

**When determiners abound:
implications for the encoding of definiteness***

1. Introduction

The topic of this paper is the encoding of definiteness in Greek. Greek has a definite article, which at first sight seems to be performing the regular function of a definite determiner, in terms of contributing semantic definiteness. Definite noun phrases in Greek obligatorily require the definite article, as indicated in (1a).¹ In fact, the determiner is required even on proper names in argument position. This is shown in (1b):²

- (1) a. *(O) kathijitis eftase protos.
the teacher arrived first
'The teacher arrived first.'
- b. *(O) Janis ine kathijitis.
the John is teacher
'John is a teacher.'

The picture of definiteness in Greek is, however, more complicated than what the above facts would suggest. This becomes obvious when we consider, in addition to more or less straightforward cases such as (1), the phenomenon of determiner spreading or polydefiniteness. Polydefinites are cases where a noun is modified by an adjective, and noun and adjective are each accompanied by a definite determiner, as illustrated in (2a) and (2b). Polydefinites exist in Greek alongside monadic

* Acknowledgments inserted here.

¹ Bare noun phrases are possible in Greek, both singulars and plurals. For detailed recent discussion, see Alexopoulou & Folli (2011). These authors argue that these NPs are arguments and that they do not involve a null D. The interpretation of these nominals is not definite, and according to Alexopoulou & Folli (op.cit.), it is also not identical to indefinite NPs preceded by the numeral *enas-mia-ena* ('one'). We return briefly to bare NPs in section 4.

² Greek distinguishes grammatically between 3 genders (masculine, feminine and neuter). The distinction is also reflected in the shape of the determiners. This fact is irrelevant for our purposes and will be ignored in the discussion and the glossing of the examples. Another property not reflected in our glossing is the case sharing inside the DP in Greek. For discussion of the role of case in connection to polydefinites, see Lekakou & Szendrői 2012.

definites, i.e. instances of ‘regular’ adjectival modification inside a definite nominal, illustrated in (2c).³

- (2) a. i asimēnia i pena
 the-FEM.NOM silver the-FEM.NOM pen
- b. i pena i asimēnia
 the-FEM.NOM pen the-FEM.NOM silver
- c. i asimēnia pena
 the-FEM.NOM silver pen
 ‘the silver pen’

As we will see in detail in section 3, polydefinites are not *semantically* polydefinite. For example, the polydefinite in (2a) and (2b) refers to a single unique entity, and in particular one at the intersection of the set of silver entities and the set of pens. This means that in (2a)/(2b), it cannot be the case that both determiners make a semantic contribution. In other words, polydefinites are only polydefinite in the morphosyntax, not in the semantics. Despite existing differences between monadic definites and polydefinites, reviewed briefly in section 2, in terms of definiteness the constructions are equivalent: they both contain only one source of definiteness. Moreover, note that, morphologically, there is no distinction between the multiple determiners in (2): both within the polydefinite construction and across polydefinites and monadic definites the shape of determiners is identical. This applies in all cases, i.e. across all case-number-gender combinations. In other words, from the point of view of morphology, we are dealing with one and the same element in all these instances.

Given these facts, the following questions are raised for Greek: (a) how is definiteness achieved in polydefinites, and (b) what is the nature of definiteness more in general, in light of the polydefinite construction? What enables the definite article in Greek to occur in polydefinites as well as monadic definites? These are the questions we focus on in this work. To the best of our knowledge, the question of definiteness across polydefinites and monadic definites has not been explicitly addressed in the existing literature.

³ The terms ‘polydefinite’ and ‘monadic definite’ are due to Kolliakou (2004).

The paper is structured in the following way. In section 2, we briefly present the properties of the polydefinite construction and the analysis we assume for it. In section 3 we turn to the implications of this analysis for the encoding of definiteness in the language. We will argue that the semantic effects usually associated with definite determiners (e.g. existence and uniqueness assertion/presupposition) are not achieved in Greek through the overtly realized definite article(s). The overtly realized determiners are merely reflexes of a phonologically null operator that scopes over the Greek DP and contributes an iota operator (cf. Zeijlstra 2004 on the encoding of negation in negative concord languages). In other words, the Greek definite determiner never makes a semantic contribution in terms of definiteness. In section 4 we address two potential problems for our proposed view of definiteness in Greek. In section 5 we conclude.

2. Polydefinites

2.1 The core properties

It has been well-established that polydefinites display a number of properties not shared by their monadic counterparts (see in particular Kolliakou 1999, 2004; Campos & Stavrou 2004; Alexiadou 2006). We discuss here the most important properties of polydefinites, and briefly review the account we rely on to capture these properties. For detailed exposition, see Lekakou & Szendrői 2012.

First and foremost, the obvious fact about polydefinites is the multiple occurrence of the definite determiner. Deriving this property is a far from trivial task, as extensively demonstrated in Lekakou & Szendrői (2012). (The question of the interpretation of the multiple determiners will preoccupy us in the following section.) Secondly, there is an ordering freedom in the polydefinite construction, as seen in (2) above, which is not available in the monadic definite. As (3) shows, monadic definites only allow the adjective in prenominal position.⁴

⁴ The ordering freedom persists when more than one adjective is present, as discussed in Androutsopoulou (1995), Alexiadou & Wilder (1998). All possible (six) word orders are acceptable in those cases.

- (3) a. i asimēnia pena
 the silver pen
 ‘the silver pen’
 b. *i pena asimēnia
 the pen silver

Thirdly, contrary to adjectives in monadic definites, adjectives in the polydefinite construction are obligatorily interpreted restrictively. The example in (4) from Kolliakou (2004) illustrates this: because as a matter of fact all cobras are poisonous, the adjective *dilitiriodis* ‘poisonous’ cannot be interpreted restrictively when applied to the noun *kobres* ‘cobras’, and therefore determiner spreading is illicit. This restriction also entails that non-subsective adjectives like ‘former’ (see (4b)) and non-intersective interpretations of otherwise ambiguous adjectives like ‘beautiful’ (see (4c)) are unavailable in the polydefinite construction (see also Campos & Stavrou 2004).

- (4) a. Idame tis dilitiriodis (#tis) kobres.
 saw.1PL the.ACC poisonous the.ACC cobras
 ‘We saw the poisonous cobras.’
 b. O proin (*o) proithipurgos pethane.
 the.NOM former the.NOM prime minister died.3SG
 ‘The former prime minister died.’
 c. Ides tin orea ti xoreftria?
 saw-3SG the.ACC beautiful the.ACC dancer
 ‘Did you see the beautiful dancer?’ (intersective reading only)

Finally, only the definite determiner may spread. There is no counterpart of the polydefinite construction with indefinites (cf. Alexiadou & Wilder 1998, Stavrou 2009, Velegrakis 2011):

- (5) a. *mia pena mia asimēnia
 a pen a silver
 b. *mia asimēnia mia pena
 a silver a pen

2.2 An account in terms of DP-intersection

In a series of papers (Lekakou & Szendrői 2007, 2009, 2012) we have highlighted a parallel between polydefinites and close appositives—a parallel also noted by Stavrou (1995); Kolliakou (2004); Panagiotidis & Marinis (2011)—and have proposed a unified account of both phenomena. Close appositives systematically pattern like polydefinites with respect to the properties identified in the previous section. Consider the close appositive in (6) (from Stavrou 1995).

