Subject chains in Greek and PF processing

Vassilios Spyropoulos & Anthi Revithiadou[1]
University of the Aegean

1.   Introduction

This paper proposes a novel approach to the derivation of subjects in Greek, which explains their distribution as a result of the processing of the syntactic output by the Phonological Component after Spell-Out. We first show that the left-dislocation analysis to preverbal Greek subjects[2] does not cover the whole range of empirical facts. More specifically, we claim that besides topicalized preverbal subjects, which are admittedly left-dislocated and therefore out of cycle elements,[3] there exist preverbal subjects that belong to the main syntactic derivation (cycle) and are liable to its operations and conditions. To account for these subjects, we put forward the hypothesis that their syntactic derivation involves a movement operation which targets an EPP Spec,TP position. The major challenge for such a hypothesis is to account for the various patterns of subject distribution which have been observed and documented for Greek. More specifically, in indicative clauses, rendered with neutral intonation, preverbal subjects may alternate with postverbal ones. Although both orders are equally grammatical, there is a robust preference for preverbal subjects in transitive constructions and a clear bias for postverbal subjects in intransitive ones (Laskaratou 1984, 1989, et seq.). Interestingly, in subjunctive clauses subjects are strictly postverbal with neutral intonation. The analysis proposed here builds on a copy approach to movement, as developed by Bošković (2001) and Bobaljik (2002), which states that the syntactic output of the movement operation is the sequence of copies at the positions involved. Moreover, the linearization of this chain, i.e. the choice upon which copy is pronounced and interpreted, is a matter of the interfaces and subject to their operations and conditions. It is exactly this latter aspect that the present analysis exploits at full.

The basic elements of our analysis are as follows. A movement operation that targets an EPP Spec,TP position creates a chain of subject copies, one at the EPP position and another at the relevant theta-position. This sequence of copies is the syntactic output of this operation, which Spell-Out sends to the PF and the LF interfaces for processing. Focusing on the PF side, we show that the linearization of the subject chain depends on a set of well-established PF constraints which exist independently so as to regulate the prosodic organization (p-phrasing, sentential stress, etc.) of the output. These PF constraints, articulated within the optimality theoretic framework (Prince & Smolensky 1993, McCarthy

---

[1] Contact information: University of the Aegean, Department of Mediterranean Studies, Division of Linguistics, 1 Demokratias Ave., Rhodes, GR-85100, tel: +30 22410 99343/99327, fax: +30 22410 99327, email: spiropoulos@rhodes.aegean.gr and revithiadou@rhodes.aegean.gr.

[2] The left-dislocation approach to preverbal subjects has been the predominant analysis in the literature of Greek syntax since Philippaki-Warburton's (1987) paper. The reader is also referred to the works by Philippaki-Warburton (1989), Alexiadou & Anagnostopoulou (1998), Spyropoulos & Philippaki-Warburton (2002) for some theoretical formulations and elaborations of the original idea.

[3] See Revithiadou & Spyropoulos (2003, 2005, to appear) for prosodic and syntactic arguments that point to the conclusion that left-dislocated elements do not belong to the main derivation, but are merged with it at a later stage of the derivation after the application of Spell-Out. They use the terms non-cyclic elements to refer to this particular status of them, a term that it will be used in this paper too with the same meaning.

& Prince 1993), are appropriately ranked and, via a single, monostratal ranking, can account for the observed patterns of variation in the surface realization of subject within the clause.[4]

The analysis advanced here enjoys several merits at the theoretical as well as at the empirical level: (a) It is able to account for the surface distribution of subjects by means of a single syntactic output, (b) it highlights the PF aspects that are intimately related to the distribution of subjects in Greek and (c) it brings to light and provides a viable explanation for the patterns of variation attested in certain constructions.

The remaining of the paper is organized as follows. In section 2, we present the predominant view on Greek subjects as left-dislocated elements. In section 3, we review a number of arguments from interpretation, prosodification and extraction phenomena that substantiate our claim that preverbal subjects may not necessarily qualify as left-dislocated elements. In section 4, we lay out the specifics of the copy approach to the derivation of Greek subjects. In sections 5 and 6, we implement it to subjunctive and indicative clauses, respectively, and show how the core distribution of subjects is derived by the enforcement of PF constraints. In section 7, we discuss the effects of the economy condition *Minimize Mismatches* (Bobaljik 2002) on the evaluation of the pronunciation and interpretation of copies. In section 8, we summarize the main findings of this paper and suggest some interesting channels the proposed line of research could be directed to in the future.

2.   Existing analyses of Greek subjects: S in SV(O) is left dislocated

The syntax of subjects has been one of the most investigated topics in Greek syntactic research. Starting with Warburton's (1975) paper on Greek passive constructions, a long tradition has been established in the analysis of Greek subjects, according to which preverbal lexical subjects are considered not to be EPP elements. Instead, they have been argued to constitute topics, or, in structural terms, left-dislocated elements doubled by a null-subject[5] (Philippaki-Warburton 1987, 1989, Tsimpli 1990, Alexiadou & Anagnostopoulou 1998, Spyropoulos & Philippaki-Warburton 2002, Kotzoglou 2005, among others):

(1)   DP-subject$_i$ [$_{MP}$ … [$_{TP}$ V-T … *pro*$_i$ …]][6]

Two basic pieces of evidence have been put forward in support of the left-dislocation analysis: First, preverbal Greek subjects are compatible with a topic reading and, second, SV(O) orders have an alternative VS(O) order, in which vitally the subject does not have the topic reading (Laskaratou 1984, 1989, 1998, Philippaki-Warburton 1985, Alexiadou 1999, among others):

(2)   <u>S as a topic</u>
        Q: tí   ékane   o   jánis?
              what-ACC do-PAST.3SG the John-NOM
              'What did John do?'

---

[4] For some earlier attempts to account for the word order patterns in terms of OT constraints see Pesetzky (1996, 1998)
[5] There are different views with respect to the exact status of the element that functions as the 'subject' in the main derivation. For the purposes of this paper, we will use a general notation *pro*.
[6] MP in the structure stands for a Mood functional projection that hosts the subjunctive particle *na* and the affix for imperatives. Between the Mood and the Tense projections, exist a number of other projections that host the negation particles and the future marker. Greek also exhibits overt verb movement to T. For more details on Greek clause structure see Philippaki-Warburton (1998), Philippaki-Warburton & Spyropoulos (1999, 2004) and Roussou (2000).

     A: o jánis   fílise   ti maría
            the john-NOM kiss-PAST.3SG the Mary-ACC
            'John kissed Mary'

(3)   All new information
     Q: tí   éɣine?   /tí   néa?
            what-ACC happen-PAST.3SG/what-NOM new-PL.NOM
            'What happened?/What's up?'

     A1.   o jánis   fílise   ti maría
            the john-NOM kiss-PAST.3SG the Mary-ACC
     A2.   fílise   o jánis   ti maría
            kiss-PAST.3SG the john-NOM the Mary-ACC
            'John kissed Mary'

Philippaki-Warburton (1982, 1985) has also noticed that, in certain cases, e.g. in subjunctive clauses, the order with a postverbal subject is the only available option with the neutral intonational contour (4). Thus, in subjunctive clauses, preverbal subjects, that is, subjects that occur in front of the [subjunctive particle *na* + verb form] complex, are rendered either with focal stress (5) or with a clear intonational gap (i.e. a H- phrase boundary tone; see Baltazani 2002) at their right side (6):

(4)   a.   na fíɣi   to púlman
              SUBJ leave-3SG the bus-ACC
              'The bus should/may leave'
       b.   i ána elpízi   na fíɣi   to púlman
              the Anna hope-PRES.3SG SUBJ leave-3SG the bus-ACC
              'Anna hopes that the bus will leave'

(5)   a.   TO PÚLMAN na fíɣi
              the bus-ACC SUBJ leave-3SG
              'THE BUS should leave'
       b.   i ána elpízi   TO PÚLMAN na fíɣi
              the Anna hope-PRES.3SG the bus-ACC SUBJ leave-3SG
              'Anna hopes that THE BUS will leave'

(6)   a.   to púlman ‖ na fíɣi
              the bus-ACC SUBJ leave-3SG
              'As for the bus, it should leave'
       b.   i ána elpízi   to púlman ‖ na fíɣi
              the Anna hope-PRES.3SG the bus-ACC SUBJ leave-3SG
              'Anna hopes that, as for the bus, it will leave'

These distributional facts, coupled by relevant cues from information structure, led safely to the conclusion that the basic subject position in Greek is the postverbal one, and that Greek subjects do not occupy the EPP Spec,TP position (Philippaki-Warburton 1987, 1989). Furthermore, the availability of null-subject and object clitic left-dislocated constructions in Greek, led support to the idea that preverbal subjects are in fact clitic left-dislocated elements doubled by a null-subject element, which functions as the subject element in the main clause structure. In other words, preverbal subjects in Greek have been assigned the same syntactic

status as preverbal clitic left-dislocated objects. Additional arguments in favor of this analysis have been proposed by Alexiadou & Anagnostopoulou (1998) and Spyropoulos & Philippaki-Warburton (2002) but, due to space limitations, they cannot be reviewed in this paper. To recapitulate, the basic assumptions of the left-dislocation analysis is that (a) overt preverbal subject do not occupy the EPP Spec,TP position and (b) preverbal subjects are left-dislocated elements.

3.   Challenging the left-dislocation approach

Although there is a great amount of truth in the left-dislocation analysis, i.e. (a) in certain constructions an overt subject may not surface at the Spec,TP position and (b) some Greek preverbal subjects do exhibit properties of left-dislocated elements and have topic readings, we will argue that this is not always the case. More specifically, we will provide evidence that there are significant asymmetries between preverbal subjects and clitic left-dislocated objects, and, moreover, that preverbal subjects in certain occasions show properties that are inherently different from those characterizing a left-dislocated element.

3.1.   Preverbal S is not necessarily a topic

A clear indication against the left-dislocation analysis is that preverbal subjects do not always have a topic reading. Both SVO and VSO orders are felicitous answers to questions requiring an all new information answer:

(7)   Q: tí   éɣine?   /tí   néa?
             what-ACC happen-PAST.3SG/what-NOM new-PL.NOM
             'What happened?/What's up?'

        A1.   o   jánis   fílise   ti maría
              the john-NOM kiss-PAST.3SG the Mary-ACC
        A2.   fílise   o   jánis   ti maría
              kiss-PAST.3SG the john-NOM the Mary-ACC
              'John kissed Mary'

Interestingly, SVO is the optimal and frequent answer in such cases, a fact that has also been experimentally substantiated by Keller & Alexopoulou (2001).[7] Although the non-topic availability of preverbal subjects has been acknowledged by all major grammars of Greek (Tzartzanos 1946-1963, Joseph & Philippaki-Warburton 1987, Holton et al. 1997), it has not received the appropriate attention so far in the literature. This is because the vast majority of previous syntactic analyses took no notice of the distinction between transitive (SVO) and intransitive[8] (SV) constructions. To explain, whereas S in SVO is readily rendered as a non-topic, this is not the case with SV constructions. In the latter, the alternative VS order is a more preferred answer in an 'all new information' context. Table 1 and Table 2 illustrate the results of a questionnaire research conducted at the University of the Aegean and the University of Athens.[9]

---

[7] See also Laskaratou (1989, 1998) for corpora-based studies that reach at the same conclusion.

[8] The term 'intransitive' will have a pretheoretic use in this paper in order to describe unergative and unaccusative constructions in general, including passives, ergatives, middles, etc.

[9] The details of this small scale project are as follows: 40 students, ranging in age from 20-25 years old, participated in the research. They were presented with a written questionnaire and were asked to select the most

Table 1: Word order preferences in intransitives

SV	VS
166/400 (41.5%)	234/400 (58.5%)

Table 2: Word order preferences in transitive (filler) sentences

SVO	VSO
153/200 (76.5%)	47/200 (23.5%)

This leaves S in SV constructions as the marked alternative. In conclusion, putting together preverbal subjects in both SVO and SV orders hides the non-topic reading of S in SVO order. We will return back to properly addressing the details of this issue in section 6.

Given that SVO orders do not necessarily involve a topic subject, the motivation for the left-dislocation approach loses ground. This is reinforced by the existence of constructions with *Free Choice Items* (FCIs) as preverbal subjects (8). Giannakidou (2001) has convincingly shown that FCIs are inherently incompatible with a topic reading due to their intentional semantics, but still are fine preverbal subjects.

(8)   opiaðípote ɣáta   kiniɣái pondíkia
        whichever cat-NOM hunt-3SG mice-ACC
        'Any cat hunts mice' (Giannakidou 2001: 679)

Adding to this line of argumentation, Roussou & Tsimpli (2006: 340-1) claim that the interpretation of certain preverbal subjects is incompatible with a topic reading. They examine middle, generic and stative verb constructions and claim that the subject must be preverbal with the intended reading and with neutral intonation. They provide the examples in (9) to substantiate their claims.

