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On Linkhood, Topicalization and Clitic Left Dislocation[1,2]

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This paper focuses on the Information Packaging notion of *linkhood* and provides a structural definition of this notion for Greek. We show that a combination of structural resources – syntactic (left dislocation), morphological (clitic duplication) and phonological (absence of nuclear accent) – are simultaneously exploited to realize linkhood in Greek, a generalization that can be captured in a constraint-based grammar such as HPSG, which permits the expression of interface constraints. We assume Vallduví's (1992) approach to Information Packaging, and Engdahl & Vallduví's (1996) implementation of the latter in HPSG, but deviate from Vallduví's work in adopting Hendriks & Dekker's (1996) revised definition of linkhood that relies on *non-monotone anaphora*. From an empirical point of view, our approach directly accounts for the invariable association of Clitic Left Dislocated NPs with wide scope readings, as well as a number of systematic differences in felicity conditions between Clitic Left Dislocation and other apparently related phenomena (Topicalization and Clitic Doubling). From a theoretical perspective, our analysis departs from syntax-based notions of *topichood* or *discourse-linking* and supports a definition that unifies linkhood with other anaphora phenomena. As such, it arguably overcomes previously noted problems for Vallduví's treatment of links as the *current-locus-of-update* in a Heim-style file-card system.

[1] The order of the authors is alphabetical.

[2] Earlier versions of this paper were presented at IATL-15, at the 6th International Conference on HPSG, at the third Paris Syntax and Semantics Conference, at the Linguistics Colloquium at the University of Tübingen, in York and in Athens. Many thanks to the participants in these events for their useful comments and inspiring discussion. In particular, we would like to thank Ronnie Cann, Jonathan Ginzburg, Claire Grover, Caroline Heycock, Ivan Sag, Dimitra Theophanopoulou-Kontou, George Tsoulas and three anonymous *Journal of Linguistics* referees for providing detailed and stimulating comments that helped us to improve this work. The alphabetically first author gratefully acknowledges the support of Leverhulme Trust Grant No. R35028, and thanks Richard Coates at the University of Sussex for arranging a visiting fellowship for the summer of 1999. The research of the alphabetically second author was partly supported by an Israel Academy of Sciences grant (project no. 755.97/2), entitled *Verbal Projection and Focus*, to Nomi Erteschik-Shir and Tova R. Rapoport, whom she thanks.

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1. Introduction

Clitic Left Dislocated (CLLD-ed) NPs in Greek and certain Romance languages (Italian, Catalan, Romanian) have long been associated with a *given*, *discourse-linked* or *topic* interpretation (see Philippaki-Warburton 1985, Cinque 1990, Dobrovie-Sorin 1990, Anagnostopoulou 1994, Schneider-Zioga 1994, Iatridou 1995, Tsimpli 1995). More recently, they have been analysed as *links* (see Vallduví 1992, 1995 for Catalan and Alexopoulou 1999 for Greek). In this paper we argue that CLLD, at least in Greek, is the structural correlate of *linkhood* in the sense of Hendriks & Dekker 1996, and treat CLLD-ed NPs as *non-monotone anaphoric* expressions that pick their referent from a salient discourse set.

From a theoretical perspective, our analysis departs from syntax-based and by and large vague notions of *topichood* and *discourse-linking*, and supports a definition that unifies linkhood with other anaphora phenomena within the broader framework of Discourse Representation Theory (DRT). As such, it arguably overcomes previously noted problems for Vallduví's treatment of links as the *current-locus-of-update* in a Heim-style file-card system. From an empirical point of view, our approach directly accounts for the invariable association of CLLD-ed NPs with wide scope readings as well as a number of systematic differences in felicity conditions between CLLD and other apparently related phenomena (Topicalization and Clitic Doubling). In particular, we systematically compare CLLD with Topicalization and demonstrate that only the former is employed for the realization of linkhood in Greek, in contrast with previous assumptions in the literature (see Alexopoulou 1999, who collapses Topicalized and CLLD-ed NPs under Vallduvian links).

While we abandon Vallduví's definition of links, we, nonetheless, adopt his general approach to Information Packaging and his view of Information Structure as independent from syntax and phonology. Following Alexopoulou (1999), we argue against an 'isomorphic' view of the discourse/syntax interface, advocated by discourse configurational approaches that treat *topic* and *focus* as syntactic features heading phrase structure configurations. To this effect, we show that the realization of discourse functions in Greek, and, in particular, of linkhood, relies on the simultaneous exploitation of a combination of diverse structural resources – syntactic (left dislocation/*fillerhood*),[3] morphological (clitic duplication/pronominal affixation) and phonological (absence of nuclear accent). We propose an analysis in HPSG, a constraint-based grammatical framework that lends itself well to capturing

[3] The term *left dislocation* is used throughout descriptively to mean *preposing*; it does not refer to the particular syntactic construction known for its insensitivity to islands and its invariable crosslinguistic association with a resumptive pronoun, as discussed in Haegeman (1991).

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the interface constraints between Information Structure, syntax, morphology and phonology.

The organization of the paper is the following: section 2 reviews discourse configurational approaches to CLLD, Topicalization and Focus Movement, and presents our basic syntactic assumptions with respect to these constructions in Greek. Section 3 introduces Vallduví's approach to Information Packaging and its adaptation to Greek, and in addition discusses some problematic aspects of his definition of links. We proceed with the revised approach to linkhood proposed by Hendriks & Dekker (1996) (section 4), followed by a detailed discussion of the properties of CLLD-ed NPs in Greek, examined in comparison with Topicalization (section 5). Section 6 presents an HPSG analysis of the generalizations proposed in the preceding sections. We conclude in section 7.

2. The discourse/syntax interface

In this section, we discuss CLLD in connection with some related phenomena (Focus Movement and Topicalization). This permits us to review the previous work and will enable the non-specialized reader to cover the necessary ground.

2.1 *Discourse configurational approaches*

In recent years, attention has been drawn to languages that employ long distance dependencies to encode discourse functions such as *focus* and *topic*. Three types of long distance dependencies have been argued to be relevant to the realization of these discourse functions: Focus Movement, Topicalization and Clitic Left Dislocation (CLLD). These constructions are widespread across languages such as Hungarian (Brody 1990, Horvath 1995, Kiss 1995a), Russian (King 1995), Turkish (Hoffman 1995), Finnish (Vilkuna 1995), Korean (Choi 1996) and Italian (Cinque 1990, Rizzi 1995). Here, we focus on Greek, a language of particular interest, as it is one of the few that exhibit both CLLD and Topicalization.[4] The following data exemplify the three constructions at issue.

(1) (a) *Focus Movement*
Pion apelise i Maria?
'Who did Maria fire?'
To YANI (***ton**) apelise i Maria.
the Yanis-ACC MASC.3SG.ACC fired-3SG the Maria-NOM
'Maria fired YANIS.'

[4] For instance, according to Rizzi (1995), Topicalization is unavailable in Italian. Certain authors assume that Greek does not exhibit Topicalization either (Tsiplakou 1998). We return to this issue in section 5.

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(b) *Clitic Left Dislocation* (CLLD)
Pii simetehun s' afti tin paragogi?
'Who contributed to this production?'
Tin parastasi **ti** skinothetise o
the performance-FEM.ACC FEM.3SG.ACC directed-3SG the
Karolos KOUN …
Karolos-NOM Koun
'Karolos Koun directed the performance …'

(c) *Topicalization*
To Kratiko Theatro ksekinise htes ti himerini saison me tin 'Erofili' tou Hortatsi.
'Yesterday the State Theatre began its winter season with "Erofili" by Hortatsis.'
Tin parastasi skinothetise o Karolos KOUN.
the performance-ACC directed-3SG the Karolos-NOM Koun
'The performance Karolos Koun directed.'/'Karolos Koun directed the performance.'

In the examples above (and throughout), small capitals indicate the main sentential stress (*nuclear accent*). Focus Movement involves an accented left dislocated NP (*to Yani*) associated with a gap. A focused NP cannot be 'duplicated' by a clitic – the presence of *ton* would render (1a) ungrammatical.[5] Topicalization and CLLD involve an unaccented left dislocated NP (*Tin parastasi*) which is associated with a gap in the former construction and a clitic in the latter.[6]

We should note here that the most 'natural' answer to a question such as *Pion apelise i Maria?* would be an 'elliptical' one, involving just the NP corresponding to the *wh*-phrase *pion*, that is, *to Yani*. It has systematically been acknowledged in the literature that answers like the one in (1a), repeating material of the preceding question, are somewhat artificial (e.g. Vallduví 1992). However, such question-answer pairs have proved useful: they illustrate the difference in discourse function between Focus Movement and Topicalization/CLLD, and have thus been widely used in the literature of focus and topic. We return to this issue in section 4, where we show how our analysis can explain the unnaturalness of answers such as the one in (1a).

As far as the syntax and interpretation of these constructions is concerned, the dominant paradigm is the so-called discourse configurational approach. Analyses of this type extend standard phrase structure markers by positing

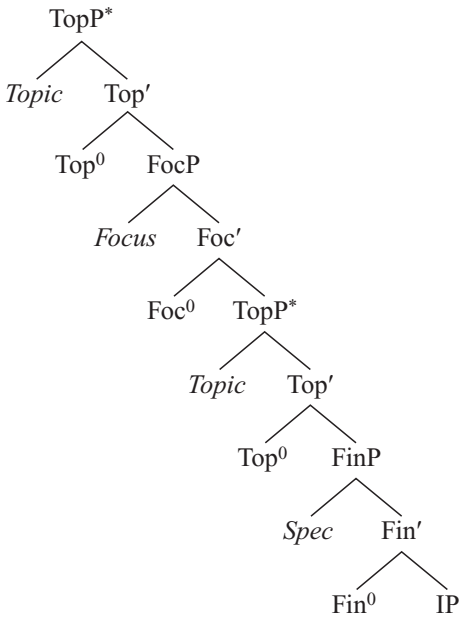
[5] The term *clitic* is used here pretheoretically. Later (section 6.3) we argue that such elements are to be analysed as lexically attached pronominal affixes, rather than postlexical clitics.

[6] Contrary to what has been claimed for French (see Hirschbühler 1975), in Greek CLLD the duplicating element must be a clitic and cannot be just any anaphoric expression; cf. *Paul, je ne connais que* **lui** 'Paul, I don't know anyone but him' or *Paul, je n'aime pas* **cet idiot** 'Paul, I don't like this idiot'. We thank an anonymous *Journal of Linguistics* referee, who pointed this out.

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two additional preverbal projections, a Focus Phrase (FP or FocP) and a Topic Phrase (TP or TopP). Consider, thus, the clause structure in (2), proposed by Rizzi (1995) for Italian.

(2)



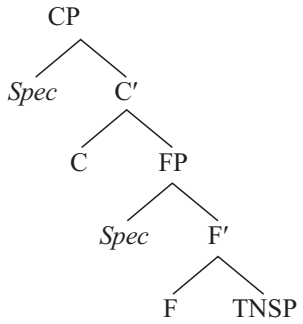
(Rizzi 1995)

FocP and TopP are located between CP and IP, with FocP typically lower than TopP to capture the fact that topics tend to precede focus crosslinguistically. (In the above structure, Rizzi assumes two TopPs to account for the free order between preverbal focus and topic in Italian. Use of an asterisk (∗) on TopP indicates multiple topics.) Focus and topic phrases are specified for a [focus] and a [topic] feature, respectively. Foci and topics are assumed to move to the Spec position of the corresponding phrase to check their discourse features. In essence, discourse functions are treated as syntactic features triggering movement.

In a similar vein, Tsimpli (1995, 1996) proposes the structure in (3) for Greek (TNSP stands for Tensed Phrase).

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(3)

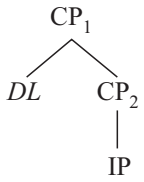


(Tsimpli 1995)

Along with most authors adopting a similar clause structure, Tsimpli 1995 assumes both a CP and an FP, but she further proposes that foci may move to [Spec,CP], and *wh*-phrases to [Spec,FP] (see also Agouraki 1993); both projections are specified for both the [focus] and the [**wh**] feature. This assumption is partly motivated by the fact that a focused phrase may appear on either side of the complementizer *oti* ('that') in Greek, as will be illustrated below.

Iatridou 1995 further posits a *discourse linked* (*d-linked*) position that is adjoined to CP and is intended to host CLLD-ed NPs (see also Anagnostopoulou 1994, 1997; Schneider-Zioga 1994).

(4)



(Iatridou 1995)

Most analyses within the discourse configurational paradigm adopt the distinction between quantificational and anaphoric movement, proposed by Lasnik & Stowell 1991. Thus, Focus Movement is taken to be on a par with *Wh*-movement and Quantifier Raising: all three are instances of A-bar movement involving a 'quantificational' operator ranging over a non-singleton set (Lasnik & Stowell 1991). On the other hand, Topicalization is treated as A-movement that involves an 'anaphoric/referential' operator[7] (Lasnik & Stowell 1991, Kiss 1995a, Rizzi 1995, Tsimpli 1995). Finally, CLLD does not arise from movement; rather, it is assumed to involve base

[7] There is no consensus on the terminology employed for these operations. Thus, Lasnik & Stowell (1991) and Rizzi (1995) assume two kinds of A-bar movement – *A-bar-quantificational* and *A-bar-anaphoric*. On the other hand, Kiss (1995a) distinguishes between Operator movement and NP-movement. Here, we use the term *A-bar movement* to refer to constructions assumed to involve a quantifier (i.e. A-bar-quantificational or Operator movement) and *A-movement* for constructions which are assumed to involve no quantificational operator (i.e. A-bar-anaphoric/NP-movement).

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generation of the apparently left dislocated phrase (Cinque 1990, Iatridou 1995).

From a pragmatic point of view, the literature on Greek has long associated CLLD-ed NPs with a *discourse given* or *topic* interpretation. Philippaki-Warburton 1985 was the first to suggest that such NPs function as topics, an intuition shared by subsequent analyses that associate them with the *D-linked* or the Topic position. Anagnostopoulou 1994 postulates a *givenness hierarchy* that makes predictions about the felicity of different types of NPs in CLLD (for some discussion, see section 5). Similar observations have been made for CLLD-ed NPs in other languages, most notably Romance (see Cinque 1990 and Rizzi 1995 for Italian, Vallduví 1992, 1995 for Catalan, Dobrovie-Sorin 1990 for Romanian), Arabic (Aoun & Benmamoun 1998) and Albanian (Kallulli 1997). However, as most of these analyses are primarily concerned with the syntactic aspects of CLLD, little attention has been paid to the formulation of a concrete definition of topichood/d-linking and its semantic/pragmatic ramifications.

In the following two sections, we argue against two main aspects of the discourse configurational paradigm.[8] First, the treatment of *focus* and *topic* as syntactic categories or features and the 'isomorphic' view of the discourse/syntax interface; the latter amounts to associating the realization of discourse functions with distinct syntactic operations (A-bar-quantificational movement and A-anaphoric movement or base generation for languages that exhibit Focus Movement and Topicalization or CLLD, respectively). Second, the syntactic distinction between A-bar-quantificational movement, A-anaphoric movement and base generation *per se* (to the extent that the motivation for this distinction originates from properties pertaining to Focus Movement, Topicalization and CLLD).

2.2 *Against the isomorphic view*

To the extent that discourse functions are viewed as syntactic categories or features, they are expected to occur recursively and be sensitive to syntactic constraints (for instance, Subjacency). However, in a number of languages, including Greek and Italian, recursive foci are ungrammatical in complex sentences, as shown in (5) for Greek (see Tsiplakou 1998, Tsimpli 1995, Alexopoulou 1999 for Greek, and Rizzi 1995 for similar data from Italian).

(5) (a) *To YANI ipe oti ide sto SINEMA.
the Yanis-ACC said-3SG that saw-3SG at-the cinema
(Putatively: 'S/he said that s/he saw Yanis at the cinema.')

(b) *O PETROS ipe oti petakse ta VIVLIA.
the Petros-NOM said-3SG that threw-away-3SG the books

[8] For a detailed review of previous work, the interested reader may consult Alexopoulou (1999), which provided the basis for the following discussion.

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(Starred on both readings: (i) 'Petros said that s/he threw the books away.' and (ii) 'S/he said that Petros threw the books away.')

Note that Greek allows for multiple accents within a given sentence (Alexopoulou 1999), which suggests that the unavailability of recursive foci is an intrinsic property of focushood *per se*, rather than a consequence of an independent phonological constraint. (In English, the issue of the availability of recursive foci has been a matter of controversy. However, a number of authors including Steedman 1991, 1998; Vallduví & Zacharski 1994 and Alexopoulou 1999 share the view that recursive foci are unavailable in this language as well.)

