Possessor Extraction in Greek and the left periphery of the DP
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Section 1: Introduction

In this paper, I address the phenomenon of possessor extraction in Greek, and the information that the extraction of possessor and other elements can reveal about the internal structure of the determiner phrase. My central claim is that there are positions within the DP that are available to certain DP-internal elements as an escape hatch for further movement outside the DP region. These positions are on the left of the determiner. Since more than one elements can appear preceding the determiner in Greek I assume that there is a left periphery in the DP similar to the one in the clausal domain (Rizzi, 1997). In other words, the DP structure parallels the clausal structure in that it has a region in which wh, focus and topic elements move to, and corresponds to the CP region (in its detailed structure as put forward by Rizzi (1997)).

The truth of this claims rests on the examination of the surface linear order of elements within the determiner phrase in Greek and the possibilities of extraction of these elements in constructions that involve pronominalization, relative clauses, topicalization, focalization, and wh-movement. In Greek such movement is not unconstraint but follows a strict pattern similar to the extraction exhibited in Romance languages (Cinque (1980), Milner (1982), Giorgi & Longobardi (1991)). The pattern allows for extraction of a genitive DPs from a larger DP only when the genitive DP is the highest in the hierarchy, possessor >> external argument >> internal argument, where external and internal arguments stand for the nominal arguments of the head noun. Although DP's that include two genitive arguments of the head noun are limited to specific types of nouns in Greek, when they appear they follow the pattern illustrated above.

I argue that this regularity is evidence for a detailed DP structure which is parallel to clausal structure and in which the genitive possessor is positioned higher with the external argument immediately following it and the internal argument immediately following the noun. Typical word order is derived via movement of the head noun to functional projections in the DP to check agreement features. Extraction of the different nominal arguments is achieved via internal movement to an escape hatch in specifier position of a projection within the left periphery of the DP that is also a landing site for focus and topic elements.

The paper is organized as follows. In section 2, I review the literature on the internal structure of the determiner phrase and present the data that lead to the postulation of a number of functional projections following the determiner and crucially the placement of nominal arguments in the lower region of the DP. I give the details of the syntactic properties of the Greek determiner phrase and the order and form in which the different nominal arguments appear in the DP. In section 3, I present more data from Greek that involve extraction from the DP. The data includes constructions with pronominalization, relative clauses and wh-movement. I also show cases of DP internal focus and the placement of demonstratives in Greek. Based on the data I argue for a detailed structure of the left perophery of the DP, following the corresponding structure of the clausal domain, proposed by Rizzi (1997). It is shown that only certain elements can be extracted from the DP in Greek. This extraction has to be preceded by a DP internal movement in which the moving element lands in an escape hatch in the left periphery, and subsequently moves from

there to the next landing site. Furthermore, I show that if an element moves to a position preceding the determiner in the DP then it can freely move to the clausal domain. Such is the case with Greek focused adjectives, possessors, and demonstratives.

In section 4 I return to cases of possessor extraction and present a brief typology of the phenomenon exploring languages that allow for optional extraction (Greek, Hungarian) and languages that do not allow extraction at all (English, German). I claim that this cross-linguistic variation can be explained if we assume the first step of the extraction process to be DP internal. If the analysis is on the right track then it explains in a straightforward way that languages that do not allow for this first step do not allow for possessor extraction at all.

Finally, in section 5 I review the main points of my analysis and examine a number of problems that arise and can be the focus of further research.

Section 2: DP Structure

Although there is still work to be done on the exact structure of the determiner phrase, there is now a clearer idea on what this structure might look like. Work on this area has progressed a lot since the emergence of what became known as the DP hypothesis (Abney, 1987). The basic idea behind the DP hypothesis is that the Determiner Phrase is the maximal category that heads the noun phrase. This assumption resolved the problems that were posed for X'-theory unifying the treatment of noun phrases and clauses. Subsequent work (Ritter, 1991, Bernstein, 1993, Szabolcsi, 1994, Zamparelli, 1995) have shown that there are more than one functional projections that intervene between the determiner projection and the nominal system. The evidence for the existence of these projections comes from head movement of the nominal head, within the DP, resulting in different linear orders with respect to adjective placement. Ritter (1991) for example, argues for a number projection within the DP in order to account for noun head movement in construct state and free genitive noun phrases in Hebrew. Szabolcsi (1994), on the other hand, argues for an Agr projection, in order to account for the assignment of Nominative case to possessor phrases in Hungarian. We can assume then a level in the determiner phrase that corresponds to the IP system of the clausal domain and includes a number of functional projections:

(1)

