Clitics and adjacency in Greek PPs

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1. Introduction[1]

This squib explores a class of phenomena which intersect two central determinants in Henk van Riemsdijk's research: prepositions and adjacency. In the first domain, Van Riemsdijk (1978, 1990) established that the empirical study of PPs can contribute important theoretical insights into the organization of various subcomponents of natural language syntax, including the theories of phrase structure, locality and selection. In the second area, this time starting from an investigation of theory-internal desiderata, Van Riemsdijk (1993, 1998) extensively argues for a re-initiation of the concept of adjacency into the grammar.

The two groups of studies are also informed by different perspectives on syntactic theorizing, foregrounding the empirical and the theoretical aspect, respectively. As has been persistently stressed by Van Riemsdijk, adequate analyses can only arise if both aspects are combined in such a way that the importance of strong empirical generalizations is not sacrificed at the cost of claims based on ephemeral theoretical assumptions. Following this methodological guideline, the present squib elaborates on some factors determining the internal structure of intransitive PPs in Greek. As will be made explicit in section 2, Greek PPs display an interesting clustering of properties, which can be distilled into two generalizations describing correlations among word order, cliticization and selection. These correlations support the view that (intransitive) prepositions in Greek come in two different flavors, which differ in that one group emulates the kind of syntactic ('special'; Zwicky 1977) cliticization properties typically associated with the IP domain (Anagnostopoulou 1994, 2003; Terzi 1999; among many others), while the other behaves as if it would host phonological ('simple'; Zwicky 1977) clitics of the type usually found inside DPs (Nespor and Vogel 1986; Alexiadou and Stavrou 2000 and others). The specific analysis of the contrast between syntactic vs. phonological clitics to be advanced makes reference to linear adjacency. Section 3 outlines a movement analysis for syntactic cliticization. Finally,

[1] We would like to thank Artemis Alexiadou for discussion.

section 4 demonstrates that the data can be used to adjudicate between two different analyses of terminal displacement in PPs, eliciting evidence in support of a conservative head movement account, and against remnant movement.

We would like to thank Henk for his inspiring and exemplary ability to demonstrate that good taste prevails in life as well as in linguistics.

1. Data

1.1. Prepositions in Greek

Greek prepositions fall into two distinct classes (see Theophanopoulou-Kontou 1992, 1995; Fykias 1994, 1995; Terzi to appear). *Transitive* prepositions require the presence of a DP complement carrying accusative case, and split into two types, illustrated in (1) and (2). The two groups are discriminated by their variable ability to combine with other prepositions. While the functional, light prepositions in (1) (Riemsdijk 1990) may also serve as prepositional complements (see (1b)), the lexical, heavy elements in (2) cannot be selected by other prepositions (see (2b)):

(1) Functional (light) prepositions: *se* 'to, in', *apo* 'from, by', *me* 'with', *gia* 'for'.

a.	s-*(to spiti) to/in-the house 'to/in the house'	Me *(ton Petro) with the Peter 'with Peter'	gia *(ton Petro) for the Peter 'for Peter'
b.	mesa s-to spiti inside in-the house 'inside the house'	mazi me ton Petro together with the Peter 'together with Peter'	anti gia ton Petro instead for the Peter 'instead of Peter'

(2) Lexical (heavy) prepositions: *pros* 'towards', *kata*$_{+Acc}$ 'according to', *mechri* 'until, up to', *os* 'until, up to', *eos* 'until, up to', *isame* 'up to', *san* 'like'.

a.	pros *(to spiti) towards the house 'towards the house'	kata *(ton Petro) according the Peter 'according to Peter'
b.	*konta pros to spiti near towards the house	*simfona kata ton Petro (cf. simfona me ton Petro) according according to the Peter (according with P.)

Unlike their transitive counterparts, *intransitive* prepositions, exemplified by (3), may optionally also occur without an object.