Further, focus is insensitive to syntactic constraints like Subjacency (Rooth 1996, Giannakidou 1997). For instance, the focused element (*Maria*) in the following example appears inside a strong island:

(6) Svisane ta fota [ya na filisi o Yanis
switched-off-3PL the lights for PART kiss-3SG the Yanis-NOM
ti MARIA].
the Maria-ACC
'They switched off the lights so that Yanis would kiss Maria.'

According to discourse configurational approaches, the focused NP in (6) should move to [Spec,FP] at the level of LF. In order to account for such examples, previous analyses would have to assume that Focus Movement is insensitive to Subjacency at LF,[9] a fact that contrasts unfavourably with the sensitivity of overt Focus Movement to strong islands that is attested crosslinguistically (some examples are provided in (10) below).

Mismatches between discourse and syntax provide additional evidence against the isomorphic relation between the two that is advocated within the discourse configurational paradigm. For example, a non-recursive ground-focus articulation may correspond to a recursive syntactic structure. This is shown in (7), where the topic segment includes a subordinate clause. If focus were a standard (recursive) syntactic feature, a focus should be identifiable inside the clause contained in the complex NP.

(7) A: What do you think of the allegations that John is a liar?
B: [$_T$ The allegations that John is a liar] [$_F$ are FALSE]. (Heycock 1993)

A final argument against previous accounts is that they do not investigate the role of nuclear accent in the realization of focus, neither do they attempt to deal with cases of *wide* (*broad*) focus. In Greek, and English likewise, accent on the rightmost complement NP may give rise to a wide focus reading. As shown in (8a), *I Maria apelise to Yani* (with *Yani* accented) can be associated with a wide focus interpretation (VP focus or all-focus), and, therefore, constitutes a felicitous answer to its preceding question. Alterna-

[9] But see Cinque (1993) and Zubizaretta (1998) for an analysis that does not involve movement at LF.

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tively, the same string can be assigned a narrow focus-in-situ reading, as in (8b). It is unclear how previous approaches can be extended to account for the ambiguity of such examples.

(8) (a) *Wide focus*
What did Maria do?/What's up?
[$_{(focus)}$ I Maria] [$_{(focus)}$ apelise to YANI]].
the Maria-NOM fired-3SG the Yanis-ACC
'Maria fired YANIS.'

(b) *Narrow focus in situ*
Who did Maria fire?
I Maria apelise [$_{(focus)}$ to YANI]
the Maria-NOM fired-3SG the Yanis-ACC
'Maria fired YANIS.' (Alexopoulou 1999)

2.3 *The syntax of discourse functions in Greek*

In this section, we turn to the syntax of the constructions at issue. As mentioned earlier, the literature associates Focus Movement, Topicalization and CLLD with three distinct syntactic operations: A-bar-quantificational movement, A-anaphoric movement and base generation. In contrast to these analyses, we adopt Alexopoulou's proposal that all three constructions form a unified class of long distance ('unbounded') dependencies. Her account relies on two types of evidence: a) a number of important commonalities among the three constructions, and b) evidence indicating that the proposed syntactic distinctions are insufficiently motivated.

Focus Movement, Topicalization and CLLD share a number of properties listed below (examples from Alexopoulou 1999).

(i) In a number of languages, all three involve long distance extraction, as shown in (9). For similar data in other languages, see among others Horvath (1995) and Kiss (1995a) for Hungarian, King (1995) for Russian, Cinque (1990) and Rizzi (1995) for Italian, Hoffman (1995) for Turkish and Anagnostopoulou (1994), Iatridou (1995), Tsimpli (1995), Tsiplakou (1998) and Alexopoulou (1999) for Greek.

(9) (a) *Focus Movement*
To YANI ipe oti apelisan.
the Yanis-ACC said-3SG that fired-3PL
'S/he said that they fired YANIS.'

(b) *CLLD*
To Yani ipe oti **ton** APELISAN.
the Yanis-ACC said-3SG that MASC.3SG.ACC fired-3PL
'Yanis, s/he said that they fired.'

(ii) In a number of languages, all three are sensitive to strong islands, as shown in (10). Similar evidence is presented by Horvath (1995) and Kiss

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(1995a) for Hungarian, King (1995) for Russian, Cinque (1990) and Rizzi (1995) for Italian, Hoffman (1995) for Turkish and Anagnostopoulou (1994), Iatridou (1995), Tsimpli (1995), Tsiplakou (1998) and Alexopoulou (1999) for Greek.

(10) (a) *Focus Movement*
*To YANI sinadisa [tin kopela [pu ide]].
the Yanis-ACC met-1SG the girl-ACC that saw-3SG
(Putatively: 'I met the girl that saw Yanis.')

(b) *CLLD*
*To Yani sinadisa [tin kopela [pu **ton**
the Yanis-ACC met-1SG the girl-ACC that MASC.3SG.ACC
IDE]].
saw-3SG
(Putatively: 'I met the girl that saw Yanis.')

(iii) In Greek, the dislocated phrase in all three cases may appear on either side of the complementizer *oti* ('that'). (Topicalized and CLLD-ed NPs are preferred after *oti*, but occurrence before the complementizer is also possible; see Schneider-Zioga 1994 for a detailed discussion on this.)

(11) (a) *Focus movement*
Ipe (to YANI) oti (to YANI) ide.
said-3SG the Yanis-ACC that the Yanis-ACC saw-3SG
'S/he said that s/he saw YANIS.'

(b) *CLLD*
Mu ipe (ta klidia) oti (ta klidia)
1SG.GEN told-3SG the keys-ACC that the keys-ACC
ta edose sti MARIA.
NEUT.3PL.ACC gave-3SG to-the Maria
'S/he told me that the keys she gave to MARIA.'

(iv) In Greek, the dislocated phrase in all three cases may appear to the left of an indirect question. (For similar data from Italian, see Rizzi 1995.)

(12) (a) *Focus Movement*
Rotise to YANI pios ide.
asked-3SG the Yanis-ACC who-NOM saw-3SG
'S/he asked who saw YANIS.'

(b) *CLLD*
Rotise to Yani pios **ton** IDE.
asked-3SG the Yanis-ACC who-NOM MASC.3SG.ACC saw-3SG
'S/he asked who saw Yanis.'

(v) As illustrated in (11) and (12), none of these constructions blocks the selection of the lower clause by the main verb. This property of CLLD led Iatridou (1995) to argue that CLLD-ed NPs do not occur at the Spec of a

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maximal projection (e.g. CP), but rather at an adjoined position. However, according to her argument, Focus Movement, standardly assumed to involve movement to the Spec of a maximal projection (FP or CP), should block selection of the lower sentence in (12a), contrary to fact. Both types of extraction, CLLD *and* Focus Movement, exhibit the same pattern with respect to this property. Thus, Iatridou's differentiation between the two cannot be maintained.

(vi) None of the three constructions creates islands for extraction. (See Kiss 1995a for similar data in Hungarian.)

(13) (a) *Focus Movement*

Pios nomizis ti MARIA oti tha psifize?
who think-2SG the Maria-ACC that FUT vote
'Who do you think would vote for Maria?'

(b) *CLLD*

Pios nomizis ti Maria oti tha **tin** psifize?
who think-2SG the Maria-ACC that FUT FEM.3SG.ACC vote
'Who do you think would vote for Maria?'

Iatridou's base generation analysis of CLLD also relies on the hypothesis that the latter, unlike A-bar movement (to Spec of a maximal projection), does not create islands for extraction. But this is a property that Greek CLLD shares with Focus Movement, as shown in (13a, b) – a fact that renders Iatridou's distinction between CLLD and A-bar movement unmotivated.

The evidence presented in (i)–(vi) provides strong support for a unified syntactic treatment of Focus Movement, CLLD and Topicalization. In section 6 we present an HPSG approach that directly accounts for the relevant syntactic properties of the constructions at issue by treating all three of them as a uniform class of long distance ('unbounded') dependencies (Gazdar 1981, Gazdar et al. 1985, Pollard & Sag 1994, Sag 1997). While we propose a unified analysis, we further identify two variants of long distance dependencies in Greek: those involving a gap and those involving a clitic (pronominal affix). HPSG's hierarchical organization of phrasal types and the mechanism of type inheritance permit an account of the commonalities of the two variants, while at the same time capturing the minor difference at the 'bottom' of the dependency.

Before closing this section, we briefly discuss two aspects in which Focus Movement, CLLD and Topicalization differ from each other, and which are related to the distribution of weak crossover effects and parasitic gaps. Previous authors essentially relied on this evidence in order to postulate three distinct syntactic accounts for the constructions at issue. We show that the data, at least with respect to weak crossover effects, are in fact more complex than originally assumed and do not justify taking such a radical step in the syntax.

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The distinction between quantificational and anaphoric movement has been based solely on the distribution of weak crossover (wco) effects. Constructions assumed to involve a quantifier (for instance, *Wh*-questions, Quantifier Raising and Focus Movement) are expected to be sensitive to such effects. On the other hand, A-anaphoric constructions such as Topicalization do not exhibit wco effects (Lasnik & Stowell 1991). Some data from Greek are presented in (14) below (for crosslinguistic data see Agouraki 1993, Dobrovie-Sorin 1990, Kiss 1995a, Rizzi 1995, Alexopoulou 1997). Examples (14a–c) can be contrasted with (14d, e), where the possessives *his* and *tou* can be coreferential with the topicalized phrases *Yanis* and *enan kenurio ipalilo*, respectively.

(14) (a) To YANI$_i$ agapai i pethera tu$_{j/*i}$.
the Yanis-ACC love-3SG the-NOM mother-in-law-NOM his-GEN
'YANIS his mother-in-law loves.'

(b) Pion$_i$ agapai i pethera tu$_{j/*i?}$
who-ACC love-3SG the-NOM mother-in-law-NOM his-GEN
'Who does his mother-in-law love?'

(c) Kanena$_i$ den agapai i pethera
nobody-ACC not love-3SG the-NOM mother-in-law-NOM
tu$_{j/*i}$.
his-GEN
'His mother-in-law loves nobody.'

(d) Yanis$_i$, his$_{i/j}$ mother-in-law loves.

(e) ?Enan kenurio ipalilo$_i$ sinelave o proistamenos
a new employee-ACC caught-3SG the boss-NOM
tu$_{i/j}$ na klevi ke ton apelise.
his-GEN SUBJ steal-3SG and him sacked
'A new employee his boss caught stealing and sacked him.'

However, contrary to Lasnik & Stowell's prediction, there exist prototypical examples of A-bar/quantificational movement which are on a par with Topicalization/CLLD in that they are not sensitive to wco effects. (15) illustrates.

(15) (a) Pion$_i$ ton$_i$ agapai i
who-ACC MASC.3SG.ACC love-3SG the-NOM
pethera tu$_{i/j}$?
mother-in-law-NOM his-GEN
'Who does his (own) mother-in-law love?'

(b) Kanena$_i$ den ton$_i$ agapai i
nobody-ACC not MASC.3SG.ACC love-3SG the-NOM
pethera tu$_{j/i}$.
mother-in-law-NOM his-GEN
'His (own) mother-in-law loves nobody.'/'Nobody is loved by his own mother-in-law.' (Alexopoulou 1999)

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The examples above are from Greek, but similar facts are attested in Romanian (Dobrovie-Sorin 1990) and Italian (Cinque 1990). They clearly constitute counterexamples to the proposal that wco effects are a reflex of quantification (Alexopoulou 1997, 1999). To the extent that the A/A-bar distinction is based solely on the distribution of wco effects, it is untenable.[10]

Crosslinguistically, the constructions at issue differ with respect to parasitic gaps. Gap-dependencies (Topicalization/Focus Movement) license p-gaps, as shown in (16a) for Greek, (16b) for English and (16c) for Hungarian.

(16) (a) *Focus Movement*
To YANI apelisan horis na (ton)
the Yanis-ACC fired-3PL without PART MASC.3SG.ACC
proidopiisun.
warning-3PL
'They fired Yani without warning (him).'

(b) *Topicalization*
The paper$_i$ we filed t$_i$ before we could read t$_i$.

(c) Egy iratot$_i$ elvesztettunk t$_i$, mielott elovastunk-volna t$_i$.
a paper-ACC we-lost before we-had-read
'A paper, we lost before we had read.' (Kiss 1995a)

Unlike Focus Movement and Topicalization, CLLD does not license p-gaps (Kolliakou 1991, Schneider-Zioga 1994, Iatridou 1995, Tsimpli 1995). In (17a) from Greek and (17b) from Italian, omission of the clitic yields ungrammaticality. Similar facts are attested in Romanian (Dobrovie-Sorin 1990).

(17) (a) *CLLD*
Ton Petro ton apelisan horis na
the Petros-ACC MASC.3SG.ACC fired-3PL without PART
*(ton) PROIDOPIISUN.
*MASC.3SG.ACC warn-3PL
'They fired Petros without warning.'

(b) *Gianni, l'ho cercato per mesi, senza trovare e.
'Gianni I have looked for for months without finding.'
(Cinque 1990)

The unavailability of p-gaps in CLLD has provided partial motivation for the base generation analysis (Cinque 1990, Iatridou 1995). Though a detailed analysis of p-gap constructions is beyond the scope of this paper,[11] it is our

[10] Note also that the view that focus is a quantifier has been independently criticized by Kempson & Gabbay (1998), Tsiplakou (1998) and Alexopoulou (1999), among others.

[11] As has already been mentioned, our HPSG analysis in section 6 identifies two variants of long distance dependencies: one originating in a gap, and one originating in a clitic. To

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conviction that a uniform analysis is preferable, given that this construction is on a par with Topicalization and Focus Movement in every other respect.

2.4 *Summary*

Contrary to the predictions of discourse configurational approaches, the mapping between structural resources (intonation, syntax) and discourse functions (focus, topic) does not yield a one-to-one pattern. First, nuclear accent is necessary but not sufficient for realizing focus: a combination of nuclear accent and syntactic constituency is utilized for realizing wide focus (see (8a) above). Second, clitic duplication is sufficient but not necessary for realizing ground: foci cannot be clitic duplicated (see (1a) above), but there exist elements of the ground that are *not* clitic duplicated either (for instance, Topicalized phrases, as in (1c)). Moreover, clitic duplication is not exclusively associated with topichood. Here, it is worth mentioning that there exists a second construction in Greek involving clitic duplication, namely, Clitic Doubling. The duplicated phrase in Clitic Doubling does not occur on the left periphery, but rather within the sentence. Though the pragmatics of this construction remains by and large unexplored, there is consensus in the literature that clitic doubled NPs are not on a par with CLLD-ed NPs, i.e. they do not denote topics (see Anagnostopoulou 1994, Iatridou 1995, and, for the pragmatic aspects of Clitic Doubling, Valiouli 1993). The clitic doubled *ta skiladika* in (18) below corresponds to some other element of the ground (possibly Vallduví's *tail*, see section 3).

(18) Den eprepe na tis feris SKILADIKA. (*Ta*) SIHENETE
you shouldn't have brought 'dog-songs'. NEUT.3PL.ACC detest-3SG
[ta skiladika].
the 'dog-songs'
'You shouldn't have brought her "dog-songs". She detests "dog-songs".'

Finally, left dislocation (*fillerhood*) is (possibly) necessary but certainly not sufficient for realizing topichood: it does not uniquely characterize topics, since there also exist left dislocated foci.

In what follows, we present an account of the realization of discourse functions in Greek based on previous work by Vallduví 1992, Vallduví & Engdahl 1996, and Alexopoulou 1999 for Greek. Our approach adopts Vallduví's view that *focus* and *topic* are encoded at an independent level of

account for the unavailability of p-gaps in CLLD, the clitic-based dependencies can be lexically required to involve no 'gappy' adjuncts. The treatment of adjuncts as on a par with arguments (Bouma et al. 1997 for English, Alexopoulou 1999 for Greek) permits us to state the constraint in the lexical entry of the verb that occurs at the 'bottom' of the dependency.

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grammar – Information Structure. It accounts for the various discourse/syntax mismatches mentioned earlier, incorporates the role of phonology and provides a framework for the analysis of both narrow and wide focus. Most importantly, it captures the pragmatic interpretation of long distance dependencies in Greek without augmenting phrase structure or adding extra machinery to the grammer. Within this framework, we focus in particular on the pragmatic difference between CLLD and Topicalization in Greek.