DP
|
D'
|
D
  AGRP
  |
  AGR'
  |
  AGR
    NumP
    |
    Num'
    |
    Num
      NP
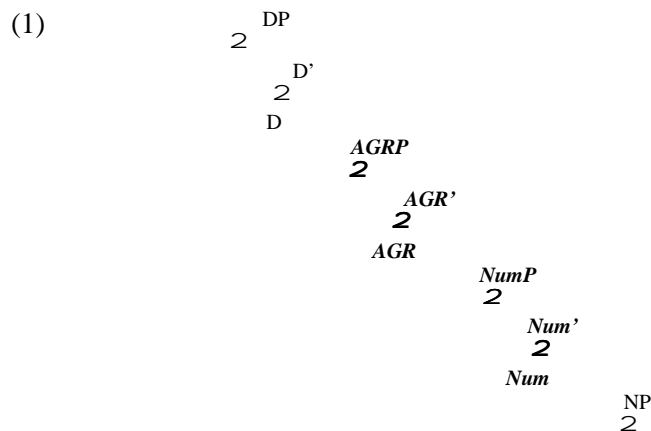
The second system in the DP that has been researched extensively is the one that corresponds to the 'root', lexical material in the domain of the noun phrase. Some evidence for this DP domain comes from extraction possibilities in Romance languages and Greek. Extraction from the DP has been studied extensively in the literature (Milner, 1982, Cinque, 1980, Longobardi & Giorgi, 1991, Valois, 1991). The possessor is not the only nominal argument that can be extracted. The external and internal arguments of nouns can also be extracted. However, this extraction process allows for the highest element in the hierarchy Possessor>>External argument>>Internal argument to extract.

 When the possessor is present it can be extracted while extraction of the rest of the arguments is ruled out. Similarly, in the absence of a possessor, only the external argument can be extracted. Finally, when no other argument is present the internal argument can be extracted.

Cinque (1980) observed that in Italian *di*-DPs introduce the external and the internal arguments of a nominal in a DP:

2.   i.   La descrizione di Giorgio dei particolari dell'incidente   Cinque, 1980
            'The description of G. of the details of the accident'

When a possessor or external argument and an internal *di*-DP are present, only the possessor or the external argument can be extracted in relative clause structures:

3.   i.   Giorgio, [$_{PP}$ di cui] ho sporcato [$_{DP}$ la fotografia di Cesare t]…
            'G. of whom I have dirtied the picture of Cesare …'

     ii.   *Giorgio, [$_{PP}$ di cui] ho sporcato [$_{DP}$ la tua fotografia t] …
            'G. of whom I have dirtied your picture …'

When an external and an internal argument *di*-DP are present, only the external argument can be extracted:

4.   i.   Giordio, [$_{PP}$ di cui] abbiamo messo in ridicolo [$_{DP}$ la descrizione di Anna t]
            'Giorgio, of whom we have made fun of the description of Anna …'

     ii.   Giordio, [$_{PP}$ di cui] abbiamo messo in ridicolo [$_{DP}$ la tua descrizione t]
            'Giorgio, of whom we have made fun of your description …'

Finally, an internal argument can be extracted when the external argument or the possessor are not present:

6.   i.   Giorgio, [$_{PP}$ di cui] ricordiamo perfettamente [$_{DP}$ la descrizione t] …
            'G., of whom we remember perfectly well the description …'

A similar pattern is observable in French.

A *de*-DP can be a possessor, an "external" argument or an "internal" argument of the nominal. Correspondingly we can have:

7.   i.   Le portrait de ce collectionneur / son portrait (possessor)   FRENCH - Valois (1991)
            Le portrait de Rembrandt / son portrait (external argument)
            Le portrait d'Aristote / son portrait (internal argument)

Only the highest argument in the hierarchy mentioned above can be pronominalized:

8. i. Le portrait d'Aristotle$_1$ de Rembrandt$_2$ de ce collectionneur$_3$
        'The portrait of Aristotle of Rembrand of the collector'

    ii. Son$_3$ portrait d'Aristotle$_1$ de Rembrandt$_2$
    iii. Son$_{2,3}$ portait d'Aristotle$_1$
    iv. Son$_{1,2,3}$ portait

In Greek, the nominal arguments usually follow the noun in the DP:

9. i. i   katastrofi   tis polis   apo tus Italous
        the destruction-NOM the city-GEN by   the Italians-ACC

        'the destruction of the city by the Italians'

Nominals derived from ditransitive verbs can have prepositional arguments of the same form as in their clausal counterparts:

10. i. o Petros   edose ena vivlio   stin   Maria
        the Petros-NOM gave   a   book-ACC to-the Maria-ACC

        'Petros gave a book to Mary'

    ii. to dosimo   enos vivliou   stin Maria   (apo ton Petro)
         the giving-NOM   a book-GEN   to-the Maria-ACC   (by Petro)

         'the giving of a book to Maria (by Petro)'

When more than one nominal argument is present, only the argument that immediately follows the noun can appear in Genitive case (Horrocks & Stavrou, 1987, Alexiadou, 2001). Compare (9.i) with the following ungrammatical example:

11. i. * i   katastrofi   tis polis   ton Italon
          the destruction-NOM the city-GEN the Italians-GEN

          'the destruction of the city by the Italians'

The rest of the arguments can appear in the DP introduced by a number of prepositions depending on their thematic roles. As shown in examples (9.i.) and (10.ii.) the external argument appears in a by-phrase following the passivization pattern in clausal structures.