(9)   a.   *stative verb construction*
               i   maría   kséri   (#i maría)   tin apántisi
               the Mary-NOM know-PRES.3SG (the Mary-NOM) the answer-ACC
               'Mary knows the answer'

        b.   *middle construction*
               ta liná   plénonte   éfkola (#ta liná)
               the linen-NOM wash-PRES.3PL easily (the linen-NOM)
               'Linen wash easily'

        c.   *generic statement with a stage-level predicate*
               i   fálenes   íne (#i fálenes)   θilastiká
               the whale-PL.NOM are (the whale-PL.NOM) mammal-PL.NOM
               'Whales are mammals'

        d.   *generic statement with an individual-level predicate*
               i   fitités   piɣénun   (#i fitités)   se ðiaðilósis
               the students-NOM go-PRES.3PL (the student-PL.NOM) to demonstration-PL.ACC
               'Students go to demonstrations'

This behavior can be straightforwardly explained by the special interpretative properties of these constructions, which obligatorily associate the subject with the T functional projection. This is more prominent in constructions where the preverbal subject has a generic reading (9b-d). This reading in Greek subjects is closely associated with the tense specification of T as [-past, -perfective]. Roussou & Tsimpli (2006) argue that this association reveals a checking relation established between the preverbal subject and the T head, which cannot be established if the preverbal subject is a left dislocated element.[10] In a nutshell, the availability of generic preverbal subjects constitutes a strong piece of evidence against the left-dislocation analysis.

Moreover, Roussou & Tsimpli (2006) put into question the validity of Alexiadou & Anagnostopoulou's (1998) argument regarding the scopal preferences of constructions with an indefinite preverbal subject, such as the one in (10):

(10)   énas astinomikós   sinélave   káθe listí
        a   policeman-NOM catch-PAST.3SG every thief-ACC
        'A policeman caught every thief'
        a.   ∃ > ∀
        b.   *∀ > ∃

Alexiadou & Anagnostopoulou (1998) claim that the indefinite subject can only take wide scope over the universal quantifier object and, furthermore, this unavailability of the narrow scope reading indicates the (left-)dislocated status of the preverbal subject. Roussou & Tsimpli (2006) do not share these judgments and counter-argue that the narrow scope reading of the indefinite subject is possible under certain pragmatic contexts. More importantly, they go on, this reading seems to be facilitated by the imperfective aspect. We concur with Roussou & Tsimpli's (2006) observations and take example (11b) to have both readings available.

(11)   a.   énas ipuryós   episkéftike   káθe perioxí   tis eláδas
                a   minister-NOM visit-PERF-PAST.3SG every region-ACC the Greece-GEN
                'A minister (has) visited every region of Greece'
                ∃ > ∀ only (*∀ > ∃)

        b.   énas ipuryós   episkeftótan   káθe perioxí   tis eláδas
                a   minister-NOM visit-IMPERF-PAST.3SG every region-ACC the Greece-GEN
                'A minister was visiting every region of Greece'
                ∃ > ∀ and ∀ > ∃

Although a detailed examination of this issue will take us too far afield, it is, however, clear that preverbal existential quantifier subjects may take narrow scope and, naturally, in such occasions they cannot be left dislocated elements. All these different pieces of evidence, put together, provide a robust interpretative argument against the dislocation analysis of preverbal Greek subjects. Since (a) preverbal subjects in SVO are not necessarily topics and (b) elements incompatible with a topic reading and a left-dislocation status may occur as

---

[10] It can be argued that this association/checking reveals a feature matching between the T head and the D head of the DP-subject, which is relevant to its interpretation. A possible candidate for such a feature could be the uT feature on D, which Pesetzky & Torrego (2001, 2004) propose that nominative case is an instance of. If this is so, then the interpretation of D will depend on the valuation of this uT feature by the appropriate tense features of T. See Roussou & Tsimpli (2006: 234, note 20) for discussion.

preverbal subjects, we can safely draw the conclusion that some other position in the clause structure serves as the host of such preverbal subjects.

3.2.   Preverbal S does not prosodify as a left-dislocated element

Revithiadou & Spyropoulos (2003, 2005, to appear) have shown that clitic-doubled objects form prosodic islands in the sense that not only are they wrapped into their own p-phrase but also resist prosodic restructuring. On the contrary, preverbal subjects may form independent p-phrases but, crucially, they are also subject to rephrasing.

To be more specific, two prosodic phrasing algorithms[11] are effective in Greek: (a) an *end-based algorithm*, which dictates the mapping of the edges of syntactic constituents with prosodic ones (Selkirk 1982, 1995, et seq., Truckenbrodt 1995, 1999), and (b) a *binarity-based algorithm*, which operates on the basis of the prosodic size of constituents.[12] In particular, the latter assesses the wellformedness of a constituent of a particular level of prosodic structure C^i in terms of the number of the constituents of a particular level C^{i-1} that it contains (Selkirk 2000). Crucially, such an algorithm, which is admittedly favored more in a natural performance situation, driven from the need to construct p-phrases of prosodically ideal (i.e. binary) size, often triggers radical rephrasing, i.e. prosodic restructuring.

(12)   /i éksi aporíes   miás péktrias   sta erotímata/
        the six query-PL.NOM a-GEN player-FEM.GEN to-the question-PL.ACC
        'The six queries of a player(fem) to the questions'

      a.   ?[jéks∅ **a**poríe**z m**ɲás péktrja∅ **s**ta erotímata]ɸ   *end-based mapping*
      b.   [jéks∅ **a**poríe**s**]ɸ [**m**ɲás péktrja∅ **s**ta erotímata]ɸ   *binarity-based mapping*

(13)   /fílise   enéa aɣória   likíu/
        kiss-PAST.3SG nine boy-PL.ACC high-school-GEN
        'She kissed nine high-school boys'
      a.   [fílis∅ **e**né∅ **a**ɣórja licíu]ɸ   *end-based mapping*
      b.   [fílis∅ **e**né**a**]ɸ [**a**ɣórja licíu]ɸ   *binarity-based mapping*

(14)   /sinantúsan   téseris maθités   likíu/
        meet-PAST.3SG four   student-PL.ACC high-school-GEN
        'They were meeting four high-school boys'

      a.   [sinandúsa**n d**éseri**z m**aθité**z** li**c**íu]ɸ   *end-based mapping*
      b.   [sinandúsa**n d**éseri**s**]ɸ [**m**aθité**z** li**c**íu]ɸ   *binarity-based mapping*

---

[11] The existence of multiple phrasing options for a given syntactic string has long been acknowledged in the literature (Nespor & Vogel 1986, Ghini 1993, among others). More recently, studies on phrasing in Romance (Sandalo & Truckenbrodt 2001, Prieto 1997, 2005, Elordieta *et al.* 2003, 2004, D'Imperio *et al.* 2005, Elordieta in press) and other languages (Hirose 1999, 2003 for Japanese, Jun 2003 for Korean) have underlined the relevance of notions such as branchingness, weight balancing and length of phrasing. For a somewhat different view on Greek phrasing, see Condoravdi (1990).

[12] The following prosodic size constraints, called collectively here *prosodic binarity* constraints, constitute the backbone of the binarity-based algorithm:

(i)   *prosodic binarity* (Selkirk 2000, based on Itô & Mester 1992, 1995; Ghini 1993)
      a.   BIN^{min}: A p-phrase must consist of at least two PrWs.
      b.   BIN^{max}: A p-phrase must consist of at most two PrWs.

There are several sandhi rules in Greek that operate within the p-phrase domain. For the purposes of the discussion here, the following four are relevant:

(15)   <u>*sandhi rules within the p-phrase*</u>
   a. *s-voicing before voiced fricatives and sonorants*
      /éxi<u>s</u> <u>m</u>aɣirépsi/ → [éçizmaɟirépsi] 'You have cooked'

   b. *VV/CC-degemination*
      /éx<u>o</u> <u>o</u>rámata/ → [éxorámata]   'I have visions'
      /éxi<u>s</u> <u>s</u>iɣurjá/ → [éçisiɣurɟá]   'You have confidence'

   c. *unstressed high vowel deletion*
      /éx<u>i</u> <u>o</u>rámata/ → [éçorámata]   'S/he has visions'

   d. *nasal-stop assimilation*
      /éxu<u>n</u> <u>t</u>ási/ → [éxundási]   'They tend to'

In (12-14), the application of the two phrasing algorithms yields two different phrasing patterns. In (12), for example, the end-based algorithm strives to wrap the whole DP into a unique but a rather lengthy p-phrase (12a). This phrasing, however, seems to be less favored compared to the one in (12b), which is formed on the basis of grouping pairs of words into binary p-phrases. The same applies to the sentences in (13-14).

   Strikingly, the binarity-driven rephrasing is not enforced in clitic left-dislocated object constructions. The following sets of examples are telling. The first set (16-17) illustrates that clitic left-dislocated objects are wrapped into their own p-phrase, whereas the second set (18-19) demonstrates their resistance to rephrasing in the appropriate environment.

   The examples in (16) and (17), which render the orders *DP-object clV DP-subject* and *DP-object DP-subject clV*, respectively, clearly show that the relevant sandhi rules are blocked between the clitic-doubled DP-object and the following constituent.

(16)   DP-object clV DP-subject
   a. *tis próve<u>s</u>,*   <u>m</u>as/<u>s</u>as tis klíni   o pános
      the rehearsal-PL.ACC us /you-PL them arrange-PRES.3PL the Panos-NOM
      'As for the rehearsals, Panos arranges them for us/you-PL'

   a′. [tis próve**s**]ɸ [**m**as/**s**as tis klíni o pános]ɸ

   b. *tus amá<u>n</u>,*   <u>t</u>us parakoluθún ta peðjá
      the A.M.A.N-ACC them watch-PRES.3PL the kid-PL.NOM
      'As for the A.M.A.N (group), the kids watch them'

   b′. [tus amá**n**]ɸ [**t**us parakoluθún ta peðjá]ɸ

(17)   DP-object DP-subject clV
   a. *tin ániks<u>i</u>,* <u>i</u> kátja   tin aɣapá
      the spring-ACC the Katia-ACC her love-PRES.3SG
      'As for the spring, Katia loves it'

a′.   [tin ániks**i**]ϕ [**i** kátça tin aɣapá]ϕ

b.   *ton aléko*,   o babás   ton misi
the Aleko-ACC the dad-NOM him hate-PRES.3SG
'As for Alex, dad hates him'

b′.   [ton alék**o**]ϕ [**o** bambás ton misí]ϕ

In (16a), s-voicing, which is initiated before a voiced fricative or a nasal, is blocked between the DP-object and the following clitic. Similarly, the nasal-stop assimilation rule fails to apply between the clitic-doubled object and the clitic in (16b), although its structural condition is met. Moreover, in (17a-b), vowel degemination is not enforced between the clitic-doubled DP-object and the DP-subject.
   The examples in (18-19) demonstrate that clitic left-dislocated objects exhibit resistance to rephrasing, which constitutes a popular restructuring procedure at the level of p-phrasing:

(18)   *tis próve<u>s</u>*,   <u>m</u>as/<u>s</u>as   tis   klíni   o   pános
the rehearsal-PL.ACC us /you-PL them arrange-PRES.3SG the Panos-NOM
'As for the try-outs, Panos arranges them for us/you-PL'

a.   [tis próve**s**]ϕ [**m**as/**s**as tis klíni o pános]ϕ
b.   *[tis próvezmas/ próve∅sas tis klíni]ϕ [o pános]ϕ

(19)   *tus amá<u>n</u>*,   <u>t</u>us   parakoluθún   ta peðjá
the A.M.A.N-ACC them watch-PRES.3PL he kid-PL.NOM
'As for the A.M.A.N (group), the kids watch them'

a.   [tus amá**n**]ϕ [**t**us parakoluθún ta peðjá]ϕ
b.   *[tus amá**nd**us parakoluθún]ϕ [ta peðjá]ϕ

As obvious from the above examples, the rules of nasal stop assimilation, s-voicing assimilation and consonant degemination are *not* enforced between a clitic left-dislocated object and the cl V constituent suggesting that no restructuring takes place in these sentences.
   Revithiadou & Spyropoulos (2003, 2005, to appear) account for the formation of independent p-phrases and the resistance to rephrasing as a direct consequence of the status of left-dislocated objects as derivational islands. Clitic left-dislocated objects constitute non-cyclic elements in the sense that they are assembled in a different derivational workspace and are merged with the rest of the structure at a later point of the derivation and after an application of Spell-Out has driven them to the interfaces (Lebeaux 1988, Uriagereka 1999, Nunes & Uriagereka 2000, Stepanov 2001). This is also indicated by their radical syntactic islandhood, i.e. such elements severely block extraction from within:

(20)   a.   * pjanú$_i$ mu   ípes   óti [$_{DP}$ to axláði t$_i$] to éfaɣes?
who-GEN me-GEN say-PAST.2SG that   the pear-ACC it eat-PAST.3SG
       b.   pjanú$_i$ mu   ípes   óti éfaɣes   [$_{DP}$ to axláði t$_i$]?
who-GEN me-GEN say-PAST.2SG that eat-PAST.3SG   the pear-ACC
'Whose pear did you tell me that you have eaten?'

