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## **Acquiring the Left Periphery of the Modern Greek DP<sup>1</sup>**

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### **1. Introduction**

Generative research on language acquisition within the Principles and Parameters framework based on the Functional Parameterisation Hypothesis (cf. Atkinson, 1992) has provided a formal account of the acquisition of lexical vs. functional categories. Accordingly, early child grammar consists of lexical-thematic categories. This idea originates in Radford (1986) and has been further developed among others by Lebeaux (1988), Guilfoyle & Noonan (1992), Radford (1990), Tsimpli (1992/1996) and Powers (1996), who have claimed that early child speech lacks functional categories. More recently, Platzack (2001-a), adopting Rizzi's (1997) ideas for an articulated structure of the Left Periphery of the clause, developed the idea that normally developing children (along with children with SLI, adults acquiring a second language and Broca's aphasic patients) display a non target-like production of the syntax of the highest structural level, the CP layer (the Left Periphery of the clause), while their production of lower structural levels, the IP layer and the VP layer (the Core Domain of the clause), is target-like.

This paper aims to contribute to this issue by extending the discussion of the acquisition of the Left Periphery to the nominal domain. The analysis of acquisition data from Greek normally developing children will show that children pass through a stage in which they do not use structures involving the Left Periphery of the nominal domain, while they do use structures involving the Core Domain (the FP layer and the NP layer). This will be taken as evidence for the unavailability of the Left Periphery of the DP in early child speech. Furthermore, it will be shown that children pass through a stage in which there is no evidence for the FP (which corresponds to the IP layer in the clausal domain). This observation is similar to those made by Clahsen, Eisenbeiss & Penke (1996) and Eisenbeiss (2000) for the acquisition of the DP in German. The extension of Rizzi's views for the Left Periphery of the clausal domain to the Left Periphery of the nominal domain provides a principled account for the development of the acquisition of the DP, which, unlike previous approaches to the same issue, such as Radford (1990), Clahsen, Eisenbeiss & Penke (1996) and Eisenbeiss (2000), explains the specific developmental route based on the different types of information encoded in each one of the three structural layers.

The paper is organised as follows: Section 2 is concerned with Rizzi's (1997) analysis of the Left Periphery of the clausal domain and with Platzack's (2001-b) idea of multiple interfaces. Section 3 extends the tri-partition of the clausal domain to the tri-partition of the nominal domain and provides an analysis of phenomena that are related to the Core Domain and Left Periphery of the nominal domain in Modern Greek, namely case and number marking in nouns, the Possessive Construction and Determiner Spreading. Data on the acquisition of these phenomena are presented in Section 4. Finally, Section 5 summarises the

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The TopP and FocP layers are present only when a constituent bears topic or focus features. In this case they are sandwiched between ForceP and FinP, as shown in (4) below.

(4)ForceP – (TopP) – (FocP) - FinP - IP – VP

Moreover, given the possibility for a sentence to have two topics in the sense that the complement of a topic head (the comment) may be in a topic-comment relation with another constituent, the TopP can undergo free recursion. The same is not true for the FocP, since the complement of a focus head (the presupposition) cannot function as the focus of some other constituent.

## 2.1 Acquiring the Left Periphery of the clause

Numerous studies have shown a dissociation of the acquisition of phenomena, which are related to higher structural levels, like the CP- and the TP-layer and the acquisition of phenomena, which are related to lower structural levels: the IP- and VP-layer. Data supporting the idea that a fully-fledged C-system is not active early in development has been provided by Penner & Mueller (1992) and Mueller, Crysmann & Kaiser (1996) among others. Similar results have been reported in Wexler (1996) for Danish, Dutch, English, Faroese, French, German, Hebrew, Irish, Norwegian and Swedish normally developing children, and in Rice & Wexler (1996) for children with SLI.

More recently, Platzack (2001-a) has viewed the results of such studies in the context of Rizzi's analysis of the Left Periphery, suggesting that children acquiring their native language (along with children with SLI, adults acquiring a second language and Broca's aphasic patients)<sup>2</sup> have difficulties with structures involving the Left Periphery, but not with structures involving lower structural layers (the IP- and the VP-layer). More specifically, Platzack showed that in Swedish and German, these groups of speakers do not adhere to the constraint that the main clause must contain a finite verb, violate verb second, omit subjects after finite verbs and omit wh-words. These structures are associated with the C-domain. Contrary to this observation, the same groups of speakers do not seem to have difficulties with phenomena that are associated with the V- and I-domain: there are no word order violations in infinitival verb-direct object, and verbal particle-direct object constructions.

## 3. Core Domain vs. the Left Periphery of the nominal domain

Since Horrocks & Stavrou (1986; 1987) and Abney (1987), the inclusion of argumental nominal phrases into a DP shell is commonly accepted. The DP layer in the nominal domain parallels the CP layer in the clausal domain. Further, Rizzi's idea of an articulated structure of the CP has been extended to the structure of the DP (Haegeman, this volume). Accordingly, the DP in the nominal domain parallels the FinP in the clausal domain: the DP encodes referentiality, i.e. it anchors nominal reference, whereas the FinP encodes finiteness, i.e. it anchors the event in time. Both the DP and the FinP serve the function of linking (a referent or an event) to the speaker's universe of discourse. Topicalisation and focalisation in the nominal domain can be represented through a TopP and FocP, as in the clausal domain.

