

Focus in Greek wh-questions

Theodora Alexopoulou and Mary Baltazani
RCEAL Cambridge and University of Ioannina
ta259@cam.ac.uk and mbaltaz@cc.uoi.gr

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Abstract

We present an analysis of multiple focus sentences in Greek. On an empirical level, we show that the current generalisation in the Greek literature that multiple focus is unavailable in Greek is too strong as it stands. What is unavailable is multiple maximal foci in sentences where one focused item has moved to the left periphery. We view the unavailability of multiple foci in such sentences as an interface mismatch between interpretation and phonology. Roughly, what is unavailable is not multiple focus but multiple sentence nuclei. We couch this intuition in Büring's (2008) analysis which provides a theory of mapping the domain of focus operators to domains of prosodic prominence. We further identify and discuss a set of previously unreported data indicating the availability of 2OF in Greek, also providing experimental data to support our analysis. The empirical data mainly involve multiple wh-questions.

1 Introduction

The paper focuses on *matching* multiple constituent questions in Greek, that is, multiple wh-questions as in (1a), that elicit pair-list answers as in (1b) (see Krifka 2001).

- (1) a. pios filise pion
who-NOM kissed-3SG who-ACC
Who kissed who.
b. o Petros ti Maria, i Eleni ton Kimona
the-NOM Petros-NOM the-ACC Maria, the-NOM Eleni-NOM the-ACC Kimon
Petros (kissed) Maria, Eleni (kissed) Keemon ...

Matching multiple questions in Greek exhibit most characteristic properties of their crosslinguistic counterparts: they give rise to a topic-focus answer where the topic functions as the "sorting key" for answering the question (Bolinger 1978; Kuno 1982). What makes questions like (1) interesting in Greek is their prosodic realisation. They are unavailable with a direct question melody. Instead, they are uttered with the melody of indirect questions. Understanding the nature of this restriction is the focus of the current paper. We examine how the properties of direct and indirect constituent questions interact with the structure of multiple constituent questions. As we shall see, a crucial difference between direct and indirect questions is that in the former, the wh-item necessarily bears the nuclear accent of the sentence. Consider (2), exemplifying a direct (2a) and indirect question (2b). Two important properties of indirect questions are of relevance here: (i) an indirect question can be uttered with or without an embedding predicate in an overt matrix clause (*pes mou*); (ii) direct and indirect questions have different melodies¹; in

¹This is irrespective of the overt presence of an embedding predicate for the indirect clause.

(2a), the direct question, the nuclear accent (NPA), indicated by small caps, is aligned with the fronted wh-item and the boundary tones are rising, indicated by /. By contrast, in the indirect question (2b), NPA is aligned with the right edge of the sentence and there are falling boundary tones, indicated by \. The direct and indirect questions, therefore, can be string identical and yet be distinguishable from each other due solely to their different melody. Viewed under this light, the main fact to be explained in this paper is why a multiple question like (1a), repeated below as (3a), is only available with the melody of an indirect question, i.e. with the NPA aligned with the right edge of the sentence. Such multiple questions are ungrammatical with a direct question melody involving NPA on the first wh-item, as shown in (3b).

- (2) a. PIOS filise ti Maria /
 who-NOM kissed-3SG the-ACC Maria
 Who kissed Maria? (*Direct question*)
 b. (pes mu) pios filise ti MARIA \
 (tell-2SG me) who-NOM kissed-3SG the-ACC Maria
 (Tell me) who kissed Maria (*Indirect question*)
- (3) a. pios filise PION / (*Indirect question melody*)
 b. *PIOS filise pion \
 (*Direct question melody*)

The main phonological feature of direct wh-questions, NPA on the fronted element followed by de-accenting, is also the phonological signature of another very productive structure in Greek, namely focus-movement as in (4b). In terms of interpretation, the two structures are closely related, since *pion* and *Yani* in (4) can be analysed as focused items (in the sense of alternative semantics—see Section 4.1.1). This brings us to another central question of our investigation, the relation of wh-movement with focus-movement and especially the interaction of the two in direct and indirect questions. Indeed, the two structures have been linked in the literature. Based on the phonological and structural similarities of focus-movement and wh-movement in direct questions, Tsimpli (1995) proposes that the wh-item in direct questions moves like a focused item, i.e. it undergoes focus-movement, rather than wh-movement; the latter takes place only in indirect questions (for details see Section 4.2.2). We will adopt this basic hypothesis which brings us to a third set of questions we will address in this paper.

- (4) a. PION filise i Maria /
 who-ACC kissed-3SG the-NOM Maria
 Who did Maria kiss?
 b. to YANI filise i Maria
 the-ACC Yanis-ACC kissed the-NOM Maria
 Maria kissed Yanis.

If interrogative pronouns in Greek move sometimes like focused items and sometimes by virtue of their wh-features we need to understand what licenses each type movement. More precisely, the question is why should indirect questions involve standard wh-movement but direct ones focus movement of the interrogative pronoun. Is the interrogative pronoun only focused in direct questions but not in indirect ones? And, going back to our main question, how does this alternation between focus and wh-movement interact with multiple questions, so that they are only compatible with indirect questions? We will consider these questions by looking in detail into the information structure of questions.

A withheld assumption in the Greek literature is that focus is unavailable in direct wh-questions like (5a) while, at the same time, multiple focus is generally unavailable (5b) (Tsimpli 1995; Alexopoulou 1999; Baltazani 2002).

- (5) a. *me PION efige o MANOLIS
 with who-ACC left-3SG the-NOM Manolis-NOM
 Who did Manolis leave with? (*Direct question melody*)
- b. *o PETROS ipe oti i Maria efige me to
 the-NOM Petros said-3SG that the-NOM Maria-NOM left-3SG with the-ACC
 MANOLI
 Manolis-ACC
 Petros said that Maria left with Manolis.

In exploring the information structure of constituent questions, we will focus on sentences involving multiple focus and present a new set of data indicating that the facts illustrated by (5) are less clearcut than assumed in the literature. For instance, focus appears to be available in direct questions like (6a) which involve longer strings than (5a); the effect appears also in declaratives (6b). *Yani* in (6) is perceived as prominent by native speakers. Understanding the contrast between (5) and (6) is crucial for understanding the properties of multiple focus sentences in Greek, and their relevance for the analysis of multiple constituent questions.

- (6) a. PIOS protine na stilume to **Yani** stis
 who-NOM decided-3SG SUBJ send-1PL the-ACC Yanis-ACC to-the-ACC
 Vrikseles
 Brussels-ACC
 Who decided that we send Yanis to Brussels?
- b. o PETROS itan aftos pu epise tin
 the-NOM petros-NOM was this-NOM that convinced-3SG the-ACC
 epitropi na stilume to **Yani** stis Vrikseles
 committee-ACC SUBJ send-1PL the-ACC Yanis-ACC to-the-ACC Brussels-ACC

Petros was the one who convinced the committee to send Yanis to Brussels.