- (6) a. o aetos to puli
the eagle the bird
b. to puli o aetos
the bird the eagle
'the eagle that is a bird'

O aetos to puli is a possible close appositive in Greek, in virtue of the fact that in this language the word for 'eagle' is homophonous to the word for 'kite'. Using a close appositive helps disambiguate the intended referent of *o aetos*.⁵

Like polydefinites, close appositives in Greek allow multiple determiners (unlike close appositives in e.g. English). Note that here too this concerns the morphosyntax and not the semantics: in (6) reference is made to a unique entity that is a member of the intersection of two sets. A second shared property, as shown in (6), is the ordering freedom: both possible orders are allowed in close appositives in Greek. Moreover, like polydefinites, close appositives involve a restrictive interpretation. As we saw in (6), one nominal in the close appositive restricts the denotation of the other one. When this is not possible, the close appositive is ill-formed. For instance, consider the example in (7a) from Stavrou (1995), which involves a dialectal and the standard Greek word for the blueberry tree. It is impossible to form a close appositive out of these two elements, because the two referents within the whole appositive are identical. This makes it impossible for one subpart of the appositive to restrict the other. The same effect can be observed, of course, if the two items belong to the same dialectal variety, as in (7b):

⁵ For most speakers, polydefinites admit more than one adjective. Close appositives pattern alike. For discussion of the iteration of the operation that we suggest derives both constructions, see Lekakou & Szendrői (2012) (section 3.1 especially).

- (7) a. *i sikaminja i murja (Stavrou 1995)
the bluberry tree_{dial} the blueberry tree_{stand}
- b. *i sikaminja i sikaminja
the bluberry tree_{dial} the blueberry tree_{stand}

Finally, close appositives are also only possible with the definite determiner, as observed by Stavrou (1995):

- (8) a. *enas aetos ena puli
one eagle one bird
- b. *ena pulienas aetos
one bird one eagle

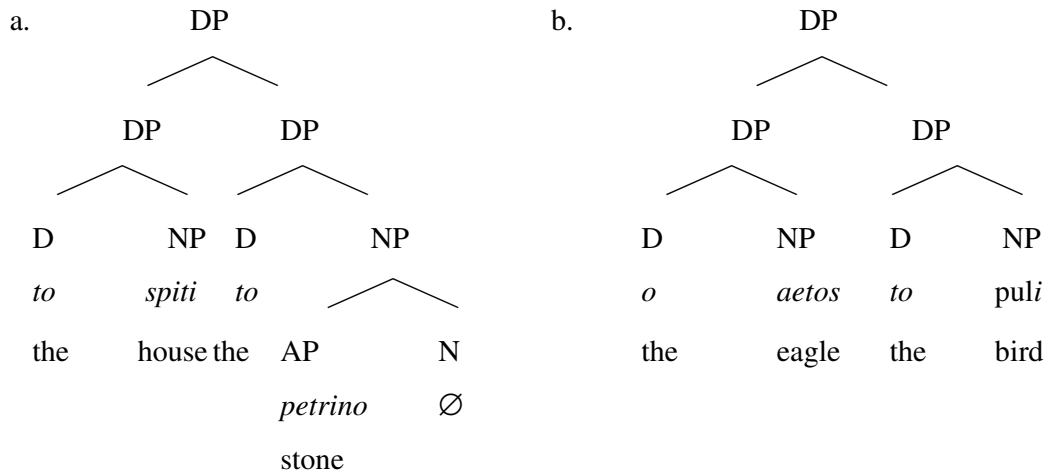
Summing up, it turns out that, as exotic as they may seem from a cross-linguistic perspective, polydefinites look much less alien from within Greek: close appositives share the core properties identified for polydefinites in the previous section.

In the analysis of Lekakou & Szendrői (2012), definite determiners head DPs and thus polydefinites and close appositives are complex DPs consisting of multiple DPs. This is illustrated in (9) (to be revised in the next section).⁶ The only way in which polydefinites differ from close appositives is that one of the two DPs contains noun ellipsis.⁷

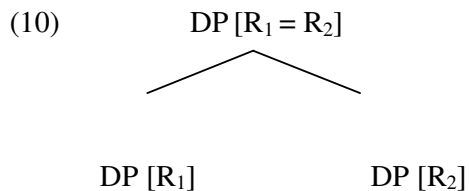
⁶ See Lekakou & Szendrői (2012) for discussion of the lack of evidence in favour of syntactic asymmetry within the polydefinite, and for discussion of the lack of a unique head that projects at the highest DP level in (9a) and (9b).

⁷ Noun ellipsis has several effects (e.g. ensuring that it is the ‘adjectival’ DP that is restrictive on the other one), which we cannot go into here. Some of these effects have been taken, erroneously in our view, to argue for a FocusPhrase inside the DP. See Lekakou & Szendrői (2007, 2012), Szendrői (2010) for extensive discussion of this question from both a theoretical and an empirical perspective.

(9)



The operation that combines the two DPs is identification of R(eferential)-roles. We follow the relevant literature in assuming that the R-role is the external thematic role of nouns and the element that enables nominals to refer (Williams 1981, Zwarts 1993, Baker 2003). We follow Higginbotham (1985), who first discussed identification between thematic roles in the context of attributive modification, in assuming that the interpretation of thematic identification involving the R-role of nominals is tantamount to set intersection; this seems reasonable, given that *o aetos to puli* is something that is both an eagle and a bird. The operation of R-role identification is schematically illustrated in (10):



The operation of R-role identification does not apply freely. It is restricted by a ban against vacuous application (a ban which can be thought of as a kind of economy principle): R-role identification applies only when its output is not identical to (part of) its input. This derives the restrictive interpretation involved within the larger constituent (polydefinite/close appositive). For detailed discussion of the operation and its restriction, see Lekakou & Szendrői (2012).

3. Expletive determiners in Greek

3.1 Determiners in polydefinites, monadic definites and proper names

In the previous section we argued that polydefinites and close appositives alike consist of DP subparts, and that between the two DP subparts set intersection takes place. For this to be possible, it has to be the case that DPs denote sets and not individuals (at least in Greek). In other words, the determiner heading each sister DP in polydefinites/close appositives has to be doing very little semantic work, and in particular it has to *not* contribute an iota operator. This is exactly what we think is going on in Greek: the definite determiner is expletive. This is a conclusion that is forced upon us independently of the particular analysis that we are advocating, once we take a closer look at the interpretation of the constructions at hand, and in particular of the definite determiners within them.