As far as the specifier of the DP is concerned, there is a consensus that in Modern Greek (MG) and in Hungarian this is a non-thematic position which serves as an escape hatch for

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<sup>2</sup> For similar observations on the comprehension and production of Broca's aphasics see Grodzinsky (2000).

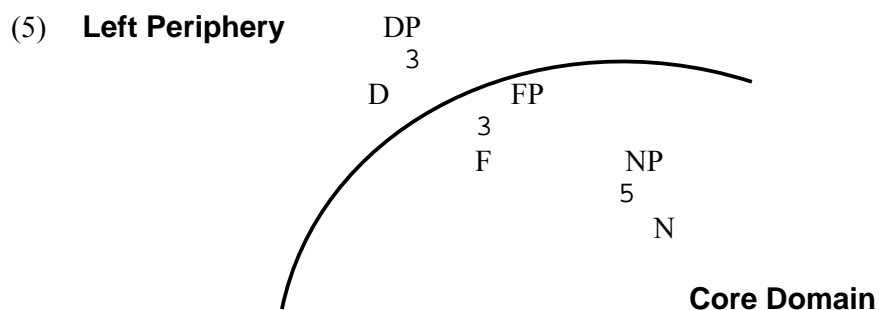
movement involving topicalisation and focalisation<sup>3</sup> (see Horrocks & Stavrou, 1987; Szabolsci, 1994; Haegeman, this volume).

The parallel between the clausal and the nominal domain is not restricted to the maximal projection of the nominal domain. Several analyses have suggested the presence of a functional category within the nominal domain, which is parallel to the IP in the clausal domain and is related to nominal inflection (see Ritter, 1991).

Karanassios (1990) was the first to propose an internal functional projection within the DP in MG. Since then, several studies have adopted such a functional projection, however, both the label and its featural content have been a matter in dispute. Departing from the labelling issue, there are three predominant views for the feature specification of this functional projection: according to Karanassios (1990) and Stavrou (1996), it hosts the number feature of the nominal phrase, according to Tsimpli & Stavrakaki (1999) it hosts case and phi-features, and in Alexiadou & Stavrou (1997) and Alexiadou (2001) it is related to number and case.

In the present paper, the latter view will be adopted. This is heavily based on the morphological properties of the DP in MG (see Ralli, 1994; 1998). According to Ralli, case and number in MG are features of the inflectional affix, while gender is an inherent feature of the noun stem. Given that, the gender feature is instantiated in the terminal node  $N^0$ , while the features of number and case show up in the head of the intermediate projection.<sup>4</sup>

Given the parallel between the DP and the CP, the NP is the lexical layer of the nominal domain, which is parallel to the VP. The FP is the inflectional layer of the nominal domain, which is parallel to the inflectional layer of the clausal domain, the IP. Finally, the DP is parallel to the CP and represents the Left Periphery of the nominal domain, as illustrated in (5) below.



The next sections will deal with phenomena which are related to the Core Domain and the Left Periphery of the MG nominal domain, i.e. case and number marking in nouns, the Possessive Construction and Determiner Spreading.

<sup>3</sup> Or possibly Spec,TopP and Spec,FocP, respectively.

<sup>4</sup> An anonymous reviewer addressed the question as to how Greek nouns would be identified within the model of Distributed Morphology, according to which lexical categories are defined as being the complement of some functional head. In line with Alexiadou (2001), I would argue that the functional category hosting the number feature, i.e. FP, constitutes the domain that nominalises abstract roots in MG and, thus, identifies words as nouns.

### 3.1 Case and Number Marking in Nouns

As shown in the previous section, FP belongs to Core Domain of the DP and is related to case and number marking. Let us now look more closely at morphological marking in nouns.

MG has a rich nominal inflectional system with four cases (nominative, accusative, genitive, vocative), two numbers (singular, plural), three genders (masculine, feminine, neuter) and eight inflectional classes (Ralli 1998). Nouns are marked for case, number and gender, but there is a relatively high degree of syncretism, which is not equal in all inflectional classes (ICs). Based on the number of different word-forms, nouns have traditionally been divided into two main classes, *diptota* which have two distinct forms (two-way distinction) and *triptota* which have three distinct forms (three-way distinction) (Kourmoulis, 1964). IC 1 corresponds to the class of *triptota*, while ICs 2 to 8 to the class of *diptota*. The relation between ICs, gender, case contrast and the number of different word-forms is illustrated in Table 1.

Table 1: IC, gender, case contrast and number of singular word-forms

IC	Gender	Case Contrast	word-forms
IC 1	} masculine	NOM vs. GEN vs. ACC (VS. VOC)	three (four)
IC 2		NOM vs. GEN/ACC/VOC	
IC 3	} feminine	} GEN vs. NOM/ACC/VOC	} two
IC 4			
IC 5			
IC 6	} neuter		
IC 7			
IC 8			

Within the class of *triptota* (IC 1), nouns have three to four different word-forms, whereas within the class of *diptota* nouns have two forms. For example, in IC 2 and IC 3 there is a distinction between a word-form ending on the stem vowel vs. a word-form ending on the suffix *-s*, as shown in Table 2.