The paper has two main goals. On the empirical side, our goal is to establish the nature and robustness of the empirical facts. We report results from three elicitation studies that aim to (i) establish the prosodic contrasts between direct and indirect multiple constituent questions and (ii) clarify the phonetic/phonological properties of the focused item in examples like (6). On the analytical side, our goal is to provide an explanation for the unavailability of matching multiple constituent questions with direct question prosody. Our analysis builds on Tsimpli's proposal that a fundamental difference between direct and indirect questions is that the *wh*-item moves like a focused item in the former. However, we depart from her strictly syntactic explanation and present an analysis that views the properties of multiple focus sentences in Greek as a consequence of conditions on the interface between phonology and Information Structure. We formulate our analysis in the context of Büring's (2008) Domain Theory of Focus Primacy, a theory capturing cases of multiple focus sentences. The theory distinguishes between maximal/primary and non-maximal focus, a distinction that will be relevant in our analysis of examples like (6). Further, the theory makes specific predictions about cases where more than one (maximal/primary) focus is involved; we will argue that multiple constituent questions instantiate such cases.

The structure of the paper: Section 2 introduces the basics of the realisation of Information Structure in Greek including a discussion of the prosodic properties of *wh*-questions and multiple focus sentences. In Section 3 we present results of three experiments establishing the prosodic contrasts between direct and indirect questions and multiple focus sentences. Our analysis is presented in Section 4.

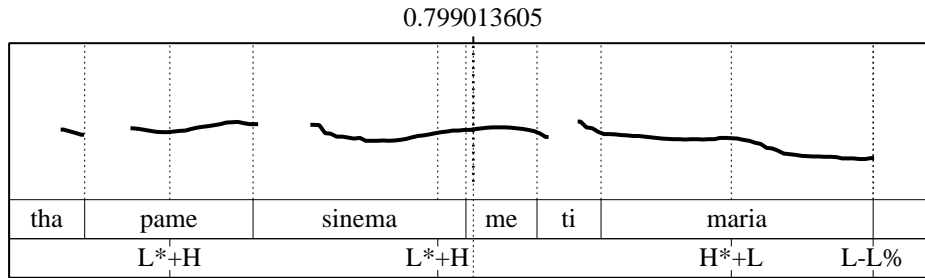


Figure 1: The typical prosodic contour of a declarative sentence uttered in an 'all new', broad focus context.

2 Background

2.1 Information Structure in Greek

We follow standard assumptions in the literature that Information Structure refers to the division of a sentence into parts such as new/old information, focus and background, theme and rheme, topic and comment etc. We study Information Structure by focusing on question-answer pairs, under the assumption that questions direct the conversation and are seen as the context of the answers. The construction of appropriate/felicitous answers is governed by the Information Structure of a given answer in the context of a question and its mapping to structural conditions which, in the case of Greek, are prosodic and, in some cases, syntactic ones. For current purposes we assume that what is usually called the new information in the answers corresponds to the wh-constituent in questions and the remainder is the old information (Halliday 1967; Chafe 1974; Vallduví 1992; Steedman 1991; Roberts 1996; Vallduví and Engdahl 1996; Büring 1997; Steedman 2000). In what follows we refer to new information in this sense as focus. In other words, we use the term 'focus' in its semantic/pragmatic notion and distinguish it from its prosodic realisation which we will refer to as 'nuclear stress' or 'nuclear pitch accent' (NPA).

Consider (7b), an 'all new', broad focus declarative sentence, where we indicate nuclear stress with SMALL CAPITALS.

- (7) a. Q: ti tha kanete apopse?
 what will do-2PL tonight
 What are you doing tonight?
- b. A: tha pame sinema me ti MARIA
 will go-1PL cinema-ACC with the-ACC Maria-ACC
 We're going to the cinema with Maria.

Figure 1 shows the typical prosodic contour of a declarative sentence uttered in an 'all new', broad focus context. The two pre-nuclear content words, *pame* and *sinema* carry a L*+H pitch accent each, and the last constituent, *Maria*, carries the H*+L nuclear pitch accent (NPA) followed by a L-L% combination of phrase accent and boundary tone².

Greek has flexible word order, that is, it can move phrases around through 'focus-

²We follow standard GRT0BI notation for the description of intonation in our examples (Arvaniti and Baltazani 2005).

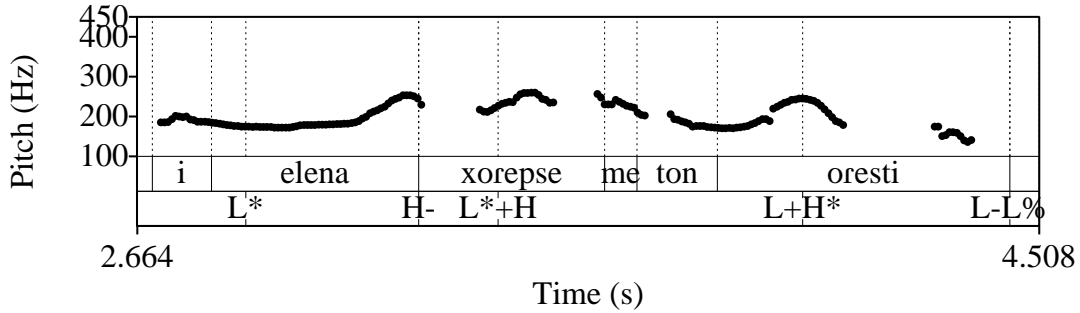


Figure 2: Compare this broad focus utterance (example (8)) with the narrow focus one in Figure 2. Broad focus is prosodically encoded by a H*+L on *oresti*.

movement'; moreover, it is 'plastic' in Vallduví's (1992) terms, that is, it can shift accent around, like English and unlike Romance languages. So the verbal complement, *me ton Oresti*, may receive nuclear accent in-situ (8) but also in a preverbal position (9); the difference is that in the latter case the interpretation is necessarily one of narrow focus, while in the former it can be either broad or narrow focus.³ In general, when NPA falls on a constituent other than the rightmost/most embedded, then only a narrow focus interpretation is available.

- (8) [i Elena_{Top} horepse me ton ORESTI]_F
 the-NOM Elena-NOM danced-3SG with the-ACC Orestis-ACC
 Elena danced with Orestis.
- (9) [me ton ORESTI]_F horepse i Elena
 with the-ACC Orestis-ACC danced-3SG the-NOM Elena-NOM
 It is Orestis that Elena danced with.

