next-to woman.F.SG.GEN
      (*"John stands next to a woman FROM THE SCHOOL."*)

   b)* Ključi   Ivan
      Keys.PL.ACC   John.NOM
      <u>pro   sučasnu</u>   <u>literaturu</u>   poklav <u>na knyžku</u>
      about modern.F.SG.ACC literature.F.SG.ACC put   on book.F.SG.ACC
      (*"As for the keys, John put them on the book ABOUT MODERN LITERATURE."*)

The contrast between (292) and (285b) follows if extraction from the matrix PP is not

available in Ukrainian while extraction from the matrix DP is available in Modern Greek.

Unlike the PP-modifier, the adjectival modifier has an option of being generated outside

of the matrix PP and of entering into a long-distance agreement with the noun. The

difference in the distribution of the adjectival modifier and the PP-modifier, thus,

underscores the difference between the base-generated discontinuity, which is involved in

long-distance modification, and extraction, which is involved in PP-modifier fronting.

The distribution of the preposition in relation to a PP-modifier and an adjectival modifier

in Modern Greek further illustrates this contrast. A matrix preposition can surface neither

preceding the extracted PP nor preceding the matrix noun that this PP modifies. The

preposition, however, is required to precede the long-distance adjectival modifier:

293.

a) <u>**Me   tin   psili   stathike   jineka**</u>
     with   the.F.SG.ACC tall.F.SG.ACC stood.3.SG   woman.F.SG.ACC
     "He stood with the TALL woman."

b) * <u>**Tin   psili   stathike   me   jineka**</u>
     the.F.SG.ACC tall.F.SG.ACC stood.3.SG   with   woman.F.SG.ACC

c) * <u>**Psili   stathike   me   tin   jineka**</u>
     tall.F.SG.ACC   stood.3.SG   with   the.F.SG.ACC tall.F.SG.ACC

294.

a) * <u>**Me   tin   apo   to   sxolio**</u>
     with   the.F.SG.ACC from   the.N.SG.ACC school.N.SG.ACC
     <u>**stathike   jineka**</u>
     stood.3.SG   woman.F.SG.ACC
     (*"He stood with the woman FROM THE SCHOOL*)

b) * <u>**Me   apo   to   sxolio   stathike**</u>
     with   from   the.N.SG.ACC school.N.SG.ACC stood.3.SG
     <u>**tin   jineka**</u>
     the.F.SG.ACC   woman.F.SG.ACC

c) * <u>**Apo   to   sxolio   stathike**</u>
     from   the.N.SG.ACC   school.N.SG.ACC stood.3.SG
     <u>**me   tin   jineka**</u>
     with   the.F.SG.ACC   woman.F.SG.ACC

The failure of the preposition to surface preceding the matrix noun in (294c) contrasts

with the behavior of the determiner under the same circumstances in (285b). The

Modern Greek data, thus, provides further support to the account that relies on the

restriction imposed on the extraction from PPs. These restrictions are operative both in

Ukrainian and in Modern Greek, since the distribution of PP-modifiers in Modern Greek

is the same as in Ukrainian (compare (294) with (288)-(290).

While the PP-modifier, embedded inside another PP, cannot be extracted from that PP and fronted, the PP-modifier can appear separated from the noun it modifiers as long as it follows the noun:

Ukrainian:

295.
  a) **Ivan**   **bilja   žinky**   **stojit' zi   školy**
     John.NOM   next-to woman.F.SG.GEN stands   from school.F.SG.GEN
     "As for the woman John stands next to, it is a woman FROM THE SCHOOL."

  b) **Ključi**   **Ivan**
     Keys.PL.ACC   John.NOM
     na knyžku   **poklav pro   sučasnu   literaturu**
     on book.F.SG.ACC put   about modern.F.SG.ACC literature.F.SG.ACC
     "As for the keys, John put them on the book ABOUT MODERN LITERATURE."

Modern Greek:

296. **Me   tin   jineka   stathike**
     with   the.F.SG.ACC   woman.F.SG.ACC   stood.3.SG
     apo   to   sxolio
     from   the.N.SG.ACC   school.N.SG.ACC
     "He stood with the WOMAN from the school."

The data in (295) and (296) can potentially be analyzed as the result of the extraposition of the PP-modifier (see Culicover and Rochemont (1990), Haider (1997)). Extraposition is often possible when extraction is not. However, see section 6.2 for an alternative analysis of these data that does not involve extraposition.

Contrasts in the distribution of adjectival and PP-modifiers present a challenge to the theories of discontinuous constituents that rely on movement (see a detailed overview of movement-based approaches to discontinuous constituents in chapter 9). The Remnant Movement analysis derives linear discontinuity by first extracting an NP out of the DP or PP and then fronting the remnant DP or PP with a stranded modifier:

297. [$_{PP}$ *Me*   mia/tin   psili   t$_i$]   stathike   [$_{NP}$ jineka]$_i$
        with   a/the   tall   stood   woman
       "He stood with a/the TALL woman."

The same mechanism should be available to derive (298) since the PP-modifier in (298)

is not a complement of the noun but either a predicate or an adjunct:

298.* [$_{PP}$ *Me*   mia/tin t$_i$ apo   to   sxolio]   stathike   [$_{NP}$ jineka]$_i$
        with   a/the   from   the   school   stood   woman
       (*"He stood with a/the woman FROM THE SCHOOL."*)

(298), however, is ungrammatical. Similarly, Distributed Deletion predicts that both

(299a) and (299b) are equally grammatical. This is not the case:

299.
   a)   <u>**Me**   **tin**</u>   <u>**psili**</u>   <u>**stathike**</u>   <u>**jineka**</u>
        with   the.F.SG.ACC   tall.F.SG.ACC   stood.3.SG   woman.F.SG.ACC
        "He stood with the TALL woman."

   [$_{PP}$ **Me tin psili** ~~**jineka**~~] **stathike** [$_{PP}$ ~~**me tin psili**~~ **jineka**]

   b) * <u>**Me**   **tin**</u>   <u>**apo**   **to**   **sxolio**</u>   <u>**stathike**</u>   <u>**jineka**</u>
        with   the.F.SG.ACC   from   the   school   stood.3.SG   woman.F.SG.ACC
        (*"He stood with the woman FROM THE SCHOOL."*)

   [$_{PP}$ **Me tin** ~~**jineka**~~ **apo to sxolio**] **stathike** [$_{PP}$ ~~**me tin**~~ **jineka** ~~**apo to sxolio**~~]

Note that Distributed Deletion allows one to delete non-adjoined parts of the constituent.

This type of deletion is needed to derive inverse discontinuity:

300.
   a)   <u>**Me**   **mia**</u>   <u>**jineka**</u>   <u>**stathike**</u>   <u>**psili**</u>
        with   a.F.SG.ACC   woman.F.SG.ACC   stood.3.SG   tall.F.SG.ACC
        "He stood with a TALL WOMAN."

   [$_{PP}$ **Me mia** ~~**psili**~~ **jineka**] **stathike** [$_{PP}$ ~~**me mia**~~ **psili** ~~**jineka**~~]

Finally, theories that use the Left Branch extraction approach to constituent discontinuity

assume that the preposition and the determiner cliticize onto the extracted item before

extraction takes place. Since a preposition can cliticize onto a determiner, a special

mechanism is needed to prevent a preposition and a determiner from cliticizing onto another preposition.

6.2 Genitive Possessors

The distribution of Genitive possessors and PP-modifiers is the same in discontinuous NPs and DPs. In discontinuous prepositional phrases, however, the Genitive possessor can appear either pre-nominally or post-nominally when separated from the noun. Regardless of the order between the Possessor NP and the Possessed NP, the preposition always surfaces before the leftmost of the two. In this respect, Genitive possessors pattern with adjectival modifiers rather than with PP-modifiers:

301.

  a) **Ivan**   <u>**bilja**</u>   <u>**velykoji**</u>   **žyve**   <u>**školy**</u>
     John.NOM   next-to big.F.SG.GEN lives   school.F.SG.GEN
     "John lives next to a BIG school."

  b) **Ivan**   <u>**bilja**</u>   <u>**školy**</u>   **žyve**   <u>**velykoji**</u>
     John.NOM   next-to shool.F.SG.GEN lives   big.F.SG.GEN
     "As for the school John lives next to, it is a BIG one."

302.

  a) **Ivan**   <u>**bilja**</u>   <u>**brata**</u>   **žyve**   <u>**školy**</u>
     John.NOM next-to brother.M.SG.GEN   lives   school.F.SG.GEN
     "John lives next to his BROTHER's school."

  b) **Ivan**   <u>**bilja**</u>   <u>**školy**</u>   **žyve**   <u>**brata**</u>
     John.NOM next-to school.F.SG.GEN   lives   brother.M.SG.GEN
     "As for the school John lives next to, it is his BROTHER's school."

The preposition is mapped preceding the long-distance modifier in discontinuous PPs because the modifier enters into φ-feature agreement with the noun phrase and shares the categorial feature with the noun it modifies. The adjectival modifier can establish an agreement relation with the noun it modifies because the φ-features of the adjectival modifier are not valued in the lexicon. Unlike the adjectival modifier, the Genitive

possessor is a full-fledged noun phrase that has its φ-features and its categorial feature

valued in the lexicon and cannot initiate agreement. The Genitive possessor and the

possessed noun phrase are, however, clearly related through case assignment. The

Genitive possessor has its case feature licensed by some functional head in the extended

projection of the possessed noun within the frameworks based on Chomsky (2000, 2001).

Structural case licensing relies on agreement in φ-features between the head that licenses

the case and the projection that receives case. The Nominative case, for instance, is

assigned to the subject NP by T when T enters into φ-feature agreement with the subject

noun phrase. Agreement in φ-features triggers case valuation on the noun. Genitive

case licensing can be attributed to a similar mechanism of case assignment, which is

based on agreement, and can be held responsible for the distribution of the preposition in

discontinuous constituents with Genitive possessors.

Genitive case assignment has indeed been modeled on Nominative case assignment to the

subject of the clause. Abney (1987), for instance, posits that possessor is assigned case

by the Determiner head (see Williams (1982), Szabolcsi (1983b, 1994), Fukui and Speas

(1986), Abney (1987), Giogri & Longobardi (1991), Kayne (1993, 1994) for various

alternative accounts of possessors). Positing that Genitive case is assignment by D,

however, raises a lot of questions. Since D is a functional head in the extended projection

of the possessed noun phrase, it is expected to share φ-features with the possessed noun

phrase. In the system proposed here, φ-feature sharing between the determiner head and

its complement noun phrase is implemented in terms of agreement. If D, however,

carries a valued case feature, one has to make sure that Genitive case is not assigned to

the possessed noun phrase in the course of the extended projection formation, as might be

expected on our account. Moreover, since the φ-features of D are valued at the time

when it forms an extended projection with the possessed noun phrase, it should fail to

initiate agreement with the possessor to value its case feature. In order to resolve this

contradiction, one might posit that D has two sets of agreement features: one set is used

to establish an agreement relation with the possessed noun phrase and another to establish

an agreement relation with the possessor. Baker (2008), however, argues that one and the

same head cannot receive and assign case. Assignment of Genitive case by D would

violate this restriction since D would have its own case feature valued through agreement

with the complement noun phrase and would value the case feature of the possessor.

I would like, therefore, to suggest an alternative analysis of Genitive case assignment that

adapts the ideas developed in Den Dikken (1995, 1998, 2006). I assume that the relation

between the Possessed NP and the Possessor NP is mediated by the Relator head. (303)

below exemplifies the structure of the noun phrase with a Genitive possessor:

303.
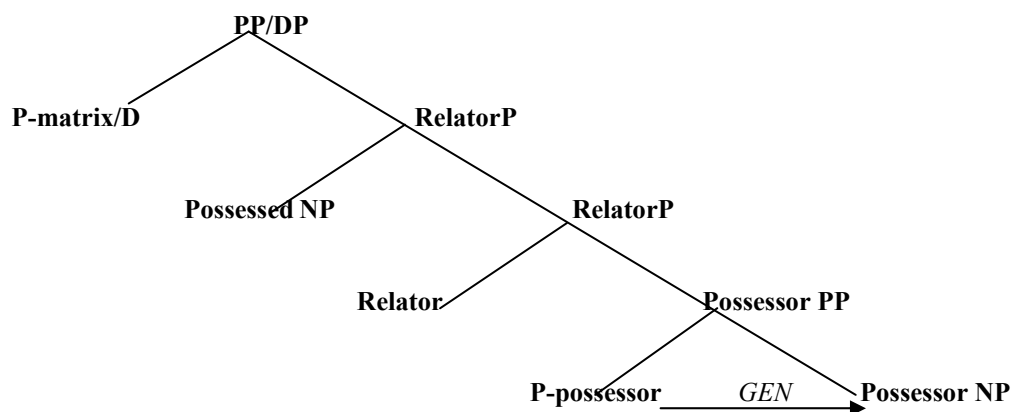
I will leave open the question of whether the determiner head is always present in the

structure in (303) and takes the Relator phrase as a complement while the matrix

preposition takes DP as a complement, or the preposition can take the Relator phrase as a

complement directly, with the null determiner head generated only in those cases when no other overt nominal functional category is present. In either case, the nominal functional category that takes the Relator phrase as a complement enters into agreement with the Possessed NP, which is the closest NP in its c-command domain, and forms an extended projection with it through agreement. Note that since agreement plays a decisive role in extended projection formation in the theory proposed here (see chapter 1, section 1.3), the categorial feature sharing relation between the Possessed NP and the nominal functional category that takes the Relator phrase as a complement can be established in the structure in (303) even though this nominal functional category does not take the Possessed NP as a complement.

Although the distribution of Genitive possessors in discontinuous constituents in Ukrainian is the same as the distribution of regular adjectival modifiers, pragmatically neutral ordering for Genitive possessors inside a regular continuous noun phrase is after the noun rather than before it. In this respect, Genitive possessors pattern together with PP-modifiers rather than adjectival modifiers:

304.

a) **Ivan**   **prodav** **velyku**   **mašynu**
John.NOM   sold   big.F.SG.ACC   car.F.SG.ACC
"John sold the big car."

b) **Ivan**   **prodav** **knyžku**   **pro** **molodyx**   **poetiv**
John.NOM   sold   book.F.SG.ACC   about   young.PL.ACC poet.PL.ACC
"John sold the book about young poets."

c) **Ivan**   **prodav** **mašynu**   **brata**
John.NOM   sold   car.F.SG.ACC   brother.M.SG.GEN
"John sold his brother's car."

Given our commitment to the antisymmetry of syntactic structure of Kayne (1994), right-hand adjunction of Genitive possessors and PP-modifiers is not available. The Relator structure in (303) allows us to maintain the antisymmetry hypothesis and, as I will show below, provides an explanation for the contrast in the distribution of Genitive possessors and PP-modifiers in discontinuous structures.

I assume that Genitive case is assigned to the Possessor NP by the preposition which constitutes part of the Possessor phrase. Its φ-features are valued by the φ-features of the Possessor NP and the agreement triggers categorial feature unification, given that the preposition is a nominal functional head:

305. P-possessor: {cat(nom[6]), gen([34]), num([26]), case(gen[41])), F(7)}
Possessor NP: {cat(nom[6]), gen(masc[34]), num(sg[26]), case([41])), F(0)}

Matrix preposition, on the other hand, initiates an agreement relation with the Possessed NP. Note that the Possessor phrase has its case feature valued and cannot serve as the goal for agreement. The Possessed NP is, therefore, the only suitable goal. The φ-features of the matrix P are not valued in the lexicon and initiate agreement with the Possessed NP located in its c-command domain. They are valued by this noun phrase and trigger categorial feature unification and case feature valuation, as expected:

306. P-matrix: {cat(nom[5]), gen([33]), num([25]), case([40])), F(7)}
Possessed NP: {cat(nom[5]), gen(fem[33]), num(sg[25]), case([40])), F(0)}

Having offered a mechanism of Genitive case assignment that avoids the pitfall of having the same head assign and be assigned case, we have not yet provided an account of the distribution of the preposition in discontinuous constituents with Genitive possessors. Note that the matrix preposition at this point does not share a categorial feature with the

Genitive possessor and cannot be linearized preceding the Genitive possessor when the latter is extracted out of the matrix PP. I will demonstrate below that the distribution of the preposition in relation to the Genitive possessor can be accounted for in terms of the theory of Predicate Inversion of Den Dikken (1995, 2006).

In order to be extracted from the matrix PP, the Genitive possessor has to undergo Predicate Inversion, which can place it into the Specifier of the matrix PP, so that it can undergo further dislocation. To enable Predicate Inversion, the preposition that assigns Genitive case has to incorporate into the Relator head with the resulting Relator node being incorporated into the matrix P node. Consider the possibility that such incorporation results in the fusion of the two prepositional heads: the prepositional head of the Possessor phrase and the matrix P node. This fusion could potentially be attributed to the fact that both nodes are of the same categorial and functional type. The fusion, I posit, involves some form of compounding of the categorial features of both heads and causes the opaqueness of the internal structure of the P node to the Linearization algorithm. Only the mother node that carries a compounded categorial feature is visible for linearization (I use italics to represent this opaqueness):

307.
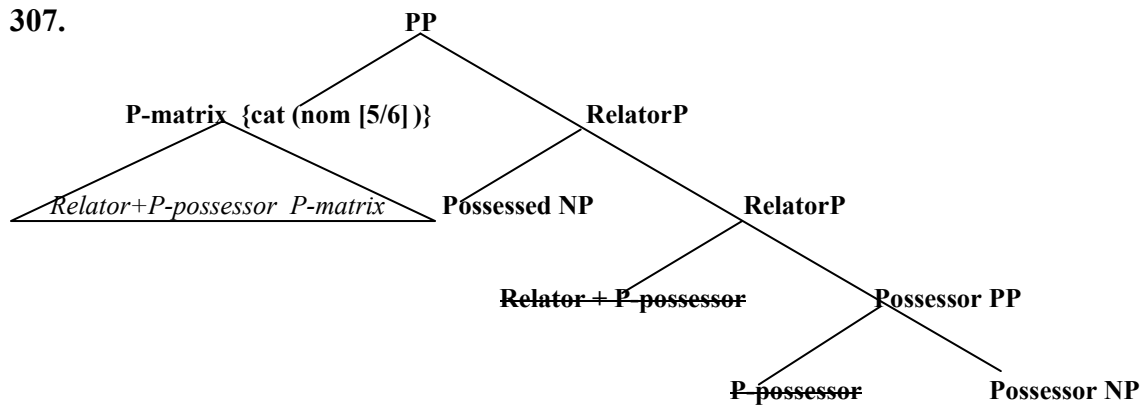
The compounding of the categorial features of the complex Relator node and the matrix preposition, inherited by the mother P node, guarantees that the matrix preposition is linearized before the Genitive possessor when it is fronted. Consider briefly the linearization of the sentence in (308), which contains a discontinuous PP with a fronted possessor:

308. **Ivan**   **bilja**   **brata**   **žyve**   **školy**
John.NOM   next-to   brother.M.SG.GEN   lives   school.F.SG.GEN
"John lives next to his BROTHER's school."

The phrase marker in (309) represents the simplified structure of this sentence:

309.

"John lives next to his BROTHER's school."
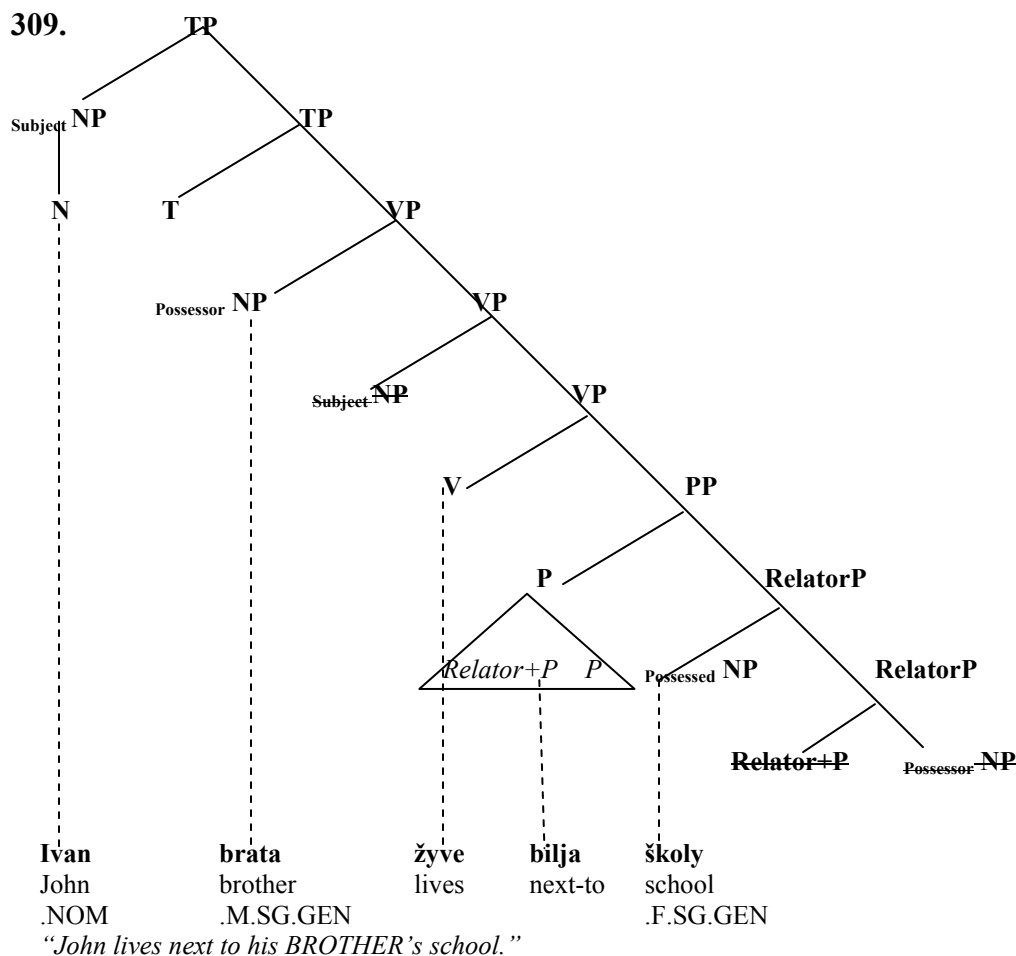
The set M, generated at stage 1, contains the pair <Possessor NP, P>, which does not comply with the F-value ordering requirement:

310. P: {cat(nom[5/6]), gen([33]), num([25]), case(gen[40])), F(7)}
Possessor NP: {cat(nom[5]), gen(masc[34]), num(sg[26]), case([41])), F(0)}

Although the preposition and the Possessor NP share only one of the index values of the categorial feature, this is apparently enough to violate the F-value ordering requirement. Consequently, at stage 2, the pair <Possessor NP, P> is replaced with the pair <P, Possessor NP>, which complies with the F-value ordering requirement. From this point on, the linearization proceeds in the same way as the linearization of sentences with a long-distance modifier, discussed in detail in chapter 3. As a result, the preposition surfaces preceding the fronted Possessor NP, generating the linear order in (308).

Note that Ukrainian does not have overt determiners and, therefore, both the Possessor and the Possessed noun phrases could be instantiated as bare NPs. Since the language does not have overt determiners, the presence in the structure of D nodes does not make any visible impact on the output of the linearization algorithm. In contrast to Ukrainian, determiners in Modern Greek are overt. The distribution of determiners in discontinuous constituents with Genitive possessors in Modern Greek can, therefore, shed some additional light on the internal structure of the noun phrases with possessors. Like in Ukrainian, in Modern Greek, Genitive possessors appear post-nominally in a regular continuous noun phrase and when fronted receive a narrow focus interpretation:

311.
a) **Didaski   s-to   sxolio**
teaches.3.SG   at-the.N.SG.ACC   school.N.SG.ACC
tu   jitona
the.M.SG.GEN   neighbour.M.SG.GEN
"He teaches at the school of the neighbour."

b) **Didaski**   <u>s-tu</u>   <u>jitona</u>
teaches.3.SG   the.M.SG.GEN   neighbour.M.SG.GEN
<u>to</u>   <u>sxolio</u>
at-the.N.SG.ACC   school.N.SG.ACC
"He teaches at the school of THE NEIGHBOUR."

c) <u>S-tu</u>   <u>jitona</u>   <u>didaski</u>
at-the.M.SG.GEN   neighbour.M.SG.GEN   teaches.3.SG
<u>to</u>   <u>sxolio</u>
at-the.N.SG.ACC   school.N.SG.ACC
"He teaches at the school of THE NEIGHBOUR."

(311c) shows that the matrix preposition that assigns Accusative case to the matrix noun phrase surfaces before the Genitive possessor in a discontinuous PP in Modern Greek, as it does in Ukrainian. The Accusative determiner, however, remains in its in situ position before the matrix noun phrase. This distribution of the preposition and the determiners can be accounted for by positing that the possessor relation is established between two DPs rather than an NP and a DP. A Possessed DP is generated in the specifiers of the Relator head while the Possessor Phrase is generated as a complement of the Relator. Note that Alexiadou and Wilder (1998), who develop their approach to Determiner Spreading on the basis of Kayne's (1994) theory of reduced relatives, independently argue that the specifier position of a reduced relative is indeed occupied by a DP rather than an NP in Modern Greek: [$_{DP}$ D [$_{CP}$ DP AP]]. The data pertaining to the distribution of Genitive possessors in discontinuous prepositional phrases in Modern Greek further indicates that the overt Accusative definite determiner is generated as part of the Possessed DP while the matrix D node in the Relator structure remains null in Modern Greek, as it does in Ukrainian. Under this analysis of the noun phrases with Genitive possessors in Modern Greek, the MCL algorithm provides a correct linearization of the matrix preposition and the determiners.

I have argued so far that discontinuous structures that involves a Genitive possessor are derived on the basis of movement: the Genitive possessor is fronted after having been extracted out of the matrix PP. By analyzing the distribution of PP-modifiers in relation to matrix DPs and matrix PPs, we have, however, concluded that a PP-modifier cannot be extracted out of another PP. We therefore need to prevent the extraction of a PP-modifier from the matrix PP while allowing the extraction of the Genitive possessor. Recall that the extraction of the Genitive possessor from the matrix PP is possible only as the result of Predicate Inversion. Consider a possibility that Predicate Inversion is licensed when the Possessor phrase appears as a complement of the Relator head but not when this position is occupied by a PP-modifier. Predicate Inversion is licensed when the null Genitive assigning preposition of the Possessor phrase incorporates into the Relator head followed by further incorporation of the resulting Relator node into the matrix P node. Let's posit that the Relator structures with Genitive possessors and with PP-modifiers differ as to whether the preposition that heads the complement of the Relator can incorporate into the Relator head. If such incorporation is restricted only to null prepositions, or to be more precise, prepositions that cannot be lexicalized in situ, the ban on extraction of PP-modifiers can be derived. Genitive case assigning preposition cannot be lexicalized in situ and has to incorporate into the higher head setting off an incorporation process that licenses extraction of Genitive possessors from the matrix NP. Prepositions that head PP-modifiers, however, can be lexicalized in situ and therefore do not undergo incorporation and ultimately block extraction of PP-modifiers from the matrix PP.

This account of the contrast in extractability of Genitive possessors and PP-modifier from the matrix PP has an advantage of providing an explanation for the availability of PP-modifier stranding in Ukrainian and Modern Greek without the recourse to extraposition. Recall that PP-modifiers cannot appear before the noun phrase they modify when this noun phrase is embedded under another PP but can surface after this noun phrase, separated from it by other linguistic material:

312.

 a)* Ivan bilja zi školy   stojit' žinky
   John.NOM next-to from shool.F.SG.GEN stands woman.F.SG.GEN
   (*"John stands next to the woman FROM THE SCHOOL."*)

 b) Ivan   bilja žinky   stojit' zi školy
   John.NOM next-to woman.F.SG.GEN stands from school.F.SG.GEN
   "As for the woman John stands next to, it is a woman FROM THE SCHOOL."

In chapter 3, I argued that by allowing extraction of NPs out of their own extended projections, one can provide an account for cross-linguistic differences that pertain to preposition stranding (see chapter 3, section 3.3 for details). By allowing NPs to be extracted from their own extended projection we can also account for the availability of PP-modifier stranding in (312b). (312b) can be derived by extracting NP out of its own extended projection, with the preposition linearized before the NP at PF:

313. Ivan bilja [$_{NP}$ žinky] stojit' [$_{PP2}$ [$_{RelP}$ t$_{NP}$ Rel [$_{PP1}$ zi školy]]
   John next-to woman   stands   from school
   "As for the woman John stands next to, it is a woman FROM THE SCHOOL."

In (313), PP1 is not extraposed from the PP2 but remains inside the PP2 after the modified noun has been extracted. The preposition is lexicalized before the Possessed NP at PF.

Finally, note that the extraction contrasts discussed in this chapter fall under the

Chomsky's (1964) A-over-A principle. While a NP/DP and a Genitive possessor (its

NP/DP part) can be extracted from the PP, a PP-modifier cannot. The problem with the

A-over-A principle has always been its excessive strength because it rules out extraction

of a DP from another DP, which is often acceptable. It is worth pointing out, however,

that under the theory of the linearization of syntactic structure proposed in this

dissertation, the undergeneration of the A-over-A principle can be circumvented. While

indeed a DP cannot be extracted from another DP, an NP could. When NP is extracted

from its own extended projection, a determiner can then be linearized preceding this NP

at PF, thus producing the effect of DP extraction from another DP. The mechanism of

Predicate Inversion and the restriction on preposition incorporation posited here extend

the coverage of A-over-A principle to include the contrasts between Genitive Possessors

and PP-modifiers in Ukrainian and Modern Greek.

6.3 Summary

In this chapter, I examined the distribution of Genitive possessors and PP-modifiers in

Ukrainian and Modern Greek. In discontinuous noun phrases in Ukrainian, PP-modifiers

have the same surface distribution as adjectives and can appear either before or after the

noun. PP-modifiers, however, cannot form a linear discontinuous structure with a noun

phrase embedded inside a prepositional phrase. In Modern Greek, PP-modifiers also

share the distribution with adjectives in discontinuous structures that involve DPs.

However, the determiner is required to precede the long-distance adjectival modifier but

cannot precede the fronted PP. The contrast in the distribution of the determiner in

relation to adjectival and PP-modifiers in Modern Greek discontinuous DPs was attributed to the structural differences between the two types of modification. The adjectival modifiers are associated with the nominal extended projection through agreement. The resulting feature sharing determines the linearization of the nominal functional categories preceding the long-distance modifier at PF. Since PP-modifiers do not establish any Agree relations with the noun phrase they modify, nominal functional categories cannot be linearized preceding the fronted PP-modifier and surface before the noun, as usual. While adjectival modifiers can be generated at a distance from the noun and foster relations with the noun through agreement, PP-modifiers can relate to the noun phrase only structurally, through direct merger and can be separated from the noun they modify only by way of movement. This explains why PP-modifiers cannot form a linear discontinuous structure with the noun phrase embedded inside another PP. Extraction from PPs is known to be subject to restrictions. The adjectival modifiers avoid violating the ban on extraction from the matrix PP by being base-generated outside of the PP and agreeing with the noun phrase from a distance, while PP-modifiers remain trapped inside another PP.

Unlike PP-modifiers, Genitive possessors have the same distribution as adjectival modifiers. In linear discontinuous PPs, the preposition has to precede the possessor when the possessor is fronted. This was explained as the consequence of case assignment. I provided an account of Genitive possessor fronting that utilizes the mechanism of Predicate Inversion of Den Dikken (1995, 2006)). I argued that the relation between the possessor and the possessee is mediated by the Relator head which takes a Possessor

phrase as a complement. Possessor phrase is headed by the null preposition that assigns Genitive case to the possessor. Genitive possessor is extracted from the matrix PP by way of Predicate Inversion when the Genitive case assigning preposition incorporates into the Relator head and the resulting Relator node incorporates into the matrix P. Fusion of the categorial features of the Genitive case assigning preposition and the matrix preposition, which results from incorporation, determines the linearization of the matrix preposition before the fronted Genitive possessor at PF. PP-modifiers cannot be extracted from the matrix PP in this way because the overt preposition blocks the incorporation process that enables Predicate Inversion. The analysis of Genitive possessor fronting that utilizes the mechanism of Predicate Inversion also accounts for PP-modifier stranding. PP-modifiers form a discontinuous string with the noun they modify when the matrix noun phrase is extracted from the matrix PP it heads. This strands the PP-modifier inside the matrix prepositional phrase while the matrix preposition is linearized preceding the matrix noun phrase at PF. In addition, I demonstrated that the analysis of the contrast in the distribution of PP-modifiers and Genitive possessors developed in this chapter sheds a new light on the A-over-A principle and opens a possibility of maintaining it in those instances where it was considered to fail.

Chapter 7: Agreement and Locality

7.0 Introduction

It has long been observed that the distribution of discontinuous DPs and PPs is subject to restrictions that are reminiscent of various movement constraints. Androutsopoulou (1997, 1998) and Fanselow & Čavar (2001) argue that the formation of long-distance discontinuous DPs, like familiar forms of movement, is subject to the Complex Noun Phrase Constraint. The data they provide, cited in (314) and (315), demonstrate that long-distance dependencies cannot be established between two fragments of a discontinuous DP or PP when one of the fragments is inside a complex noun phrase and the other is not:

Croatian:

314.

a) **Ivan je vidio [auto [koji je Marija <u>svojoj sestri</u> kupila]]**
Ivan is seen car which is Maria her sister bought
"Ivan has seen the car which Mary bought for her sister."

b)* **[<u>Čijoj sestri</u>] $_i$ je Ivan vidio [auto [koji je Marija t $_i$ kupila]]?**
whose sister has Ivan seen auto which has Maria bought
"Whose sister is such that Ivan saw the car which Mary bought for her."

c)* **<u>Čijoj</u> je Ivan vidio [auto [koji je Marija t $_i$ <u>sestri</u> kupila]]?**

(Fanselow & Čavar (2001): 78)

Modern Greek:

315.

a) **Ghnorisa ti jineka pou forese <u>to kokkino forema</u>**
met.1SG the woman that wore the red dress
"I met the woman that wore the red dress."

b)* **<u>To kokkino forema</u> ghnorisa ti jineka pou forese**
the red dress met.1SG the woman that wore
"It is the RED DRESS that I met the woman who wore."

c) * <u>**To kokkino**</u> **ghnorisa ti jineka pou forese** <u>**forema**</u>
the red   met.1SG the woman that wore   dress
"It is the RED dress that I met the woman who wore."