Table 2: Noun Inflection: *triptota* vs. *diptota* in the singular

	IC 1	IC 2		IC 3
<b>Nom.</b>	anthrop-os	baba-s	<b>Nom</b>	} mama
<b>Gen.</b>	anthrop-u	} baba	<b>Acc.</b>	
<b>Acc.</b>	anthrop-o		<b>Voc.</b>	
<b>Voc.</b>	anthrop-e		<b>Gen.</b>	

Nouns ending in the stem vowel represent unmarked forms of the inflectional paradigm of nouns (Christofidou, 1998; Stephany, 1997; Marinis, 2000/in print).<sup>5</sup>

<sup>5</sup> According to Thomadaki (1994), nouns in IC 2 are specified by the feature  $[\pm \text{NOM}]$ , nouns in ICs 3 to 8 with the feature  $[\pm \text{GEN}]$ , and nouns in IC 1 with the features  $[\pm \text{NOM}]$  and  $[\pm \text{GEN}]$ .

As discussed in the previous section, morphological marking in nouns is related to the FP layer of the nominal domain. Within the analysis of Alexiadou (2001) case/number checking takes place through movement of the noun from  $N^0$  to  $F^0$ , as shown in (6a) vs. (6b) below.

(6a)	DP		(6b)	DP	
	<sup>3</sup>		<sup>3</sup>		
	D <sup>0</sup>	FP		D <sup>0</sup>	FP
	g	<sup>3</sup>	g	<sup>3</sup>	
	<i>to</i>	F <sup>0</sup>	<i>to</i>	F <sup>0</sup>	NP
	<i>the</i>		<i>the</i>	g	<sup>5</sup>
		NP		<i>vivlio</i> <sub>i</sub>	<i>t</i> <sub>i</sub>
		<sup>5</sup>		<i>book</i>	
		<i>vivlio</i>			
		<i>book</i>			

$N^0$  to  $F^0$  movement is an instance of movement within the Core Domain of the DP. If this movement is operative in child speech, we expect children to use nouns with case/number marking. If, on the other hand, children do not apply this type of movement, the prediction is that they will use nouns in the unmarked form, i.e. ending on the stem vowel. Finally, if there is dissociation between the acquisition of the Core Domain and the Left Periphery of the DP, we expect children to pass through a stage in which they use nouns marked for case/number, while phenomena which are related to the Left Periphery of the DP are not present in their speech. The next two sections illustrate two constructions involving the Left Periphery of the DP, the Possessive Construction and Determiner Spreading.

### 3.2 The Possessive Construction

The Possessive Construction in MG displays two linearisations, Possessum > Possessor and Possessor > Possessum, as shown in examples (7) and (8) below. Both possessor and possessum have to be preceded by the definite article, i.e. the Possessive Construction requires the use of multiple determiners. Finally, within the possessor DP, both the determiner and the noun are marked for genitive.

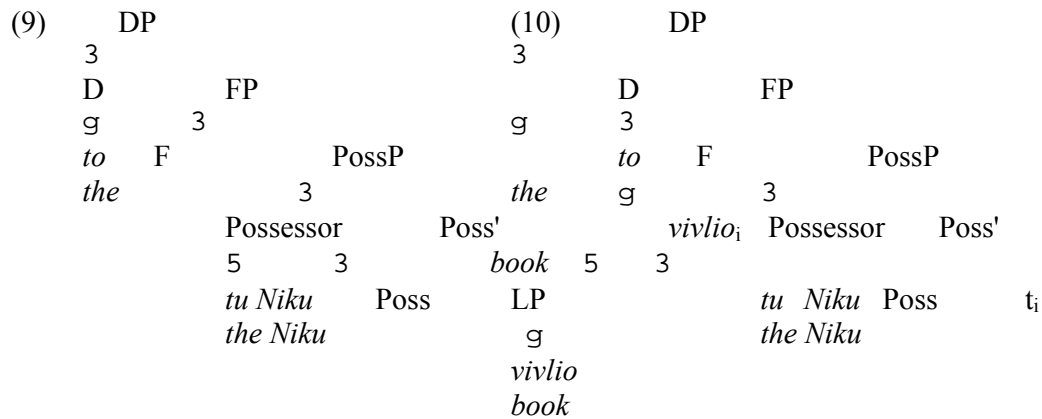
- (7) Pira **to** **vivlio** **tu** **Niku**. (Possessum > Possessor)  
 took **the-ACC** **book-ACC** **the-GEN** **Niku-GEN**  
 'I took Niko's book.'
- (8) Pira **tu** **Nikou** **to** **vivlio**. (Possessor > Possessum)  
 took **the-GEN** **Niku-GEN** **the-ACC** **book-ACC**  
 'I took Niko's book.'

Crucially, example (8) above involves either focalisation or topicalisation. In the case of focalisation, the DP in genitive '*tu Nikou*' has focal stress and it is the focus of the complex DP. In the case of topicalisation, there is no stress on the DP '*tu Nikou*' which is the topic of the complex DP whereas the DP '*to vivlio*' is the comment.