Figure 2 shows the prosodic realisation of utterance (8) and figure 3 of utterance (9). From the prosodic point of view, the difference between broad (8) and narrow focus (9) also shows up in the type of pitch accent used on the word carrying the nuclear stress, *oresti*. Notice that narrow focus here is realized with a L+H* nuclear pitch accent, whereas the broad focus NPA in Figure 2 (as well as in Figure 1) is H*+L. Crucially, in-situ narrow focus and preverbal narrow focus have the same interpretation. But the material preceding in-situ focus is organised in prosodic phrases with local pitch accents while material following preverbal focus is deaccented and necessarily interpreted as old/given information.⁴

The realization of old information is not as uniform as new information. Consider again (9). An important feature in this example is that the post-nuclear part of the sentence, *horepse i Elena*, is necessarily deaccented and interpreted as old information. In general, for affirmative declaratives, whenever nuclear stress moves leftwards, it causes

³We follow standard assumptions in the Greek literature, going back to Philippaki-Warburton (1985) that Greek is VSO and that preverbal constituents, including subjects, are either topics or foci (but see Roussou and Tsimpli 2006 who argue for the existence of some cases of "true" preverbal subjects.) An example like (8) has a VP focus with the subject as a topic. However, such examples are also acceptable in all-focus contexts as shown in Keller and Alexopoulou (2001).

⁴See Neeleman and van de Koot's (2007) assumption that foci move preverbally to make material left in-situ given.

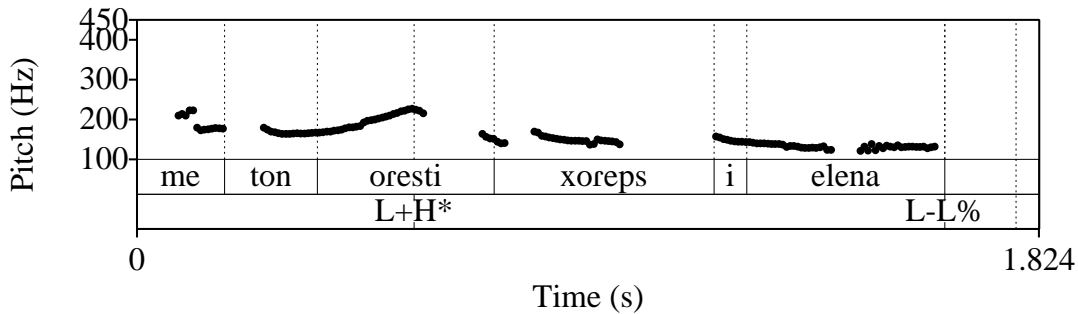


Figure 3: An utterance with narrow focus interpretation on its object, *oresti*, which has moved to the left edge. Narrow focus is prosodically encoded by a L+H* pitch accent on *oresti*.

deaccenting of post nuclear accent material. Deaccenting encodes given information, but, crucially, not the other way around: given information is not always encoded by deaccenting, but it can be topicalized by moving to the left.⁵ Deaccented material always occurs on the right edge, but topicalized material always occurs on the left edge.

To sum up: (i) There is a prosodic requirement for focus to be always associated with the nuclear pitch accent. (ii) In narrow focus cases the domain of focus is just the constituent bearing nuclear accent. (iii) In broad focus, the domain of focus extends leftwards beyond the nuclear accent bearer assigning prenuclear pitch accents to content words. (iv) There is a prosodic requirement for post-focus material to be deaccented.

2.2 Wh-questions in Greek

As indicated in the introduction, Greek is a wh-fronting language so wh-words move to the left periphery in general. The tune for wh-questions is a L*+H nuclear pitch accent aligned with the wh-word, followed by a L-!H% boundary⁶, with the L- phrase accent spreading between the nuclear pitch accent and the final !H%, which remains approximately in the middle of the speaker's range (Arvaniti 1996; Baltazani 2002; ?) The NPA in wh-questions invariably stays with the wh-word.

Figure 4 shows the wh-question melody for a long direct question (10) which makes clear the absence of accents on the material following the wh-word. F0 rapidly falls after the wh-word⁷ and remains low until the last stressed syllable which is the lowest L target (marked with a L- phrase accent) before the rise for the !H% boundary. In this respect Greek contrasts with English where wh-questions behave just like affirmatives, that is, the nuclear stress is usually on the last word.

- (10) PION ides sto parti me tin eleni ehtes?
 who-ACC saw-2SG at-the-ACC party-ACC with the-ACC eleni-ACC yesterday
 Who did you see yesterday at the party with Eleni?

⁵Topic objects mainly undergo Clitic Left Dislocation (Philippaki-Warbuton 1985; Anagnostopoulou 1994).

⁶For a more recent analysis of the prosodic structure of wh-questions see Arvaniti and Ladd (2009). There are differences in the analysis of the prosodic structure of wh-questions in that paper, which, however, do not affect our analysis here.

⁷F0 may not fall immediately after the wh-phrase, but a bit later, after the stressed vowel of the word following the wh-word, see Arvaniti and Ladd (2009). Thanks to Micha Wagner for raising this point.

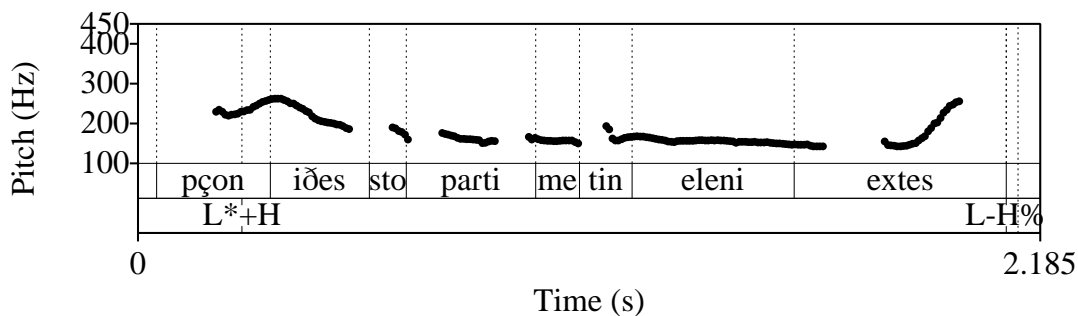


Figure 4: A typical wh-question in Greek with the nuclear stress on the wh-word, *pion*, and a combination of L-H% tones at the boundary. There is no other pitch accent between the L*+H and the L-H% because all the words after *pion* are post-nuclear and as such they must be deaccented.