3. Information packaging

3.1 *Vallduví's 1992 approach*

Vallduví 1992 (and elsewhere) looks at the realization of discourse functions (*focus*, *topic*) cross-linguistically, and demonstrates that different languages exploit a combination of different means (phonological, morphological, syntactic) to express such functions. His findings support the view that the mapping between structural resources and discourse functions is not isomorphic: more often than not, the former stand in a one-to-many relation with the latter. Information Structure is an independent level of grammer, a level that encodes the 'packaging' of the information conveyed by a sentence, by identifying which part of the utterance represents an actual contribution to the *information state* of the hearer (at the time of utterance), and which part, if any, represents material that is already subsumed by this information state; this is a view building on earlier work by Chafe 1976, 1983 and Prince 1986, among others. The decoupling of information structure from phrase structure is entirely consistent with the evidence presented in the previous section and permits a straightforward account of discourse/syntax mismatches. Vallduví's original proposal was couched in a transformational framework (Government & Binding Theory), where he postulated Information Structure as an independent grammatical level, also distinct from LF (Vallduví 1992, 1995). However, in more recent work jointly with Elisabet Engdahl (Vallduví & Engdahl 1994, Engdahl & Vallduví 1996), he developed an HPSG approach. The multidimensional architecture of HPSG, where syntax, semantics and context are distinct 'attributes' which, however, can mutually constrain each other, lends itself well to dealing with discourse/syntax interface phenomena.

An important innovation in Vallduví's framework is the trinomial nature of the ground-focus articulation. This overcomes problems associated with previous binomial partitions such as *topic-comment* (or *theme-rheme*) (e.g. Halliday 1967, Gundel 1988, Reinhart 1982) and *ground-focus* (or *old-new*). For a brief illustration, consider the following example:

(19) What about John? What does he drink?
  (a) $[_T$ John] $[_C$ drinks BEER].
  (b) $[_G$ John drinks] $[_F$ BEER]. (Vallduví & Engdahl 1996)

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The topic-comment partition relies on the concept of *aboutness* (Reinhart 1982): topics are what the sentence is about. Typically, topics belong to the ground (but see Reinhart 1982 for a discussion of topics that are not necessarily old/ground.) As shown in (19a), the topic-comment articulation does not draw a distinction between *old* and *new* – the comment segment contains both ground and focus material (*drinks* and *beer*, respectively). On the other hand, the ground-focus partition in (19b) does not capture the intuition that *John* has a different status from the rest of the ground material. Vallduví proposes the hierarchical structure in (20a), which involves three informational primitives – *focus*, *link* and *tail* – and conflates *topic-comment* with *ground-focus*. Example (19) is thus reanalysed as in (20b).

(20) (a) S = focus, ground
Ground = link, tail
(b) What about John? What does he drink?
$[_G\ [_L$ John] drinks] $[_F$ BEER]. (Vallduví 1992)

In Vallduví's framework, each sentence is viewed as an instruction to the hearer on how to update her knowledge-store or *information state*. Information states are represented as systems of Heim-style file-cards (Heim 1983). A file-card contains a number of records (conditions) listing attributes that pertain to the entity it denotes, or relations holding between that entity and other entities denoted by other file-cards. *Focus* indicates that part of the sentence that provides relational new information relative to a given context. For instance, the update potential of the answer to the question in (21) does not lie in the denotational force of the focal NP *per se* (which can be taken to be marked by the definite article), but rather in the fact that that NP instantiates an open parameter in a condition λx.rusty(x) of an information state $S_1$of the hearer (speaker A).

(21) (a) Speaker A: I have some rust remover. You have any rusty things?
(b) Speaker B: $[_F$ The PIPES] are rusty. (Vallduví & Engdahl 1996)

Ground acts as an anchor for focus, indicating *where* and *how* the new information should be added. More specifically, a *link* 'designates a particular file-card as the current locus of information update', i.e. it points to the file-card where the new information should be added. Vallduví 1992 views aboutness as 'an epiphenomenon resulting from the very relation of links as address pointers with the informative part of the sentence: if the information is retrieved and entered under a given address, that information will be felt as being *about* the denotation of that address' (p. 48). (Links will be further discussed in section 4.) A *tail* indicates that the new information should either complete or alter an already existing condition in the link file-card.

The three primitives *focus*, *link* and *tail* give rise to four possible instruction types: *all-focus*, *link-focus*, *focus-tail*, *link-focus-tail*; all involve

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(at least) a focus segment, since all sentences are taken to have an update potential. The four types are illustrated in (22) below for English. English primarily exploits prosodic means for realizing information structure: narrow foci bear the nuclear accent, whereas accent on the most oblique complement NP in a given VP or sentence gives rise to a *wide* or *broad* focus interpretation. While focus is associated with nuclear or A Accent (a contour which corresponds to a simplex H* tone, generally followed by an L boundary tone), links are also marked prosodically, by the so-called B Accent (a contour of a complex L+H* fall-rise; see Pierrehumbert & Hirschberg 1990). (In the following examples, nuclear accent placement is indicated by small caps and B Accent by boldface.)

(22) (a) The president has a weakness.
[$_F$ He hates CHOCOLATE.] *all-focus*
(b) Tell me about the people in the White House. Anything I should know?
The **president** [$_F$ hates CHOCOLATE.] *link-focus*
(c) You shouldn't have brought chocolates for the president.
[$_F$ He HATES] chocolate. *focus-tail*
(d) And what about the president? How does *he* feel about chocolate?
The **president** [$_F$ HATES] chocolate. *link-focus-tail*

(Vallduví & Engdahl 1996)

The new information conveyed by the second sentence in (22a) – an *all-focus* instruction – updates the file-card denoting (*the*) *president*, which has already been activated (due to the first sentence in (22a)). Similarly, the locus of update is 'inherited' from the previous discourse in (22c), which is also a 'linkless' instruction. Example (22b) instructs the hearer to go to the file-card denoting (*the*) *president* and add a new condition *hates chocolate*. Finally, example (22d) instructs the hearer to look in the link file-card for a condition of the form *feels-like-about-chocolate* and replace the predicate *feels-like-about* with *hates*.

Note that the instruction types do *not* indicate the relative order in which the constituents realizing link, tail or focus appear. In languages where the order of focus, link and tail is fixed, additional constraints (for instance, linear precedence rules) are needed to ensure that, for example, links precede focus. We return to this issue at the end of the following section.

3.2 *The Information Structure Instantiation Principle*

HPSG represents linguistic information by means of feature structures that simultaneously satisfy a combination of lexical constraints and grammatical principles. Phonological, syntactic, semantic and contextual information associated with a given linguistic object (word or phrase) constitutes independent 'attributes' in the feature structure representing that object. These attributes can, nonetheless, mutually constrain each other. Consider

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thus the feature structure in (23), which is somewhat simplified for expository purposes.[12]

(23) To YANI apelise i Maria.

$$\begin{bmatrix} \textit{hd-filler-ph} & \\ \text{SYNSEM}|\text{LOCI}|\text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} \\ \text{VFORM} \quad \textit{fin} \end{bmatrix} \\ \text{SPR} \quad \langle\rangle & \\ \text{COMPS} \quad \langle\rangle & \end{bmatrix} \\ \text{CONTEXT} & \begin{bmatrix} \text{INFO-STRUC} & \begin{bmatrix} \text{FOCUS} \quad \{\boxed{5}\} & \\ \text{GROUND} & \begin{bmatrix} \text{LINK} \quad \{\} \\ \text{TAIL} \quad \{\boxed{2}, \boxed{3}\} \end{bmatrix} \end{bmatrix} \end{bmatrix} \\ \text{DTRS} & \left\langle \boxed{5} \begin{bmatrix} \text{PHON} \quad \langle \text{TO YANI} \rangle \\ \text{SYNSEM}|\text{LOC} \quad \boxed{1} \end{bmatrix}, \boxed{4} \right\rangle \\ \text{HD-DTR} & \boxed{4} \begin{bmatrix} \textit{hd-comp-ph} & \\ \text{SYNSEM}|\text{SLASH} \quad \{\boxed{1}\} & \\ \text{HD-DTR} \quad \boxed{2} \; [\text{PHON} \quad \langle \text{apelise} \rangle] & \\ \text{DTRS} \quad \langle \boxed{2}, \boxed{3} \; [\text{PHON} \quad \langle \text{i Maria} \rangle] \rangle & \end{bmatrix} \end{bmatrix}$$

According to the syntactic analysis of Focus Movement sketched in section 2.3, *to Yani apelise i Maria* is a long distance dependency holding between a filler and a sentence with a gap. Constituency information is represented in the attribute DAUGHTERS: the 'extracted' NP *to Yani* realizes the filler daughter (FILLER-DTR), while the subsequent clause is the head daughter (HEAD-DTR) of the phrase. The information that the head daughter contains a gap is registered in its SLASH value, which is identified with (part of) the filler (as indicated by tag $\boxed{1}$). We will return to the role of SLASH and the exact details of the licensing of unbounded dependencies in HPSG in section 6.1. While the attribute DAUGHTERS registers information about the internal structure of a phrase (and is thus defined exclusively for phrases), CAT(EGORY) specifies syntactic properties (and is defined for words as well as phrases). Very roughly, the (simplified) value of CAT in (23) corresponds to an IP, modulo the fact that IPs are projections of bound morphemes (inflections), whereas HPSG sentences are headed by verbs. In the above feature structure, the value of CAT indicates that the sentence is headed by a finite verb and that the subcategorization requirements of that verb – its specifier (SPR) and complements (COMPS) – are all saturated. (A number of other properties that

[12] The version of HPSG we employ follows, in the main, the version developed in Ginzburg & Sag (2000). They do not, however, make use of the attribute INFO-STRUC.

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are not directly relevant have been omitted for convenience.) Finally, the attribute INFORMATION-STRUCTURE (INFO-STRUC) we adopt from Engdahl & Vallduví 1996. Its internal make-up directly reflects the tripartite hierarchical structure we talked about in the previous section. A central mechanism of HPSG, namely, *unification* or *structure-sharing* (represented by means of number tags), allows us to map the syntax onto discourse in a potentially non-isomorphic manner. Thus, the filler daughter in this example is mapped onto focus and the constituents of the head daughter onto tail. In what follows, we explicate how exactly this mapping takes place.

In both English and Greek, narrow foci are accented. On the other hand, if a word is not accented, its contribution to the information structure of the sentence it appears in is underspecified – the word can end up in either the ground or a wide focus segment. This observation can be captured in HPSG terms by means of the following constraint from Engdahl & Vallduví (1996), – which applies to both English and Greek:[13]

(24) *Phonological constraint on words* (applies in both English and Greek)

$$word \rightarrow \boxed{1} \begin{bmatrix} \text{PHON|ACCENT } a\text{(ccented)} \\ \text{INFO-STRUC|FOCUS } \boxed{1} \end{bmatrix} \vee \boxed{1} \begin{bmatrix} \text{PHON|ACCENT } u\text{(naccented)} \\ \text{INFO-STRUC } [\,] \end{bmatrix}$$

Once the FOCUS value of a given word is instantiated, it will propagate to the INFO-STRUC value of its mother and from there to the top, till it reaches the INFO-STRUC attribute of the (highest) sentence. The propagation of the values of the INFO-STRUC attributes is governed by a disjunctive principle proposed by Engdahl & Vallduví, namely, the Information Structure Instantiation Principle.

(25) *Information Structure Instantiation Principle*

Either (i) if a daughter's INFO-STRUC is instantiated, then the mother inherits this instantiation (for narrow foci, links and tails),

or (ii) if the rightmost daughter's FOCUS is instantiated, then the FOCUS of the mother is the sign itself.

Option (25i) accounts for instructions with narrow focus (see examples (22c, d): it requires a mother to inherit the INFO-STRUC values of its daughters. Option (25ii) accounts for instructions with wide focus (see examples (22a, b): it allows a given phrase to be interpreted as focused, if its rightmost daughter is accented (and, therefore, has its focus value instantiated).[14]

[13] For English, Engdahl & Vallduví (1996) assume a further constraint that associates a word that is B-accented with the link attribute. Note also that the constraint in (24) is expressed in a non-standard way from a technical point of view; the first disjunct involves circularity whereas the INFO-STRUC value in the second disjunct does not correspond to a standard (typed) HPSG object. As pointed out by an anonymous referee, restating (25) in a way that its second disjunct would correspond to a typed HPSG object is not trivial from a technical point of view.

[14] The second disjunct of Principle (25) differs slightly from the constraint Engdahl & Vallduví (1996) assume for English: in English wide focus is associated with the most

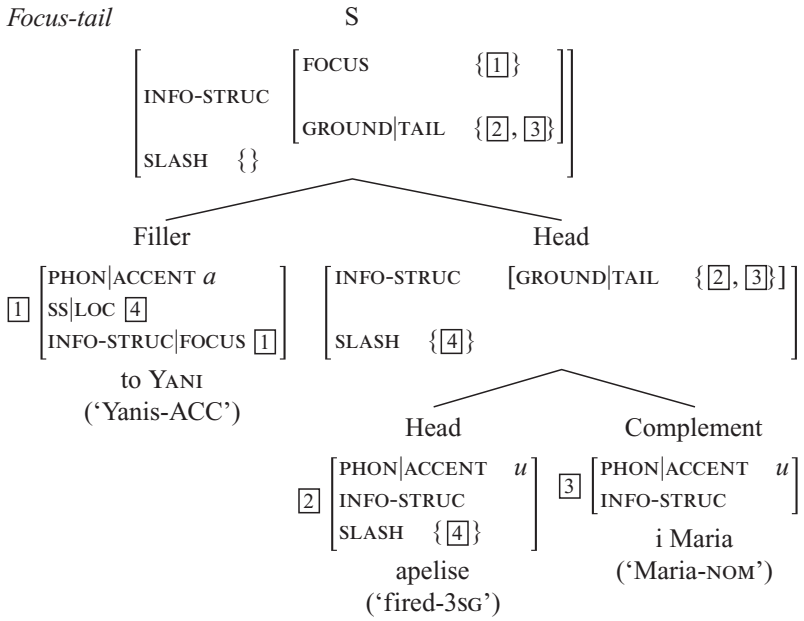
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The Information Structure Instantiation Principle in (25) applies across phrasal types, and, therefore, accounts for a variety of instructions in both English and Greek, even though they can differ from each other in their syntactic realization. For example, a focus-tail instruction may be realized by a subject-head phrase in English, (26a), and a filler-head phrase in Greek, (26b).

(26) (a) Who fired Mary?
[$_F$ JOHN] [$_G$ fired Mary].
(b) Pion apelise i Maria? ('Who did Mary fire?')
[$_F$ To YANI] [$_G$ apelise i Maria].

The tree diagram in (27) illustrates the propagation of INFO-STRUC values for the answer in (26b). The filler *To Yani* is accented, and, therefore, its focus value is instantiated. This value [1] is inherited by the mother S, by application of (25i). The verb and its complement, which are originally underspecified, can be interpreted as tail. The English subject-head phrase in (26a) will have an INFO-STRUC of the same type, with the subject *John* interpreted as focus (by application of (25i)), and the head VP *fired Mary* interpreted as tail.

(27) *Focus-tail*



oblique rather than the rightmost daughter. Typically, the most oblique daughter in English is also the rightmost one (though this is not so in Greek as shown, for example, in (28b) below). For our current purposes, we assume that option (25ii) applies to both English and Greek, but for a detailed discussion see Alexopoulou (1999). Note further that the notion of 'rightmost' involves interaction between INFO-STRUC and the DOMAIN attribute, which registers linear order (Reape 1994, Kathol 1995).

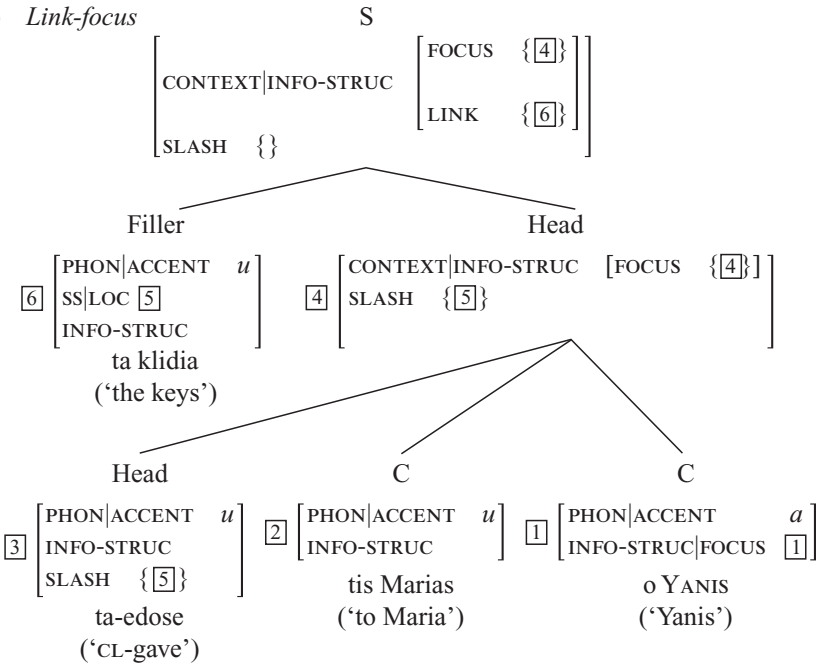
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Option (25ii) accounts for link-focus instructions. These can be realized by subject-head phrases in English, and filler-head phrases (e.g. CLLDs) in Greek:

(28) (a) [$_L$ John] [$_F$ gave the keys to MARY].
(b) [$_L$ Ta klidia] [$_F$ ta-edose tis Marias
the keys-ACC NEUT.3PL.ACC-gave-3SG the-GEN Maria-GEN
o Yanis].
the-NOM Yanis-NOM
'YANIS gave the keys to Maria.'