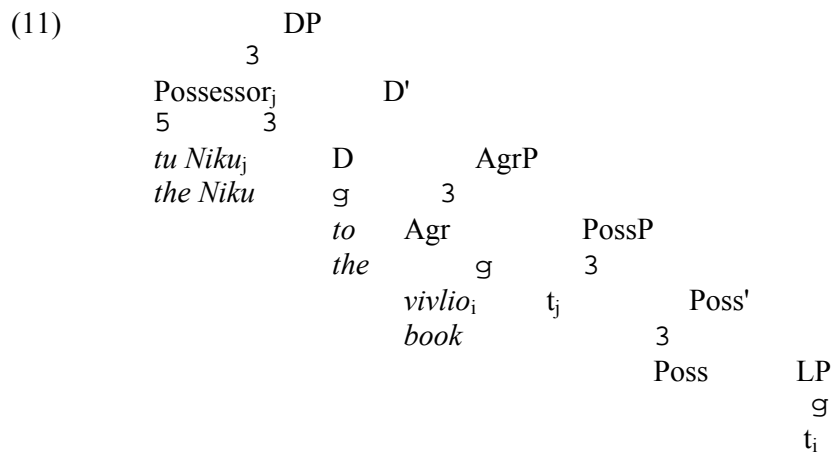
In this chapter, I will adopt Alexiadou (2001) analysis of the MG Possessive Construction. According to Alexiadou's analysis, (alienable) possessors<sup>6</sup> are licensed by an external functional head, PossP. Alienable possessors, like the ones in examples (7) and (8) above, are analysed by Alexiadou (2001) in the following way: the possessor is base-generated/merged

<sup>6</sup> Alexiadou (2001) argues for a different analysis for inalienable and alienable possessors. Due to the lack of data from inalienable possessors in the corpora used in this study, this paper will address only the acquisition of alienable possessors.

within the PossP and the possessum within a lexical projection (LP), as shown in (9) below. The possessum moves to F<sup>0</sup>, in order to check number and case (see Section 3.1), as shown in (10) below. The result of this movement is the order Possessum > Possessor.



The order Possessor > Possessum is the result of a subsequent movement of the possessor to the specifier of the DP for focalisation or topicalisation, as illustrated in (11) below.



The next section deals with a further phenomenon, which involves the Left Periphery of the DP, namely Determiner Spreading.

### 3.3 Determiner Spreading

Determiner Spreading (DS) is an instance of adjective modification. In MG, when used attributively, adjectives in definite DPs precede the noun, as shown in example (12) below.

- (12) a Aghorasa to **meghalo** spiti.  
 bought the **big** house  
 'I bought the big house.'

In the phenomenon of DS, definite articles precede both the adjective and the noun, as shown in example (13) below, or even every adjective modifying the noun, when the noun is modified by more than one adjective, as shown in (14) below.

- (13) Aghorasa to **meghalo** to spiti.  
bought the **big** the house  
'I bought the big house.'
- (14) Aghorasa **to** meghalo **to** petrino **to** spiti.  
bought **the** big **the** stone-made **the** house  
'I bought the big house, made of stone.'

As far as the interpretation of DPs with DS is concerned, DPs with DS do not have exactly the same reading as DPs without (Kolliakou, 1998). Adjectival modification with a single definite article may have either a restrictive or a non-restrictive interpretation; adjectival modification involving DS, on the other hand, may only have a restrictive reading.

With respect to the distributional properties of DS, in the presence of extra definite articles, more than one order of the DP constituents is possible, as shown in examples (15a)-(15e) below, but in the absence of extra definite articles, the order is rigid, as illustrated in examples (16a) and (16b) below.

- (15) a Aghorasa **to** meghalo **to** petrino **to** spiti.  
bought **the** big **the** stone-made **the** house  
b Aghorasa **to** meghalo **to** spiti **to** petrino.  
bought **the** big **the** house **the** stone-made  
c Aghorasa **to** petrino **to** spiti **to** meghalo.  
bought **the** stone-made **the** house **the** big  
d Aghorasa **to** spiti **to** meghalo **to** petrino.  
bought **the** house **the** big **the** stone-made  
e Aghorasa **to** spiti **to** petrino **to** meghalo.  
bought **the** house **the** stone-made **the** big  
'I bought the big house, made of stone.'
- (16) a Aghorasa **to** meghalo petrino spiti.  
bought **the** big stone-made house  
b\* Aghorasa **to** spiti meghalo petrino.  
bought **the** house big stone-made  
'I bought the big house, made of stone.'

Moreover, in the presence of some but not all possible definite articles, word order variation is restricted, as shown in (17a) and (17b) below. The noun can be used without an extra definite article, when it does not precede adjectives, as shown in (18a) below, and when it precedes some but not all adjectives, as illustrated in example (18b) below.

- (17) a\* Aghorasa **to** spiti meghalo **to** petrino.  
bought **the** house big **the** stone-made  
b\* Aghorasa **to** spiti **to** meghalo petrino.  
bought **the** house **the** big stone-made  
'I bought the big house, made of stone.'
- (18) a Aghorasa **to** meghalo **to** petrino spiti.  
bought **the** big **the** stone-made house  
b Aghorasa **to** meghalo spiti **to** petrino.  
bought **the** big house **the** stone-made  
'The big house, made of stone.'

In the present paper, I will adopt the analysis of Alexiadou & Wilder (1998) and will treat the phenomenon of DS as Determiner Complementation.<sup>7</sup> Alexiadou & Wilder analyse APs in DS as full clauses with a CP and an IP projection. This idea is based on Kayne's (1994) analysis of adjectives modifying nouns as Reduced Relative Clauses. Extending Kayne's analysis of Reduced Relative Clauses, APs are according to Alexiadou & Wilder predicates of a CP, which is the complement of D. The surface word order D-Adj-N is the result of movement of every AP to the specifier of the corresponding CP, as shown in (19) below. This movement is triggered by an A-feature of C.

