

scrambling languages move an XP to Spec AgrO and this derives the common properties of scrambling and doubling. In other words, the view that scrambling of objects in Germanic involves movement to AgrO captures the correlation between scrambling and doubling straightforwardly, as the clitic is clearly an agreement marker. According to Alexiadou & Anagnostopoulou (1997c, 1998) an analysis of scrambling as adjunction to VP or as free base generation of arguments does not accommodate the common facts, as it cannot carry over to clitic doubling constructions.

A question that Alexiadou & Anagnostopoulou do not address in their relevant papers is the connection between morphological case and freedom of scrambling/doubling. The distributional facts show that Greek and German have overt morphological case markings and they both have extensive scrambling/doubling. Other Germanic and Null Subject Languages have less case morphology and fewer scrambling/doubling possibilities.

It is worth mentioning and clarifying that both these operations are *overt* operations suggesting that a lot of the differences among languages reduce to the way in which properties of AGR determine the licensing of arguments in the *overt* syntax. This implies that agreement projections are relevant for licensing and interpretation of arguments for the PF Interface, which is not totally true. If this was true then all the interpretational or information structure effects that are sometimes connected to these phenomena would not be primitives driving these operations but rather by-products. More specifically, these effects can be derived if we combine theories of the interfaces such as, for instance, Diesing's (1992) Mapping Hypothesis or Abraham's (1994), Cinque's (1993) and Zubizarreta's (1994) theories of stress with Chomsky's *Attract* theory of Movement.

A precise way of how these interactions between the interfaces can be achieved is the main purpose of the paper. The view adopted in the paper and the main proposal are completely the opposite from Alexiadou's and Anagnostopoulou's deriving the same effects in a more natural way. What this suggests is that the interpretational as well as the intonational effects of scrambling and doubling are not by-products of the operations of the *overt* syntax interpreted at the interfaces (PF, LF). Rather, the discourse requirements and the PF interface conditions are satisfied by syntactic movements resulting in a partitioning of the sentence into *old* and *new* information, that is obeying information structure. Thus, the relation between the prosodic component of the phonological information and the focus/topic articulation in the semantics of the sentence is mediated and represented at the component called syntax.

The realization of AGR and the way its properties are parametrized is subject to strict feature based accounts. Agreement projections may be crucial for the licensing of arguments but they are not the only factor crucial or responsible for that. For example, the case of the Greek gerund which bears no morphological marking of subject agreement and has a defective TP but whose subject nevertheless is licensed Nominative Case in the specifier of TP due to Semantic Tense (cf. Haidou & Sitaridou 2002).

- (16) telionondas o Thodoris to fajito tu, irthe i Maria
 finish-GERUND the Thodoris the food his, come-PAST3PS the Maria
 'When finishing his food Thodoris, Maria came'

Therefore, the operations of scrambling and doubling discussed here have a semantic/pragmatic impact since they affect the information structure of the sentence, i.e. the focus/giveness information.

The analysis adopted here will pursue the claim that the scrambling found in Greek is not like the one found in Germanic. The operation of object movement/scrambling in Greek which results to an alternative word order (from VSO to VOS) is prosodically motivated (p-movement). It has the same realization as the Dutch and German scrambling (Neeleman & Reinhart 1998) but the reason it occurs is not formal feature checking (e.g. AgrO) but the semantic or structural incompatibility of the object DP within the VP domain.

Thus, the main proposal of this paper is that Greek has two types of Object-shift/Scrambling. The first manifestation is semantically motivated and is akin to the one intensively studied for the Germanic languages: it only occurs with presupposed/specific DPs. However, Greek deviates from Germanic by using a different means to manifest Object-shift: clitic-doubling, an optional process that is obligatory when it occurs with direct and indirect object non-pronominals. The hypothesis is that languages comply with semantic well-formedness conditions at the earliest point in the derivation given the means they have at their disposal and the "cutting point" they choose. The second type of Object-shift is p-movement (Zubizarreta 1998), a prosodically motivated movement which changes the asymmetric c-command hierarchy of metrical sisters with contradictory prosodic properties. The latter type has a wider operating domain than the former.² Let's see first how p-movement applies in Greek.

2.5 VOS in Greek and Scrambling

In VOS structures the new information encodes pragmatic considerations. This dimension has a syntactic counterpart in the structure. Unlike Tsimplici (1995), the VOS word order facts in Greek can be explained without a structural FocusP by assuming that prosodic considerations related to focus determine both word order and focus related pragmatic aspects on interpretation. Look at (8):

- (17) Anakalipse tin Ameriki o Kolomvos
 Discovered 3sg the America-ACC the Colombus NOM
 "Columbus discovered America"

In VOS orders the *subject* is considered to be the new information. It receives the main stress in the sentence and must find itself in a position where it is the most embedded constituent bearing the main focus in the sentence e.g. anakalipse tin Ameriki o Kolomvos /discovered 3sg the America-ACC the Colombus NOM.