However, two arguments marked with Genitive case are possible, but still marginal and only with nouns of the type 'description' (Horrocks & Stavrou, (1987), Alexiadou, (2001)):

12. i.   i perigrafi tu   topiu   tis   Marias
         The description the landscape-GEN the   Maria-GEN

         'Mary's description of the landscape'

    ii.   i metafrasi tis Odisias   tu Kakridi
          the translation the Odyssay-GEN the Kakridis-GEN

          'Kakridi's translation of the Odyssey'

The above examples are grammatical (although still marginal) independently of the linear order of the two nominal arguments.

In the cases with two genitives, Greek follows the French and Italian patterns in that only the external argument can be pronominalized or relativized when present and the internal argument pronominalizes or relativizes when the external is not present:

13. i.   i perigrafi   tis   tu Petru   (= tis Marias)
the description   her-CL-GEN   the Petru-GEN   (=of Mary)
'her description of Petros'

   i.   * i perigrafi   tu   tis Marias   (= tu Petru)
the description   its-CL-GEN   the Maria-GEN   (=of Petros)
'his description by Mary' (✓ 'his description of Mary')

   i.   i perigrafi   tu   (= tu Petru)
the description   its-CL-GEN   (=of Petros)
'His description'

   i.   i perigrafi   tis   (= tis Marias)
the description   its-CL-GEN   (=of the landscape)
'Her description'

Examples (13.iii.- 13.iv.) are ambiguous. They can refer either to the Theme argument of description (the element that is described) or to the Agent (the describer). The same pattern is observed in relative structures:

14. i.   i Maria,   tis opias i perigrafi   tu topiu   itan magiki
the-Maria-NOM the whose-GEN the description-NOM the landscape-GEN was magical
      'Maria, whose description of the landscape was magical'

   ii. *   to topio,   tu opiu   i   perigrafi   tis Marias   itan magiki
the-landscape-NOM the whose-GEN the description-NOM the Maria-GEN was magical
      'The landscape, of which the description of Maria was magical'

   iii.   to topio,   tu opiu   i   perigrafi   itan magiki
the-landscape-NOM the whose-GEN the description-NOM was magical
      'The landscape, of which the description was magical'

Wh-extraction of the genitive DP in Greek follows the same patterns. The interpretation of *tinos/whose* depends on the presence or absence of specific arguments of the noun, always following the order external argument>>internal argument:

15. i.   tinos i perigrafi   tu   Petru   t
whose the description-NOM the Petros-GEN
      'whose description of Petros'

   i. *   tinos i perigrafi   t   tis Marias   (t = tu Petru)
whose   the description-NOM   the Maria-GEN   (t=of Petros)
      'whose description by Mary' (✓ 'whose description of Mary')

   i.   tinos i perigrafi
whose the description-NOM
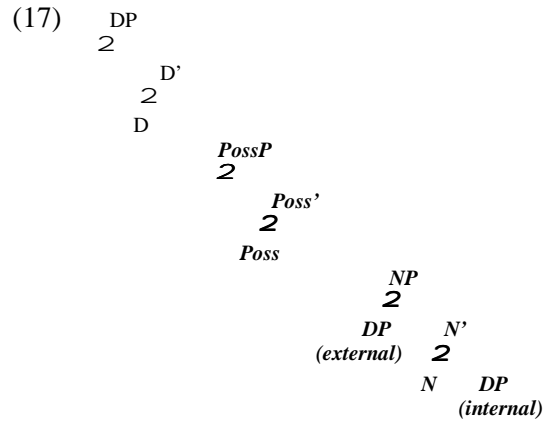   'whose description'

In (15.i.) 'whose' can refer either to *Maria*, the external argument of 'description' or to *Petros*, if *Petros* is interpreted as the describer. (15.ii.) is ungrammatical when 'whose' refers to the described element.. It can only be grammatical when 'whose' refers to a 'describer' of *Maria*. Finally, in (15.iii.) where no argument of the nominal is present, 'whose' can refer to either the external or the internal argument of the nominal. Observe also the same pattern with the following examples:

16.   i.   i afiksi   ton turiston   prokalese haos
the arrival-NOM the tourists-GEN   created   chaos-ACC.
'the arrival of the tourists created chaos'

ii.   tinos i   afiksi   t   prokalese   haos
whose the arrival-NOM created   chaos-ACC
'whose the arrival created chaos'

iii.   tinos prokalese   haos   i   afiksi   t
whose   created   chaos-ACC the arrival-NOM
'whose the arrival created chaos'

iv.   i kivernisi   empothise tin afiksi   ton turiston
the government-NOM prevented the arrival-NOM the tourists-GEN
'the government prevented the arrival of the tourists'

v.   tinos empothise   i kivernisi   tin afiksi   t
whose   prevented   the government-NOM   the arrival-ACC
'whose arival did the government prevent'