- (19)  $[_{DP3} \text{ to}_1 [_{CP1} [_{AP1} \text{ meghalo}]_i [_{DP2} \text{ to}_2 [_{CP2} [_{AP2} \text{ petrino}]_j [_{DP3} \text{ to}_3 \text{ spiti}] \text{ t}_j]] \text{ t}_i]]$   
the big the stone-made the house  
‘The big house, made of stone.’

The other possible word orders are the result of further movements of DPs to the specifier of higher DPs, as shown in (20) below. Such movements are triggered by an optional strong D-feature of D.

- (20)  $[_{DP1} \text{ to}_1 [_{CP1} [_{AP1} \text{ meghalo}]_i [_{DP2} [_{DP3} \text{ to}_3 \text{ spiti}]_k \text{ to}_2 [_{CP2} [_{AP2} \text{ petrino}]_j \text{ t}_k \text{ t}_j]]] \text{ t}_i]]$   
the big the house the stone-made  
‘The big house, made of stone.’

Alexiadou & Wilder's analysis captures the word order possibilities illustrated in (15) above. However, the optional movements of DPs to higher DPs triggered by an optional D-feature are conceptually not very appealing because the problem of motivating the movements is not resolved. It is not clear when D-features are strong and when they are weak, and moreover, it is not clear why D-features should trigger a movement, which is related to topicalisation or focalisation. I will, thus, make a slight modification in order to dispense with the stipulation of the optional movement triggered by a D-feature.

Given that the specifier of the DP in MG is an operator position, in which elements can move as an instance of topic or focus and given that A'-movement is driven by P-features of the peripheral system, this movement can be best accounted for if it is triggered by the presence of a Peripheral feature (see Chomsky, 1998), a topic or focus feature, rather than an optional strong D-feature. Under this assumption, a topic or focus feature comes into the numeration each time topic or focus is intended. There are two conceptual advantages for the use of a topic and focus feature instead of an optional strong D-feature: a) this movement is no longer optional, since a topic or focus feature appears in the numeration, when topicalisation or focalisation are involved and then movement *must* take place, and b) movement for the checking of a topic or focus feature can capture not only movement to Spec,DP in DS, but every movement that involves topicalisation or focalisation, e.g. movement of the possessor to Spec,DP in the Possessive Construction.

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<sup>7</sup> For a different analysis see Androutsopoulou (1994; 1995).

## 4. The Data

This study is based on the speech of 5 monolingual Greek children growing up in Athens, Christos, Spiros, Janna, Mairi and Maria. The age of the children, the number of recordings and the number of utterances produced by each child are given in Table 3.

*Table 3: Data*

	<i>Christos</i>	<i>Spiros</i>	<i>Janna</i>	<i>Maria</i>	<i>Mairi</i>
<b>Age</b>	1;7-2;8	1;9	1;11/2;5/2;9	2;3/2;9	1;9/2;3/2;9
<b>Nr. of recordings</b>	69	2	9	5	12
<b>Nr. of utterances</b>	12,383	443	1,357	3,074	4,154

The speech of Christos comes from the Christofidou Corpus, and the speech of the other four children from the Stephany Corpus, which is available in the CHILDES Database (MacWhinney & Snow, 1985).

The recordings of the Christofidou Corpus took place on a weekly and sometimes on a daily basis and cover the age of 1;7 to 2;8. The data of the Stephany Corpus covers the age of 1;9 to 2;9. However, it has been collected at three different points in time with approximately six months between each recording. Developmental aspects of the acquisition process can, therefore, be best observed in the data of the Christofidou Corpus due to the density of the recordings.

### 4.1 The emergence of Number and Case Marking in Nouns

Case and number marking in nouns is related to the FP layer, which belongs to the Core Domain of the DP. The use of case and number marking in nouns in children's speech can, thus, provide evidence for the availability of the inflectional layer of the nominal domain.

The acquisition of noun morphology in the Christofidou and the Stephany Corpus has been studied in detail in Christofidou & Stephany (1997), Kilani-Schoch, et al. (1997), Stephany (1997) and Christofidou (1998). The data presented in this section is based on both these studies and my own investigation of the corpora.

In the Stephany Corpus, the child with the lowest MLU, Janna, initially uses no number and case marking on nouns. At the age of 1;11, all nouns in her speech end on a stem vowel, which is the unmarked form of the paradigm (see Section 3.1). In the next recording which is six months later (2;5), Janna uses both number and case marking on nouns. In the speech of all other children in the Stephany Corpus nouns have both number and case marking from the first recording of the corpus. This is illustrated in Table 4.

*Table 4: Emergence of case and number marking in nouns*

	<i>Christos</i>	<i>Spiros</i>	<i>Janna</i>	<i>Mairi</i>	<i>Maria</i>
<b>no case/number marking</b>	1;7-1;10	-	1;11	-	-
<b>case marking</b>	1;11	1;9	2;5	1;9	2;3
<b>number marking</b>	1;11	1;9	2;5	1;9	2;3

In the data from the Stephany Corpus it is, thus, not clear whether number or case marking emerges first. According to Stephany, '*case differences between unmarked singular accusative forms and the marked nominative of masculine stems as well as the genitive of the three genders may either develop later than or simultaneously with number distinctions*' (Stephany 1997:224).