For concreteness, consider the following example of a polydefinite from Kolliakou (2004). The example contains an exchange between two speakers, one of whom has been considering several objects as Christmas presents for common friends. Among the candidates are a silver pen, a golden pen, and a golden bracelet. The final decisions have been made, and the following dialogue ensues:

- (11) a. Speaker A: *Ti pires tu Janni ja ta christujena?*
what took.2SG the Jannis.GEN for the Christmas
'What did you get Jannis for Christmas?'
- b. Speaker B: *(Tu pira) tin asimenia pena.*
him.GEN took.1SG the silver pen
'(I got him) the silver pen.'
- c. Speaker A: *Ti pires tis Marias?*
what took.2SG the Maria.GEN
'What did you get for Maria?'
- d. Speaker B: *(Tis pira) ti chrisi tin pena.*
her.GEN took.1SG the golden the pen
'(I got her) the golden pen.'

What interests us is the polydefinite *tin pena ti chrisi* 'the pen the golden' in (11d). The context is set up in such a way that there does not exist a unique pen, but rather two pens. This means that the definite determiner on the noun in the polydefinite in

(11d) cannot be semantically contentful. In fact, given that the adjective is always interpreted restrictively in the polydefinite construction, it will always be the case that the noun-referent *cannot* be unique. So, at least one determiner in the construction cannot be the one contributing semantic definiteness. What about the determiner on the adjective? The context contains two golden entities. So it is not the case that the determiner on the adjective is semantically real either.⁸ Since there is no unique pen in this context, nor is there a unique golden entity, neither overt determiner can be responsible for the semantic effect of uniqueness.

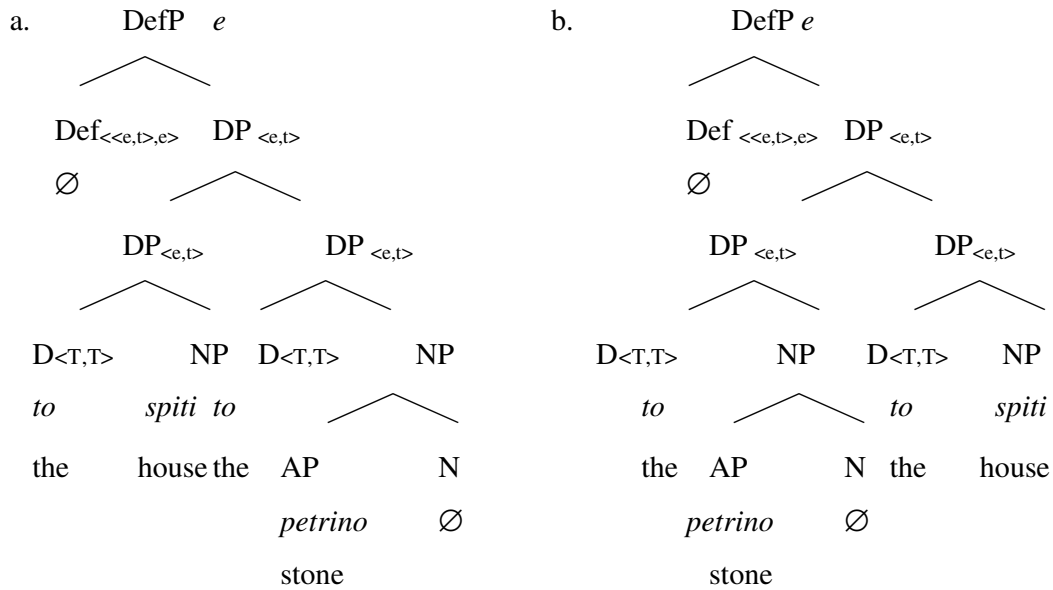
If none of the overtly realized determiners is semantically contentful, where does definiteness reside in the polydefinite? We propose that semantic definiteness is contributed by a phonologically null operator, which is hosted in a projection above the big DP of polydefinites and close appositives. We dub this projection DefP, standing for Definiteness Phrase. It is in Def that the iota operator, taking properties and returning individuals, resides. Overtly realized D heads make no relevant semantic contribution; they simply encode the identity function ($\langle T, T \rangle$). NP projections denote sets (type $\langle e, t \rangle$), as is standardly assumed. Our proposal is illustrated in (12) (which is a revised version of (9) above):⁹

⁸ Since the noun in the polydefinite construction is not necessarily restrictive on a previously mentioned noun, the polydefinite in (11d) would be felicitous even if the context included only one golden entity.

⁹ In line with its minimal semantic content, the definite determiner in Greek can co-occur with the numeral (sometimes considered, erroneously in our view, as the indefinite determiner), as well as with other quantificational elements, such as ‘all’, ‘many’ and ‘few’. The following examples illustrate this point. Example (i) is from Lekakou & Szendrői (2012), example (ii) is a Greek proverb:

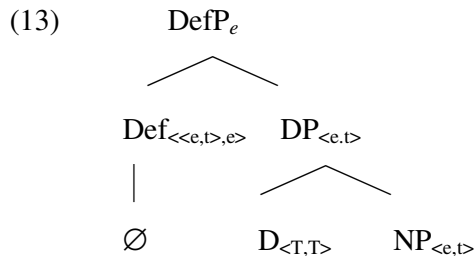
- (i) O enas drastis sinelifthi.
the one perpetrator arrested.3SG.NONACT
‘One of the perpetrators was arrested.’
- (ii) Ta pola loja ine ftoxia.
the many words are poverty
‘Too many words is not such a good thing.’

(12)



The kind of approach to definiteness that we are pursuing here has been proposed by Zeijlstra (2004) for negation in strict negative concord languages (like Greek), where multiple negative elements do not cancel each other out but contribute a single semantic negation. For these languages, it is argued by Zeijlstra that overtly negative elements are not semantically negative, but they simply mark the presence of a covert semantic negator in the clause.

With this as the analysis of definite determiners in polydefinites, what can be said for monadic definites? We see no reason not to assume that what we have just argued to be the case in the polydefinite is generalized to the monadic case. No instance of the definite determiner in Greek makes a semantic contribution of definiteness. The source of semantic definiteness is always a phonologically null element scoping over DP. The picture that emerges for monadic definites is given in (13):



Is there any independent evidence for D being semantically expletive in Greek, and for the concomitant Def-D split? The answer is positive. Recall that proper names in Greek obligatorily require the definite determiner. The determiner is morphologically identical to the one accompanying common nouns (contrary to e.g. the Catalan preproprial determiner):

- (14) *(O) Janis ine kathijitis.
the John is teacher
'John is a teacher.'

In line with Kripke (1980) (and contra most recently Elbourne 2005 and Matushansky 2009), we assume that proper names refer rigidly, and are thus of type e . The determiner they combine with cannot be of type $\langle\langle e,t \rangle, e \rangle$, as that would lead to a type mismatch. We need a determiner that has very minimal semantic content, which is what we postulate for the Greek determiner in general. Since the Greek definite determiner evidently *can* be semantically inert, given its co-occurrence with proper names, it is best to assume that it *must* be inert, i.e. that it is *always* inert, and that something else contributes definiteness whenever that is the case.¹⁰ In terms of language acquisition, the obligatory presence of articles on proper names is sufficient to trigger a split Def-D structure in the language learners' grammar.