Following Zubizarreta (1994, 1997), Cinque (1993) and Vallduví (1993) what happens in Greek VOS orders is the following: a syntactic operation, i.e. prosodic movement is performed through which the association of focus and intonational prominence is achieved. The subject, bearing the i-focus, must find itself in a position where it is the most embedded constituent, since the focus of the sentence must also carry the main stress in the sentence. Thus, the object being non-focal is forced to move out of the VP. DP arguments obligatorily leave the VP when they are semantically and structurally incompatible within the VP domain.³ Objects cannot be

² For a similar proposal in Spanish, see Suñer (2000)

³ See Cardinaletti & Starke (1995) analysis on strong vs. weak and clitic elements, the *Grammatical Component of Lightness*.

- (22) a. [IP agorase [VP₂ simera [VP₁i Maria [DP ena forema]]]]
 bought today the Mary-NOM a dress-ACC
 "Mary bought a dress (today)."
 Focus set={OBJ, VP₁, VP₂, IP}
- b. ena forema [IP agorase [VP₂[ADV simera [VP₁ i Maria [DP t_{ena} forema]]]]
 a dress-ACC bought today the Mary-NOM
- ↑
Focus set={ADV, VP₂, IP} (not VP₁)

In the non-scrambled sentence (22a), the focus domain could be the object DP, VP₁, VP₂, or the entire IP. In the scrambled version of the sentence (22b), since the object is scrambled to a higher position, main stress falls on the new rightmost constituent (i.e. subject or adverb). In such a case, a difference appears in the focus domain. First, the adverb or the subject by itself can be the focus domain. This was not a possible focus domain without scrambling. In contrast, the lower VP (VP₁) no longer serves as a potential focus domain, since it no longer contains the stressed phrase. The higher VP (VP₂) can still be the focus domain, but it no longer contains the object.

To conclude, scrambling is a syntactic operation that takes the scrambled phrase out of the focus domain. This is the semantic/pragmatic effect of scrambling. Scrambling changes the focus information structure of the sentence by taking the scrambled phrase out of the focus domain.

3.2 Scrambling and Givenness (Scrambling and Stress-Shifting)

The next question is what happens when scrambling takes place with stress-shifting. When a stress is assigned additionally, it is often claimed that the stressed phrase bears a *narrow focus* interpretation (Reinhart 1995). This means that other phrases receive a non-focus interpretation. Following Schwarzschild (1999), we can call this interpretation *given*.

In fact, deaccented constituents always receive a given interpretation. Therefore, if a phrase with the new information is deaccented, the sentence sounds odd as in (23).

- (23) a. PJOS agorase TI?
 Who-NOM bought3sg what-ACC
 "Who bought what"
- b. * O PETROS agorase autokinito
 Peter-NOM bought-3sg a car-ACC
 "Peter bought a car"

In example (23) both the subject and the object are being questioned. Therefore both the subject and the object in the answer sentence are supposed to carry some new information. In (23b), however, the object is deaccented. This causes an incompatibility between the desired interpretation of the object (focus) and the actually assigned one (given). From this, we can conclude that the deaccented constituent always constitutes a *givenness domain*.

It should be noted, however, that not all unaccented elements are given. Phrases that appear on the left of the stressed element may be interpreted as either given or focus. These elements are different from those on the right of the stress (i.e.,

deaccented elements in that they may be interpreted as focus, and in that they do not constitute a constituent.

Now let us consider the interaction between scrambling and deaccenting. In the last section we saw that scrambling takes the scrambled phrase out of the focus domain. When scrambling takes place with deaccenting, scrambling does something opposite, but in a very consistent fashion. In this case, scrambling takes the scrambled phrase out of the givenness domain.

For example, let look at a case of multiple *wh*-questions. Greek is a "wh-ex-situ" language. This means that the *wh*-element moves to SpecCP under a syntactic analysis. With respect to prosody, *wh*-words such as *pjos/pjon* 'who/whom' and *ti* 'what' behave in just the same way as the stressed phrase in stress-shifting situations: they require a *focal stress*; and the following phrases are deaccented. On the basis of this property of *wh*-words, let us look at the following example.

- (24) a. pjos agorase ti gia pjon?
 Who-NOM bought-3sg what-ACC for whom-DAT
 "Who bought what for whom?"
- b. pjos ipe TI?
 Who-NOM said-3sg what-ACC
 "Who said what?"
- c. pjos edose TI sto Jani?
 Who-ACC gave-3sg what-ACC to John-DAT
 "Who gave what to John?"
- d. sto Jani TI pjos edwse?
 to John-DAT what-ACC who-ACC gave-3sg
 "Who gave what to John?"
- e. sto Jani pjos edose TI?
 to John-DAT who-ACC gave-3sg what-ACC
 "Who gave what to John?"

It should be noted that there are two alternative intonational frames for a Greek interrogative with an in-situ *wh*-phrase. The first is similar to the English echo-question intonation, i.e., rising at the end as well, whereas the second has focal stress on the *wh*-word but no overall rising intonation as in 24(b).