Based on the evidence presented above, they had concluded, therefore, that the syntactic islandhood of clitic-doubled DP-objects is matched by prosodic islandhood as well. This finding has an important consequence for the status of Greek preverbal subjects: if subjects in SVO orders are left-dislocated elements doubled by a null-subject, one would expect a similar prosodic behavior with clitic left-dislocated objects due to their structural similarity. However, this expectation is not borne out, since preverbal subjects can be subject to rephrasing, as illustrated by the following examples:

(21)   to fó<u>s</u>   <u>ð</u>íni   i<u>s</u>xí   sti   mixaní
        the light-NOM give-PRES.3SG power-ACC to-the engine-ACC
        'The light gives power to the engine'

        a.   [to fós]ɸ [ðín∅ **i**sçí]ɸ [sti mixaní]ɸ   *end-based mapping*
        b.   [to fó**z** ðíni]ɸ [**i**sçí sti mixaní]ɸ   *binarity-based mapping*

(22)   o páno<u>s</u>   <u>ð</u>íni   <u>e</u>fxé<u>s</u>   <u>me</u> kártes
        the Panos-NOM give-PRES.3SG wish-PL.ACC with card-PL.ACC
        'Panos sends wishes with cards'

        a.   [o pános]ɸ [ðín∅ **e**fçés]ɸ [**m**e kártes]ɸ   *end-based mapping*
        b.   [o páno**z** ðíni]ɸ [efçé**z m**e kártes]ɸ   *binarity-based mapping*

In the above examples, s-voicing is blocked across p-phrases whereas vowel degemination is enforced within the p-phrases formed by the end-based algorithm (21a and 22a). In contrast, the opposite situation holds for the p-phrases generated by the binarity algorithm (21b and 22b).

    To sum up, the evidence discussed above shows that preverbal subjects and clitic left-dislocated objects do not behave the same at the syntax-phonology interface. We take this to constitute a solid argument that preverbal subjects are not necessarily left-dislocated elements.

3.3.   Preverbal subjects are not islands

One of the most intriguing properties of Greek syntax is that it violates the *Subject Condition* by permitting extraction out of a subject even when this is preverbal:[13]

(23)   [pjanú maθití]ᵢ   mu   ípes   óti [DP-subj i mitéra tᵢ]
        which student-GEN me-GEN tell-PAST.2SG that   the mother-NOM
        paraponéθike   sto   ðiefθindí?
        complain-PAST.3SG to-the headmaster-ACC
        '*Which student did you tell me that the mother of complained to the headmaster?'

In this respect, preverbal subjects crucially differ from left-dislocated elements. As evident from clitic left-dislocated objects (see section 3.2. above), left-dislocated elements do not allow extraction from within, as a result of their status as derivational islands (in the sense of Uriagereka 1999, Nunes & Uriagereka 2000 and Stepanov 2001). Thus (23) contrasts with (20a), repeated here as (24):

---

[13] See Spyropoulos (1999, 2003), Spyropoulos & Philippaki-Warburton (2002), Kotzoglou (2005), among others.

(24)   *pjanú$_i$ mu   ípes   óti [$_{DP}$ to axláði t$_i$] to éfaɣes?
        who-GEN me-GEN tell-PAST.2SG that   the pear-ACC it eat-PAST.3SG
        'Whose pear did you tell me that you have eaten?'

If preverbal subjects were indeed left-dislocated, then we would expect them to constitute derivational islands and extraction out of them to be rigidly banned. This syntactic piece of evidence adds to the line of arguments presented so far against the left-dislocation analysis of preverbal Greek subjects.

3.4.   Interim summary

The evidence presented above shows that preverbal subjects may exhibit properties that are not compatible with a topic reading and hence a left-dislocation status. Crucially, such properties are revealed in the most simple and unmarked constructions, i.e. indicative transitive constructions rendered with neutral intonation in 'all new' information contexts. We propose that non left-dislocated subjects should be liable to a different kind of analysis, mainly because they belong to the main syntactic derivation and that the left-dislocation analysis should be restricted to those instances of preverbal subjects that constitute radical topics or hanging topics in Alexiadou's (1999) terminology.

4.   Greek subjects: A copy approach

In the previous section, we reached at the conclusion that preverbal Greek subjects are not necessarily left-dislocated elements. Especially, the evidence from stative verb, middle and generic constructions (see section 3.1), as argued by Roussou & Tsimpli (2006), suggests that preverbal subjects must belong to the functional domain of T and establish some kind of syntactic relation (feature checking) with it. On the basis of this, we claim that preverbal subjects in discourse neutral SVO constructions reside at the Spec,TP position.[14] This proposal leads to a more general approach to Greek subjects, according to which their syntax is associated with the projection of an EPP position. In particular, they are defined by means of a syntactic movement operation that moves them from their theta-position to an EPP Spec,TP position.[15] The major challenge for such an approach is to provide a principled account for a number of issues regarding the positions in which an overt subject may surface. More specifically, subjects (a) may be either preverbal or postverbal in transitive constructions (SVO ~ VSO, with SVO being the preferred option by far), (b) are preferred to be postverbal in passive and intransitive constructions, and (c) are obligatorily postverbal in subjunctive clauses.[16] In what follows, we adopt a copy theory to movement and show that the distribution of overt subjects in Greek is not a matter of syntax, but rather the result of the linearization of the subject chain in the PF component after Spell-Out.

---

[14] Such a proposal leaves space for preverbal subjects to also be able to occupy focus or topic positions in the relevant occasions. However, in such cases preverbal subjects seem to belong to the CP-layer, as Roussou (2000) and Roussou & Tsimpli (2006) have extensively argued for. We will not discuss here the details of the syntactic derivation of such subjects. We would simply like to point out that they involve some extra operation that brings them in the relevant position.

[15] We leave aside the issue of what may constitute the driving force for such a movement (case checking, agreement valuation, satisfaction of EPP, etc.; see Chomsky 2000, Bobaljik 2002, Bošković to appear, among others).

[16] Note that VOS orders are always rendered with focus either on the S or the O or the [VO] and hence their derivation falls out of the scope of this study (see Georgiafentis & Sfakianaki 2004).

4.1. The copy theory to movement: Basic assumptions

Based on Chomsky's proposals about the formulation of movement in the Minimalist Program in terms of copies, Bošković (2000, to appear) and Bobaljik (2002) develop a particular approach to movement which assumes a T-model instead of the classic Y-model and maximizes the role of interfaces in evaluating the output of the syntactic derivation.

(25) a. The Y-model (Chomsky 1995)   b. The T-model (Bobaljik 2002)
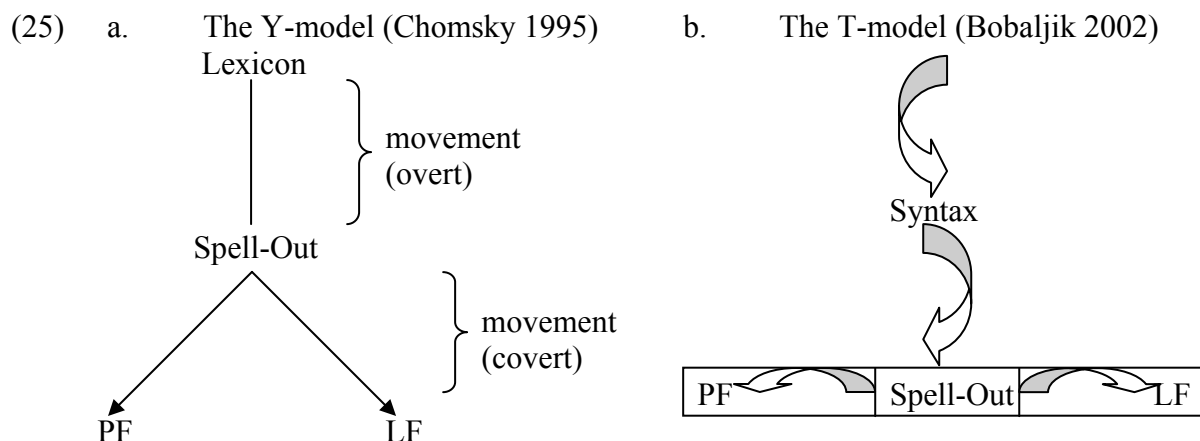
According to this approach, movement is a strictly syntactic process which operates before Spell-Out and creates a sequence of copies of the moving element at the relevant positions. Crucially, syntax itself does not decide on which copy should delete; this is essentially a matter of the linearization of the copy sequence at the interfaces. In other words, the PF and LF components decide on which copy will be pronounced or interpreted on the basis of their own principles and constraints. Thus, if a movement operation creates a chain consisting of two copies, the sequence of these two copies will be the output of the syntactic component after Spell-Out has driven this part of derivation to the interfaces. Bobaljik (2002: 199) identifies four possibilities with respect to the interplay between pronunciation and interpretation of the copies in such a movement chain, which coincide with the typology of overt vs. covert movement in the classic Y-model of Chomsky (1995). All four possibilities are depicted in (26).

(26)

a. $copy_1 \ldots copy_2$	b. $copy_1 \ldots copy_2$
PF LF	LF PF
'overt movement; no reconstruction'	'LF movement'
c. $copy_1 \ldots copy_2$	d. $copy_1 \ldots copy_2$
PF LF	PF LF
'overt movement + reconstruction'	'LF movement + reconstruction' (lower right corner effect)

      To sum up, syntax simply generates a series of copies and the interfaces dictate by means of certain phonological and interpretative conditions which one will be uttered and will be interpreted, respectively. Due to space limitations, we will not explore the LF conditions that might be involved in such an evaluation process, though they are clearly worth developing. In the remainder of this section we sketch out some basic PF conditions that are intricately involved in the selection of the optimal PF copy. For this purpose, we adopt an optimality theoretic jargon (OT, Prince & Smolensky 1993, McCarthy & Prince

1993), since we believe that OT offers an excellent platform for phrasing the PF conditions that regulate the pronunciation of copies.

The default case is linearization of chains to favor pronunciation of the highest copy. This effect is captured by the constraint PRONOUNCE HIGHEST (PH) proposed by Franks (2000):[17]

(27)   PRONOUNCE HIGHEST (PH)
       Lower identical copies are silent

Technically, PH is a form of a *positional faithfulness* constraint (Beckman 1995, 1997, 1998),[18] since it promotes the pronunciation of the head of a chain. Its effects can of course be seen only when it is high-ranking. That is, it is likely other competing PF-driven forces (e.g. strict adjacency constraints, size/weight-wellformedness restrictions, and so on) to be deemed more important than PH and hence render a candidate output with the highest copy pronounced ungrammatical. The non-positional correlate of PH is PRONOUNCE which indiscriminately advocates the pronunciation of every copy available in the syntactic string.

(28)   PRONOUNCE
   A copy must be pronounced

Given these two constraints in a system, in a two copy chain, the highest copy will be pronounced. Needless to say, the set of PF constraints is not exhausted by the ones mentioned above. There are several PF constraints intimately involved in the selection of the optimal copy; some of them are morphophonological whereas others are purely prosodic. In the subsequent sections, we will show that the interaction of these constraints, as encoded in a language-specific constraint hierarchy, provides a promising and powerful analysis for the linearization of chains and the surface distribution of the moving element.

4.2.   The subject chain in Greek

Implementing the theoretical assumptions presented in the previous section to the Greek subject case, we propose that in the strict syntactic derivation, subjects move from their relevant theta-position in the *v*P to an EPP Spec,TP position creating a sequence of copies, one in the Spec,TP and another in the theta position. Omitting details regarding phases for the moment, the syntactic structure at the Spell-Out will be as follows:

---

[17] See also Bošković (1995, 2001), and Revithiadou (2006) for a reformulation in terms of HEADCHAIN: Pronounce the head of a chain.
[18] Positional faithfulness strives for the preservation of elements in privileged positions such as root-initial syllables, stressed vowels, and so on. However, there have been proposed extensions that favor the pronunciation of the segmental and accentual properties of morphosyntactic heads as well (Revithiadou 1999).

(29)
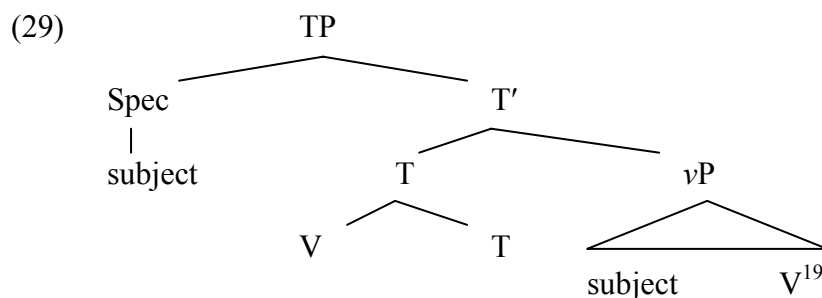
After Spell-Out, linearization of the chain at the PF interface will promote the pronunciation of one of the two copies. As mentioned above, this decision rests totally upon the PF in the sense that PF requirements (e.g. adjacency conditions, prosodic wellformedness principles, stress assignment, and so on) alone will decide on which copy qualifies as a well-formed PF-structure and hence will be pronounced as the *optimal* output, and which does not and, consequently, it will be silenced. For instance, given a ranking in which PH is ranked high enough to guarantee that its effect will not blunted by another PF constraint, the highest copy will be pronounced in the abstract example in (29). Remarkably, exactly this ranking is also responsible for the emergence of the SVO order.