To summarize, in this section we have provided a proposal for the encoding of definiteness in Greek that is consonant with the semantics of polydefinites, namely with set intersection taking place among DP categories and with the fact that neither determiner is 'real' in the construction. We have proposed that overt definite determiners in Greek do not encode semantic definiteness, but rather definiteness is due to the workings of a phonologically null head. We take the obligatory presence of the definite determiner in proper names as independent evidence for our proposal that the determiner is semantically inert in Greek. We extend our proposal to monadic definites, which also employ a covert source of definiteness and a semantically expletive D head. The three instances of the definite determiner – with monadic

¹⁰ For proper names, in other words, we do not assume that DefP is projected, since the name is itself inherently definite. The Greek definite determiner can thus combine with both predicate nominals (i.e. common nouns) and with individual-denoting nominals (i.e. proper names). This kind of flexibility is not unexpected, given the minimal semantics we assign to it.

definites, with polydefinites, and with proper names – are all given the same treatment. This level of generality is not only desirable conceptually. It also makes sense from an empirical, and in particular from a morphological point of view: in all these guises, the determiner is morphologically one and the same creature.

In what follows, we present a particular syntactic implementation of this approach to definiteness, as well as more evidence in its favour, in terms of more constructions with multiple determiners yet single referents. Before doing this, however, it is worth contemplating what the alternative to the proposed view of definiteness could be. It could be argued that something special is going on with the D heads in polydefinites and close appositives (possibly, but not necessarily linked to the obligatory presence of determiners with proper names), but otherwise the definite determiner is generally semantically definite in Greek. In brief, Greek determiners are lexically ambiguous. This has been, implicitly or explicitly, the prevalent view in the literature on polydefinites: for most, if not all, existing treatments of polydefinites, the idea has been that one determiner is a (semantically real) D head, and the other is either semantically expletive (as in, presumably, the analyses of Alexiadou & Wilder 1998, Kariaeva 2004) or realizes a distinct syntactic head (as in the analyses of Androutsopoulou 1995, Campos & Stavrou 2004, or Ioannidou & den Dikken 2009). However, the distribution of the alleged two types of determiner within the polydefinite construction, and also in monadic definites, has to be stipulated and even so, it is unclear that the observed semantic effects can be accounted for.¹¹

Take for instance the analysis of Alexiadou and Wilder (1998), where polydefinites underlyingly involve a reduced relative clause. One determiner is external to the relative clause structure, and an additional one is inside it, occupying the subject position. This is shown in (15a). Predicate raising (which must be obligatory, as (15a) reflects an ungrammatical base order) within the relative clause delivers one order of the polydefinite, cf. (15b), and raising of the relative-clause-subject to the edge of the outer DP delivers the other order, as shown in (15c).

(15) a. [_{DP} the D [_{CP} [_{IP} [_{DP} the book] [_{AP} red]]]]

¹¹ To be fair, most existing analyses of polydefinites do not aim at providing a semantic treatment of the determiners, but at capturing the properties of the construction. However, explaining the multiplicity of determiners in polydefinites is obviously linked to the issue of their semantic contribution. In other words, it is important to evaluate the different syntactic claims made also from the perspective of the theory of definiteness.

- b. [_{DP} the D [_{CP} [_{AP} red] [_{IP} [_{DP} the book] t_{AP}]]] ‘predicate raising’
 c. [_{DP} [_{DP} the book] the D [_{CP} [_{AP} red] [_{IP} t_{DP} t_{AP}]]] DP-raising to SpecDP

Regarding the encoding of definiteness, it seems that what needs to be stipulated is that the external D is the semantically real one and the internal one is the expletive head. (This would perhaps be welcome on independent grounds: it could be thought of as bringing the analysis more in line with the original Kaynean analysis of relative clauses, which crucially featured NP and not DP subjects inside the reduced relative clause.) This will work for (15a) and (15b), but the scope of definiteness is not right in (15c), where the external head is now situated too low. In sum, it is impossible for one and the same D to be the ‘real’ one across (15).¹² It seems that an additional head is required, which scopes over the whole construction. In that case, all D heads in (15) will be semantically expletive. This is exactly what we have proposed.

The biggest shortcoming of the alternative view briefly considered here, that the Greek definite determiner is systematically ambiguous between a semantically expletive and a semantically real one, is that the postulated ambiguity receives no independent justification in the language. Given the complete morphological overlap between the alleged two sets, it is hard to see how a child may successfully acquire them. This, in our view, constitutes a real challenge for an alternative to what we have been pursuing here.

3.2 An implementation in terms of definiteness agreement

Polydefinites and close appositives constitute one kind of construction where the morphosyntax and the semantics of definiteness ostensibly part ways:¹³ if we are right, the locus of semantic definiteness in these cases is in one place, but its morphosyntactic reflex(es) is/are elsewhere. This is precisely because D in Greek does not host material that is semantically definite. In some sense, in other words, we

¹² The problem is aggravated in the case of polydefinites that involve more than one adjective, with a concomitant increase in determiners; which of the two adjectival ones would be the ‘real’ one in e.g. (i), and why?

(i) to podilato to kokino to kenurjo
 the bicycle the red the new
 ‘the new red bicycle’

¹³ For monadic definites we have not included empirical, but only theoretical arguments in favour of the same state of affairs holding.

are dealing with definiteness agreement (cf. Kariaeva 2004). We can think of Def as hosting a [+inter, +def] feature, and as agreeing with one or more D head, which realize the feature combination [-inter, +def]. We can formulate the following generalization as regulating the distribution of these heads:

(16) **Definiteness concord generalisation (DCG)**: In Def-D split languages, any nominal element in the scope of a definite operator must be marked for definiteness by the presence of the syntactic marker for definiteness, D.

The generalisation is schematically represented as follows:

(17) *Def [D NP.... *(D) NP]

This simply says that in Def-D split languages, the presence of D marks definiteness and the absence of D marks *lack* of definiteness. So, the latter (i.e. absence of D) is not possible in the scope of Def. To give an example of how the DCG works, consider polydefinites. Here, the locus of semantic definiteness in Def takes two nominals in its scope. Given the DCG in (16), both must bear a definite article. So, all the nominal elements in a polydefinite must be marked for definiteness, i.e. bear a definite article.