In both cases the *wh*-word needs focal stress, although the intonational pattern of the sentence differs, and, I assume the difference correlates with the final vs. non-final position of the *wh*-element. The question is whether the two in-situ structures correlate with a difference in the [wh] and [f] feature specification of the *wh*-word too or not. Note that both (24b) and (24c) are marked in that their use is highly restricted by the preceding context or discourse, although the conditions in which each construction occurs differ. According to Tsimplis (1997), the interpretation of the question in (24c) can be understood as an information-seeking question more readily than that of (24b). I would thus conclude that an in-situ *wh*-phrase has to be focused, ignoring for the time being the exact conditions in which the differences in intonation should be formulated.

In a number of syntactic analyses on *wh*-movement it has been assumed that the *wh*-phrases can co-occur at the sentence or the clause level. It has also standardly been assumed that the *wh*-phrase is a quantifier occurring in a predetermined scope position, SpecCP or SpecFP. From this position the *wh*-operator binds its variable in the extraction position at LF. Along similar lines, Chierchia (1992) and Reinhart

(1992) argue that the interpretation of wh-phrases in-situ is expressed as existential quantification over choice functions. Indefinite existential quantifiers and wh-phrases, which are also indefinite, pattern in a similar way. According to Reinhart (1992) a sentence like (25a) can have (25b) as its LF representation:

- (25) a. Every lady read some book.
 b. $\exists y \forall x (\text{lady}(x) \rightarrow x \text{ read } y (\text{book}))$

The point here is that the function variable is bound by the existential operator while the restriction of its function, namely *book*, is not pulled out from its base position. The similarity between existentially quantified NPs and wh-phrases is represented as the role of the existential/wh-phrase operating on the *open* argument of a noun, in the sense of Higginbotham (1983). In the case of wh-function variables the position of the binding existential operator is predetermined by the scope of the question-formation operator. According to Tsimpli (1997), in the case of multiple wh-phrases, it is assumed that the existential operator overtly moved to C in the syntax, i.e., the wh-function, binds all function variables in the sense of Unselective Binding.

With respect to echo questions, notice that not all the interpretive possibilities associated with ordinary wh-questions are available. For instance, in the presence of a universal quantifier, the paired-list reading found in normal wh-questions is blocked while the individual or bound variable pronoun readings are available.

- (26) Everyone saw who?
 a. Mary
 b. His mother
 c. *Peter, Mary; John, Patricia;

May (1985) argues that wh-phrases in echo questions are focused and this entails the wide scope reading only. This would exclude the possibility of a paired-list reading for (26c). Focused wh-phrases differ in terms of the operator responsible for binding their variable. More precisely, the difference between a wh-operator and an F-operator is expressed as a difference between a quantificational operator and an individual one. The former would be associated with link functions, in the sense discussed in the previous section, and would bind a function variable. The focus operator, on the other hand, would not be associated with a function and thus would only bind individual variables, disallowing functional readings.

Therefore, as for wh-phrases in echo questions with focal stress, the prediction is that in Greek a wh-phrase with an echo interpretation bears the [f] feature and *can* thus move overtly as a focused element and only as such, as illustrated in Tsimpli (1997). The possibility of an embedded echo question in the same context under the same interpretation is still an option. Their status as focus operators gives the possibility of focused wh-phrases to be spelled out in different clausal positions, i.e., intermediate or final. This is related to the apparently unrestricted possibilities on spell-out of the focus phrases as opposed to wh-phrases. This is precisely a generalization attributed to the restrictions involving quantifiers with relative scope, like the wh-operator, and individual operator with obligatorily broad, i.e. sentential scope, like the focus operator.

There are, however, cases according to Tsimpli (1997), where unless the spell-out position of the focus phrase is the highest in the sentence the intended interpretation, that is wide scope cannot be achieved.

- (27) a. Koitaksēs ton MAKI?
 Looked at-2sgPAST the Mike?
 Did you look at Mike?
 b. TO JANI idēs?
 the Mike Looked at-2sgPAST?
 Was it Mike you looked at?

There is a difference in the interpretation of (27a-b). In particular, whereas in (27a) the yes/no question ranges over the whole proposition, in (27b) the presupposition is that you saw someone and the question operator refers to the individual variable identified by the focus operator, namely JANI. The natural reading of the focused phrase in (a) is that of presentational and not that of contrastive/identificational. This observation might be true for the particular cases. However, later on, there will be shown cases where the apparent constraints on the spell-out possibilities do not exist, regardless of the semantic interpretation and the scope properties of the focused phrases.

After the long presentation of a syntactic analysis I would like to turn back to the prosodic account. If we look again at the examples (24a-e) repeated here as (28a-e) for the sake of convenience, we can observe the following.

- (28) a. pjos agorase ti gia pjon?
 Who-NOM bought-3sg what-ACC for whom-DAT
 "Who bought what for whom?"
 b. pjos ipe TI?
 Who-NOM said-3sg what-ACC
 "Who said what?"
 c. sto Jani pjos edose TI?
 to John-DAT who-ACC gave-3sg what-ACC
 "Who gave what to John?"
 d. ?? STO JANI pjos edwse TI?
 to John-DAT who-ACC gave-3sg what-ACC?
 "Who gave what to John?"
 e. *STO JANI pjos TI edwse?
 to John-DAT who-ACC what-ACC gave-3sg

According to Tsimpli (1997), the interpretation of the question in (28c) can be understood as an information-seeking question more readily than that of (28b). I would thus conclude that an in-situ wh-phrase has to be focused. According to the prosodic account we can observe the following for the examples (28c-e).