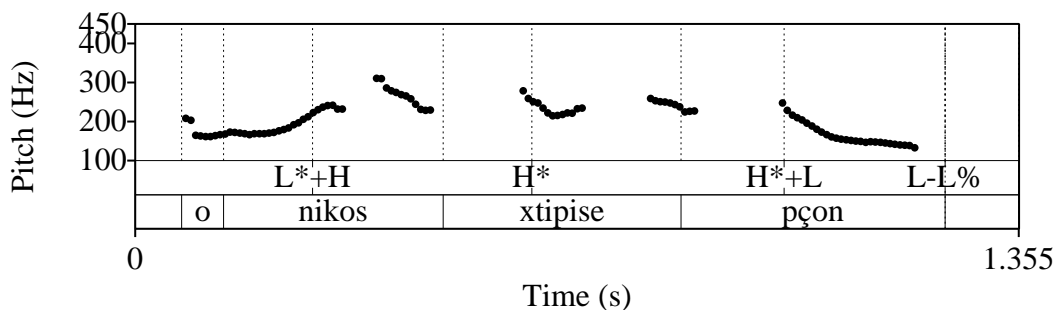


Figure 5: An utterance with the wh-word in situ. Notice that its melody is declarative (like in Figure 1 and 2).

In Greek it is also possible to have the wh-word in situ like in (11). In such cases, the melody used can be either the standard wh-question intonation or a declarative one (most often), but in either case the nuclear stress must be on the wh-word, as is shown in Figure 5.

- (11) o Nikos htipise PION
 the-NOM Nikos-NOM hit-3SG who-ACC
 Nikos hit who?

To sum up, there is a prosodic requirement in direct wh-questions for nuclear stress to align with the wh-phrase irrespective of whether the wh-phrase is moved or in-situ.

Let us now turn to indirect questions like *pios tha paralavi to dema apo tin trapeza* in (12): they necessarily involve a wh-item at the beginning of the clause and, unsurprisingly, their melody turns out to be the same as the melody of declaratives: the NPA is on the right edge of the IP, which ends in L-L% (cf. Figure 1). So, unlike direct wh-questions, the wh-phrase does not normally carry sentential stress (unless it is focused in itself, see (i) in Section 4.2.2).

- (12) Pite mu pios tha paralavi to dema apo tin TRAPEZA
 tell-2PL me who-NOM will receive-3SG the parcel from the bank
 Tell me who will receive the parcel from the bank.

An interesting property of the indirect question in (12) is that it can appear free-standing and alternate with direct wh-questions. Consider (13). In this context, the wh-question can be produced in two ways: (i) with the melody of a direct wh-question intonation, i.e. with NPA on the fronted wh-item followed by de-accenting or (ii) with the melody of an indirect question, i.e. with NPA on the right edge, ending in L-L%. In the latter case, the question *pios tha paralavi to dema apo tin trapeza* appears as a fragment of an indirect question (cf.(12)) missing the embedding verb. Let us call this type of indirect question *covert* indirect question to distinguish it from an example like (12)—let us call it *overt* indirect question— where the embedding verb is explicit.

- (13) ENA pragma thelo na ksero. Pios tha paralavi to dema
 One thing want-1SG SUBJ know-1SG. Who-NOM will receive-3SG the parcel
 apo tin trapeza.
 from the bank
 I want to know one thing. Who will receive the parcel from the bank? (*direct or
 indirect question melody*)

In (13), the verb *ksero*, though only implicitly embedding the covert indirect question, is still explicit in the discourse/context. It is worth pointing out that an embedding verb may be completely absent from the discourse context. Consider (14). At the end of a dinner the host brings ice-cream and various cakes to the table as dessert; kids start shouting all together and the host cannot figure out who wants what. In this context the host can say (14) as a covert indirect question without mentioning any embedding verb at all.

- (14) Isihia! Prot'ap'ola pios theli pagoto
 Quiet! first-from-all who-NOM want-3SG ice-cream
 Quiet. First of all who wants ice-cream (*covert indirect question melody*)

The general ambiguity of contexts like (13) and (14) will be of relevance in understanding multiple wh-questions. One analytical question is why the two types of questions, direct and (covert) indirect are possible in contexts like (13) and (14) and whether they are interpretationally equivalent. We take up this question in Section 4.

2.3 Multiple wh-questions

As mentioned in the introduction, an important fact about multiple wh-questions in Greek is that they are unacceptable with a direct question prosody (15) (indicated by two putative accents on both wh-items which are in small caps). Intuitively, this relates to the fact that the wh-item receives nuclear stress in Greek questions by deaccenting the material that follows. Consider (15a). Nuclear stress on *pios* in (15a) requires deaccenting of *htipise pion*. On the other hand, the in-situ *pion* also requires nuclear stress, a requirement incompatible with deaccenting. Since it is impossible to satisfy both requirements simultaneously, examples like (15a) are impossible in Greek *with normal direct wh-question melody*. In other words, the need for nuclear stress on the wh-items makes conflicting requirements on the phonological realization of such sentences.

- (15) a. *PIOS htipise PION
 who-NOM hit-3SG who-ACC
 Who hit whom?

- b. *PIOS ipe oti o Petros htipise PION
 who-NOM said-3SG that the-NOM Petros-NOM hit-3SG who-ACC
 Who said that Petros hit whom?

Interestingly, multiple wh-questions are possible in Greek if they are produced with the melody of an indirect question. In fact this is the *only* melody they can be pronounced with.⁸ followed Like (58a), (16) can be produced without any embedding verb, for instance in a context where children have been playing and are now complaining to an adult about hitting each other but the adult cannot figure out who hit who.

- (16) pios htipise PION
 who-NOM hit-3SG who-ACC
 Who hit who.

2.4 Focus and wh-questions

Let us now turn to the interaction between focus and wh-questions. In English it is possible to place narrow "focus" on some constituent other than the wh-word by means of nuclear stress as in (17). A natural context for (17) is one in which we are discussing who left with whom last night. After someone says 'Bill left with Mary', it is natural to ask (17) with narrow focus on *John*, if in addition to *Bill* I want to know about *John's* partner.

- (17) Who did JOHN leave with?

As indicated in the introduction, a wideheld view in the Greek literature is that focus is unavailable in questions like (18) (Tsimplici 1995; Alexopoulou 1999; Baltazani 2002). Note that this generalization has to do with the wh-question melody and given what we've seen so far this is not surprising, since both focus and the wh-word "compete" for the nuclear stress.

- (18) *me PION efige O MANOLIS?
 with who-ACC left-3SG the Manolis-NOM
 Who did MANOLIS leave with?

In the absence of focus, Greek resorts to Topicalisation to obtain meanings like (17), see Baltazani (2002). In (19), *Manolis* is topicalised and followed by a usual direct wh-question melody, with *pion* carrying the L*+H NPA ((19)).

- (19) o manolis_{Topic} me PION efige?
 the Manolis-NOM with who-ACC left-3SG
 Who did MANOLIS leave with?

Unlike direct questions, indirect questions allow focus as shown in (20), where *Manolis* is focused. But note that (20) does not have the same interpretation with (17). (20) has a metalinguistic correction meaning, i.e., 'I didn't ask you who NIKOS left with, but who MANOLIS left with'.