The tree diagram in (29) illustrates the propagation of INFO-STRUC values for (28b). The rightmost complement daughter *o Yanis* is accented and its FOCUS value is instantiated. By (25ii), the mother (4) is assigned broad focus, which in turn propagates to the top S node (by application of (25i)). The filler is unaccented and can be interpreted as a link. The English subject-head phrase in (28a) will have the same type of INFO-STRUC, with a FOCUS value corresponding to the VP *gave the keys to Mary* (by application of (25ii)), and a LINK value that corresponds to the subject NP *John*.

(29) *Link-focus*



Thus far, we have shown that the various discourse functions associated with left dislocation (long distance dependencies) in a language like Greek follow directly from the same set of principles that operate in English, a language which primarily exploits prosody to realize information structure.

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Engdahl & Vallduví's approach achieves this without any need to extend phrase structure or introduce additional constraints. Nonetheless, cross-linguistic variation in the discourse/syntax interface is accounted for.

There remain, however, a number of unresolved issues. In what follows, we focus on the issue of how to identify links in a language like Greek. The situation in English is simpler, since links are standardly associated with B Accent. For languages like Catalan, where links are marked by means of dislocation to the left periphery of the clause, Engdahl & Vallduví (1996) propose the Linear Precedence (LP) statement in (30) below, which was adopted by Alexopoulou (1999) for Greek. This essentially captures certain general tendencies in the linearization of the Information Structure primitives.

(30) *phrase* → LINK ≺ FOCUS ≺ TAIL

It can easily be shown that (30) does not always make the right predictions for Greek. For example, it may allow the verb in a verb-initial clause to be interpreted as a link (31a), and rules out well-formed examples such as (31b), where the focus appears after the tail.

(31) (a) [$_L$ Edose] [$_F$ tis MARIAS] [$_T$ ta klidia].
gave-3SG the-GEN Maria-GEN the keys
'S/he gave Maria the keys.'

(b) [$_L$ Ta klidia] [$_T$ ta-edose tis Marias] [$_F$o YANIS].
the keys CL-gave-3SG the-GEN Maria-GEN the-NOM Yanis-NOM
'Yanis gave the keys to Maria.'

Further, and most crucially for the purposes of this paper, (30) will interpret *all* unaccented fillers (i.e. both CLLD-ed and topicalized NPs) as links. As will be demonstrated in the following section, various pragmatic and semantic differences between Topicalized and CLLD-ed NPs indicate that only the latter are links in Greek. We will further argue that Vallduví's definition of links as the *current-locus-of-update* cannot be maintained as it currently stands, since it resists extension to a satisfactory account of the wide scope readings invariably associated with CLLD-ed NPs. This in turn leads us to extend the approach presented here by introducing a parochial constraint for Greek, namely, the 'Linkhood Constraint'.

4. LINKHOOD AND NON-MONOTONE ANAPHORA

In this section, we consider an alternative definition of linkhood provided by Hendriks & Dekker (1996). Hendriks & Dekker criticize certain aspects of Vallduví's framework, in particular Vallduví's proposal to model the hearer's information state (at the time of utterance) as a system of Heim-style file-

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cards. More specifically, they raise a number of problems for Vallduví's view that a link designates a particular file-card as the current locus of information update.

First, the very notion of the 'current locus of update' – the location where the 'file clerk' happens to find herself – entails that sentences with more than one link should not be available (assuming that the file clerk cannot simultaneously find herself in different places and update different files). This goes against Vallduví's own premises: he allows for multiple link examples in some languages, for example, in Catalan. Second, it is not clear what locus of update can be associated with phrases which have the structural trappings of links (e.g. they bear a B Accent or are left dislocated), but are quantified, negative or disjunctive. A third point concerns the treatment of pronouns. They do not designate file-cards; rather, their interpretation is provided by a card that has already been activated. However, Vallduví's segmentation of sentences into a focus and a ground component often allows a subject or object pronoun to be part of the focal segment, which seems counterintuitive. A fourth point may be added, which is crucial for our purposes: it is hard to see how Vallduví's definition can be extended to account for links that are sometimes referred to as 'contrastive' and which pick out members of a (typically larger) set that has been previously introduced in discourse.[15] In this and the following section we show that these links are systematically coded by special structural means (CLLD in Greek, and B Accent and, optionally, Topicalization in English) and, in addition, they are related to more general phenomena of anaphora. There is ample motivation for a uniform treatment, which, however, does not appear to be possible under Vallduví's original definition of linkhood.

Hendriks & Dekker proceed by redefining Vallduví's links as elements signalling *non-monotone anaphora*. From an empirical point of view, their paper is an attempt to unify phenomena associated in English with the B Accent; these include subsectional and relational anaphora. Traditional discourse topics or Vallduvian links (also marked with B Accent in English) are viewed as a further case subsumed under non-monotone (typically, subsectional) anaphora. From a theoretical point of view, their proposal enables information states to be represented by means of Kampian Discourse Representation Structures. The latter can model precisely the same information as file-card systems, except that they lack a marked discourse referent corresponding to the file notion of the 'current locus of update'. Links are instead taken to posit a condition on discourse referents – an

[15] Though Vallduví discusses such links (see e.g. his examples in (36) and (37) below), his standard approach presented above makes no allowances for their special status. In more recent work (Vallduví & Vilkuna 1997), the 'current locus of update' definition is complemented with a concept of *kontrast*, primarily intended for links of this type. We discuss Vallduví & Vilkuna's contrast proposal in the appendix.

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approach that arguably circumvents the problems Hendriks & Dekker raise for Vallduví's system. Before turning to their revised definition of linkhood, let us consider a few examples of non-monotone anaphora.

In general, anaphora is assumed to be monotone or upward monotone. Upward monotone anaphora is exemplified in (32a). Neither *John* nor *Mary* can function as antecedents of *they*, it is their sum that does so. Kamp & Reyle (1993) define the operation Summation that provides discourse referents for plural pronouns by unioning individuals or sets that have been previously introduced in discourse. The anaphoric resolution of *they* in (32a) can be contrasted with that of *they* in (32b). The latter cannot be construed as referring to the two balls missing from the bag: substracting one set from another is not a permissible process for the construction of pronominal antecedents.

(32) (a) John took Mary to Acapulco. **They** had a lousy time.
(b) Eight of the ten balls are in the bag. **They** are under the sofa.
(Kamp & Reyle 1993)

Nonetheless, several authors support the view that anaphora can be non-monotone. van Deemter (1994) and Hendriks & Dekker (1996), among others, observe that pitch accent in English can be employed to signal *subsectional anaphora*. In (33), *the cats* is anaphoric to *the animals*. If *cats* is unaccented, the set of animals that John fed is understood to entirely consist of cats. If it is accented, then the implication is that John fed at least one non-cat – *the cats* identifies with a subsection of the set of animals at issue.

(33) John fed the animals. **The cats** were hungry.

Non-monotone (subsectional) anaphora has been argued to have a morphological correlate in the Greek NP (Kolliakou 1999b). A particular type of Greek definites (*polydefinites*) exhibits multiple definite marking and is associated with contextual constraints that go beyond the uniqueness presupposition of standard definites (*monadics*). More precisely, polydefinites are unambiguously non-monotone anaphoric expressions, and, therefore, require their referential index to be anchored to an entity that forms a proper subset of some previously introduced set. The special pragmatic import of this construction is illustrated by the minimal pair in (34) below. Example (34a) (based on an English example by Hendriks & Dekker) can be associated with four readings, depending on whether the noun is subsectionally anaphoric to *ta zoa* ('the animals') or not, and whether the adjective is restrictive or non-restrictive. Crucially in (34b), where the monadic is replaced by a polydefinite, two of the four readings – those that involve a non-restrictive interpretation for the adjective *i mikres* ('DEF young') – are lost. Example (34b) can, therefore, signify solely either (a) that all the animals John fed were cats, but there were young and non-young cats, or (b) that John fed cats and non-cats, and there were young and non-young cats.

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(34) (a) O Yannis taise ta zoa. **I mikres gates** itan
Yanis-NOM fed the animal-ACC DEF young cats were
pinasmenes.
hungry
'John fed the animals. The young cats were hungry.' (All four readings.)

(b) O Yannis taise ta zoa. **I mikres i gates** itan
Yanis-NOM fed the animals-ACC DEF young DEF cats were
pinasmenes.
hungry
'John fed the animals. The young cats were hungry.' (Two readings only.) (Kolliakou 1999b)

Another type of non-monotone anaphora is the so-called *relational anaphora* (Hendriks & Dekker 1996). The example in (35) below can be associated with two non-monotone anaphoric readings: *the fathers* is either subsectionally or *relationally* anaphoric to *ten guys*, if it is assigned a B Accent. On the subsectional reading, *the fathers* corresponds to a proper subset of the ten players. On the relational reading, it does not identify with the ten basketball players at all, but rather refers to their fathers.

(35) Ten guys were playing basketball in the rain. **The fathers** were having fun.

Discourse topics or Vallduvian links can be viewed as instances of non-monotone (typically, subsectional) anaphora and, as such, they can be unified with the examples presented above. Consider, for example, the *link* in (22b), repeated here as (36).

(36) Tell me about the people in the White House. Anything I should know?
The **president** [$_F$ hates CHOCOLATE]. *link-focus*

The president is a non-monotone anaphoric expression picking an individual from a salient set in the discourse, the set denoting the *people in the White House*. On a par with non-monotone anaphoric elements, it bears B Accent (Vallduví 1992). Cases of explicit contrast (*contrastive links* in Vallduví's terminology in his early work, but see Vallduví & Vilkuna 1998) are available as well, as shown in (37).

(37) (a) Where can I find the cutlery?
(b) The **forks** are in the CUPBOARD but the **knives** I left in the DRAWER.
(Engdahl & Vallduví 1994)

As it currently stands, Vallduví's definition of linkhood in terms of 'current locus of information update' does not have much to say about the special relationship holding between *the president* and *the people in the White House* in (36), or *forks* and *knives* and *the cutlery* in (37). How can the file-cards representing the former be 'marked' as standing in a 'subset of' relationship

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with the file-cards representing the latter? Hendriks & Dekker's (1996) definition of linkhood essentially addresses this issue: expressions that are links (linkhood being structurally realized by means of B Accent in English) are required to satisfy the constraint in (38).

(38) *Hendriks & Dekker's Non-Monotone Anaphora Hypothesis*
Linkhood (marked by B Accent in English) serves to signal non-monotone anaphora. If an expression is a link, then its discourse referent Y is anaphoric to an antecedent discourse referent X, such that $X \not\subseteq Y$.

According to the above, X (the antecedent set) should *not* be a subset of or equal to Y (the set corresponding to the link). This formulation allows for two cases: either a) the previously introduced set is larger (i.e. the set Y that the link picks out is a proper subset of the antecedent set X), or b) the two sets do not intersect. The former case accounts for the examples of subsectional anaphora in (33) and (34), as well as the topics/links in (36) and (37). In all these cases, the set the link picks out is a proper subset of the antecedent set. The latter case, where the two sets do not intersect, captures relational anaphora as exemplified in (35) above, where *the fathers* (Y) does not refer to the antecedent set *ten guys* (X), but rather to the fathers of those guys. Case b) can possibly also account for non-contrastive topics. In our subsequent discussion of the structural realization of linkhood in Greek, we will assume this definition and provide a formalization couched in HPSG.

In the following section, we present evidence indicating that CLLD-ed NPs in Greek are always non-monotone anaphoric elements, picking their referent from a salient discourse set. By analysing Greek CLLD phrases as links in the Hendriks & Dekker, rather than the Vallduvian sense, we capture an intuition that has been previously expressed in the literature (see section 2.1), namely, that such NPs are 'given' or 'discourse-linked'. At the same time, our definition overcomes the vagueness of syntax-based notions of 'givenness', 'topichood' or 'discourse-linking', by relying on concepts formalized within a general framework of discourse anaphora (DRT). From an empirical point of view, our approach can readily account for various facts already reported in the literature, while a new set of data, related to the invariable association of CLLD-ed NPs with wide scope readings, finds a straightforward explanation.

Finally, the notion of linkhood adopted here provides a natural explanation for the artificiality of the (b) examples in the question-answer pairs in (39) and (40). (As has already been mentioned in section 2, these are examples that have been employed in the literature for expository purposes, i.e. to differentiate between discourse functions such as focus and topic. They have invariably been acknowledged as artificial.)

(39) Ti sinevi me ton Petro?
'What happened with Petros?'

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(a) **Ton** sinelave i astinomia.
MASC.3SG.ACC arrested-3SG the-NOM police-NOM
'The police arrested him.'

(b) Ton Petro **ton** sinelave i
the Petros-ACC MASC.3SG.ACC arrested-3sg the-NOM
astinomia.
police-NOM
'The police arrested Petros.'

(40) Pios ide to Yani?
'Who saw Yanis?'

(a) O Petros.
the Petros-NOM
'Petros did.'

(b) To Yani ton ide o Petros.
the Yanis-ACC MASC.3SG.ACC saw-3SG the Petros
'Petros saw Yanis.'

In the above, the CLLD-ed NP in the (b) examples is not related non-monotonically to its antecedent, thus violating the constraint imposed by the definition in (38) – that the antecedent discourse referent X should *not* be equal to the discourse referent Y of a link. By contrast, when the question introduces a set, a member of which is picked by the CLLD-ed NP in the answer, these examples become fully natural. This is illustrated below.

(41) Ti sinevi me ta pedia?
'What happened to the kids?'

(a) **Ta** sinelave i astinomia.
NEUT.3PL.ACC arrested-3SG the-NOM police-NOM
'The police arrested them.'

(b) Ton Pertro **ton** sinelave i
the Pertos-ACC MASC.3SG.ACC arrested-3SG the-NOM
astinomia (ya tus alus den ksero).
police-NOM as-for the others not know-1SG
'The police arrested Petros (– as for the others, I don't know).'

(42) Pios ide ta pedia?
'Who saw the kids?'

(a) O Petros.
the Petros-NOM
'Petros did.'

(b) To Yani ton ide o Petros
the Yanis-ACC MASC.3SG.ACC saw-3SG the Petros
(ya tus alus den ksero)
as-for the others not know-1SG
'Petros saw Yanis (– I don't know about the others).'

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Though examples of subsectionally anaphoric links appear to constitute the great majority (see following section), there also exist cases such as (43) below. The latter seems to suggest that CLLD may also be employed for relational anaphora.

(43) Htes vjikame me tis palies simathitries.
yesterday went-out-1PL with the old classmates
'Yesterday I went out with the old classmates.'
Ta paidia ta afisame stus andres.
the kids-ACC NEUT.3PL.ACC left-1PL to-the men
'The children, we left to the men.'

Here, we focus on the most productive use of CLLD-ed NPs (subsectional linkhood). A detailed examination of examples of relational anaphora is beyond the scope of this paper. However, to the extent that relational anaphora is an instance of non-monotone anaphora, as suggested by Hendriks & Dekker, the argumentation presented in the following section should be extendable to relational links as well.

5. Linkhood, Topicalization and CLLD

In this section, we systematically compare the distribution of CLLD-ed and topicalized NPs in Greek. We show that they are associated with distinct semantic and pragmatic constraints. We propose that the behavior of CLLD-ed NPs can be straightforwardly derived from their treatment as links in the sense of Hendriks & Dekker (1996). Mere Topicalization (left dislocation and absence of accent) does not realize linkhood in Greek; rather, in addition to the absence of accent, it is a combination of syntactic and morphological means, left dislocation *and* clitic duplication, that does so. We further show that the discrepancies between CLLD and Topicalization cannot be derived from the structural difference between the two, namely, the fact that the former involves a clitic, whereas the latter a gap. The construction known as Focus Movement, which always involves a gap, allows for systematic ambiguity in cases where Topicalization and CLLD can each be associated with only one out of potentially two distinct readings.

Consider first (44) below. As observed by Anagnostopoulou (1994), only (44a), where the NP *ton Chomsky* is CLLD-ed, constitutes a felicitous follow-up for the context provided. Example (44b), an instance of Clitic Doubling, where the NP at issue is not left dislocated, but solely clitic duplicated, is not a felicitous follow-up; the same is true of (44c), an instance of Topicalization, where *ton Chomsky* is left dislocated, but not clitic duplicated. In the context of (44), the NP *ton Chomsky* is a (subsectional) link in the sense of Hendriks & Dekker (1996), since it picks its referent from a salient discourse set, the set of linguists included in the bibliography given to the students. The infelicity of Clitic Doubling and Topicalization in (44) supports the

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generalization that links in Greek are realized exclusively through CLLD, not Clitic Doubling or Topicalization.