In what follows, we examine subjunctive and indicative clauses in Greek and demonstrate how such an interface approach to copy selection, which exploits in full the power of PF constraints, provides a promising and straightforward analysis for the distribution of Greek subjects. Furthermore, we will bring to light the set of PF constraints that regulate the selection of the optimal subject copy in Greek and argue that, interestingly, this very same set is also in charge of p-phrasing.

5.   Subjunctive clauses

Subjunctive clauses in Greek involve (a) a verb form, which is the same as the indicative verb form and inflects for tense and subject-agreement, plus (b) the proclitic subjunctive particle *na*. In formal terms, the syntactic structure of a subjunctive clause is the following:

(30)   [$_{MP}$ M [$_{TP}$ T …
          na   V
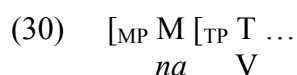
As mentioned in section 2, overt subjects in subjunctive (both transitive and intransitive) clauses are always postverbal when rendered with neutral intonation. They may appear before the *na*+verb complex, but in this case they are obligatorily rendered with a focus or a topic intonational pattern.

(31)   *subject in focus*
          a.   TO PÚLMAN   na   fíɣi
                  the bus-NOM   SUBJ leave-3SG
                  'THE BUS should go'

---

[19] Greek exhibits overt verb movement to the T head. Given the copy approach to movement, such a movement operation creates a chain of copies, one in the *v*P and another in the TP. To the best of our knowledge there are no constructions in which it can be argued that the lower verb copy is pronounced, although this is a valid possibility. For the purposes of this paper, we will assume that the verb chain is always linearized in favor of the high copy and we will strike out the low copy from our representations.
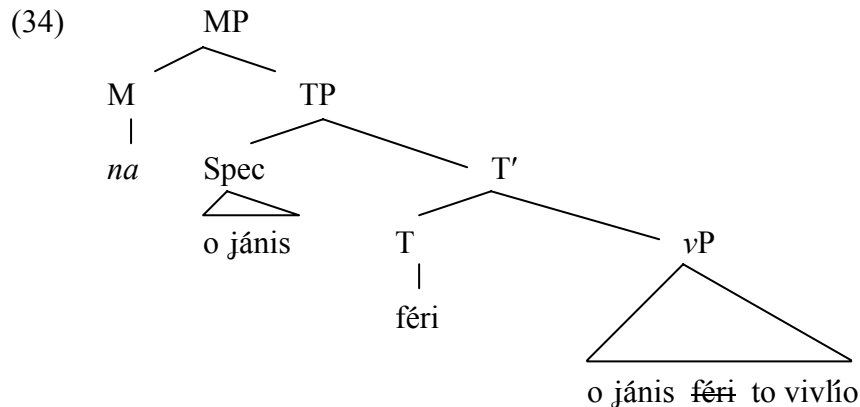
   b. O NÍKOS na ríksi to ðísko
      the Nikos-NOM SUBJ throw-3SG the server-ACC
      'NICK should throw the server'

(32) *subject as topic*
   a. to púlman ‖ na fíɣi
      the bus-NOM SUBJ leave-3SG
      'As for the bus, it should go'

   b. o níkos   ‖ na ríksi to ðísko
      the Nikos-NOM SUBJ throw-3SG the server-ACC
      'Nick should throw the server'

Such a distribution is straightforwardly explained by our analysis. The subjunctive clause in (33) will help us visualize the explanatory strength of the copy selection analysis advocated here. Its syntactic derivation is depicted in (34).

(33) na (*o jánis) féri o jánis to vivlío
   SUBJ the John-NOM bring-3SG the John-NOM the book-ACC
     'John should/may bring the book'

(34)   MP

    M   TP

    |

    na Spec   T′

       o jánis T   *v*P

           |

           féri

             o jánis ~~féri~~ to vivlío

Subject movement targets the EPP position which is the Spec,TP. In this position, the copy structurally intervenes between the particle *na* and the verb form. Philippaki-Warburton & Spyropoulos (1999) extensively argue that *na* and the verb form are subject to some kind of postsyntactic morphological merger (Marantz 1988) which results in the procliticization of *na* to the verb form. Notice that this kind of merger does not involve any checking between the two elements. The mood features of the M head are satisfied by the merging of the particle *na*, whereas the verb form has no mood morphology whatsoever. This indicates that such a morphological merger cannot be interpreted as lowering or post-syntactic affixation. Given that procliticization of the mood particle *na* is a property of this particular vocabulary item, we may safely conclude that the merger operating between *na* and the verb form is a type of *Local Dislocation* merger, in the sense of Embick & Noyer (2001). This merger operates on string-adjacent elements after *Vocabulary Insertion* and *Linearization* have taken place:

(35) na ~~[o jánis]~~ féri [o jánis] to vivlío

          ⌊_merger_⌋

Pronunciation of the higher copy in Spec,TP position would thus have catastrophic results for this kind of merger. Given that pronunciation of the higher copy creates an ill-formed morphophonological object in PF, some other constraint must enforce the pronunciation of the lowest copy. We argue that this constraint is STRICT ADJACENCY, stated in (36):

(36)   STRICT ADJACENCY (SA)
        Elements liable to *Local Dislocation* must be strictly adjacent.

An ungrammatical output such as **na o jánis féri to vivlío* is exactly what SA is designed to rule out, through high-rank. We infer from this that PH is outranked by SA, as shown in (37). The tableau in (38) illustrates the competition between the crucial candidates. Candidate (38a) violates SA and, given the proposed constraint ranking, this is a fatal defect. This leaves candidate (38b), which realizes the lowest copy, as the winner. Note that each candidate scores a single violation of PRONOUNCE since one copy always deletes, regardless of its position.

(37)   STRICT ADJACENCY » PRONOUNCE HIGHEST » PRONOUNCE

(38)

|	na o jánis féri o jánis …	SA	PH	PRONOUNCE
	a. na o jánis féri o~~jánis~~ …	*!		*
☞	b. na o~~jánis~~ féri o jánis …		*	*

6.   Indicative clauses

6.1.   Transitive clauses

In section 3.1, we mentioned that both SVO and VSO orders are possible in rendering an all new information transitive sentence, but SVO is strongly preferred. This variation is very interesting itself and calls for an explanation. Let us use the sentence in (39) as an instructive example. The syntactic derivation of (39) is outlined in (40) and both grammatical outputs are provided in (41).

(39)   (o jánis)   éfere   (o jánis)   to vivlío
        the John-NOM bring-PAST.3SG the John-NOM the book-ACC
   'John brought the book'

(40)
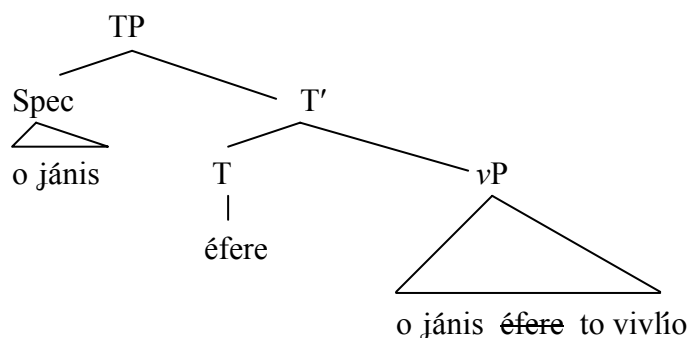
(41)   a.   [o jánis] éfere ~~[o jánis]~~ to vivlío   *preferred*
        b.   ~~[o jánis]~~ éfere [o jánis] to vivlío   *less preferred*

The fact that both sentences in (41) are equally grammatical when uttered in an all new information context – although the latter is admittedly much less frequent – suggests that the requirement to pronounce the highest copy is somewhat relaxed in Greek, since otherwise a lower copy would never had the chance to surface. In order to fully-understand the described pattern of variation, we need first to sketch the overall lay of the land starting from the infrastructure of the syntactic derivation in (40). A typical sentence in Greek consists of two phases.

(42)

CP-phase   Spell-Out   *v*P-phase   Spell-Out
Root Spell-Out
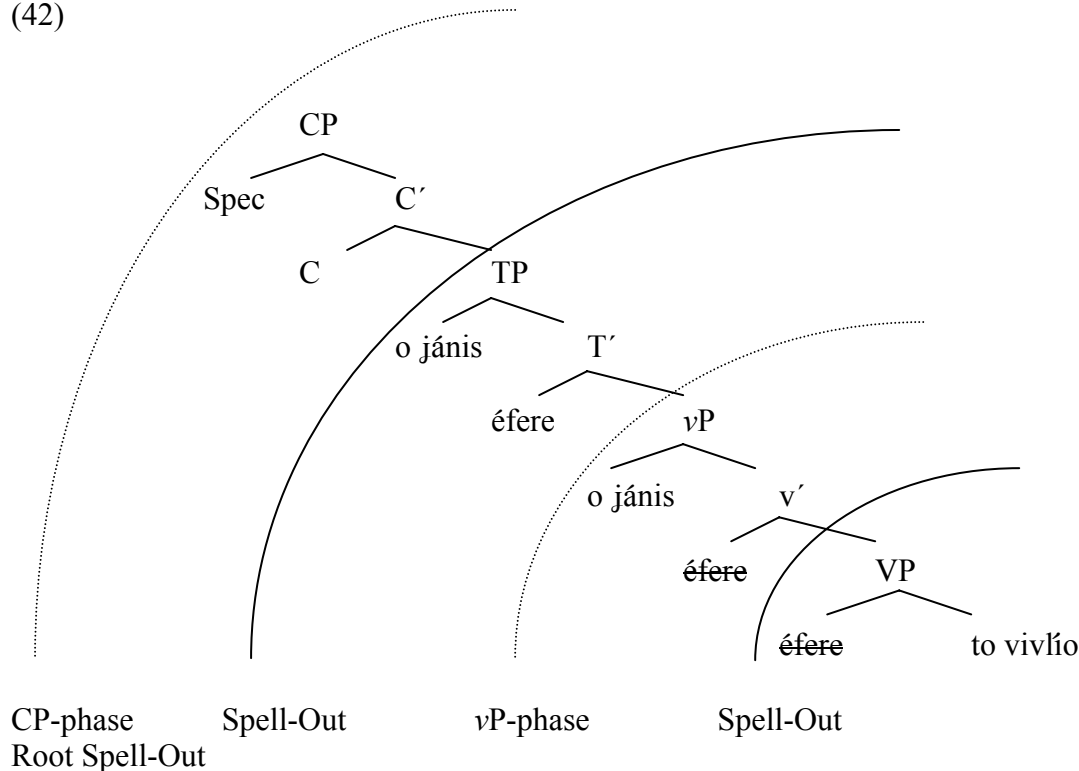
In the *v*P, the two arguments of the verb are subsequently merged with it and Spell-Out applies at the end of the *v*P-phase sending its complement domain, i.e. the VP, to the interfaces for processing. At the next phase level up, two movement operations take place. First, the verb moves to the T head for morphology reasons and, second, the DP *o jánis* is attracted to the Spec,TP position in order to satisfy EPP. Spell-Out of the CP-phase will send its complement domain, i.e. the TP, which now includes a copy of the DP *o jánis* and a copy of the verb, to the interfaces. Leaving aside verb movement, for which we assume that the high copy is always the one which is promoted at the interfaces (see fn 17), interfaces will have to linearize the output of the movement of the DP *o jánis* which consists of two copies. Let us now see how PF processes this output in Greek.

Recent proposals, including the present one, assume that during Spell-Out higher order prosodic structure, i.e. p-phrasing, is assigned.[20] Leaving aside the technical differences among the various analyses, the core idea is that the spell-out domain of a phase forms a p-phrase constituent. For instance, Kratzer & Selkirk's (2007) propose that prosodification works according to the *Highest Phrase Condition*, given in (43):

---

[20] See Revithiadou & Spyropoulos (2003, 2005, to appear), Kahnemuyipour (2004), Adger (2006), Selkirk (2006a,b), Kratzer & Selkirk (2007), among others.

(43)   *Highest Phrase Condition* (Kratzer & Selkirk 2007: 12)
        The highest syntactic phrase within the spell-out domain of a phase corresponds to a
        p-phrase in phonological representation.