<div align="right">(Androutsopoulou (1997): 5)[16]</div>

Similarly, in Ukrainian, long-distance dependences cannot be established between two

fragments of a discontinuous DP or PP when one of the fragments is inside a complex

noun phrase:

Ukrainian:

316.

 a) **Ja   zustrila   žinku**
  I.NOM met   woman.F.SG.ACC
  jaka   bula odjahnuta v červonu   suknju
  which.F.SG.NOM was dressed   in red.F.SG.ACC dress.F.SG.ACC
  "I met a woman that wore a red dress."

 b)* <u>**V červonu   suknju**</u>   **ja   zustrila žinku**
  In red.F.SG.ACC dress.F.SG.ACC I.NOM met   woman.F.SG.ACC
  jaka   bula   odjahnuta
  which.F.SG.NOM   was   dressed
  (*"I met a woman that wore A RED DRESS."*)

 c)* <u>**V černovu**</u>   **ja   zustrila žinku**
  In red.F.SG.ACC   I.NOM met   woman.F.SG.ACC
  jaka   bula odjahnuta <u>suknju</u>
  which.F.SG.NOM was dressed   dress.F.SG.ACC
  (*"I met a woman that wore a RED dress."*)

The failure to form a discontinuous constituent across a syntactic island has been taken as

key evidence that discontinuity is derived by movement.

Movement violations and discontinuity violations, however, are not always the same. In

some cases, extraction from the noun phrase is indeed allowed even though a similar

discontinuity is blocked. The Genitive possessor can be extracted from the Possessed

NP, ending up dislocated to the left periphery of the clause. However, the Genitive

possessor that is located inside the Possessed NP cannot be modified from a distance by

an adjective (see Corver (1990, 1992) for a discussion of similar facts in Czech and

Polish and Bošković (2005) for a discussion of similar facts in Serbo-Croatian):

317.

  a) **Ivan**   **zahubyv knyžku**   <u>**novoho**</u>   <u>**profesora**</u>
     John.NOM   lost   book.F.SG.ACC   new.M.SG.GEN   professor.M.SG.GEN
     "John lost a book that belongs to the new professor."

  b) <u>**Novoho**</u>   <u>**profesora**</u>   **Ivan**   **zahubyv knyžku**
     new.M.SG.GEN   professor.M.SG.GEN John.NOM   lost   book.F.SG.ACC
     "John lost a book that belongs to THE NEW PROFESSOR."

  c)* <u>**Novoho**</u>   **Ivan**   **zahubyv knyžku**   <u>**profesora**</u>
     new.M.SG.GEN   John.NOM   lost   book.F.SG.ACC   professor.M.SG.GEN
     (*"John lost a book that belongs to the NEW professor."*)

A similar distribution pattern holds of PP-modifiers to an NP. A PP-modifier can be

focused by being extracted from the noun phrase it modifies and moved to the left

periphery of the clause. The noun inside this PP, however, cannot be modified from a

distance when the PP remains in its in situ position:

318.

  a) **Ivan**   **zahubyv knyžku**
     John.NOM   lost   book.F.SG.ACC
     <u>**pro**   **sučasnu**   **arxitekturu**</u>
     about   contemporary.F.SG.ACC   architecture.F.SG.ACC
     "John lost a book about contemporary architecture."

  b) <u>**Pro**   **sučasnu**   **arxitekturu**</u>
     about   contemporary.F.SG.ACC   architecture.F.SG.ACC
     Ivan   **zahubyv knyžku**
     John.NOM   lost   book.F.SG.ACC
     "John lost a book ABOUT CONTEMPORARY ARCHITECTURE."

  c)* <u>**Pro**   **sučasnu**</u>   **Ivan**   **zahubyv**
     about contemporary.F.SG.ACC   John.NOM   lost
     knyžku   <u>**arxitekturu**</u>
     book.F.SG.ACC   architecture.F.SG.ACC
     (*"John lost a book about CONTEMPORARY architecture."*)

These data cannot be explained if discontinuity is analyzed simply as resulting from the fragmentation of the constituent through movement. The facts, however, follow when discontinuity is analyzed not as the result of movement transformations but as the result of long-distance concord, given that the locality restrictions on movement and agreement are distinct.

In section 7.1, I review independent evidence that supports dissociating locality conditions on Agree from locality conditions on Move. Stjepanović and Takahashi (2001), Lee (2003), and Bošković (2007a, b) argue contra Chomsky (2000, 2001) that agreement is not constrained by the Phase-Impenetrability Condition, which restricts movement. Bošković (2007a) suggests that agreement is constrained not by PIC but by a form of Relativized Minimality, being subject to intervention effects. Like Bošković (2007a, b), Bobaljik and Wurmbrand (2005) argue that agreement and movement are subject to different locality constraints; however, they claim that Agree relations respect a domain-based locality condition.

In section 7.2, I examine restrictions on movement and agreement in Ukrainian and demonstrate that movement and agreement are subject to different locality conditions in the language. While NP and PP extraction from noun phrases is possible in Ukrainian, long-distance agreement with the noun embedded inside another noun phrase is not. Locality restrictions on agreement in Ukrainian, however, are distinct from intervention effects. Not every intervening noun phrase blocks long-distance adjectival agreement and discontinuity. I, therefore, conclude that long-distance concord is not constrained in

terms of the closest c-command, and locality restriction on discontinuity in Ukrainian should be defined in terms of agreement domains, as in Bobaljik and Wurmbrand (2005), rather than in terms of intervention effects as in Bošković (2007b).

In section 7.3, I examine closely the nature of the domains that constrain long-distance adjectival agreement in Ukrainian. By comparing the generalizations arrived at by Bobaljik and Wurmbrand (2005) on the basis of the German and Japanese data, and the discontinuity facts from Ukrainian, I conclude that agreement domains should be defined relative to the type of agreement involved. While an extended projection of the verb constitutes a locality domain for case assignment, an extended projection of the noun constitutes a locality domain for concord. The difference in locality constraints on case assignment and concord is captured in terms of the directionality of feature valuation. I argue that each lexical category prevents other categories from transferring feature values in the same direction in which it does. The projections of the nominal head block valuation of the features of the probe by any other goal they contain while the projections of the verbal head block valuation of the features of any goal they contain by other probes, which are not part of their extended projection. I formulate the Directionality Parameter for Agreement (DPA) which links the categorial value of the syntactic head with the general direction of feature valuation. The DPA is incorporated into the definition of the Locality Constraint on Agreement (LCOA), which applies only when the probe does not form an extended projection with the head of the agreement domain, thus treating an entire extended projection as a single agreement domain. The LCOA

accounts both for the facts discussed in Bobaljik and Wurmbrand (2005) and for the Ukrainian data discussed in this dissertation.

In section 7.4, I examine agreement domains headed by an adjective. Since the categorial feature of an adjective is not valued in the lexicon, the Locality Constraint on Agreement correctly predicts that adjectives allow long-distance concord with their complements. The categorial feature of the adjective is, however, valued in narrow syntax through agreement, I demonstrate that valuation of the adjectival categorial feature has impact on its ability to block long-distance concord. A projection of the adjective whose categorial feature has been valued as nominal through agreement blocks long-distance concord with its complement. Adjectives used predicatively, however, do not block long-distance concord with their complement because they do not form a single constituent with the subject of the clause. The agreement between the adjectival predicate and the subject is mediated by the Pred head and does not result in categorial feature unification between the subject and the adjectival predicate.

In section 7.5, I examine restrictions on discontinuity across clausal boundaries in Ukrainian and argue that these restrictions also follow from the Locality Constraint on Agreement. In Ukrainian, long-distance concord is impossible into declarative and interrogative subordinate clauses. Extraction, however, is possible from certain interrogative clauses. Bošković (2007b) argues that in languages where agreement into finite clauses is impossible, long-distance concord is blocked by a complementizer. I follow up on this insight and argue that complementizers in Ukrainian are ambiguous

between a nominal and a verbal category. If a categorial feature of a complementizer is valued as nominal, LCOA predicts that long-distance agreement into the complementizer headed clauses is going to be blocked. I demonstrate that the availability of long-distance concord and noun phrase discontinuity across the clausal boundary in Ukrainian indeed correlates with the presence or absence of a complementizer layer in a syntactic structure. While linear discontinuity across a clausal boundary is not available, inverse discontinuous constituents can cross a clausal boundary. This is precisely what is predicted by theory of discontinuity proposed here since linear discontinuous constituents are argued to involve long-distance agreement while inverse discontinuous constituents are formed by movement.

Finally, in section 7.6, I compare agreement domains with phases. I demonstrate that agreement domains, as defined in this chapter, differ from phases not only by being relativized to the direction of the syntactic information transfer but also by being dense. The density of agreement domains manifests itself in the fact that every projection of a given head, rather than only the topmost projection of a head, acts as an agreement barrier. The PIC associates with phases the so-called edge effect (Chomsky (2000, 2001)). Bobaljik and Wurmbrand (2005) also assume that agreement domains are non-discrete and the edge of an agreement domain is visible for agreement from outside. The motivation for making the edge of an agreement domain visible for agreement from outside comes from the long-distance agreement facts in Tsez (Polinsky & Potsdam (2001)), Passamaquoddy (Bruening (2001)), and Innu-aimûn (Braningan & MacKenzie (2002)), where, it has been argued, agreement across the clausal boundary is possible

only when the item agreed with occupies the specifier of the highest projection of the clause. I examine evidence for and against associating agreement domains with the edge effect.

7.1 The Locality of Move and Agree

Chomsky (2000, 2001) posits that the same locality restrictions hold for both Move and Agree. Both agreement and movement are constrained by the Phase-Impenetrability Condition (PIC):

319. *Phase Impenetrability Condition (PIC)*:
A phase α with head H, the domain of H is not accessible to operations outside α, only H and its edge are accessible to such operations.

(Chomsky 2000:108)

According to the PIC, only the highest head of a phase and the specifier of this head are visible for agreement from outside of the phase. The specifier of this head can thus serve as an escape hatch for movement outside of the phase. vP and CP are treated in Chomsky (2000, 2001) as two key phases in the derivation. Their function as phases is argued to force the successive cyclic nature of movement. Several attempts have been made to extend the set of phases to include other maximal projections as well. Legate (2003)) argues that passive and ergative VPs should be considered phases on a par with vP and CP since the successive cyclic movement targets their edge. Manzini (1994), Takahashi (1994), Bošković (2002), Boeckx (2003), and Müller (2004) demonstrate that every maximal projection can, in fact, serve as a host to successive cyclic movement and can, therefore, be considered a candidate for the status of a phase. While the locality of movement determines the successive cyclic nature of movement, the locality of agreement is derived on the basis of a theory specific premise: namely, that movement is

always activated by Agree. According to Chomsky (2000, 2001), movement of the target item is triggered by the probe establishing an agreement relation with it.

Given the notion of a phase as the domain of both movement and agreement, it follows that successive cyclic movement involves a set of agreement relations established between the moved item and the heads of the various phases that are bypassed by this item. Each phase head that hosts the item undergoing successive cyclic dislocation has to establish an agreement relation with it prior to attracting it to its external specifier position. Bošković (2002, 2007b) and Boeckx (2003), however, argue that successive cyclic movement does not necessarily involve feature checking with the intermediate head. In particular, they rely on facts related to the licensing of ellipsis. Lobeck (1995) and Saito and Murasugi (1990) argue that all and only functional heads that undergo agreement with their specifier can license ellipsis. Bošković (2007b) demonstrates that the intermediate C does not license ellipsis of its complement:

320. * I know who Mary said that John met,
but I don't know who Peter said that ~~John met~~.

If wh-movement involves agreement between the wh-item and the intermediate complementizer, that complementizer should be able to license ellipsis, provided that agreement is the licensing condition on ellipsis. This is not the case. Moreover, since in English a wh-item can by-pass a declarative complementizer in the course of a long-distance movement, an agreement driven theory of movement has to posit feature checking of some sort between two items that have incompatible features (+/-wh). Further theoretical complications are caused by the need to stipulate the defectiveness of certain heads. Defective intermediate complementizer heads cannot eliminate the

uninterpretable feature of the moving item, and thus allow further dislocation of this item.

The problems of this type, Bošković (2007b) argues, do not arise under the assumption

that dislocation is not related to agreement. If dislocation and agreement are not

necessarily correlated, it follows that the locality of agreement might not necessarily

coincide with the locality of movement.

Indeed, Stjepanović and Takahashi (2001), Lee (2003), and Bošković (2007a, b) argue

that agreement is not constrained by the Phase-Impenetrability Condition, provided that

CPs and vP are taken to be the relevant locality domains. In particular, they argue that in

languages such as Chukchee, Blackfoot, and Tsez, agreement can reach into finite CPs.

In Chukchee, for instance, the matrix v can enter into agreement with the direct object in

the embedded clause (data in (321), (322), and (323) is from Inènlikèj and Nedjalkov

(1973), Polinsky and Potsdam (2001), and Lee (2003) respectively, as cited in Bošković

(2007a, b)):

321. **ənan   qəlɣiḻu ləŋərkə-nin-et [iŋqun Ø-rətəmŋəv-nen-at   qora-t].**
he.INST regrets.3.PL   that   3.SG.lost.3.PL   reindeer.PL.NOM
'He regrets that he lost the reindeers.'

(Bošković (2007b): 613)

Similarly, in Tsez, the matrix verb shows agreement with the absolutive argument of the

embedded clause (but see Polinsky and Potsdam (2001) for an analysis under which this

type of agreement complies with PIC):

322. **eni-r   [už-ā   magalu   bāc'ruḽi] b-iyxo.**
mother.DAT boy.ERG bread.III.ABS ate   III.know
'The mother knows the boy ate the bread.'

(Bošković (2007b): fn. 45)

+Wh agreement across a CP / vP boundary is also possible in wh-in-situ languages, such as Chinese and Japanese. In Japanese, the wh-word can be left inside the subordinate clause headed by an overt complementizer:

323. John-ga   Peter-ga   nani-o   kat-ta   to   omot-teiru no?
John.NOM   Peter.NOM   what.ACC bought   COMP   thinks   Q
'What does John think that Peter bought?'

(Bošković (2007b): 616)

Further evidence of agreement crossing boundaries comes from the existential construction, LF anaphor movement, and control. On the basis of this evidence, Bošković concludes that the locality restrictions on Move and Agree are distinct, and unlike Move, Agree is not subject to PIC (for a detailed discussion of all the arguments and the data see Bošković (2007a, b))

Agreement, however, is not entirely unconstrained cross-linguistically. Agreement into finite CPs, for example, is a relatively rare phenomenon. Bošković (2007a) suggests that Agreement is constrained not by PIC but by a form of Relativized Minimality: it is subject to intervention effects. More specifically, in those languages where agreement into finite clauses is impossible, the agreement is blocked by the complementizer. Bošković (2007a) speculates that complementizers can bear φ-features. When a complementizer bears φ-features, it acts as an intervener and blocks agreement with noun phrases inside the clause it heads.   Since C is a closer goal for agreement for a probe located outside of the subordinate clause than any NP located inside the clause, the matrix v is prevented from agreeing with the NP inside the subordinate clause. Cross-linguistic differences are thus tied to the lexical properties of individual items rather than to general conditions. Even though the locality of agreement is not constrained in the

same way as the locality of movement, and a single agree operation can extend over a larger span of structure than a single move operation, agreement often appears to be more constrained than movement. French, for instance, disallows long-distance wh-in-situ while allowing overt long-distance wh-movement (see Bošković (1998) for discussion):

324.
  a)* Jean et Pierre croient que Marie a vu qui?
    Jean and Pierre believe that Marie has seen whom
    (*"Whom do Jean and Pierre believe that Marie saw?"*)

  b) Qui Jean et Pierre croient-ils que Marie a vu?
    Whom Jean and Pierre believe-they that Mary has seen
    "Whom do Jean and Pierre believe that Marie saw?"

  c) Marie a vu qui?
    Mary has seen whom
    "Whom has Mary seen?"

<div align="right">(Bošković (2007a): 85)</div>

Bošković (2007a) argues that the contrast in (324) is due to the availability of successive cyclic movement. The item that is dislocated can bypass intervening boundaries, using an escape hatch, thereby avoiding intervention effects.

Like Bošković (2007a, b), Bobaljik and Wurmbrand (2005) argue that agreement and movement are subject to different locality conditions. Their evidence comes from anti-reconstruction effects in German and Japanese. Unlike Bošković (2007a), however, Bobaljik and Wurmbrand (2005) claim that agreement respects a domain-based locality condition. Agreement relations are contained within specific agreement domains and are subject not to Phase Impenetrability Condition but to Domain Impenetrability Condition:

325. *Domain Impenetrability Condition*:
    Case/agreement-checking may occur without DP-movement but only within a
    single agreement domain

<div align="right">(Bobaljik and Wurmbrand (2005): 812)</div>

Movement, on the other hand, is not subject to Domain Impenetrability Condition and can cross agreement domain boundaries. In particular, Bobaljik and Wurmbrand (2005) argue that, in German, a restructured infinitival clause that is a complement of a lexical predicate constitutes an independent agreement domain. DP argument of the infinitival verb has to raise out of the infinitival clause to the matrix clause to receive case:

326. weil er alle Fenster vergessen hat [t_{obj} zu schliessen]
since he all windows.ACC forgotten has to close
"since he forgot to close all the windows."

(Bobaljik and Wurmbrand (2005):823)

Even though German allows case checking in situ under Agree (see Wurmbrand (2004)), long-distance case checking is not available in (326) because it has to cross agreement domain boundary. Bobaljik and Wurmbrand (2005) demonstrate that the reading where the embedded object takes scope over the matrix predicate is the only possible reading in (326). They attribute the failure of reconstruction in (326) to the ban on reconstruction across an agreement domain boundary. In the remainder of this chapter, I examine locality restrictions on Move and Agree in Ukrainian. I demonstrate that Move and Agree are subject to different locality conditions in the language. I argue that locality constraints on agreement are distinct from standard intervention effects and can be captured in terms of agreement domains.

7.2 Intervention Effects

If locality restrictions on movement and agreement are different, the contrast between the availability of extraction and discontinuity, in Ukrainian, although puzzling from the point of view of theories that treat discontinuity as the result of movement, can be naturally explained under a theory that treats discontinuity as the consequence of long-

distance agreement. Recall that discontinuity is not available when the goal for

agreement is embedded inside another noun phrase as in (327b) and (328b):

327.
  a) **Ivan**   **zahubyv**   **knyžku**   <u>**novoho**</u>   <u>**profesora**</u>
  John.NOM lost   book.F.SG.ACC new.M.SG.GEN professor.M.SG.GEN
  "John lost a book that belongs to the new professor."

  b) * **Ivan**   <u>**novoho**</u>   **zahubyv**   **knyžku**   <u>**profesora**</u>
  John.NOM new.M.SG.GEN lost   book.F.SG.ACC professor.M.SG.GEN
  (*"John lost a book that belongs to the NEW professor."*)

328.
  a) **Ivan**   **zahubyv knyžku**   <u>**pro**   **molodyx**   **poetiv**</u>
  John.NOM lost   book.F.SG.ACC about young.PL.ACC poet.PL.ACC
  "John lost a book about young poets."

  b)* **Ivan**   <u>**pro**   **molodyx**</u>   **zahubyv knyžku**   <u>**poetiv**</u>
  John.NOM about young.PL.ACC lost   book.F.SG.ACC poet.PL.ACC
  (*"John lost a book about YOUNG poets."*)

The structural location of the embedded NP and the embedding NP in (327b) and (328b)

can be determined through intonation assignment. The dislocation of an argument in

Ukrainian is marked intonationally. The sentences in (327b) and (328b) are

ungrammatical when the embedded and embedding noun phrases are left de-accented.

Crucially, while discontinuity is blocked, movement out of the embedding NP is

available. Both the Genitive possessor and the PP-modifier can be extracted out of the

embedding noun phrase as a whole:

329.
  a) <u>**Novoho**   **profesora**</u>   **Ivan**   **zahubyv knyžku**
  new.M.SG.GEN professor.M.SG.GEN John.NOM lost   book.F.SG.ACC
  "John lost a book that belongs to THE NEW PROFESSOR."

  b) <u>**Pro**   **molodyx**   **poetiv**</u>   **Ivan**   **zahubyv**   **knyžku**
  about young.PL.ACC poet.PL.ACC John   lost   book.F.SG.ACC
  "John lost a book ABOUT YOUNG POETS."

A copy of the moved item can be lexicalized in various sites:

330.

  a) **Ivan**   **zahubyv** **knyžku**   <u>**novoho**   **profesora**</u>
      John.NOM   lost   book.F.SG.ACC new.M.SG.GEN professor.M.SG.GEN
      "John lost a book that belongs to the new professor."

  b) **Ivan**   **zahubyv** <u>**novoho**   **profesora**</u>   **knyžku**
      John.NOM   lost   new.M.SG.GEN professor.M.SG.GEN book.F.SG.ACC

  c) **Ivan**   <u>**novoho**   **profesora**</u>   **zahubyv** **knyžku**
      John.NOM new.M.SG.GEN professor.M.SG.GEN lost   book.F.SG.ACC

  d) <u>**Novoho**   **profesora**</u>   **Ivan**   **zahubyv** **knyžku**
      new.M.SG.GEN professor.M.SG.GEN John.NOM lost   book.F.SG.ACC
      "John lost a book that belongs to THE NEW PROFESSOR."

331.

  a) **Ivan**   **zahubyv** **knyžku**   <u>**pro**   **molodyx**   **poetiv**</u>
      John.NOM   lost   book.F.SG.ACC   about young.PL.ACC poet.PL.ACC
      "John lost a book bout young poets."

  b) **Ivan**   **zahubyv** <u>**pro**   **molodyx**   **poetiv**</u>   **knyžku**
      John.NOM   lost   about young.PL.ACC poet.PL.ACC book.F.SG.ACC

  c) **Ivan**   <u>**pro**   **molodyx**   **poetiv**</u>   **zahubyv** **knyžku**
      John.NOM   about young.PL.ACC poet.PL.ACC lost   book.F.SG.ACC

  d) <u>**Pro**   **molodyx**   **poetiv**</u>   **Ivan**   **zahubyv** **knyžku**
      about young.PL.ACC poet.PL.ACC John.NOM lost   book.F.SG.ACC
      "John lost a book ABOUT YOUNG POETS."

Once a Genitive possessor or a PP-modifier has been extracted from its noun phrase, it

can be modified from a distance:

332.

  a) <u>**Novoho**</u>   **Ivan**   <u>**profesora**</u>   **zahubyv** **knyžku**
      new.M.SG.GEN John.NOM   professor.M.SG.GEN lost   book.F.SG.ACC
      "As for the NEW professor, John did lose one of his books."

  a) <u>**Pro** **molodyx**</u>   **Ivan**   <u>**poetiv**</u>   **zahubyv** **knyžku**
      about young.PL.ACC John.NOM poet.PL.ACC lost   book.F.SG.ACC
      "As for a book about YOUNG poets, John did lose one."

The Genitive possessor and the PP-modifier, having been extracted from the noun phrase, are visible for agreement.

The data reviewed above present a serious challenge for the movement-based theories of discontinuity. Since extraction of the Genitive possessor and PP-modifier is available in (329), the Distributed Deletion analysis of constituent discontinuity predicts that (327b) and (328b) should be fine as well. According to the Distributed Deletion analysis of discontinuity, (329), (327b), and (328b) do not differ structurally:

333.

  a) <u>Novoho   profesora</u>   Ivan   zahubyv knyžku
  new.M.SG.GEN professor.M.SG.GEN John.NOM lost   book.F.SG.ACC
  "John lost a book that belongs to THE NEW PROFESSOR."

  [NP **Novoho profesora**] **Ivan zahubyv knyžku** [NP ~~novoho profesora~~]

  b) * <u>Novoho</u>   **Ivan   zahubyv knyžku**   <u>profesora</u>
  new.M.SG.GEN John.NOM lost   book.F.SG.ACC professor.M.SG.GEN
  (*"John lost a book that belongs to the NEW professor."*)

  [NP **Novoho**   ~~profesora~~] **Ivan   zahubyv   knyžku** [NP ~~novoho~~   **profesora**]

334.

  a) <u>Pro   molodyx   poetiv</u>   Ivan   zahubyv knyžku
  about   young.PL.ACC poet.PL.ACC John   lost   book.F.SG.ACC
  "John lost a book ABOUT YOUNG POETS."

  [PP **Pro molodyx poetiv**] **Ivan zahubyv knyžku** [PP ~~pro molodyx poetiv~~]

  b) * <u>Pro   molodyx</u>   **Ivan   zahubyv knyžku**   <u>poetiv</u>
  about young.PL.ACC John.NOM   lost   book.F.SG.ACC poet.PL.ACC
  (*"John lost a book about YOUNG poets."*)

  [PP **Pro molodyx** ~~poetiv~~] **Ivan zahubyv knyžku** [PP ~~pro molodyx~~ **poetiv**]

Other movement-based approaches to discontinuity also have to resort to stipulation to account for these contrasts. Thus, for instance, in order to account for similar facts in

Serbo-Croatian, Bošković (2005), who adheres to the Left Branch extraction approach to

discontinuity, posits a rather arbitrary definition of a phase for Serbo-Croatian: NP

headed by a noun that takes a non-trace complement is a phase (see chapter 9 for further

discussion).

Since the embedding noun phrase plays a crucial role in blocking discontinuity, the

locality restrictions on discontinuity appear to resemble standard intervention effects.

Intervention effects result from the violation of Relativized Minimality:

335. *Relativized Minimality*
X x-governs Y only if there is no Z such that
(i) Z is a typical potential x-governor for Y;
(ii) Z c-commands Y and Z does not c-command X.

(Rizzi (1990):7)

Rizzi (1990) formulates Relativized Minimality as a condition on government.

Relativized Minimality is, however, reanalyzed in the Minimalist Program as a Minimal

Link Condition:

336. *Minimal Link Condition/Attract Closest*:
H(K) attracts α only if there is no β, β is closer to H(K) than α, such that H(K)
attracts β.

(Chomsky (1995b): 311)

The locality restrictions on Attract Closest are streamlined in Chomsky (2000: 123, 2001:

27) to provide a foundation for the principle that regulates agreement in the probe-goal

based system. As with Relativized Minimality, locality restrictions on agreement are

reduced to closest c-command:

337. *Intervention Effects:*
D(P) is the c-command domain of P, and a matching feature G is closest to P if
there is no G' in D(P) matching P such that G is in D(G').

(Chomsky (2000):122)

According to (337), when there are two suitable goals in the c-command domain of the probe, the probe can enter into agreement only with the goal that is closer to it. The closer goal acts as an intervener and blocks agreement with a more distant goal.

Consider in this respect the phrase marker in (339), which represents a simplified structure of the sentence in (338) (see chapter 6 for a detailed discussion of the internal structure of the possessed NP):

338. * **Ivan**   **novoho**   **zahubyv** **knyžku**   **profesora**
    John.NOM   new.M.SG.GEN   lost   book.F.SG.ACC professor.M.SG.GEN
    (*"John lost a book that belongs to the NEW professor."*)

339.

    Ivan   **novoho**   **zahubyv**   **knyžku**   **profesora**
    John.NOM   new.M.SG.GEN   lost.PST   book.F.SG.ACC   professor.M.SG.GEN
    (*"John lost a book that belongs to the NEW professor."*)
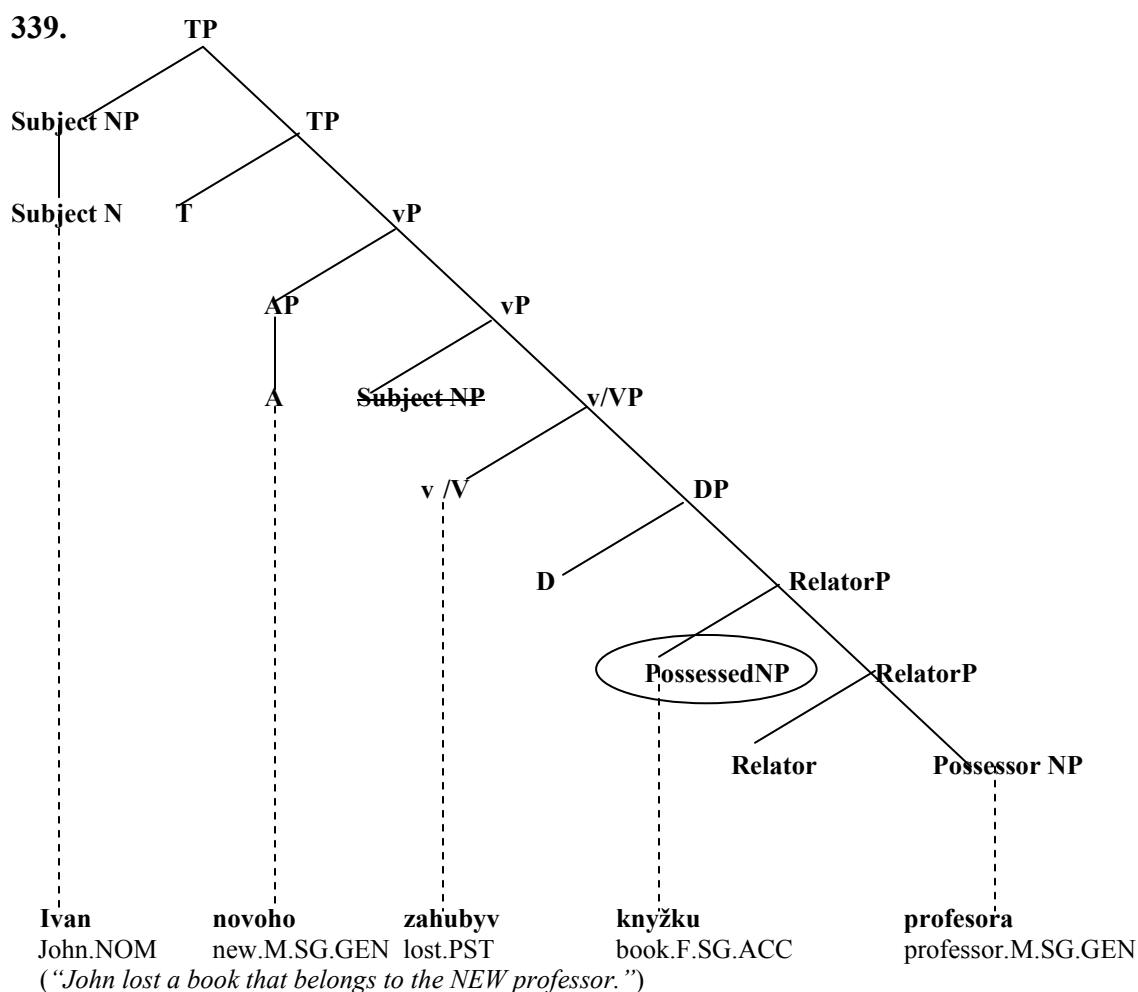
The modifier in (339) c-commands both the possessed noun and the possessor noun. However, the possessed noun is closer to the modifier than the possessor noun because the possessor noun is located in the c-command domain of the possessed noun. The possessed noun, thus, can be analyzed as an intervener that blocks agreement between the adjective and the possessor noun.

Not every intervening noun phrase, however, blocks long-distance adjectival agreement and discontinuity. Subject NPs, for instance, don't block agreement with Accusative or Genitive arguments of the verb nor do they block agreement with the Genitive possessor or the PP-modifier that has been extracted from the embedding noun phrase:

340.

  a) **Novu**   **Ivan**   **kupyv**   **knyžku**
new.F.SG.ACC   John.NOM   bought   book.F.SG.ACC
"John bought a NEW book."

  b) **Novoho**   **Ivan**   **vstydajet'sja**   **profesora**
new.M.SG.GEN   John.NOM   embarrass.SEFF   professor.M.SG.GEN
"John is embarrassed in front of the NEW professor."

  c) **Novoho**   **Ivan**   **profesora**   **zahubyv**   **knyžku**
new.M.SG.GEN   John.NOM   professor.M.SG.GEN bought   book.F.SG.ACC
"As for the NEW professor, John did lose one of his books."

  d) **Pro**   **sučasnu**   **Ivan**   **arxitekturu**
about   contemporary.F.SG.ACC   John.NOM   architecture.F.SG.ACC
zahubyv   **knyžku**
lost   book.F.SG.ACC
"As for a book about CONTEMPORARY architecture, John did lose one."

In (340), the subject NP is closer to the adjective than the intended goal, yet the adjective can establish an agreement relationship with its goal, by-passing the subject NP.

In (340), an adjectival modifier and the subject NP can be analyzed as adjoined to the same phrasal projection, and the lack of intervention effects can be attributed to the multiple adjunction, with the subject NP being too close to the probe, and therefore not a qualified goal. Consider the phrase marker in (342), which represents the structure of the sentence in (341):

341. **Kupyv** <u>**novu**</u>   **Ivan**   <u>**knyžku**</u>
buy.PST new.F.SG.ACC   John.NOM   book.F.SG.ACC
"John bought a NEW book."

342.