(44) O kathigitis glosologias edose stus fitites vivliografia …
'The professor of linguistics gave a bibliography to the students … '

(a) … ke ton Chomsky **ton** vrikan poli diskolo.
and Chomsky MASC.3SG.ACC found-3PL very difficult (CLLD)
' … and Chomsky they found very difficult.'

(b) … #ke **ton** vrikan ton Chomsky poli diskolo.
and MASC.3SG.ACC found-3PL Chomsky very difficult (Clitic Doubling)

(c) … #/? ke ton Chomsky vrikan poli diskolo.
and Chomsky found-3PL very difficult (Topicalization)

The question mark in (44c) (and throughout in this article) indicates that some speakers consider the example less acceptable irrespective of context. While Topicalization is a productive construction in Greek, there exist examples that are considered less grammatical than others. We will return to this issue at the end of this section, where we offer an explanation for the reduced acceptability of such examples.

Before turning to the next piece of evidence, note that unlike Topicalization, Focus Movement, which also employs a gap, is felicitous in a similar 'contrastive' context:

(45) Pion apo tus sigrafis vrikan diskolo?
'Which one of the authors did they find difficult?'
Ton CHOMSKY vrikan diskolo.
'Chomsky, they found difficult.'

Examples (46a, b) below illustrate the same contrast between Topicalization and CLLD as (44). The clitic *tin* cannot be omitted in (46a): it duplicates an NP (*mia didaktoriki diatrivi*) that picks out a member of the (implicit) set of Ph.D. theses submitted by the students of our university. Similarly, the left dislocated NP (*ena filo mu*) in (46b) must be clitic duplicated (by *ton*), since it refers to a single friend out of the speaker's circle of friends.

(46) (a) I fitites tou panepistimiou mas exoun poli kales epidosis.
'The students of our university are of a high calibre.'
Mia didaktoriki diatrivi *(tin)
a Ph.D. thesis-ACC FEM.3SG.ACC
protinan gia to vravio kaliteris diatrivis
recommended-3PL for the prize best Ph.D. thesis-GEN
stin astronomia.
in astronomy
'They recommended a Ph.D. thesis for the prize of the best Ph.D. thesis in astronomy.'

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(b) Ena filo mu *(ton) psahno
a friend-ACC of-mine MASC.3SG.ACC look-for-1SG
apo htes ke den boro na ton vro
since yesterday and not be-able to MASC.3SG.ACC find
puthena.
anywhere
'Since the day before yesterday I've been looking for a friend of mine and I cannot find him anywhere.'
(Example (46b) adapted from Philippaki-Warburton 1985.)

On the basis of further evidence, we can make an even stronger claim for CLLD-ed NPs in Greek: it is exactly these NPs that take wide scope both in contexts where they might be expected to take narrow scope, and in contexts where they should be expected to take either wide or narrow scope. This seems to follow straightforwardly from their treatment as (subsectional) links that pick out a subset of a previously introduced (and hence salient) set.

Consider thus the interpretation of CLLD-ed NPs in examples that involve the quantifier *kathe* 'each'. In plain declaratives such as (47a) below, wide scope for *each* is strongly preferred – each musician is understood to have suggested a *different* piece. In CLLD constructions such as (47b), it is the CLLD-ed NP *ena komati* 'a piece' that takes wide scope; (47b) therefore translates as 'there is a piece such that all musicians suggested it'. The Topicalization example in (47c) is on a par with (47a), not with (47b): *kathe* takes wide scope, as expected.

(47) (a) Kathe musikos protine ena komati.
'Each musician suggested a piece.'

(b) Ena komati **to** protine kathe
a PIECE-NEUT.ACC NEUT.3SG.ACC suggested-3SG each
musikos.
musician
'There is a piece that all musicians suggested.'

(c) ??Ena komati protine kathe MUSIKOS (ki etsi kaname ena programa gia ola ta gousta).
'Each musician suggested a piece (and so we made a program for all tastes).'

The same point is illustrated by the Topicalization examples in (48a, b) (note that examples (48a, b) are perfectly acceptable, unlike example (47c), which some speakers consider marginal). In both examples, as expected, it is the *kathe* phrase (rather than the Topicalized phrase *ena* (*dorean*) *isitirio* …) that takes wide scope; each unemployed youth/lucky winner will get his/her own ticket for the spectacle. The comparison between (47b) above and (48a, b) further supports our claim that only CLLD-ed NPs are links, whereas

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unaccented fillers that are not clitic duplicated (Topicalization) do *not* behave on a par with fillers in CLLD.

(48) (a) To Ipurgio Politismu, se mia prospathia enishisis tis politistikis zois ton ikonomika asthenesteron, ehi eksagili mia sira parohon.
'The Ministry of Culture, in an attempt to support the cultural life of the financially weak, has announced a list of benefits.'
Ena isitirio gia mia ekdilosi tu Festival Athinon
a ticket-ACC for a show the-GEN Festival Athens-GEN
tha pari kathe anergos neos kato ton 30
FUT take each unemployed youth-NOM under 30
'Every unemployed youth under thirty will be granted a ticket for a show at the Festival of Athens.'

(b) I ekpompi mirazi dora piotitas stus tiherus.
'The show gives out quality presents to the lucky winners.'
Ena dorean isitirio gia to Irodio tha pari kathe
a free ticket-ACC for the Herodium will take each
nikitis tu protu giru.
winner-NOM [the first round]-GEN
'Each winner of the first round will get a free ticket for the Herodium Theatre.'

A third piece of evidence in support of the claim that only CLLD-ed NPs realize linkhood in Greek comes from examples involving predicates such as *psahno* 'seek', 'look for'. These are known to be associated with two readings – a transparent (specific) reading and an opaque one. Take, for example, the indefinite singular *a unicorn* in (49) below. On the transparent reading, there is some particular unicorn that Kelly has in mind, and it is only this unicorn that can satisfy her search. On the opaque reading, *any* entity that has the property of being a unicorn can satisfy Kelly's search. In the larger context of (49b), where *a unicorn* is coindexed with a definite pronoun *it* in the second conjunct, only the former reading can be associated with the indefinite singular: both Kelly and Millie must be seeking the same unicorn, and there is no reading in which each one of them is looking for different unicorns, or is engaged in some general unicorn-seeking activity. These readings are allowed in (49c), where the element *one* functions as the *pro-form*; nonetheless, *one* is incompatible with the transparent reading that amounts to referring to a particular unicorn.

(49) (a) Kelly is seeking **a unicorn**.
(b) Kelly is seeking **a unicorn** and Millie is seeking **it** too. ('transparent reading')
(c) Kelly is seeking **a unicorn** and Millie is seeking **one** too. ('opaque reading') (Carlson 1977)

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Philippaki-Warburton (1985) was the first to observe that in example (46b), repeated below as (50), the CLLD-ed NP may only be specific.

(50) Ena filo mu *(ton) psahno apo htes
a friend-ACC of-mine MASC.3SG.ACC look-for-1SG since yesterday
ke den boro na ton vro puthena.
and not be-able to MASC.3SG.ACC find anywhere
'Since the day before yesterday I've been looking for a friend of mine and I cannot find him anywhere.'

As shown in more detail in (51a) below, CLLD-ed direct objects of such predicates can take only the transparent (specific) reading and resist the opaque reading. Only (51a,i) constitutes a felicitous follow-up in the context at issue: the implication here is that the speaker has a specific red blouse in mind. Example (51a,ii) clashes with its previous context, since it forces the opaque reading for the indefinite NP – the speaker cannot find *any* red blouse whatsoever that s/he likes. On the other hand, Topicalized objects of *psahno* exhibit a strong preference for the opaque reading. In the context of (51b), the only natural follow-up is (51b,i). The clitic duplication of the left dislocated *mia kokini bluza* in (51b,ii) necessarily evokes the specific reading.

(51) (a) Mia kokini bluza **tin** psahno
a red blouse-FEM.ACC FEM.3SG.ACC look-for-1SG
edo ki ena mina … (CLLD)
for a whole month now
'I have been looking for a red blouse for a whole month now …'
(i) … ke den boro na thimitho pú tin exo vali.
'… and I cannot remember where I put it.'
(ii) … # ke de boro na vro puthena kamia pou na m'aresi.
'… # and I cannot find anywhere one that I like.'
(b) Fetos i moda ine apesia. Idika i bluzes ine aparadektes.
'I hate this year's fashion. The blouses are especially outrageous.'
(i) Mia kokini bluza psahno
a red blouse-ACC look-for-1SG
edo ki ena mina … (Topicalization)
for a whole month now
'I have been looking for a red blouse for a whole month now …'
… ke de boro na vro puthena kamia pu na m' aresi.
'… and I cannot find anywhere one that I like.'
(ii) #Mia kokini bluza **tin** psahno
a red blouse-ACC FEM.3SG.ACC look-for-1SG
edo ki ena mina … (CLLD)
for a whole month now
'I have been looking for a red blouse for a whole month now …'

It is worth noting again that an example like (52), where the preposed NP is focused, may take either (51ai) or (51aii) as a follow-up, thus indicating that

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the interpretational differences between Topicalization and CLLD may not be attributed to the structural difference between the two, namely, the gap/clitic alternation.[16]

(52) Mia BLUZA/MIA bluza psahno edo ke kero …

Finally, evidence that only CLLD-ed NPs take wide scope comes from plurals with a numeral determiner. At least two distinct readings can be associated with such plurals: the *distributive* reading and the *collective* reading, taken in semantics to correspond to narrow and wide scope, respectively (Landman 1996). In (53) below, the distributive reading is one where twelve ladies in total were invited; on this reading, the narrow scope is on *four ladies*. The collective reading is one where four ladies in total were invited – how exactly the invitations were made, for example, whether one gentleman invited one lady and the other two jointly invited three is not relevant to the point at issue. This latter reading is the one where wide scope is on *four ladies*.

(53) Tris kirii proskalesan tesseris kiries
'Three gentlemen invited four ladies.'
(i) **Distributive** reading (twelve ladies invited).
(ii) **Collective** reading (four ladies invited).

Interestingly, in (54a) below, the CLLD-ed *tesseris kiries* 'four ladies' resists the distributive reading and can take only the collective (wide scope) reading – (54a) cannot be associated with a reading where twelve ladies in total were invited. (A natural follow-up for (54a) would be '… whereas the rest of the ladies at the ball were invited to dance by fewer gentlemen'.) On the other hand, the topicalized *tesseris kiries* in (54b) exhibits no such asymmetry and can be assigned either the narrow or the wide scope reading. Therefore, (54b) can mean: three gentlemen invited four ladies each, despite the fact that there was an agreement according to which no gentleman could bring along more than three guests of his own.

[16] CLLD in Romance (in particular, Romanian) patterns in many ways with Greek. Dobrovie-Sorin (1990) assumes that XPs associated with clitics (as opposed to gaps) are *d-linked* and do not take scope over the clause at LF. There are a number of problems with this analysis. First, as shown in Alexopoulou 1999, there are technical flaws in the account that result in two LF representations neither of which captures the non-specific (opaque) reading (the LF representation '*There is an x, such that x is a secretary and I look for x*' is given for the opaque reading, but in fact it is the representation of the transparent one). Second, while Dobrovie-Sorin mentions that clitic duplicated *wh*-phrases are *d-linked*, she proposes an account of the relevant data that relies on an arbitrary syntactic stipulation, namely, that clitic duplicated NPs do not take scope over the clause at LF. She further seems to associate the semantic properties of CLLD-ed NPs with the presence of the clitic which structurally distinguishes CLLD from gap constructions. Such a one-to-one mapping between structure (clitic vs. gap) and interpretation does not hold, at least in Greek, since it was shown that fronted NPs in Focus Movement are ambiguous, whereas CLLD-ed and Topicalized ones are not.

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(54) (a) Tesseris kiries **tis** proskalesan tris
four ladies-FEM.ACC FEM.3PL.ACC invited-3PL three
kirii. (CLLD)
gentlemen-NOM
'Three gentlemen invited four ladies.'

(b) Tesseris kiries proskalesan tris kirii (eno tus ihame pi oti o kathenas bori na sinodevete apo tris dikus tu proskeklimenus to poli).
'Three gentlemen invited four ladies (though they had been told that each one could bring along at most three guests of his own).'

To sum up, the evidence presented in (44)–(54) indicates that in Greek only CLLD-ed NPs (unlike Topicalized and clitic doubled NPs) take wide scope and pick out a proper subset of a salient set – a generalization that can be captured by assigning to those NPs the status of (subsectional) links, as proposed in the previous section. The wide scope effects follow directly from the precisely defined non-monotone anaphoric relationship holding between the referent of a CLLD-ed NP and its antecedent. As already mentioned in section 4, an anaphoric relationship that would, for instance, associate the file-card that functions as the *current-locus-of-update* to a salient discourse set is absent from Vallduvi's system. Further, his system resists extension to a satisfactory account of the characteristic properties of Topicalized NPs in Greek. Topicalized indefinites associated with a narrow scope (cf. (48)) and plurals with a numeral determiner assigned the distributive reading (cf. (54b)) cannot correspond to a single locus (file-card) currently under update, a criticism already addressed by Hendriks & Dekker (1996), as mentioned in section 4.[17]

Before closing this section, we briefly discuss a couple of remaining issues.

In this paper, we confine ourselves to exploring standard CLLD, and do not further elaborate on the effect of clitic duplication in *wh*-questions. While such a discussion remains beyond the scope of the current work, it appears that our analysis can be easily extended to account for various properties that distinguish clitic duplicated *wh*-phrases from 'plain' ones. For example, clitic duplicated *wh*-phrases have been argued to have a specific reading (Iatridou 1995) and introduce a stronger existential presupposition (Alexopoulou 1999). Further, the distribution of clitics in *wh*-constructions has been linked to the following *referentiality hierarchy*, posited by Anagnostopoulou 1994:

[17] An anonymous referee notes that even though the *current-locus-of-update* definition of linkhood cannot capture the relevant properties of CLLD-ed NPs, it is still useful as a notion encompassing what Topicalization and CLLD have in common, namely, a sense of 'aboutness'. But, according to Vallduví, 'aboutness' is an epiphenomenon, rather than an integral part of his definition of links (see section 3.1). Since the notion of *current-locus-of-update* has been argued to be problematic for a number of reasons, an account of 'aboutness' in these terms seems untenable. At present, we leave open the issue of how the notion of 'aboutness', if needed, could be incorporated in the current system.

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(55) *Anagnostopoulou's Referentiality Hierarchy*
Overt partitive *wh*-phrases (*which of your books*) ≺ *Which*-phrases (*which book*) ≺ *What*-phrases (*what book*) ≺ Bare *wh*-phrases (*who*, *what*)

The potential for clitic duplication of the *wh*-phrases in the hierarchy above reduces from left to right: clitic duplicated overt partitives are fully grammatical; clitic duplicated *which*-phrases are marginal; clitic duplicated *what*-phrases and bare *wh*-phrases are ungrammatical (Anagnostopoulou 1994: 173–174, exx. (37)–(40)). The effect of the hierarchy in (55) can be straightforwardly captured by the hypothesis that CLLD-ed NPs are links in the sense discussed above, and is consistent with the data presented in this section; a treatment of CLLD-ed *wh*-phrases as links would be facilitated in a framework that treats *wh*-phrases as non-quantificational (Ginzburg & Sag 2000). (For further discussion of clitic duplication in *wh*-questions and Quantifier Raising, see also Agouraki 1993, Schneider-Zioga 1994, Tsiplakou 1998.)

Finally, we would like to briefly discuss some remaining issues related to Topicalized NPs – in particular, the acceptability of examples involving Topicalization of definite NPs, as in (44c). Such examples represent a controversy in the literature, with some authors (Tsiplakou 1998) arguing that they are ungrammatical. A more objective source of information is an experimental study conducted by Keller & Alexopoulou (2001), who use the method of magnitude estimation for measuring gradience of acceptability judgements (Bard et al. 1996). This study shows that examples with Topicalized definite NPs pattern with grammatical examples in receiving generally high scores by subjects, but they are systematically considered less acceptable than their CLLD-ed counterparts.

The reduced acceptability of Topicalized definites may be linked to an interesting pattern emerging from the data discussed above: Topicalized NPs, unlike CLLD-ed ones, are typically non-specific. Such a constraint might account for the infelicity of (44c) as well as (47c), and is compatible with felicitous examples of Topicalization. These include (48a, b), where the Topicalized NP is clearly non-specific (each unemployed youth/lucky winner will get a *different* ticket for the spectacle), and (51b,i–ii), with the Topicalized object of *psahno* 'seek' associated with the opaque reading. The same point is illustrated by (56) below, where *logisti* 'an accountant' and *gramatea* 'a secretary' in the follow-up sentence are opaque.