(3) Intransitive prepositions

a.	mesa(s-to spiti) inside in-the house 'inside the house'	mazi (me ton Petro) together with the Peter 'together with Peter'	kato (apo to trapezi) under from the table 'under the table'
b.	meta (apo to fagito) after (from the dinner) 'after dinner'	prin (apo ton Petro) before (from the Peter) 'before Peter'	
c.	iper (tu Petru) in favor of (the $\text{Peter}_{\text{gen}}$) 'in favor of Peter'	kata (tu Petru) against (the $\text{Peter}_{\text{gen}}$) 'against Peter'	enantion (tu Petru) against (the $\text{Peter}_{\text{gen}}$) 'against Peter'

In this squib, we focus on restrictions that affect intransitive prepositions, some of which have gone unnoticed so far. More specifically, intransitive prepositions (INPs) can be further classified according to whether they partake in one of three alternations. The resulting taxonomy lays the foundation for two new correlations to be introduced in section 2.2.

First, some prepositions, such as the ones in (4a), allow their complements to surface as clitics, while others, some of which are listed under (4b), only license non-reduced DP objects:

(4)

a.	mesa-tu inside cl_{gen} 'inside him/it'	mazi-tu together cl_{gen} 'together with him/it'	iper-tu in favor cl_{gen} 'in favor of him/it'	enantion-tu against cl_{gen} 'against him/it'
b.	*meta tu after cl_{gen}	*prin tu before cl_{gen}	*ektos tu except cl_{gen}	

Second, certain prepositions display variable categorial selection, as witnessed by the fact that they may combine with a nominal or with a prepositional complement. This group, exponents of which are provided in (5a), contrasts with INPs that only tolerate DP complements, as illustrated by (5b).

(5)

a.	meta apo to fagito after from the dinner 'after dinner'	meta to fagito after the dinner 'after dinner'
b.	ekso apo to spiti outside from the house 'outside the house'	*ekso to spiti outside the house

A third and final parameter divides prepositions according to admissible word order patterns. While the objects of the INPs in (6a) may be separated from their heads, the prepositions in (6b) require that their complements surface in a position right-adjacent to the selecting category.

(6)

a.	me ton Petro mazi with the Peter together 'together with Peter'	s-to spiti mesa in-the house inside 'inside the house'	apo to trapezi kato from the table under 'under the table'
b.	*apo to fagito meta from the dinner after	*apo ton Petro ektos from the Peter except	*tu Petru enantion the Peter$_{gen}$ against

1.2. A taxonomy of INPs

The three criteria introduced in section 2.1. generate a matrix with nine cells. Three of these cells are actively employed by Greek, resulting in a taxonomy which assigns INPs to one of three different categories. The first class, which includes the prepositions in (7), admits cliticization, selects for PP complements and tolerates object preposing, as specified in (8):

(7) *mazi* 'together', *mesa* 'inside', *ekso* 'outside', *pano* 'above', *kato* 'below', *konta* 'close', *makria* 'far', *giro* 'around', *dipla* 'near', *brosta* 'in front', *piso* 'behind'

(8) Properties of Class I INPs:
a. Cliticization is possible:
mesa tu
inside it/him

b. Optionally subcategorize for PP complements introduced by *se, apo, gia, me*:
   mesa sto spiti
   inside in-the house
   'inside the house'
c. Allow preposing of PP complements:
   kimithike sto spiti mesa
   $slept_{3rd\ sg}$ in-the house inside
   'He/she/it slept inside the house'

The second group, represented by *iper* 'for, in favor of', $kata_{+GEN}$ 'against' and, *enantion* 'against'[2] is characterized by the clustering of properties in (9). Class II prepositions differ from their class I counterparts in that they do not combine with PP complements and fail to license postpositional word orders:

(9) Properties of Class II INPs:
a. Cliticization is possible:
   kata tu
   against him
b. Subcategorize for DP complements
   kata tu/*sto Janni
   against the/to-the Janni
   'against him/against Janni'
c. No preposing of PP complements
   *milise tu Janni kata
   $spoke_{3rd\ sg}$ the $Janni_{gen}$ against
   'He/she spoke against Janni'

The members of the final group of INPs, exemplified by *meta'*after', *prin* 'before', *ektos* 'apart' and *anti* 'instead'[3], share with class II the strict serialization requirement (see (10c)). However, unlike other INPs, class III heads possess a variable subcategorization frame (see (10b)). In addition, their complements resist cliticization (see (10a)).