Kupyv   novu   Ivan   knyžku
bought   new.F.SG.ACC John.NOM   book.F.SG.ACC
"John bought a NEW book."
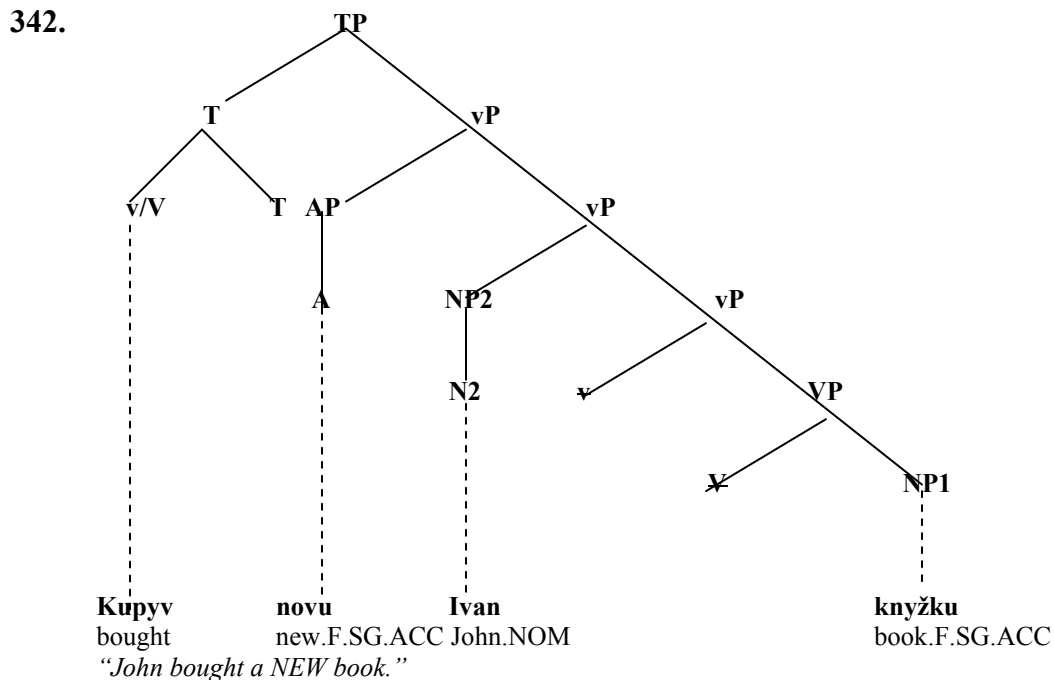
One could rule out NP2 as a qualified goal by redefining intervention effects along the lines of asymmetric c-command of Kayne (1994). According to Kayne's (1994) definition, multiple adjuncts c-command each other. Mutual c-command could be used to block intervention effects in (342) since one can stipulate that agreement can take place between a probe and a goal only when the goal does not c-command the probe.

Subject NPs, however, do not block discontinuity even in those cases when they are located lower in the clause, adjoined to a projection different from the one to which the adjectival probe is adjoined. Consider the phrase marker in (344), which represents the structure of the sentence in (343):

343. **<u>Novu</u>**   **kupyv**   **Ivan**   **<u>knyžku</u>**
new.F.SG.ACC   bought   John.NOM   book.F.SG.ACC
"John bought a NEW book."

344.

Novu   **kupyv**   **Ivan**   **knyžku**
new.F.SG.ACC bought   John.NOM   book.F.SG.ACC
"John bought a NEW book."
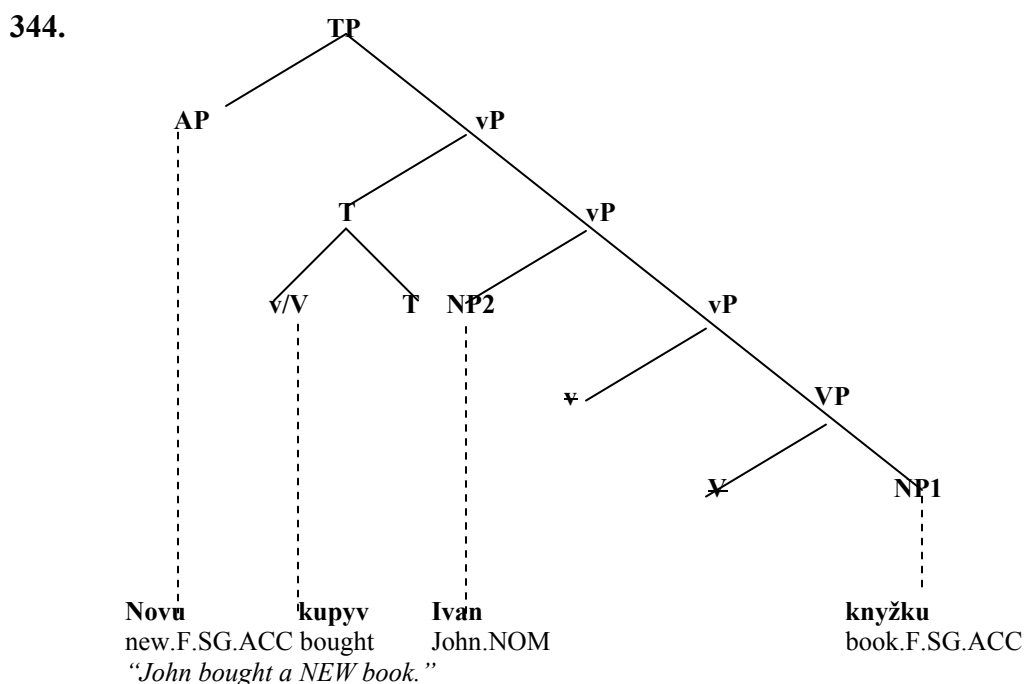
Even though the sites of adjunction of the modifier and the subject NP are different, and NP2 is clearly closer to the probe than NP1, long-distance agreement with the direct object across the subject NP is possible.
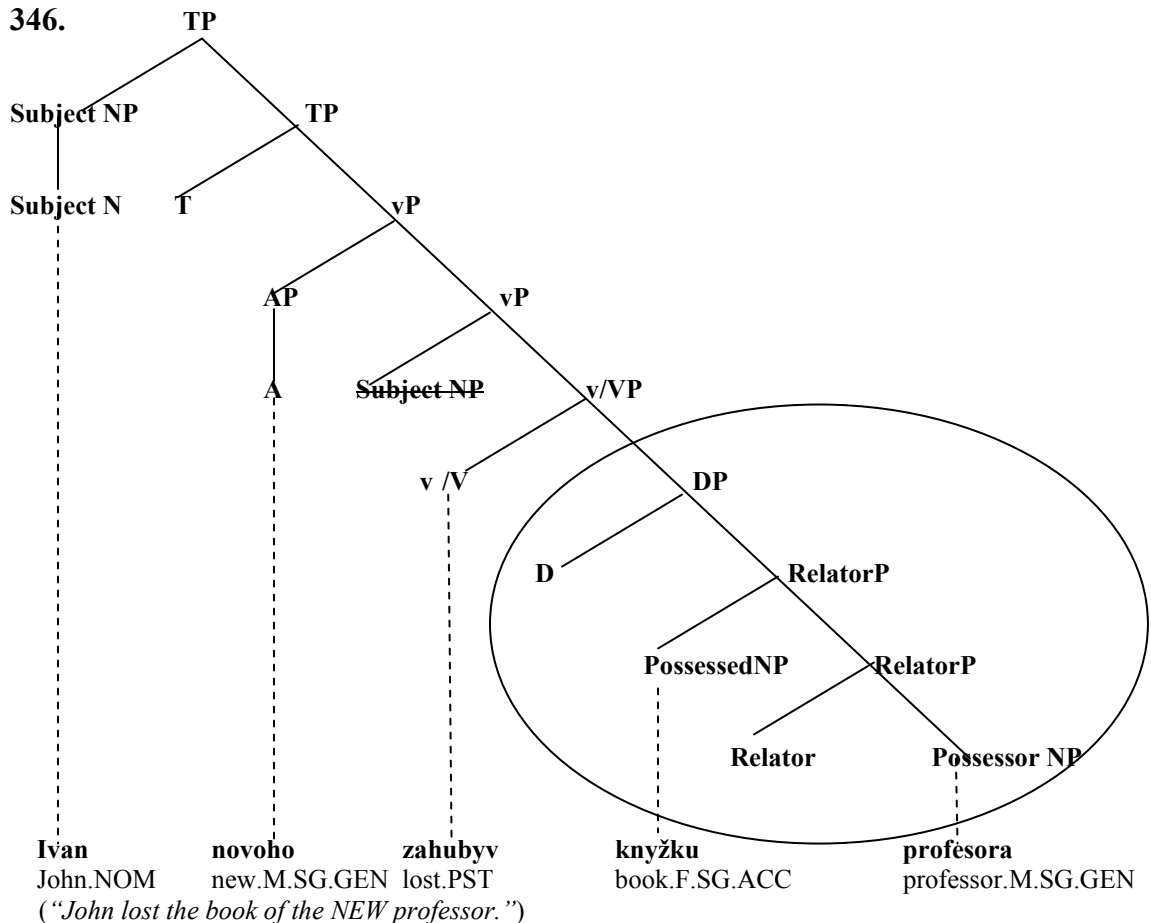
The failure of the intervening subject NP to block the discontinuity of other arguments indicates that the locality of long-distance concord is not constrained in terms of the closest c-command and, thus, is not subject to standard intervention effects. What

matters for long-distance concord is whether the goal is contained in the projection of an

intervening argument or not. I adopt the definition of *contain* from Chomsky (2000):

345. K contains α if K immediately contains α or immediately contains L that contains
α. K immediately contains α and β if K is the new object generated as a result of
merging α and β

Chomsky (2000: 116)

 In (342) and (344), the projection of the subject noun phrase does not contain the goal

and does not block long-distance agreement with it. However, discontinuity is blocked

by the embedding noun phrase in (339) because the projection of the embedding noun

contains the goal and blocks long distance agreement. Consider once again the phrase

marker in (339), repeated below as (347):

346.

Ivan	novoho	zahubyv	knyžku	profesora
John.NOM	new.M.SG.GEN	lost.PST	book.F.SG.ACC	professor.M.SG.GEN

(*"John lost the book of the NEW professor."*)

As discussed in chapter 6, section 6.2, D in (346) enters into agreement with the

Possessed NP, which results in categorial feature sharing. In this way, D forms an

extended projection with the Possessed NP. In (346), the Possessor NP is, therefore,

contained in the extended projection of the Possessed NP, and the long-distance concord

between the modifier and the Possessor NP is blocked.

Consider now once again the phrase marker in (341), repeated below as (348):

347.

Novu   **kupyv**   **Ivan**   **knyžku**
new.F.SG.ACC bought John.NOM   book.F.SG.ACC
"John bought a NEW book."
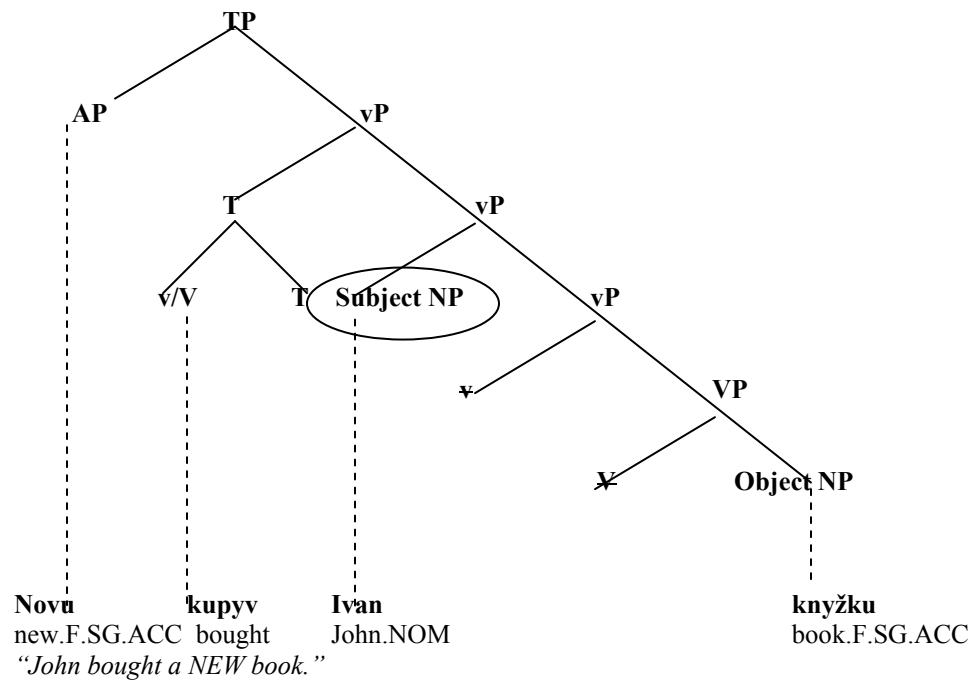
The projection of the subject NP does not contain the direct object. Long-distance

concord between the modifier and the direct object can be established even though the

subject NP is a closer c-commanded goal to the modifier and, therefore, intervenes

between the modifier and the object NP. Since the failure of noun phrase discontinuity is

not subject to closest c-command, locality constraints on discontinuity in Ukrainian

should be defined in terms of agreement domains, as in Bobaljik and Wurmbrand (2005),

rather than in terms of interventions effects, as in Bošković (2007a). In the section that

follows, I examine closely the nature of the domains that constrain long-distance

adjectival agreement in Ukrainian.

7.3 Agreement Domains

In the previous section, I demonstrated that discontinuity in Ukrainian is not constrained

by standard intervention effects. A noun that intervenes between a long-distance

modifier, which acts as a probe, and another noun, which is an intended goal, does not

necessarily block long-distance agreement between them. Long-distance agreement of

this type is blocked only when the projection of the intervening noun contains the goal.

In other words, the projection of a head, rather than the head itself, imposes constraints

on long-distance adjectival agreement in Ukrainian. So far we have encountered

evidence that a projection of a noun constrains long-distance adjectival agreement and

discontinuity in Ukrainian. In contrast, the projection of a verb does not block

discontinuity of the arguments of the verb in the language. A direct object can be made

discontinuous across the verb that theta-marks it, even though the projection of the verb

contains the object. Consider the phrase marker in (349), which represents the structure

of the sentence in (348):

348. **Ivan**   <u>**novu**</u>   **kupyv**   <u>**knyžku**</u>
      John.NOM   new.F.SG.ACC   bought   book.F.SG.ACC
      "John bought a NEW book."

In (349), the direct object NP is contained by the projections of both v and V;

nevertheless, long-distance modification of the direct object is possible. This indicates

that while closest c-command does not play a decisive role in blocking long-distance

concord, as seen in discontinuous constituents in Ukrainian, the lexical category of an

item does play a role in determining whether the projection of this item blocks long-distance adjectival agreement or not.

349.

Ivan	novu	kupyv	knyžku
John.NOM	new.F.SG.ACC	bought	book.F.SG.ACC

"John bought a NEW book."
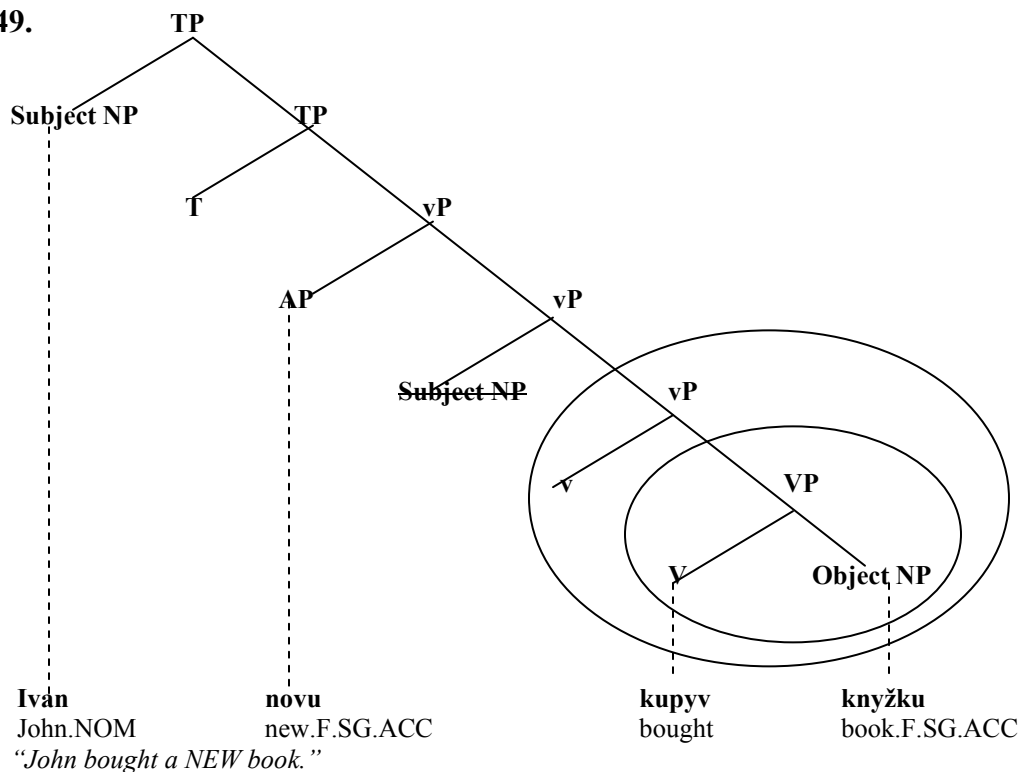
The contrast between verbs and nouns in their ability to block noun phrase discontinuity is clearly seen when one compares the distribution of Genitive possessors and PPs that modify the noun with the distribution of Genitive and PP arguments of the verb:

350.

a) **Ivan   vstydajet'sja   novoho   profesora**
John.NOM   embarrass.SELF   new.M.SG.GEN   professor.M.SG.GEN
"John is embarrassed in front of the new professor."

b) **Novoho   profesora   Ivan   vstydajet'sja**
new.M.SG.GEN   professor.M.SG.GEN   John.NOM   embarrass.SELF
"John is embarrassed in front of THE NEW PROFESSOR."

c) **Novoho   Ivan   vstydajet'sja   profesora**
new.M.SG.GEN   John.NOM   embarrass.SEFF   professor.M.SG.GEN
"John is embarrassed in front of the NEW professor."

351.

   a)   **Ivan**   **hovoryt' <u>pro   sučasnu   arxitekturu</u>**
      John.NOM   speaks   about contemporary.F.SG.ACC   architecture.F.SG.ACC
      "John speaks about contemporary architecture."

   b)   **<u>Pro   sučasnu   arxitekturu</u>**   **Ivan**   **hovoryt'**
      about contemporary.F.SG.ACC   architecture.F.SG.ACC   John.NOM   speaks
      "John speaks ABOUT CONTEMPORARY ARCHITECTURE."

   c)   **<u>Pro   sučasnu</u>**   **Ivan**   **hovoryt' <u>arxitekturu</u>**
      about contemporary.F.SG.ACC   John.NOM   speaks   architecture.F.SG.ACC
      "John speaks about CONTEMPORARY architecture."

Genitive and PP arguments of the verb can be extracted from the v/VP and can be made

discontinuous across the v/VP on a par with the Accusative and Nominative arguments

discussed in chapter 2. Similarly, PP adjuncts in the verbal domain can be dislocated and

can be modified from a distance:

352.

   a)   **Ivan**   **pryjde**   **<u>v   peršij   hodyni</u>**
      John.NOM   come.FUT   in   one.F.SG.LOC hour.F.SG.LOC
      "John will come at one."

   b)   **<u>V   peršij   hodyni</u>**   **pryjde**   **Ivan**
      in   one.F.SG.LOC hour.F.SG.LOC   come.FUT   John.NOM
      "At one, JOHN will come."

   c)   **<u>V   peršij</u>**   **Ivan**   **pryjde**   **<u>hodyni</u>**
      in   one.F.SG.LOC John.NOM   come.FUT   hour.F.SG.LOC
      "John will come at ONE."

The projections of the verb, therefore, do not block discontinuity, regardless of the

grammatical function of the discontinuous noun phrase.

In this respect, restrictions on long-distance concord in Ukrainian contrast with the

conclusion reached by Bobaljik and Wurmbrand (2005) regarding agreement domains in

German and Japanese. According to Bobaljik and Wurmbrand (2005), a VP complement

of a lexical verb constitutes a domain that is impenetrable for an outside probe. Bobaljik
and Wurmbrand (2005) observe that case cannot be assigned to the argument of the verb
when this verb is selected by a lexical verb. Case, however, can be assigned to the
argument of the verb when this verb is a complement to a functional head. Since case
assignment depends on establishing agreement between the item that assigns case and the
item that receives case, Bobaljik and Wurmbrand (2005) interpret the restrictions on case
assignment as restrictions on agreement. They suggest that the context dependency
involved in case assignment can be accounted for in terms of the locality of agreement,
using Grimshaw's theory of extended projection. An extended projection as a whole
counts as a single agreement domain for case assignment. According to Bobaljik and
Wurmbrand (2005), agreement domains are, therefore, sensitive to thematic factors.

In Ukrainian, however, long-distance modification can cross a VP boundary even when
this VP is a complement of a lexical verb (see section 7.4 for a detailed discussion of
long-distance concord across clausal boundaries in Ukrainian):

353.

a) **Mykola** **xoče** **kupyty** **<u>červonu</u>** **<u>mašynu</u>**
Michael.NOM wants to-buy red.F.SG.ACC car.F.SG.ACC
"Michael wants to buy a red car."

b) **<u>Červonu</u>** **Mykola** **xoče** **kupyty** **<u>mašynu</u>**
red.F.SG.ACC Michael.NOM wants to-buy car.F.SG.ACC
"Michael wants to buy a RED car." or
"As for a RED car, Michael wants to buy one."

An adjectival modifier generated in the matrix clause can agree with the noun embedded
inside the restructured infinitival complement of the subject control verb. The contrast
between the German/Japanese and the Ukrainian data can be explained under the premise

that agreement domains are not absolute locality domains, the way that phases are in

Chomsky's theory (see Chomsky (2000, 2001)), but are defined relative to the type of

agreement involved. While an extended projection of the verb constitutes a locality

domain for case assignment, an extended projection of the noun constitutes a locality

domain for concord.

Nominal and verbal categories form distinct agreement domains because of their feature

make-up and the type of agreement relations they participate in. Each lexical category

prevents other categories from transferring feature values in the same direction in which

it does. In other words, it monopolizes the syntactic space delimited by its extended

projection to ensure the valuation of its own unvalued features. Consider feature

valuations that different categories participate in. Nouns have their φ-features valued in

the lexicon and are, therefore, quintessential goals. Their case feature, however, is not

valued in the lexicon and needs to be valued in narrow syntax. Case feature valuation,

however, is dependent on φ-feature agreement (see Chomsky (2000, 2001)). In order to

increase their own chances for the valuation of its case feature, nominal projections block

valuation of the features of a probe by any goal they contain (their competitor). Verbal

heads, on the other hand, do not have their φ-features valued in the lexicon and are,

therefore, quintessential probes. The valuation of their φ-features, however, depends on

their ability to assign case to the goal that carries valued φ-features. Baker (2003) argues

that in Indo-European languages the correlation between φ-feature agreement and case

valuation is even stronger than the one posited in Chomsky (2000, 2001)): φ-feature

agreement is dependent on case assignment and cannot take place when case cannot be

assigned. In order to increase their own chances for the φ-features valuation, verbal projections block valuation of the features of any goal they contain by the probes that do not belong to their extended projection. In other words, both categories are "greedy" and reserve access to potential feature valuation events only to themselves.

The blocking effects of this type, however, are of a more general kind than specific intervention effects. Intervention effects are defined over individual features and even individual feature values while domain restrictions, proposed here, are defined over lexical categories and their projections and apply to all agreement events that cross the boundaries delimited by these projections. The correlation between the category of the head of the projection and the blocking effects it incurs is formulated in (354) as the Directionality Parameter for Agreement:

354. Directionality Parameter for Agreement (DPA):
Projection of the head Z blocks valuation of features on the probe X iff the categorial feature of Z is valued as nominal, and it blocks valuation of features on the goal Y iff the categorial feature of Z is valued as verbal.

Consider now the similarities and differences between case assignment by the verbal head and concord involved in adjectival modification. Both case assignment and concord establish agreement in φ-features. The goal values the φ-features of the probe in either of this agreement events. Both case assignment and concord also involve valuation of a case feature. The two processes differ, however, as to the directionality of case assignment. In concord, the goal values the case feature of the probe, while in case assignment, the probe values the case feature of the goal. Case assignment by the verbal head is, therefore, a bi-directional process while concord is one-directional:

355. *Feature value transfer*:

a) *Case assignment by a verbal head*:

case →

Probe   Goal

← φ-features

b) *Concord between the adjective and the noun*:

← case
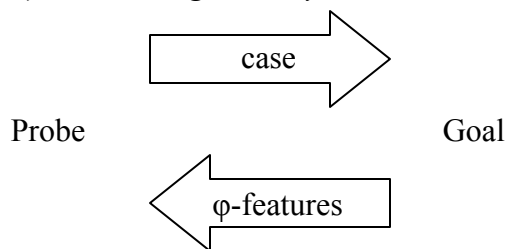
Probe   Goal
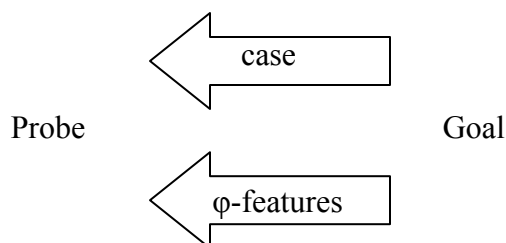
← φ-features

Since in concord all the features are transferred from the goal to the probe, i.e. in the same direction in which nouns transfer their valued features, the nominal projections are predicted to block concord with the goals contained in their domain. Verbal projections, however, are predicted not to block concord because they transfer their valued features downward: from the probe to the goal. No features are transferred in this direction in concord.

At this point we are ready to formulate the general Locality Constraint on Agreement that accounts for both the German/Japanese and the Ukrainian data:

356. Locality Constraint on Agreement (LCOA):
Projection of a head Z constitutes an agreement domain and blocks agreement between a probe X that does not share a categorial feature with Z and a goal Y iff
(i)   X c-commands Z and Y,
(ii)   a projection of Z contains Y
(iii)   Directionality Parameter holds

The Locality Constraint on Agreement defines agreement domains in terms of c-command (clause (i)) and containment (clause (ii)). It makes provisions for Bobaljik and Wurmbrand's (2005) observation that agreement blocking should be defined in terms of extended projections since it applies only to those probes that do not share a categorial feature with the head of the agreement domain. It also requires the observation of the Directionality Parameter. Directionality Parameter expresses the correlation that exists between the category of the head of the agreement domain and the type of agreement that is confined to this domain.

The Locality Constraint on Agreement accounts for the facts discussed in Bobaljik and Wurmbrand (2005). VP complement to a verbal functional head forms a single extended projection with this head. Therefore, both T and v that form the same extended projection with the VP are exempted from the LCOA. They can probe down into the extended projection they belong to in search of a goal. The projections of V do not constitute barriers for agreement when a probe is part of the extended projection of V. However, when a VP is selected by another lexical head, the functional heads that form an extended projection with the selecting head are not exempted from the LCOA. They cannot case-mark the argument of the selected verb, since the categorial feature of the selected V is valued as verbal and blocks feature valuation of the goal.

The Locality Constraint on Agreement also explains lack of noun phrase discontinuity involving a noun that is embedded inside another noun phrase. Consider once again the sentence in (345), repeated below as (357), and the phrase marker in (346), repeated

below as (358), which represents the structure of the sentence with a failed long-distance

concord with the Genitive possessor contained inside the extended projection of the

Possessed NP :

357.* Ivan   **<u>novoho</u>**   **zahubyv knyžku**   **<u>profesora</u>**
John.NOM   new.M.SG.GEN   lost   book.F.SG.ACC   professor.M.SG.GEN
(*"John lost a book that belongs to the NEW professor."*)

358.

TP
Subject NP, TP
Subject N, T, vP
AP, vP
A, Subject NP, v/VP
v /V, DP
D, RelatorP
Possessed NP, RelatorP
Relator, Possessor NP

Ivan   novoho   zahubyv   knyžku   profesora
John.NOM   new.M.SG.GEN lost.PST   book.F.SG.ACC   professor.M.SG.GEN
(*"John lost the book of the NEW professor."*)
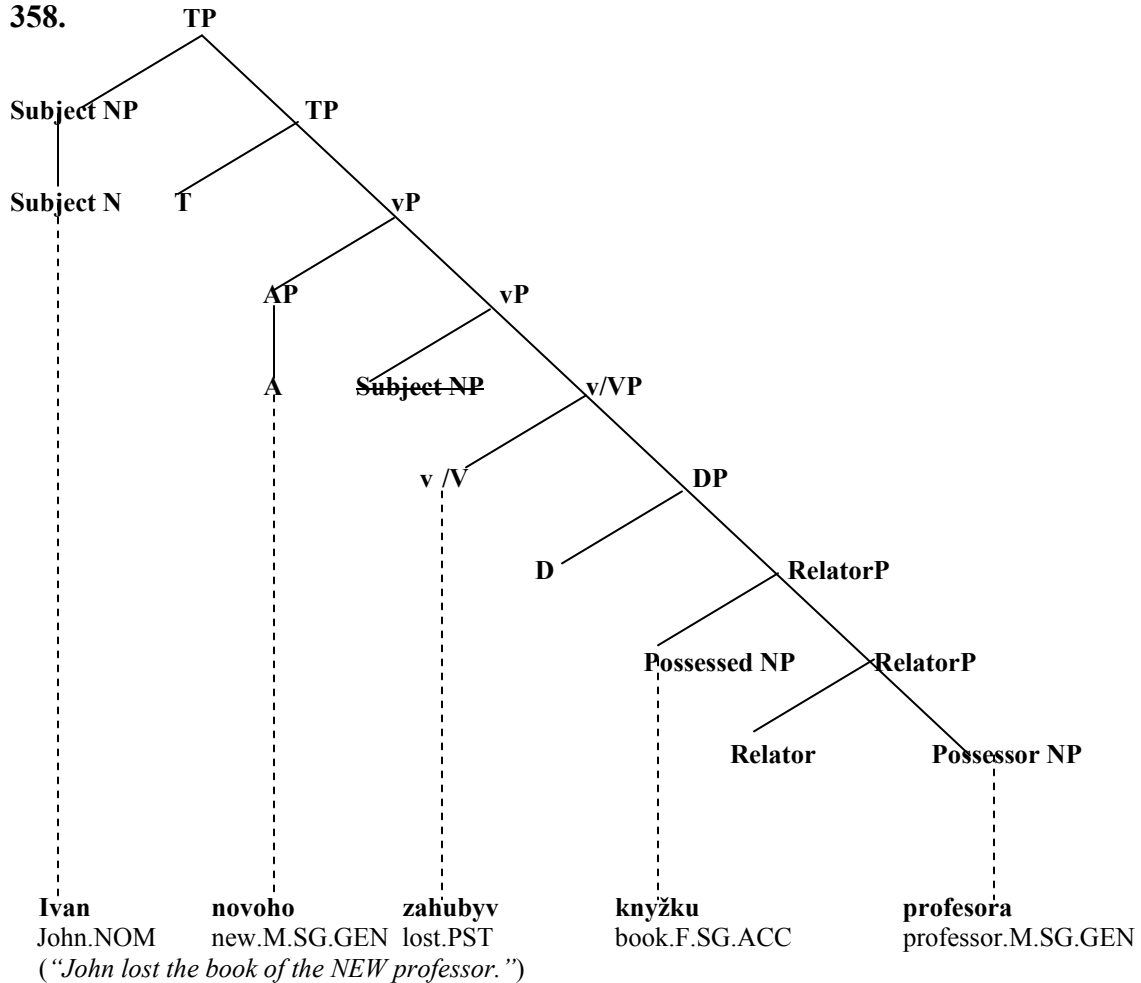
In (358), the adjectival modifier c-commands both the possessor NP and the possessed

NP. DP, which forms the extended projection of the Possessed NP, contains the

possessor NP, as discussed earlier. Since, prior to agreement being established, AP does

not share the categorial feature with the Possessed NP, the Locality Constraint on

Agreement applies. The Possessed NP is a nominal category, and therefore its extended

projection blocks valuation of the φ-features of the AP by the Possessor NP.

According to the LCOA, the long-distance modification is, however, possible in (348),

which is repeated below as (359) together with its structural representation in (360):

359. **Ivan**   **novu**   **kupyv**   **knyžku**
        John.NOM   new.F.SG.ACC   bought   book.F.SG.ACC
        "John bought a NEW book."

360.

        Ivan   **novu**   **kupyv**   **knyžku**
        John.NOM   new.F.SG.ACC   bought   book.F.SG.ACC
        "John bought a NEW book."
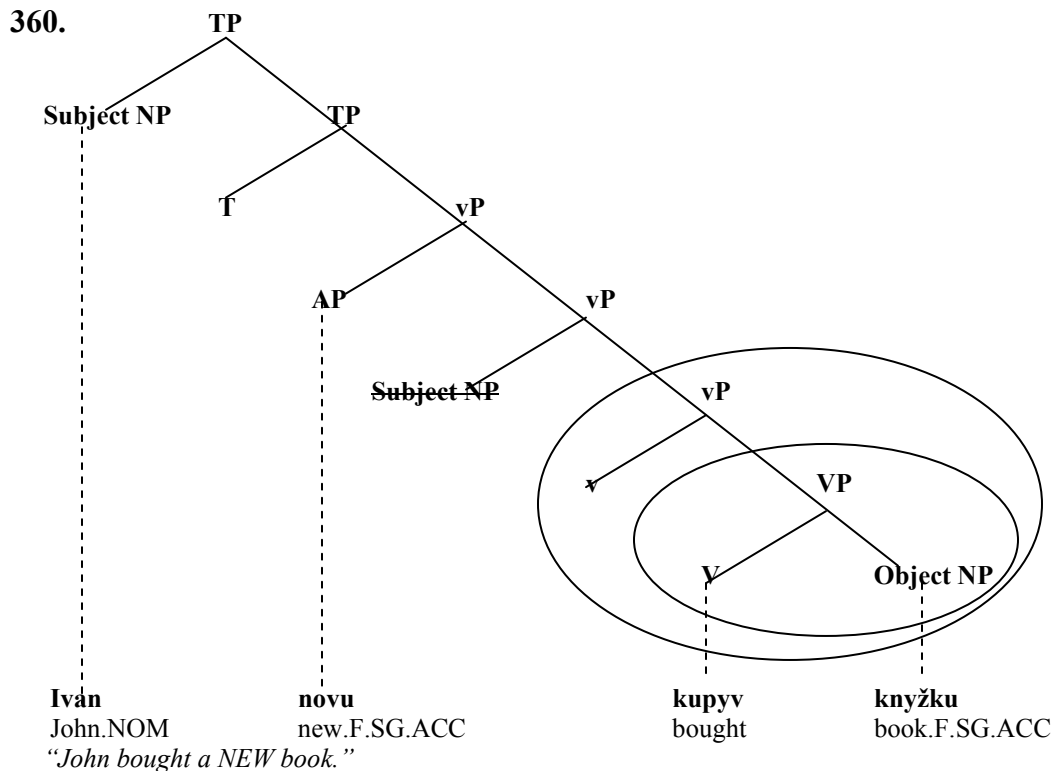
In (360), the adjectival modifier c-commands v, V, and the Object NP. The projections

of v and V contain the Object NP. Again, the AP does not form an extended projection

with V and is not exempted from the LCOA. V, however, is a verbal category and its

projections permit valuation of features on the adjectival probe through agreement with

the noun phrase that they contain. Direct object discontinuity is, therefore, correctly

predicted to be grammatical in (359).