Kratzer & Selkirk argue that only the *highest syntactic phrase* within the spell-out domain
will be Spelled-Out by the PF. According to (43), therefore, only the object *to vivlío* will be
Spelled-Out in the first phase and, concomitantly, will be prosodified into a p-phrase:

(44)   *p-phrasing in vP-phase*
        [to vivlío]ϕ

Similarly, when at the end of the CP-phase the string *o jánis éfere o jánis* will be Spelled-
Out, only the subject (irrelevant which copy right now) will be liable to prosodization but,
crucially, not the V since it is not phrasal. The prosodic adjunction of the V will wait for the
syntactic derivation and its Spell-Outs to be completed. We believe, however, that PF cannot
single out certain parts of the derivation, i.e. phrases vs. heads, and, accordingly, decide to
prosodify them or leave them stray. Instead, we assume that after Spell-Out the whole
spelled-out string should be made available to PF for p-phrasing. In this case, the p-phrasing
algorithm will operate to prosodify the string in the usual fashion, that is, by scanning the
edges of syntactic phrases and appropriately mapping them into p-phrase boundaries (through
traditional ALIGNMENT constraints of the type 'Align the Right (/Left) edge of an XP with the
Right (/Left) edge of a p-phrase').[21] We concur, nevertheless, with Kratzer & Selkirk that p-
phrasing and sentential stress are determined in root-spell out, i.e. after the whole derivation
is completed. But even then, only a partial phonological representation is constructed, which
can still be manipulated by core PF constraints (e.g. binarity and heaviness constraints).
        Having said this and assuming for the sake of argument that both copies are equally
pronounceable (or not), we predict two possible p-phrasings for the input string *o jánis éfere
o jánis*:

(45)   *p-phrasing in CP-Phase*
        a.   [o jánis]ϕ éfere o̶ ̶j̶á̶n̶i̶s̶   (*End-based mapping*: Right-align XP and p-phrases)
        b.   o̶ ̶j̶á̶n̶i̶s̶ [éfere o jánis]ϕ

In terms of wellformedness, the phrasing in (45b), which promotes the VS order, fares much
better than the one in (45a), which gives rise to the SV order, because the V is included into
the p-phrase, i.e. the string is exhaustively parsed. On the contrary, the p-phrasing in (45a)
results in a prosodically unparsed, i.e. stray, verb which will have to prosodically incorporate
either into the p-phrase of the subject or into the p-phrase of the object in a latter application
of the p-phrasing algorithm.[22] To account for the non-optimal phrasal shape of (45a), we
bring into play the archetypical constraint NOSTRAY, stated in (46). Setting aside redundant
for this paper technical details, this constraint strives towards achieving *Exhaustivity*.[23]
Significantly, a parsimonious parsing where the V is immediately prosodified after Spell-Out
satisfies NOSTRAY. The tableau in (47) shows how the relevant candidates fare with respect
to this constraint.

---

[21] This is basically an incarnation of the *End-based Theory* (Selkirk 1982, 1995, et seq., Truckenbrodt 1995,
1999).
[22] In fact, as argued in section 3.2, both options are exploited by the language.
[23] Every prosodic constituent of a higher level should immediately dominate a prosodic constituent of a lower
level.

(46)   NOSTRAY
        Morphosyntactic material should be prosodically parsed

(47)

	o jánis éfere o jánis	NOSTRAY
	a. [o jánis]ϕ éfere ~~o jánis~~	*$_v$
☞	b. ~~o jánis~~ [éfere o jánis]ϕ	✓

It is clear from the above that in Greek NOSTRAY may outrank the constraint that favors the pronunciation of the head of the chain, namely PH. When this happens, the VSO order emerges. The rankings in (48) encode the described pattern of variation:

(48)   a.   PH » NOSTRAY   *Result:* SVO order
        b.   NOSTRAY » PH   *Result:* VSO order

It is important to emphasize that the exact conditions under which SVO and VSO orders emerge may also hinge to a great extent on the other competing forces in the system. Let us not forget the significant role that prosodic size constraints (e.g. binarity of p-phrases) play in Greek (see section 3.2). Often the added effects of these constraints conspire towards appointing one output as the optimal one. For instance, pronunciation of the highest copy will be reinforced when the subject is heavy (branching) since the desire of prosodic size constraints to organize constituents into binary structures meets in this case the goal of PH, namely to pronounce the highest copy. Consequently, both constraints target the same copy and hence their combined effects converge to selecting the highest copy as optimal. The following tableau works out the possible p-phrasings and word orders of a string with the heavy (branching) subject *o jánis tis ánas* 'John of Anne': *o jánis tis ánas éfere o jánis tis ánas to vivlío*.

(49)

	o jánis tis ánas éfere o jánis tis ánas to vivlío	NOSTRAY	PH	BIN
	a. [o jánis tis ánas]ϕ$_1$ éfere ~~o jánis tis ánas~~ [to vivlío]ϕ2	*$_v$		*ϕ$_2$
	b. [[o jánis tis ánas]ϕ$_1$ éfere]ϕ$_1$ ~~o jánis tis ánas~~ [to vivlío]ϕ$_2$			*ϕ$_1$*ϕ$_2$
	c. [o jánis tis ánas]ϕ$_1$ éfere ~~o jánis tis ánas~~ [to vivlío]ϕ$_2$	*$_v$		*ϕ$_2$
☞	d. [o jánis tis ánas]ϕ$_1$ [éfere ~~o jánis tis ánas~~ [to vivlío]ϕ$_2$]ϕ$_2$			
	e. [~~o jánis tis ánas~~ [éfere o jánis tis ánas]ϕ$_1$ [to vivlío]ϕ$_2$		*	*ϕ$_1$*ϕ$_2$

The tableau shows that, regardless of ranking, the added effects of all three constraints at issue will yield candidate (49d) as the optimal output.

An important prediction of the analysis so far is that SVO orders must be favored in long and more complex sentences that consist of many elements because this is typically the context where binarity effects and other wellformedness-driven constraints have the chance to kick in. In contrast, a less sizable string might favor a parsing in which the CP-phase spelled-out material, i.e. the verb and the subject, are grouped together into a p-phrase, i.e. [V S]ϕ, right in the first pass of the p-phrasing algorithm. In other words, VSO orders should be favored more when the verb and the subject are light (non-branching). This assumption predicts that a sentence such as *ésvise i ría to fós* 'Ria switched off the light' should be, and actually is, better than *ésvise i aðerfí tis rías to fós* 'Ria's sister switched off the light' when uttered in an all new context situation. Future research should be directed in exploring the

relation of p-phrasing constraints and word order in Greek and, accordingly, confirm or not whether the aforementioned predictions are empirically met.[24]

Regardless of which p-phrasing and, consequently, word order is chosen, the p-phrased string will have to be assigned sentence stress. In Greek, default stress prominence is rightmost within the p-phrase and rightmost within the intonational phrase (IP):

(50)   *Greek Sentence Stress Rule (GSSR)*
       Assign stress prominence to the rightmost element of the clause

The widely accepted constraints in (51) are responsible for the emergence of rightmost sentence stress.

(51)   a.   RIGHTMOST-ϕ: The head prosodic word (PW) is rightmost in a p-phrase.
       b.   RIGHTMOST-IP: The head p-phrase is rightmost in an IP.
               (based on EDGEMOST, Prince & Smolensky 1993; Prince 1983)

For both the SVO/VSO orders, the most rightmost element will be the object:

(52)   *default sentence stress in SVO/VSO orders*

```
       {                    x}          {               x }      IP
       [[    ] x  ]25[   x ]            [     x  ] [   x ]        p-phrase
       ( x ) (x  ) (     x )            (x  )( x  ) (    x )      PW
    a.  o jánis éfere to vivlío    b.    éfere o jánis to vivlío
```

A possible candidate that would carry sentence stress prominence on any other constituent than the object will incur a fatal violation of the constraints in (51) and be instantly disqualified.

In the following section, we show that the same set of PF constraints yield somewhat different results for intransitive clauses, which is exactly what we expect under the copy approach to movement.

6.2.   Intransitive clauses

In intransitive constructions the VS order seems to be preferred (see section 3.1 and especially the results of a questionnaire research in Table 1). According to our analysis, intransitive structures involve a subject chain with a preverbal and a post-verbal copy. The intransitive sentence in (53) serves as an illustrative example.

(53)   írθan   ta peðiá
   come-PAST.3SG the child-PL.NOM
       'The children came'

Let us take collectively intransitive predicates to head an intransitive *v*P.[26] Chomsky (2000) suggests that such an intransitive *v*P does not constitute a strong phase and, therefore, it is not

---

[24] It should be noticed that the results of Laskaratou's (1989) corpus based study of the distribution of subjects point to the same direction, i.e. that preverbal subjects are more 'heavy' than postverbal ones in transitive clauses.

[25] An alternative phrasing where the stray verb is adjoined to the p-phrase of the object *to vivlío* is of course also possible.

subject to Spell-Out. Legate (2003) provides a series of interpretative arguments against this proposal and shows that such *v*P are also subject to Spell-Out. Her conclusion is also shared by most of the phase analyses to prosodification (see for instance Kratzer & Selkirk 2007). Thus, there seems to be interface evidence that intransitive *v*Ps are subject to Spell-Out. We adhere to this hypothesis, i.e. we assume that intransitive *v*Ps in Greek are phases and Spell-Out sending their material to PF for prosodic processing. Consequently, the example in (53) involves a two-phase derivation with the DP *ta peðiá* moving to the Spec,TP position[27] and creating a chain that consists of a high copy at the Spec,TP and a low copy in the *v*P:

(54)
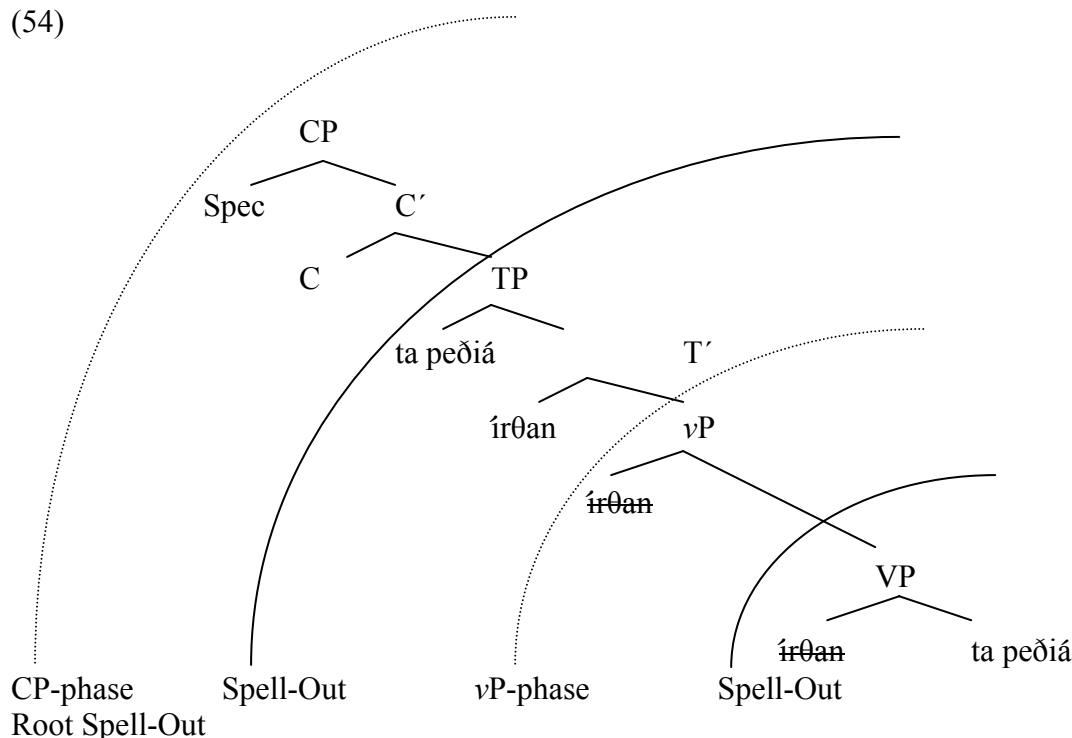
Following the same steps as those taken in the analysis of transitive constructions, the Spell-Out of *v*P-phase will send the DP *ta peðiá* to PF for prosodification. Then, the right edge of the DP will be right-aligned with the right edge of a p-phrase, as shown in (55):

(55)   *p-phrasing in vP-phase*
        [ta peðiá]ɸ

Accordingly, the output of the CP-phase *ta peðiá írthan* will be Spelled-Out and will be appropriately parsed at the PF into a prosodic unit. Note, however, that the verb will remain stray once again and will have to await a later application of the p-phrasing algorithm.

---

[26] For the purposes of this paper, we will not enter into the details of the internal argument structure of one-argument predicates and its syntactic representation, i.e. whether they may or not head a *v*P projection. However, we note that such distinctions may be ultimately related with the prosodification of the relevant structure through the availability/unavailability of triggering a Spell-Out operation. It remains a project for future research to examine word order preferences and the relevant prosodification of the different types of one-argument predicates in Greek.

[27] For the ease of exposition, we abstract away from details regarding cyclic movement via an intermediate Spec position at the *v*P phase.