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[2] *Eksetias* (because of) also belongs to this category, even though its DP complement is obligatory.
[3] Just like *eksetias*, *anti* must occur with a complement, i.e. it is not an intransitive preposition.

(10) Properties of Class III INPs:

a. No cliticization:
*meta tu (cf. *mesa tu* from class I)
after it/him

b. Subcategorize for DP or for PP complements introduced by *apo* and *gia*:
meta (apo) to proino
after from the breakfast
'after breakfast'

c. No preposing of PP complements:
*efige apo to proino meta[4]
$\text{left}_{\text{3rd sg}}$ from the breakfast after
'He/she/it left after breakfast'

Theoretically, it is possible to extract two correlations linking cliticization, complement selection and freedom of word order from the tripartite taxonomy of INPs above. On the one side, complement preposing appears to be blocked whenever the preposition can in principle combine with a DP complement. On the other side, all and only those INPs tolerate cliticization that select their complements from a single category (i.e. PP or DP, but not both):

(11) a. INP may in principle select for DP complement ⇔ object preposing impossible

b. INP selects one category only (either PP or DP) ⇔ cliticization possible

The following section presents the first steps towards an account of the clustering effects which define INPs. As it turns out, the correlations in

[4] Some informants judge the string to be acceptable. These speakers construe *meta* as a comparative temporal adverb that takes the *apo*-phrase as its comparative complement (cf. *after lunch* vs. *(no) later than lunch*). As expected, adding a second temporal modifier leads to ungrammaticality if the object precedes the INP (see (ib)).

(i) a. chthes meta apo to proino
yesterday after from the breakfast
'yesterday after breakfast'

b. *chthes apo to proino meta
yesterday from the breakfast after

(11), which seem intuitively rather unnatural in the first place, will not be part of the final analysis, though, and will be replaced by more substantive generalizations.

2. Analysis

It is well-known that cliticization is not a uniform process, but appears in different guises depending on several poorly understood factors (Van Riemsdijk 1999). This distinction is also attested in Greek, where cliticization of objects arguably involves a syntactic dependency - possibly movement - which preposes the clitic to the left of the verb, subject to syntactic locality (Anagnostopoulou 2003). In contrast, DP-internal cliticization inserts the weak pronoun in a position immediately to the right of the head noun (or adjective; Nespor 1999; Alexiadou and Stavrou 2000). This adjacency requirement represents a typical hallmark of phonological cliticization. We suggest that cliticization with INPs of class I and II instantiates these two different strategies, respectively. To be precise, class I INPs will be assumed to behave akin to verbs, triggering syntactic cliticization, whereas INPs that belong to class II are nominal in nature and involve phonological clitics. At the moment, we do not understand why INPs are grouped in the way they are or whether the selectional differences can be independently motivated. However, as will be explicated below, adopting this specific view offers a promising new perspective on the clustering effects of section 2.2.

To begin with, cliticization with class I INPs resembles indirect object cliticization in the extended verbal/IP-domain, which in Greek implicates genitive morphology. As a syntactic procedure, cliticization is contingent on movement. We adopt two assumptions, the second of which can ultimately be eliminated. First, class I prepositions bear an edge feature (e.g. EPP) that activates SpecPP as a landing site (Van Riemsdijk 1978). Second, cliticization affects the whole complement of the preposition. Since the complement is itself realized as a PP, the clitic serves as a proform for a PP, and not a DP. It is for this reason that Greek displays contrasts such as (12):

(12) a. mesa tu
inside it
b. *mesa s-to/tu
inside to-it$_{Acc}$/tu$_{Gen}$

Thus, as schematized in (13), cliticization with class I INPs consists in movement of PP2 to the edge of the containing PP (SpecPP1). Then, P1 raises to the left of PP2, landing in a higher FP and restoring the original word order P1^PP2:

(13) $[_{PP1}\ \ P1°_{[Edge\ feature]}\ PP2_{Clitic}] \Rightarrow$ (movement of PP2)
$[_{PP1}\ PP2_{Clitic}\ \ [P1°\ \ t_{PP}]] \Rightarrow$ (movement of P1°)
$[_{FP}\ P1°\ [_{PP1}\ PP2_{Clitic}\ \ [t_{P1°}\ \ t_{PP}]]]$

The premise that class I prepositions are endowed with an edge feature, which opens an 'escape hatch' for extraction (Riemsdijk 1978), furthermore correctly leads one to expect that the complement can be preposed (see (8c) above), accounting for the second defining property of class I items. Thus, the analysis links the availability of cliticization and postpositional orders to a common factor, viz. the presence of an (active) specifier of PP.

It was pointed out that cliticization affects PPs, but not their DP complements. This restriction can be made to follow from the assumption that the light prepositions that may head complements of class I prepositions (*se* 'to, in', *apo* 'from, by', *me* 'with' and *gia* 'for' lack an edge feature.[5] As a result, the DP in (14) cannot raise to SpecPP2 and DP-cliticization, which is contingent on movement, is blocked.[6]

(14) $[_{PP1}\ P1°\ [_{PP2}\ P2°\ DP_{Clitic}]] \Rightarrow$ (cliticization of DP)
$*[_{PP1}\ P1°\ [_{PP2}\ DP_{Clitic}\ P2°]]$

Cliticization is also attested with class II prepositions, which historically originated in the formal *katharevousa* register. In contrast to their class I counterparts, class II INPs employ a cliticization strategy similar to the one characteristically associated with the nominal domain. In this sense, Greek class II INPs are more nominal in nature, while class I

[5] Functional P°s behave in this respect like the overt complementizer *that*, which has been analyzed as a functional preposition and whose presence also inhibits movement and/or extraction for adjacent categories such as subjects (Emonds 1985; Van Riemsdijk 1990). Moreover, the idea that functional categories are impermeable for extraction dovetails with the view sometimes found in the literature that definites, which are opaque for extraction, are DPs, while indefinites, which tolerate extraction, are represented as (lexical) NPs (Longobardi 1994).

[6] Phonological cliticization - see below - is never possible with accusative DPs in Greek.

INPs form a natural group with verbal predicates. Thus, cliticization inside DPs can be interpreted as the result of a local, phonological process which is subject to adjacency (on adjacency see Van Riemsdijk 1993, 1998; Lechner 2001, a.o.). It is for this reason that the DP-complements of class II INPs may be cliticized (*kata tu* 'against it'), but cannot be preposed (**tu Janni kata* 'the Jannis against').

Class II prepositions also mimic nouns in that they do not support syntactic cliticization. On the present conception, this deficiency can be tied to a common property of class II and nominal heads, both of which appear to lack an edge feature. Their complements are therefore not allowed to target SpecPP and SpecDP, respectively, and fail to satisfy the movement criterion for syntactic cliticization. Interesting independent support for such a uniform analysis of class II INPs and nominal heads comes from locality effects in DPs.

More specifically, the hypothesis that Greek DPs lack an edge feature contributes to a new understanding of a puzzle in the analysis of DPs related to thematic restrictions on subextraction. Greek represents almost the mirror image of English in that it limits subextraction to possessors (as has been discussed extensively in the literature since the seminal work of Horrocks and Stavrou 1987), whereas themes[7] (in non-derived nominals) may not be moved:

(15) Tinos ekapses to biblio
whose burnt$_{2nd\ sg}$ the book
'Whose book did you burn'

(16) Jia pio thema ekapses to biblio
about which topic burnt$_{2nd\ sg}$ a book
'*Which topic did you burn the book about'

This curious property can be directly derived from the deficiency analysis and the plausible additional assumption that possessors, which serve the function of external arguments, are like subjects in that they are generated in the specifier of the minimally containing functional projection. It follows now that possessors, which originate in SpecDP, may escape the DP (see (15)), as they satisfy the requirement that extraction necessarily proceed

[7] Probably English is like Greek in this respect. See e.g. Müller (1995) for discussion.

through a specifier even without movement.[8] On the other hand, the absence of an edge feature in Greek DPs ensures that categories which are generated in lower positions (e.g. themes) can never be attracted into the escape hatch SpecDP, which in turn blocks extraction in cases such as (16).