Unlike intervention effects, the Locality Constraint on Agreement and the Directionality

Parameter are not formulated in terms of specific features. The LCOA and the DPA are,

therefore, expected to apply not only to long-distance adjectival modification but also to

long-distance adverbial modification. In chapter 5, I argued that the relation between a

degree adverb and an adjective involves valuation of the degree feature. This type of

agreement should also be subject to the LCOA. Consider the sentence in (361), which

contains a long-distance degree modifier of the adjective used predicatively:

361. **Duže**　　　　　**Ivan**　　　　**buv**　**zmučenyj**
new.F.SG.INST　John.NOM　was　tired.M.SG.NOM
"John was VERY tired." or *"John was VERY TIRED."*

The phrase marker in (362) represents the structure of the sentence in (361):

362.

Duže　　　**Ivan**　　　**buv**　　　　　　　　　**zmučenyj**
very　　　John.NOM　was　　　　　　　　　tired.M.SG.NOM
"John was VERY tired."
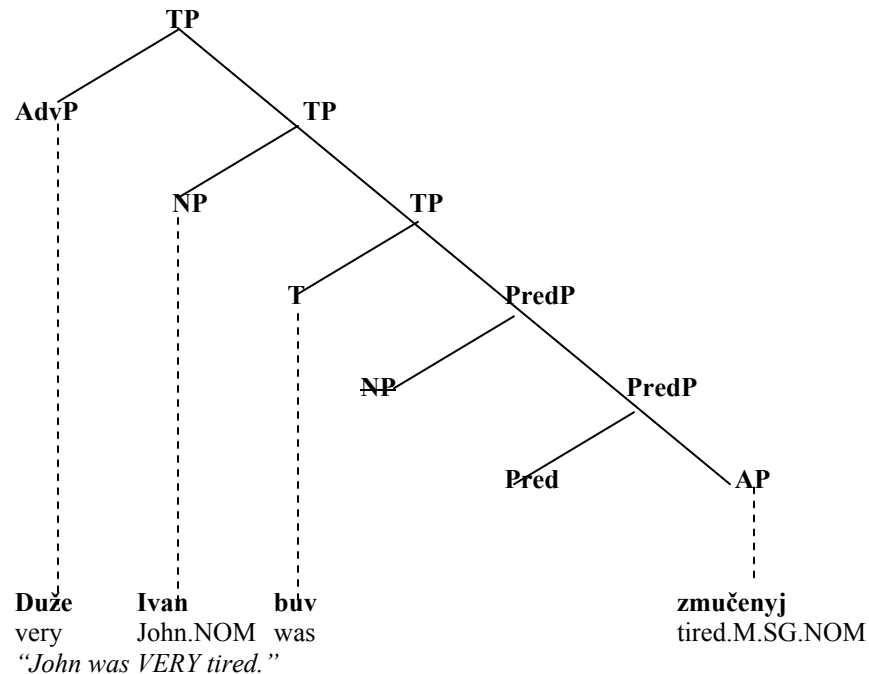
In (362), the AdvP c-commands T, Pred, and AP, and the projections of T and Pred

contain the AP. The degree adverb generated at a distance from the AP does not form an

extended projection with the Pred head and is not exempted from the LCOA. However,

since Pred and T are verbal heads, they do not block valuation of the degree feature of the

adverbial phrase.   The LCOA, therefore, correctly predicts that the discontinuous

constituent in (361) is grammatical.

The Locality Constraint on Agreement also correctly predicts that valuation of the degree

feature is blocked by an extended projection headed by a nominal category. Consider the

sentence in (363), which contains an NP modified by an adjective that itself is modified

by a degree adverb:

363. **Ivan   zutriv studenta**
      John.NOM   met   student.M.SG.ACC
      <u>**duže   zadovolenoho**</u>   **kontrol'noju**
      very   satisfied.M.SG.ACC test.F.SG.INST
      "John met a student who was very happy with the test."

Heavy complement-taking adjectival modifiers can appear either before or after the noun

inside a regular continuous noun phrase:

364.
  a) **Ivan   zutriv**
      John.NOM   met
      studenta   **zadovolenoho**   **kontrol'noju**
      student.M.SG.ACC   satisfied.M.SG.ACC test.F.SG.INST
      "John met a student happy with the test."

  b) **Ivan   zutriv**
      John.NOM   met
      <u>**zadovolenoho**   **kontrol'noju**</u>   **studenta**
      satisfied.M.SG.ACC test.F.SG.INST   student.M.SG.ACC
      "John met a student HAPPY WITH HIS TEST."

The heavy adjectival modifier in the pre-nominal position receives narrow focus. This indicates that, unlike a light adjectival modifier, it is base-generated post-nominally. I, therefore, assume the same structural representation for heavy adjectival modifiers as for PP-modifiers and Genitive possessors. They are generated as complements of the Relator head, while the noun they are associated with is generated as the Specifier of the Relator head.

If the same constraint blocks valuation of both the degree feature and the φ-features, we predict that degree adverbs cannot be separated from the modifier which is embedded inside the extended projection of the modified NP. This is indeed the case:
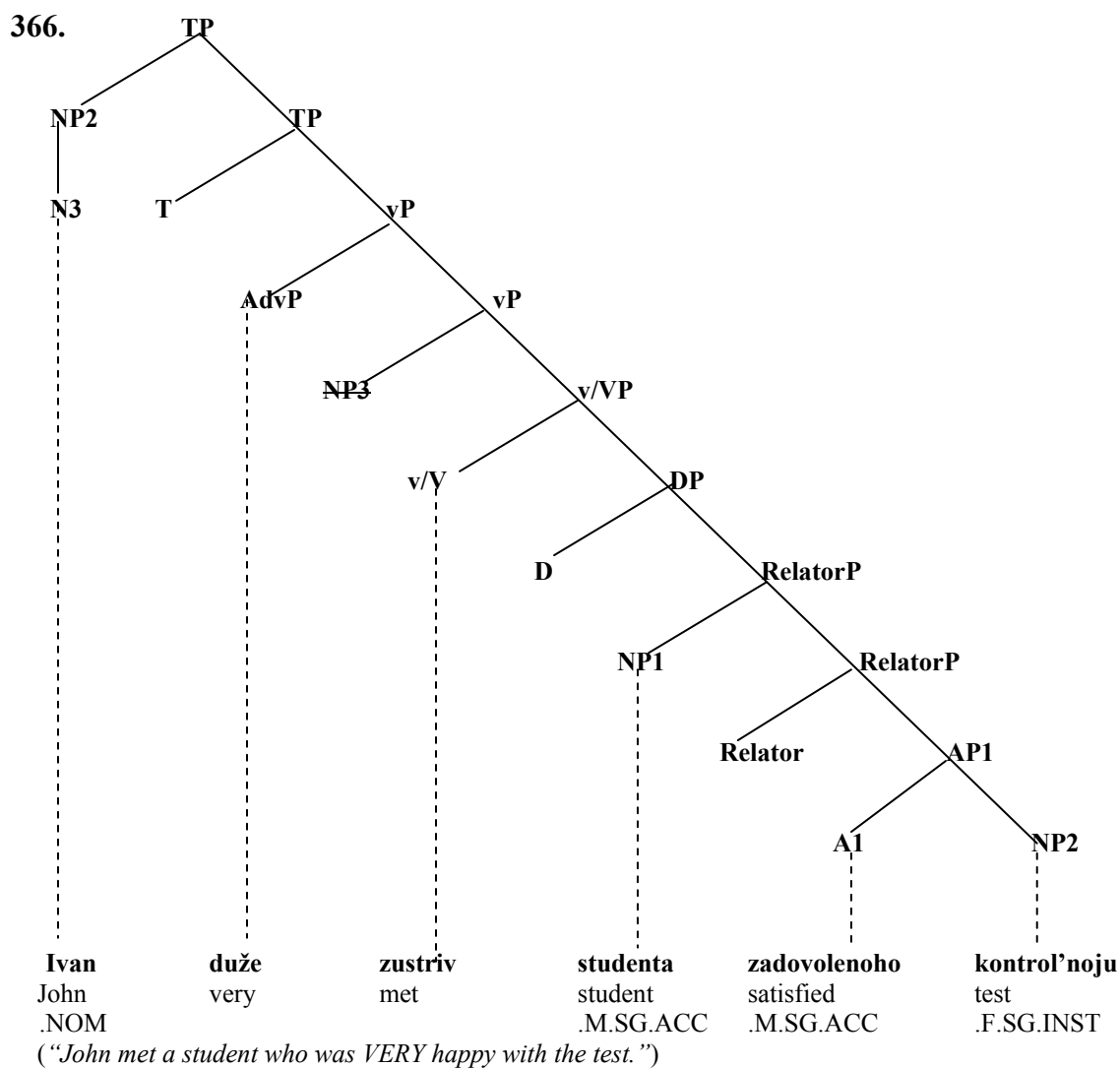
365.

a) * **Ivan**   **zutriv <u>duže</u>**   **studenta**   **<u>zadovolenoho</u> kontrol'noju**
   John.NOM met   very   student.ACC satisfied.ACC   test.INST

b) * **Ivan**   **<u>duže</u>**   **zutriv studenta**   **<u>zadovolenoho</u> kontrol'noju**
   John.NOM   very   met   student.ACC satisfied.ACC   test.INST

c) * **<u>Duže</u>**   **Ivan**   **zutriv studenta**   **<u>zadovolenoho</u> kontrol'noju**
   very   John.NOM met   student.ACC   satisfied.ACC   test.INST
   (*"John met a student who was VERY happy with the test."* or
   "John met a student who was VERY HAPPY with the test.")

Consider the phrase marker in (366), which represents the structure of the sentence in (365b). In (366), the degree adverb is generated as a vP adjunct, outside of the extended projection of the noun phrase that contains the adjective, which the adverb attempts to modify (see chapter 6, section 6.2 for a detailed discussion of the Relator structure in question). According to the LCOA, concord between AdvP and AP1 in (366) is blocked by the DP:

366.

TP
- NP2 — N3
- TP
  - T
  - vP
    - AdvP
    - vP
      - NP3
      - v/VP
        - v/V
          - D
        - DP
          - NP1
          - RelatorP
            - RelatorP
              - Relator
              - AP1
                - A1
                - NP2

Ivan	duže	zustriv	studenta	zadovolenoho	kontrol'noju
John	very	met	student	satisfied	test
.NOM			.M.SG.ACC	.M.SG.ACC	.F.SG.INST

(*"John met a student who was VERY happy with the test."*)

Note that the heavy adjectival modifier can appear separated from the noun it modifies:

367. **Ivan**   **duže   zadovolenoho   kontrol'noju**
  John.NOM   very   satisfied.M.SG.ACC   test.F.SG.INST
  zustriv studenta
  met   student.M.SG.ACC
  "John met a student VERY HAPPY WITH THE TEST."

The failure of discontinuity in (365b), therefore, presents a problem for the Distributed

Deletion accounts of discontinuity. Consider the derivation of the sentence in (365c)

using the mechanism of Distributed Deletion:

368. * Ivan   duže   zutriv studenta   zadovolenoho kontrol'noju
John.NOM   very   met   student.ACC satisfied.ACC test.INST
(*"John met a student who was VERY happy with the test."*)

Ivan [AP duže ~~zadovolenoho kontrol'noju~~] zutriv studenta
                                                    [AP ~~duže~~ zadovolenoho kontrol'noju]

The theory of Distributed Deletion predicts that since the entire AP can be lexicalized in

the displaced location, as (367) shows, one should also be able to lexicalize part of the

AP in this location.

7.4 Adjective-Headed Domains

The Locality Constraint on Agreement and the Directionality Parameter on which it relies

link agreement blocking effects with the lexical category of the head of the agreement

domain. Verbal heads block feature valuation on the goal while nominal heads block

feature valuation on the probe. As a result, long-distance concord across the projections

of the verb is available while long-distance concord across the projections of the noun is

not. The adjective, however, is neither a verbal nor a nominal head. Its categorial feature

remains unvalued in the lexicon. The Locality Constraint on Agreement therefore

predicts that adjectives should allow long-distance agreement with their complements.

Indeed, adjectives used predicatively do not block discontinuity of their complements:

NP Complement of AP:

369.
   a) **Ivan   buv   zadovolenyj   novoju   robotoju**
       John.NOM   was   satisfied.M.SG.NOM new.F.SG.INST work.F.SG.INST
       "John was happy with his new job."

   b) **Novoju   robotoju   Ivan   buv   zadovolenyj**
       new.F.SG.INST work.F.SG.INST John.NOM   was   satisfied.M.SG.NOM
       "John was happy with HIS NEW JOB." or
       "As for the new job, John was HAPPY with it."

c) **Novoju** **Ivan** **buv** **zadovolenyj** **robotoju**
new.F.SG.INST John.NOM was satisfied.M.SG.NOM work.F.SG.INST
"John was happy with his NEW job."

PP complement of AP:

370.
a) **Ivan** **buv** **zakoxanyj** **v** **sučasnu** **literaturu**
John.NOM was loving.M.SG.NOM in modern.F.SG.ACC literature.F.SG.ACC
"John loved modern literature."

b) **V** **sučasnu** **literaturu** **Ivan** **buv** **zakoxanyj**
in modern.F.SG.ACC literature.F.SG.ACC John.NOM was loving.M.SG.NOM
"John loved MODERN LITERATURE."

c) **V sučasnu** **Ivan** **buv** **zakoxanyj** **literaturu**
in modern.F.SG.ACC John.NOM was loving.M.SG.NOM literature.F.SG.ACC
"John loved MODERN literature."

An AP predicate that takes either an NP or a PP complement does not block discontinuity

of its complement even though the projection of this AP contains the complement NP.

Consider the phrase marker in (372), which represents the structure of the sentence in

(371):

371. **Ivan** **novoju** **buv** **zadovolenyj** **robotoju**
John.NOM new.F.SG.INST was satisfied.M.SG.NOM work.F.SG.INST
"John was happy with his NEW job."

In (372), AP2 c-commands both AP1 and NP1, and the projection of AP1 contains NP1.

Nevertheless, AP2, base-generated at a distance from NP1, is able to agree with this NP

and form a discontinuous constituent with it. Agreement between AP2 and NP1 is not

blocked by AP1, given the Directionality Parameter. Only the projections of the head

whose categorial feature is valued as nominal block valuation of features of the external

probe. Since the categorial feature of the adjective is unvalued in the lexicon, AP1 does

not block discontinuity in (370).

372.

TP
NP2   TP
T   PredP
AP2   PredP
NP2   PredP
Pred   AP1
AP1   NP1

Ivan	novoju	buv	zadovolenyj	robotoju
John.NOM	new.F.SG.INST	was	satisfied.M.SG.NOM	work.F.SG.INST

"John was happy with his NEW job."
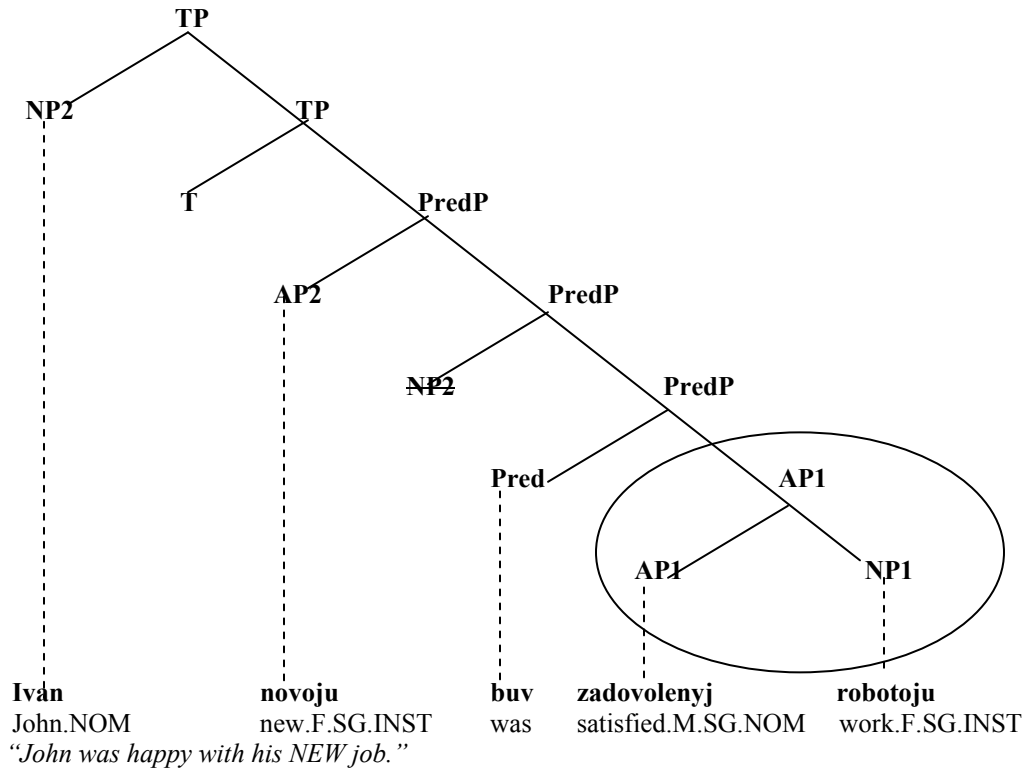
Note that the failure to block long-distance concord with its complement cannot be attributed to the predicative function of the adjective. Although an adjective used predicatively does not block discontinuity of its complement, a noun used predicatively does block discontinuity of its complements:

373.

  a) **Ivan   xlopec'   <u>vysokoho</u>   <u>rostu</u>**
      John.NOM   young-man.M.SG.NOM   tall.M.SG.GEN   height.M.SG.GEN
      "John is a young man of considerable height."

  b)* **<u>Vysokoho</u>   Ivan   xlopec'   <u>rostu</u>**
      tall.M.SG.GEN   John.NOM   young-man.M.SG.NOM   height.M.SG.GEN
      "John is a young man of CONSIDERABLE height."

374.

  a) **Ivan   zadovolenyj   <u>vysokym</u>   <u>rostom</u>**
      John.NOM   satisfied.M.SG.NOM   tall.M.SG.INST   height.M.SG.GEN
      "John is happy with his considerable height."

b) **Vysokym**   **Ivan**   **zadovolenyj**   **rostom**
tall.M.SG.INST John.NOM satisfied.M.SG.NOM height.M.SG.GEN
"John is happy with his CONSIDERABLE height."

(373b) is minimally different from (374b). The difference in the lexical category of the

embedding item, however, suffices to induce the contrast in grammaticality.

Adjectives permit long-distance concord with their complements not only when they act

as primary clausal predicates but also when they modify the noun. Consider the phrase

marker in (375), which represents the structure of the sentence in (376).

375.

"John met a student who was happy with the LAST test."
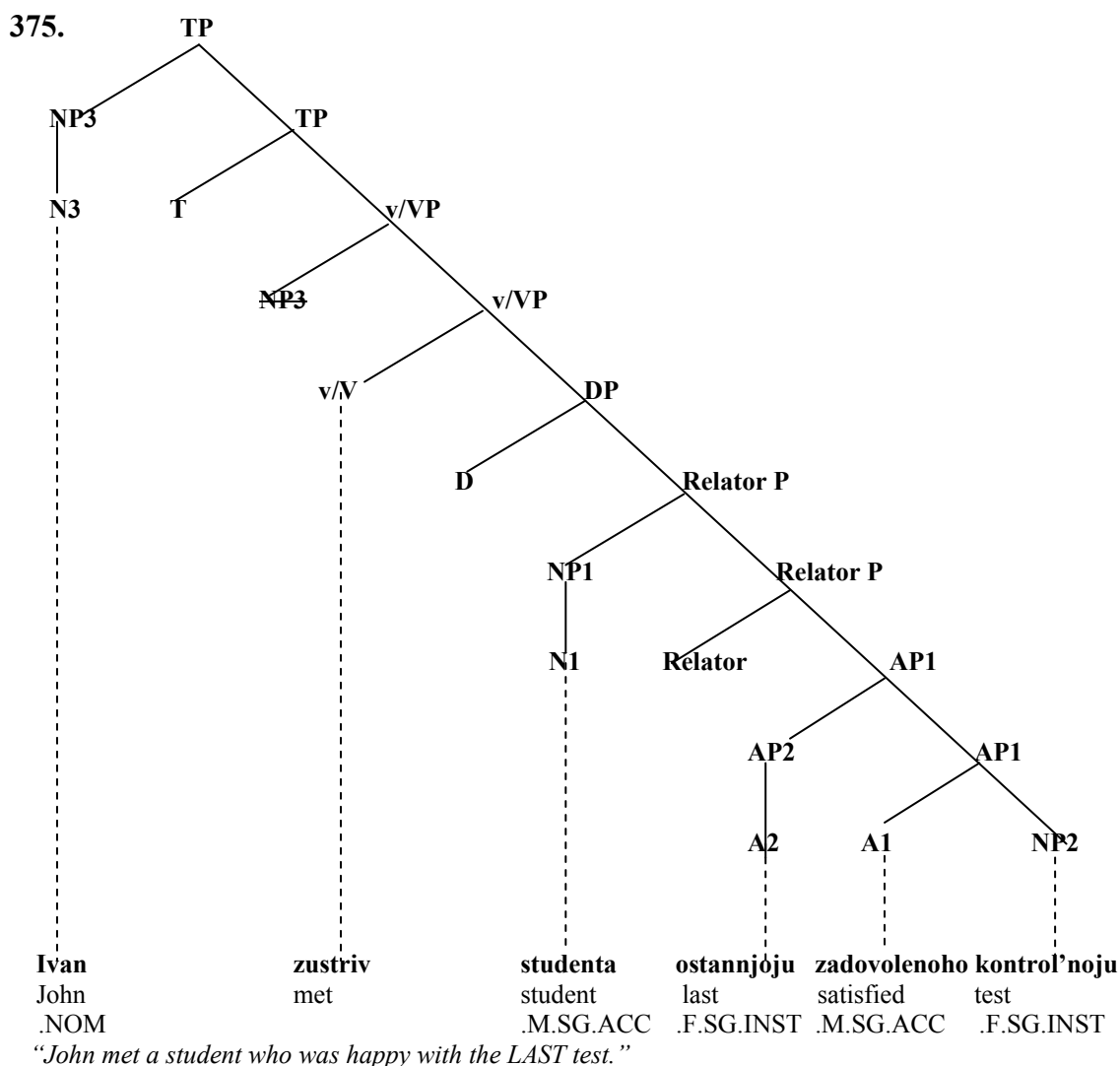
376. Ivan   zutriv studenta
John.NOM   met   student.M.SG.ACC
ostann'oju   zadovolenoho   kontrol'noju
last.F.SG.INST   satisfied.M.SG.ACC test.F.SG.INST
"John met a student who was happy with the LAST test."

In (375), AP1, the projection of the complement taking adjective, contains its

complement, NP2, and is c-commanded by AP2. Nevertheless, AP2 and NP2 can form a

discontinuous constituent across AP1. I take the derivation to be cyclic, the categorial

feature of AP1 is unvalued at the time the long-distance agreement between AP2 and

NP2 takes place. Agreement, therefore, goes through, given the Directionality Parameter.

It is significant that when the non-local modifier is generated higher in the tree, adjoined

either to NP1 or vP/TP, agreement with NP2 is no longer available:

377.
  a) * **Ivan   zutriv ostann'oju** *studenta*   **zadovolenoho kontrol'noju**
      John.NOM met   last.INST   student.ACC satisfied.ACC test.INST

  b) * **Ivan   ostann'oju zutriv** *studenta*   **zadovolenoho kontrol'noju**
      John.NOM   last.INST   met   student.ACC satisfied.ACC test.INST

  c) * **Ostann'oju Ivan   zutriv** *studenta*   **zadovolenoho kontrol'noju**
      last.INST   John.NOM met   student.ACC satisfied.ACC test.INST
      (*"John met the student who was happy with the LAST test."*)

In (377a-c), the projection of the direct object contains both the modifier and the

complement of this modifier. Consider the phrase marker in (378), which represents the

structure of the sentence in (377b). In (378), AP2 is generated as an adjunct in the verbal

domain above the direct object NP1. It attempts to establish a long-distance concord with

NP2. NP2, however, is contained within the nominal extended projection which it does

not head. According to the LCOA, the agreement between AP2 and NP2 is blocked by

the DP:

378.

```
TP
├── NP2
│    └── N3 ┈┈┈ Ivan
│                John
│                .NOM
└── TP
     ├── T ┈┈┈ ostannjoju
     │          last
     │          .F.SG.INST
     └── vP
          ├── AP2
          └── vP
               ├── NP3
               └── v/VP
                    ├── v/V ┈┈┈ zustriv
                    │            met
                    │            .3.SG
                    └── DP
                         ├── D
                         └── Relator P
                              ├── NP1 ┈┈┈ studenta
                              │            student
                              │            .M.SG.ACC
                              └── Relator P
                                   ├── Relator
                                   └── AP1
                                        ├── A1 ┈┈┈ zadovolenoho
                                        │           satisfied
                                        │           .M.SG.ACC
                                        └── NP2 ┈┈┈ kontrol'noju
                                                     test
                                                     .F.SG.INST
```

(*"John met the student who was happy with the LAST test."*)
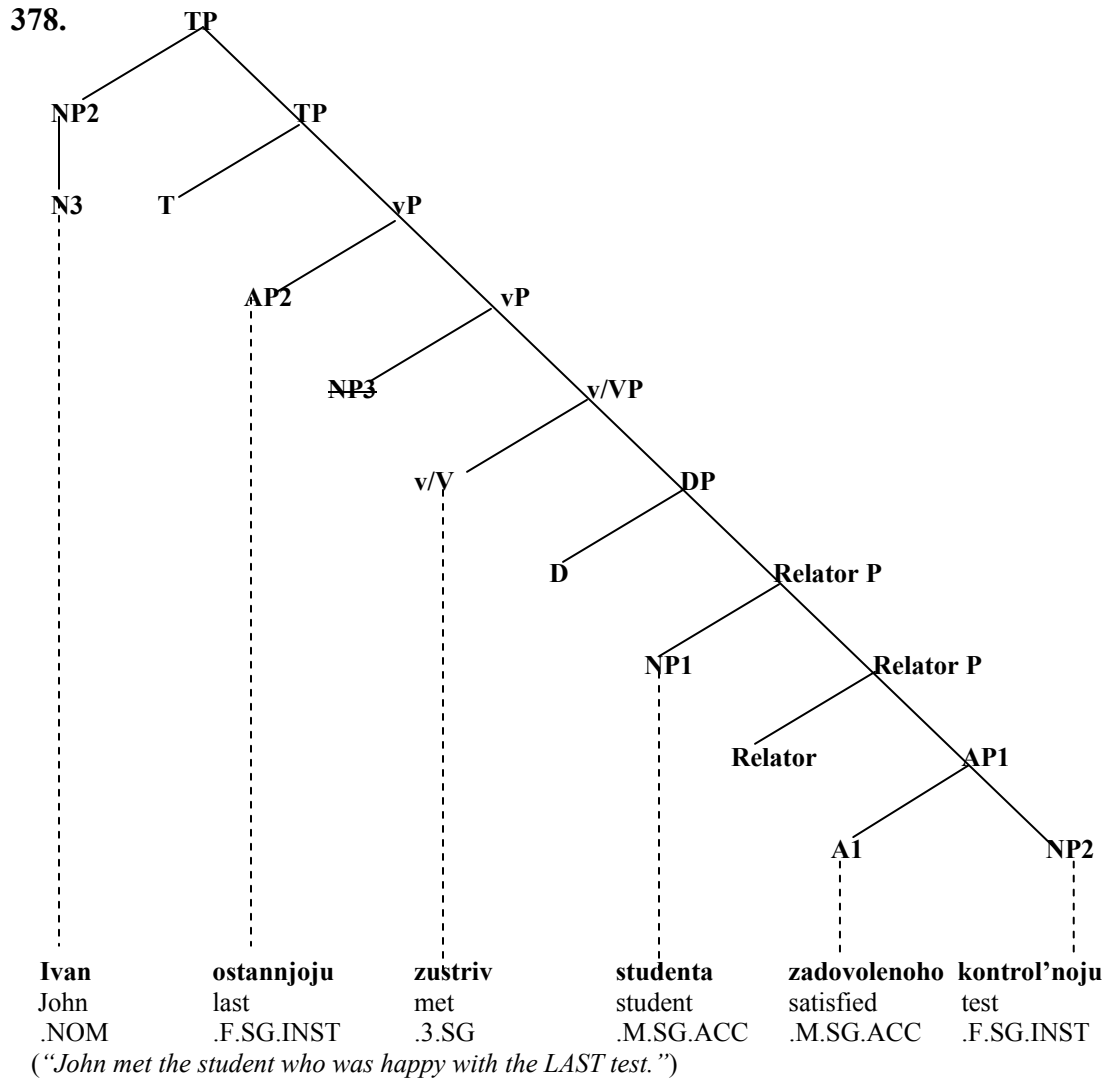
Recall, however, that although the categorial feature of the adjective is left unvalued in the lexicon, this feature is valued in narrow syntax as the result of agreement between the adjective and the noun. It is interesting to examine whether the valuation of the categorial feature of the adjective impacts its ability to block concord. After all, when the adjective enters into agreement with the noun, its categorial feature is valued as nominal. The valuation of the categorial feature of the adjective is predicted to affect agreement, given that the Directionality Parameter is formulated in terms of categorial feature value.

Consider, in this respect, an example in which a heavy modifier is generated at a distance from the noun it modifies:

379.

   a) **Ivan**   **zutriv**
       John.NOM   met
       studenta   **zadovolenoho**   **ostannjoju**   **kontrol'noju**
       student.M.SG.ACC   satisfied.M.SG.ACC last.F.SG.INST   test.F.SG.INST
       "John met a student happy with the last test."

   b) **Ivan**   **zadovolenoho**   **ostannjoju**   **kontrol'noju**
       John.NOM   satisfied.M.SG.ACC last.F.SG.INST   test.F.SG.INST
       zustriv   **studenta**
       met   student.M.SG.ACC
       "John met a student HAPPY WITH THE LAST TEST."

According to the theory of discontinuity proposed here, the heavy modifier in (379b) is generated in the position in which it is spelled out, as an adjunct to vP, rather than inside the noun phrase it modifies. Consider the phrase marker in (380), which represents the structure of the sentence in (379b):

380.

"John met a student HAPPY WITH THE LAST TEST."
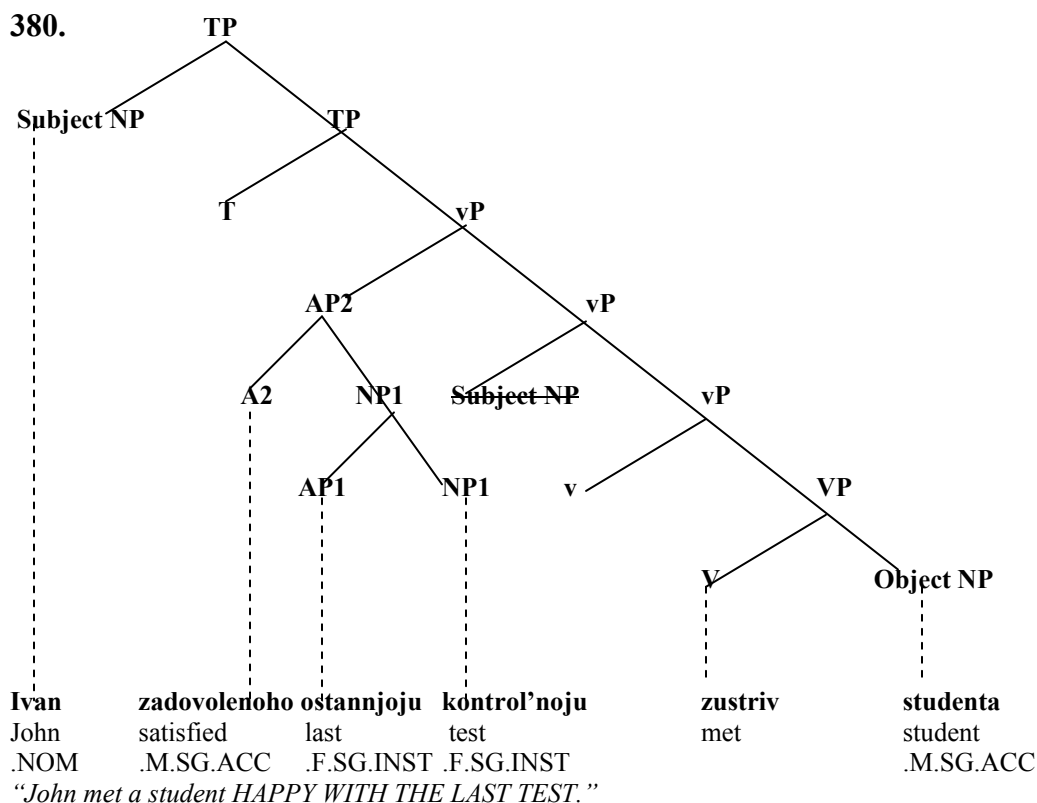
Given the principle of free adjunction on which long-distance modification is based, AP1 could also adjoin higher in the clause, to TP, and try to establish a long-distance agreement relation with its goal NP1. Sentences of this type, however, are ungrammatical in Ukrainian:

381. * **Ostannjoju**   **Ivan**   **zadovolenoho**   **kontrol'noju**
      last.F.SG.INST   John.NOM   satisfied.M.SG.ACC   test.F.SG.INST
      zustriv   **studenta**
      met   student.M.SG.ACC
      (*"John met a student happy with the LAST test."*)

Consider the phrase marker in (382), which represents the structure of the sentence in (381):

382.