The examples in (28c-e) presuppose that there is someone that gave *something* to Jani and the question operator tries to identify a substitute referring to the individual variable identified by the focus operator, namely the [f] wh-phrase *TI*. Thus, *pjos* and *to Jani* are given in the discourse.

In example (28c) the indirect object is scrambled out of the focus domain (verbal) to the left periphery of the sentence and to the left of the wh-phrase *pjos*. The scrambled phrase is not accented here. Phrases on the left of a stressed phrase may be interpreted as given without deaccenting, because they may in principle be outside of the focus domain. In example (28d) the direct object *STO JANI* is moved out of the VP above the subject *pjos* carrying additional stress. Let's suppose that there is an underlying structure S-V- DO, IO where the sequence DO-IO is given. Then, if the IO

is scrambled above the subject carrying focal stress, we can conclude that the IO is scrambled out of a given domain. This is the operation discussed above as scrambling with stress-shifting where an additional stress is assigned to the scrambled phrase and the sister node is deaccented. There is a crucial difference worth discussing between (28d) and (28e). Example (28e) compared to (28d) carries one extra movement. The focused wh-phrase TI is moved outside of the VP domain above the verb *edose*. This is again an operation of scrambling with stress shifting. In both cases, the constituents *pjos* and *edose* are deaccented due to the application of the Deaccenting Rule. (28e) is worse than (28d) being fully ungrammatical. This is again the type of scrambling out of a givenness domain.

Note that all these operations are optional and obey particular discourse requirements that need to be met when certain information is being asked or needs to be focalized. Therefore, in a particular discourse context the speaker will make use of the discourse devices appropriate for the information he/she needs to ask or convey. Given the partition of the sentence into given vs. new information according to the what he has available he would choose the way to convey or ask his/her information by altering the word order in the most effective way for his/her listener. This explains the optionality in word order on the above examples, which may be judged as ungrammatical by many native speakers but which under certain intonation are acceptable.

From the observations here, we can summarize the semantic property of scrambling in a more generalized way: it affects the focus/givenness information structure of the sentence, by taking a phrase out of the givenness focus domain. By doing so, the focus/givenness structure is manipulated so that the focus domain is grouped into one, not divided by any given element. In this sense, scrambling is not a "semantically vacuous" operation.

3.3 Economy and Deaccenting

The above examples (28c-e) all respect the Economy Principle. The reason for that is that in all the above examples the Deaccenting Rule is applied only once and that is the preferred option. We observed that stress shifting is a combination of additional stress assignment and deaccenting. This process is felicitous only when a certain element needs to be interpreted as given.

In a case where two focused elements are found in a sentence and more specifically where these two elements appear discontinuously the sentence is disfavored.

- (29) *PJOS edose TI sto Jani?
Who-NOM gave-3sg what to John
"Who gave what to John?"

Sentences like the above, although they can be said under certain intonation and context, are less acceptable and preferred than (c-e) and almost ungrammatical for the following reasons. Under a syntactic analysis it is claimed that in Greek among other languages multiple foci are excluded. More precisely, assuming that the focus operator identifies its variable, it could not serve as a binder for any other variable with a distinct index. Moreover, if a focus operator has a predetermined sentential scope, co-occurrence of focus phrases is excluded even if one belongs to the matrix and the other to the embedded clause, as shown by the example (30) below:

- (30) *STIN MARIA ipe TON PETRO oti sinandise (Tsimpli 1997)
To Mary-DAT said-3sg the Peter-ACC that met-3sg
"She/he said to Mary that she/he met Peter"

Based on the current prosodic analysis I will propose a different explanation of the above phenomenon. The idea is that when two focused elements appear discontinuously, the sentence is disfavored. In all the sentences in (29-30) two independent stress assignments are needed for each wh-phrase. The difference between (28) and (29-30) is in the number of applications of the Deaccenting Rule. In examples (29 and 30), there are two discontinuous deaccented constituents (the verb *ipe*, *edose* and the embedded clause *oti sinandise* as well as the indirect object *sto Jani*), while in the other two sentences there is only one deaccented constituent. From this fact, we could attribute the decreased acceptability of (29-30) due to a violation of an Economy Principle: *applying the Deaccenting Rule twice is less economical than applying it just once*.

If we focus on the effect of the Economy Principle, we can make sense of why deaccenting always applies at the sister node of the stressed constituent. First of all, we can deduce from the discussion above that the Deaccenting Rule need not apply (and accordingly must not apply, due to the Economy Principle) when only XPs need to be interpreted as given. I showed above that a phrase may be interpreted as given (without deaccenting) if it is on the left of the stress, i.e., outside the focus domain. In general, when an XP has to be interpreted as given, we can derive such an interpretation by scrambling that phrase to the left of the stressed phrase. Scrambling can take an XP out of the focus domain and consequently allow it to be interpreted as given. Therefore, the application of the Deaccenting Rule is not required for XPs. Since it is not required, the Economy Principle prohibits it. Material carrying the verbal head is interpreted as given, unless stress on the verbal head is required by discourse needs. The generalization explains why both (28d) and (29e) are acceptable without any preference of one over the other. Since both derivations require the application of the Deaccenting Rule just once, there is no preference in terms of economy.