(56)   *p-phrasing in CP-phase*
        [ta peðiá]φ írθan

Interestingly, regardless of which copy will be phonetically realized, we end up in both cases with a less parsimonious p-phrasing since the verb is left unparsed:

(57)   a.   [ta peðiá]φ írθan   *higher copy is pronounced*
        b.   írθan [ta peðiá]φ   *lower copy is pronounced*

An important question that arises at this point is how the preference for VS orders in intransitives arises. To put it differently, what hampers down the effects of PH? We believe that the source of explanation lies on the dynamics of the rightmost sentence stress rule. Unlike transitive constructions, in which sentence stress falls always on the object, in intransitives the element that hosts stress prominence changes depending on which copy is pronounced. Thus, in (58a) sentence stress will have to await the prosodification of the stray V and hence the second round of p-phrasing.[28] After that, the V will be assigned sentence stress, as shown in (58a). If the lower copy is selected (58b), however, sentence stress can be assigned right away, i.e. in the first application of the p-phrasing algorithm. Although (58a) and (58b) phrase alike, the latter is more parsimonious than the former because it does not postpone the application of the GSSR. We expect in this case, like in transitive constructions, the prosodic heaviness of elements to leave their imprint on the p-phrasing preferences, but clearly this is an issue for future research.

(58)   *default sentence stress in SV/VS orders*

```
            {         x    }           {           x }       IP
            [[      ]  x   ]           [           x]         p-phrase
            (     x) (x    )           (x   ) (     x)        PW
    a.      ta peðiá írθan      b.     írθan ta peðiá
```

        To conclude, in this section we have shown that several PF constraints, appropriately ranked, not only control p-phrasing in Greek but also regulate which copy will be pronounced. This result has more than abstract interest because, in essence, it derives from an analysis that postulates *one and the same constraint ranking*, given in (59), to account for both p-phrasing and word order in Greek.[29]

(59)   STRICT ADJACENCY » {NOSTRAY, BINARITY, RIGHTMOSTφ/IP, PRONOUNCE HIGHEST} » PRONOUNCE

We should of course emphasize that only a copy theory of movement provides the necessary leeway to the PF interface to dynamically process the syntactic output. For all the above reasons, we believe that the present analysis succeeds its goal, that is, to attain considerable descriptive and explanatory economy.

---

[28] One may argue that the GSSR can apply to the string *[[ta peðiá]φ írθan]IP* and assign prominence to the only p-phrase, namely, *ta peðiá*. Note, however that this cannot be an optimal output because it violates RIGHTMOST-IP since the head p-phrase is not rightmost within the intonational phrase.

[29] Revithiadou (2006) and Revithiadou & Spyropoulos (2006) propose an analysis along these lines to account for the variable distribution of pronominal clitics in several Greek dialects (Cypriot, Cappadocian, Silly, Karpathos, Kouvoukliotika, Marioupoli, etc.), as well as for its diachronic development from the second position cliticization system of Medieval Greek.

7.   Evaluating the copies: Minimize Mismatch

In the previous sections, we demonstrated how an interface approach to copy pronunciation can account for the various distribution patterns of subjects in Greek clauses. The crucial assumption is that PF constraints, appropriately ranked, regulate the linearization of the subject chain by determining which copy will be phonetically expressed and which one(s) will remain silent. In this section, we move on to examining cases which illustrate the effects of an important evaluation condition on the processing of the copies both at the PF and the LF interfaces.

Bobaljik (2002) proposes that the possibilities with respect to the pronunciation and interpretation of the copies in a chain are evaluated by a condition which he calls *Minimize Mismatch* (MM):

(60)   *Minimize Mismatch* (Bobaljik 2002: 251)
         (To the extent possible) privilege the same copy at PF and LF.

This evaluation condition states that, all things being equal, a syntactic output which is processed in a way that the same copy is both pronounced and interpreted (*total match*) should be better than an output where one copy is pronounced and the other one is interpreted (*mismatch*):

(61)   *harmonic scale of LF and PF copy processing*
         $\text{copy}^{\text{LF}}_{\text{PF}} \ldots \text{copy}$ » $\text{copy}^{\text{LF}} \ldots \text{copy}_{\text{PF}}$

In the light of MM, we would like to have a closer look at the examples in (9) repeated here as (62). What these examples share in common is that LF has to interpret the highest subject copy in order for the sentences to get the appropriate interpretation. Thus, they instantly qualify as valuable case studies for anyone who wishes to explore whether the dictates of LF interpretation will be imposed on PF pronunciation or not.

(62)   a.   *stative verb construction*
                i   maría   kséri   (#i maría)   tin apántisi
                the Mary-NOM know-PRES.3SG (the Mary-NOM) the answer-ACC
                'Mary knows the answer'
        b.   *middle construction*
                ta liná   plénonte   éfkola (#ta liná)
                the linen-NOM wash-PRES.3PL easily (the linen-NOM)
                'Linen wash easily'

        c.   *generic statement with a stage-level predicate*
                i   fálenes   íne (#i fálenes)   θilastiká
                the whale-PL.NOM are (the whale-PL.NOM) mammal-PL.NOM
                'Whales are mammals'

        d.   *generic statement with an individual-level predicate*
                i   fitités   piɣénun   (#i fitités)   se ðiaðilósis
                the student-PL.NOM go-PRES.3PL (the student-PL.NOM) to demonstration-PL.ACC
                'Students go to demonstrations'

As also discussed in section 3.1, example (62a) illustrates a stative verb construction, examples (62c-d) are generic statements about their subject and example (61b) demonstrates a middle construction. These examples are drawn from Roussou & Tsimpli (2006), who convincingly argue that the preverbal subjects cannot be considered as left-dislocated elements. They also further notice that, in examples (62a-c), the alternative VS(O) order is not an option, whereas in example (62d) VS(O) is only possible with a definite/specific reading of the subject. Based on this observation, they claim that the interpretation of subjects in these constructions lies outside the VP domain, which explains why postverbal subjects are not allowed. More specifically, subjects of stative verbs do not affect their thematic interpretations, whereas the generic interpretation of the subject in generic statements and middles is tightly associated with the tense properties of the clause (see also Diesing 1992).

Returning to our analysis, the state of affairs described above indicates that the subject chain in these constructions is interpreted at the high copy, which occupies the Spec,TP position. Remarkably, the same copy is also chosen for pronunciation. Sentences such as *íne i fálenes θilastiká* (62c) are ill-formed when uttered with a neutral intonation. From a PF perspective though, both orders are available (see section 6.1). The same holds for the remaining constructions in (62). We infer, therefore, from this set of facts that MM compels pronunciation of the high copy and deletion of the lower, yielding the desired SV(O) pattern. To put it differently, because of MM, the pronunciation of the lower copy is blocked, even if this is a felicitous or even a better PF choice. Consider the case of intransitives where the VS order is the preferred one. In generic and middle constructions, nevertheless, VS is blocked despite the PF bias towards pronouncing the low copy, because the generic interpretation is only available with the high copy.[30] Pronouncing the low copy and interpreting the high one causes an unwarranted mismatch, and hence results in the less harmonic MM output. To conclude, when the PF provides us with two possible outputs, but LF only with one, the MM privileges the output that both interprets and pronounces the same copy.
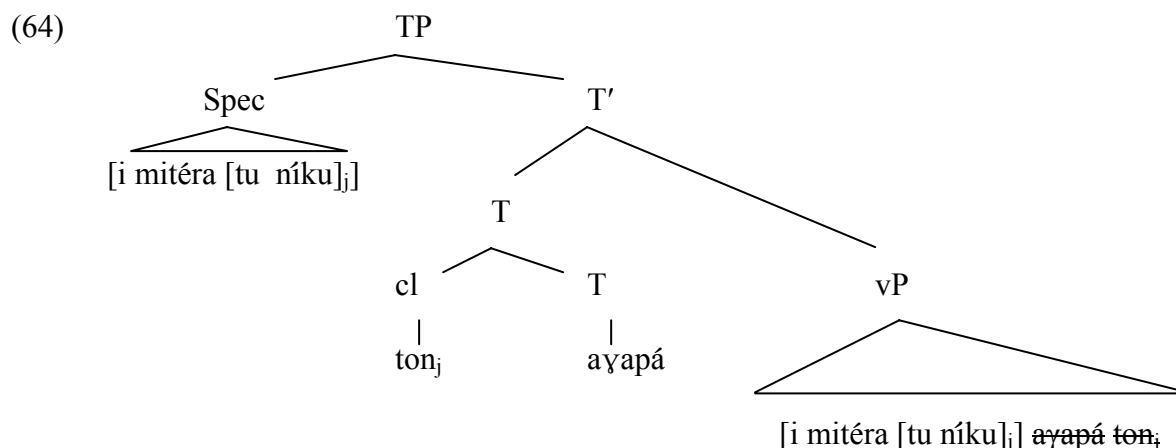
Another interesting area where the effects of MM can be detected is binding. The binding possibilities in the set of examples in (63) have drawn the attention of a number of researchers (Horrocks 1994, Spyropoulos & Philippaki-Warburton 2002, Panagiotidis & Tsiplakou 2006).

(63) a. $ton_{i/*j}$ aɣapá   [i mitéra   [tu níku]$_j$]
              him love-PRES.3SG the mother-NOM the Nikos-GEN
      b.   [i mitéra   [tu níku]$_j$] $ton_{i/j}$ aɣapá
              the mother-NOM the Nikos-GEN him love-PRES.3SG
              'Nikos' mother loves him'

In example (63a), co-reference between the clitic *ton* and the DP *tu níku* cannot be established, as a result of a Principle C violation. However, this is possible in example (63b), because the DP *tu níku* is not c-commanded by the clitic. Let us assume that these examples involve the same syntactic derivation:

---

[30] Interpreting the low copy in this case results in a specific/definite reading of the subject.

(64)

```
                          TP
                _____
              Spec                     T′
           _____          _____
         [i mitéra [tu  níku]ⱼ]  T              vP
                            _____    _____
                          cl        T                         
                          |         |
                         tonⱼ      aɣapá
                                          [i mitéra [tu níku]ⱼ] a̶ɣ̶a̶p̶á̶ t̶o̶nⱼ
```

The way copies are processed at the interface accounts for the co-reference possibilities. If LF must interpret the high copy, so as to get co-reference, MM will compel this copy to also be pronounced, giving example (63b). On the other hand, interpretation of the low copy and its corresponding pronunciation will result in example (63a) with a non-coreferent interpretation of the clitic. We see once again that MM blocks the mismatch between the low copy pronounced and the high copy interpreted.

This latter choice constitutes an instance of what Bobaljik (2002) dubs the *Lower Right Corner Effect* (LRCE). He argues that the existence of such a 'peculiar' situation where a movement has no interface effects constitutes a strong piece of evidence for the existence of movement as an independent syntactic process and, especially, for the copy approach to movement. The intriguing property of such constructions is that there is neither phonological nor interpretative indication for the higher copy, so that one may assume that no movement has taken place. Crucially, evidence for the existence of the higher copy comes from constructions which involve subject control in a non-finite gerundival adverbial clause (Spyropoulos 1999, Spyropoulos & Philippaki-Warburton 2002). Consider the following sentence:

(65)   ton sinántise   i   kóri   tu níku   piɣénontas sti   ðuliá
        him meet-PAST.3SG the daughter-NOM the Nick-GEN go-GER   to-the work-ACC
        'Nick's daughter met him on her way to the work'
        [TP tonₖ/*ⱼ sinántise [vP [vP [i kóri [tu níku]ⱼ]ᵢ [XP PROᵢ piɣénontas sti ðuliá]]]]

The null subject of the manner gerund clause is controlled by the subject of the matrix clause. Given its position in the configuration (manner gerund clauses adjoin at the *v*P level), this can only be possible, if there is a subject element in the EPP Spec,TP position, i.e. a silent copy. Let us take a closer look at the derivation:

(66)
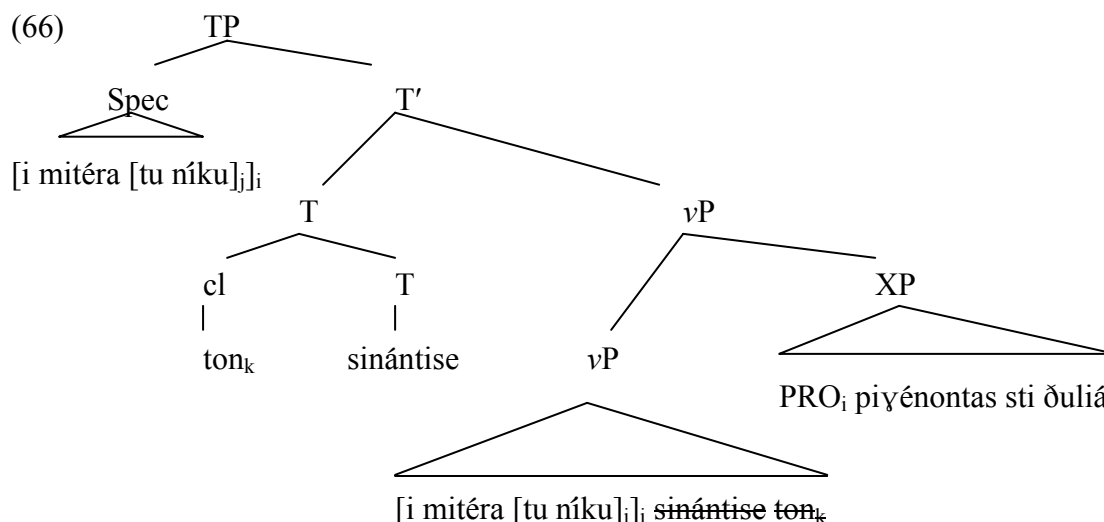
That the clitic cannot co-refer with the DP *tu níku* indicates that it is the low copy that it is both pronounced and interpreted; the existence of the high copy is only revealed by its control effect on the gerundival clause.