In sum, class II INPs share two substantive characteristics of DPs: lack of an edge feature and phonological cliticization. The present account correlates these two properties by making syntactic cliticization dependent on movement.

Members of the third class of INPs never cliticize (see (10a)), while their complements alternate freely between PPs and DPs (see (10b)). Finally, the absence of preposing (see (10c)) indicates that class III INPs lack an edge feature. On current views, at least DP complements should be able to undergo phonological cliticization to their host, though (but see fn. 6). Thus, the third class of INPs at first sight appears to fall outside the present analysis. However, as will be demonstrated below, a slightly more abstract parse for cases involving apparent DP complementation does not only remove this complication, but also strengthens the overall consistency of the account.

Class III heads do not fit well in the taxonomy of INPs for a second reason, they form the only group which does not subcategorize for a uniquely specified category.[9] But this ambiguity can be resolved once a slightly more abstract representation is admitted. Specifically, we suggest that class III INPs invariably select for PP complements, but that the head of this complement can be phonetically unrealized. As an additional advantage, this analysis offers an explanation for why prepositions that belong to class III do not permit phonological cliticization. As shown by (17), the clitic *tu* is separated from the contentful P-head *meta* by a zero preposition, violating the adjacency requirement on weak pronouns and their hosts, and can therefore not cliticize.

(17) *$[_{PP1}$ meta $[_{PP2}$ P° $tu_{Clitic}]]$

[8] The actual word order (*to biblio tu Petru*, i.e. D - NP - Poss) has to be derived by further movement of NP and D across Poss. Note that a similar movement operation is called for in the derivation of *mesa tu*, where the INP crosses over the preposed clitic (see (12a) and (13)). Thus, a single additional assumption covers both constructions. For the standard view according to which Greek DPs have edge features, see Horrocks and Stavrou (1987).

[9] The ambiguity of class I is different in nature, as class I heads come in a transitive and an intransitive version.

On this interpretation of the data, zero prepositions disrupt the relation between the clitic and the host, suggesting that the calculation of adjacency does not only refer to phonological information, but is also sensitive to silent, yet syntactically projected, nodes.

Recapitulating, INPs in Greek can be categorized by the use of two properties - selectional criteria and the presence vs. absence of an edge feature - yielding the matrix in (18):

(18)

	Edge feature	Complement
Class I:	+	PP or Ø
Class II:	–	DP
Class III:	–	PP

Syntactic cliticization is restricted to 'verbal' prepositions of class I. These prepositions project an edge feature whose presence can also be detected in the ability of the prepositional complement to undergo preposing. Class II and class III elements constitute the group of what has been called nominal prepositions and do not sponsor juxtaposition. Even though both groups may in principle partake in phonological cliticization, structural adjacency limits the latter process to class II contexts.

Returning finally to the two correlations formulated in (11), it is obvious - as was already foreshadowed in 1.2 - that they only reflect a conflation of epiphenomenal properties. The analysis for a good reason neither recognizes a connection between potential selection properties and preposing (as encapsulated in (11a)), nor a close relation between the number of alternative subcategorization frames and cliticization (see (11b)).

3. Complex alternations and head vs. remnant movement

As exemplified by (19), some class I prepositions enter into alternations with a synonymous variant (see (19b)) in which the light preposition (*apo* 'from') is reduplicated in a position immediately preceding the contentful head (*pano* 'above'):

(19) a. pano apo to trapezi
above from the table
'above the table'

b. apo pano apo to trapezi
from above from the table
'above the table'

This final section presents an analysis of the doubling construction that also generates an argument in support of a head, and against a remnant movement account of the phenomenon.