⁸One anonymous reviewer disagrees with the strength of our statement and suggests that a direct wh-question melody *can* be available for multiple wh-questions. The reviewer accepts that the covert indirect question melody is the most natural one, as will also be demonstrated by the results of the elicitation study we report in the next section. However, s/he points out that an acceptability or perception study could reveal that such questions are possible, though of lower acceptability. We leave this possibility open for future experimental investigations. For the moment we note that constructing test items for such an experiment would not be straightforward since, according to our judgements, it requires some effort and a trained linguist to produce the right utterances for (15a), i.e. with sentential stress on the first wh-phrase followed by a normal non-de-accented sentence.

- (20) (ithela na matho) o MANOLIS me pion efige
 wanted-1SG subj know-1SG the-NOM Manolis-NOM with who-ACC left-3SG
 I wanted to know who MANOLIS left with.

However, as indicated in the introduction, the generalisation that multiple foci are excluded in Greek is called to question by examples like (21). In both examples below *to Yani* is perceived as focused. However, its stress, indicated in boldface, is perceived as secondary, while sentential stress is still carried by the wh-item in (21a) and the focused subject *Petros* in (21b). (21a) is interesting because it is a wh-question apparently involving two foci, *pios* and *yani*, and yet it can be pronounced with the melody of a *direct* wh-question, contrary to what we have seen so far. In addition, the second focus appears in the de-accented region.

- (21) a. PIOS protine na stilume to **Yani** stis
 who-NOM suggested-3SG subj send-1PL the-ACC Yanis-ACC to-the
 Vrikses?
 BrusselsACC
 Who suggested to send YANIS to Brussels?
- b. o PETROS itan aftos pu epise tin
 the-NOM Petros-NOM was-3SG dem that convinced-3SG the-ACC
 epitropi na stilume to **Yani** stis Vrikses
 committee-ACC subj send-1PL the-ACC Yanis-ACC to-the BrusselsACC
 It was PETROS who convinced the committee to send YANIS to Brussels.

Examples like (21) raise two questions. The first one is what makes them at all possible, i.e. how come two foci are possible. The difference lies in the fact that sentences like (21) are in some sense longer. They contain material after the second focused item. See for example the contrast between (22) and (23) below. The examples constitute a minimal pair because (22) cannot be pronounced as a direct question while (23) can and their only difference is the phrase *ap to party*.

- (22) *me PION efige o MANOLIS? (*direct question melody*)
 with who-ACC left-3SG the Manolis-NOM
 Who did MANOLIS leave with?
- (23) me PION efige o MANOLIS ap to party? (*direct question melody*)
 with who-ACC left-3SG the Manolis-NOM from the-ACC party-ACC
 Who did MANOLIS leave the party with?
 (akusa oti o Marinos efige me ti Lina)
 (I heard that Marinos left with Lina)

The second question is whether the two focused items, e.g. *o Petros* and *to Yani* in (21b) are interpretationally equivalent. It appears that they are not. For instance, (21b) *cannot* be an answer to a multiple question like *who convinced the committee to send who to Brussels*. In other words, they cannot both function as answers to the wh-phrase of a preceding question. In addition, though (21a) is possible, a corresponding wh-question is not; in other words, this second focus cannot be a wh-phrase.

- (24) *PIOS apofasise na stilume **pion** stis Vrikses
 who-NOM suggested-3SG subj send-1PL who-ACC to-the BrusselsACC
 Who suggested to send who to Brussels?

In Section 4.3 we will investigate the properties of this second focus and its relation to the general facts about the information structure of Greek wh-questions. The challenge here is how to derive a theoretical generalisation that will capture both the badness of multiple focus/wh but also the availability of multiple focus sentences like (23).

2.5 Interim Summary

Before we turn to the experiments and the analysis, let us summarise the main questions we'll be dealing with in the following sections. The central question is why matching multiple wh-questions are only available with the melody of indirect questions. Answering this question relates to answering the following questions:

1. **Direct vs. (covert) indirect questions:** (i) What is the information structure of direct and indirect questions? Why is the wh-item in direct questions focused but not in indirect ones and how is this to be captured theoretically? (ii) How, despite their differences with direct questions, can covert indirect questions alternate with direct questions in (certain) contexts?
2. **Multiple focus/wh:** (iii) Why is multiple focus generally excluded? (iv) How are we to accommodate cases of multiple focus in view of the generalisation that multiple focus is unavailable?

3 The Experiments

We ran three pilot production experiments to establish the prosodic characteristics of the types of wh-questions under discussion, which have not so far been explored experimentally in Greek, to our knowledge⁹. The order in which the experiments were run is different from the order in which they are presented here: we present the simpler structures first (simple indirect questions in section 3.1), followed by more complex types of questions in subsequent sections (multiple questions in 3.2 and questions containing a focused word in 3.3). However we ran the multiple questions experiment first to ensure that subjects' response was influenced neither from the types of sentence nor from the instructions in the other two experiments: we wanted to keep instructions minimal for this type of sentence (i.e. 'read the following sentences in a natural way') to avoid giving them any clues as to how we expected them to utter the sentences.

In all three experiments the participants were the same: 10 native Greek speakers, who were undergraduate students of linguistics at the University of Ioannina, naive to the purpose of the experiment, judged by the second author to have a standard Greek accent, and participating for class credit.

3.1 The melody of indirect Wh-questions in Greek – Experiment 1

The first experiment explores sentences like (25), an indirect question embedded under the matrix verb *ton rotisa*. Let us call it an *overt* indirect question because the embedding verb is explicit. It also investigates sentences like (26) (b), a fragment of the indirect question, missing the matrix verb, which is understood in the context of (26) (a). Let us call this type of indirect question *covert*, to distinguish it from (25). Our goal was to show

⁹All three experiments were run twice. One anonymous reviewer raised concerns about the instructions we used and the form of the experimental sentences for experiment 1. We therefore re-ran all experiments with revised instructions and experimental sentences and with a new set of subjects. The results of the first round were discarded but we should note that they are replicated by, and, thus, confirm, the results of the second round.

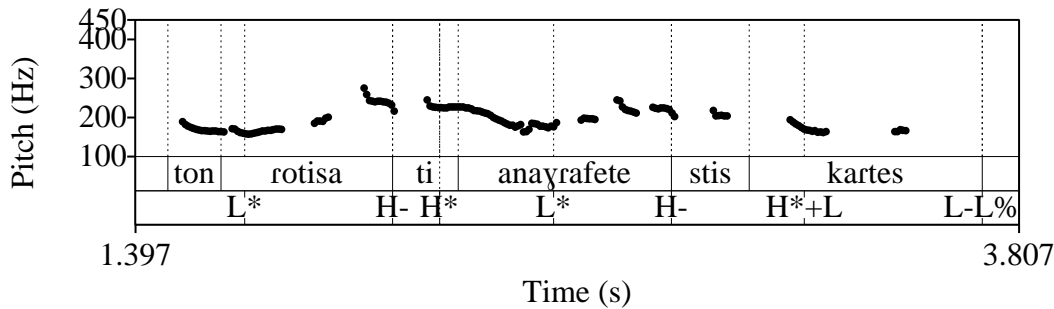


Figure 6: An indirect wh-question in Greek with an overt matrix clause. Its melody resembles that of broad focus declarative sentences (cf. Figures 1 and 2). This token is split into three small phrases, the first one containing the matrix verb, the second one containing the wh-word and the embedded verb and the third one containing the object. The sentence nucleus is aligned with the right edge of the IP.

that both *covert* and *overt* indirect wh-questions have the same melody, that of of broad focus declaratives (cf. Figure 1).