In fact, the DCG applies in other structures as well. For instance, in pseudopartitives (PsP), it has been independently acknowledged (see e.g. Alexiadou, Haegeman & Stavrou 2007) that there is a single referent. In PsP, the more substantial nominal is sometimes the second noun (N₂) (which delivers the so-called quantity reading), while other times the real ‘head’ is the first noun (N₁) (which yields the so-called container reading). These two options are illustrated in (18) from English:

- (18) a. The cup of **sugar** was strewn onto the floor. (quantity reading)
b. The **cup** of sugar smashed on the floor. (container reading)

Regardless of which N is the more substantial, the two nominals in a PsP do not refer independently. Indeed, as expected if in languages like English or Dutch the locus of semantic definiteness is the article itself, no article may occur on N₂ inside the construction. This is because the presence of the article would turn NP₂ into an

independently referring nominal and the construction would no longer be pseudo-partitive.

- (19) a. the bottle of (*the/*my) wine
b. de vles (*de) vijn

If the DCG is correct, we expect determiner spreading to show up in pseudo-partitives in Greek. This is indeed the case as Alexiadou et al note:

- (20) To bukali *(to) aroma epese ke espase. (container reading)
the bottle the perfume fell and broke
'The bottle of perfume fell down and broke.'
- (21) To bukali *(to) aroma xithike sto patoma (quantity reading)
the bottle the perfume spilled on.the floor
'The bottle of perfume spilled on the floor.'

We remain agnostic as to what the internal structure of PsP's is (see Alexiadou et al 2007 for extensive discussion of the options). What is crucial for any syntactic analysis adopted is that it reflect that the whole construction picks out a single referent. In our terms, this means that the construction is in the scope of a single reference-assigning head, D in English, or Def in Greek.

In fact, as Alexiadou et al (op.cit.), further note, determiner spreading occurs in other domains too, such as PP modifiers like (22)-(23) and even certain genitives, (24)-(25).

- (22) O anthropos me *(ta) jalja bike sto katastima.
the person with the glasses entered in.the shop
'The person with the glasses entered the shop.'
- (23) Enas anthropos me (*ta) jalija bike sto katastima.
a person with the glasses entered in.the shop
'A person with glasses entered the shop.'
- (24) to sinolo *(ton) ghramatikon katighorion
the set the.GEN grammatical.GEN categories.GEN
'the set of grammatical categories'

- (25) ena sinolo (*ton) gramatikon katigorion
 a set the.GEN grammatical.GEN categories.GEN
 ‘a set of grammatical categories’

What unifies all these constructions, again, is that semantically there is a single referent, although morphosyntactically we have multiple D’s.¹⁴ Our split Def-D analysis, placing the locus of reference assignment in a position above D, together with the DCG, account for all these cases. In all of these structures, a single Def takes the whole construction in its scope (even if internally these complex DPs that are complements to Def do not have identical structure – we do not want to commit ourselves to any specific analysis of the constructions above). This allows for an interpretation involving a single referent, and by the DCG, will give rise to determiner spreading.¹⁵

4. Apparent challenges

¹⁴ The construction in (22)/(23) is the focus of Stavrou & Tsimpli (2009), who first make the observation that agreement in terms of definiteness is required in this construction. These authors also offer experimental support in favour of this generalization. However, they discard the option that this kind of multiple definite marking is similar to that found in polydefinites/close appositives, because in their view *ta jalja* ‘the glasses’ in example (22) above introduces a discourse referent. We disagree with this, and follow Danon (2008) instead, who explicitly argues that *glasses* is a property-denoting noun in this case: the entire DP has a single referent, the unique glasses-bearing individual. This aligns the construction with polydefinites, close appositives and PsP’s, in terms of definiteness.

¹⁵ Our approach in terms of the DCG has as its starting point the account proposed by Danon (2008), who proposed something similar on the basis of Hebrew data such as the following:

- (i) a. ha-seret al *(ha-)milxama lo mat’im le-yeladim.
 the-movie about the-war NEG suitable to-children
 ‘The movie about a/the war is not suitable for children.’
 b. seret al (ha-)milxama lo mat’im le-yeladim.
 movie about the war NEG suitable to-children
 ‘A movie about a/the war is not suitable for children.’

Greek DPs differ in a number of respects from Hebrew DPs (more limited distribution of bare singulars in Greek, lack of generic readings for bare singulars in Greek, etc). Moreover, there seem to exist some differences in the two paradigms of multiple (in)definiteness, which we will not address here.

Although in our view quite insightful, the account pursued in Danon rests on the assumption that all nouns in Hebrew bear a [+/def, u] feature. This ultimately detracts from the explanatory power of the theory developed (which aims to also capture the obligatory multiple definiteness in case of adjectival modification). By contrast, our account of Greek multiple definiteness makes the D part of a split Def-D pair, and not nouns in general, the culprit.

There are two ways in which our proposal could be shown to be inadequate: one would involve arguing that the definite determiner does, in general, make the relevant semantic contribution (even though it doesn't make it in polydefinites). The other way would involve arguing that proper names should be analysed differently and in particular more in line with definite descriptions; this would undermine the rationale that proper names in Greek can provide independent evidence for the expletive nature of the determiner. We discuss how each kind of counterargument could be constructed, and refuted, in turn.

4.1 Joint and split readings under coordination

Longobardi (1994) argued that the number of determiners in Italian equals the number of referents in examples like (26a) and (26b), where subject agreement on the verb tracks the number of referents. On the basis of examples such as these, there seems to be a one-to-one correspondence between definite determiners and referential expressions.

- (26) a. La mia nuova efficiente segretaria e tua ottima collaboratrice *stanno/sta
the my new efficient secretary and your excellent collaborator are/is
uscendo.
left
'My new efficient secretary and your excellent collaborator has left.'
- b. La mia nuova efficiente segretaria e la tua ottima collaboratrice stanno/*sta
the my new efficient secretary and the your excellent collaborator are/is
uscendo.
left
'My new efficient secretary and your excellent collaborator have left'

The pattern in (26) would receive a straightforward explanation if indeed the D-head would be directly responsible for creating an *e*-type entity. However, Heycock and Zamparelli (henceforth H & Z) (2000) have shown that the situation is more complicated than this. Conjunction of nominal phrases allows in principle two different kinds of readings: a joint reading, where a unique (singular or plural) individual instantiates different properties, and a split reading, where multiple referents are being picked out. Many languages allow only a joint reading when

singular noun phrases are conjoined, but when conjunction operates on plural noun phrases split readings become possible, even with a single determiner present. In terms of the split-joint distinction, therefore, (26a) involves a joint reading and (26b) a (trivial) split reading. Italian allows a split reading with plurals, even if coordination takes place under a single determiner. An example of this is given in (27), from H & Z (op.cit., ex (38)).

- (27) a. I {numerosi / pochi / venti} generali americani e diplomatici jugoslavi
the numerous/few/twenty generals americans and the diplomats Yugoslavian
alla conferenza concordavano su un solo punto.
at the conference agreed on a single point
‘The numerous/few/20 American generals and Yugoslavian diplomats at the
conference agreed on a single point.’
- b. {Molti / Vari / Parecchi} amici di Carlo e parenti di Francesca
many / various / several friends of Carlo and relatives of Francesca
si incontrarono per la prima volta al matrimonio.
REFL met for the first time at the wedding
‘Many/various/several friends of Carlo and relatives of Francesca met for
the first time at the wedding.’