(56) Kanume ananeosi tu prosopiku ki imaste se megales furies; elpizume mehri to telos tu minos na ehume kalipsi ta vasika kena, gramatea kai logisti.
'We are in the process of recruiting administrative personnel; hopefully, by the end of the month we will have covered our basic needs, a secretary and an accountant.'

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Logisti tha vrite amesos, gia gramatea
accountant-ACC FUT find-2PL right-away as-for secretary-ACC
den ksero.
not know-1SG
'You'll find an accountant right away, as for a secretary, I don't know.'

While this hypothesis may open an interesting line of further research, it seems that the acceptability of Topicalized definites is a more complex case: while examples such as (44c) are considered less acceptable, examples like (1c) are perfectly acceptable. (1c) was extracted from a TV news item, which might suggest that the requirement for non-specificity in association with Topicalized NPs actually applies to an everyday oral register, rather than a formal/news register. Not surprisingly, it is not just definite NPs but also specific indefinites that may be Topicalized in a formal/news register. Compare thus (57) with examples in (46) above.

(57) Enan andra trianta hronon sinelave htes i
a-ACC man-ACC thirty years-GEN arrested-3SG yesterday the-NOM
asfalia Athinon …
police-NOM Athens-GEN
'The Athens Police arrested yesterday a thirty year old man …'

Topicalization will not be discussed further in this work. Its exact effect (pragmatic, stylistic, etc.) needs to be addressed in further research, since, as we have shown, its function in Greek is clearly distinct from that of CLLD.

6. An HPSG approach

In this section we present an account of Focus Movement, Topicalization and CLLD couched in HPSG. All three constructions are treated as long distance dependencies triggered by a gap or a clitic (section 6.1). Following previous work on Romance (see Monachesi 1996, Miller & Sag 1997) and Greek (Alexopoulou 1999, Kolliakou 1999a), we argue that elements we have up to now referred to as clitics should be analysed as pronominal affixes attached at the lexical level, rather than postlexically (section 6.3). In section 6.2, we formulate the Linkhood Constraint, which modifies and complements the original account presented in section 3.2. This constraint captures the generalization proposed in the previous section: it exclusively allows CLLD-ed phrases in Greek to be interpreted as links.

6.1 *Long distance dependencies*

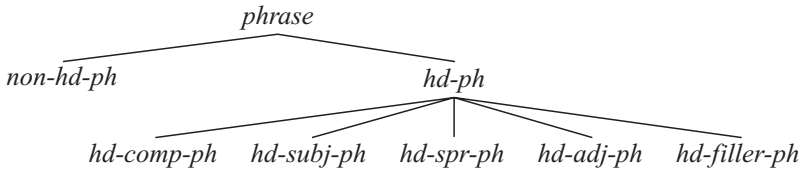
Recent versions of Head-driven Phrase Structure Grammar (HPSG) do not posit phrase structure rules (Ginzburg & Sag 2000). Phrases are characterized as types on a par with words. The information concerning those

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types – phrasal or lexical – emerges by multiple inheritance combined with constraints on each type. All (nondefeasible) constraints on the higher (more general) types in a hierarchy are inherited by the lower (more specific) nodes by means of type inheritance. Thus, a given constraint is stated only once. This 'hierarchical' approach enhances economy in lexical representation: it eliminates the redundancy that arises by repeating predictable information in each individual lexical entry – a characteristic of traditional ('serial') approaches. Further, it allows a flexible treatment of idiosyncratic properties of individual constructions by means of specific constraints imposed on subtypes in the lower strata.

The following hierarchy (adapted from Ginzburg & Sag 2000) subsumes the main phrasal types across languages. It introduces two basic distinctions. First, a distinction between headed and non-headed constructions (*headed-phrase* (*hd-ph*) and *non-headed-phrase* (*non-hd-ph*), respectively); the former consist of a syntactic head and other material, the latter, for instance, subsume coordination structures. The *headed-phrase* type further partitions into more specific subtypes (*head-complement-phrase* (*hd-comp-ph*), *head-subject-phrase* (*hd-subj-ph*), *head-specifier-phrase* (*hd-spr-ph*), *head-adjunct-phrase* (*hd-adj-ph*) and *head-filler-phrase* (*hd-filler-ph*)).[18] Thus, it makes provisions for the configurational clause structure of languages like English, and, in addition, encompasses phrases with a filler, the latter 'filling' a gap within the head clause.

(58)



A given word comes along with an argument structure (ARG-ST) – an attribute that determines its combinatorial potential, including specific subcategorization restrictions (Manning & Sag 1995). Consider for instance *vlepo* 'see' in (59) below. Constraints on lexical types, type inheritance and HPSG's theory of linking allow complex lexical information like that shown in (59) to be derived, rather than stipulated.

(59)

$$\left\langle \text{VLEPO}, \begin{bmatrix} \text{ARG-ST} & \langle [\,]_i, [\,]_j \rangle \\ \text{CONTENT} & \begin{bmatrix} \text{NUCL} & \begin{bmatrix} \textit{see-rel} \\ \text{SEER} & i \\ \text{SEEN} & j \end{bmatrix} \end{bmatrix} \end{bmatrix} \right\rangle$$

[18] Ginzburg & Sag (2000) further assume *subject-auxiliary-inversion-phrase* and *head-only-phrase* as subtypes of *hd-ph*. These phrases have been omitted here for simplicity. Note also that it is an open question whether such phrases should be assumed for the grammar of Greek, one that lies well beyond the scope of this paper.

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The arguments represented in (59) by square brackets can be realized in a number of different ways. In the default case, they are realized *locally* as (complement) sisters of the head. In Greek, for example, in such a case, the ARG-ST list of a given verb is identical to its COMP(LEMENT)S list;[19] thus, a phrase consisting of a head and one or more (locally realized) complements is subsumed under the *hd-comp-ph* type. Arguments realized locally as complements are of sort *canonical*, which is in turn subsumed under *synsem* (see (62) below); alternatively, the members of ARG-ST may be *noncanonical – gaps* or *affixes*. In the former case, the argument corresponding to the gap is realized nonlocally as a filler, as in Topicalization, Focus Movement, but also *wh*-questions and Relativization. An affixal argument, on the other hand, corresponds to a pronominal clitic attached to the verb by a morphological operation (F_{PrAf}). (Below, we consider CLLD, where an argument is realized both in the morphology, as an affix, and (nonlocally) in the syntax, as a filler.)

More specifically, these options are derived from two argument realization types: *plain-word* (*pl-wd*) and *clitic-word* (*cl-wd*), shown in (60a, b) (Miller & Sag 1997, Abeillé et al. 1998). Both allow one or more of the arguments to be optionally realized as gaps.[20] While a subtype of *pl-wd* does not specify any of its arguments to be of type *affix* (i.e. its ARG-ST is the sequence union (⊕) of its COMPS list and a list of gaps), at least one argument of *cl-wd* should be affixal (hence, the list of affixes is specified as non-empty (*n*(*on-e*(*mpty*) *list*))). The ARG-ST of the latter is thus the sequence union of COMPS, a non-empty list of affixes and a potentially non-empty list of gaps.[21] Note that the members of COMPS are constrained to be of sort *canonical*, precluding both gaps and affixes from local realization (Miller & Sag 1997, Bouma et al. 1998, but see Abeillé et al. 1999 and Kolliakou 1999a for a proposal that allows affixes in the COMPS list of plain words to account for clitic climbing). As a result, when the gap and/or affix lists are non-empty, the COMPS list is not identical with ARG-ST.

[19] Here we assume that Greek has no *head-subj-phrase* and that both subject and object(s) instantiate verb complements, saturated through the type *head-comp-phrase*. This analysis is consistent with the commonly held view that Greek has VSO as a basic order (Philippaki-Warburton 1982, Tsimpli 1995) – for a detailed discussion of the configurationality of the Greek clause, see Philippaki-Warburton 1982; Horrocks 1983, 1994; Tsiplakou 1998; Alexopoulou 1999.

[20] As has been shown earlier on, Greek allows for multiple extraction, e.g. (12).

[21] Here we assume that the morphological operation F_{PrAf} may attach only object clitics on verbs. See, however, Kolliakou (1991) for an account of agreement inflection as on a par with pronominal affixation and a treatment of subject NPs as on a par with clitic duplicated phrases.

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(60) (a) $\begin{bmatrix} \textit{pl-wd} & \\ \textsc{comps} & \boxed{1}\ (\textit{canonical}) \\ \textsc{arg-st} & \boxed{1} \bigcirc \text{list}\ (\textit{gap}) \end{bmatrix}$

(b) $\begin{bmatrix} \textit{cl-wd} & \\ \textsc{comps} & \boxed{1}\ (\textit{canonical}) \\ \textsc{arg-st} & \boxed{1} \bigcirc \text{nelist}\ (\textit{aff}) \bigcirc \text{list}\ (\textit{gap}) \end{bmatrix}$

Let us now examine how the above constraints account for the phenomena we are concerned with – Focus Movement, Topicalization and CLLD. The verbal form is of type *pl-wd* in the first two constructions and of type *cl-wd* in the latter. This is exemplified for the lexeme *vlepo* in (61a, b). All cases illustrated below involve preposed (direct) objects.

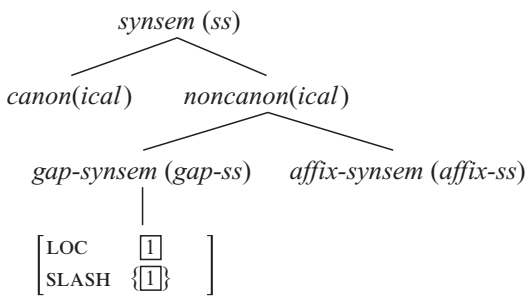
(61) (a) $\left\langle \textit{vlepo}, \begin{bmatrix} \textsc{comps} & \langle \text{NP}_{nom,\,i} \rangle \\ \textsc{arg-st} & \langle \text{NP}_{nom,\,i},\ \textit{gap}_j \rangle \\ \textsc{cont} & \begin{bmatrix} \textsc{nucl} & \begin{bmatrix} \textit{see-rel} \\ \textsc{seer} & i \\ \textsc{seen} & j \end{bmatrix} \end{bmatrix} \end{bmatrix} \right\rangle$

(b) $\left\langle \textit{ton-vlepo}, \begin{bmatrix} \textsc{comps} & \langle \text{NP}_{nom,\,i} \rangle \\ \textsc{arg-st} & \langle \text{NP}_{nom,\,i},\ \textit{aff}_j \rangle \\ \textsc{cont} & \begin{bmatrix} \textsc{nucl} & \begin{bmatrix} \textit{see-rel} \\ \textsc{seer} & i \\ \textsc{seen} & j \end{bmatrix} \end{bmatrix} \end{bmatrix} \right\rangle$

Gaps and affixes differ from canonical arguments in the following crucial way: one of their nonlocal features is instantiated, and, thus, through interaction with certain basic constraints of the grammar (to be presented below), they trigger long distance dependencies. We assume the standard HPSG constraint on gaps (see e.g. Ginzburg & Sag 2000). As shown in (62) below, noncanonical objects of type *gap-synsem* (*gap-ss*) are specified for a SLASH set that contains a single object identified with their own LOCAL value. SLASH being the relevant nonlocal feature, crucial syntactic and semantic information (such as case marking and thematic role) are propagated to the 'top' of the dependency, and the filler can therefore be required to satisfy the specifications imposed by the head verb at the 'bottom'.

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(62)



Affixes differ from gaps in two respects. First, unlike gaps, they do not trigger a long distance dependency necessarily, but only optionally, as they may also occur in sentences with no filler in the left periphery (e.g. *ton* in *ton vlepi sihna* – 's/he sees him often'). At first sight, it might appear that this difference could be captured straightforwardly by assuming that the SLASH value of affixes may only optionally contain an object of type *local* identified with the affix's LOCAL value, as is shown in (63). The parentheses around 1 in (63) indicate optionality.[22]

(63) *affix*

$$\begin{bmatrix} \text{LOC} & \boxed{1} \\ \text{SLASH} & \{(\boxed{1})\} \end{bmatrix}$$

However, (63) cannot capture the second and most crucial difference between gaps and affixes: unlike gaps, affixes share less than their local value with their fillers. Objects of type *local* are specified for certain basic syntactic and semantic features, including the feature CONTENT. Among other things, the latter introduces the pronoun/nonpronoun partition (see e.g. Pollard & Sag 1994), which is necessary for stating HPSG's Binding Theory constraints. Evidently, the affixes at issue are marked pronominal, and this information will be borne by the local object inside SLASH. Given the standard constraint on fillers (that they should share the specifications of the 'slashed' argument they correspond to), fillers in Greek CLLD will be wrongly predicted to be pronouns, rather than potentially nonpronominal. Thus, though *local* contains the right amount of information in the case of gaps, it actually contains more information than required in the case of (pronominal) affixes. What filler and affix share in CLLD is just their case, agreement and index value, which, under HPSG's current assumptions, correspond to only *part* of their respective local values.[23] In addition, there is no HPSG object smaller

[22] Abeillé et al. (1998) propose an account along these lines for pronominal affixes in relative clauses in French.

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than *local* that corresponds to the shared information, since CASE and AGREEMENT are attributes of *category*, while INDEX is an attribute of *content*.

We introduce instead a novel nonlocal feature CLITIC (CL) that is on a par with the other HPSG nonlocal features (e.g. SLASH, WH and BACKGROUND – see Ginzburg & Sag 2000) in that it is subject to the same set of constraints that control nonlocal feature propagation. The CL set of an affixal argument optionally contains a single object identified with the affix's HEAD value. The latter is of type *noun* and is thus specified for the feature CASE, as is standardly assumed in HPSG (see Pollard & Sag 1994, Ginzburg & Sag 2000, among others). Following Sag & Wasow (1999), we further employ a noun feature AGR(EEMENT) whose value (an object of sort *agr*) bears the attributes NUMBER, GENDER and PERSON. The type *affix-ss* is thus associated with the following constraint:

(64) (*Preliminary version*)

$$\begin{bmatrix} \textit{affix} & & & \\ \text{CAT}|\text{HEAD} & \boxed{1} & \begin{bmatrix} \textit{noun} & & \\ \text{CASE} & c & \\ \text{AGR} & \begin{bmatrix} \text{PERSON} & p \\ \text{NUMBER} & n \\ \text{GENDER} & g \end{bmatrix} \end{bmatrix} \\ \text{CLITIC} & \{(\boxed{1})\} & \end{bmatrix}$$

However, the proposed modification cannot as yet account for the sharing of the thematic role between the filler and the pronominal affix. Thematic role assignment is lexically defined[24] at the 'bottom' of the dependency and is established nonlocally via nonlocal feature propagation. At the cost of introducing a small amount of redundancy, we propose to include INDEX in feature structures of type *noun*, and, moreover, unify its value with the standard content INDEX involved in thematic role assignment in HPSG (Pollard & Sag 1994).[25] Tag $\boxed{i}$ in (65) below registers this identity. The CLLD-ed filler at the 'top' of the dependency will thus be required to bear an identical INDEX value, which amounts to sharing the same thematic role.

[23] HPSG's underlying feature logic (see e.g. Carpenter 1992, Pollard & Sag 1994) requires feature structures to be both (a) *totally well-typed* (meaning that every feature that is appropriate for a given type should be actually present), and (b) *sort-resolved* (meaning that a given object must be assigned a sort label that is maximal or most specific in the sort ordering). Subsequently, no 'partial' local object could be defined – one that would bear an underspecified CONTENT value, which would therefore unify with a nonpronominal filler at the 'top' of the dependency. Assuming that there exists independent motivation in favour of employing the feature SLASH in the case at issue, Greek CLLD could be argued to provide empirical evidence in support of a different feature logic for HPSG, one that would for instance allow for partial models of the objects represented, as suggested, *inter alia*, by King (1989).

[24] For a detailed discussion see, for instance, Pollard & Sag 1994.

[25] Given recent developments in HPSG semantics (see e.g. Ginzburg & Sag 2000), it appears that it might be possible to eliminate this redundancy and exclusively define INDEX as a

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(The filler NP will be understood to pick out the same entity in discourse as the pronominal affix, and that entity will be associated with a particular thematic role in the content attribute of the head verb at the 'bottom' of the dependency.) The revised constraint on *affix-ss* is as follows:

(65) (*Final version*)

$$\begin{bmatrix} \textit{affix} & \\ \text{CAT|HEAD} & \boxed{1}\begin{bmatrix} \textit{noun} & \\ \text{CASE} & c \\ \text{INDEX} & i \\ \text{AGR} & \begin{bmatrix} \text{PERSON} & p \\ \text{NUMBER} & n \\ \text{GENDER} & g \end{bmatrix} \end{bmatrix} \\ \text{CONTENT} & \begin{bmatrix} \textit{pronoun} & \\ \text{INDEX} & i \end{bmatrix} \\ \text{CLITIC} & \{(\boxed{1})\} \end{bmatrix}$$

We now turn to the lexical constraints that control the propagation of nonlocal features. Following Ginzburg & Sag (2000), we assume the Non-LOCAL Amalgamation Constraint in (66) below that defines the value of the nonlocal features of words in terms of the value of the nonlocal features of their arguments, i.e. the value of the nonlocal features of the members of their ARG-ST list. The Non-LOCAL Amalgamation Constraint applies to both SLASH and CL(ITIC), since it in fact generalizes over more specific constraints proposed in earlier work (Sag 1997, Bouma et al. 1997, 1998), such as the SLASH Amalgamation Constraint, the WH-Amalgamation Constraint and the Principle of Contextual Consistency. The '/' notation indicates that this constraint can be overriden by more specific constraints on words.