(*"John met a student happy with the LAST test."*)
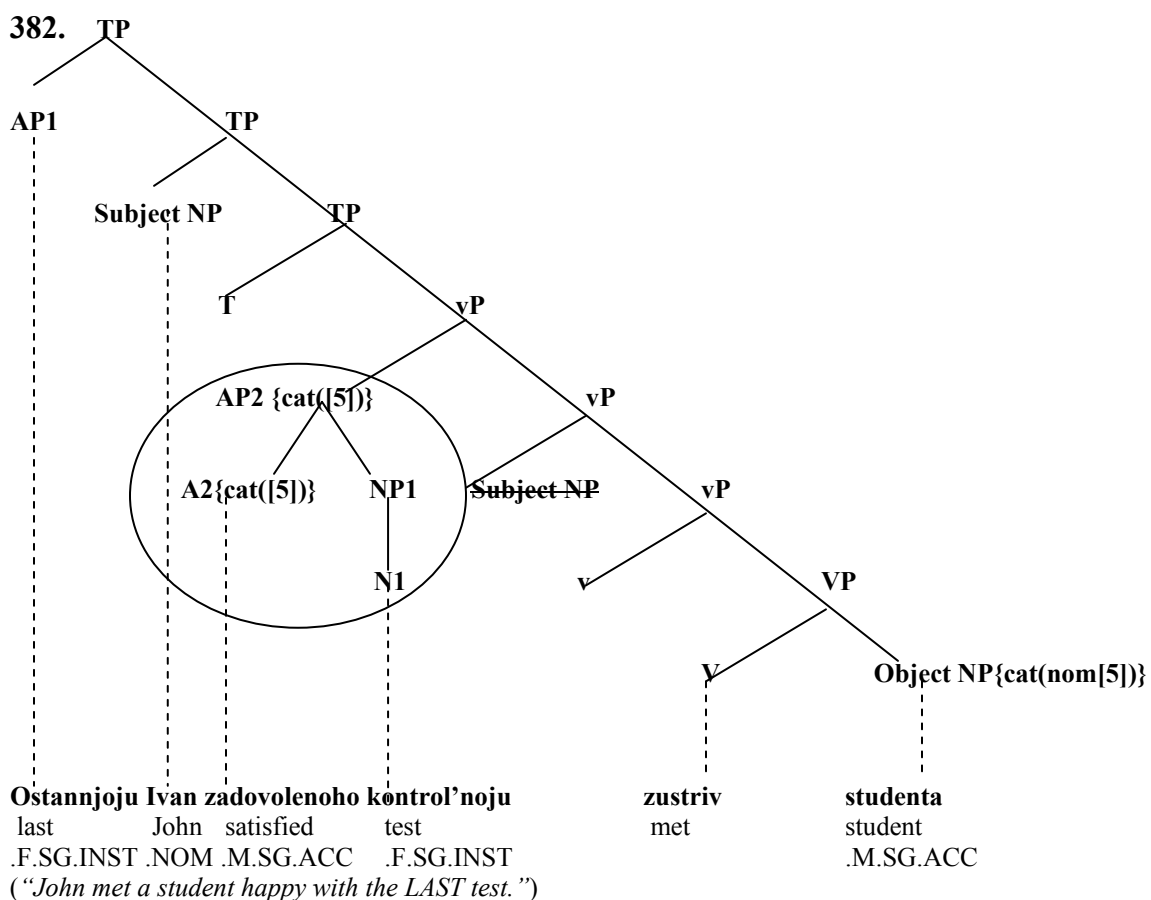
In (382), NP1 is contained in TP, vP, and AP2. We know, however, that neither TP nor vP can block long-distance concord with the noun phrase they contain. AP is not able to

block long-distance concord with its complement either when its categorial feature is unvalued. In (382), however, the embedding AP2 enters into agreement with the object noun phrase before AP1 is merged. At the time when long-distance concord between AP1 and NP1 is attempted, AP2 is valued for its categorial feature through agreement with the object NP. Such valuation makes AP2 a barrier for agreement according to the Directionality Parameter, and agreement across AP2 boundary is blocked. Note that the sentence in (381) is predicted to be grammatical given the Distributed Deletion approach to discontinuity given the data in (379b).

Since valuation of the categorial feature of the adjective affects agreement across the AP boundary, we should revisit the cases where the adjective is used predicatively. Adjectives used predicatively agree in φ-features with the subject. Such agreement does not, however, affect long-distance concord across the predicative adjective even when the long-distance modifier is generated as an adjunct to TP:

383. <u>**Novoju**</u>   **Ivan**   **buv**   **zadovolenyj**   <u>**robotoju**</u>
new.F.SG.INST   John.NOM   was   satisfied.M.SG.NOM   work.F.SG.INST
"John was happy with his NEW job."

Note, however, that the relation between the modifier used attributively and the noun it modifies differs from the relation between the modifier used predicatively and the noun it is predicated of, even though in both instances the adjective and the noun share φ-features. As was shown in this dissertation, the modifier used attributively is associated with the extended projection of the noun it modifies and such association affects the linearization of nominal functional categories in relation to the adjectival modifier. This is, however, not the case when the adjective is used predicatively. Data from Modern

Greek demonstrates that the subject and the adjective used predicatively do not form a single constituent.

Recall that in inverse discontinuous DPs in Modern Greek, Determiner Spreading is obligatory (see chapter 4 for details):

384.
a)* <u>To</u>   **diamerisma**   **agorase**   **megalo**
the.N.SG.ACC   apartment.N.SG.ACC bought.3.SG   big.N.SG.ACC

b) <u>To</u>   **diamerisma**   **agorase**   <u>to</u>   **megalo**
the.N.SG.ACC apartment.N.SG.ACC bought.3.SG the.N.SG.ACC big.N.SG.ACC
"He bought the big APARTMENT."

In (384), the modifier enters into agreement with the entire DP rather than the NP, and the agreement with the DP causes Determiner Spreading. In predicative environments, however, the adjectival predicate which agrees with the subject DP in φ-features, does not show Determiner Spreading:

385. <u>To</u>   **diamerisma**   **ine**   **megalo**
the.N.SG.ACC   apartment.N.SG.ACC is.3.SG   big.N.SG.ACC
"The apartment is big."

Recall also that whenever the modifier and the noun form a single abstract constituent, the determiner has to precede the modifier when the modifier appears before the noun:

386.
a)* <u>Megalo</u>   **agorase**   <u>to</u>   **diamerisma**
large.N.SG.ACC   bought.3.SG the.N.SG.ACC   apartment.N.SG.ACC
(*"He bought the BIG apartment."*)

b) <u>To</u>   **megalo**   **agorase**   **diamerisma**
the.N.SG.ACC large.N.SG.ACC bought.3.SG   apartment.N.SG.ACC
"He bought the BIG apartment."

This is not the case when the adjective used predicatively is fronted:

387. **<u>Megalo</u>** **ine** **<u>to</u>** **<u>diamerisma</u>**
large.N.SG.ACC is the.N.SG.ACC apartment.N.SG.ACC
"The apartment is BIG."

The adjectival predicate can be focused without the determiner being linearized before

the fronted modifier. The data in (387), therefore, demonstrate that the subject and the

predicate AP do not form a single constituent and do not share a categorial feature even

though they have the same φ-feature values. Baker (2003) argues that modifiers used

predicatively enter into agreement with the subject of the clause by probing up rather than

down the tree. It is possible that such agreement is more restricted and is limited only to

basic φ-features. Alternatively, we can assume that the item in the predicative position in

(385) is not an AP but an NP headed by a null noun. The adjective forms a constituent

with the null noun and the φ-feature concord with the subject is the result of anaphora

rather than agreement. Anaphora can be blamed for the lack of the concord in

definiteness and the lack of the unification of the categorial features of the items

involved. Finally, we can attribute the fact that the adjective used predicatively and the

subject do not form a single constituent to the lack of a direct agreement relation between

them.

Consider this latter option in more detail. The adjective used predicatively does not enter

directly into agreement with the subject of the clause; rather, the φ-features of the

adjective used predicatively are unified with the φ-features of the Pred head, which takes

this AP as a complement. The agreement relation between the AP and the Pred head is

established prior to the agreement between the Pred head and the noun. This can explain

the absence of definiteness spread to the adjective used predicatively when the subject of

the clause is definite. Recall that spreading of definiteness results from the valuation of the referential feature. Verbal categories have an expanded arsenal of φ-features and express person value alongside number and gender. If person is a value assigned to the referential feature on verbs, unification of the φ-features of the AP and Pred can trigger valuation of the referential feature on the adjective with the person value of the Pred. Even though the person morphology cannot be realized on the adjective in Modern Greek, the adjective is no longer able to agree in definiteness with the subject of the clause. Agreement between the Pred head and the adjective used predicatively can also explain why the nominal functional categories of the subject are not linearized before the adjectival predicate when it is fronted. Since adjective agrees with the Pred head, its categorial feature cannot be unified with the categorial feature of the subject since such unification can take place only under agreement. However, the categorial feature of the adjectival predicate does not appear to be unified with the Pred head either. Recall that, in Modern Greek, future tense marker cliticizes onto the highest verbal form in the clause:

388.

 a) **Aftos** <u>**tha**</u> **pinai**
   He.NOM will hungers
   "He will be hungry."

 b) **Aftos** <u>**tha**</u> **exi** **pinasi**
   He.NOM will has hungered
   "He will get hungry (by then)."

 c) * **Aftos** **exi** <u>**tha**</u> **pinasi**
   He.NOM has will hungered

When the predicative adjective is fronted, the future tense particle cannot be linearized preceding the modifier:

389.

a) <u>**Megalo**</u>   **tha**   **ine**   <u>**afto**</u> <u>**to**</u>   <u>**diamerisma**</u>
large.N.SG.ACC   FUT be.3.SG   this the.N.SG.ACC apartment.N.SG.ACC
"This apartment will be BIG."

b) *** Tha** <u>**megalo**</u>   **ine**   <u>**afto**</u> <u>**to**</u>   <u>**diamerisma**</u>
FUT large.N.SG.ACC   be.3.SG   this the.N.SG.ACC apartment.N.SG.ACC

This indicates that the modifier does not form a single verbal constituent with the Pred head either and retains its categorial distinctiveness. Baker (2003), however, argues that adjectives are indeed capable of forming a single syntactic item with the Pred head. When this happens, they are lexicalized together with a Pred head as a verb. Consider now a possibility that the unification of φ-features of the adjective and the Pred head can either be accompanied by the unification of the categorial feature or not. When the categorial features of the adjective and the Pred head are unified, the two are lexicalized as a verbal form. Alternatively, the categorial feature of the adjective can be saturated in some way without being unified with the Pred head. The adjective thus retains its categorial uniqueness without being assimilated either into the verbal or into the nominal extended projection. I will leave this issue open for further investigation.

7.5 Constituent Discontinuity and Clausal Boundaries

Discontinuity in Ukrainian is blocked not only across a noun phrase boundary but also across a clausal boundary. A modifier adjoined in the main clause cannot modify the argument of the verb in the declarative subordinate clause:

390.

a) **Mykola**   **znaje**
Michael.NOM knows
ščo   **Ivan**   **kupyv** <u>**červonu**</u>   **mašynu**
that   John.NOM bought red.F.SG.ACC   car.F.SG.ACC
"Michael knows that John bought a red car."

b) * <u>**Červonu**</u>　　　　**Mykola**　　　**znaje**
red.F.SG.ACC　　Michael.NOM　knows
ščo　**Ivan**　　　**kupyv**　<u>**mašynu**</u>
that　John.NOM　　bought　car.F.SG.ACC

c) * **Mykola**　　<u>**červonu**</u>　　　**znaje**
Michael.NOM　red.F.SG.ACC　knows
ščo　**Ivan**　　　**kupyv**　<u>**mašynu**</u>
that　John.NOM　　bought　car.F.SG.ACC

d) * **Mykola**　　　**znaje**　<u>**červonu**</u>
Michael.NOM　knows　red.F.SG.ACC
ščo　**Ivan**　　　**kupyv**　<u>**mašynu**</u>
that　John.NOM　　bought　car.F.SG.ACC
(*"Michael knows that John bought a RED car."* or
　"As for a/the RED car, Michael knows that John bought one/it.")

Extraction from finite declarative clauses is also prohibited in Ukrainian:

391. * <u>**Červonu**</u>　　　<u>**mašynu**</u>　　　　**Mykola**　　　**znaje**
red.F.SG.ACC　　car.F.SG.ACC　Michael.NOM　knows
ščo　**Ivan**　　　**kupyv**
that　John.NOM　bought
(*"Michael knows that John bought A RED CAR."* or
　"As for a/the red car, Michael knows that John bought one/it.")

Ukrainian also lacks long-distance wh-movement from declarative subordinate clauses:

392. * <u>**Ščo**</u>　　　　**Mykola**　　　**znaje ščo**　**Ivan**　　　**kupyv?**
What.ACC　Michael.NOM　knows that　John.NOM bought

However, when it comes to clausal boundaries, locality restrictions on movement and locality restrictions on agreement in Ukrainian are not always the same. While long-distance concord is impossible across the subordinate interrogative clausal boundary, extraction from the subordinate interrogative clause is sometimes permitted:

393.
a) **Mykola**　　　**ne**　　**znaje jaka**　　　　　**divčyna**
Michael.NOM　not　　knows　which.F.SG.NOM　young-woman.F.SG.NOM
kupyla <u>**červonu**</u>　　　**mašynu**
bought　red.F.SG.ACC　car.F.SG.ACC
"Michael does not know which young woman bought a/the red car."

b) <u>**Červonu**</u>   **mašynu**   **Mykola**   **ne**   **znaje**
red.F.SG.ACC   car. F.SG.ACC   Michael.NOM   not   knows
jaka   **divčyna**   **kupyla**
which.F.SG.NOM   girl.F.SG.NOM   bought
"As for the red car, Michael does not know which young woman bought it."

(393b) shows that when the subject of the subordinate clause is interrogative, the direct

object can be extracted to the matrix clause. The direct object, however cannot be made

discontinuous across the clausal boundary:

394.
   a) * <u>**Červonu**</u>   **Mykola**   **ne**   **znaje**
red.F.SG.ACC   Michael.NOM   not   knows
jaka   **divčyna**   **kupyla**   <u>**mašynu**</u>
which.F.SG.NOM   young-woman.F.SG.NOM   bought   car.F.SG.ACC

   b) * **Mykola**   <u>**červonu**</u>   **ne**   **znaje**
Michael.NOM   red.F.SG.ACC   not   knows
jaka   **divčyna**   **kupyla**   <u>**mašynu**</u>
which.F.SG.NOM   young-woman.F.SG.NOM   bought   car.F.SG.ACC

   c) * **Mykola**   **ne**   **znaje**   <u>**červonu**</u>
Michael.NOM   not   knows   red.F.SG.ACC
jaka   **divčyna**   **kupyla**   <u>**mašynu**</u>
which.F.SG.NOM   young-woman.F.SG.NOM   bought   car.F.SG.ACC
(*"As for a/the RED car, Michael does not know which young woman
   bought one/it."*)

Even though linear discontinuity is not available, inverse discontinuity is much improved.

This is precisely what our theory of discontinuous constituents predicts since inverse

discontinuity does not involve long-distance concord and is generated through

movement:

395. ? <u>**Mašynu**</u>   **Mykola**   **ne**   **znaje**
car.F.SG.ACC   Michael.NOM   not   knows
jaka   **divčyna**   **kupyla**   <u>**červonu,**</u>
which.F.SG.NOM   young-woman.F.SG.NOM   bought   red.F.SG.ACC
a   **jaka**   <u>**bilu**</u>
and   which.F.SG.NOM   white.F.SG.ACC
*"As for the car, Michael does not know which young woman bought the RED one
and which one bought the WHITE one."*

A pair-list parallel structure in (395) helps to license two foci in the subordinate clause—
a wh-word and a modifier that is part of the inverse discontinuous constituent (see
footnote 14). The deterioration in acceptability is the result of a rather complex
pragmatic structure of the utterance. However, it is an improvement over the linear
discontinuous constituent in (394c), even though the latter has a simpler pragmatic
structure. Note that while in inverse discontinuous constituents, a modifier is commonly
assigned narrow focus while the noun is topicalized, the noun in linear discontinuous
constituents is usually de-accented. The pair-list parallel structure is also possible with
inverse discontinuous constituents, as (396b) shows. The use of this intonation pattern,
however, does not make linear discontinuity across a clausal boundary acceptable:

396.

a) * **Červonu**   **Mykola**   **ne**   **znaje**
red.F.SG.ACC   Michael.NOM   not   knows
jaka   **divčyna**   **kupyla**   **spidnycju,**
which.F.SG.NOM   young-woman.F.SG.NOM   bought   skirt.F.SG.ACC
a   **jaka**   **sukonku**
and   which.F.SG.NOM   dress.F.SG.ACC
(*As for a/the RED outfit, Michael does not know which young woman bought a/the SKIRT and which one bought a/the DRESS."*)

b) **Červonu**   **Natalka**   **kupyla**   **spidnycju,**
red.F.SG.ACC   Natalia.NOM   bought   skirt.F.SG.ACC
a   **Marička**   **sukonku**
and   Mary.NOM   dress.F.SG.ACC
"As for a RED outfit, Natalia bought a SKIRT and Mary bought a DRESS."

The difference in acceptability of linear and inverse discontinuous constituents that cross
clausal boundaries can therefore be attributed to the different syntactic mechanisms that
generate these two types of discontinuity.

Extraction is also possible from a subordinate yes/no interrogative clause (397b) while

discontinuity remains blocked (398):

397.

a) **Mykola**   **ne**   **znaje**
Michael.NOM   not   knows
čy   **Marička**   **kupyla**   <u>**červonu**</u>   <u>**mašynu**</u>
whether   Mary.NOM   bought   red.F.SG.ACC   car.F.SG.ACC
"Michael does not know whether Mary bought a/the red car."

b) <u>**Červonu**</u>   <u>**mašynu**</u>   **Mykola**   **ne**   **znaje**
red.F.SG.ACC   car.F.SG.ACC   Michael.NOM   not   knows
čy   **Marička**   **kupyla**
whether   Mary.NOM   bought
"As for the red car, Michael does not know whether Mary bought it."

398.

a) * <u>**Červonu**</u>   **Mykola**   **ne**   **znaje**
red.F.SG.ACC   Michael.NOM   not   knows
čy   **Marička**   **kupyla**   <u>**mašynu**</u>
whether   Mary.NOM   bought   car.F.SG.ACC

b)* **Mykola**   <u>**červonu**</u>   **ne**   **znaje**
Michael.NOM   red.F.SG.ACC   not   knows
čy   **Marička**   **kupyla**   <u>**mašynu**</u>
whether   Mary.NOM   bought   car.F.SG.ACC

c)* **Mykola**   **ne** **znaje**   <u>**červonu**</u>
Michael.NOM   not   knows   red.F.SG.ACC
čy   **Marička**   **kupyla**   <u>**mašynu**</u>
whether   Mary.NOM   bought   car.F.SG.ACC
(*"As for a/the RED car, Michael does not know whether Mary bought one/it."*)

Again, an inverse discontinuous constituent is acceptable in the same syntactic

environment in which a linear discontinuous constituent is marked:

399.

a)* <u>**Červonyj**</u>   **Mykola**   **ne**   **znaje**
red.M.SG.ACC   Michael.NOM   not   knows
čy   **Marička**   **kupyla** <u>**velosyped**</u>   **čy**   <u>**motocykl**</u>
whether   Mary.NOM bought   bike.M.SG.ACC   or   motor-bike.M.SG.ACC
(*"As for a/the RED vehicle Mary bought, Michael does not know whether she*
bought a/the BIKE or a/the MOTOR BIKE."

b) <u>**Mašynu**</u>   **Mykola**   **ne**   **znaje**
car.F.SG.ACC   Michael.NOM   not   knows
čy   **Marička**   **kupyla**   <u>**červonu**</u>   **čy**   <u>**bilu.**</u>
whether   Mary.NOM   bought   red.F.SG.ACC   or   white.F.SG.ACC
"As for the car Mary bought, Michael does not know whether she bought a RED one or a WHITE one."

It is true that extraction from the subordinate interrogative clause is not always possible:

400.
a)   **Mykola**   **sumnivajet'sja jaka**   **z**   **divčat**
Michael.NOM   hesitates   which.F.SG.NOM   from   young-women.PL.GEN
kupyla <u>**červonu**</u>   **mašynu**
bought   red.F.SG.ACC   car. F.SG.ACC
"Michael hesitates which young woman bought a/the red car."

b)* <u>**Červonu**</u>   **mašynu**   **Mykola**   **sumnivajet'sja**
red.F.SG.ACC   car.F.SG.ACC   Michael.NOM   hesitates
jaka   **z**   **divčat**   **kupyla**
which.F.SG.NOM   from   young-women.PL.GEN   bought
(*"As for the red car, Michael hesitates which young woman bought it."*)

Acceptability of extraction from various clauses can also vary from speaker to speaker.

Nevertheless, the data presented above confirm that the locality restrictions on agreement

and the locality restrictions on movement in Ukrainian are not the same. It also serves as

a supporting evidence for the theory of discontinuity proposed here, which derives linear

discontinuous constituents and inverse discontinuous constituents using different

syntactic mechanisms.

The ban on extraction from finite subordinate clauses in Ukrainian can be attributed to

Phase Impenetrability Condition (see Chomsky (2000, 2001)). According to PIC, an item

raised to the edge of the phase can potentially be extracted from the phase. The highest

head of the phase projects a specifier when it carries an EPP feature. The availability of

extraction from subordinate clauses can, therefore, be implemented by parametrizing the

EPP feature assignment to C. Whenever a complementizer in Ukrainian lacks an EPP

feature, it cannot provide an escape route for a noun phrase to leave the complementizer

headed clause. However, since the locality restrictions on agreement and the locality

restrictions on movement are not the same in Ukrainian, the PIC cannot be held

responsible for blocking noun phrase discontinuity across the clausal boundary.

Bošković (2007b) argues that, in languages where agreement into finite clauses is

impossible, long-distance agreement is blocked not by the PIC but by the features of the

complementizer. A complementizer blocks long distance-agreement with an embedded

argument when it is endowed with φ-features and thus constitutes a legitimate goal for

agreement. Since C is a closer goal for agreement from outside of the subordinate clause

than any of the embedded arguments, a matrix T or v is prevented from agreeing with the

NP inside the complementizer headed clause. In other words, Bošković (2007b)

attributes the failure of long-distance agreement across the clausal boundary to standard

intervention effects.

Indeed, Ukrainian does not allow verbal agreement to cross clausal boundaries. The verb

of the main clause cannot agree with the subject of the subordinate clause even when the

overt subject in the main clause is missing:

401.
  a) **Zdavalosja**   **ščo**   **divčata**   **spivajut'**
     Seem.PST.N.SG   that   girl.F.PL.NOM   sing.PRS.PL
     "It seemed that the girls were singing."

  b)* **Zdavalysja**   **ščo**   **divčata**   **spivajut'**
     Seem.PST.PL   that   girl.F.PL.NOM   sing.PRS.PL

However, since long-distance concord is not subject to standard intervention effects in Ukrainian (see section 7.2), intervention effects cannot be held responsible for the failure of noun phrase discontinuity across the clausal boundary. Although the ban on discontinuity across the clausal boundary cannot be attributed to standard intervention effects, the complementizer can still potentially be held responsible for blocking agreement into the clause it heads. Note that a complementizer is not only a closer goal to the probe located outside of the clause but also the head of the projection that contains the intended goal of agreement. The phrase marker in (403) represents a compressed structure of the sentence in (402):

402. * **Červonu** **Mykola** znaje ščo Ivan **kupyv** **mašynu**
red.F.SG.ACC Michael.NOM knows that John.NOM bought car.F.SG.ACC
(*"As for the RED car, Michael knows that John bought it."*)

403.

Červonu **Mykola** **znaje** ščo **Ivan** **kupyv** **mašynu**
red.F.SG.ACC Michael.NOM knows that John.NOM bought car.F.SG.ACC
(*"As for the RED car, Michael knows that John bought it."*)
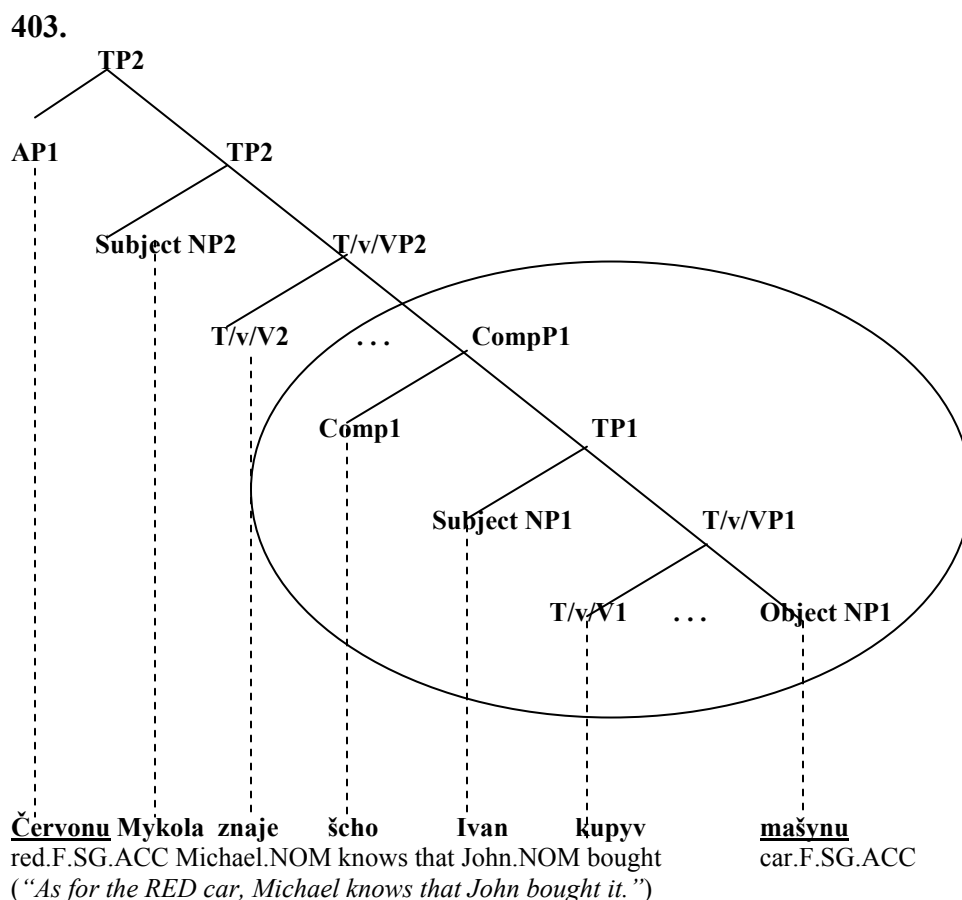
According to the Locality Constraint on Agreement, the complementizer in (403) can be

held responsible for blocking long-distance concord if it is a nominal category.

Bošković (2007b) attributes agreement blocking power of complementizers to their φ-

feature content. Baker (2003), however, argues that complementizers are not standard

carriers of φ-features. The lack of φ-features on complementizers is responsible for lack

of subject-predicate agreement when the complementizer-headed clauses appear in the

subject position. Ability to occupy an argument position is taken by Baker (2003) as a

testimony not of the φ-feature content of complementizers but of their having a

referential index. Baker (2003) suggests that complementizers, like nouns, carry a

referential index and are, therefore, akin to other nominal categories. Indeed, it is

reasonable to assume that the declarative complementizer in Ukrainian is a nominal item;

after all, it is etymologically related to the interrogative pronoun "what":

404.
  a) **Ivan   znaje   ščo?**
     John.NOM   knows   what.N.SG.ACC?
     "What does John know?"

  b) **Ivan   znaje   ščo   Mykola   spyt'**
     John.NOM   knows   that   Michael.NOM   sleeps
     "John knows that Michael is sleeping."

While arguing that complementizers are heads of a verbal extended projection, Grimshaw

(2005) admits the possibility that complementizers are items that are ambiguous between

a nominal and a verbal functional status (see section 1.4.6 in Grimshaw (2005)). If

complementizers in Ukrainian are, indeed, both nominal and verbal items, the

ungrammaticality of (402) can be attributed to the LCOA. Being a nominal item, the

complementizer blocks long-distance concord with an argument that its projection

contains. The same constraint is, thus, responsible for ruling out long-distance concord

across the nominal and across the clausal boundary.

Note that if agreement blocking is due to intervention effects and the complementizer

blocks long-distance concord due to its φ-feature content, as is argued by Bošković

(2007b), long-distance concord that involves features other than φ-features should be

available across the intervening complementizer. This is not the case. Compare long-

distance concord involved in adjectival modification and in adverbial modification:

405.

  a) **Mykola   znaje**
     Michael.NOM knows
     ščo   Ivan   kupyv   <u>duže   velyku   mašynu</u>
     that   John.NOM bought   very   big.F.SG.ACC car.F.SG.ACC
     "Michael knows that John bought a very big car."

  b) * **Mykola   znaje**
     Michael.NOM knows
     <u>**duže   velyku   ščo   Ivan   kupyv   mašynu**</u>
     very   big.F.SG.ACC that   John.NOM   bought   car.F.SG.ACC
     (*"Michael knows that John bought a VERY BIG car."*)

  c) * **Mykola   znaje**
     Michael.NOM knows
     <u>**duže   ščo   Ivan   velyku   kupyv   mašynu**</u>
     very   that   John.NOM big.F.SG.ACC bought   car.F.SG.ACC
     (*"Michael knows that John bought a VERY big car."* or
     "Michael knows that John bought a VERY BIG car.")

In (405b), the complementizer blocks discontinuity between the adjectival modifier and

the noun. In (405c), the complementizer also blocks discontinuity between the degree

modifier and the adjective (see chapter 5 for a detailed discussion of degree

modification). Note that this is precisely what is predicted by the LCOA given that the

complementizer in (405) is a nominal category.

Given the LCOA, the availability of long-distance concord and noun phrase discontinuity across the clausal boundary should correlate with the presence or absence of a complementizer layer in a syntactic structure as well as with its categorial status. Indeed, the data above demonstrate that whenever a complementizer is present in the clausal structure in Ukrainian and the projection of the complementizer contains the goal of the long-distance agreement, noun phrase discontinuity is not available. Since extraction is not permitted from the declarative subordinate clauses and some interrogative subordinate clauses, the arguments of the verbs that head these subordinate clauses cannot move to a position outside of the clause where they are no longer contained by the projection of the complementizer and hence cannot serve as a goal for further long-distance agreement. Therefore, the arguments of the verbs of the subordinate clauses of this type cannot be made discontinuous inside the main clause:

406.

a)* <u>**Červonu**</u>   <u>**mašynu**</u>   **Mykola**   **znaje ščo**   **Ivan**   **kupyv**
red.F.SG.ACC car.F.SG.ACC Michael.NOM knows that   John.NOM bought
(*"As for the red car, Michael knows that John bought it."*)

b)* <u>**Červonu**</u>   **Mykola**   <u>**mašynu**</u>   **znaje ščo**   **Ivan**   **kupyv**
red.F.SG.ACC Michael.NOM car.F.SG.ACC knows that   John.NOM bought
(*"As for a/the RED car, Michael knows that John bought one/it."*)

407.

a)* <u>**Červonu**</u>   <u>**mašynu**</u>   **Mykola**   **sumnivajet'sja**
red.F.SG.ACC car.F.SG.ACC Michael.NOM hesitates
jaka   **z**   **divčat**   **kupyla**
which.F.SG.NOM from young-women.PL.GEN   bought
(*"As for a/the red car, Michael hesitates which young woman bought one/it."*)

b)* <u>**Červonu**</u>   **Mykola**   <u>**mašynu**</u>   **sumnivajet'sja**
red.F.SG.ACC Michael.NOM car.F.SG.ACC   hesitates
jaka   **z**   **divčat**   **kupyla**
which.F.SG.NOM from young-women.PL.GEN   bought
(*"As for a/the RED car, Michael hesitates which young woman bought one/it."*)

However, when a particular complementizer does allow an argument to move out of the subordinate clause, this argument, once extracted, is no longer contained by the CP and should be accessible for long-distance concord. This is, indeed, the case:

408.

a) **Červonu   mašynu   Mykola   znaje**
red.F.SG.ACC   car.F.SG.ACC Michael.NOM knows
jaka   divčyna   kupyla
which.F.SG.NOM   girl.F.SG.NOM   bought
"As for the red car, Michael knows which young woman bought it."

b) **Červonu   Mykola   mašynu   znaje**
red.F.SG.ACC   Michael.NOM car.F.SG.ACC   knows
jaka   divčyna   kupyla
which.F.SG.NOM   girl.F.SG.NOM   bought
"As for the RED car, Michael knows which young woman bought it."

409.

a) **Červonu   mašynu   Mykola   ne   znaje**
red.F.SG.ACC   car.F.SG.ACC   Michael.NOM   not   knows
čy   Marička   kupyla
whether   Mary.NOM   bought
"As for the red car, Michael does not know whether Mary bought it."

b) **Červonu   Mykola   mašynu   ne   znaje**
red.F.SG.ACC   Michael.NOM   car.F.SG.ACC   not   knows
čy   Marička   kupyla
whether   Mary.NOM   bought
"As for the RED car, Michael does not know whether Mary bought it."

The discontinuity of an argument of the subordinate clause is possible in the matrix clause only when the extraction of this argument from the clause is possible. There is, therefore, a clear cut correlation between the availability of a noun phrase discontinuity and the position of the goal in relation to the complementizer.

Discontinuity is also sensitive to the presence of the complementizer layer in the syntactic structure. Unlike sentences with finite subordinate clauses, sentences with

infinitival subordinate clauses allow both long-distance movement and long-distance

discontinuity:

410.

a) **Mykola   xoče   kupyty   <u>červonu</u>   <u>mašynu</u>**
   Michael.NOM wants   to-buy   red.F.SG.ACC   car.F.SG.ACC
   "Michael wants to buy a red car."

b) **<u>Červonu   mašynu</u>   Mykola   xoče   kupyty**
   red.F.SG.ACC   car.F.SG.ACC Michael.NOM wants   to-buy
   "Michael wants to buy A RED CAR."

c) **<u>Červonu</u>   Mykola   xoče   kupyty <u>mašynu</u>**
   red.F.SG.ACC   Michael.NOM wants   to-buy   car.F.SG.ACC
   "Michael wants to buy a RED car."

The availability of scrambling out of subject control infinitives has been attributed to

various forms of restructuring (see Wurmbrand (2004)). Restructured clauses do not

have as much functional super-structure as other clauses, and have been argued to be bare

VPs. It is, therefore, not surprising that discontinuity is available in restructured clauses

on a par with extraction. No complementizer layer is present and, therefore, there is no

phase boundary to prevent extraction and no nominal CP projection to block agreement.