(67) $[_{TP}$ ~~[i kóri [tu níku]ⱼ]ᵢ~~ tonₖ sinántise $[_{vP}[_{vP}$ [i kóri [tu níku]ⱼ]ᵢ$]$ $[_{XP}$ PROᵢ piɣénontas…$]]]$

Significantly, the LRCE in the construction above is induced by the MM, since the latter has the power to make the high copy in a chain inert to interfaces. However, that its existence has certain syntactic effects, as shown above, indicates that movement is a purely syntactic operation that operates blindly no matter whether its products, i.e. its copies, will receive pronunciation and interpretation.

A question that emerges at this point is what happens when the PF does not provide us with two possible pronunciation sites for the subject copy, as in the case of subjunctive clauses. Examples with statives such as the one given in (68) suggest beyond any doubt that MM can exercise its full power only when the PF is flexible enough to allow for more than one output. To explain, LF promotes the high copy for interpretation purposes but PF strictly forbids its pronunciation due to the top-ranking of SA (see the ranking in (37)). We infer, therefore, that in this case MM cannot enforce maximal match between the respective copies because PF does not provide this choice.

(68)   ílpiza   na   kséri   i   maría   tin   apántisi
         hope-PAST.3SG SUBJ know-3SG the Maria-NOM the answer-ACC
         'I hoped Maria to know the answer'

One may wonder whether MM is a filter that controls the LF-PF communication or some kind of an interface constraint. If the former view is taken, then we must assume that there exists a 'buffer' between the interfaces that evaluates the outputs of each component on the basis of a well-defined pool of principles, among which MM is also found. If the latter view is taken, on the other hand, then we must encode the basic premises of MM in the form of a violable interface constraint. Such a constraint would be designed to cross-cut the PF and LF components and ultimately require *reciprocity*[31] between them, in the sense that, if a copy is

---

[31] Goldrick (2000) first proposes the constraint RECIPROCITY (If *Y* projects to *X*, then *X* must pronounce *Y*, Goldrick 2000: 3) as part of an enriched autosegmental representation framework, in order to account for phonological opacity. Revithiadou (in press) modifies this constraint so as to apply to the phonology-morphology interface.

pronounced, it should also be interpreted and vice versa. A provisional formulation of such a constraint is given in (69):

(69)   RECIPROCITY (Copy^{PF} ↔ Copy^{LF})
        If a copy is pronounced, then it should also be interpreted and vice versa.

Under the constraint-based scenario, RECIPROCITY will occupy a specific rank in the hierarchy in (59); it will be ranked below STRICT ADJACENCY but above the other PF constraints:

(70)   STRICT ADJACENCY » RECIPROCITY » {NOSTRAY, BINARITY, RIGHTMOSTφ/IP, PRONOUNCE HIGHEST} » PRONOUNCE

This constraint hierarchy will give rise to a mismatch in the case of subjunctive stative clauses. The following tableau illustrates its effects (only the crucial constraints and candidates are included):

(71)

	na i maría kséri i maría	STRICT ADJACENCY	RECIPROCITY
☞	a. na *i maría*^{LF} kséri i maría		*
	b. na *i maría*^{LF} kséri ~~i maría~~	*!	

Candidate (71b) loses the competition despite the total LF and PF match because it fatally violates STRICT ADJACENCY.

In lack of evidence in favor of the one or the other position, we choose at this point to remain agnostic as to the exact status of MM in the grammar. Future research should test the predictive and explanatory power both of the constraint-oriented and the buffer scenario and decide accordingly.

In summary, the sets of data examined above illustrate the significance of the *Minimize Mismatches* condition in evaluating the syntactic output at both interfaces. Combining its effects with the constraints that PF imposes on the linearization of the subject chain, discussed in sections 5 and 6, we are able to derive a pattern that adequately accounts for the distribution of subjects in Greek clauses.

8.   Conclusions, extensions and further issues

We presented an approach to the syntax of Greek subjects which accounts for its basic distribution in a unified way. More specifically, based on a series of arguments having to do with the status of the preverbal subject in neutral intonation/information conditions, we concluded that it lacks significant properties of left-dislocated elements. Thus, by reviewing evidence from prosodification, interpretation and extraction, we showed that preverbal subjects cannot be considered non-cyclic elements as the left-dislocation approach would imply. Instead, we put forward the hypothesis that the syntax of subjects in Greek involves a movement operation targeting an EPP Spec,TP position. In the realm of the copy theory of movement, as developed by Bobaljik (2002), we proposed that this movement operation creates a sequence of copies, which constitutes the syntactic output of this operation. PF and LF requirements then decide on the pronunciation and interpretation of the copies. Crucially, the distribution of overt subjects is regulated by the linearization of this chain at PF. More specifically, the fact that subjects are obligatorily postverbal in subjunctive clauses was

shown to be the result of the obligatory linearization of the chain in favor of the low copy: Pronunciation of the high copy would block the strong adjacency requirement on the merger of the particle *na* with the verb form, thus causing its deletion. In indicative clauses, pronunciation of either copy is possible. There are certain preferences having to do with the nature of the predicate (transitive vs. intransitive) and the heaviness of the constituent (see also Laskaratou 1989). Significantly we show that this variation is straightforwardly explained as the effect of a set of PF constraints that independently regulate the prosodic organization of the utterance. This is a welcome result on both empirical and theoretical grounds. Although tacitly recognized, the variation between preverbal vs. postverbal subjects in indicative clauses and the significance of pure phonological factors, such as heaviness and sentential stress, for its conditioning has not received the appropriate focus of examination, with the only exception of Laskaratou's (1984, 1989) studies. Our analysis makes the clear statement that this variation is not accidental, but it is conditioned in a principled way by the PF processing of the syntactic output.

This is perhaps the major advantage of the hypothesis developed here. It accounts for the interplay between syntax and phonology in the determination of the word order by using independent operations and constraints of each module. Syntax creates chains of copies and PF fixes their surface distribution on the basis of independently existing phrasing constraints. In other words, PF invokes a single constraint system to account for both p-phrasing and word order. What is more, the analysis advanced here offers ample empirical support to the copy approach to movement and the decisive role of interfaces in regulating the output of the syntactic derivation, by elaborating on the exact nature of the PF conditions that determine the ways in which syntactic derivations may surface.

From a computational point of view, the approach developed is both minimal and explanatory more adequate than the dislocation analysis. The dislocation analysis has to resort to two different derivations for constructions with preverbal and postverbal subjects: preverbal subjects are dislocated, whereas postverbal ones occupy the base position inside the *v*P. Given the existing surface variation in indicative clauses, syntax would have two different constructions for the same utterance. In other words, the dislocation analysis poses variation within the syntactic component, which is theoretically undesired given the minimalist proposals for the computational system. Even, if this was a possibility, the emerging question would be on which grounds such a choice can be made in the syntactic component in a strictly derivational fashion. To the best of our knowledge, there is no way that this can be achieved. More significantly, that the variation in the surfacing of subjects seems to be PF conditioned proves to be fatal for the dislocation analysis. Syntax would not be able to choose the appropriate derivation without a massive cross-modular look ahead that will provide the relevant information on what may constitute a legitimate at the PF syntactic output. Crucially, syntax has no way to acquire such information, i.e. syntax is blind with respect to the heaviness of a constituent or the prosodic organization of the utterance or stress assignment considerations. Our analysis therefore has the advantage that it takes syntax to operate on the basis of its own machinery, so that it does not have to resort to information from other components in order to decide on the surfacing of the subject. The syntactic output is determined by syntactic considerations in a strictly derivational fashion, i.e. EPP satisfaction and feature checking. Linearization of this output on the basis of independently existent PF principles derives the surface order and accounts for its possible variation.

The analysis of subjects developed here raises a number of issues regarding the specifics of the movement operation itself. First, it is definitely worth investigating the relation of this movement with the Agree operation that valuates subject agreement in T and assigns nominative case to the subject. An important question to seek an answer to is whether this Agree operation targets the low copy or the high one and what the consequences would

be in any case. Second, since we assume that preverbal subjects occupy an EPP specifier position, a natural question is to safely identify its exact position. This issue stems out from the status of preverbal subjects in future tense constructions, which seem to have the same properties as preverbal subjects in pure indicative constructions, but they surface on the left of the future particle *θa* that procliticizes on the verb form. Finally, another venue of investigation should be directed towards safely determining the specifics of the preverbal vs. postverbal subject distribution by means of appropriately designed experiments that will target the specific factors, such as the nature of the predicate and the relative heaviness of the constituents involved. We hope that by extending this line of research to the above issues will deepen our understanding of the properties of Greek subjects and shed light to less explored aspects of their derivation.

References

Adger, David. 2006. Stress and phasal syntax. Ms. Queen Mary College, University of London.

Alexiadou, Artemis. 1999. On the properties of some Greek word order patterns. In Artemis Alexiadou, Geoffrey Horrocks & Melita Stavrou (eds.), Studies in Greek Syntax. Dordrecht: Kluwer Academic Press, 45-65

Alexiadou, Artemis & Elena Anagnostopoulou. 1998. Parametrizing AGR: Word-order, V-movement and EPP checking. *Natural Language and Linguistic Theory* 16: 491-539.

Baltazani, Mary. 2002. Quantifier Scope and the Role of Intonation in Greek. Ph.D. Thesis, UCLA.

Beckman, Jill. 1995. Shona height harmony: Markedness and positional identity. *University of Massachusetts Occasional Paper* 18: 53-76.

Beckman, Jill. 1997. Positional faithfulness, positional neutralization and Shona vowel harmony. *Phonology* 13: 283-328.

Beckman, Jill. 1998. Positional Faithfulness. Ph.D. Thesis, University of Massachusetts, Amherst.

Bobaljik, Jonathan D. 2002. A-chains at the PF interface: copies and 'covert' movement. *Natural Language and Linguistic Theory* 20: 197-267.

Bošković, Željko. 1995. Particle movement and second position cliticization in Serbo-Croatian. *Lingua* 96: 245-266.

Bošković, Željko. 2001. *On the Nature of the Syntax-Phonology Interface: Cliticization and Related Phenomena*. Amsterdam, London and New York: Elsevier.

Bošković, Željko. To appear. On the locality and motivation of Move and Agree: An even more minimal theory. To appear in *Linguistic Inquiry*.

Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, MA: MIT Press.

Chomsky, Noam. 2000. Minimalist inquiries: The framework. In Roger Martin, David Michaels & Juan Uriagereka (eds.), *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*. Cambridge MA: MIT Press, 89-115.

Condoravdi, Cleo. 1990. Sandhi rules of Greek and prosodic theory. In Sharon Inkelas & Draga Zec *The Phonology-Syntax Connection*. Chicago: Chicago University Press, 63-84.

D'Imperio, Mariapaola, Gorka Elordieta, Sónia Frota, Pilar Prieto & Marina Vigário. 2005. Intonational phrasing in Romance: the role of syntactic and prosodic structure. In Sónia Frota, Marina Vigário & Maria João Freitas (eds.), *Prosodies: With Special Reference to the Iberian Languages*. Berlin: Mouton de Gruyter, 59-98.

Elordieta, Gorka. In press. Segmental phonology and syntactic structure. In Gillian Ramchand & Charles Reiss (eds.), *The Handbook of Linguistic Interfaces*. Oxford: Oxford University Press.

Elordieta, Gorka, Sónia Frota, Pilar Prieto & Marina Vigário. 2003. Effects of constituent length and syntactic branching on intonational phrasing in Ibero-Romance. In María-Josep Solé, Daniel Recasens & Joaquín Romero (eds.), *Proceedings of the XVth International Congress of Phonetic Sciences,* 487-490.

Elordieta, Gorka, Sónia Frota & Marina Vigário. 2005. Subjects, objects and intonational phrasing in Spanish and Portuguese. *Studia Linguistica* 59: 110-143.

Embick, David & Rolf Noyer. 2001. Movement operations after Syntax. *Linguistic Inquiry* 32: 555-595.

Franks, Steven. 2000. Clitics at the interface: An introduction to clitic phenomena in European languages. In Frans Beukema and Marcel den Dikken (eds.), *Clitic Phenomena in European Languages*. Amsterdam: John Benjamins, 1-46.

Georgiafentis, Michalis & Anna Sfakianaki. 2004. Syntax interacts with prosody: The VOS order in Greek. *Lingua* 114: 935-961.

Ghini, Mirco. 1993. ∅-formation in Italian: a new proposal. *Toronto Working Papers in Linguistics* 12: 41-78. Dept. of Linguistics, University of Toronto, Toronto, Ontario.