vi.   i kivernisi   anisihi   jia ti dieksagogi ton olimpiakon agonon
the government-NOM worries for the holding-ACC the   olympic games-GEN
'the government worries about holding the Olympic Games'

vii. *   tinos anisihi i   kivernisi   jia ti dieksagogi
whose   worries the government-NOM for   the holding fall-ACC
'holding what does the government worry about'

viii.*   jia tinos anisihi i   kivernisi   ti dieksagogi

ix.   jia ti dieksagogi tinos anisihi i   kivernisi

x.   jia tinos ti dieksagogi   anisihi i   kivernisi

xi.   o athelfos   tu Jiani   eftase htes
the brother-NOM the Jiani-GEN arrived yesterday
'Jiani's brother arrived yesterday'

xii.   tinos eftase xtes o athelfos
whose arrived yesterday the brother-NOM
'whose brother arrived yesterday'

Examples (16.ii.-16.iii.) show that both preverbal and postverbal positions of the subject in a transitive verb construction allow for extraction in Greek. The same is true for examples (16.iv.-16.v.) where the DP is in object position. However, when the DP is a prepositional complement the DP internal element cannot escape from the PP and the whole prepositional phrase is pied-piped to the spec-CP. However, within the PP the wh-element can move to the left periphery of the DP in correspondence with the previous examples, as example (16.x.) demonstrates. Finally,

extraction of the wh-element follows the same pattern with unaccusative verbs (examples 16.xi.-16.xii.).

If the above mentioned restrictions on what can be extracted from DPs and in what order, are constant cross-linguistically, we can assume the following structure for the base domain of the DP (namely the nominal, lexical domain and the realisation of the nominal argument structure):

(17)

```
        DP
       2
           D'
          2
         D
            PossP
            2
              Poss'
              2
             Poss
                  NP
                  2
                DP      N'
             (external)  2
                       N    DP
                         (internal)
```

Bringing the functional and lexical structures together, we end up with a clearer idea of what the DP structure might look like:

(18)

```
 DP
2
    D'        The Left Periphery (CP)
   2
  D
```

```
  AGRP
  2
    AGR'
    2
  AGR              The Functional Domain (IP)
      NumP
      2
        Num'
        2
      Num
```

```
  PossP
  2
    Poss'
    2
  Poss              The Lexical Domain (VP)
      NP
      2
    DP      N'
 (external)  2
          N    DP
            (internal)
```
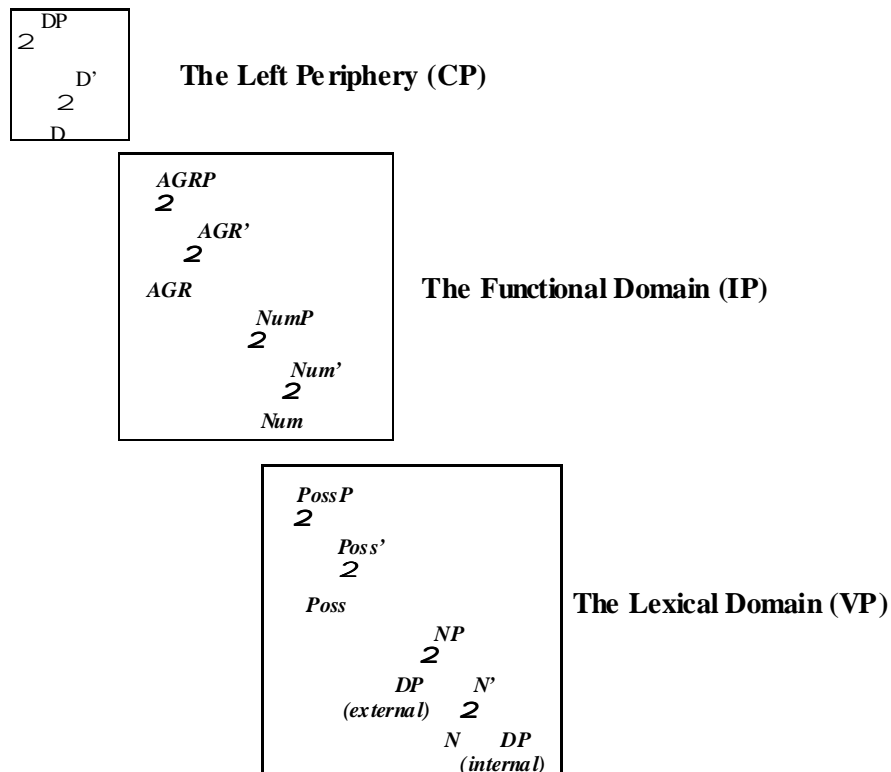
A number of issues remain with respect to what kind of material can appear in the left periphery of the DP and what are the syntactic properties associated with this domain. In the following section I will explore this issues using data from Greek and I will argue for a more detailed

structure of the left periphery of the DP, following the work done by Rizzi (1997) for the clausal left periphery.

Section 3: Possessors, Focus Elements, Demonstratives, and the Left Periphery of the DP.