It is important to note that there is some disagreement as to the availability of

discontinuity across clausal boundaries in Russian. Bailyn (1995) and Sekerina (1997)

claim that discontinuous constituents in Russian cannot cross the boundaries of a

declarative clause. Pereltsvaig (2008), however, disagrees and cites the following piece

of data as evidence that discontinuity can cross clausal boundaries:

411. Nesvežuju   ty   žaleeš'   čto   poel   ikru?
      Not-fresh   you   regret   that   ate   caviar
      "Do you regret eating NOT-SO-FRESH caviar?"

                                                    (Pereltsvaig (2008): 11)

Note that the dialectal variation in Russian can easily be accounted for in the theory of long-distance agreement proposed here. The speakers in whose lexicon the declarative complementizer is an unambiguously verbal category are predicted to accept the sentence in (411). The speakers, in whose lexicon the complementizer is ambiguous between a nominal and a verbal functional category, will consider the data in (411) ungrammatical.

While clausal boundaries are clearly marked in the clauses headed by an overt complementizer, clausal boundaries in wh-word headed clauses are not always easy to identify since in Russian wh-words can appear anywhere inside the clause. Consider the following data, also from Pereltsvaig (2008):

412. **Net, menja dejstvitel'no interesuet,**
no me really interests
tvoj [CP kuda delsja Miška]?
your where have.got.to Mishka
"No, I am really curious where your Mishka have got to."

(Pereltsvaig (2008): 24)

If indeed clausal boundaries are located where they are marked by Pereltsvaig (2008) in (412), we have another example of dialectal variation in the categorial status of the null interrogative complementizer. However, given the punctuation in (412) in combination with the fact that the wh-word does not always surface in Spec CP in Russian, the discontinuous constituent in (412), arguably, does not cross clausal boundaries. It is likely to be located inside the subordinate clause below the CP, as shown in (413a):

413.
a) **Net, menja dejstvitel'no interesuet,**
no me really interests
[CP C tvoj kuda delsja Miška]?
your where have.got.to Mishka
"No, I am really curious where YOUR Mishka disappeared."

b) Net, menja   dejstvitel'no   interesuet,
   no   me   really   interests
[CP C tvoj   delsja   kuda   Miška]?
      your   have.got.to   where   Mishka
"No, I am really curious where YOUR Mishka disappeared."

c) * Net,   menja   tvoj   dejstvitel'no   interesuet,
   no   me   your   really   interests
[CP   kuda   delsja   Miška]?
      where   have.got.to   Mishka

(413b) shows that the wh-word can appear lower in the subordinate clause. (413c) shows

that the sentence is not acceptable when the pronominal adjective appears higher in the

matrix clause. Only the acceptability of (413c) can serve as a definitive indication that

we are dealing with dialectal variation here as well.

Finally, there is also disagreement as to the acceptability of discontinuous constituents

that cross the subjunctive clause boundary in Russian.

414. ?*Po novoj   Maša   poprosila, čtoby   my   poexali doroge.
   On   new.PREP Mary.NOM   asked   that.SUBJ we.NOM go   road.PREP
   "Masha asked that we went on the new road."
                                        (Sekerina (1997):188)

Sekerina (1997) judges the sentence in (414) to be highly marked while Bailyn (2004)

and Pereltsvaig (2008) take sentences of this type to be grammatical. Note that the

subjunctive complementizer in (414) is a complex entity that consists of the regular

declarative complementizer *čto* and a subjunctive particle *by*. The variation in judgment

can in principle be attributed to the complex nature of this complementizer. Since

declarative complementizers block discontinuity in Standard Russian, these

complementizers are, most likely, associated with the nominal categorial feature in the

language. The subjunctive particle, however, is in all probability a verbal functional

head. Consider, therefore, a possibility that the dialects of Russian vary as to how they identify the categorial status of the subjunctive complementizer. The speakers for whom discontinuity across the subjunctive complementizer is marked associate the subjunctive complementizer with the nominal properties of the declarative complementizer while the speakers, for whom the discontinuity across the subjunctive complementizer is acceptable, associate this complementizer with the verbal properties of the subjunctive head. The dialectal variation is, therefore, attributed not to the nature of the agreement process but to the variation in the properties of the lexical items that affect availability of agreement.

7.6 Agreement Domains and Phases

Bobaljik and Wurmbrand (2005) point out that agreement domains are distinct from Chomsky's (2000) phases in two respects. Phases are absolute domains and constrain both agreement and movement. According to Bobaljik and Wurmbrand (2005), agreement and movement are subject to different locality conditions, and agreement domains constrain agreement only. Secondly, Bobaljik and Wurmbrand (2005) claim that agreement domains are context dependent. VP constitutes an agreement domain for case assignment only when it is selected by a lexical verb and not when it appears as a complement to a functional head. We have dispensed with the notion of context dependency by incorporating the concept of extended projection into the definition of agreement domains and drawing a connection between the lexical category of the head of the agreement domain and the directionality of agreement involved. Agreement domains, as formulated in this chapter, however, differ from phases in one additional respect: they

are defined as dense. The density of agreement domains manifests itself in the fact that every projection of a given head, not just the topmost projection of the head, acts as an agreement barrier. Hence, the mechanism that enforces the locality of agreement proposed here differs from the notion of an agreement domain as conceived in Bobaljik and Wurmbrand (2005).

According to the definition of the Locality Constraint on Agreement, a projection of a head qualifies as a potential barrier for agreement as long as it contains the goal and the probe c-commands both the head in question and the goal. Thus, in (415), XP c-commands both Z and YP, and ZP contains YP, as required by the definition of the Locality Constraint on Agreement:

415.
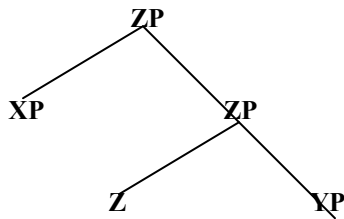
Crucially, it does not matter that XP is adjoined to ZP and is technically inside the agreement domain delimited by the highest projection of Z. Given our definition of Locality Constraint on Agreement, any projection of Z constitutes a barrier for agreement. Agreement domains are, therefore, dense. No projection can intervene for agreement to take place.

The blocking effects induced by the density of agreement domains are visible in those cases where the modifier is adjoined directly to the embedding noun phrase. Direct adjunction to the embedding NP is not sufficient to guarantee grammaticality:

416.

  a)* **Ivan**   **zahubyv** <u>**novoho**</u>   **knyžku**   <u>**profesora**</u>
      John.NOM lost   new.M.SG.GEN book.F.SG.ACC professor.M.SG.GEN
      "John lost a book that belongs to the NEW professor."

  b)* **Ivan**   **zahubyv** <u>**pro**   **sučasnu**</u>
      John.NOM lost   about contemporary.F.SG.ACC
      knyžku   <u>**arxitekturu**</u>
      book.F.SG.ACC   architecture.F.SG.ACC
      "John lost a book about CONTEMPORARY architecture."

This contrasts with the fact that both the Genitive possessor and the PP-modifier as a

whole can appear on either side of the embedding noun phrase:

417.

  a) **Ivan**   **zahubyv** **knyžku**   <u>**novoho**</u>   <u>**profesora**</u>
      John.NOM   lost   book.F.SG.ACC new.M.SG.GEN professor.M.SG.GEN
      "John lost a book that belongs to the new professor."

  b) **Ivan**   **zahubyv** <u>**novoho**</u>   <u>**profesora**</u>   **knyžku**
      John.NOM   lost   new.M.SG.GEN professor.M.SG.GEN book.F.SG.ACC
      "John lost a book that belongs to THE NEW PROFESSOR."

418.

  a) **Ivan**   **zahubyv**
      John.NOM   lost
      knyžku   <u>**pro**   **sučasnu**   **arxitekturu**</u>
      book.F.SG.ACC about contemporary.F.SG.ACC architecture.F.SG.ACC
      "John lost a book about contemporary architecture."

  b) **Ivan** **zahubyv**
      John   lost
      <u>**pro**   **sučasnu**   **arxitekturu**</u>   **knyžku**
      about contemporary.F.SG.ACC architecture.F.SG.ACC book.F.SG.ACC
      "John lost a book ABOUT CONTEMPORARY ARCHITECTURE."

The Genitive possessor and the PP-modifier can be focused by being fronted. This

indicates that there is no prohibition on adjunction to the embedding noun phrase and this

location is a legitimate site for generating a focus interpretation. The modifier should, in

principle, be allowed to adjoin in this position. The ungrammaticality of the sentences in

(416) can, therefore, be attributed to the fact that every projection of the embedding noun

phrase that contains the goal acts as a barrier for agreement. Agreement, however, can be established between a probe that heads a given extended projection and any item within that extended projection, being exempted from the LCOA by the definition of an extended projection that is built into it.

Note that the density of agreement domains is also responsible for the fact that agreement always takes place with the maximal projection of the head rather than the head itself. The Locality Constraint on Agreement, therefore, allows us to account for Determiner Spreading facts in Modern Greek without any additional stipulations. Recall that Kariaeva (2003) argues that Determiner Spreading in Modern Greek is a consequence of agreement between the long-distance modifier and a DP. That agreement is with the DP, and not its NP complement, no longer needs to be stipulated to derive Determiner Spreading. When the modifier is generated outside of the DP, agreement with the DP is the only option available. D is a nominal category and its projection contains the NP. According to the Locality Constraint on Agreement, therefore, the adjectival modifier base-generated outside the DP cannot enter into agreement with the NP contained within the DP but can only agree with the DP as a whole.

The PIC associates with phases the so-called edge effect (see Chomsky (2000:108)). The specifier of the highest projection of the phase constitutes the edge of the phase. According to PIC, this specifier position is available for agreement from outside of the phase. Phases are, therefore, non-discrete. Consider the phrase marker in (419):

419.
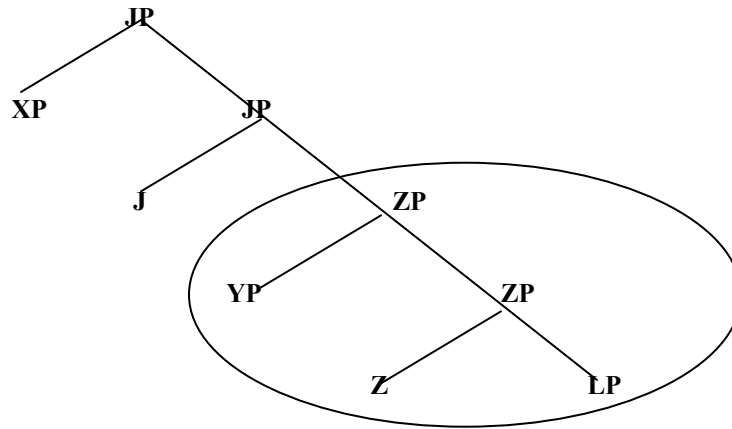
According to the PIC, if ZP is a phase, agreement relation can be established between XP located outside of the phase and YP located at the edge of the phase but not between XP and LP. The question emerges whether agreement domains are also characterized by edge effects. Bobaljik and Wurmbrand (2005) assume that agreement domains are non-discrete and the edge of an agreement domain is visible for agreement from outside. As a consequence, in order to maintain their account of anti-reconstruction effects in German, they have to stipulate that movement is not successive cyclic. If movement is successive cyclic, a goal can raise to the edge of the restructured infinitival clause in German, and can be visible for agreement from outside. Bobaljik and Wurmbrand (2005), however, demonstrate that a goal located in the restructured infinitival clause has to raise all the way to the matrix clause in order to undergo agreement.

The motivation for making the edge of an agreement domain visible for agreement from outside comes from long distance agreement facts in Tsez (Polinsky & Potsdam (2001)), Passamaquoddy (Bruening (2001)), and Innu-aimûn (Braningan & MacKenzie (2002)). Polinsky & Potsdam (2001) argue that, in Tsez, agreement across the clausal boundary is possible only when an item agreed with occupies the specifier of the Topic Phrase:

420. eni-r   [už-ā   magalu   bāc'rułi] b-iyxo.
mother.DAT boy.ERG bread.III.ABS ate   III-know
'The mother knows the boy ate the bread.'

(Polinsky & Potsdam (2001): 584)

In Tsez, the matrix verb shows agreement with the absolutive argument of the embedded

clause only when this argument is interpreted as topic. Polinsky & Potsdam (2001) take

this as evidence that the agreed with argument is associated with the Topic head and

moves to its specifier position covertly. The embedded clause, then, constitutes an

agreement domain in Tsez, with the edge of the clause, specifier of Topic, exempt from

agreement blocking effects by the PIC. For agreement with an argument of the lower

clause to take place, the Topic projection has to be the highest projection of the lower

clause and the complementizer layer should not be present. Whenever the

complementizer layer is projected above the Topic layer, long-distance agreement is

blocked:

421.

a) **eni-r   [nā   c'ohor-ā   micxir   b-ok'āk'-ru-li]**
mother.DAT [where   thief.ERG money.III.ABS III.steal.PST-PRT.NMLZ
r/*b-iyxo.
IV/*III-knows
'The mother knows where the thief stole the money.'

(Polinsky & Potsdam (2001): 634)

b) * **eni-r   [už-ā   magalu   b-ac'-si-λin]   b-iyxo.**
mother.DAT boy.ERG bread.III.ABS III.eat.PST-EVID.COMP III.knows
'The mother knows that the boy ate the bread.'

(Polinsky & Potsdam (2001): 635)

Long-distance agreement is not possible in Tsez when the embedded clause is introduced

by a wh-word as in (421a). Presence of the wh-word indicates that complementizer layer

is projected in the structure, and agreement is blocked. Long-distance agreement is also

impossible when the embedded clause is headed by an overt complementizer as in

(421b).

Long-distance agreement facts in Tsez can, however, be accounted for without the recourse to the edge effect. Bošković (2007b) argues that Tsez provides an example of the language that allows agreement into subordinate clauses. The absolutive argument in the lower clause does not need to be associated with the Topic head in the left periphery of the clause to enforce agreement on the verb of the main clause. After all, topic interpretation can be achieved without projecting a Topic layer (Diesing (1992), Déprez (1998)). Agreement is blocked into subordinate clauses only when the complementizer layer is projected. The complementizer causes standard intervention effects. The analysis proposed in Bošković (2007b) can be recast within the theory of agreement domains proposed here. Note that long-distance verbal agreement in Tsez involves only φ-feature valuation and is not connected to case assignment, with verbs showing participle-like morphology. Agreement of this type, like concord, should be blocked by the nominal functional head. Indeed, complementizers in Tsez carry noun class features. If complementizers in Tsez are nominal, conclusions by Bošković (2007b) hold on our account as well. Whenever a complementizer is projected, it blocks long-distance agreement with an argument within its c-command domain.

Bošković (2007b), however, assumes that long-distance agreement shows effects similar to edge effects associated with the PIC. Since, according to Bošković (2007b), agreement is blocked by the complementizer head and not the projection of the complementizer, the item in the specifier of the complementizer should be visible for agreement. He takes the following data to be supporting evidence:

422. **eni-r**   **[šebi**   **y-āk'i-ru-łi]**   **y-iy-x-ānu.**
mother.DAT who.II.ABS   II.go.PST-PRT.NMLZ   II.know.PRES.NEG
'The mother does not know who [of women] left.'

(Polinsky & Potsdam (2001): fn. 20)

In (422), the verb of the main clause agrees with the wh-word of the subordinate clause.

Bošković (2007b) assume that this type of agreement is possible because the wh-word is

located in the specifier of the complementizer head. Note, however, that the wh-word in

(422) has to be obligatorily D-linked when it enforces agreement. Consider now the

possibility that D-linking of the wh-word requires it to raise from the specifier position of

the complementizer head to a specifier position of the Topic head located above the

complementizer head, as in (423):

423.
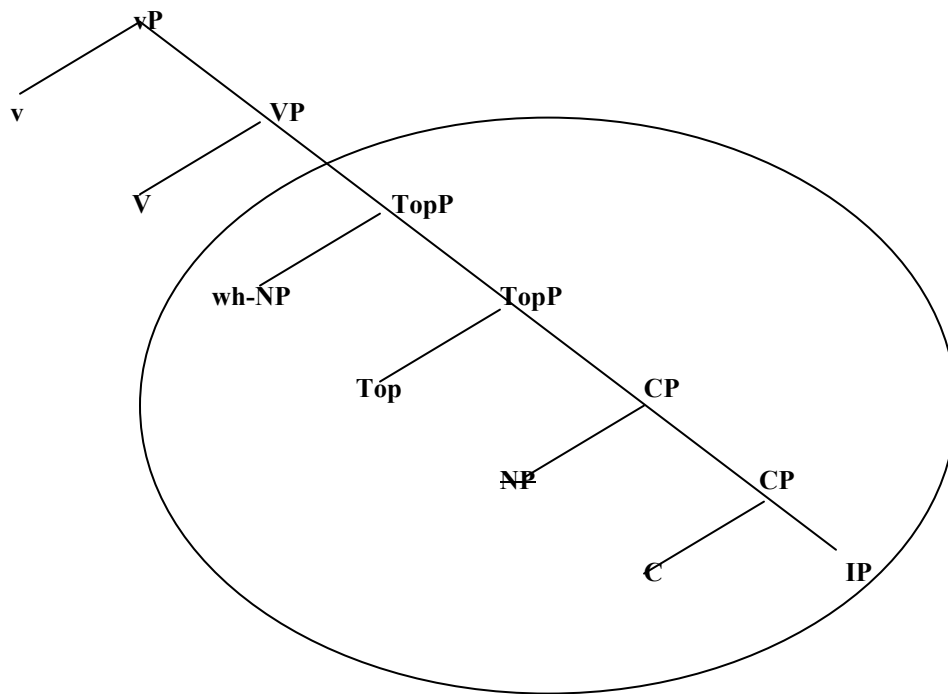
Given Rizzi's (1992) theory of the extended left periphery of the clause, Topic Phrase

can indeed be projected above the CP layer. If the wh-word is located in the specifier of

the Topic Phrase and Topic is not nominal, v should be able to enter into agreement with

the wh-word. This would explain the data in (422) without positing special edge effects.

Ukrainian also has facts that might suggest that edge effects involving agreement can be reanalyzed as the result of the goal located in the specifier of the projection outside the agreement domain rather than at the edge of this domain. Recall that degree adverbs can enter into agreement with the long-distance modifier, forming a tripartite discontinuous noun phrase (see chapter 5 for details):

424.

  a) **Ivan**   **kupyv**   <u>**duže**</u>   <u>**velyku**</u>   <u>**kvartyru**</u>
      John.NOM bought   very   big.F.SG.ACC apartment.F.SG.ACC
      "John bought a very big apartment."

  b) <u>**Duže**</u>   **Ivan**   <u>**velyku**</u>   **kupyv** <u>**kvartyru**</u>
      very   John.NOM big.F.SG.ACC bought apartment.F.SG.ACC
      "John bought a VERY BIG apartment."

When the modifier appears immediately preceding the noun, the acceptability of long-distance degree modification deteriorates unless the modifier is assigned emphatic stress, which is interpreted as narrow focus, and a pause separates the modifier and the noun:

425.

  a) **Ivan**   <u>**duže**</u>   **kupyv**   <u>**VELYKU**</u>   <u>**kvartyru**</u>
      John.NOM very   bought   big.F.SG.ACC   apartment.F.SG.ACC
      "John bought a VERY BIG apartment."

  b) * Ivan   <u>**DUŽE**</u>   **kupyv**   <u>**velyku**</u>   <u>**kvartyru**</u>
      John.NOM very   bought   big.F.SG.ACC apartment.F.SG.ACC
      ("John bought a VERY big apartment.")

  c) <u>**Duže**</u>   **Ivan**   **kupyv**   <u>**VELYKU**</u>   <u>**kvartyru**</u>
      Very   John.NOM bought   big.F.SG.ACC   apartment.F.SG.ACC
      "John bought a VERY BIG apartment."

  d) * <u>DUŽE</u>   **Ivan**   **kupyv** <u>**velyku**</u>   <u>**kvartyru**</u>
      Very   John.NOM bought   big.F.SG.ACC   apartment.F.SG.ACC
      "John bought a VERY big apartment."

Note that the long-distance modifier in (424b) is also associated with narrow focus. One could in principle analyze obligatory association of the modifier with narrow focus in this

context as the indication that the adjectival modifier in (425a) and (425c), like the adjectival modifier in (424b), is located not inside the noun phrase but outside of it, adjoined to some non-nominal projection above the NP. The contrast with (425b) and (425c) seems to suggest this analysis. It would mean that the specifier of the highest nominal projection is not visible for agreement from outside and the modifier has to be generated as an adjunct higher in the tree where it is obligatorily assigned narrow focus. The facts discussed above, however, are not sufficient to conclude definitively at this point that agreement domains are not subject to edge effects as phases are. Raising the argument to Spec CP might be sufficient to cause D-linking in Tsez and narrow focus can in principle be obligatorily imposed on the modifier in its in situ position in (425) for independent reasons (even though such reasons are hard to foresee within our framework). Further exploration of this issue remains beyond the scope of the current dissertation.

7.7 Summary

I this chapter, I examined restrictions on movement and agreement in Ukrainian and demonstrated that movement and agreement are subject to different locality restrictions in the language. While NP and PP extraction from noun phrases is possible in Ukrainian, long-distance agreement with the noun embedded inside another noun phrase is not. The locality restrictions on agreement in Ukrainian, however, are distinct from intervention effects. Not every intervening noun phrase blocks long-distance adjectival agreement and discontinuity. Long-distance concord is blocked only when the projection of the intervening noun contains the goal. In other words, the projection of a head, rather than

the head itself, imposes constraints on long-distance adjectival agreement in Ukrainian.
I, therefore, concluded that long-distance agreement is not constrained in terms of the
closest c-command; rather, the locality restrictions on agreement should be defined in
terms of agreement domains, as in Bobaljik and Wurmbrand (2005). While projections
of a nominal category constrain long-distance concord, projections of a verbal category
do not block discontinuity. Long-distance modification can cross a VP boundary even
when this VP is a complement of a lexical verb. This contradicts conclusions regarding
agreement domains for case assignment reached by Bobaljik and Wurmbrand (2005) on
the basis of the German/Japanese data. The contrast between the German/Japanese facts
and the Ukrainian data examined in this dissertation was explained by defining agreement
domains relative to the type of agreement involved. While an extended projection of the
verb constitutes a locality domain for case assignment, an extended projection of the
noun constitutes a locality domain for concord.

The difference in locality constraints on case assignment and concord was captured in
terms of the directionality of feature valuation. I argued that each lexical category
prevents other categories from transferring feature values in the same direction in which
it does. In other words, it monopolizes the domain it controls to ensure the valuation of
its own unvalued features. Nominal heads are inherently valued for φ-features, and they
transfer φ-features values to a probe. The projections of the nominal head, therefore,
block valuation of the features of the probe by any other goal they contain. Verbal heads
are inherently valued for case feature, and they transfer the case feature value to a goal.
The projections of the verbal head, therefore, block valuation of the features of any goal

they contain by other probes, which are not part of their extended projection. I

formulated the Directionality Parameter for Agreement (DPA) which links the categorial

value of the syntactic head with the general direction of feature valuation. Since in

concord all feature values are transferred in the same direction in which the φ-features

values are transferred, nominal projections block concord. Verbal projections do not

block concord because they permit transfer of feature values to the probe. The DPA is

built into the definition of the Locality Constraint on Agreement (LCOA), which applies

only when the probe does not form an extended projection with the head of the agreement

domain, thus treating an entire extended projection as a single agreement domain. The

LCOA accounts both for the facts discussed in Bobaljik and Wurmbrand (2005) and for

the Ukrainian data discussed in this dissertation.

Unlike intervention effects, the Locality Constraint on Agreement and the Directionality

Parameter are not formulated in terms of specific features. The LCOA, therefore,

correctly predicts that valuation of the degree feature is also blocked by a projection of a

nominal category and is not blocked by a projection of a verbal category. Since the

categorial feature of the adjective is not valued in the lexicon, the Locality Constraint on

Agreement also correctly predicts that adjectives allow long-distance agreement with

their complements. The categorial feature of the adjective is, however, valued in narrow

syntax through agreement. I demonstrated that valuation of the adjectival categorial

feature has impact on its ability to block long-distance concord. A projection of the

adjective whose categorial feature has been valued as nominal through agreement with

the noun blocks long-distance agreement with its complements. Adjectives used

predicatively, however, do not block long-distance agreement with their complement. Unlike adjectives used attributively, they do not form a single constituent with the subject of the clause. I concluded that agreement between the adjectival predicate and the subject is mediated by the Pred head and does not result in unification of the categorial feature of the subject and of the adjectival predicate.

Constituent Discontinuity in Ukrainian is blocked not only across a nominal boundary but also across a clausal boundary. A long-distance concord is impossible into declarative and interrogative subordinate clauses. Extraction, however, is possible from certain interrogative clauses. Bošković (2007b) argues that in languages where agreement into finite clauses is impossible, long-distance agreement is blocked by a complementizer. I followed up on this insight and argued that complementizers in Ukrainian are ambiguous between a nominal and a verbal status. Since the categorial feature of a complementizer is valued as nominal in Ukrainian, the LCOA correctly predicts that long-distance agreement into the complementizer-headed clauses is blocked. I demonstrated that the availability of long-distance concord and linear noun phrase discontinuity across the clausal boundary in Ukrainian correlates with the presence or absence of a complementizer layer in a syntactic structure. While linear discontinuity across a clausal boundary is not available, inverse discontinuous constituents can cross a clausal boundary. This is precisely what is predicted by theory of discontinuity proposed here since linear discontinuous constituents were argued to involve long-distance agreement while inverse discontinuous constituents are formed by movement.

Agreement domains, as defined in this chapter, differ from phases in several respects. They are not absolute and are relativized to the direction of the syntactic information transfer. In addition, they are also defined as dense. The density of agreement domains manifests itself in the fact that every projection of a given head, rather than only the topmost projection of a head, acts as an agreement barrier. The PIC associates with phases the so-called edge effect (Chomsky (2000, 2001)). Bobaljik and Wurmbrand (2005) also assume that agreement domains are non-discrete and the edge of an agreement domain is visible for agreement from outside. The motivation for making the edge of an agreement domain visible for agreement from outside comes from the long-distance agreement facts in Tsez (Polinsky & Potsdam (2001)), Passamaquoddy (Bruening (2001)), and Innu-aimûn (Braningan & MacKenzie (2002)), where, it is argued, agreement across the clausal boundary is possible only when an item agreed with occupies the specifier of the highest projection of the clause. I examined evidence against associating agreement domains with the edge effect and concluded that this evidence, albeit promising, is not sufficient to posit agreement domains as discrete.

Chapter 8. The Semantics of Discontinuous Constituents

8.0 Introduction

I have examined various syntactic aspects of discontinuous constituents while taking for

granted the availability of full interpretation for a long-distance modifier. Bošković and

Takahashi (1998) propose that scrambling in Japanese can be derived by generating

arguments in their spell-out positions rather than moving them into these positions in

narrow syntax. To solve the issue of full interpretation, they argue that arguments are

lowered into their theta-positions at LF driven by the need for theta-role checking. Given

Higginbotham's (1985) theta-identification analysis of adjectives, Bošković (2005)

suggests that adjectives base-generated at a distance from the noun could also be assigned

full interpretation by means of the same operation of theta-feature driven lowering at LF.

Given the somewhat uncertain status of LF-movement operations of this kind within the

Minimalist framework, I would like to propose an alternative solution to the problem of

full interpretation of adjectives base-generated at a distance from the noun. In this

chapter, I demonstrate that full interpretation of long-distance adjectival modifiers is

available without the recourse of the special syntactic mechanism of LF-lowering once

agreement information is taken as an input into semantic analysis. I illustrate the

interpretation of discontinuous constituents using Discourse Representation Theory

(DRT) of Kamp (1981). In section 8.1, I provide a brief overview of the relevant aspects

of DRT, and in section 8.2, I demonstrate how discontinuous constituents can be

interpreted in DRT given agreement enriched syntactic trees.

8.1 Discourse Representation Theory

In this section, I provide a brief overview of the basic language and method of semantic

analysis of the Discourse Representation Theory (DRT) of Kamp (1981). My discussion

of DRT is based on Kamp and Reyle (1985). In DRT, interpretation of sentences and

texts is a process of constructing semantic representations of these sentences and texts in

the form of Discourse Representation Structures (DRSs).   The interpretation proceeds

incrementally, sentence by sentence, and is cumulative: the interpretation of each

individual sentence is related to the information structure (DRS) that has already been

created on the basis of the interpretation of previous sentences. Semantic representation

is constructed by applying DRS construction rules to the syntactic structure. DRT,

therefore, provides an excellent tool for illustrating the role syntactic processes play in

interpretation. I will first exemplify the mechanism of DRT, and will then demonstrate

how this mechanism can be adapted to interpret discontinuous constituents.

Discourse Representation Structures have two key components: discourse referents that

relate to individuals and DRS-conditions that stand for properties that individuals satisfy.

A DRS-condition consists of a discourse referent and a predicate that names some

property. Thus, x is a discourse referent and *tall* is a predicate in the following DRS-

condition: *tall(x)*.   A DRS is represented as a box, known as diagram, that displays

discourse referents at the top and DRS-conditions below:

426.

x
tall (x)
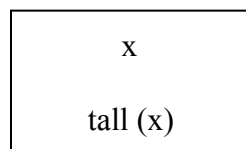
The DRS in (426) states that some individual referred to by the discourse referent x has the property of being tall. Interpretation of syntactic trees proceeds from top down, with the top-most node of the tree being decomposed first. The process of decomposition of syntactic trees, known as sentence-incorporation, produces sub-trees which are reduced until the resulting sub-trees are not further reducible. The irreducible trees, or DRS-conditions in a tree-format, act as triggering configurations for the application of DRS construction rules.

As an illustration, consider the interpretation of the following sentence in DRT:

427. Ivan   kupyv   mašynu.
John.NOM   bought   car.F.SG.ACC
"John bought a car."

The sentence in (427) has a simplified syntactic structure as in (428). I use the simplified syntactic representation generally employed by DRT.

428.

Ivan   kupyv   mašynu.
John.NOM bought   car.F.SG.ACC
"John bought a car."
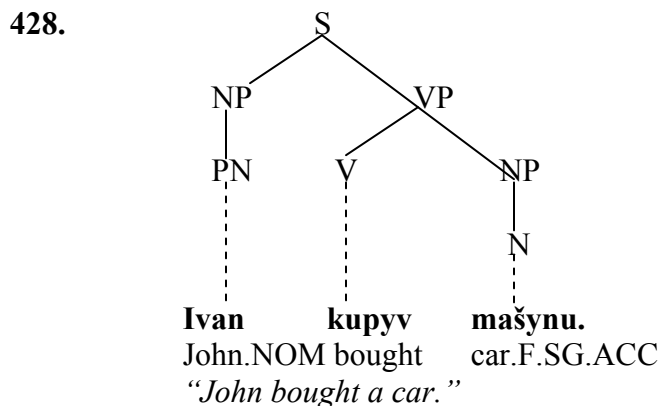
First, the subject NP is interpreted because it is the first irreducible sub-tree that results from decomposing the S node. Since the subject NP in (428) is a proper name, the DRS construction rule for proper names applies. A discourse referent x is substituted for the subject NP in the DRS that is created and predicate is written as the DRS-condition on x:

429.
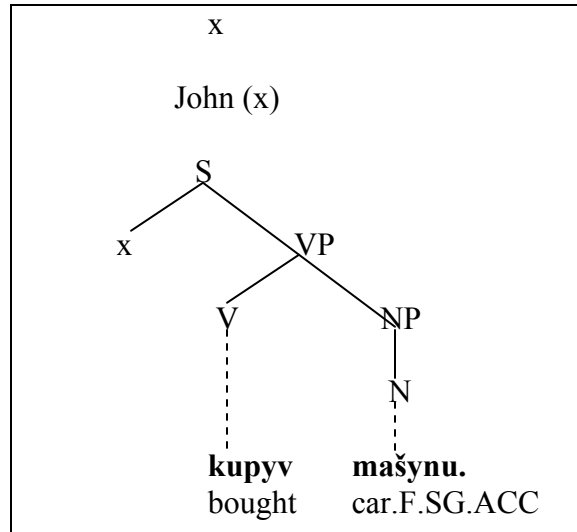
The diagram in (429) contains one discourse referent and two DRS-conditions, one written as a semantic predicate, another written as a tree. At the next step in the derivation, the object NP is interpreted and a second discourse referent is added at the top of the diagram and in the tree:

430.
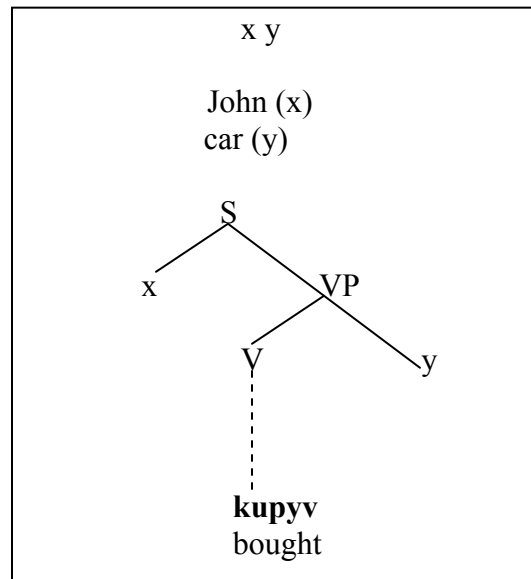
At this point, the verbal predicate can be interpreted as well, resulting in the following final DRS:

431.

```
┌─────────────────────────┐
│            x            │
│                         │
│        John (x)         │
│        car (y)          │
│        x bought y       │
└─────────────────────────┘
```
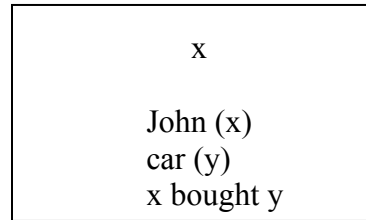
The DRS in (431) states that there is a car such that the bearer of the name John bought it.