(25) Ton rotisa [ti anagrafete stis kartes]
 Him asked-1SG what-NOM be-written-3SG on-the cards-ACC
 I asked him what is written on the cards (*indirect question melody*)

(26) a. Q: ti ton rotises?
 what him asked-2SG
 What did you ask him?

b. A: [ti anagrafete stis kartes]
 what-NOM be-written-3SG on-the cards-ACC
 What is written on the cards (*indirect question melody*)

We asked participants to read two different lists¹⁰ of questions. The first list was composed of nineteen sentences like (25), containing different question words like *pios*, *ti*, *pu*, *pos*, *poso*, *pote*, *giati* ('who', 'what', 'where', 'how', 'how much', 'when', 'why'). The instructions for this part simply said: 'Read the following sentences in a natural way.' The second list contained mini-dialogues like (26) and the instructions given said: 'A friend of yours did not hear the question you asked your professor and is asking you to repeat it to him. Read the mini-dialogues that follow in a natural way.' Since the answers in this second list are equally acceptable either as direct wh-questions or as indirect ones, at the outset of this experiment we explained to participants that we did not want them to repeat the questions verbatim, but to *report* what they had asked.

After the initial explanations, all questions were produced with the same melody, thus establishing that questions like (26) have the intonation of indirect questions—i.e., sound like (25)—even though they are uttered without an overt matrix verb. In both types of utterance, the melody resembles that of broad focus declarative sentences (cf. Figures 1 and 2). Figures 6 and 7 show representative examples of an overt and a covert indirect wh-question respectively.

¹⁰The materials for all experiments are given in the Appendix.

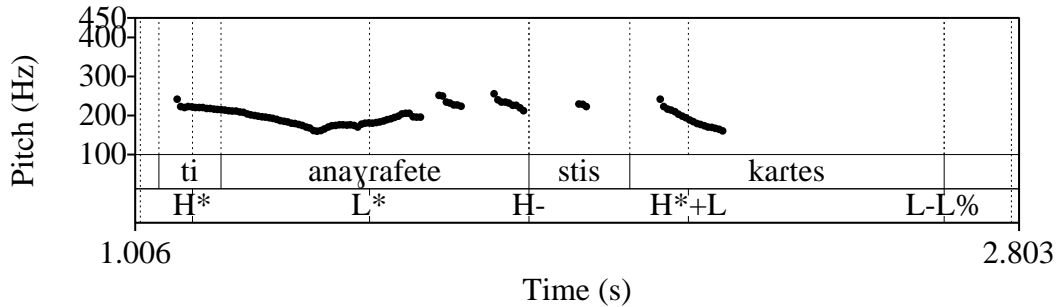


Figure 7: An indirect wh-question in Greek with a covert matrix clause. Its melody resembles that of declarative sentences, but it is split into two small phrases, the first one aligning the NPA with the wh-word and the second one aligning the NPA with the right edge of the IP.

Intonationally these questions end in L-L% just like declaratives. The overt indirect ones are divided in three intermediate phrases (*ips*): the first *ip* contains the matrix verb which carries the L* NPA of the phrase; the second *ip* contains the wh-word *ti* and the embedded verb, with the L* NPA aligned with the rightmost word *anagrafete*; the third *ip* contains the object *stis kartes* and carries the sentence nucleus. In the covert indirect questions there are only two *ips*, since the matrix negative clause is absent. All *ips* in the experiment end in a H- phrase accent which is a typical tone for a continuation rise in Greek (Arvaniti and Baltazani 2005). One noteworthy detail is that the tone used for the NPA aligned with the wh-word is a H*, whereas in direct wh-questions it is usually a L*+H.

To sum up: We showed experimentally that indirect wh-questions in Greek have the melody of declarative sentences, whether an embedding verb is present or not. In the following two sections we examine more complex questions: (a) questions containing two wh-words and (b) wh-questions containing a focused word.

3.2 Multiple wh-questions: Experiment 2

The second experiment involved multiple wh-questions. Recall that our claim is that multiple wh-questions in Greek are unacceptable with a direct question prosody. The setup was the same as in the first experiment. The participants were asked to produce two lists, first one with nineteen multiple questions like (27), followed by a second list of another nineteen sentences like (28), containing different combinations of the question words *pios, ti, pu, pos, poso, pote, giati* ('who', 'what', 'where', 'how', 'how much', 'when', 'why') and also varying the linear order of the question words.

- (27) PIOS anagorizi PION
 who-NOM recognize-3SG who-ACC
 Who recognizes whom.
- (28) den katalaveno PIOS anagorizi PION
 not understand-1SG who-NOM recognize-3SG who-ACC
 I don't understand who recognizes whom.

The instructions for the first list simply said: "Read the following questions in a natural way", deliberately omitting any further instructions or context to avoid giving subjects

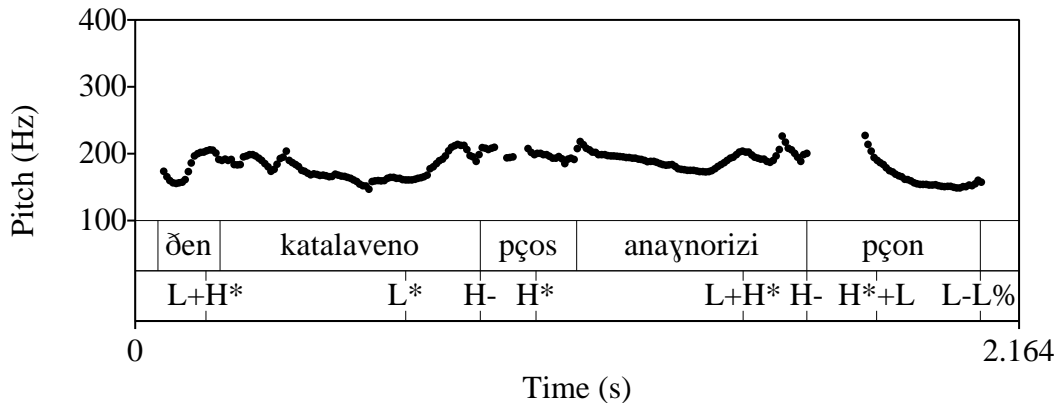


Figure 9: An overtly indirect multiple wh-question in Greek. The melody of this question is the same as the melody of the covertly indirect multiple question shown in 8.

prosodic realization of a direct wh-question. We now turn to a fourth type of wh-sentence, realized with a direct question melody, which seems to allow the coexistence of two foci. As mentioned in the introduction and Section 2.4, a widely held assumption in the Greek literature is that focus is unavailable in direct wh-questions like (29) (Tsimpli 1995; Alexopoulou 1999; Baltazani 2002). However, examples like (30) call to question this generalisation.