However, as there were six month gaps between the recordings of the children in the Stephany Corpus, it is possible that simultaneous emergence of number and case marking is an artefact of the recording procedure. A way to investigate this issue more closely is to look at a corpus that does not have gaps as long as six months between the recordings. As shown in Section 4, the Christofidou Corpus is a very large and dense corpus. The next step was, thus, to look at the emergence of number and case marking in the speech of Christos.

Christos uses plural forms of nouns from very early on (1;7). However, the first nouns in plural attested in his speech are nouns used typically in the plural, like *children*, *shoes*, *oranges* (cf. Christofidou, 1998). Evidence for children's knowledge of plural marking can be provided if the child uses both singular and plural forms of the same noun. An analysis of the nouns that appear in both forms has shown that number marking emerges at the age of 1;11 in Christos's speech.<sup>8</sup> The number of nouns (in tokens and types) that were used with both singular and plural marking in his speech is illustrated in Table 5.

*Table 5: Number of nouns used in both the singular and plural*

<i>Stage</i>	<i>Age</i>	<i>tokens</i>	<i>types</i>
	1;7	0	0
	1;8	0	0
<i>I</i>	1;9	1	1
	1;10	0	0
	1;11	8	6
	2;0	2	2
	2;1	54	15
<i>II</i>	2;2	1	1
	2;3	40	12
	2;4	42	19
	2;5	25	12
	2;6	48	18
<i>III</i>	2;7	51	21
	2;8	41	20

Table 5 shows that with the exception of one noun at the age of 1;9, number marking in the speech of Christos emerges at the end of Stage I,<sup>9</sup> that is at the age of 1;11. From 1;11 onwards several nouns (tokens and types) are used in both the singular and the plural. This raises the question when does case marking emerge in the speech of Christos.

Section 3.1 has shown that nouns in most of the inflectional classes (IC2 to IC8) have two word forms, an unmarked one and a marked one. Marked forms in these inflectional classes are either nominative (IC2) or genitive forms (IC3 to IC8). Nouns in IC1 have three to four word forms, an unmarked one, a form marked for the nominative, a form marked for the genitive and in some nouns a form marked for the vocative case. Evidence for the emergence of case marking can be provided by the use of nouns in contexts requiring a marked form of

<sup>8</sup> But see also Christofidou (1998).

<sup>9</sup> Acquisition stages have been defined on the basis of Christos's Mean Length of Utterances (MLU) (cf. Brown, 1973). MLU at Stage I is below 2, MLU at Stage II is below 2.5 and MLU at Stage III is below 3. MLU values have been calculated on the basis of words and not on the basis of morphemes. For a discussion on calculating MLU in languages with rich morphology, see Stephany (1985).

the noun. To investigate this further, I analysed only nouns used in marked contexts.<sup>10</sup> Table 6 shows the percentage and number of correct case marking in nouns in the speech of Christos.

*Table 6: Case marking in nouns*

<i>Stage</i>	<i>Age</i>	<i>case marked nouns</i>	
<i>I</i>	1;7	50%	[N=2/4]
	1;8	0%	[N=0/1]
	1;9	0%	[N=0/7]
	1;10	0%	[N=0/4]
	1;11	69.4%	[N=34/49]
<i>II</i>	2;0	85%	[N=68/80]
	2;1	80.2%	[N=130/162]
	2;2	80.7%	[N=71/88]
	2;3	78%	[N=92/118]
	2;4	93.3%	[N=126/135]
<i>III</i>	2;5	92.9%	[N=39/42]
	2;6	92.9%	[N=39/42]
	2;7	92.3%	[N=48/52]
	2;8	90.8%	[N=59/65]

Table 6 shows that at Stage I there is no evidence for case marking in the speech of Christos. Only towards the end of Stage I does Christos start using case marked nouns. This is very similar to the emergence of number marking. Interestingly, from the onset of the use of case marked nouns (1;11) almost 70% of nouns are marked with case. Moreover, there was no effect of syncretism. Case marking in nouns with a three-way distinction (IC1) emerges simultaneously with case marking in nouns with a two-way distinction (IC2-4). This is illustrated in Table 7.

*Table 7: Case marking in nouns of IC1 vs. IC2, IC3 & IC4*

<i>Stage</i>	<i>Age</i>	<i>IC1</i>		<i>IC2, IC3 &amp; IC4</i>	
<i>I</i>	1;7		[N=0/0]	50%	[N=2/4]
	1;8	0%	[N=0/1]		[N=0/0]
	1;9	0%	[N=0/2]	0%	[N=0/5]
	1;10		[N=0/0]	0%	[N=0/4]
	1;11	69.6%	[N=16/23]	69.2%	[N=18/26]
<i>II</i>	2;0	80.6%	[N=25/31]	87.8%	[N=43/49]
	2;1	82.9%	[N=87/105]	75.4%	[N=43/57]
	2;2	80.8%	[N=42/52]	80.6%	[N=29/36]
	2;3	82.3%	[N=65/79]	69.2%	[N=27/39]
	2;4	98.2%	[N=54/55]	90%	[N=72/80]
<i>III</i>	2;5	93.3%	[N=14/15]	92.6%	[N=25/27]
	2;6	89.5%	[N=17/19]	95.7%	[N=22/23]
	2;7	96.6%	[N=28/29]	87%	[N=20/23]
	2;8	94.1%	[N=32/34]	87.1%	[N=27/31]

<sup>10</sup> As the number of plural forms in marked contexts was very low, I will only present data in the singular. There were no marked contexts for neuter nouns in this corpus. Thus, this analysis includes only masculine and feminine nouns.