DRS construction rules crucially rely on the syntactic tree structure to track the relations

between various discourse referents and their predicates. Structural adjacency serves as

the main vehicle of interpretation. Therefore, DRT appears at the first sight incapable of

accommodating constituent discontinuity. Consider the analysis of the sentence in (432),

which contains a modified direct object:

432. Ivan   kupyv   velyku   mašynu.
     John.NOM   bought   big.F.SG.ACC   car.F.SG.ACC
     "John bought a big car."

The sentece in (432) has a simplified syntactic structure as in (433):

433.

     Ivan   kupyv   velyku   mašynu.
     John.NOM bought   big.F.SG.ACC car.F.SG.ACC
     "John bought a car."
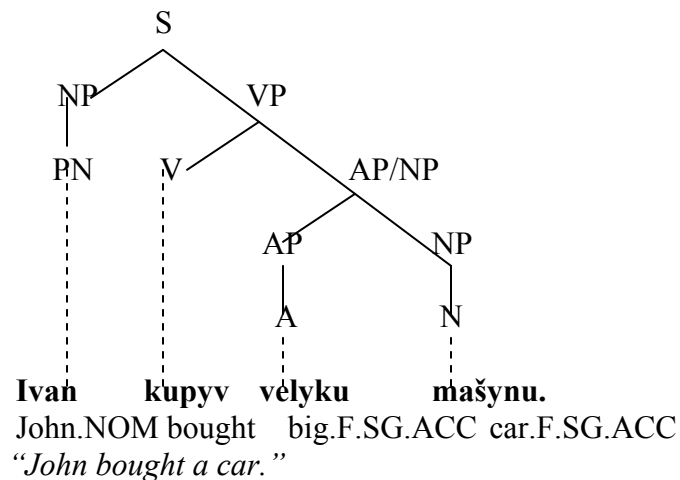
I will model the decomposition of the modified NP node on the treatment of indefinite

DPs in DRT, assuming rather arbitrarily that the adjunction AP/NP node is split into an

NP and AP nodes, when decomposed. The following is the representation of the DRS with the verbal and the adjectival predicates separated:

434.

```
┌─────────────────────────────────────┐
│              x  y                    │
│            John (x)                  │
│            car (y)                   │
│                                      │
│              AP                      │
│             ╱  ╲                     │
│           AP     y                   │
│           │                          │
│           A                          │
│           ┆                          │
│        velyku                        │
│        big.F.SG.ACC                  │
│                                      │
│              S                       │
│            ╱   ╲                     │
│          x      VP                   │
│               ╱  ╲                   │
│              V     y                 │
│              ┆                       │
│           kupyv                      │
│           bought                     │
└─────────────────────────────────────┘
```
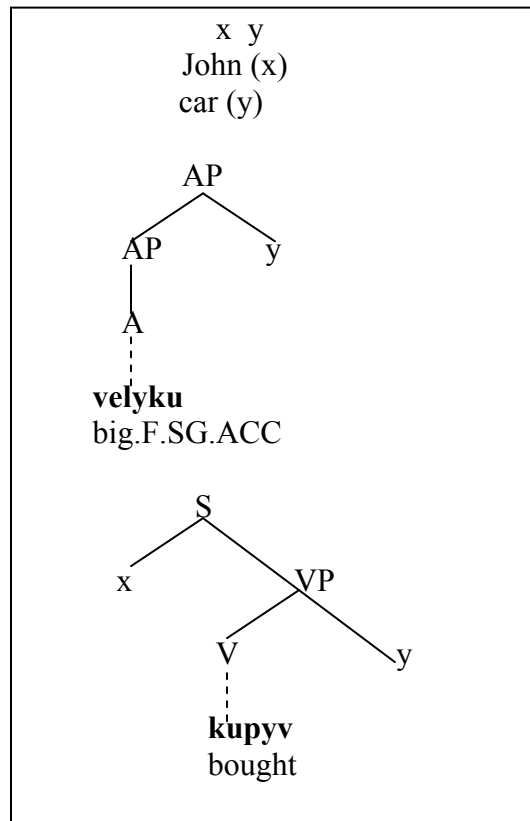
Crucially, adjacency between AP and NP and the projected hybrid node that instantiates such adjacency allows one to establish the predication relation between the AP and the NP needed to interpret the adjective as the modifier of the noun. DRS construction rules as a separate vehicle of interpretation serve precisely the purpose of associating predicates with discourse referents. Since discontinuous constituents do not map onto a structural representation where a long-distance modifier is adjacent to the noun, such modifier is not interpretable using standard DRS construction rules.

Consider the interpretation of the sentence in (435) which contains a discontinuous direct object:

435. **Ivan** **velyku** **kupyv** **mašynu.**
John.NOM big.F.SG.ACC bought car.F.SG.ACC
"John bought a BIG car."

The sentence in (435) has a simplified syntactic structure as in (436):

436.

Ivan **velyku** **kupyv** **mašynu.**
John.NOM big.F.SG.ACC bought car.F.SG.ACC
"John bought a BIG car."
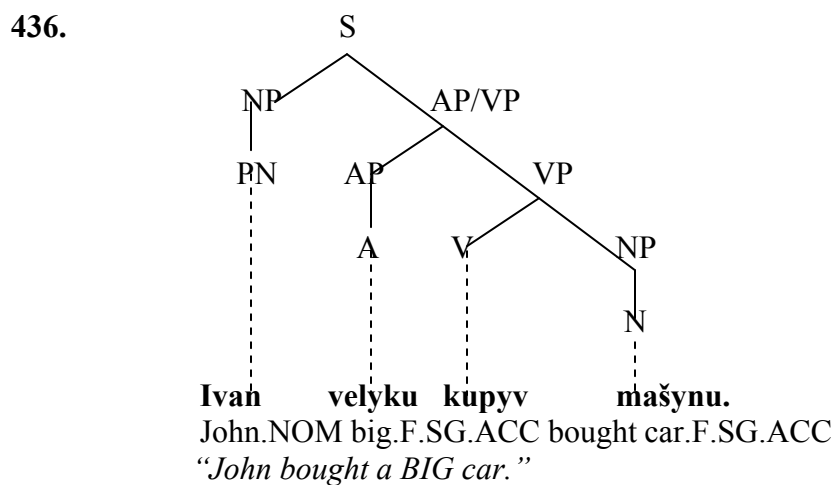
The DRS that results from the interpretation of the nominal items is shown in (437):

437.
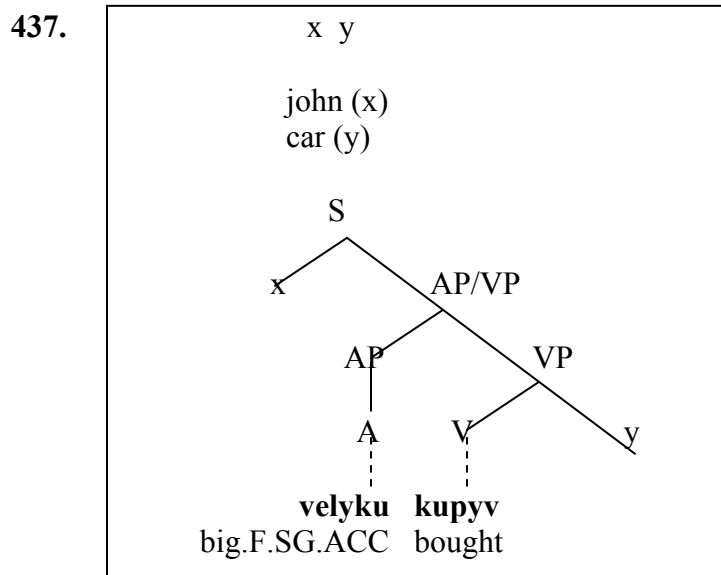
The adjective adjoined to the VP node does not receive any interpretation because there is

no DRS construction rule that can interpret the AP/VP node.

8.2 Feature Sharing and Discourse Referents

So far we have considered bare syntactic trees that represent adjacency relations between the items but do not reflect agreement relations between them. Agreement, however, constitutes an important part of syntactic derivation. The significance of syntactic information that goes beyond syntactic structure is acknowledged in Kamp and Reyle (1985). The feature content of syntactic nodes feeds into interpretation and plays a key role in anaphora resolution. Kamp and Reyle (1985) suggest that φ-feature information, such as number and gender, should either be transferred from the syntactic input into the DRSs by being encoded as conditions on discourse referents, or it should be retrieved by inference from the syntactic rules that have this information explicitly built in.   Although Kamp and Reyle (1985) do not incorporate either of these methods into their presentation, they emphasize the paradigmatic role of the agreement information for the comprehensive account of natural language interpretation. I will demonstrate below that the system of agreement as feature sharing, which is advocated in this dissertation as a primary method of syntactic analysis, provides a smooth transition from syntactic representation to semantic interpretation. It not only makes many of the DRS construction rules redundant but also naturally accommodates discontinuous constituents.

Consider the phrase marker in (438) which represents the structure of the sentence in (432) but with the agreement information filled in.   Since we are not interested at this point in anaphora resolution, I will conflate various φ-features associated with syntactic nodes into a single φ-feature with an index that tracks feature sharing information. It is

assumed, however, that the individual φ-feature values are available if needed for a more comprehensive analysis:

438.

	Ivan	kupyv	veľyku		mašynu.
	John.NOM	bought	big.F.SG.ACC		car.F.SG.ACC

"John bought a big car."
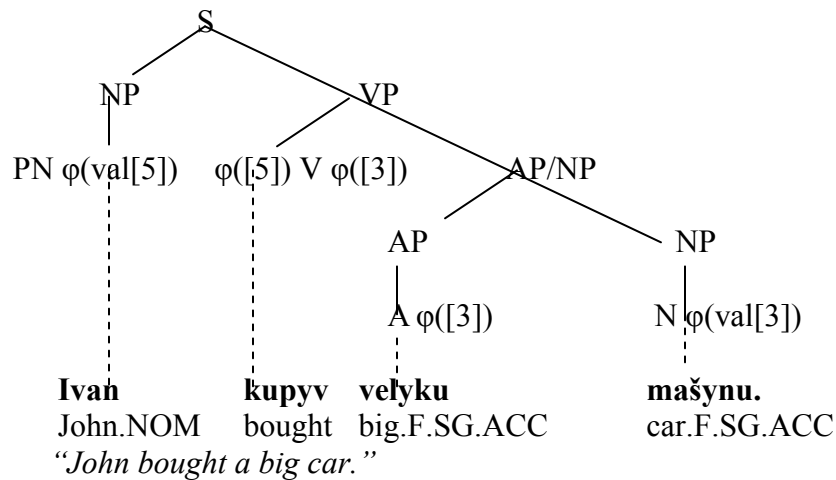
I will continue with Kamp and Reyle's (1985) practice of representing Tense node information to the left of V and v node information to the right of V, keeping in mind a more complex clausal structure that underlies such representation. Each terminal tree node consists of a combination of syntactic, semantic, and phonological features. I would like to suggest that syntactic agreement information rather than purely structural information constitutes the main input into interpretation. One does not need additional rules for translation of tree structures into semantic predication relations since such relations are encoded through agreement.

Consider the phrase marker in (439), which differs from (438) by having syntactic labels replaced with semantic predicates while agreement indices are retained as arguments of these predicates. This process of replacement can be viewed as stripping off phonological and conventional syntactic labeling information off the tree nodes and

leaving only interpretable semantic and agreement information there—a process expected

to take place at the interface:

439.

Ivan	**kupyv**	**veľyku**	**mašynu.**
John.NOM	bought	big.F.SG.ACC	car.F.SG.ACC

"John bought a big car."

The result of this minimal processing is the translation of syntactic agreement

information into DRS conditions. There is no need for special DRS construction rules

that provide instructions of how to translate structural adjacency into statements of

semantic predication. This information is now provided directly by the syntactic input.

Consequently, by assuming that agreement operations are interpretable at the interface,

we can significantly simplify the process of information transfer from the syntactic to the

semantic component of grammar.

By giving semantic reality to agreement operations that take place in narrow syntax, we

also provide interpretation for discontinuous constituents. Consider the phrase marker in

(440) which represents the structure of the sentence with a discontinuous direct object.

Here again, terminal nodes have been stripped of phonological features and syntactic

labels, leaving behind only semantically interpretable information:

440.

Ivaň   velyku   kupyv   mašynu.
John.NOM big.F.SG.ACC bought   car.F.SG.ACC
"John bought a BIG car."

The DRS information available in (440) is identical to the DRS information available in (439). In both cases, the adjective is correctly interpreted as a modifier of the direct object. Both (439) and (440) correspond to the DRS in (441):

441.

x y
john (x)
car (y)
big(y)
x bought y
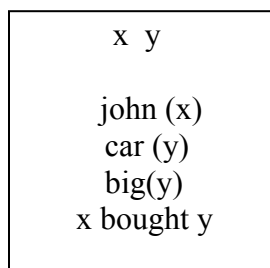
The DRS in (441) states that there is a car such that it is big and the bearer of the name John bought it. Although the sentences in (439) and (440) have the same basic semantic representation, they clearly differ in their meaning, as the English translation demonstrates. This difference, however, resides not in the semantic information the two constituents carry but in the pragmatic information associated with them.

A comprehensive analysis of the relation between various types of syntactic agreement and semantic mapping remains beyond the scope of this project and is left for further research.

8.3 Summary

In this chapter, I provided a cursory look at the semantic analysis of discontinuous

constituents. I utilized DRT as a method of semantic analysis. While DRT uses bare

syntactic tress as input into semantic analysis, the significance of syntactic information

that goes beyond syntactic structure is also acknowledged (see Kamp and Reyle (1985)).

In this chapter, I argued that by referencing agreement, implemented in terms of feature

sharing, one can provide a simple transition from the syntactic representation to the

semantic analysis within the framework of DRT. Agreement information, once it is built

into the DRS conditions, makes many of the DRS construction rules redundant while

naturally accommodating discontinuous constituents. Working out the details of this

proposal is left for further research.

Chapter 9 Movement-Based Approaches to Constituent Discontinuity

9.0 Introduction

There have been numerous attempts made to account for discontinuous DPs and PPs in terms of the standard notion of constituency. Discontinuous constituents, however, cannot readily be analyzed as the result of the co-reference relation established between two base-generated maximal projections since either one or both fragments of a discontinuous DP often fail well-formedness requirements imposed on independent base-generated constituents in the language (see Van Riemsdijk (1989) for an early critique of two constituents approach). The attempts to account for constituent discontinuity, therefore, have focused on analyzing discontinuity in terms of movement. Discontinuous constituents, however, also present a serious challenges to movement-based approaches since they put into doubt the core assumption of the X-bar theory that only heads and maximal projections can undergo movement and can, as a result, be separated from the rest of the phrasal constituent. Since nominal functional categories appear adjacent to the adjective with which they do not form a constituent, special assumptions have to be made regarding the process of splitting a single constituent by way of movement. Various analyses of constituent discontinuity that utilize movement transformations to derive discontinuity can be divided into three distinct groups: (1) approaches that appeal to the copy theory of movement; (2) approaches that utilize Remnant Movement; and (3) approaches that rely on Left Branch extraction. In this chapter, I provide a brief overview of the movement-based approaches to constituent discontinuity and flesh out some of the issues that arise in relation to each individual approach.

9.1 Distributed Deletion

The most straightforward way to account for constituent discontinuity in terms of movement is by utilizing the copy theory of movement (Chomsky (1993), Nunes (1995)). Junghanns and Zybatow (1995) suggest that discontinuous constituents in Russian can be derived by copying the constituent into several locations and then deleting different parts of the constituent in different copies of the same constituent. This idea has been developed into a full-fledged theory of constituent discontinuity in the work of Fanselow & Čavar (2001, 2002), who propose an account of discontinuous constituents in German and Croatian based on the notion of Distributed Deletion. Fanselow & Čavar (2001, 2002) extend the version of the copy-and-deletion theory espoused by Groat & O'Neill (1996) and Pesetsky (1998), among others. According to this version of the copy-and-delete theory some instances of covert movement are better analyzed as the result of constituent movement in the overt component followed by the deletion of the upstairs rather than the downstairs copy of the moved constituent. Fanselow & Čavar (2001, 2002) further this concept of deletion by claiming that deletion may partially affect both the upstairs and the downstairs copies of the moved constituent at the same time. Such Distributed Deletion is responsible for discontinuous constituency.

Fanselow & Čavar (2002) assume that Distributed Deletion is motivated by the needs of pragmatic feature checking. Whenever a constituent is split, the fronted fragment is topicalized while the stranded fragment is focused. Fanselow & Čavar (2002) adhere to a syntactic notion of Topic and Focus according to which topic and focus features are checked in the specifier position of two distinct Topic and Focus projections. They claim

that the constituent is split when it bears two distinct pragmatic features that cannot be

checked in the same syntactic configuration. In order to provide an implementation of

this idea of Distributed Deletion, Fanselow & Čavar (2002) propose a new treatment of

the notion of "feature strength." According to their theory, the strength of the attracting

feature does not determine whether movement (copying) applies before the Spell-Out or

not. Copying always takes place as soon as possible. The strength of the attracting

feature determines which of the copies created by movement is spelled out. When the

attracting feature is weak, the lowest copy is spelled out. When the attracting feature is

strong, the highest copy survives the Spell-Out. However, when the configuration

contains more than one strong attracting feature, a constituent has to be split since one

and the same item cannot be spelled out in several loci. At each point in the derivation,

when the strong feature is checked, the operator (i.e.: the sub-constituent that checks the

feature) is spelled out. A constituent that checks several strong features contains several

operators. Each operator is spelled out in the position in which it checks the

corresponding feature producing discontinuity on the surface.

Fanselow & Čavar (2002) adopt Chomsky's (1995b) feature checking mechanism and the

Minimal Link Condition as the main generative vehicle for Distributed Deletion. The

Minimal Link Condition (MLC) requires that K attracts α only if there is no β such that β

is closer to K and K attracts β (Chomsky 1995b: 310). α is closer to target K than β if α

c-commands β (Chomsky 1995b: 358). Consequently, in the configuration in which α

carries feature [p] and c-commands β that carries feature [q] only p but not q can be

attracted by a head H that c-commands α. Since syntactic features become invisible for

the computational system after being checked, the feature q can become accessible for attraction and movement only after p has been checked. This mechanism of feature checking enforces the reversal of the constituent internal order of operators after splitting. The operator α that c-commanded the operator β XP-internally prior to splitting is c-commanded by β after the Spell-Out.

By linking the spell out of various sub-parts of the constituent to feature checking, Fanselow & Čavar (2002) constrain the mechanism of Distributed Deletion bringing it in line with the general notion of movement as a feature-driven operation. However, this poses problems for the account. In particular, according to Distributed Deletion, each part of the discontinuous constituent is spelled out at the site of strong feature checking, that is in a derived position. The lowest part of a discontinuous constituent, however, often surfaces in its in situ position and therefore cannot be associated with the checking of a pragmatic feature that determines the survival or deletion of the material at PF. Since deletion is determined on the basis of checking pragmatic features, the key question of what determines the survival or deletion of the functional categories remains unanswered by the main derivational mechanism and requires additional stipulations. Finally, given the Minimal Link Condition, Fanselow & Čavar (2002) can only derive inverse discontinuous constituents and fail to account for the cases of linear discontinuity. Given that languages such Ukrainian and Modern Greek allow freedom of lexical item ordering, the coverage of the constrained version of Distributed Deletion remains rather limited.

In order to account for the freedom of noun-adjective order and an in-situ spell-out of the lowest part of a discontinuous constituent in Russian, Pereltsvaig (2008) adopts Fanselow & Čavar's (2002) mechanism of Distributed Deletion but relaxes its constraining mechanism. She assumes that the focus and topic features are interpretable features. They do not undergo checking and do not drive movement. Movement of the constituent is driven by a contrastive feature checking that is assigned to the constituent as a whole. Feature checking, therefore, does not determine the spell-out of items. The actual mechanism that determines the spell-out of the parts of a discontinuous constituent, however, remains unclear. Pereltsvaig (2008) assumes that the spell-out is relatively unconstrained and the items can be freely lexicalized in any location in which the copy of the constituent appears. Given that each part of the discontinuous constituent can contain a number of items, the role of interpretable topic and focus features appears rather arbitrary and not relevant to the spell-out rule. Franks (2007) examines a possibility of constraining the output of the deletion rule by requiring all the items in the upper copy that are located to the right of the focused item to be deleted, with the lower copy adjusted appropriately. He applies this analysis to the discontinuous constituents in Croatian that are split by clitics. He acknowledges that clitic based discontinuity is much less constrained in the language in comparison with the instances of discontinuity discussed in this dissertation and appears to be a PF phenomenon. Nevertheless, even in Croatian, clitics cannot isolate a transitive preposition (a preposition that does not double in the language as an adverb). Syntactic effects of this kind are problematic for the accounts based on Distributed Deletion. Specific problems that are encountered by the

Distributed Deletion approach to discontinuity have been discussed in detailed

throughout this dissertation (in particular, see sections 3.4, 6.1, 7.2, 7.4)

9.2 Remnant Movement

Remnant Movement analysis was proposed by Den Besten & Webelhuth (1990) to deal

with the phenomenon of remnant VP topicalization in German. According to their

proposal, remnant VP topicalization results from the NP being first scrambled out of the

VP into the Middle Field followed by a topicalization of the VP that contains the trace of

the scrambled NP:

442.   **[t <u>Gelesen</u>] hat Hans <u>das Buch</u> nicht.**
       read   has Hans the book not
       'Hans has not read the book.'

                                                      (Den Besten & Webelhuth (1990): 1)

This double-move solution allowed one to avoid positing a problematic A-bar movement

of a head. There were several attempts made to explain discontinuous constituents

examined in this dissertation in terms of Remnant Movement. Androutsopoulou (1997,

1998) applies Remnant Movement analysis to the study of discontinuous constituents in

Modern Greek. Sekerina (1997) uses Remnant Movement analysis to examine Russian

data. Franks and Progovac (1994) and Bašić (2004) propose Remnant Movement

analysis of discontinuous constituents in Serbo-Croatian. This section contains an

overview of the main aspects of Remnant Movement analysis of discontinuous

constituent.

Androutsopoulou (1997, 1998) applies standard Remnant Movement analysis to account

for discontinuous DPs in Modern Greek.   She argues that discontinuous DPs are derived

in a two-step manner. First, the NP moves out of the DP to the Spec of a Clitic Voice

Phrase, which functions as the clause internal topic position. Then, the DP that contains

the trace of the noun phrase moves to the Specifier of the Focus Phrase in the Left

Periphery of the clause:

443.   **[To kokkino** t $_k$]$_i$ **idha**   **[forema]** $_k$ t $_i$
      the red   saw.1.SG   dress
      'I saw the RED dress'

<div align="right">(Androutsopoulou (1998): 2)</div>

NP movement is available under the Abney's (1987) version of DP internal architecture

which Androutsopoulou (1997, 1998) adopts. On this account of DP architecture, the

adjective is the head of the DP and NP appears as a complement to the adjective.

Androutsopoulou (1997, 1998) assumes that the movement of the fronted DP remnant is

feature driven. The DP raises to the Left Periphery of the clause to have its +Focus

feature checked which the whole DP inherits from the adjectival modifier it contains.

The two movement operations involved in Remnant Movement analysis of constituent

discontinuity are asymmetric. The Focus driven movement of the DP is independently

available in Modern Greek. The extraction of the noun from the DP, however, cannot

occur independent of the fronting of the remnant:

444. * erapse   **forema**   **to   kokkino**
      sewed.3SG   dress   the red
       's/he sewed the red dress'

<div align="right">(Androutsopoulou (1998): 10)</div>

Androutsopoulou (1997, 1998) motivates the extraction of the noun phrase from the DP

by a requirement to keep the feature make up of the extended nominal projection

uniform. When the adjective carries a + Focus feature, the DP (but not the NP) inherits

it. The feature make up of the noun that is marked as –Focus by default conflicts with that of the DP. Consequently, the noun has to be extracted from the DP to preserve the uniformity of feature specification of the DP. Extraction of the NP to the right that feeds remnant movement in Androutsopoulou's (1997, 1998) account of DP discontinuity in Modern Greek predicts that the NP part should surface in the derived position rather than in situ. This is not always the case. The NP part of a discontinuous direct object does often surface in its in situ position, as Fanselow & Čavar (2001) demonstrate using data from Croatian:

445. **Čiju**   **je Ivan vidio**   **sestru**?
Whose   is   Ivan   seen   sister
"Whose sister has Ivan seen?"

<div align="right">(Fanselow & Čavar (2002): 66)</div>

The examination of discontinuous constituents in Ukrainian confirms that the distribution of parts of a discontinuous constituent is not confined to particular clausal projection and is largely determined by the needs of the informational organization of the utterance.

The availability of noun adjective re-ordering in discontinuous constituents presents a further challenge to the account of constituent discontinuity presented in Androutsopoulou (1997, 1998). Remnant Movement analysis posits the reversal of adjective-noun order as a precondition for its subsequent restoration. Sub-extraction reverses the order of constituents and further DP-remnant fronting restores the lost linearity. Crucially, however, restoration of XP internal basic order is obligatory in the original Remnant Movement analysis of Den Besten and Webelhuth (1990). It also allows one to explain the ungrammaticality of sub-extraction taken in isolation. This rigorous notion of Remnant Movement, present in Androutsopoulou's (1997, 1998)

analysis, provides an explanation for those cases where DPs and PPs preserve the basic XP internal order of constituents. The question remains open how to explain the availability of both adjective-noun and noun-adjective orders in discontinuous DPs and PPs in the same language and in relation to the same type of XP. Recall that, according to Androutsopoulou (1997, 1998), adjectives take NPs as complements and, therefore, permit NP scrambling. Equivalent scrambling of APs, which could be used to reverse noun adjective order using Remnant Movement analysis, is not available on structural grounds.

An analysis of the reversal of noun-adjective order in discontinuous constituents in Russian has been proposed by Yearley (1993) and modified in Sekerina (1997). To account for inverse noun-adjective order, Yearly (1993) utilizes a mirror image of the Remnant Movement. First, a DP is scrambled to the left and is adjoined to the IP. Then, the adjectival head of this Abney-style DP is XP-moved out of its own extended projection and is adjoined to the right of the IP. Sekerina (1993) follows up on this analysis. However, she assumes that DPs are headed by nouns while APs adjoin to the N-bar node inside the NP. To derive a linear discontinuous DP, the DP as a whole is scrambled to the left and is adjoined to the focus related FP projection in the left periphery of the clause. Then the N-bar node is scrambled out of this moved DP and is adjoined to the right of the FP. The reversal of the order between the adjective and the noun is achieved by allowing A-bar, instead of N-bar, to be scrambled out of the fronted DP and adjoin to the right of the FP. Both XP-movement of a head, appealed to by

Yearly (1993), as well as a dislocation of an X-bar node, appealed to by Sekerina (1993), remain rather non-standard movement operations.

The extraposition mechanism is also used by Franks and Progovac (1994) who provide a more standard Remnant Movement account of discontinuous constituents in Serbo-Croatian (see also Zabrocki (1984) for a similar account of Polish). Like Androutsopoulou (1997, 1998), they adopt Abney's (1987) analysis of noun phrase architecture but argue that, when the noun phrase is extracted from the AP/PP, it is right-adjoined to the IP. The remnant AP/PP is subsequently raised to the specifier of C. The data in (446), therefore, receives the following analysis under their approach:

446.

   a)   [$_{AP}$ **Crveno t$_i$**]$_j$ **je on kupio**   **t$_j$**   [$_{NP}$ **auto**]$_i$
         red   CL he bought   car
       "He bought a red car."

   b)   [$_{PP}$ **U veliku t$_i$**]$_j$ **on udje**   **t$_j$**   [$_{NP}$ **sobu**]$_i$
         in big   he entered   room
       "He entered the big room."

<div align="right">(Bošković (2005): 10, 30)</div>

Right-hand adjunction of the NP to the IP accounts for the fact that in Serbo-Croatian, like in Modern Greek, the noun cannot appear to the left of the AP/PP when extracted:

447. * <u>**Sobu**</u>   **on udje**   <u>**u**   **veliku**</u>
       Room   he entered in   big
       (*"He entered the big room."*)

<div align="right">(Bošković (2005): 31)</div>

One does not, therefore, need to stipulate that extraction is possible only when it feeds the dislocation of the remnant to the left of the extracted noun phrase. It also explains the frequent clause final position of the NP part of the discontinuous constituent. Franks and Progovac (1994), however, encounter the problem opposite to the one encountered by

Androutsopoulou (1997, 1998) since the NP part is not required to appear in clause final

position. Bošković (2005) demonstrates that the extracted noun can be followed by other

adjuncts in Serbo-Croatian:

448. **<u>Crveno</u> je on kupio <u>auto</u> prije tri dana**
red   is he bought car before three days
"He bought a red car three days ago."

<div align="right">(Bošković (2005): 11)</div>

This contradicts the extraposition account since the extraposed item is expected to be

confined to the clause final position.

Unlike Modern Greek, Serbo-Croatian has only linear discontinuous constituents. Noun-

adjective reordering is unacceptable in Serbo-Croatian irrespective of the presence and

placement of nominal functional categories:

449.
a) ?*<u>Kuće</u>   je on   vidio <u>lijepe</u>
houses   is he   seen beautiful
(*"He saw beautiful houses."*)

b) * <u>U sobu</u>   on udje   <u>veliku</u>
In room   he entered big
(*"He entered the big room."*)

<div align="right">(Bošković (2005): 11, 31)</div>

The Remnant Movement account provides a relatively uncontroversial analysis of simple

linear discontinuous constituents that consist of two parts. As was demonstrated in this

dissertation, however, discontinuous constituents often encompass more than two parts.

Tripartitioning of constituents is possible also in Serbo-Croatian:

450.
a) ?<u>V vrlo</u> je   <u>veliku</u> Jovan udjao <u>sobu</u>
in very CL   big   Jovan walked room
"Jovan walked into a very big room."

<div align="right">(Franks and Progovac (1994): fn. 6)</div>

b) <u>**Koje**</u> **je** **Ivan** <u>**zanimljive**</u> **kupio** <u>**knjige**</u>.
which is   Ivan   interesting   bought   books
"Which interesting books did Ivan buy?"

<div align="right">(Fanselow & Čavar (2002): (8.a-b))</div>

Remnant Movement analysis predicts that only two fragments can be generated in the course of constituent splitting. Sub-extraction generates two fragments and DP/PP remnant movement orders the fragments. Müller (1996) posits the Freezing Effect of Ross (1967) and Wexler and Culicover (1980) as a restriction on Remnant Movement that prevents over-generation and feeding of one remnant movement into another. According to the Freezing Effect, extraction of the constituent α from the constituent β is possible only if α has not undergone prior movement. As the Ukrainian and Modern Greek data, analyzed in this dissertation, demonstrate, parts of a discontinuous constituent can either maintain a noun phrase internal adverb-adjective-noun order or can alter the order between the adjective and the noun and even between the adverb and the adjective. In order to generate such multiple order permutations using Remnant Movement analysis one has to posit multiple sub-extractions not only from the base constituent prior to its dislocation but also from the extracted items as well as moved remnants, challenging the viability of Remnant Movement accounts.

9.3 Left Branch Extraction

Ross (1967) introduces the Left Branch Condition (LBC) to ban extraction from NPs of the items that appear to the left of the noun: determiners, possessors, and adjectives. He notes, however, that in some languages Left Branch Extraction (LBE) is indeed allowed. Uriagereka (1988) observes that there is a correlation between the availability of LBE and the absence of overt articles in the language. The same idea is used by Corver (1990,

1992) to develop an account of constituent discontinuity. Corver (1990, 1992) offers an

account of LBC in terms of ECP and Subjacensy violations. In the languages that have

determiners, LBE is impossible because D does not L-mark its complement NP and the

NP constitutes a barrier that blocks extraction. In languages that do not have determiners,

NPs are always L-marked and extraction from NPs is possible. Bošković (2005) adopts

Uriagereka's (1988) and Corver's (1992) assumptions that LBE is allowed only in

languages that do not have determiners and proposes two alternative accounts of

adjectival LBE (or constituent discontinuity) in Serbo-Croatian. The first implementation

proposed by Bošković (2005) appeals to the theory of phases. Since DP is a phase,

extraction from DP is possible only when it proceeds through the Spec of DP. To rule

out the adjectival LBE in English, Bošković posits that LBE is subject to the condition on

chain links (see Bošković (1994, 1997) and Saito and Murasugi (1999)), according to

which the item is required to cross an XP boundary when it is moved. Hence, in English,

an adjectival modifier cannot be extracted from the noun phrase by being moved to Spec

DP (by the condition on chain links) nor by being adjoined to DP (a condition on

extraction from phases). The complement of the embedded PP can, however, be

extracted via Spec DP:

451.
   a) * Beautiful he saw houses
         *[$_{DP}$ AP$_i$ [$_{D'}$ D [$_{NP}$ t$_i$ [$_{NP}$ ...
         * AP$_i$ [$_{DP}$ [$_{D'}$ D [$_{NP}$ t$_i$ [$_{NP}$ ...

   b) Who do you like friends of ?
         [$_{DP}$ NP$_i$ [$_{D'}$ D [$_{NP}$ [$_{N'}$ [$_{PP}$ t$_i$ ...

Since Serbo-Croatian does not have DPs, and NPs are not phases, adjectival LBE is

allowed in Serbo-Croatian. In Serbo-Croatian, as in Ukrainian, adjectival LBE, however,

is not allowed from the complement of a noun while the complement itself can be extracted from the same noun phrase. Moreover, adjectival LBE is allowed from this complement once this complement has been extracted (see chapter 7, section 7.2 for a discussion of this data in Ukrainian):

452.
  a)   **On je   vidio prijatelja <u>njegove majke</u>**
      He is   seen   friend   his   mother
      "He saw a friend of his mother."

  b)(?)? On je   <u>njegove majke</u>   vidio prijatelja
      He   is   his   mother seen   friend
      "He saw a friend of his mother."

  c) *<u>Čije</u>   je   on vidio prijatelja [*t* <u>majke</u>]?
      Whose is   he   seen   friend   mother
      "Whose mother did he see a friend of?"

  d)(?)? <u>Čije</u> je   on [*t* <u>majke</u>] vidio prijatelja?
      Whose is   he   mother seen   friend
      "Whose mother did he see a friend of?"

                                             (Bošković (2005): 8-9)

To rule out (452c) while allowing (452b), Bošković (2005) has to stipulate that, in Serbo-Croatian, an NP headed by a noun that takes a non-trace complement is a phase. This condition has to be evaluated at the next phase level so that (452d) is allowed. Bošković (2005) admits that this condition on phases is arbitrary enough to put the analysis based on phases into question and, therefore, offers an alternative account that posits different DP architectures for different languages.