In Greek, a possessor marked with Genitive case appears post-nominally in the DP:

19.   i.   to vivlio   tis Marias
                the book-NOM the Maria-GEN
                'Mary's book'

However, a different word order with the possessor preceding the possessed is possible. This structure is used most of the times as a way to put the possessor in a focus position:

20.   i. ?   tis Marias   to vivlio
              the Maria-GEN the book-NOM
              'Mary's book'

       ii.   TIS MARIAS   to vivlio (ki ohi tu Kosta)
              the Maria-GEN the book-NOM (and not Kosta's)
              'MARY'S book (and not Kosta's)'

Any possessor can appear as a weak pronominal clitic marked with Genitive case, attached to the possessed noun:

21.   i.   to vivlio   mu/su/tu/tis/mas/sas/tous
                the book-NOM mine/your/his/her/our/your/their-GEN
                'My/your/his/her/our/your/their book'

The clitic can also appear preceding the noun. However since it is a weak bound pronominal it needs to attach to another element. Thus, the bound adjective dikos/own, is inserted and the clitic attaches to it. This structure again is used as a way to put the possessor in a focus position assigning emphasis to it:

22.   i. ?   to diko   tis   vivlio
              the own her-GEN book-NOM
              'Her own book'

       ii.   TO DIKO TIS   vivlio (ki ohi tu Kosta)
              the   own her-GEN book-NOM (and not Kosta's)
              'HER OWN book (and not Kosta's)'

Examples (20.ii.-22.ii.) suggest that there is a position in the left periphery of the DP where focused elements can move to. The possessor appears before the determiner in the linear order of the elements within the DP. Therefore, we can assume that it is situated in the specifier position of the DP:

(23)

```
                              DP
                             2
                      DP          D'
                      |         2
               tis Marias  D        FP
                          |       2
                         to    XP       F'
                               |      2
                                    F      NP
                                    |    2
                                   XP      N'
                                   |     2
                                        N      XP
                                        |
                                      vivlio
```
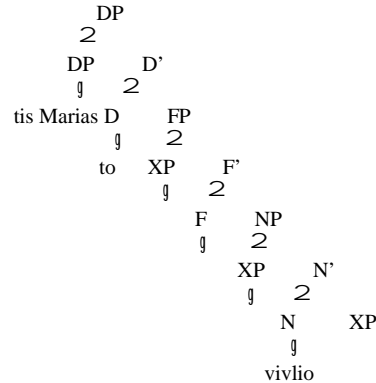
That the possessor is still inside the DP is justified by the fact that the string 'tis Marias to vivlio' has the distribution of a determiner phrase as coordination tests show:

24. i.   tu   edosa to periodiko   ke tis Marias   to vivlio
              him-GEN gave-I   the magazine-NOM and the Mary-GEN the book-ACC
              'I gave him the magazine and Mary's book'

The following example, that includes a demonstrative, shows that more material can appear preceding the determiner in the Greek DP:

25. i.   afto tis Marias to forema   den mu   aresi katholu
              this the Maria-GEN the dress-NOM not me-GEN like   at all
              'I don't like this dress of Maria's at all'

      ii.   i bluza   su   ke afto tis Marias to forema   den mu   aresi katholu
              the blouse your-CL and this the Maria-GEN the dress-NOM not me-GEN like   at all
              'I don't like your blouse and this dress of Maria's at all'

Example (25.ii.) shows that the string 'afto tis Marias to forema' has the distribution of a DP and therefore the demonstrative and the possessor are still DP-internal although they appear preceding the determiner. Therefore, there must be more than one available position in the left periphery of the DP, where demonstratives and focus elements can appear.

Building on Rizzi's (1997) proposal on a left periphery in the clausal structure, we can assume a left periphery in the DP structure. The determiner is the element of this left periphery that communicates with the nominal system in the sense that it determines the presupposition of existence of the entity represented by the nominal. The choice of the determiner reflects certain properties of the nominal system in that it selects the nominal domain. Therefore, the determiner occupies a syntactic position parallel to that of FinP proposed for the clausal structure by Rizzi (1997).

Focused elements appear to the left of the determiner in a FocP projection. This assumption predicts that any XP in the determiner phrase system can move to a focus position in the left periphery of the DP. In particular, it predicts that possessors and adjectives can occupy this position too. This prediction is borne out in Greek:

26. i.   thelo tis MARIAS to forema
              want-I the Maria-GEN   the dress-NOM
              'I want MARIA'S dress' (and not Eleni's)

    ii.   thelo to KOKKINO to forema
                 want-I the red-NOM   the dress-NOM
                 'I want the RED dress' (and not the white)

Furthermore, it predicts that any element that appears in a predeterminer position in the DP can be extracted from the DP and appear in a position in the CP-system. This is also borne out in Greek (Horrocks & Stavrou, 1987, Androutsopoulou, 1998):

27.   i.   tis MARIAS thelo   to forema
              the Maria-GEN want-I   the dress-NOM
              'I want MARIA'S dress' (and not Eleni's)

     ii.   to KOKKINO thelo to forema
              the red-NOM   want-I the dress-NOM
              'I want the RED dress' (and not the white)