- (22) Adult: Afto ti ine?  
 this what is  
 'What is this.'
- Child: **Lululi mamach.** (Christos 1;11.19)  
**to luludhi tis mamas** (target-utterance)  
**the flower the mummy's**  
 'Mummy's flower.'

None of the children simultaneously used both word orders or the order Possessor > Possessum prior to the order Possessum > Possessor. This provides evidence for a developmental stage in which children make use of the Core Domain but not of the Left Periphery of the DP in MG.

Phase 2 is defined by the first use of the order Possessor > Possessum. From this point onwards, children use both word orders. This provides evidence that the Left Periphery is operative in children's production. Consider example (23) below.

- (23) Child: **Iko Bebe.** (Christos 2;0.7)  
**tu Niku i BMW** (target-utterance)  
**the-GEN Niku-GEN the-NOM BMW**  
 'Niko's BMW.'
- Adult: I Beemve tu thi u Niku ine afti?  
 the BMW the uncle Niku is this  
 'Is this uncle Niko's BMW?'

This phase is observed in the speech of three out of the five children, i.e. Christos, Mairi and Maria. Janna and Spiros use only the word order Possessum > Possessor. For Janna, this may be the result of the fact that she uses mainly *possessive pronouns* when she wants to express possessive relations.<sup>11</sup> Spiros is the only child, for whom we have recordings only at one point in time, i.e. at the age of 1;9. There are no recordings available at a later age. Thus, in the case of Spiros, lack of data for Phase 2 is very likely to be due to the lack of recordings at a later age.

In sum, all children under study started initially using the word order Possessum > Possessor and only later did they use the order Possessor > Possessum. This shows that the word order that involves the Core Domain is used prior to the word order involving the Left Periphery of the nominal domain.

### 4.3 The emergence of Determiner Spreading

Within the analysis of DS adopted in this study, in order for the child to be able to use this construction, DPs, CPs and A'-Movement must be available in his/her grammar. More specifically, DPs are needed for the generation of definite articles, a CP is needed as a complement of D<sup>0</sup> and two types of A'-Movement are necessary for the generation of the two main word order variations: movement of the adjective to the specifier of the CP, and movement of the lower DP to the specifier of a higher DP (or to the specifier of a FocP or

<sup>11</sup> In the recordings of Janna there are very few instances of the Possessive Construction (tokens = 4). As far as possessive pronouns are concerned, Janna is using them from the first recording available, which is at the age of 1;11. In this recording, she uses the possessive pronoun in the 1<sup>st</sup> person singular, which she overgeneralizes for the 2<sup>nd</sup> and 3<sup>rd</sup> person singular and plural. From the age of 2;5 onwards she uses possessive pronouns in all three persons in the singular, and from the age of 2;9 onwards she uses possessive pronouns also in the plural.

TopP). The use of DS in child speech may, thus, provide evidence that the Left Periphery of the DP is operative in children's speech.

Adjectives are attested very early on in the speech of all the children under investigation. Christos uses adjectives from the first recording available, at the age of 1;7.11. However, the first instance of DS is attested in his speech only at the age of 2;3.21. Moreover, he uses both versions of DS in the same recording, as shown in examples (24) and (25) below.

- (24) Ta kani bu **to palio to Bede.** (Christos 2;3.21)  
 tha kani bu **to palio to Mercedes**  
 fut-prt do bu **the old the Mercedes**  
 'The old Mercedes car will fall down.'

- (25) ... **to puli to melalo** Pitsos. (Christos 2;3.21)  
**to puli to meghalo** o Christos  
**the bird the big** the Christos  
 '... the big bird Christos.'

In the speech of Mairi, adjectives are used for the first time at 1;9.19. However, DS emerges at 2;9.15. Consider examples (26) and (27) below, in which Mairi is using the two types of DS in variation.

- (26) Child: **O mik(r)os o likos** pu ine? (Mairi 2;9.15)  
 the small the wolf where is  
 'Where is the small wolf?'

- (27) Child: **O likos o mik(r)os** pu ine? (Mairi 2;9.15)  
 the wolf the small where is  
 'Where is the small wolf?'

A similar picture is present in the speech of Maria. Adjectives are attested in her speech from the first recording onwards (in 2;3.9), whereas the first instance of DS is attested at the age of 2;9.12, as shown in (28) and (29) below.

- (28) Child: Thelo na pao **athino to to kabine to athino.** (Maria 1;9.12)  
 thelo na pao s-ton kabine ton alithino (target)  
 want subj-prt go true the to-the toilet the true  
 'I want to go to the real bathroom.'

- (29) Child: Ke a vro ke **ton meghao ton liko.** (Maria 1;9.13)  
 ke tha vro ke ton meghalo to liko (target-utterance)  
 and fut-prt find and the big the wolf  
 'And I will find the big wolf.'

In the speech of Spiros and Janna there are no instances of DS. This is not surprising for Spiros, because there are recordings of his speech only until 1;9. As far as Janna is concerned, it is not clear, if the unavailability of DS in her speech is the result of sampling or if she is not yet able to use this construction.

Crucially, all three children that use DS simultaneously make use of both types, i.e. the one involving movement of the AP to Spec,CP and the one involving a further movement of the lower DP to the specifier to a higher DP (FocP, or TopP), as shown in Table 9.