- (29) *me PION efige O MANOLIS? (*direct question melody*)
with who-ACC left-3SG the Manolis-NOM
Who did MANOLIS leave with?
- (30) me PION efige O MANOLIS ap to party? (*direct question melody*)
with who-ACC left-3SG the Manolis-NOM from the-ACC party-ACC
Who did MANOLIS leave the party with?
(akusa oti o Marinos efige me ti Lina)
(I heard that Marinos left with Lina)
- (31) me PION efige o manolis ap to party? (*direct question melody*)
with who-ACC left-3SG the Manolis-NOM from the-ACC party-ACC
Who did Manolis leave the party with?

The third experiment compares minimal pairs as in (30) and (31) contrasting in the presence of a second focus on *Manolis*. The setup was the same as in the previous two experiments. The participants were asked to produce a list of four pairs of questions like (30) and (31), one question in each pair being a simple wh-question and the other containing a focused word like *Manolis*. For this second member of each pair we gave a short context in parentheses which helped bring out the contrastive meaning of the focused word and instructed the subjects to read all sentences silently before starting the experiment. The instructions said: 'Read the following questions, giving emphasis to the words in capitals.'

Our initial intuitions about these questions were confirmed. Note also that subjects picked up very easily the contrast between (30) and (31) and produced it effortlessly. There is a difference in the prosodic realization of the two questions in each of the four pairs. The second member containing the focus word showed a small pitch movement at

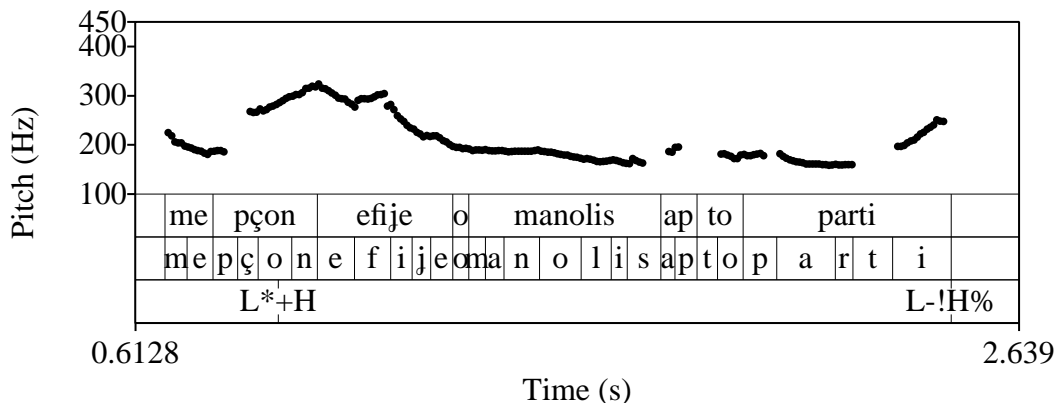


Figure 10: A direct wh-question in Greek without any 2of.

the focused word while in the first member there was only a low plateau after the wh-word.

Figure 10 shows the melody of (31) and Figure 11 that of (30). In both questions *pion* carries a L*+H NPA and its phonetic realization is similar in scaling and duration: in scaling (the difference in frequency between the highest and lowest point), the L*+H pitch accent shows a 55 Hz difference¹¹ in the plain version and a 60 Hz difference in the 2OF one; in duration, the word lasts 253 ms in the plain version and 257 ms in the 2OF one. The post-nuclear material, except *Manolis*, in the two sentences is realized as a low plateau. As for the word *Manolis* itself, it carries a L+H* pitch accent in the 2OF sentence but no pitch accent in the plain one. Its pitch is higher and its duration longer in the 2OF: in scaling, there is a 43 Hz difference at the L+H* pitch accent in the 2OF version but no pitch accent in the plain version. In duration, the 2OF *Manolis* lasts 250 ms, while the plain one lasts 162 ms, quite a big difference.

On average, the 2OF item showed a 43 Hz and a 90 ms difference from its non focused counterpart. The 2OF *Manolis* is both syntagmatically and paradigmatically different: it is higher and longer both from the non-focused *Manolis* and from the other words in its own sentence. All the other sentences in experiment 3 showed comparable characteristics.

4 Analysis

4.1 Büring 2008: Domain Theory of Focus Primacy

We discuss sentences with multiple focus in Greek in the context of Büring (2008) proposal, an analysis unifying standard focus with 2OF. There are two key aspects in his analysis. The first is the distinction between primary and non-primary focus, defined on the basis of their domain. What distinguishes standard focus from 2OF is that the domain of the latter is necessarily contained in the domain of the former. The second key element of his analysis is a system mapping different types of focus and their domains to prominence in prosodic domains based on a metrical view of prosodic prominence. We discuss these in detail in the following two sections.¹²

¹¹We followed the measuring conventions presented in Arvaniti 1996.

¹²Rooth (2008) also proposes a unified analysis of standard and 2OF which shares the two basic insights of Büring (2008), namely that the main property of 2OF is relativised scope, and consequently stress, in relation to standard focus, which takes widest scope and, consequently, maximal prosodic prominence.

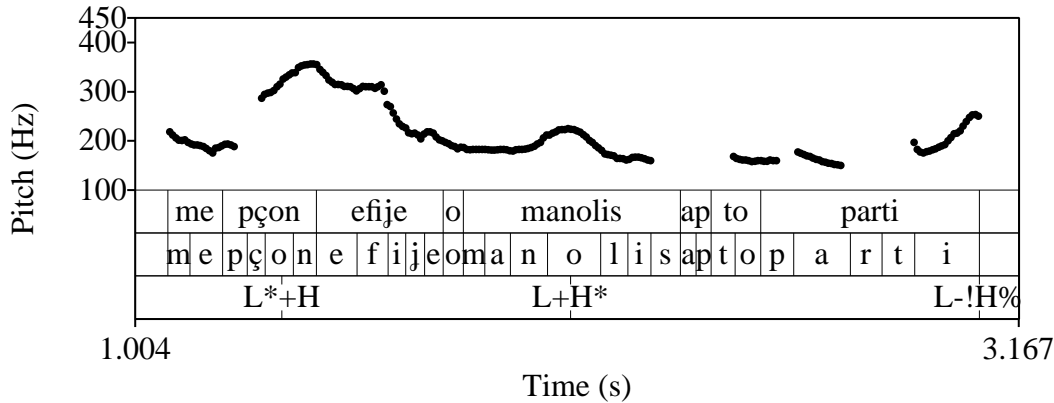


Figure 11: A direct wh-question in Greek with 2of on the word *Manolis*. Notice the small range L+!H* pitch accent on *Manolis*.