In this section, I discussed the semantic/pragmatic aspects of scrambling. I showed that scrambling affects the focus/givenness interpretation of the sentence by taking a phrase out of the focus/givenness domain. I looked at the restrictions on the environment where deaccenting may occur, which are imposed by the Economy Principle. I concluded that deaccenting occurs only when a constituent that contains the verbal head and some other phrases needs to be interpreted as given. This amounts to saying that the Deaccenting Rule always applies to a constituent at the bottom of the syntactic structure.

4 Greek prosody and focus revisited

There exists a well known claim in the literature that in many languages the focus of the sentence contains the main stress of that sentence. My goal is to show that the operation of scrambling discussed above has direct consequences for the syntax of the language by triggering movement in the syntactic component. Scrambling as discussed in sections 1,2 and 3) is in fact not unexpected in Minimalism (Chomsky 1995). Scrambling is seen here as a *stress-driven movement* extracting an element out of the focus domain where stress is needed to be assigned to a different element or out of the givenness domain by stress strengthening.

Before I begin talking on Greek prosody I will make a crucial distinction regarding the application of prosodic rules that apply at the clause level. This distinction is between the syntax-prosody mapping of phrases and the syntax-prosody mapping of clauses. Thus, the clausal and the phrasal level should be kept distinct.

In the same line of argumentation of Selkirk (1984,1986) and Szendrői (2001) I assume that main stress is not assigned in the syntactic representation. Thus, the Nuclear Stress Rule (NSR) applies in the prosodic structure.

The syntax-prosody mapping on the domain of syntactic and phonological phrases is subject to the principle given in (31). Principle (31) can account for semantic types of focus known as contrastive and exhaustive. Based on Nespor & Vogel 1986; Selkirk 1984, 1986; McCarthy & Prince 1993; Inkelas 1989; Inkelas & Zec 1995; Neeleman & Weerman 1999; Vogel & Kenesei 1990, Szendrői 2001, Truckenbrodt 1999).

(31) *Syntax-prosody mapping of phrases (Greek)*

Align the right edge of a syntactic phrase with the right edge of the phonological phrase.

Accordingly at the clausal level, on the basis of the data considered in this paper, the following principle is operative in Greek. Principle (32) captures the cases of information focus, which has been claimed to occur as the most embedded constituent of any XP according to the phrasal metrical rules.

(32) *Syntax-prosody mapping of clauses (Greek)*

a. Align the right edge of the largest extended projection of the V with the right edge of the highest intonational phrase.

Nuclear stress in Greek is assigned to the rightmost phonological phrase in the intonational phrase (32), while phrasal stress is assigned to the rightmost phonological word in the phonological phrase (31). The latter is applicable to information and contrastive focus. At the clausal level in example (33) nuclear stress and phrasal stress occur together on *MARIA* according to the mapping principles (32) and (31).

In example (34) where we get narrow focus on *YANI* principle (31) applies, where phrasal stress is assigned on to *YANI* and principle (32) which closes off the intonational boundary accounting for the constituents that follow as extrametrical. This is the place where a marked operation applies, deriving contrastive focus. This does not exclude the possibility of nuclear stress to be assigned to *i MARIA* by the NSR. Therefore in the unmarked case (33), the right edge of the intonational phrase is aligned with the right edge of the clause. In the marked case it is aligned with the right edge of the phonological phrase other than the one that is final in the clause. The rest of the phonological phrases remain free in the sense of not being integrated into the intonational phrase.

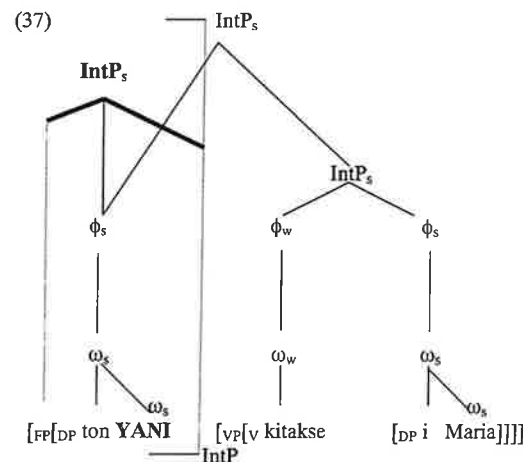
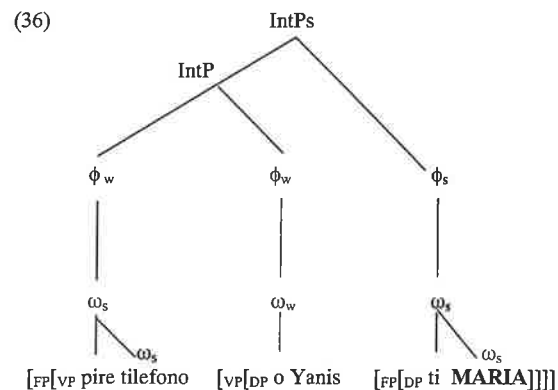
(33) [_F pire telefono o Yanis ti MARIA] ke tis ipe...
[_F took-3SG phone the Yanis-NOM the Maria-ACC] and her-CL told-3SG