*Table 9: First use of adjectives and first use of Determiner Spreading*

<i>first use of</i>	<i>Christos</i>	<i>Spiros</i>	<i>Janna</i>	<i>Mairi</i>	<i>Maria</i>
adjectives	1;7	1;9	1;11	1;9	2;3
DS with movement to Spec,CP	2;3	-	-	2;9	2;9
DS with movement to Spec,CP/Spec,DP	2;3	-	-	2;9	2;9

In sum, in the speech of the children that use this structure, DS emerges much later than their first use of adjectives. Moreover, when children start using DS, both types emerge simultaneously. This indicates that the number of A'-Movement operations required for the generation of DS does not have an effect on the emergence of the two types of DS.

## 5. Summary and discussion

The Left Periphery of the nominal domain in MG consists of the DP, which is parallel to the FinP (see also Haegeman, this volume), and possibly of a FocP and/or a TopP, which project, when focalisation and/or topicalisation are intended. The Core Domain consists of an FP, an inflectional layer corresponding to the IP layer, and the NP, the lexical layer corresponding to the VP in the clausal domain.

If the acquisition process of the nominal and the verbal domain takes place in a parallel fashion, given the results from Platzack (2001-a), children at an earlier stage of development are expected to pass through a stage in which they do not use structures involving the Left Periphery, while they use structures involving the Core Domain of the nominal domain. The results from the data analysed in this paper are summarised in Table 10.

*Table 10: The emergence of structures involving the Core Domain vs. the Left Periphery of the nominal domain*

<i>emergence of</i>	<i>Christos</i>	<i>Spiros</i>	<i>Janna</i>	<i>Mairi</i>	<i>Maria</i>
Number/Case marking (Core Domain)	1;11	1;9	2;5	1;9	2;3
Possessum > Possessor (Core Domain)	1;11	1;9	2;9	2;3	2;3
Possessor > Possessum (Left Periphery)	2;0	-	-	2;9	2;9
Determiner Spreading (Left Periphery)	2;3	-	-	2;9	2;9

Table 10 shows that structures involving the Core Domain, i.e. number and case marking in nouns and the order Possessum > Possessor emerge earlier than structures involving the Left Periphery, i.e. the order Possessor > Possessum and Determiner Spreading.

Under a strong parallelism hypothesis between the acquisition of the nominal and verbal domain, the emergence of phenomena, which are related to the Left Periphery of the nominal domain should correlate with the emergence of phenomena which are related to the Left Periphery of the clausal domain. Data on the acquisition of Clitic Left Dislocation (Marinis, 2000) partially support this hypothesis.



production consists only of the lexical layer (NP)<sup>15</sup> and lacks both the inflectional layer (FP)<sup>16</sup> and the Left Periphery (DP and FocP/TopP).

How then can the unavailability of the inflectional layer and/or the Left Periphery of the nominal domain be accounted for?

Within the Principles and Parameters framework, similar results have been interpreted in terms of the presence/lack of functional categories in child grammar (Radford, 1986; Guilfoyle & Noonan, 1992; Radford, 1990; Tsimpli, 1992/1996; Powers, 1996, among others) or in terms of underspecification of functional categories (Clahsen, Eisenbeiss & Penke, 1996; Eisenbeiss, 2000). However, in the Minimalist Program there is no fixed set of functional categories; Universal Grammar is assumed to provide a set of formal features and a set of operations. The language acquisition process consists of selection of the formal features, which are operative in the target grammar, construction of lexical items and refinement of the computational system (Chomsky, 1998). If Platzack's (2001-b) idea of multiple interfaces is on the right track, the interfaces of Thematic Form, Grammatical Form and Discourse Form are primitives, which do not have to be learned. Parameterisation should concern the set of formal features grammaticalised in every language and the way these are encoded in the specific lexical items. Consequently, the exact set of functional projections present in every language should be subject to parameterisation on the basis of the set of formal features grammaticalised in the target language. This being so, development in the three structural domains of the clausal and nominal domain does not have to take place in a uniform way. As far as the phenomena discussed in this paper are concerned, acquisition of the inflectional domain of the DP is reflected in the acquisition of case and number marking in nouns, and is related to the selection of formal features and construction of lexical items. On the other hand, acquisition of the Left Periphery of the nominal domain is reflected in the emergence of the word order Possessor > Possessum and Determiner Spreading, which are related to the encoding of focalisation and topicalisation. The first type of phenomena are associated with the interface of Grammatical Form, whereas the second type of phenomena with the interface of Discourse Form. The unavailability of the Left Periphery of the nominal domain in child grammar is, thus, unrelated to the (un)availability of the inflectional layer. Finally, since the Left Periphery is related to discourse information, the unavailability of the Left Periphery may reflect difficulties with the pragmatic system operating in child grammar.<sup>17</sup>

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<sup>15</sup> As evinced by the use of common nouns and proper names. There were no deverbal nouns attested at this stage of development.

<sup>16</sup> Under the assumption that the FP layer hosting the number feature constitutes the domain that nominalises abstract roots, unavailability of this layer implies that during this developmental stage lexical categories have not yet been fully defined in child grammar.

<sup>17</sup> See also Hyams, 1996; Müller, Crysmann & Kaiser, 1996; Borer & Rohrbacher, 1998.

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