So, the number of determiners does not directly correlate with reference in the noun phrases; this holds for a number of languages including Italian, French, Spanish and German, at least for plurals. Some languages even allow split readings for singular cases: English, Dutch, and Finnish are such languages. So, cross-linguistically, it does not seem to be the case that the right way to analyse the unavailability of split readings under the determiner to be due to the unavailability of referring expressions under the determiner.

To account for the split and joint readings without postulating a cross-linguistically lexically ambiguous coordinator, Heycock & Zamparelli (op.cit) put forward an account, which is technically based on the idea that the coordinator gives rise to set product. Without going into the technicalities of the proposal, the direct consequence of this account is that when the coordinator applies to predicative categories, it will mimic the operation of set intersection. So, joint readings arise. This is how we can account for examples like *My [best friend and colleague] is sitting next to the*

director. The coordinator applying to the predicative nominals delivers (in a technically nontrivial way) a meaning where the individual in question must have both the property of being a friend and a colleague. In contrast, when the coordinator applies to (sets of) individuals, it will create a set product based on the sets corresponding to the two denotations of the conjuncts. Thus, split readings arise.

Let us now turn to the corresponding Greek data. Adapting Longobardi's (1994:620) Italian examples for Greek, Alexiadou et al. (2007: 67-68) argue that the number of determiners equals the number of referents in examples like (28a) and (28b). So, Greek, like the Romance languages, does not allow singular split readings under the definite article.

(28) a. Irthe/ *irthan o andiprosopos tis dikastikis arxis ke
 came-3SG/ came-3PL the delegate the.GEN court and
 proedros tis eforeftikis epitropis.
 chair the.GEN elective committee
 'The representative of the court and chair of the elective committee has
 arrived.'

b. Irthan/ *irthe o andiprosopos tis dikastikis arxis ke
 came-3PL/ came-3SG the delegate the.GEN court and
 o proedros tis eforeftikis epitropis.
 the chair the.GEN elective committee
 'The representative of the court and the chair of the elective committee have
 arrived.'

In our terms, (28a) involves co-ordination of NPs, i.e. below the Def-D structure, whereas (18b) involves co-ordination of two DefPs. It comes as no surprise that the former involves a joint reading and the latter a split reading. What is interesting about Greek is that it seems to be quite unique in completely disallowing split readings under the definite determiner, i.e. also with co-ordination of plural nominals. This has been acknowledged (but not accounted for) in the relevant literature (H&Z 2000; King and Dalrymple 2000). Example (29) illustrates this state of affairs.¹⁶

¹⁶ The examples in (29) can of course receive a (pragmatically unlikely) joint reading.

- (29) a. *i gates ke kotes
 the-PL cats and chickens

Heycock and Zamparelli (2000: ex 116a)

- b. *I fili ke exthri tu Jani simfonisan se ena simio.
 the-PL friends and enemies the.GEN John agreed.3PL on one point

In Greek, split readings can only apply if coordination takes place at the highest level, among DefPs. Lower in the structure, coordination leads to joint readings. Recall that Heycock and Zamparelli proposed that coordination is uniformly set product applying to sets of individuals. But when it applies to predicative categories, it mimics set intersection. Recall also that on our proposal, Greek DPs do not denote individuals, but predicates. Individuals are only available if DefP is present. Thus, we predict that for split readings to obtain, coordination should only apply to DefPs. This explains the unavailability of split readings for plural noun phrases under a single determiner, i.e. (29). Singular split readings, such as (28a) are also excluded in the same way.¹⁷

So, on our proposal the lack of split readings in the case of plural definite coordination in Greek is easily accommodated. This is important because previous analyses have not been able to account for this (H&Z 2000; King and Dalrymple 2000). But, unfortunately, this cannot be the whole story. This is because even though Greek does not allow split readings under the definite determiner, it has been observed that it allows split readings with what H & Z (op.cit.) call vague adjectival numerals, i.e. expressions like ‘several’, ‘(a) few’, ‘some’, etc. Compare the grammatical examples in (30), which contain such expressions, to the corresponding ungrammatical ones with the definite determiner in (29).

¹⁷ One may reasonably wonder whether co-ordination at the DP-level, below a single DefP projection, is possible, i.e. [_{DEFP} Def [_{&P} DP & DP]]. This would be similar to polydefinites/close appositives, except for the presence of conjunction. The expected interpretation, given our semantic treatment of DPs in Greek as predicates, is a joint one. However, such examples are not possible. Presumably, such a construction is blocked by the availability of conjunction at the NP level, which produces the same effect. A similar filter is used in H & Z (2000: 244, ex 101) to account for the lack of a split reading of conjoined singular nouns in Italian.

- (30) a. merikes gates ke kotes
some-PL cats and chickens

adapted from Heycock and Zamparelli (2000: ex 116b)

- b. Meriki fili ke exthri tu Jani simfonisan se ena simio.
some friends and enemies the.GEN John agreed on one point
'Some of John's friends and enemies agreed on one thing.'

Although we do not have a full explanation, we would like to suggest that the key to understanding this data comes from understanding indefinites and in particular bare nominals in Greek in general, which is currently a matter of some controversy. According to Alexopoulou & Folli (2011), Greek bare nouns, singular and plural, are nominal arguments, albeit functionally impoverished as compared to definite DPs: they are NumPs, and do not involve a phonologically null (definite or indefinite) D head (see also Stavrou 2003 for a similar analysis of partitives).¹⁸ However, the precise conditions that license bare nouns (and especially bare singulars) in Greek are very much under investigation at the moment, as is the overall question of whether the relevant data cannot be handled by semantic incorporation, along the lines of for instance Espinal & McNally (2011), who have discussed bare singulars in Catalan and Spanish. This question is addressed in Lazaridou-Chatzigoga (2011).¹⁹ If bare nouns in Greek involve semantic (or pseudo-)incorporation, they denote properties, and not individuals. In that case, something else, situated higher in the extended nominal structure, must be responsible for individuation. This is compatible with our analysis, which maintains a predicate denotation of Greek DPs. If, however, Num is responsible for individuation in the nominal domain (and delivers argumenthood for bare nouns), as argued by Alexopoulou & Folli, it can presumably also supply the plural individuals necessary for the split reading in examples like (19) and (20).

¹⁸ The claim advanced by Alexopoulou & Folli (op.cit.) is that D is not required to turn nominal predicates into arguments/individuals in Greek, because in this language Number is doing that work. Greek is thus minimally different from Italian, in terms of the typology proposed in Chierchia (1998): Greek Num is doing the work performed by Italian D.

¹⁹ See also Gehrke & Lekakou (2012) for an analysis of Greek bare nouns in so-called P-drop contexts (Ioannidou & den Dikken 2009, Terzi 2010) as involving incorporation. On this analysis, at least some bare nouns in Greek denote properties and not individuals. The landscape of Greek bare nouns appears thus to be mixed, and in any event constitutes an area that has only recently started to be systematically explored.