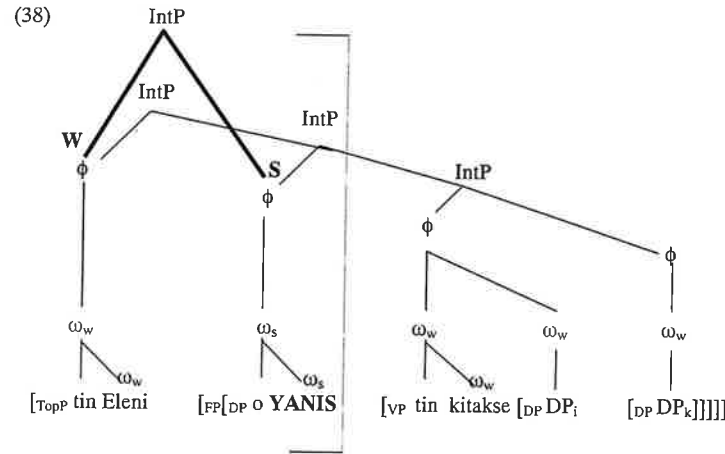
(34) [_F ton YANI] kitakse i Maria (oxi ton Petro)
[_F the Yani-ACC] looked-3SG the Maria-NOM (not the Petros-ACC)
'Maria looked at Yanis (not Petros).'

The following tree diagrams as based on Liberman 1979 and Liberman & Prince 1977 metrical trees. The main stress falls on the node that is only dominated by S-s, that is strong. The dashed lines show the intonational pause that contrastive focus creates with the material that follows. The metrical structure is [W S] in Greek obeying the principles 31 and 32 above. The Greek nuclear stress rule is given in (35):

(35) Greek stress rule:

Assign a Strong label to the rightmost phonological word in the phonological phrase.
Otherwise assign Weak
Assign a Strong label to the rightmost phonological phrase in the intonational phrase.
Otherwise assign Weak
Assign a Strong label to the highest intonational phrase.





As shown in the trees above, I distinguish three different levels. The first level is the syntactic, which maps further into the prosodic ones. Furthermore, phonological words group into phonological phrases creating the second prosodic-phonological phrase-level, which further group phonological phrases into intonational phrases, the third prosodic-intonational phrase-level. The levels are mapped as pairs of representations. The stress is assigned in the prosodic representation, which is distinct from the syntactic one. Given that main/nuclear stress will fall on the right most element in the prosodic structure, main stress will fall on that constituent, as in (36). What is crucial is that it does not matter for the prosodic operation of stress assignment that this element is not always the rightmost within the syntactic structure. This is because the two operations are distinct.

Contrastive stress is assigned at an extra intonational level which comes and outlays on top of the intonational phrase level which defines the normal-nuclear stress of the sentence, as in (37, 38). Therefore semantic notions of contrastiveness and exhaustiveness require specific prosodic processes adding a different dimension of interpretation, whereas information focus obeys to normal prosodic processes (i.e. NSR). Contrastive focus is not prosodic in the sense of information focus. An in depth explanation on the differences of focus in Greek is given in the next section where I elaborate on Williams (2001) 'Representational Theory'.

5 Two Semantic types of Focus

Why is it the case that information focus is obligatorily clause-final in Greek but contrastive focus is not subject to such a requirement. I will illustrate the differences basing my proposal on Williams (2000) Representation Theory to account for the particular semantic effects that arise. Williams generates two types of focus. One kind of focus generates a propositional presupposition—that is, a presupposition that some proposition is true. This sort of Focus is found for example in the Cleft construction:

(39) It was John that Bill saw

(39) presupposes that Bill saw someone. This is what he calls a Logical Focus (LFocus). The other kind of focus is tied directly to the placement of main sentence accent, but does not involve anything presuppositional—for example:

(40) John wants a red hat and a BLUE hat

The "presupposition" generated by focusing on BLUE is just the word hat and nothing than that. As this kind of focus pertains to what has been called the information structure of the sentence, inducing accent placement, he calls it Information Focus (IFocus).

Returning back to the problem with Greek, we must distinguish normal focus from contrastive focus. The IFocus/LFocus distinction gives us the means of treating them separately without abandoning a common account of the phenomena described. First, why must answer to a question, which we have identified now as LFocus, be final in Greek, as illustrated in the examples in (41):

(41) **object focus:** Pion kitakse i Maria?
Who did Mary look at?