Assuming that the simple and the doubled variants are systematically related, preposition doubling of the type attested in (19) can be seen as the result of multiple Spell-Out of a head-chain, as made explicit by (20).[10] In (20), movement of *apo* to the left of *pano* supplies the input to the phonological component:

(20) a. $[_{PP1}$ pano $[_{PP2}$ apo $[_{DP}$ to trapezi]]] $\Rightarrow$ (movement of *apo*)
b. $[_{FP}$ apo $[_{PP1}$ pano $[_{PP2}$ apo $[_{DP}$ to trapezi]]]]

Doubling is not an isolated phenomenon in Greek. For some rather poorly understood reason, Greek allows multiple Spell-Out of heads in a number of well-defined contexts. For instance, the simple, adnominally modified DP in (21a) alternates with the doubled version in (21b) (on *determiner spreading* see Alexiadou and Wilder 1998 among many others):

(21) a. to megalo trapezi
the big table
'the big table'
b. to megalo to trapezi
the big the table
'the big table'

Delegating the details to future research, the mechanisms responsible for multiple Spell-Out in (21) are arguably sufficiently similar to the ones at work in (20) in order to justify a common analysis of the two constructions. On this view, multiple spell-out of both copies of *apo* in (20b) directly feeds preposition doubling.[11]

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[10] It is immaterial for present purposes whether the head in (20b) reaches its derived position by movement, or whether *apo* is merged or generated twice. Both options are compatible with the analysis presented below.

[11] Similar doubling effects have been observed with prepositions in German. German *da* 'there' is a prepositional proform, which fuses with *in* 'in' to *drin* 'therein'. In (i), the preposition *in* accordingly surfaces twice, in *in* and in *drin*.

(i) in der Kiste drin
in the box there-in
'in the box'

The construction is of theoretical relevance inasmuch as it poses a challenge for recent attempts to eliminate head movement (Hinterhölzl 1997; Koopman and Szabolcsi 2000; Mahajan 2000; Müller 2004; Nilsen 2003). In particular, adherents of this school of thought, according to which displacement of terminal symbols is to be reanalyzed as the product of possibly multiple remnant movement, need to find a derivation for (19b) which yields the correct surface order from the source in (19a) without invoking displacement of heads. However, neither fronting of PP2, as in (22), nor extraction of the DP followed by remnant movement, as in (23), results in the desired output order. (For the sake of the argument, we adopt the liberal assumption that any part of the *apo*-PP can be spelled-out twice.)

(22) a [$_{PP1}$ pano [$_{PP2}$ apo [$_{DP}$ to trapezi]]] ⇒ (movement of PP2)
b. *[[$_{PP2}$ apo [$_{DP}$ to trapezi]] [$_{PP1}$ pano t_{PP2}]
c. Spell-out: *apo to trapezi pano (apo)

(23) a. [$_{PP1}$ pano [$_{PP2}$ apo [$_{DP}$ to trapezi]]] ⇒ (movement of DP)
b. [$_{PP1}$ pano [[$_{DP}$ to trapezi] [$_{PP2}$ apo t_{DP}]]] ⇒ (movement of PP2)
c. [[$_{PP2}$ apo t_{DP}] [$_{PP1}$ pano [[$_{DP}$ to trapezi] t_{PP2}]]]
d. Spell-out: *apo pano to trapezi (apo)

Alternatively, remnant movement analyses might also posit the derivation in (24), which is like (23) but involves an additional movement step that generates an occurrence of *apo* (marked by underlined) in the correct location inbetween *pano* and *to trapezi*:

(24) [[$_{PP2}$ apo t_{DP}] [$_{PP1}$ pano [[$_{PP2}$ <u>apo</u> t_{DP}] [[$_{DP}$ to trapezi] [$_{PP2}$ apo t_{DP}]]]]]