According to the second implementation of DP/NP based analysis of LBE offered in Bošković (2005), languages differ as to whether the noun phrase in the language is headed by an adjective or by a noun. In languages that have determiners, A takes NP as a

complement while in languages that do not have determiners APs are generated in multiple specifier positions of the noun. Availability of LBE follows from these architectural differences. In AP-over-NP languages, like English, AP cannot be extracted because it is not a constituent. In NP-over-AP languages, like Serbo-Croatian, AP can undergo LBE. While appealing on an abstract level, this analysis does not straightforwardly account for the data in (452). Its coverage is also restricted to languages that allow only linear constituent discontinuity and has nothing to say about the languages that allow noun-adjective reordering.

The analyses that view constituent discontinuity as the result of AP extraction, account more or less straightforwardly only for linear discontinuity of bare noun phrases. In linear discontinuous DPs and PPs, the preposition surfaces before the adjective rather than before the noun, contrary to what the extraction analysis would make one to expect. Borsley and Jaworska (1988), who also propose an LBE account of discontinuous constituents, suggest that the preposition adjoins to the adjective before the adjective is extracted. This adjunction is implemented as a restructuring operation. Corver (1992) chooses to lower a preposition onto the adjective before performing extraction. Bošković (2005) suggest a third option: the adjective raises to some PP internal position that c-commands the preposition and the preposition raises and cliticizes on the AP. As the data analyzed in this dissertation shows, however, the prepositions that appear in front of the adjective in discontinuous constituents are often phonetically heavy and are unlikely candidates to act as clitics. Given that all nominal functional categories surface before the adjective and are ordered in relation to each other, one has to posit a rather robust

cliticization mechanism to account for several lowering/raising cliticization events. Finally, while indeed most Slavic languages that have constituent discontinuity do not have overt determiners, the data from Modern Greek present a major problem for the LBE analyses that make availability of extraction dependent on the presence of determiners in the language.

9.4 Summary

In this chapter, I provided a brief review of the three key types of movement-based approaches to constituent discontinuity. As I demonstrated, each approach faces its own challenges and leaves many questions unanswered. The analysis of constituent discontinuity as long-distance concord proposed in this dissertation was intended to answer some of these questions. The base-generation approach proposed here is closest in spirit to the traditional LBE account. The choice of base-generating the adjective in its in situ position over extracting it from the noun phrase is motivated on several grounds. Base-generation and long-distance concord provide a more natural account of the different locality restrictions on movement and discontinuity. The theory of discontinuity proposed in this dissertation has the advantage of explaining the failure of discontinuity in those instances when dislocation of the entire constituent is available while at the same time providing an alternative account for the island-like effects associated with discontinuous constituents. Freedom of word order in discontinuous constituents is another challenge that is easily overcome by base-generating the modifiers outside the noun phrase rather than positing multiples movement operations that feed into each other. Base-generation account derives discontinuous constituents that extend beyond two parts

without redefining restrictions on movement operations. Freedom of word order coupled with multi-part discontinuity present a serious challenge to all movement-based accounts. Note, however, that the MCL linearization algorithm proposed in this dissertation to account for the distribution of functional categories in discontinuous constituents has equal explanatory power for the Left Branch extraction accounts of discontinuity. It derives the desired distribution of nominal functional categories in relation to the long-distance adjectival modifier irrespective of whether the adjective is Internally or Externally merged in its spell-out location. This dissertation, therefore, provides a solution to some of the problems faced by the LBE accounts.

Conclusion

In this dissertation, I proposed a new analysis of the phenomenon of constituent discontinuity which takes into account the non-structural relations that exist between parts of a discontinuous constituent. In particular, discontinuous constituents the parts of which stand in an agreement relation to each other were analyzed as the product of the interaction between the long-distance nature of agreement and the syntactic properties of adjectives. Given Baker's (2003) treatment of adjectives as a default lexical category that can be generated in any syntactic position in the clause as long as that position permits free adjunction, I argued that an adjectival modifier in discontinuous constituents of this type is base-generated at a distance from the noun it modifies. Since agreement can be established between two non-adjacent items (Chomsky (2000, 2001)), the adjectival modifier base-generated at a distance from the noun it modifies can be licensed by agreement with this noun in the same way as the adjectival modifier base-generated inside the noun phrase. In both cases, agreement values the features of the adjective and ensures full interpretation. In this dissertation, I therefore advanced and defended the Radical Discontinuity Hypothesis (RDH)—a claim that agreement-based discontinuous constituents do not map onto a phrasal constituent at any point in the derivation. They are not the result of splitting a single phrasal constituent into several parts by way of movement but the result of long-distance concord.

A major challenge for the Radical Discontinuity Hypothesis comes from the distribution of functional categories in discontinuous constituents. The functional categories, such as functional prepositions and determiners, cannot be separated from the associated noun;

however, they surface before the long-distance modifiers of the noun even though they do not form a constituent with them. In this dissertation, I argued that the distribution of functional categories in discontinuous constituents should be attributed to the F-value ordering principle. I proposed that the F-value ordering principle responsible for extended projection formation in narrow syntax (Grimshaw (2005)) also guides linearization of the hierarchical structure at PF. By establishing a correlation between the asymmetric c-command and the F-value based ordering of heads of an extended projection, I formulated a well-formedness condition on the linearization of syntactic structure—the Mapping Constraint on Linearization for Head-initial Languages (MCL-HI)—which ensures that the items in a linear string are ordered in accordance with their F-values. Furthermore, I developed a linearization algorithm that implements the MCL-HI. The MCL algorithm combines the structure driven linearization principle of the LCA of Kayne (1994) with the F-value ordering principle of Grimshaw (2005). Like the LCA, the MCL algorithm generates a maximal set of pairs of non-terminals that are characterized by the relation of asymmetric c-command. After this set is generated, the F-value ordering mechanism is activated. The output of this mechanism is used to produce the linear ordering of items.

The MCL algorithm relies on the idea that an extended projection can be identified uniquely within a syntactic structure. To achieve this, I appealed to agreement as a syntactic process that involves feature valuation and feature sharing, as proposed by Pesetsky and Torrego (2007). On this view of agreement, valuation of features does not introduce new valued occurrences of the features into the derivation but converts distinct

occurrences of a particular feature into instances of the same feature. I adopted

Chomsky's (2000, 2001) mechanism of ancillary feature checking and posited that

agreement affects all the features associated with a given syntactic node simultaneously.

An unvalued feature establishes an agreement relation between two syntactic nodes and

all the features of these two nodes eligible for unification are unified as the result of

agreement. The uniqueness of each extended projection is achieved through the

mechanism of categorial feature unification. Two categorial features are unified when

the items that carry these features stand in an agreement relation with each other and the

values of these features are non-distinct. Agreement thus becomes a vehicle of extended

projection formation. A head of an extended projection establishes an agreement relation

with its complement, and the feature information inside the extended projection is shared,

making the mechanism of feature percolation redundant. Agreement alone ensures that

any given extended projection is not only characterized by the consistency of the

categorial feature values of its heads, as required by the theory of extended projection,

but is in fact associated with the same categorial feature. Each extended projection is

thus identified uniquely as a syntactic item all heads of which share the same categorial

feature.

The impact of the MCL-HI constraint on the linearization of syntactic structure was

illustrated by examining the linearization of extended projections that have been affected

by movement transformations. Whenever a movement operation separates the lexical

item from the functional items with which it forms an extended projection in narrow

syntax, the MCL algorithm linearizes the functional items preceding this lexical item,

thus restoring at PF the F-value ordering between lexical and functional items. The MCL algorithm, therefore, restricts the output of both XP movement and head movement. As an independent finding, it licenses only those instances of head movement within an extended projection that comply with Travis's (1984) Head Movement Constraint while producing no linearization for the structures that violate this constraint. Travis's (1984) Head Movement Constraint is formulated in terms of government—a notion that is no longer considered theoretically viable. The MCL algorithm achieves similar result without the recourse to government. Although the MCL algorithm, as formulated in this dissertation, applies only to head-initial languages, which constitute the main object of the current study, the principle that underlies the MCL-HI constraint has the potential to account for variation in the directionality of headedness in different languages by parametrizing the linearization mechanism rather than syntactic structure. While in head-initial languages F-value ordering of heads of the extended projection is translated at the interface with PF into the relation of precedence, the ordering of syntactic items in head-final languages could be attributed to the translation of F-value ordering of heads of the extended projection into the relation of succession. The implementation of this idea is left for further research as is the analysis of mixed languages.

Crucially, the MCL linearization algorithm proposed in this dissertation supports the theory of discontinuous constituents which treats discontinuity, including DP and PP discontinuity, as a product of long-distance concord. It provides an explanation for the contrast in the distribution of lexical and functional categories in discontinuous constituents. These contrasts and the explanatory role of the MCL linearization

algorithm were studied both in relation to discontinuous PPs and discontinuous DPs. PP discontinuity was examined in detail on the basis of Ukrainian data. In Ukrainian, prepositions have clearly marked characteristics of a nominal functional category. They form a closed class of syntactic items, take only one kind of complement, and are inseparable from their complement. As functional nominal categories, they are required to be generated in the immediate vicinity of the noun by the theory of extended projection (Grimshaw (2005)). Adjectives, however, are free to be generated independent of the nominal extended projection. At the outset of the derivation the long-distance adjectival modifier is not linked to the nominal extended projection. However, in order to be licensed, the adjective generated outside of the PP has to enter into an agreement relation with the noun that heads the PP. Independent evidence pertaining to secondary predicates testifies that agreement of this type is indeed available in the language. When the agreement relation between the adjective generated outside of the PP and the noun that heads this PP is established, the categorial features of the adjective and the noun are unified alongside the φ-features, and the adjective becomes associated with the nominal extended projection as a whole. Since the MCL linearization algorithm linearizes all the items according to their F-value based on their association with a particular extended projection, the agreement-based association of the long-distance adjectival modifier with the nominal extended projection determines the linearization of the preposition before the adjectival modifier.

In Ukrainian, discontinuous prepositional phrases, like discontinuous noun phrases, are characterized by a free noun-adjective order. The adjectival modifier can appear either

before or after the noun. The preposition, however, always appears preceding the

leftmost item of a discontinuous constituent. Noun-adjective re-ordering that gives rise

to inverse discontinuous constituents was analyzed in this dissertation as the result of

movement of the noun from its thematic position to the left periphery of the clause.

Since the F-value of all lexical items is the same, these items can be re-ordered in relation

to each other in the hierarchical structure by way of movement, and the re-ordering is

maintained in the course of their linearization at PF. Given the unconstrained nature of

Merge assumed here, the adjective and the noun can be re-ordered either by fronting the

entire PP or by fronting the NP embedded inside it. When the bare NP is fronted, the

preposition is linearized preceding this NP at PF. It is possible that languages do have a

choice as to whether to dislocate a noun phrase or a prepositional phrase that contains it.

The analysis of inverse discontinuous PPs that relies on the extraction of the noun phrase

from the PP followed by the linearization of the preposition before the noun has a

potential advantage of providing an explanation for the phenomenon of preposition

stranding. Whether preposition stranding occurs or not in any given language depends on

the lexical properties of the preposition in this language. Given the MCL algorithm,

preposition stranding is predicted to occur in those cases when the categorial feature

sharing between the preposition and its complement does not take place.

The distribution of determiners in Modern Greek was analyzed in this dissertation as

evidence that the asymmetries discussed in relation to the distribution of the preposition

in Ukrainian are of a general nature and are not confined to a single functional category.

Like in Ukrainian, in Modern Greek, the modifier can easily be separated from the head

noun, while the determiner cannot. The order between the noun and the modifier can be changed, while the order between the noun and the determiner as well as the order between the determiner and the preposition cannot. The preposition must precede the determiner and both must precede the first lexical item of the discontinuous noun phrase. The MCL algorithm, developed in this dissertation, captures the uniform behavior of these two functional categories in discontinuous constituents. The class of determiners in Modern Greek, however, is not homogeneous and the two core determiners, the definite article and the indefinite article, show different behavior patterns in the language. The indefinite article in Modern Greek behaves in the same way as the preposition while the definite article is subject to optional doubling. The account of Determiner Spreading in discontinuous DPs in Modern Greek proposed in this dissertation is based on Kariaeva (2003), who argues that modifiers generated outside of the DP in Modern Greek have to agree with the entire DP in definiteness as well as in gender and number. This expanded agreement in φ-features creates the effect of Determiner Spreading. The lack of Determiner Spreading in indefinite noun phrases results from the fact that the indefinite article in Modern Greek is not a true determiner but a quantifier and does not trigger the indefiniteness agreement and indefiniteness spreading. The indefinite discontinuous noun phrases and the definite discontinuous noun phrases are, therefore, associated with the same syntactic structure.

While the prepositions and the determiners considered in this dissertation belong to the class of nominal functional categories, free-standing degree expressions in Ukrainian show a full range of lexical rather than functional properties and form a single syntactic

class with other adverbs in the language. Like adjectival modifiers, degree adverbs can appear separated from the word they modify by other lexical material, they can be re-ordered in relation to other lexical items that pertain to the same abstract constituent, and have to be preceded by all the nominal functional categories that belong to the larger nominal constituent with which they are associated. In this dissertation, I argued that, like adjectives, degree adverbs can be generated in any position in the clause that permits adjunction and are licensed through relations they establish with other syntactic categories in narrow syntax. While the key licensing relation for adjectives is the valuation of their φ-features, the key licensing relation for degree adverbs is the valuation of their degree feature. The linearization of the nominal functional categories before degree adverbs is enforced by the same mechanism of categorial feature sharing that enforces linearization of the nominal functional categories before long-distance adjectival modifiers. The categorial feature of the degree adverb is unified with the categorial feature of the adjective in the course of degree feature valuation. As a result, the degree adverb is associated with the entire noun phrase and shares the categorial feature with all the nominal functional categories.

The agreement-based account of constituent discontinuity proposed in this dissertation was supported by examining the contrasts in the distribution of agreeing and non-agreeing modifiers. In particular, nouns can be modified not only by adjectives but also by PPs. In discontinuous noun phrases in Ukrainian, PP-modifiers have the same surface distribution as adjectives and can appear either before or after the noun. PP-modifiers, however, cannot form a linear discontinuous structure with a noun phrase embedded

inside a prepositional phrase. In Modern Greek, PP-modifiers also share the distribution with adjectives in discontinuous structures that involve DPs. However, the determiner is required to precede the long-distance adjectival modifier but cannot precede the fronted PP. The contrast in the distribution of the determiner in relation to adjectival and PP-modifiers in Modern Greek discontinuous DPs was attributed to the structural differences between the two types of modification. The adjectival modifiers are associated with the nominal extended projection through agreement. The resulting feature sharing determines the linearization of the nominal functional categories preceding the long-distance modifier at PF. Since PP-modifiers do not establish any Agree relations with the noun phrase they modify, nominal functional categories cannot be linearized preceding the fronted PP-modifier and surface before the noun, as usual. While adjectival modifiers can be generated at a distance from the noun and foster relations with the noun through agreement, PP-modifiers can relate to the noun phrase only structurally, through direct merger and can be separated from the noun they modify only by way of movement. This explains why PP-modifiers cannot form a linear discontinuous structure with the noun phrase embedded inside another PP. Since extraction from PPs is subject to restrictions, PP-modifiers remain trapped inside the matrix PP. The adjectival modifiers avoid violating the ban on extraction from the matrix PP by being base-generated outside of the PP and agreeing with the noun phrase from a distance.

Unlike PP-modifiers, Genitive possessors have the same distribution as adjectival modifiers. In linear discontinuous PPs, the preposition has to precede the possessor when the possessor is fronted. This was explained as the consequence of case assignment. I

provided an account of Genitive possessor fronting that utilizes the mechanism of Predicate Inversion of Den Dikken (1995, 2006)). I argued that the relation between the possessor noun phrase and the possessee noun phrase is mediated by the Relator head which takes a possessor phrase as a complement. Possessor phrase is headed by the null preposition that assigns Genitive case to the possessor. Genitive possessor is extracted from the matrix PP by way of Predicate Inversion when the Genitive case assigning preposition incorporates into the Relator head and the resulting Relator node incorporates into the matrix P. Fusion of the categorial features of the Genitive case assigning preposition and the matrix preposition, which results from incorporation, determines the linearization of the matrix preposition before the fronted Genitive possessor at PF. PP-modifiers cannot be extracted from the matrix PP in this way because the overt preposition blocks the incorporation process that enables Predicate Inversion. The analysis of Genitive possessor fronting that utilizes the mechanism of Predicate Inversion also accounts for PP-modifier stranding. PP-modifiers form a discontinuous string with the noun they modify when the matrix noun phrase is extracted from the matrix PP it heads. This strands the PP-modifier inside the matrix prepositional phrase while the matrix preposition is linearized preceding the matrix noun phrase at PF. The analysis of the contrast in the distribution of PP-modifiers and Genitive possessors developed in this dissertation sheds a new light on the A-over-A principle and opens a possibility of maintaining this principle even in those instances where it was considered to fail.

The account of constituent discontinuity proposed in this dissertation was also supported by comparing the restrictions on movement and agreement in Ukrainian. I demonstrated

that movement and agreement are subject to different locality constraints in the language. While NP and PP extraction from noun phrases is possible in Ukrainian, long-distance concord with the noun embedded inside another noun phrase is not. I argued that the locality restrictions on agreement in Ukrainian are distinct from intervention effects. Not every intervening noun phrase blocks long-distance adjectival agreement and discontinuity. Long-distance concord is blocked only when the projection of the intervening noun contains the goal. In other words, the projection of a head, rather than the head itself, imposes constraints on long-distance adjectival agreement in Ukrainian. I, therefore, concluded that long-distance agreement is not constrained in terms of the closest c-command; rather, the locality restrictions on discontinuity in Ukrainian are defined in terms of agreement domains, as in Bobaljik and Wurmbrand (2005). The Ukrainian data pertaining to long-distance concord, however, contrasts with the German and Japanese data pertaining to long-distance case-assignment, examined by Bobaljik and Wurmbrand (2005). While the projections of a nominal category constrain long-distance adjectival agreement, the projections of a verb do not block constituent discontinuity. Moreover, long-distance concord can cross a VP boundary even when this VP is a complement of a lexical verb. The contrast between the German and Japanese data studied in Bobaljik and Wurmbrand (2005) and the Ukrainian data examined in this dissertation was explained by defining agreement domains relative to the type of agreement involved. While an extended projection of the verb constitutes a locality domain for case assignment, an extended projection of the noun constitutes a locality domain for concord.

The difference in locality constraints on case assignment and concord was captured in terms of the directionality of feature valuation. I argued that each lexical category prevents other categories from transferring feature values in the same direction in which it does. In other words, it monopolizes the syntactic space delimited by its extended projection in order to ensure the valuation of its own unvalued features. Since nominal heads are inherently valued for φ-features and value the φ-features of the probe, the projections of the nominal head block valuation of the features of a probe by any other goal they contain. Since verbal heads are inherently valued for case feature and value the case feature of a goal, the projections of the verbal head block valuation of the features of any goal they contain by other probes. I formulated the Directionality Parameter for Agreement (DPA) which links the categorial value of the syntactic head with the general direction of feature valuation. Since in concord all feature values are transferred in the same direction in which the φ-feature values are transferred, nominal projections block concord. Verbal projections do not block concord because they permit transfer of feature values to the probe. The DPA is incorporated into the definition of the Locality Constraint on Agreement (LCOA), which applies only when the probe does not form an extended projection with the head of the agreement domain, thus treating an entire extended projection as a single agreement domain. The LCOA accounts both for the facts discussed in Bobaljik and Wurmbrand (2005) and for the Ukrainian data discussed in this dissertation. Unlike intervention effects, Locality Constraint on Agreement and the Directionality Parameter are not formulated in terms of specific features. The LCOA, therefore, correctly predicts that valuation of the degree feature is also blocked by a projection of a nominal category and is not blocked by a projection of a verbal category.

I examined the predictions the LCOA makes regarding the availability of constituent discontinuity when the noun is embedded inside another adjectival phrase. Since, as argued in this dissertation, the categorial feature of the adjective is not valued in the lexicon, the LCOA predicts that adjectives allow long-distance agreement with their complements, which is indeed the case. The categorial feature of the adjective is, however, valued in narrow syntax through agreement. I demonstrated that valuation of the adjectival categorial feature has impact on its ability to block long-distance concord. A projection of the adjective used attributively whose categorial feature has been valued as nominal through agreement with the noun blocks long-distance agreement with its complements. Adjectives used predicatively, however, do not block long-distance agreement with their complement. Unlike adjectives used attributively, they do not form a single constituent with the subject of the clause.

Constituent Discontinuity in Ukrainian is blocked not only across a nominal boundary but also across a clausal boundary. A long-distance concord is impossible into declarative and interrogative subordinate clauses. Extraction, however, is possible from certain interrogative clauses. Bošković (2007b) argues that in languages where agreement into finite clauses is impossible, long-distance agreement is blocked by a complementizer. I followed up on this insight and argued that complementizers in Ukrainian are ambiguous between a nominal and a verbal status. Since a categorial feature of a complementizer is valued as nominal in Ukrainian, LCOA correctly predicts that long-distance agreement into complementizer-headed clauses is blocked. I demonstrated that the availability of long-distance concord and linear noun phrase discontinuity across the clausal boundary in

Ukrainian correlates with the presence or absence of complementizer layer in a syntactic structure.

In this dissertation, I focused primarily on the syntactic properties of agreement-based discontinuous constituents and provided only a cursory look at the intonational, pragmatic, and semantic aspects of discontinuity. I observed that the choice between vP and TP, as sites for adjunction of a long-distance adjectival modifier, does not play any specific pragmatic function. Following Zubizarreta (1998), I assumed that some mechanism of the intonation-to-syntactic structure mapping determines the information structure of the utterance. Alignment plays an important role in this mapping. I therefore posited that base-generation of long-distance modifiers at the left-edge of prosodically significant syntactic domains marks them as links to the discourse state at hand and is translated into some form of restrictive interpretation at the interface. As a result, I chose to forego positing multiple Topic and Focus projections and maintained that adjunction itself is sufficient to produce a needed configuration for intonation-to-syntactic structure mapping. I also briefly considered the issue of full interpretation that arises given the Radical Discontinuity Hypothesis. I argued that full interpretation of base-generated long-distance modifiers can be achieved once not only structural but also agreement relations are taken as input into semantic analysis. I argued that by referencing agreement, implemented in terms of feature sharing, one can provide a simple transition from the syntactic representation to the semantic analysis within the framework of DRT. Agreement information, once it is built into the DRS conditions, makes many of the DRS construction rules redundant while naturally accommodating discontinuous constituents.

Working out the details of the pragmatic and semantic proposals was left for further research.

Finally, I also left unexamined broader cross-linguistic implications of the proposed analysis of agreement-based discontinuous constituents. This was largely due to the restrictions imposed by the scope of this dissertation. The primary goal of this research project was to understand in depth a particular subsection of the vast and diverse phenomenon of constituent discontinuity. While a unified account of discontinuous constituents across languages remains an ultimate goal, the phenomenon of constituent discontinuity has often been defined too broadly, grouping together constructions which, given a closer look, appear to have distinct syntactic origins. This dissertation has attempted to disentangle the complex web of discontinuous constituents and by following a single thread of research has hopefully come one step closer to unraveling the mystery of this complex phenomenon.

References

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[1] Agreement information is fully glossed on all nominal and adjectival items in the non-English data throughout this dissertation, unless these items are part of a general context or the data are cited from another source. Agreement information on verbal items is indicated only in the case of pro-drop. Since verbal domain does not constitute the focus of discussion, verbal functional information, such as tense, aspect, and mood, is rendered through translation only and is glossed when either potentially lost in translation or cited. The interpretation of all grammatical sentences is provided in italics. The intended interpretation of ungrammatical sentences is provided only whenever indispensable for clarity and is enclosed in parenthesis. Primary (narrow) focus of the utterance is rendered with the help of caps when the interpretation of the utterance is given while secondary focus is rendered by means of small caps. Capital letters are used in the transcription line to render emphatic stress.

KEY TO GLOSSES: 1, 2, 3 --1st person, 2nd person, 3rd person, ABS -- Absolutive case, ACC -- Accusative case, CL -- clitic, DAT -- Dative case, EMPH -- emphatic particle, ERG -- Ergative case, F - feminine gender, FOC -- Focus, FUT -- Future tense, GEN -- Genitive case, I, II, III, IV -- noun class, INST -- Instrumental case, INTERR -- interrogative, LOC -- Locative case, M -- masculine gender, N -- neuter gender, NEG -- negation, NMLZ -- nominalizer, NOM -- Nominative case, PL -- plural , PREP -- Prepositional case, PRES -- Present tense, PST -- Past tense, PST-EVID -- Past Evidential, PST-PRT -- Past Participle, REFL -- reflexive, SG -- singular , SUBJ -- Subjunctive, TOP -- Topic.

[2] Items are arranged in an utterance in Ukrainian in terms of their salience in the context with the more salient item always preceding a less salient item. Sentential topic is always the leftmost topicalized item in the utterance (see chapter 2, section 2.1 for more details). Since the gradation in the salience of topics in any utterance cannot always be rendered precisely in a compact translation, my priority will be to document the topic-focus relations between the items that form a discontinuous constituent. One should, however, keep in mind the left to right ordering principle when assessing the salience of topicalized items in an utterance in general.

[3] The data provided throughout this dissertation are both the result of introspection (the author is a native speaker of Ukrainian) and have been elicited from other native speakers. Many of the facts have been previously discussed in literature on discontinuous or split constituents (see chapter 9 for an overview) and credit lines are provided for all cited data.

[4] Each interpretation corresponds to a distinct intonation contour assignment to the same linear string. In Ukrainian, topics are associated with a rising intonation contour while focused items are assigned a falling intonation contour. See footnotes 12 and 13 for further discussion.

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[5] Pesetsky and Torrego's (2007) system utilizes both the notion of feature valuation and feature interpretability as two independent syntactic concepts. I will only adopt the notion of feature sharing that they introduce into generative framework following the work of Brody (1997), Frampton and Gutmann (2000) and base it on the techniques used in HPSG framework (Pollard and Sag (1994), Sag et al. (2003).

[6] Ancillary feature checking takes place when the uninterpretable feature F of the Goal β erases as part of the feature matching established between the uninterpretable features of the Probe α and the interpretable features of the Goal on which the feature F is dependent. Crucially, ancillary checking of the feature F takes place only when the complete set of the features on which F is dependent enters Agree relationship. The φ-completeness is designed to prevent premature Case checking on the noun in raising constructions and exceptional Case marking constructions.

[7] Note that the syntactic theory of discontinuous constituents proposed in this dissertation is equally compatible with a more rigid concept of the information structure of an utterance whereby pragmatic features serve as direct input into syntactic transformations.

[8] The second example cited by Pereltsvaig (2008) is not relevant since it does not contain an instance of constituent discontinuity:

(i) **Ja očen' xoču poblagodarit'Nikolaevu za konečno bol'šuju pomošč v rabote.**
I very want to-thank Nikolaeva for surely big help in work
(a) #"I surely want to thank Nikolaeva very much for her extensive help in my work"
(Pereltsvaig (2008): 34)

(b) "I want to thank Nikolaeva very much for her certainly extensive help in my work"

The adverb "surely, certainly" can only be understood in (i) as modifying the adjective it is adjoined to rather than the verb, as Pereltsvaig's (2008) translation suggests. Correct translation is provided in (b).

[9] The indefinite article in Modern Greek is homonymous with the numeral "one". When used as a numeral, "ena" can stand alone:

(i) **Agorase mono ena**
bought.3.SG only one.N.SG.ACC
"He bought only one"

It can also be separated from the noun, forming a discontinuous constituent with it:

(ii) **Ena agorase aftokinito**
a.N.SG.ACC bought.3.SG car.N.SG.ACC
"He bought ONE (#a) car (and not two cars)."

The numeric and contrastive interpretation is obligatory in this case. I do not consider the uses of "ena" as a numeral and examine only its distribution as an indefinite article.

[10] The claim that the extended nominal projection exceeds the DP-IP analogy and is characterized by an additional maximal projection equivalent to Complementizer phrase

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in the clausal domain is not novel in literature. In a proposal that predates Abney's (1987) dissertation by several years, Szabolcsi (1983b) suggests that the NP configuration is reminiscent of S configuration not only due to Inflection morphology but also due to the presence of the peripheral position analogous to Complementizer which she labels KOMP. Horrocks and Stavrou (1987) also posit the existence of Comp node in the extended NP projection in Modern Greek arguing that it serves as an "escape hatch" for extraction out of the NP. This Comp position, they argue, is a nominal Topic position that is utilized in Greek for expressing emphasis. More recently, Ihsane (2003) and Laenzlinger (2000) developed different versions of layered DP architecture that incorporate Rizzi's (1997) notion of the Left Periphery.

[11] Note that Functional Type Raising increases the F-value of the syntactic node affected by agreement but does not lower it. So Functional Type Raising does not take place when the preposition enters into agreement with the DP:
(i)   *Agreement between P and DP*:
         P: {cat(nom[5]), gen([10]), num([15]), case(acc[20]), ref([30]), F(7)}
         DP: {cat(nom[5]), gen([10]), num([15]), case([20]), ref(def[30]), F(5)}
Although the referential feature of the preposition is valued as the result of agreement, its F-value is higher than the F-value associated with the definiteness value in the language and no type-raising takes place. If the referential feature is spelled out only on those terminals in the language that are dominated by the syntactic node that undergoes functional type-raising, we can explain why definiteness spread does not affect the preposition in Modern Greek. The Functional Type Raising, therefore, predicts that the definiteness spread is going to affect only those items that have lower F-value than the determiner.

[12] The acceptability of sentences in which the degree adverb follows an attributive adjectival modifier varies from speaker to speaker. The sentences in (229)-(230) are marked for some speakers. The markedness of these sentences, however, has prosodic/pragmatic rather than syntactic roots. Note that the sentences in (229)-(230) contain two instances of discontinuity: noun-adjective discontinuity and adjective-degree adverb discontinuity. Pereltsvaig (2008) examines the intonation of discontinuous constituents in Russian and comes to the conclusion that they are associated with two intonation patterns. Intonation construction 2, or IC-2 in traditional Russian grammars (Academy Grammar (1960): 98, 107, 109-111, as cited in Pereltsvaig (2008)), has only one intonation peak, which is aligned with the item that receives narrow focus interpretation. Intonation construction 5, or IC-5 (Academy Grammar (1960): 98, 107, 115-118), has two peaks: one aligned with a topicalized item and another aligned with the item that receives narrow focus. Discontinuous constituents in Ukrainian are also characterized by these two intonation patterns. While the first intonation pattern is commonly associated with a linear discontinuous constituent, the second intonation pattern is commonly associated with an inverse discontinuous constituent. Therefore, in the case of noun-adjective discontinuity, the adjectival modifier is typically assigned a falling (focus) intonation contour. The language, however, requires this contour to be the final prominent contour of the prosodic phrase. The items that appear to the right of the

focused item are pronounced at a low pitch. Speakers who have a strong preference for associating all long-distance modifiers (including degree adverbs) with some degree of intonational prominence resist such de-accenting of degree adverbs and perceive sentences in (229) and (230) as marked.

[13] Speakers who find (229)-(230) marked tend to find (231b) much less marked. This supports the prosodic explanation given in footnote 12. The sentence in (231b) contains only one instance of discontinuity and can be assigned the intonation pattern typical of inverse discontinuous constituents, with the rising intonation contour associated with the adjective and the falling focus contour associated with the degree adverb. Note that while IC-2 intonation pattern is typical of linear discontinuity and IC-5 intonation pattern is typical of inverse discontinuity, IC-5 can also be assigned to a linear discontinuous constituents and IC-2 can also be assigned to an inverse discontinuous constituents (see Pereltsvaig (2008)). Assignment of IC-2 contour to the sentence in (231b), however, makes it more marked for the speakers who find (229)-(230) marked since it requires de-accenting of the stranded degree adverb.

[14] Zubizarreta (1998) observes that the foci in the pair-list answers to a multiple wh-question have to be interpreted together as a bundled value:
(i)   *Background Assertion*: there is an (x, y), such that x gave roses to y
      Main Assertion: the (x, y), such that x gave roses to y = (John, Mary), (Michael, Natalia), etc.
The Assertion Structure, which Zubizarreta (1998) posits as the vehicle of pragmatic organization of the utterance, entails that each utterance can have only one focus. The values provided for the wh-words in a pair-list answer are, therefore, interpreted as a single item. Crucially, the Assertion Structure does not provide any ordering between the foci. That such ordering exists has been noticed by Bolinger (1978). One of the foci functions as a link to the discourse at hand while the other ranges over the possible variable values derived through such linking:
(ii) a. It's nice to have all those times scheduled, but when are you doing what?
         (# but what are you doing when?)
     b. It's nice to have all those activities ahead of you, but what are you doing when?
         (# but when are you doing what?)
The wh-foci in (ii) are ordered as topic and focus in relation to each other, rather than remain as two independent foci. The first wh-word has to be able to link to the discourse at hand for the utterance with multiple wh-words to be interpreted while the second wh-word ranges over the output of the first (see also Hornstein (1995), Comorovski (1996)).

[15] The sentences of this type are acceptable with "ena/mia" only when "ena/mia" is used as a numeral and not as an indefinite determiner:
(i)   **Mia   *(‖) apo to sxolio   sinandise   jineka**
      one.F.SG.ACC from the school.N.SG.ACC meet.3.SG.PST woman.F.SG.ACC
      "He met ONE woman, a woman FROM THE SCHOOL."
In this case "mia" is a lexical and not a functional item (see footnote 9). It forms a discontinuous constituent with the noun "jineka." This relation between the numeral and the noun phrase is separate from the process of PP-modifier extraction. "Ena" and "apo

to sxolio" do not form a single constituent in (i). This is marked by the pause between the numeral and the PP-modifier.

[16] Only the example in (314c) comes from Androutsopoulou (1997). The paradigm was filled in on the basis of the data gathered from native speakers. Note that the speakers I consulted deemed the examples in (314b-c) to be strongly ungrammatical while Androutsopoulou (1997) assigns ?? to the sentence in (314c).

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Employment

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Publications

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