- a. I Maria kitakse $[\text{F ton YANI}]$
the Maria-NOM looked-3SG $[\text{F the Yani-ACC}]$
'Maria looked at Yani'
- b. * $[\text{F ton YANI}]$ kitakse i Maria
* $[\text{F the Yani-ACC}]$ looked-3SG the Maria-NOM

Williams assumes that, if the LFocus is a right-peripheral constituent of Surface Structure or Quantifier Structure, then the IFocus, which is directly related to the accented constituent in Prosodic Structure, will be rightmost as well, under the canonical representation. What we need to do then for Greek is to impose the requirement that this map supersedes any other in the derivation. This would explain why Greek answers must always be postposed. Second, why is the requirement of rightward positioning not imposed for contrastive focus? The answer is short, because contrastive focus does not involve LFocus but Informational Focus. The LPresupposition is a presupposition of truth and as it has been shown, it is not relevant to the general case of contrastive focus, example (42):

(42) I prefer the red book to the $[\text{BLUE}]_{\text{IFocus}}$ book.

The same notion of information structure is applicable to both contrastive and normal focus, but the requirement of rightward positioning for answers stems from the syntax of LFocus in SS, not from IFocus, and so has no effects on examples like (43):

(43) $[\text{F o YANIS}]$ tin kitakse tin Eleni
 $[\text{F the Yanis-NOM}]$ her-CL looked-3SG the Helen-ACC
'Yanis looked at Helen'

The focusing of (43) involves no truth presupposition, insofar as saying *YANIS looked at* does not presuppose the truth of *someone looked at*; it presupposes that *x looked at* has occurred in the discourse already, but that it is nothing than to say that *x looked at* is an anaphor, not that it is true:

(44) *i Katerina den tin kitakse*, [_F o YANIS] *tin kitakse tin Eleni*

The licensing of the anaphor *looked at* is provided by *i Katerina den tin kitakse* in (44), even though that clause explicitly denies that Mary telephoned, and give no indication that anyone else did.

6 Conclusion

In this paper I propose an analysis based on the syntax-prosody mapping to account for focus constructions in Greek. I based myself on a number of assumptions: Syntactic and prosodic representation are independent modules of the grammar connected by the principles of the syntax-prosody mapping. Stress is assigned and defined in prosodic representation. Firstly, I discussed thoroughly Greek scrambling from three different aspects: phonology, semantics/pragmatics and syntax, where I proposed that there are two manifestations of Greek scrambling. According to the structure provided by the syntactic component, the prosodic component calculates the position of the main stress, applying the NSR, and optionally, additional stress assignments and the Deaccenting Rule. The focus structure is calculated according to the position of the stress. Under this framework, whether a phrase is scrambled or not affects the interpretation, since word order will affect where the stress falls, and accordingly, will affect how the focus structure is constructed. I also showed how the syntax-prosody mapping rules can be applied to the Greek focus structures, following the principles adapted (Selkirk 1984, 1995; McCarthy & Prince 1993; Liberman 1979 and Liberman & Prince 1977, Szendrői 2001). Moreover, I provided a prosodic explanation for the phenomenon of *contrast*, which requires an extra intonational level of analysis. I also showed based on Williams 2000 that the difference between contrastive and information focus lays on the assumption that the former has no truth propositional presupposition and by that I could argue for the different syntactic positions –postverbal and preverbal- of focus.

References

- Alexiadou, A. and E. Anagnostopoulou (1997). Toward a Uniform Account of Scrambling and Clitic Doubling. In W. Abraham and E. van Gelderen (eds.) *German: Syntactic Problems- Problematic Syntax*, Max Niemeyer Verlag, pp. 142-161.
- Alexiadou, A. and E. Anagnostopoulou (1998a). Parametrizing Agr: word order, verb-movement and EPP checking. *Natural Language and Linguistic Theory* 16: 491-539.
- Alexiadou, A. and E. Anagnostopoulou (2000). Clitic and (Non-) Configurationality To Appear in *NELS* 30
- Alexiadou, A. and E. Anagnostopoulou (2000). The Subject In-situ Generalization, and the role of Case in driving computations, Lecture Notes, Girona GLOW Summer School in Linguistics.
- Alexiadou, A. and E. Anagnostopoulou (1999). On the Properties of some Greek Word Order Patterns. In A. Alexiadou, G. Horrocks, and M. Stavrou (eds.) *Studies in Greek Syntax*. Kluwer, pp. 46-65.
- Alexopoulou, T. (1999). The Syntax of Discourse Functions in Greek: a Non-Configurational Approach, Ph.D. Dissertation, University of Edinburgh.
- Jackendoff, R. (1997). *The architecture of the language faculty*. Cambridge, Mass.: MIT Press.
- Brody, M (1995b). *Lexico-Logical Form*. Cambridge, Mass: MIT Press.
- Chomsky, N. (1995). *The Minimalist Program*. Cambridge, Mass: MIT Press.
- Chen, M (1987). The syntax of Xiamen Tone Sandhi. *Phonology Yearbook* 4:109-150.
- Cinque, G. (1993a). "A Null Theory of Phrase and Compound Stress" *Linguistic Inquiry* 24: 239-297.
- Nespor, M & I, Vogel (1986). *Prosodic Phonology*. Dordrecht: Foris.
- Haidou, K. (2000). Word Order, DP-Focusing and the PF Interface: Evidence from Greek. *SOAS Working Papers in Linguistics* Vol 10 :161-192.
- Haidou, K. (2001). Focus movement vs. focus in-situ. A prosodic approach. Can we dispense with focus movement at LF? *SOAS Working Papers in Linguistics* Vol 11: 67-202.
- Halle, M and J-R Vergnaud. (1987). *An Essay on Stress*. Cambridge, MA: MIT Press.
- Harlig, J & K, Bardovi-Harlig (1988). Accentuation typology, word order and the theme-rheme structure. In *Studies in syntactic typology*, Michael Hammond, Edith A. Moravcsik & Jessica R. Wirth (eds.),125-146. Philadelphia: John Benjamins Publishers.
- Inkelas, S.(1989) *Prosodic constituency in the lexicon*. Doctoral dissertation. Stanford: Stanford University.
- Inkelas, S & D, Zec (1995). Syntax-phonology interface. In John Goldsmith (ed.) *Handbook of Phonology*. Cambridge, Mass.: Blackwells. 535-549.
- Ladd, D. Robert. (1996). *Intonational Phonology*. Cambridge, England: Cambridge University Press.
- Liberman, M. (1979). The intonational system of English. Ph.D. dissertation, MIT,1975. New York: Garland Press.
- Liberman, M. & A. Prince (1977). On stress and linguistic rhythm. *Linguistic Inquiry* 8:249-336.