Such a derivation suffers from two deficiencies, though. First, it is not clear why only the first two copies of *apo* can be pronounced. Whereas on the head movement account, doubling tracks the number of syntactic copies, no such simple procedure can be defined for remnant movement analysis. Second, remnant movement is usually assumed to be determined by the following algorithm (see e.g. Nilsen 2003):

1. Move α to the left of its dominating host β: [β α] ⇒ [α [β $t_α$]]
2. Merge new category γ: [γ [α [β $t_α$]]]
3. Move β over the newly merged category γ: [[β $t_α$] [γ [α $t_β$]]]

Hence, the *apo*-PP in (24) (PP2, which instantiates β) must immediately move across the newly merged category *pano* (γ in (24)), and cannot land in an intermediate position in between *pano* and the moved category *to trapezi*, as in (24). Unless substantial changes are admitted, the system does therefore not sanction the alternative output (24).

The doubling construction may also be targeted by cliticization, yielding the string *apo pano tu* 'from above it'. Adopting the analysis of section 3, the derivation proceeds as in (25). To begin with, *apo* raises into a higher functional head, resulting in doubling (see (25b)). Next, cliticization relocates PP2 into SpecPP1 (see (25c)). Finally, *pano* undergoes local raising to a higher functional projection GP, yielding the output *apo pano tu* in (25d).

(25) a. $[_{PP1}$ pano $[_{PP2}$ apo DP]] ⇒ (movement of *apo*)
b. $[_{FP}$ apo $[_{PP1}$ pano $[_{PP2}$ apo DP]]] ⇒ (cliticization PP2)
c. $[_{FP}$ apo $[_{PP1}$ tu pano $t_{PP2}]]$ ⇒ (movement of *pano*)
d. $[_{FP}$ apo $[_{GP}$ pano $[_{PP1}$ tu t_{PP1} $t_{PP2}]]]$

Two notes are in order at this point. First, observe that on current assumptions, cliticization targets PPs. It follows that the alternative, illicit forms in (26), which implicate DP-cliticization, cannot be produced by the analysis. Clearly, this represents a desirable result.

(26) a *apo pano tu apo
b. *apo pano apo tu

Second, *pano* in (25) needs to satisfy the head movement constraint. This requirement dictates that *pano* must not cross over *apo* in the higher FP, but must choose its landing site inbetween *apo* and the clitic *tu*.[12] Thus, the unattested serialization **pano apo tu* can be excluded on principled grounds.

[12] The derivational step in (25d) presents an instance of *tucking in* (Richards 1997) with head movement. We assume that *apo* can evade the HMC when crossing over *pano* either because the relation between the two copies does not involve movement (see fn. 10), or because the HMC is only defined for empty categories. Note that *tucking in* does not apply when XPs move across higher thematic specifiers (Anagnostopoulou 2003; Rackowski 2002), just as *apo* does not *tuck in* below (base-generated) *pano* in (25b). The claim that (25d) respects syntactic locality (the HMC) is also supported by the observation that resumption by pronouns in many contexts salvages otherwise ill-formed movement relations.

Again, it can be demonstrated that the remnant movement analysis fails to provide the correct results. Crucially, if cliticization applied prior to movement, at the step documented in (27a), the predicted output word order would be *pano tu*. This string is also attested, but not the one the analysis is intended to generate.

(27) a. $[_{PP1}$ pano $[_{PP2}$ apo DP]] $\Rightarrow$ (movement of DP)
b. $[_{PP1}$ pano [DP $[_{PP2}$ apo $t_{DP}]]] \Rightarrow$ (movement of PP2)
c. $[[_{PP2}$ apo $t_{DP}]$ $[_{PP1}$ pano [DP $t_{PP2}]]]$

Moreover, cliticization cannot apply after remnant movement has been completed, at step (27c), because the process would have to target a DP instead of a PP, in contradiction to an empirically well-supported generalization about INP internal cliticization. Among others, admitting DP cliticization in (27) would incorrectly lead one to expect that forms such as **pano apo tu* should be part of the grammar. Hence, the remnant movement account does not offer a descriptively adequate alternative vehicle for expressing restrictions on serialization inside Greek INPs.

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