Finally, it predicts that any other element that moves to a position preceding the determiner (as is the case with demonstratives in Greek) is able to extract to the clausal domain:

28.   i.   nomizo oti thelis ekino to vivlio
              think-I that want-you that the book
              'I think that you want that book'

     ii.   nomizo oti ekino thelis   to vivlio
              think-I   that that want-you the book
              'I think that you want that book'

     iii.   ekino nomizo oti thelis   to vivlio
              that   think-I   that want-you the book
              'I think that you want that book'

A somewhat similar type of movement can be observed in the following examples from English:

29.   i.   This is a very important decision.   Haegeman & Guéron, 1999

     ii.   How important is this decision?

     iii.   How important a decision is this?

In (29.ii.) the adjective has moved together with the adverbial wh-element to the specifier position of the CP. However, in (29.iii.) the adjective has moved to a pre-determiner position within the DP. Therefore, a DP internal movement is possible when extraction of an XP from the determiner phrase is possible.

DP internal movement followed by extraction is also observed with wh-elements in Greek (Horrocks and Stavrou, 1988):

30.   i.   mu   ipes   pos dhiavases to vivlio   tu Gianni
              me-GEN said-you that   read-you   the book-NOM the-Gianni-GEN
              'you told me you read Gianni's book'

              mu   ipes   pos dhiavases to vivlio   tinos
     ii.   me-GEN said-you that   read-you   the book-NOM   whose-GEN

'you told me you read whose book?' (echo question)

iii.
mu   ipes   pos   dhiavases tinos   to vivlio
me-GEN said-you that   read-you   whose-GEN the book-NOM

'you told me you read whose book?' (echo question)

iv.   tinos   mu   ipes   pos dhiavases to vivlio
whose-GEN me-GEN said-you that   read-you   the book-NOM

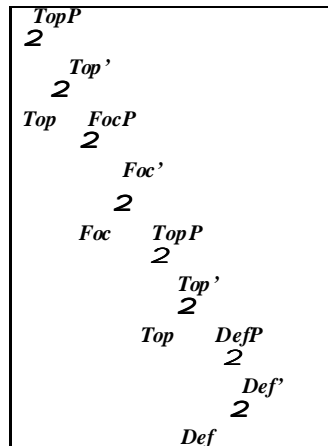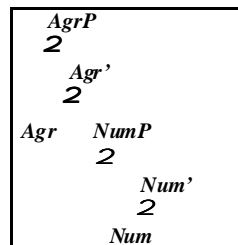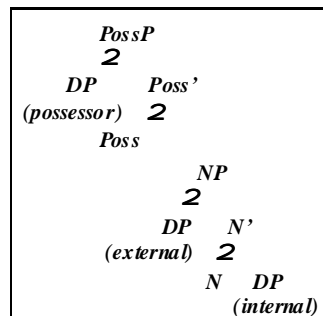'whose book did you tell me that you have read?'

The possessor starts in a postnominal position and then moves to a position in the left periphery of the DP before moving to the focus position of the clausal left periphery, the expected landing site of wh-elements. Further evidence for the different positions that the wh-element occupies in this movement process can be found in constructions that involve quantifier float (i.e following McCloskey, 2000):

31.   i.   simera timate i   mnimi   olon   ton iroon
today   is honored the memory-NOM all-GEN the heroes-GEN

'the memory of all the war heroes is honored today'

ii. ? simera   ton iroon   timate i   mnimi   olon
today   the heroes-GEN is honored the memory-NOM all-GEN

iii.   simera ton iroon   timate olon i   mnimi
today   the   heroes-GEN is honored all-GEN the memory-NOM

iv.   simera ton   iroon   olon timate i   mnimi
today   the   heroes-GEN all-GEN is honored the memory-NOM

v.   simera olon ton   iroon   timate i   mnimi
today   all-GEN the   heroes-GEN   is honored the memory-NOM

The quantifier olon/all quantifies the noun iroes/heroes. In (31.i.) the possessor is in situ following the nominal head. In (31.ii.) the possessor has moved outside the DP in a focus position in the clause. However, the quantifier has been left behind in its original position quantifying over the trace of the moved possessor. In (31.iii-26.iv.) the quantifier appears in higher positions. We have to assume then that in all these positions there is a trace of the possessor left behind which is quantified over by *olon*.