However, only (20), without a D layer, allows a split reading. Thus, it seems to us inevitable that noun phrases involving vague numerals have a different syntax when they occur bare than when they occur under a definite D. We leave an elaboration of this issue for future research.

We thus claim that in Greek definite noun phrases, coordination at a level lower than Def would lead to set intersection. Only at the level that *e*-type individuals are created, i.e. at the DefP –level, can we obtain a split reading by set product. Hence the cross-linguistically unexpected unavailability of split readings for plural coordinate noun phrases under a single determiner. In addition, the syntax and semantics of indefinites must differ from that of definites in ways that allow for the availability of split readings with indefinites involving vague numerals.

4.2 *The denotation of proper names*

We have been following the philosophical tradition that treats proper names as *e*-type individuals. Thus, unlike common nouns, proper names are not predicative. The obligatory determiner on proper names is thus semantically vacuous. It is a syntactically necessary marker without a type shifting function.

However, as Dora Alexopoulou (p.c.) brought to our attention Greek allows proper names in predicative positions. One such example is given in (31). Here, the determiner must be absent:

- (31) I Dora den ine Xristina, na vafi ke na stolizi
the Dora NEG is Christina SUBJ paint-3SG and SUBJ decorate-3SG
pasxalina avga me tis ores.
easter eggs with the hours
‘Dora is not like Christina, to spend hours painting and decorating Easter eggs.’

In fact, she gives the following minimal pairs. In (32a) *Evropi* ‘Europe’ is used predicatively, while (32b) is an identificational copular sentence.

- (32) a. I Galia dhen ine Evropi.
the France not is Europe
‘France is not (like) Europe.’

- b. I Galia dhen ine i Evropi.
 the France not is the Europe
 ‘France is not (the sum of) Europe’.

As Alexopoulou points out, the predicative use of the proper name disallows the presence of the article, while the identificational use requires it. Recall that we assume that the denotation of proper names is type e . In the predicative use of proper names we propose that an operator is present, for concreteness, Partee’s (1986) IDENT, taking individuals (type e) and lifting them to the singleton set containing them (type $\langle e, t \rangle$) or to the ‘property of being that entity’ (Partee 1986: 122). Possibly, this type-shifter competes syntactically with the definite determiner, i.e. is merged directly with the proper name NP, whence the lack of the definite determiner in (32). The obtained interpretation is the right one. In (32a) the meaning is that Greece is not *Europe-like*.

It turns out that proper names with this *x-like* meaning seem to behave syntactically like common nouns (see Marmaridou 1989 for this observation and a similar analysis). They can appear under the indefinite article as in (33a) and they can even become definite descriptions as in (33b). Crucially, the meaning of *o Iudas* ‘the Judas’ in (33b) is ‘the unique individual in the context that has Judas-like properties’, i.e. the traitor among us.

- (33) a. O Nikos ine Iudas.
 the Nikos is Judas
 ‘Nikos is a Judas/traitor.’
 b. Irthe o Iudas tis pareas.
 arrived-3SG the Judas the.GEN company
 ‘The Judas of our company [the traitor among us] arrived.’

This, we propose is derived by applying the operator IDENT to the proper name, and then subsequently applying the Def operator:

- (34) $[\text{Def } \emptyset [\text{DP the } [\emptyset_{\text{IDENT}} \text{Iudas}]]]$ = the unique individual in the context with Judas-like properties

This is not the only possible way to account for the data. One may go the opposite way and assume that the denotation of proper names is predicative and the definite article is a type shifter that turns it into an *e*-type individual. So, (32a) would simply be an example of a predicative use of the proper name, while (32b) involves an *e*-type individual created by the iota operator associated with the definite determiner. However, for such an analysis to take shape, we need to look at specific proposals in the literature that advocate a predicative denotation for proper names. One such proposal was put forward by Matushansky (2009). The starting point of her analysis is the syntax and semantics of naming constructions. She notices that in many languages naming predicates select small clauses, where the name itself acts as the predicate of the small clause, while the named individual is the subject. Based on this she ascribes to the proper name *Alice* of (35) the meaning in (36):²⁰

(35) I baptized the girl Alice.

(36) [Alice] = $\lambda x \in D_e. \lambda R_{\langle e, \langle n, t \rangle \rangle}. R(x)$ (/æIIs/)

where *n* is a sort of the type *e* (a phonological string)

In this theory, proper names are two-place predicates, taking as arguments an individual and a naming convention *R* (in (33) the matrix verb *baptize* specifies the naming convention). It is easy to see that this analysis does not derive the meaning of (32): the article-less proper name does not make reference to the phonological form, but rather to the property of being Europe(-like). So, even in a theory that treats proper names as predicates, the analysis of such examples must involve an extra operator like IDENT.

Besides, there are discrepancies between proper names and common nouns, which are unexpected under the view of the former as definite descriptions. In identificational copular constructions, coordination between two definite descriptions

²⁰ We find the proposed semantics correct for naming constructions. But we have doubts that naming predicates would be the right source for the semantics of proper names in general. It seems to us that naming constructions are special cases, where indeed the phonological form of the name is salient. But outside presentational or naming contexts the phonological string does not seem to be accessible. Compare:

- (i) Zygmund took the parcel to the post office. #(Incidentally,) I LIKE names with three syllables.
- (ii) My new partner is called Zygmund. I LIKE names with three syllables.

involving common nouns is well-formed. So is coordination of bare common nouns under a single definite article – the familiar joint reading –, so long as the properties denoted by the common nouns are closely associated with each other (e.g. friend and colleague; secretary and collaborator; etc.), see (37b). At the same time, proper names can only be coordinated high. This is illustrated by (38) where the context is that several aliases identify the same spy, Spiros Alexiou.

- (37) a. I Maria ine i gramateas ke i synergatis mu.
the Maria is the secretary and the collaborator me-GEN
‘Maria is my secretary and my collaborator.’
- b. I Maria ine i gramateas ke synergatis mu.
the Maria is the secretary and collaborator me-GEN
‘Maria is my secretary and collaborator.’
- (38) a. O Spiros Alexiou ine o Petros Dimitriou ke o Alexis Nikolaou.
the Spiros Alexiou is the P D and the A N.
‘Spiros Alexiou is Petros Dimitriou and Alexis Nikolaou.’
- b. *O Spiros Alexiou ine o Petros Dimitriou ke Alexis Nikolaou.
the Spiros Alexiou is the Petros Dimitriou and Alexis Nikolaou.

If proper names have the same denotation as common nouns, the discrepancy between (37b) and (38b) needs to be explained.