(66) **Non-LOCAL Amalgamation Constraint**
For every non-LOCAL feature **F**:

$$\textit{word} \Rightarrow / \begin{bmatrix} \text{SS|}\mathbf{F}\ \boxed{\Sigma_1} \cup \ldots \cup \boxed{\Sigma_n} \\ \text{ARG-ST}\ \langle [\mathbf{F}\ \boxed{\Sigma_1}], \ldots, [\mathbf{F}\ \boxed{\Sigma_n}] \rangle \end{bmatrix}$$

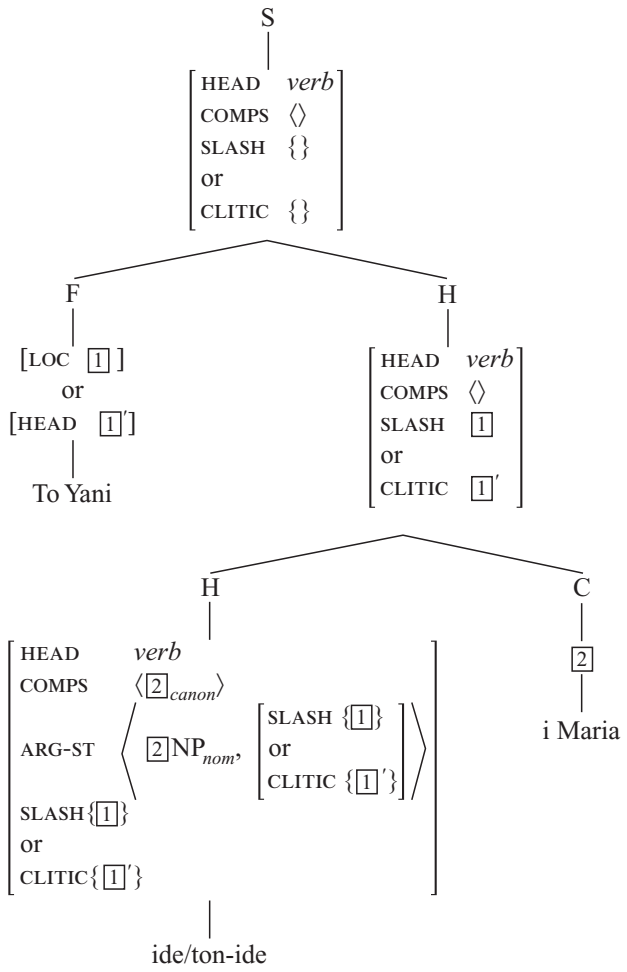
By (66), both *vlepi* (of type *pl-wd*) for Focus Movement/Topicalization and *ton-vlepi* (of type *cl-wd*) for CLLD inherit the nonlocal value of their gap

feature of *noun*. Verbs would then be required to identify the values of the arguments of the semantic relation inside their NUCLEUS with the HEAD|INDEX value of their NP arguments. We will not, however, further pursue this idea in the current work.

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and affix arguments, which amounts to a nonempty SLASH and CLITIC set, respectively. Amalgamation by the verb is shown on the lowest head (H) node in (67):

(67)



The propagation of the nonlocal features from head-daughter to mother illustrated in (67) by tags 1 and 1′ is due to the Generalized Head Feature Principle (GHFP) (Ginzburg & Sag 2000) that applies across headed phrases and can be thought of as analogous to the 'X' identity condition of X′ Theory. (Technically, GHFP is a defeasible constraint on the type *headed-phrase*; the '/' notation indicates that it can be overriden by specific subtypes of *hd-ph*.)

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GHFP requires that the SYNSEM value of the mother of a headed phrase and that of its head daughter be identical by default. This is a principle that allows considerable simplification in the grammar: more specific constraints posited in earlier work such as, for instance, the (nondefault) Head Feature Principle (for unifying the head value of the mother and its head daughter), or the (default) Valence Principle (for ensuring that the mother inherits the head daughter's SUBJ, COMPS and SPR specifications, unless they are 'cancelled off' due to interacting constraints on subtypes), can be dispensed with. Since both SLASH and CL, along with all other nonlocal features, are specified for objects of type *synsem*, they propagate from head daughter to mother in accordance with (68).

(68) Generalized head feature principle (GHFP)
headed-phase:

$$\left[\text{SYNSEM} \quad /\boxed{1}\right] \rightarrow \ldots \mathbf{H} \left[\text{SYNSEM} \quad /\boxed{1}\right]$$

Propagation stops at the point when the head phrase bearing on its nonlocal feature(s) the relevant specifications is combined with a suitable filler. By defining *head-filler-phrase* (*hd-fill-ph*) and *clitic-left-dislocation-phrase* (CLLD-*ph*) as subtypes of *hd-ph*, the two constraints in (69) (associated with *hd-fill-ph* and CLLD-*ph*, respectively) override the GHFP (68).

(69) (a) *Head-filler-phrase*

$$[\text{SLASH} \ \boxed{\Sigma_2}] \rightarrow [\text{LOC} \ \boxed{1}], \mathbf{H} \begin{bmatrix} \textit{phrase} & \\ \text{HEAD} & \textit{verb} \\ \text{SLASH} & \{\boxed{1}\} \uplus \boxed{\Sigma_2} \end{bmatrix}$$

(b) CLLD-*phrase*

$$[\text{CLITIC} \ \boxed{\Sigma_2}] \rightarrow [\text{HEAD} \ \boxed{1}], \mathbf{H} \begin{bmatrix} \textit{phrase} & \\ \text{HEAD} & \textit{verb} \\ \text{CLITIC} & \{\boxed{1}\} \uplus \boxed{\Sigma_2} \end{bmatrix}$$

The analysis presented here directly accounts for the syntactic commonalities that characterize Focus Movement, Topicalization and CLLD in Greek. First, CPs (complementizer phrases) and sentences (IPs) constitute a by and large unified class in HPSG (for details, see Pollard & Sag 1994, Sag & Wasow 1999). Neither CLLD-*ph* nor *head-filler-ph* poses any requirements concerning the 'marking' value of the head-daughter (i.e. whether it should be an *oti* ('that'-) or an *oti*-less ('that'-less) clause). Therefore, the filler can

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combine with either *oti* or *oti*-less clauses and appear on either side of the complementizer, as was shown in (11).[26] Second, no constraint has been posited for blocking multiple extraction; we thus account for examples such as (12), which involve extraction from inside an interrogative. Interrogatives are also subsumed under *hd-filler-ph* and allow for SLASH members that have not yet encountered their filler to propagate upwards. A small set of HPSG principles (the GHFP and the Marking Principle – alternatively, a treatment of complementizers as heads of the phrase they appear in, as proposed in more recent work in HPSG) ensure that a head-filler phrase inherits all the relevant syntactic information borne by its head-daughter (e.g. it is specified for a finite verb head and it is marked *oti*, in case the head-daughter is marked *oti*, too). As a result, the presence of a filler that linearly precedes a clausal complement does not block the selection of the latter by a higher verb. Finally, since a head-filler phrase is not (necessarily) specified for an empty SLASH, it does not constitute an island for extraction, as shown in (13).[27]

6.2 *The Linkhood Constraint*

In this section, we present the final version of the constraint on CLLD-*ph*(*rase*). It complements the Information Structure Instantiation Principle (25), originally proposed by Vallduví & Engdahl (1994) and Engdahl & Vallduví (1996), and adopted by Alexopoulou (1999) for Greek.

The 'linkhood constraint' is intended as a parochial constraint: we here posit it for Greek, but anticipate that it can be suitably adapted for other languages that realize linkhood in a similar way. It states that links can only be fillers that are 'duplicated' in the morphology by a pronominal affix. Therefore, 'plain' fillers in Topicalization, as well as clitic duplicated phrases in situ in Clitic Doubling, cannot be marked as links in the INFO-STRUC attribute of the sentence they appear in. This approach captures the basic difference in discourse function between the three syntactic constructions, though it says nothing in particular about Topicalization and Clitic Doubling, apart from the fact that they do not realize linkhood. The discourse functions associated with these constructions are an issue left for further research. Consider thus (70).

[26] For further discussion, see Alexopoulou (1999), who opts for an analysis of CPs as head-marker phrases in line with Pollard & Sag (1994).

[27] A detailed account of the sensitivity of long distance dependencies to islands remains beyond the scope of this paper. An obvious solution lies in constraining the slash value of adjunct clauses to be the empty list (technically, the restriction would apply on the head-daughter of a head-marker phrase introduced by markers like *otan* 'when', *epidi* 'because', etc. or relative pronouns) – see Sag (1997), who pursues this solution for relative clauses. We should note here that we cannot foresee any implications a developed account of island effects would have on our analysis, as all three types of constructions studied here obey islands.

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(70) CLLD-*phrase* (final version) or the 'Linkhood Constraint'

$$\begin{bmatrix} \text{INFO-STRUC}|\text{LINK} & \{\boxed{2}\} \\ \text{CLITIC} & \boxed{\Sigma_2} \end{bmatrix} \rightarrow \boxed{2} \begin{bmatrix} \text{PHON}|\text{ACCENT} & u \\ \text{HEAD} & \boxed{1} \end{bmatrix}, \mathbf{H} \begin{bmatrix} \textit{phrase} & \\ \text{HEAD} & \textit{verb} \\ & \\ \text{CLITIC} & \{\boxed{1}\} \cup \boxed{\Sigma_2} \end{bmatrix}$$

The constraint in (70) is to be satisfied by all phrases of type *clitic-left-dislocation-phrase* (CLLD-*phrase*). The filler and the pronominal affix are required to share their head value, that is, their case,[28] index and agreement features. As discussed in section 6.1, these are exactly the features introduced by an affixal argument to its CL(ITIC) set (indicated here by tag $\boxed{1}$). In addition, it is required that the filler-daughter identifies with the LINK attribute in the information structure of the mother. (This is registered by tag $\boxed{2}$.) Note finally that the requirement that the filler-daughter should be unaccented (*u*) is included here for ease of presentation. An independent constraint in the grammar requires that 'clitic duplicated' NPs (in-situ or dislocated) should bear no accent.

We can now dispense with the LP-statement *phrase* → LINK ≺ FOCUS ≺ TAIL posited by Alexopoulou 1999 (see above), which was shown to make wrong predictions in a number of cases.

6.3 *The affixal status of verbal clitics in Greek*

Pronominal clitics in Greek and Romance have been analysed as prosodically deficient elements occupying syntactic positions (for example, they have been treated as heads or operators of distinct syntactic projections such as the Clitic or Topic Phrase; see Agouraki 1993, Rizzi 1995, Uriagereka 1995). Here we depart from this approach and, following Miller 1992, Miller & Sag 1997 and Monachesi 1996, we analyse verbal clitics in Greek as affixal elements, attached to the verb at the lexical level, by means of a morphological operation (F_{PrAf}). In this section we present the main arguments supporting an affixal treatment of Greek pronominal clitics (for a similar account of 'weak' possessive pronouns see Kolliakou 1999a). As this aspect of our analysis does not bear directly on the main claims of this paper, we confine ourselves to a brief discussion of the relevant material.

A number of diagnostics distinguishing postlexical clitics from pronominal affixes provide support for an affixal analysis of the elements at issue. Thus, Greek pronominal clitics display several properties on a par with French elements that have been analysed as affixes (Miller & Sag 1997).

Postlexical clitics may attach to hosts of various syntactic categories. Affixes, on the other hand, are always attached to the same host. Indeed,

[28] We leave case underspecified, as CLLD may involve indirect objects in the genitive in addition to direct objects in the accusative.

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Greek verbal clitics may only attach to the verb, as indicated by the ungrammaticality of (71b), where the clitic precedes the negation particle.

(71) (a) Na mi tu to dosis.
SUBJ.PART not him-MASC.3SG.GEN it-NEUT.3SG.ACC give-2SG
'Don't give it to him.'
(b) *Na tu mi to dosis.

The presence of 'arbitrary gaps' can also distinguish between pronominal affixes and postlexical clitics. Such gaps do in fact occur in case of verbal pronominal clitics in Greek. Thus, while a third person genitive pronoun may combine with a third person accusative one (72a), this sequence is ungrammatical in (72b), which instead involves a first person accusative. Such otherwise unexplained gaps in the paradigm are reminiscent of the arbitrariness of affix combinations in morphology.

(72) (a) Tis ton parusiase.
her-FEM.3SG.GEN him-MASC.3SG.ACC presented-3SG
'S/he presented him to her.'
(b) *Tis me parusiase.
her-FEM.3SG.GEN me-1SG.ACC presented-3SG
'S/he presented me to her.'

Unlike postlexical clitics, pronominal affixes exhibit rigid ordering with respect to their host and each other. Greek clitics always precede their (verbal) host,[29] while genitive clitics are rigidly ordered to the left of accusative ones (73).

(73) (a) Tu to edosa.
him-MASC.3SG.GEN it-NEUT.3SG.ACC gave-1SG
'I gave it to him.'
(b) *To tu edosa.

Finally, the unavailability of wide scope over co-ordinated verbs is a distinctive property of affixal elements. Compare the ungrammatical (74a), where a verb of type *cl-verb* is co-ordinated with a verb of type *pl-verb*, with the grammatical (74b), which involves two plain verbs. This contrast can be directly accounted for if *tus* is treated as an affix that cannot therefore be associated with a conjunction of hosts; rather, it merely satisfies the subcategorization requirements of *akuse*.

(74) (a) *Tus akuse ke ide.
them-MASC.3PL.ACC heard-3SG and saw-3SG
'S/he heard and saw them.'

[29] Except when the verbal head is either a participle or an imperative, in which case they appear postverbally (Agouraki 1993).

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(b) Akuse ke ide polus anthropus.
heard-3SG and saw-3SG many people-ACC
'S/he heard and saw many people.'

7. Conclusions

We have offered an analysis of CLLD-ed NPs as *links* in the sense of Hendriks & Dekker 1996. Their definition surmounts the vagueness of syntax-based notions of *givenness* or *topic* previously employed in the literature, while it can adequately address problems for the Vallduvian approach to links. Our analysis provides a straightforward explanation for a wide range of data, most notably the invariable association of CLLD-ed NPs with a wide scope reading.

We have further shown that the relation between linkhood (as defined by Hendriks & Dekker) and CLLD is biconditional: not only CLLD-ed NPs function as links, but links in Greek are exclusively associated with CLLD. It was shown that Clitic Doubling and Topicalization do not realize linkhood, while Topicalized NPs are invariably associated with a narrow scope reading, in sharp contrast with their CLLD-ed counterparts.

Our analysis of links is incorporated within a system assuming an Information Structure arising from interface constraints. In particular, we have shown that linkhood relies on the simultaneous employment of diverse structural resources, phonology (absence of accent placement), syntax (left dislocation) and morphology (clitic duplication). The multidimensional architecture of HPSG allowed a straightforward formulation of our linguistic generalizations, sparing our analysis from extending phrase structure.

Appendix

In this appendix, we briefly consider more recent work by Vallduví & Vilkuna (1998), which can be interestingly compared with Hendriks & Dekker (1996). Vallduví & Vilkuna (1998) argue for a notion of *kontrast* that is orthogonal both to (informational) focus (*rhematicity*) and ground (*thematicity*). They adopt Rooth's semantic definition of focus (Rooth 1992, 1996), and describe *kontrast* as follows: 'If an expression **a** is kontrastive, a membership set $M = \{ \ldots, \mathbf{a}, \ldots\}$ is generated and becomes available to semantic computation as some sort of quantificational domain' (1998: 83). Following Krifka (1992), the members of M are required to be 'comparable' to α.

Given Vallduví's (1992) pragmatic definition of focus (rheme) and link (theme), a kontrast may be coextensive with either of the two. In (ia) below, *beer* is a B-accented and topicalized thematic kontrast that denotes a member of, for example, the set of alcoholic drinks. (A natural follow-up for (ia) would be something like … *but whisky I hate*.) Two points of prominence can

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be perceived here: one on the rheme (*I like*), and one on the thematic kontrast. Example (ib) is different from (ia) and can be thought of as a reply to *What drinks do you like? – beer* is now a rheme and, potentially, also kontrastive. Only *beer* is associated with prominence in (ib); the post-rhematic segment of the sentence lacks any prominence.