Bringing together, all the information that extraction phenomena have offered about the linear order of elements in the left periphery of the DP we can assume a number of functional projections that precede the spot in which the definite determiner is spelled out. Following Rizzi's (1997) proposal on the clausal left periphery, we can assume a focus projection where focused elements, like adjectives and possessors can move to. Furthermore, a topic projection may be available preceding or following the focus phrase. This is a position that demonstratives can appear in Greek. If we assume that demonstratives behave like adjectives in that they modify the nominal head then they must originate in a specifier position of a functional projection in the determiner phrase (for such a proposal for romance demonstratives, see Bernstein, 1997). Consequently, in Greek they move to a Topic phrase. Motivation for such a movement in the minimalism framework is the satisfaction of some feature checking. Ihsane & Puskas (2001) propose that such a feature can be a [+specific] feature that determiners and demonstratives can check and that relates to pre-established elements in the discourse. If these assumptions are on the right track we can assume a further extension of the determiner phrase system to the left:

(32)

TopP
└ *Top'*
  └ *Top* *FocP*
            └ *Foc'*
              └ *Foc* *TopP*
                       └ *Top'*
                         └ *Top* *DefP*
                                  └ *Def'*
                                    └ *Def*

The Left Periphery (CP)

AgrP
└ *Agr'*
  └ *Agr* *NumP*
           └ *Num'*
             └ *Num*

The Functional Domain (IP)

PossP
└ *DP*   *Poss'*
  (possessor) └ *Poss*
                   NP
                   └ *DP*   *N'*
                     (external) └ *N* *DP*
                                          (internal)

The Lexical Domain (VP)

Section 4: Cross-linguistic possessor extraction and how it fits in the analysis

Gavruseva (2000) distinguishes three types of languages with respect to whether or not they allow for possessor extraction: i. languages with obligatory extraction (e.g. Chamorro, Chung, 1991), ii. languages with optional extraction (e.g, Hungarian, Szabolcsi, 1984, 1994, Greek) and iii. languages that allow for no extraction (i.e. English and other Germanic languages). Consider the following examples:

33. i.   a Mari   kalap- ja-   i   HUNGARIAN
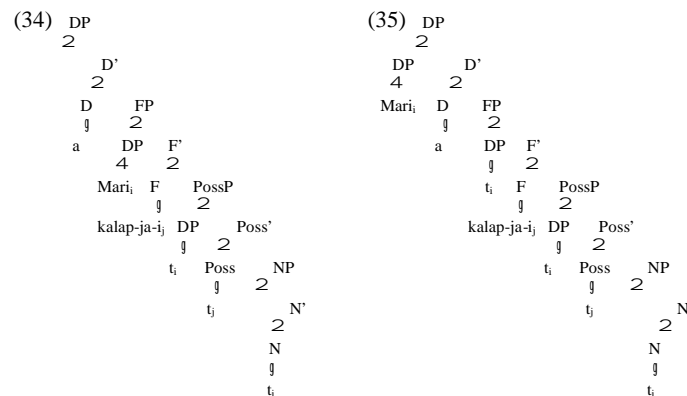   the Mari-(NOM) hat- POSS- PL(-3SG)   Szabolcsi (1994)
           'Mari's hats'

     ii.   Mari-nak a- kalap-ja- i
           Mari-DAT the hat- POSS- PL(-3SG)
           'Mari's hats'

     iii. * a ki - Ø   vendég-e-Ø
           the who-NOM guest - POSS- 3SG

'whose guest'

iv. ki-nek   a vendég-e-Ø
who-DAT the guest- POSS-3SG
'whose guest'

v. You are eating Bill's cake   ENGLISH

vi. You are eating whose cake

vii. *Whose are you eating cake?

viii. *Who are you eating 's cake?

Hungarian can have the possessor in Nominative case (example (33.i.)) or in Dative (example (33.ii.)). However, possessor extraction is allowed only when the possessor is in Dative. On the other hand in English, possessor extraction is not allowed and the question is formed by moving the wh-element with the rest of the DP pied-piped, to spec-CP.

The interesting part in the Hungarian data is that the possessor in Dative case that is allowed to extract appears before the determiner in the structure while the Nominative one (in example (33.i.)) appears after the determiner. Assuming that both elements are base generated in the same position we can conclude that the Dative possessor has moved to some projection in the left periphery of the DP while the Nominative remains in situ. The question then that is raised is what triggers this movement. Since the basic difference between the two possessors is case specifications we can assume that the Dative possessor moves to the left of the determiner head to check Dative case. In other words this movement is parallel to the movement of the external argument in clauses to a functional projection to check Nominative case. The structure configuration that allows for checking of Case features is assumed to be the specifier-head configuration (Koopman 1996, Koopman & Sportiche, 1991). This case-checking movement brings the Dative possessor to the left periphery of the DP and thus to the escape hatch from which it can move further to the clausal domain (example (33.iv.)).