5 Conclusion

Relying on our analysis of polydefinites as an instance of close apposition, we have proposed that the Greek determiner is semantically expletive in the sense that it does not contribute an iota operator. This solution has the advantage of treating definiteness in monadic and polydefinite constructions in a uniform way, and of not relying on ad hoc lexical ambiguity for the Greek definite determiner. After presenting our analysis of definiteness based on our treatment of polydefinites, we widened the empirical coverage of our proposal to include pseudo-partitives, PP-complements and agreeing genitives; three constructions that share the characteristic

of involving multiple nominal phrases corresponding to a single referent. Finally, we put our analysis of definiteness in Greek to the test by considering two potentially problematic data sets: one regarding the nature of the link between reference assignment and the definite article (Longobardi 1994, Heycock and Zamparelli 2000); the other concerning naming predicates (Matushansky 2009). We suggested how the data can be handled while maintaining the approach to definiteness in Greek that we have pursued here.

References

- Androutopoulou, Antonia. 1995. The licensing of adjectival modification. In Proceedings of *WCCFL 14*:17-31.
- Alexiadou, Artemis & Chris Wilder. 1998. Adjectival modification and multiple determiners. In A. Alexiadou & C. Wilder, eds., *Possessors, Predicates and Movement in the DP*, 303–332. Amsterdam: John Benjamins.
- Alexiadou, Artemis, Liliane M. V. Haegeman and Melita Stavrou 2007. *Noun phrase in the generative perspective*. (Studies in Generative Grammar 71.) Berlin: Mouton de Gruyter.
- Alexopoulou, Dora & Raffaella Folli. 2011. Topic-strategies and the internal structure of nominal arguments in Greek and Italian. Ms. University of Cambridge and University of Ulster.
- Baker, Mark. 2003. *Lexical Categories*. Cambridge: Cambridge University Press.
- Campos, Hector. & Melita Stavrou. 2004. Polydefinites in Greek and Aromanian. In O. Tomic, ed., *Balkan syntax and semantics*, 137–173. Amsterdam: John Benjamins.
- Chierchia, Gennaro. 1998. Reference to kinds across languages. *Natural Language Semantics* 6: 339-405.
- Danon, Gabi. 2008. Definiteness agreement with PP modifiers. In Sharon Armon-Lotem, Gabi Danon and Susan Rothstein (eds.), *Current Issues in Generative Hebrew Linguistics*. Amsterdam: John Benjamins. 137-160.
- Elbourne, Paul. 2005. *Situations and individuals*. Cambridge, MA: MIT Press.
- Espinal, Maria-Theresa & Louise McNally. 2011. Bare nominals and incorporating verbs in Spanish and Catalan. *Journal of Linguistics* 47: 87-128.
- Ioannidou, Alexia & Marcel den Dikken. 2009. P-drop, D-drop, D-spread. In C. Halpert, J. Hartmann and D. Hill (eds.), *Proceedings of the 2007 Workshop in Greek Syntax and Semantics at MIT*. MIT Working Papers in Linguistics 57. 393-408.
- Kariaeva, Natalia. 2004. Determiner spreading in Modern Greek: split-DP hypothesis. Ms. Rutgers University.
- Kripke, Saul. 1980. *Naming and necessity*. Blackwell, Oxford.
- Kolliakou, Dimitra. 2004. Monadic definites and polydefinites: their form, meaning and use. *Journal of Linguistics* 40:263–333.
- Lazaridou-Chatzigoga, Dimitra. 2011. The distribution and interpretation of bare singular count nouns in Greek. Presented at the Weak Referentiality Workshop, Utrecht 9 September 2011.
- Lekakou, Marika & Kriszta Szendrői. 2007. Eliding the noun in close apposition, or Greek polydefinites revisited. *UCL Working Papers* 19:129-154.

- Lekakou, Marika & Kriszta Szendrői. 2009. Close apposition with and without noun ellipsis: an analysis of Greek polydefinites. In M. Stavrou-Sifaki, D. Papadopoulou & M. Theodoropoulou (eds.), *Proceedings of 29th Meeting of the Linguistics Department of Aristotle University of Thessaloniki*. Thessaloniki: Manolis Triantafyllidis Foundation. 151-166.
- Lekakou, Marika & Kriszta Szendrői. 2012. Polydefinites in Greek: ellipsis, close apposition, and expletive determiners. *Journal of Linguistics*.
- Lekakou & Gehrke 2012. How to miss your preposition. To appear in *Proceedings of 33rd Meeting of the Linguistics Department of Aristotle University of Thessaloniki*. Thessaloniki.
- Longobardi, Giuseppe. 1994. Reference and proper names: a theory of N-movement in syntax and Logical Form. *Linguistic Inquiry* 25:609-665.
- Marmaridou, Sophia. 1989. Proper names in communication. *Journal of Linguistics* 25:355-372.
- Matushansky, Ora. 2009. On the linguistic complexity of proper names. *Linguistics and Philosophy* 31(5), 573-627.
- Panagiotidis, Phoevos. 2003. Empty nouns. *Natural Language and Linguistic Theory* 21: 381-432.
- Panagiotidis, Phoevos, & Thodoris Marinis. 2011. Determiner spreading as DP-predication. To appear in *Studia Linguistica*.
- Partee, Barbara. 1986. Noun phrase interpretation and type-shifting principles. In J. Groenendijk & M. Stockhof (eds.), *Studies in Discourse Representation Theory and the Theory of Generalized Quantifiers*. Dordrecht: Foris. 115-143.
- Stavrou, Melita. 1995. Epexegesis vs. apposition. Scientific Yearbook of the Classics Department. Aristotle University of Thessaloniki.
- Stavrou, Melita. 2003. 'Semi-lexical nouns, classifiers and the interpretation(s) of the pseudopartitive construction'. In M. Coene & Y. D' Hulst (eds.), *From NP to DP*. Amsterdam: John Benjamins. 329-354.
- Stavrou, Melita. 2009. Postnominal adjectives in Greek indefinite noun phrases. To appear In L. Brugè, A. Cardinaletti, G. Giusti, N. Munaro, C. Poletto, eds., *Functional Heads. Papers in honour of Guglielmo Cinque for his 60th anniversary*.
- Stavrou, Melita & Ianthi Tsimpli. 2009. Definite agreement in complex noun phrases. In M. Stavrou-Sifaki, D. Papadopoulou & M. Theodoropoulou (eds.), *Proceedings of 29th Meeting of the Linguistics Department of Aristotle University of Thessaloniki*. Thessaloniki: Manolis Triantafyllidis Foundation. 193-206.

- Szendrői, K. 2010. A flexible approach to discourse-related word order variations in the DP. *Lingua* 120(4): 864-878.
- Terzi, A. 2010. "On null spatial Ps and their arguments". *Catalan Journal of Linguistics* 9, 167-187.
- Williams, Edwin. 1981. Argument structure and morphology. *The Linguistic Review* 1:81–114.
- Williams, Edwin. 1989. The anaphoric nature of theta-roles. *Linguistic Inquiry* 20:425–256.
- Zeijlstra, H. 2004. *Sentential negation and negative concord*. PhD Diss., University of Amsterdam.
- Zwarts, Joost. 1993. *X-bar Syntax, S-bar Semantics*. PhD Diss, University of Utrecht.