Giannakidou, Anastasia. 2001. The meaning of free choice. *Linguistics and Philosophy* 24: 695-735.

Goldrick, Matthew. 2000. Turbid output representations and the unity of opacity. In Masako Hirotani, Andries Coetzee, Nancy Hall & Ji-yung Kim (eds.), *Proceedings of NELS 30*. University of Massachusetts, Amherst, MA: GLSA, 231-245.

Hirose, Yuki. 1999. *Resolving Reanalysis Ambiguity in Japanese Relative Clauses*. Ph.D. Thesis, The City University of New York, New York.

Hirose, Yuki. 2003. Recycling prosodic boundaries. *Journal of Psycholinguistic Research* 32: 167-195.

Horrocks, Geoffrey. 1994. Subjects and configurationality: Modern Greek clause structure. *Journal of Linguistics* 30: 81-109.

Holton, David, Peter Mackridge & Irene Philippaki-Warburton. 1997. *Greek: A Comprehensive Grammar of the Modern Language*. London: Routledge.

Itô, Junko & Armin Mester. 1992. Weak layering and word binarity. *Linguistics Research Center Report No. 92-109*. University of California, Santa Cruz.

Itô, Junko & Armin Mester. 1995. Hierarchical alignment and binarity. Talk presented at *TREND* (University of California, Santa Cruz, April 1995) and *GLOW* (University of Tromsø, Norway, May 1995).

Joseph, Brian D. & Irene Philippaki-Warburton.1987. *Modern Greek*. London & Wolfeboro: N.H. Croom Helm.

Jun, Sun-Ah. 2003. The effect of phrase length and speech rate on prosodic phrasing. *Proceedings of the XVth International Congress of Phonetic Sciences*. Barcelona.

Kahnemuyipour, Arsalan. 2004. *The Syntax of Sentential Stress*. Ph.D. Thesis, University of Toronto.

Keller, Frank & Theodora Alexopoulou. 2001. Phonology competes with syntax: Experimental evidence for the interaction of word placement in the realization of information. *Cognition* 79: 301-372.

Kotzoglou, George. 2005. *Wh-Extraction and Locality in Greek*. Ph.D. Thesis, University of Reading.

Kratzer, Angelika & Elisabeth Selkirk. 2007. Phase theory and prosodic spellout: The case of verbs. Ms. University of Massachusetts

Laskaratou, Chryssoula. 1984. *The Passive Voice in Modern Greek*. Ph.D. Thesis, University of Reading.

Laskaratou, Chryssoula. 1989. *A Functional Approach to Constituent Order with Particular Reference to Modern Greek. Implications for Language Learning and Language Teaching*. Athens: Parousia Monograph Series 5.

Laskaratou, Chryssoula. 1998. Basic characteristics of Modern Greek word order. In Anna Siewierska (ed.), *Constituent Order in the Languages of Europe*. Berlin: Mouton de Gruyter, 151-74.

Lebeaux, David. 1988. Language Acquisition and the Form of the Grammar. Ph.D. Thesis, University of Massachusetts, Amherst.

Legate, Julie Anne (2003). Some interface properties of the phase. *Linguistic Inquiry* 34: 506-516.

McCarthy, John J. & Alan Prince. 1993. Generalized alignment. In Geert Booij & Jaap van Maarle (eds.), *Yearbook of Morphology 1993*. Dordrecht: Kluwer Academic Publishers, 79-153.

Marantz, Alec. 1988. Clitics, morphological merger and the mapping to phonological structure. In Michael Hammond & Michael Noonan (eds.), *Theoretical Morphology: Approaches in Modern Linguistics*. San Diego: Academic Press, 253-270.

Nespor, Marina & Irene Vogel. 1986. *Prosodic Phonology*. Dordrecht: Foris.

Nunes, Jairo & Juan Uriagereka. 2000. Cyclicity and extraction domains. *Syntax* 3: 20-43.

Panagiotidis, Phoevos & Stavroula Tsiplakou. 2006. An A-binding asymmetry in null-subject languages and its significance for Universal Grammar. *Linguistic Inquiry* 37: 167-177.

Pesetsky, David. 1996. Optimality Theory and syntax: Movement and pronunciation. In Diana Archangeli & Terence Langedoen (eds), *Optimality Theory*. Oxford: Blackwell, 134-170.

Pesetsky, David. 1998. Some optimality principles of sentence pronunciation. In Pilar Barbosa, Danny Fox, Paul Hagstrom, Martha McGinnis & David Pesetsky (eds.), *Is the Best Good Enough? Optimality and Competition in Syntax*. Cambridge, MA: MIT Press & MIT Working Papers in Linguistics, 337-383.

Pesetsky, David & Esther Torrego. 2001. T-to-C movement: Causes and consequences. In Michael Kenstowicz (ed.), *Ken Hale: A Life in Language*. Cambridge, MA: MIT Press, 355-426.

Pesetsky, David & Esther Torrego. 2004. Tense, case and syntactic categories. In Jacqueline Guéron & Jacqueline Lecarrme (eds.), *The Syntax of Time*. Cambridge, MA: MIT Press: 494-537.

(Philippaki-)Warburton, Irene. 1975. The passive in English and Greek. *Foundations of Language* 13: 563-578.

Philippaki-Warburton, Irene. 1982. Η σημασία της σειράς Ρήμα Υποκείμενο Αντικείμενο στα Νέα Ελληνικά (The significance of the VSO order in Modern Greek). *Studies in Greek Linguistics* 3: 135-158.

Philippaki-Warburton, Irene. 1985. Word order in Modern Greek. *Transactions of the Philological Society*: 113-143.

Philippaki-Warburton, Irene. 1987. The theory of empty categories and the pro-drop parameter in Modern Greek. *Journal of Linguistics* 23: 289-318.

Philippaki-Warburton, Irene. 1989. Subject in English and Greek. *Proceedings of the 3rd Symposium on the Description and/or Comparison of English and Greek*, 11-32. Thessaloniki: Aristotle University, School of English.

Philippaki-Warburton, Irene. 1998. Functional categories and Modern Greek syntax. *The Linguistic Review* 15: 58-186.

Philippaki-Warburton Irene & Vassilios Spyropoulos. 1999. On the boundaries of inflection and syntax. In Geert Booij & Jaap van Marle (eds.), *The Yearbook of Morphology 1998*. Dordrecht: Kluwer Academic Press, 45-72.

Philippaki-Warburton, Irene &Vassilios Spyropoulos. 2004. A change of mood: The development of the Greek mood system. *Linguistics* 42: 523-549.

Philippaki-Warburton, Irene, Spyridoula Varlokosta, Michalis Georgiafentis & George Kotzoglou. 2004. Moving from theta-positions: pronominal clitic doubling in Greek. *Lingua* 114: 963-989.

Prince, Alan. 1983. Relating to the grid. *Linguistic Inquiry* 14: 19-100.

Prince, Alan & Paul Smolensky. 1993. Optimality Theory: constraint interaction in Generative Grammar. Report no. RuCCS-TR-2, Rutgers University Center for Cognitive Science, New Brunswick, NJ.

Prieto, Pilar. 1997. Prosodic manifestation of syntactic structure in Catalan. In Fernando Martínez-Gil and Alfonso Morales-Front (eds.), *Issues in the Phonology of the Major Iberian Languages*. Washington DC: Georgetown University Press, 179-199.

Prieto, Pilar. 2005. Syntactic and eurhythmic constraints on phrasing decisions in Catalan. *Studia Linguistica* 59, 194-222.

Revithiadou, Anthi. 1999. *Headmost accent wins: Head dominance and ideal prosodic form in lexical accent systems*. LOT Dissertation Series 15 (HIL/Leiden University). Holland Academic Graphics, The Hague.

Revithiadou, Anthi. 2006. Prosodic filters on syntax: An interface account of second position clitics. *Lingua* 116: 79-111.

Revithiadou, Anthi. In press. Colored Turbid accents and Containment: A case study from lexical stress. In Sylvia Blaho, Patrik Bye & Martin Krämer (eds.), *Freedom of Analysis?*. Berlin: Mouton de Gruyter.

Revithiadou, Anthi & Vassilios Spyropoulos. 2003. Trapped within a phrase: Effects of syntactic derivation on p-phrasing. In Amina Mettouchi & Gaëlle Ferré (eds.), *Proceedings of IP2003 Prosodic Interfaces*. Nantes, 167-172.

Revithiadou, Anthi & Vassilios Spyropoulos. 2005. The Multiple Spell-Out Hypothesis and the phonological component: Evidence from Greek. In Leah Bateman & Cherlon Ussery (eds.),

Proceedings of NELS 35. Graduate Linguistic Student Association, University of Massachusetts, Amherst, 523-537.

Revithiadou, Anthi & Vassilios Spyropoulos. To appear. A dynamic approach to the syntax-phonology interface: A case study of Greek. To appear in Kleanthes Grohmann (ed.), *InterPhases: Phase-Theoretic Investigations of Linguistic Interfaces*. Oxford: Oxford University Press.

Revithiadou, Anthi & Vassilios Spyropoulos. 2006. A typology of Greek clitics with special reference to their diachronic development. Ms. University of the Aegean.

Roussou, Anna. 2000. On the left periphery: Modal particles and complementizers. *Journal of Greek Linguistics* 1: 65-94.

Roussou, Anna & Ianthi-Maria Tsimpli. 2006. On Greek VSO again. *Journal of Linguistics* 42: 317-354.

Sandalo, Filomena & Hubert Truckenbrodt. 2001. Some notes on phonological phrasing in Brazilian Portuguese. In Anikó Csirmaz, Zhiqiang Li, Andrew Nevins, Olga Vaysman & Michael Wagner (eds.), *Phonological Questions (and their Corresponding Answers), MIT Working Papers in Linguistics* 42. Cambridge, MA, 81-105.

Selkirk, Elisabeth O. 1986. On derived domains in sentence phonology. *Phonology Yearbook* 3: 371-405.

Selkirk, Elisabeth O. 1995a. The prosodic structure of function words. In Jill Beckman, Laura Walsh Dickey & Susanne Urbanczyk, *University of Massachusetts Occasional Papers in Linguistics 18: Papers in Optimality Theory*. Amherst: Graduate Linguistic Student Association, University of Massachusetts, Amherst, 439-469.

Selkirk, Elisabeth O. 1995b. Sentence prosody: intonation, stress, and phrasing. In John Goldsmith (ed.), *The Handbook of Phonological Theory*. Oxford: Blackwell Publishers, 550-569.

Selkirk, Elisabeth O. 2000. The interaction of constraints on prosodic phrasing. In Gösta Bruce & Merle Horne (eds.), *Prosody: Theory and Experiment. Studies Presented to Gösta Bruce*. Dordrecht: Kluwer Academic Publishers, 231-261.

Selkirk, Elisabeth. 2006a. Contrastive focus, givenness and phrase stress. Ms. University of Massachusetts, Amherst.

Selkirk, Elisabeth O. 2006b. Strong minimalist spellout of prosodic phrases. Paper presented at the *GLOW Workshop on Prosodic Phrasing*. Universitat Autònoma de Barcelona, 5 April 2006.

Selkirk, Elisabeth O. & Tong Shen. 1990. Prosodic domains in Shanghai Chinese. In Sharon Inkelas and Draga Zec (eds.), *The Phonology-Syntax Connection*. Chicago and London: The University of Chicago Press, 313-338.

Spyropoulos, Vassilios. 1999. Agreement Relations in Greek. Ph.D Thesis, University of Reading.

Spyropoulos, Vassilios. 2003. The syntactic status of head-movement: Evidence from Greek. Paper presented at the *Generative Linguistics of the Old World (GLOW) Colloquium 2003*. Lund, 9-11 April 2003.

Spyropoulos, Vassilios & Irene Philippaki-Warburton. 2002. Subject and EPP in Greek: The discontinuous subject hypothesis. *Journal of Greek Linguistics* 2: 149-86.

Stepanov, Arthur. 2001. Late adjunction and minimalist phrase structure. *Syntax* 4: 94-125.

Truckenbrodt, Hubert. 1995. Phonological Phrases: Their Relation to Syntax, Focus, and Prominence. Ph.D. Thesis, MIT, Cambridge, MA.

Truckenbrodt, Hubert. 1999. On the relation between syntactic phrases and phonological phrases. *Linguistic Inquiry* 30: 219-255.

Tsimpli, Ianthi-Maria. 1990. The clause structure and word order of Modern Greek. *University College London Working Papers in Linguistics* 2: 226-255.

Tzartzanos, Achilleas. 1946-1963. *Νεοελληνικὴ Σύνταξις (Modern Greek Syntax)*. Vol. 1 (1946) & Vol. 2 (1963). Οργανισμός Εκδόσεως Διδακτικών Βιβλίων.

Uriagereka, Juan. 1999. Multiple Spell-Outs. In Samuel David Epstein & Norbert Hornstein (eds.), *Working Minimalism*. Cambridge, MA: MIT Press, 251-282.