- Mahajan, A. (1994). Toward a Unified Theory of Scrambling. In *Studies on Scrambling Movement and Non-Movement Approach to Free Word-Order Phenomena*, ed. Norbert Corver and Henk van Riemsdijk, 301-330. Berlin: Mouton de Gruyter.
- McCarthy, J. & A. Prince (1993). Generalized alignment. In *Yearbook of Morphology 1993*: 79-154
- Neeleman, A. & F. Weerman. (1999) *Flexible Syntax: A theory of case and arguments*. Dordrecht: Kluwer.
- Neeleman, Ad and T. Reinhart. (1998). Scrambling and the PF Interface. In *The Projection of Arguments Lexical and Compositional Factors*, ed. Miriam Butt and Wilhelm Geuder, 309-353. Stanford, California: CSLI Publications
- Philippaki-Warbuton, I. (1982). Problematika shetika me tin sira ton oron stis ellinikes protasis. *Glossologia*.1.99-107.
- Philippaki-Warbuton, I. (1985). Word order in Modern Greek. *Transactions of the Philosophical Society*, 113-143.
- Reinhart, T (1995). *Interface Strategies*. *OTS Working Papers*. Utrecht: OTS Utrecht University.
- Rochemont, M. (1986) Focus in generative grammar. Amstredam: John Benjamins
- Schwarzschild, R. GIVENness, AvoidF and other Constraints on the Placement of Accent. *Natural Language Semantics* 7:141-177.
- Selkirk, E (1984). *Phonology and Syntax*. Cambridge, Mass.: MIT Press
- Selkirk, E (1986). On derived domains in sentence phonology. *Phonology Yearbook* 3, 371-405.
- Selkirk, E (1995). Sentence Prosody, Intonation, Stress and Phrasing. In *The Handbook of Phonological Theory*. Blackwells.
- Szendrői K. (2001). *Focus and the Syntax-Phonology Interface*. Ph.D. Dissertation, UCL.
- Truckenbrodt, H. (1999). On the relation between syntactic phrases and phonological phrases. *Linguistic Inquiry* 30.2 219-255.
- Tsimpli, I-M. (1995). Focussing in Modern Greek. In K. Kiss (ed.), *Discourse Configurational Languages*. New York: Oxford University Press, 176-206.
- Tsimpli, I-M. (1997). Individual and Functional Readings for Focus, WH-and Negative operators: Evidence from Greek. In *Themes in Greek Linguistics II*, Edited by Brian D. Joseph, Geoffrey C. Horrocks and Irene Philippaki-Warbuton, *Current Issues in Greek Linguistics* 159, 197-227, Benjamins.
- Vallduvi, E & E. Engdahl (1996). The linguistic realisation of information packaging. *Linguistics* 34: 459-519.
- Vogel, I. & Kenesei Istvan (1990). Syntax and Semantics in Phonology. In *The Phonology-Syntax connection*, Sharon Inkelas & Draga Zec (eds.), 339-363. Chicago: The University of Chicago Press.
- Zubizarreta, M-L. (1994). Grammatical Representation of Topic and Focus; Implications for the Structure of the Clause. *Cuardenos de Linguistica del I.U. Ortega y Gasset* 2: 181-208.
- Zubizarreta, M-L. (1995a). Some prosodically motivated movements. In G. Cinque, J.Koster, J.-Y. Pollock, L. Rizzi, and R. Zanuttini, eds, *Paths Towards Universal Grammar*. Washington, D.C.: Goergetown University Press.
- Zubizarreta, M-L. (1998). *Prosody, Focus and Word Order*, Mass: MIT Press.
- Williams, E. (2000). *Representation Theory*. Ms. Princeton