On the other hand, the nominal head, or the compound formed by the nominal head and the possession morpheme, assigns Nominative case in the Hungarian DP. Compare the following two structures:

```
(34)  DP                              (35)  DP
       2                                     2
        D'                            DP         D'
        2                             4          2
      D     FP                     Mari_i  D        FP
      g     2                              g        2
      a    DP    F'                        a       DP    F'
           4     2                                 g     2
        Mari_i  F    PossP                        t_i   F    PossP
             g     2                                    g     2
        kalap-ja-i_j  DP    Poss'                 kalap-ja-i_j  DP    Poss'
                      g     2                                   g     2
                     t_i  Poss   NP                            t_i  Poss   NP
                          g    2                                    g    2
                         t_j    N'                                 t_j    N'
                                2                                         2
                                N                                         N
                                g                                         g
                                t_j                                       t_j
```

In the structure involving the Nominative morpheme (34), the possessor is generated in the specifier position of a projection that is headed by the possession morpheme –e. The nominal head moves via head movement and incorporates with the possession morpheme. At this part of the derivation the compound noun-possession morpheme and the possessor are in a specifier head configuration and Nominative case on the possessor is checked. Subsequent movement of the

compound to a number projection gives the plural number specification followed by movement of the possessor to the specifier of this projection.

In the second structure, the same movements take place. However, the possessor needs to check its Dative case and the only place it can do this is in the specifier position of the DP. It moves then to this position and being in a specifier-head configuration with the determiner it checks Dative case. Thus, the pre-determiner position of the Dative possessor is explained. From this position the possessor can move outside the DP (example (33.iv.).

Let us now consider the English examples. It has been assumed in the literature that the Genitive case assignor in English and other Germanic languages is the 's morpheme. Let us assume that this morpheme heads an agreement projection within the DP. In order for the possessor to check its case feature it will have to move to the specifier position of this projection so that it can be in a specifier-head configuration with the head 's. If we assume that at this point of the derivation the possessor with the head 's are in a position to the right of the definiteness projection (the rightmost projection of the left periphery of the DP) then the possessor must move to the head position of DefP to check a [+definite] feature. However, this head movement is not allowed because the morpheme 's cannot move independently of the material that appears in the specifier position of the projection it heads[1]. The relation between 's and the possessor DP is not of the incorporation type. Evidence for this comes from examples in which 's appears to the right of large phrasal strings as in the following example:

36.   i.   This is John and his friend's car.

No incorporation process can be proposed then for the relation between 's and the material in its specifier. However, this relation is strong since no other material can intervene between the two elements. Therefore, movement of 's to the head of the Def-P is ruled out. Consequently, the whole phrase is pied-piped to the specifier position of the Def projection where the definiteness feature is checked through the specifier-head configuration in the sense of Koopman (1997): an XP inherits a feature from its *specifier (where "*specifier" is the closure of the specifier relation). Let us see the relevant structure:

(37)   DefP

The possessor checks its Genitive case in the specifier position of a functional projection headed by 's. Subsequently, the whole constituent moves to spec-DefP to check the [+definite] feature located in the elements of the specifier of the FP. In other words, there is a process of feature

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[1] Work that has been done in L1 and L2 acquisition in English (Gavruseva, 2002) shows that children produce sentences in which the possessor appears to be extracted leaving behind the 's head. Gavruseva (2002) argues that the patterns in (38.i.-38.ii.) should be taken as evidence that extraction of wh-possessors is a grammatical option available to children via Universal Grammar.
38.   i.   Who do you think 's fish is in the cradle?
       ii.   Who do you think 's Spiderman saved cat?

inheritance from the specifier of the phrase in the specifier of DefP to the head and ultimately to the maximal projection of the DefP. This mechanism of feature "inheritance" and projection is relevant for all movement operations that are driven by the presence of some formal feature. (Koopman, 1996, see also Horvath, 2002, on Pied-piping).

Conclusion

In this paper, I presented the phenomenon of possessor extraction in Greek and a number of other languages. I argued that this extraction is the second step of a two-step process. The first step requires movement of the possessor to a specifier position of a projection situated in the left periphery of the determiner system. I also argued that any material that moves to a position in the left periphery of the DP (i.e. wh-element or focus element, demonstratives in Greek) can subsequently move to the clausal domain.

I showed that there is cross-linguistic difference in what can be extracted from the DP. Languages like Greek and Hungarian allow for optional possessor extraction while in languages like English the possessor pied-pipes the rest of the nominal phrase with it when moving to the left periphery of the DP.

I argued that the motivation for these types of movement to the left peripheryis the need of the moved element to check its case feature, whether Dative as in Hungarian, or Genitive as in Greek. In languages that do not allow for possession extraction, it was shown that the case feature is checked lower in the structure. This results in pied-piping of the lower projection to a specifier position in the left periphery of the DP in order for a definiteness feature to be checked. The reason for pied-piping is the relation between the head element of the lower projection and the material that appears in its specifier position. I showed that this relation is neither morphologically characterized nor the result of incorporation but it still retains some of the properties associated with bound elements.

There are further issues that have not been answered in the limited space of this paper. No explanation has been given to what draws focus-movement within the DP. If we assume the existence of a [+focus] feature that the moved element needs to check in some projection of the left periphery of the DP then the satisfaction of such a feature becomes problematic in relation to the subsequent movement of the same element to a focus position in the clause. Furthermore, no detailed account for the exact order of projections in the left periphery of the DP was attempted. It is a possible topic for further cross-linguistic research to explore the different types of material that can appear preceding the determiner within the DP and establish a relative order of the different elements included in this material.

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