(i) (a) **Beer** [$_R$ I like]
(b) [$_R$ BEER] I like. (Vallduví & Vilkuna 1998)

Vallduví & Vilkuna's thematic kontrasts by and large coincide with Hendriks & Dekker's subsectional links. Thus, typical CLLD-ed NPs in Greek could alternatively be viewed as simultaneously realizing two discourse functions: (Vallduvian) linkhood *and* kontrast. By defining linkhood and kontrast as two distinct Information Packaging primitives, Vallduví & Vilkuna in principle allow for non-contrastive links as well, which, however, they do not further discuss. One might then wonder whether the broader category of links (in the Vallduvian sense) could be thought of as encompassing topicalized phrases in Greek, which have been shown to resist the type of readings associated with CLLD-ed NPs. However, as shown in sections 4 and 5, the *current-locus-of-update* definition of linkhood is not consistent with the tendency of Greek topicalized objects to induce a non-specific (opaque) or narrow scope reading.

Hendriks & Dekker treat contrast as an epiphenomenon of their definition of linkhood. It should be stressed that their Non-monotone Anaphora Hypothesis does *not* entail that all non-monotone anaphoric elements function as links, but only the reverse.[30] Subsectional anaphora is in turn a subtype of non-monotone anaphora. Therefore, there can be non-subsectional links, as illustrated in (43) (section 4), where CLLD is employed for expressing relational anaphora. Though Hendriks & Dekker's definition, as it currently stands, does not account for Greek topicalized NPs, no aspect of their proposal appears to be *a priori* inconsistent with a broader definition of topichood that would *inter alia* encompass non-specific topics of the Greek topicalization type illustrated in this paper. On the other hand, Hendriks & Dekker's subsectional and/or relational links can hardly be viewed as a subtype of Vallduvian links, with the latter extending to topicalized NPs: as we have already seen, it is not clear how the Vallduvian definition of linkhood can be extended to a satisfactory account of non-specific (opaque) topics. Moreover, there appears to be at least one crucial difference between Hendriks & Dekker's links and Vallduví & Vilkuna's thematic kontrasts: the former subsume both subsectional and relational

[30] For instance, Greek polydefinites, which have been argued to be unambiguously non-monotone anaphoric, can be either foci or links in Information Packaging terms (Kolliakou 1999b). Similarly for restrictive relatives. They are non-monotone anaphoric according to Hendriks & Dekker and may function either as (parts of) links or as (parts of) foci in terms of Information Packaging.

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topics, and thus account for both classical 'contrastive' cases and examples like (43), respectively, whereas the latter deal exclusively with contrastive topichood and cannot be clearly extended to account for cases like (43).

For the purposes of this work, we have adopted Hendriks & Dekker's definition, which makes allowances for relational anaphora and, most crucially, introduces *one* rather than two discourse primitives. Admittedly, our account, as it currently stands, has little to say about Topicalization in Greek, which is thus left open for further research.

REFERENCES

Abeillé, A., Godard, D. & Sag, I. A. (1998). French relative clauses. Ms., Stanford University & CNRS.

Abeillé, A., Godard, D. & Sag, I. A. (1999). Two kinds of composition in French complex predicates. In Hinrichs, E., Kathol, A. & Nakazawa, T. (eds.), *Complex predicates in nonderivational syntax* (Syntax and Semantics **30**). San Diego: Academic Press. 1–41.

Agouraki, Y. (1993). *Spec-Head licensing: the scope of the theory*. Ph.D. thesis, University College London.

Alexopoulou, T. (1997). A discourse-based account of Weak Crossover Effect. In Drewery, A., Kruijff, G.-J. M. & Zuber, R. (eds.), *Proceedings of the Second ESSLLI Student Session*. ESSLLI'97 Summerschool, Aix-en-Provence. (Available at www.iccs.informatics.ed.ac.uk/archive/essli97/contents.html)

Alexopoulou, T. (1999). *The syntax of discourse functions in Greek: a non-configurational approach*. Ph.D. thesis, University of Edinburgh.

Anagnostopoulou, E. (1994). *Clitic dependencies in Modern Greek*. Ph.D. dissertation, University of Salzburg.

Anagnostopoulou, E. (1997). Clitic Left Dislocation and Contrastive Dislocation. In Anagnostopoulou, E., van Riemsdijk, H. & Zwarts, F. (eds.), *Materials on Left Dislocation* (Linguistik Aktuell **14**). Amsterdam: Benjamins. 151–192.

Aoun, J. & Benmamoun, E. (1998). Minimality, Reconstruction, and PF-movement. *Linguistic Inquiry* **29(4)**. 569–597.

Bard, E. G., Robertson, D. & Sorace, A. (1996). Magnitude estimation of linguistic acceptability. *Language* **72**. 32–68.

Bouma, G., Malouf, R. & Sag, I. A. (1997). Satisfying constraints on extraction and adjunction. Ms., University of Groningen & Stanford University. (Available at ftp://csli-ftp.stanford.edu/linguistics/sag/ext-adj-draft.ps.gz)

Bouma, G., Malouf, R. & Sag, I. A. (1998). A unified theory of complement, adjunct, and subject extraction. In Bouma, G., Kruijff, G.-J. M. & Oehrle, R. T. (eds.), *Proceedings of the FHCG98*. Universität des Saarlandes und DFKI, Saarbrücken. 83–97.

Brody, M. (1990). Remarks on the order of elements in the Hungarian focus field. In Kenesei, I. (ed.), *Approaches to Hungarian* (Structures and Arguments **3**). Szeged: JATE. 207–243.

Carlson, G. (1977). *Reference to kinds in English*. Ph.D. dissertation, University of Massachusetts at Amherst.

Carpenter, B. (1992). *The logic of typed feature structures with applications to unification-based grammars, logic programming and constraint resolution* (Cambridge Tracts in Theoretical Computer Science **32**). New York: Cambridge University Press.

Chafe, W. (1976). Givenness, contrastiveness, definiteness, subjects, topics, and point of view. In Li, C. (ed.), *Subject and topic*. New York: Academic Press. 25–56.

Chafe, W. (1983). *Meaning and the structure of language*. Chicago: University of Chicago Press.

Choi, H.-W. (1996). *Optimizing structure in context: Scrambling and Information Structure*. Ph.D. dissertation, Stanford University.

Cinque, G. (1990). *Types of A-bar dependencies*. Cambridge, MA: MIT Press.

Cinque, G. (1993). A null theory of phrase and compound stress. *Linguistic Inquiry* **24**. 239–297.

https://doi.org/10.1017/S0022226702001445 Published online by Cambridge University Press

Dobrovie-Sorin, C. (1990). Clitic doubling, *wh*-movement, and quantification in Romanian. *Linguistic Inquiry* **21(3)**. 351–397.
Engdahl, E. & Vallduví, E. (1996). Information packaging in HPSG. In Grover, C. & Vallduví, E. (eds.), *Edinburgh Working Papers in Cognitive Science* (Studies in HPSG **12**). Centre for Cognitive Science, University of Edinburgh. 1–32.
Gazdar, G. (1981). Unbounded dependencies and coordinate structure. *Linguistic Inquiry* **12**. 155–184.
Gazdar, G., Klein, E., Pullum, G. & Sag, I. A. (1985). *Generalised Phrase Structure Grammar*. London: Basil Blackwell.
Giannakidou, A. (1997). *The landscape of polarity items*. Ph.D. dissertation, University of Groningen.
Ginzburg, J. & Sag, I. A. (2000). *Interrogative investigations: the form, meaning and use of English interrogatives*. Stanford, CA: CSLI.
Gundel, J. K. (1988). *Studies in syntactic typology*. Amsterdam: Benjamins.
Haegeman, L. (1991). *Introduction to government and binding theory*. Oxford: Basil Blackwell.
Halliday, M. A. K. (1967). Notes on transitivity and theme in English (part II). *Journal of Linguistics* **3**. 199–244.
Heim, I. (1983). *Meaning, use and interpretation of language*, Berlin & New York: de Gruyter.
Hendriks, H. & Dekker, P. (1996). Links without locations: information packaging and non-monotone anaphora. In Dekker, P. & Stokhof, M. (eds.), *Proceedings of the 10th Amsterdam Colloquium*, Amsterdam: ILLC/Department of Philosophy. 339–358.
Heycock, C. (1993). Focus projection in Japanese. In González, M. (ed.), *Proceedings of NELS* **24**. Amherst, MA: GLSA. 159–187.
Hirschbühler, P. (1975). On the source of left hand NPs. *Linguistic Inquiry* **6**. 155–165.
Hoffman, B. (1995). Integrating 'free' word order syntax and information structure. In *Proceedings of the 1995 Conference for the European Association for Computational Linguistics*. 245–252.
Horrocks, G. (1983). The order of constituents in Modern Greek. In Gazdar, G., Klein, E. & Pullum, G. K. (eds.), *Order, concord and constituency*. Dordrecht: Foris. 95–111.
Horrocks, G. (1994). Subjects and configurationality: Modern Greek clause structure. *Journal of Linguistics* **30**. 81–109.
Horvath, J. (1995). Structural focus, structural case and the notion of feature-assignment. In Kiss (ed.), 28–64.
Iatridou, S. (1995). Clitics and island effects. In Bhatt, R., Garrett, S., Han, C.-H. & Izvorski, R. (eds.), *Penn Working Papers in Linguistics* **2**. 11–31.
Kallulli, D. (1997). *Clitic doubling in Albanian and Greek*. Ms., University of Durham.
Kamp, H. & Reyle, U. (1993). *From discourse to logic: introduction to model-theoretic semantics of natural language, formal logic and discourse representation*. Dordrecht: Kluwer Academic Publishers.
Kathol, A. (1995). *Linearization-based German syntax*. Ph.D. dissertation, Ohio State University.
Keller, F. & Alexopoulou, T. (2001). Phonology competes with syntax: experimental evidence for the interaction of word order and accent placement in the realization of information structure. *Cognition* **79**. 301–372.
Kempson, R. & Gabbay, D. (1998). Crossover: a unified view. *Journal of Linguistics* **34**. 73–124.
King, P. (1989). *A logical formalism for Head-driven Phrase Structure Grammar*. Ph.D. dissertation, University of Manchester.
King, T. (1995). *Configuring topic and focus in Russian*. Stanford, CA: CSLI Publications.
Kiss, K. E. (1995a). NP-movement, operator movement and scrambling in Hungarian. In Kiss (ed.), 207–243.
Kiss, K. E. (ed.) (1995b). *Discourse configurational languages*. Oxford: Oxford University Press.
Kolliakou, D. (1991). A formal account of clitic doubling depedencies in Modern Greek, M.Sc. thesis, University of Edinburgh.
Kolliakou, D. (1999a). A composition approach to Modern Greek 'weak form' possessives. In Webelhuth, G., Koenig, J.-P. & Kathol, A. (eds.), *Lexical and constructional aspects of linguistic explanation* (Studies in Constraint-Based Lexicalism). Stanford: CSLI Publications. 31–47.
Kolliakou, D. (1999b). Non-monotone anaphora and the syntax of definiteness. In Corblin, F., Dobrovie-Sorin, C. & Marandin, J.-M. (eds.), *Empirical issues in formal syntax and semantics*. The Hague: Thesus. 121–145.

https://doi.org/10.1017/S0022226702001445 Published online by Cambridge University Press

Krifka, M. (1992). A compositional semantics for multiple focus constructions. In Jacobs, J. (ed.), *Informationsstruktur und Grammatik* (Linguistische Berichte Sonderheft **4**). Opladen: Westdeutscher Verlag. 17–53.
Landman, F. (1996). Plurals. In Lappin (ed.), 425–458.
Lappin, S. (ed.) (1996). *Handbook of contemporary semantic theory*. London: Basil Blackwell.
Lasnik, H. & Stowell, T. (1991). Weakest crossover. *Linguistic Inquiry* **22(4)**. 687–720.
Manning, C. D. & Sag, I. A. (1995). *Dissociations between argument structure and grammatical relations*. Ms., Carnegie Mellon University & Stanford University.
Miller, P. (1992). *Clitics and constituents in phrase structure grammar*. New York: Garland.
Miller, P. & Sag, I. A. (1997). French clitic movement without clitics or movement. *Natural Language & Linguistic Theory* **15**. 573–639.
Monachesi, P. (1996). *A grammar of Italian clitics*. Ph.D. dissertation, University of Tilburg.
Philippaki-Warburton, I. (1982). Provlimata shetika me ti sira ton oron stis ellinikes protasis. *Glossologia* **1**. 99–107.
Philippaki-Warburton, I. (1985). Word order in Modern Greek. *Transactions of the Philological Society* **83**. 113–143.
Pierrehumbert, J. B. & Hirschberg, J. (1990). *Intentions in communication*. Cambridge, MA: MIT Press.
Pollard, C. & Sag, I. A. (1994). *Head-driven Phrase Structure Grammar*. Chicago: University of Chicago Press.
Prince, E. F. (1986). On the syntactic marking of presupposed open propositions. In Farley, A. M., Farley, P. T. & McCullough, K.-E. (eds.), *Chicago Linguistic Society* **22**, part 2: *Papers from the Parasession on Pragmatics and Grammatical Theory*. Chicago: Chicago Linguistic Society. 208–222.
Reape, M. (1994). Domain union and word order variation in German. In Nerbonne, C. J. & Netter, K. (eds.), *German in Head-driven Phrase Structure Grammar*. Stanford, CA: CSLI Publications. 151–198.
Reinhart, T. (1982). *Pragmatics and linguistics: an analysis of sentence topics*. Indiana University Linguistics Club.
Rizzi, L. (1995). *The fine structure of the left periphery*. Ms., University of Geneva.
Rooth, M. (1992). A theory of focus interpretation. *Natural Language Semantics* **1**. 75–116.
Rooth, M. (1996). Focus. In Lappin (ed.), 271–297.
Sag, I. A. (1997). English relative clause constructions. *Journal of Linguistics* **33**. 431–484.
Sag, I. A. & Wasow, T. (1999). *Syntactic theory: a formal introduction*. Stanford, CA: CSLI Publications.
Schneider-Zioga, P. (1994). *The syntax of clitic doubling in Modern Greek*. Ph.D. dissertation, University of Southern California.
Steedman, M. (1991). Structure and intonation. *Language* **67(2)**. 260–296.
Steedman, M. (1998). Information structure and the syntax/phonology interface. Ms., University of Edinburgh. (Available at http://www.cogsci.ed.ac.uk/steedman/papers.html)
Tsimpli, M. I. (1995). Focusing in Modern Greek. In Kiss (ed.), 176–206.
Tsimpli, M. I. (1996). *Focus, negation and quantification in Greek*. New York: Cambridge University Press.
Tsiplakou, S. (1998). *Focus in Greek: its structure and interpretation*. Ph.D. dissertation, University of London, School of Oriental and African Studies.
Uriagereka, J. (1995). Aspects of the syntax of clitic placement in western Romance. *Linguistic Inquiry* **26(1)**. 79–123.
Valiouli, M. (1993). Post verbal subjects, reduplicated objects or retopicalisation. In Philippaki-Warburton, I., Nicolaidis, K. & Sifianou, H. (eds.), *Themes in Greek linguistics: papers from the 1st International Conference on Greek Linguistics* (Current Issues in Linguistic Theory **117**). Amsterdam: Benjamins. 85–92.
Vallduví, E. (1992). *The informational component*. New York: Garland.
Vallduví, E. (1995). Structural properties of information packaging in Catalan. In Kiss (ed.), 122–152.
Vallduví, E. & Engdahl, E. (1994). Information packaging and grammar architecture. In Engdahl, E. (ed.), *Integrating informational structure into constraint-based and categorial approaches*. Amsterdam: ILLC. 519–533.
Vallduví, E. & Engdahl, E. (1996). The linguistic realization of information packaging. *Linguistics* **34**. 459–519.

https://doi.org/10.1017/S0022226702001445 Published online by Cambridge University Press

Vallduví, E. & Vilkuna, M. (1998). On rheme and kontrast. In Culicover, P. & McNally, L. (eds.), *The limits of syntax*. New York: Academic Press. 79–108.
Vallduví, E. & Zacharski, R. (1994). Accenting phenomena, association with focus and the recursiveness of focus-ground. In Dekker, P. & Stokhof, M. (eds.), *Proceedings of the Ninth Amsterdam Colloquium*. Amsterdam: ILLC. 683–702.
van Deemter, K. (1994). What's new? A semantic perspective on sentence accent. *Journal of Semantics* **11**. 1–31.
Vilkuna, M. (1995). Discourse configurationality in Finnish. In Kiss (ed.), 244–268.
Zubizaretta, M.-L. (1998). *Prosody, focus and word order*. Cambridge, MA: MIT Press.

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