4.1.1 Primary and non-primary Focus

Let us begin with a definition of focus. Consider (32a) where *John* is focused. Building on Rooth's (1992) alternative semantics view of focus, *John* is understood as the focus in (32a) only if there is a proposition in the context entailing *x showed up last at the party*, for example sentences like *Frank showed up last at the party* or *Who showed up last at the party?*. The focus value of (32a) then is the set of propositions in (32b) (see Büring 2007). *John* is bound by a focus sensitive root operator, \sim Context Connect as in (32c), linking the focused item to a salient antecedent in the set of propositions in (32b).

- (32) a. JOHN showed up last at the party.
 b. { *x* showed up last at the party — *x* an individual }
 c. [JOHN_{F1} showed up last at the party] \sim_1 CC

Each focused element comes with a domain or scope.¹³ The focused element with the widest domain is the primary one while any focus contained within the domain of the primary focus is non-primary. Thus, the *Domain Theory of Primacy* as defined below:

- (33) **Domain Theory of Primacy**
 Among two foci in a sentence, the primary focus is the focus whose domain contains the domain of the other.

In (32), the domain of the focused element *John* is the domain/scope of its binding operator, \sim CC, that is, the whole sentence. Technically, this is captured by the definition below and *John* is assumed to have maximal focus.

- (34) **Domain of a Focus/an Operator**
 P is the domain of a focus F and the domain of its operator O iff P is the biggest constituent containing F, but excluding O.

Examples like (32) instantiate *free* focus in contrast to (35a) below illustrating a case of *bound* or *associated* focus. In (35a) the focused item, *juice* is associated with the focus sensitive operator *only*. The domain of *only* is, by (34), the VP as shown in (35b). But

¹³All examples in this section are adapted from Büring (2008).

at the same time *juice* is also (trivially) bound by the root operator and has sentential scope.

- (35) a. Many people only drank JUICE at John's party.
 b. [Many people [only₁ drank JUICE_{F₁,F₂} at the party]]. \sim ₂ CC

Consider now (36) as a continuation of (35a). The example involves two focus sensitive operators, *even* and *only* and two bound foci, *John* and *juice*. The focus domains of *even* and *only* are the subject DP and the VP respectively, as shown in (36b). A crucial fact about (36a) is that it is a case of second occurrence focus (2OF). One of the two focus operators, *only*, was already present in the previous sentence. The relevant antecedent for the focus value of (36b) is *Someone (only) drank juice at John's party* indicating that the domain of *only* is restricted within the VP.¹⁴ By contrast, *John* is associated with *even* but also is a free focus bound by the root operator.

- (36) a. (Many people only drank JUICE at John's party). Even JOHN only drank juice at his party.
 b. [[Even₁ JOHN_{F₁,F₃}] [only₂ drank juice_{F₂} at his party]]. \sim ₃ CC

(36) illustrates a case where the Domain Theory of Primacy in (33) is relevant. In (36) *john* instantiates primary focus and *juice* non-primary focus exactly because the domain of the latter is contained within the domain of the former. This relative scope explains why it is *john*, i.e., the primary focus that receives prosodic prominence, i.e. sentential stress in (36).

Note that the only theoretical distinction is the one between primary and non-primary focus, that is, between focus with a maximal domain and focus with a smaller domain. There is no theoretical distinction between "first" and 2OF or free and associated focus. It seems to be a matter of fact, at least for English, that 2OF is *associated*, that is, bound more "locally" by items like *only*, *even* etc. and only optionally by the root operator. Büring (2008) further assumes that free foci always have a maximal domain. In other words, the contextual operator CC is always a root one. In Section 4.3 we will present evidence from Greek for non primary focus that is not bound by an (overt) focus sensitive operator.

4.1.2 The interface with phonology

The second aspect of Büring's theory is the relation between focus domains and prosodic prominence. The fundamental assumption is that focus receives prosodic prominence, the latter understood in terms of metrical strength in prosodic domains.¹⁵ This is ensured by the interface principle, *Focus Prominence* in (37).¹⁶

- (37) If P is the domain of a focus sensitive operator O, the most prominent element in P is a focus of O.

The main effect of (37) is a relativisation of prosodic prominence according to the relative scope of different focus elements. As expected, sentential stress is associated with maximal/primary focus; but (37) also caters for more "local" prosodic prominences marking non-maximal foci in smaller domains. Consider (36) repeated below as (38).

¹⁴If *juice* had maximal scope, then the relevant antecedent of (36) should be a sentence like *even someone only drank something at John's party*, which is not the case.

¹⁵For detailed argumentation on the metrical strength approach see Büring (2006), Ladd (1996) and Rooth (2008).

¹⁶Focus domains are here defined in syntactic terms—see (34). At the end of his paper, Büring offers some arguments favoring a more direct link between focus and prosodic domains.

- (46) a. Q: pu tha pate apopse?
 where will go-2PL tonight
 Where are you going tonight?
 b. A: [tha pame sinema_{F1} me ti MARIA_{F1}] \sim_1 CC
 will go-1PL cinema with the-ACC Maria
 We are going to the cinema with Maria.
- (47) ((*) IP
 (*) (*) ip
 (*) (*) (*) PrWd
 (tha pame) (sinema) (me ti maria)

Let us now see how this augmented metrical structure fares with narrow focus sentences in Greek. As indicated in Section 2.1 narrow focus may stay in-situ or appear in a preverbal position as indicated in (48). In both examples below, the focused item *me ton Oresti* is a free focus with maximal domain bound by the root operator. In both examples Focus Prominence ensures that *me ton Oresti* receives prosodic prominence within its domain, i.e the sentence.

- (48) a. [i Elena horepse me ton ORESTI_{F1}] \sim_1 CC
 the-NOM Elena danced-3PL with the-ACC orestis-ACC
 Elena danced with ORESTIS.
 b. [me ton ORESTI_{F1} horepse i Elena] \sim_1 CC

The metrical grid of (48a) is similar to (47) while the metrical structure of (48b) is given in (49). The main difference is that in (48a) there are prenuclear pitch accents while no pitch accents other than the sentential stress survive in (48b).¹⁹ We assume that the erasure (or compression) of the postnuclear pitch accents and the absence of sentence internal *ips* is the effect of HEAD-RIGHT: in order for the pitch accent on *me ton Oresti* to be the most prominent one, it must be the last one on the right and the only way to ensure this is by erasing all pitch accents after it.²⁰ This has to take place at the ip level: if we marked a prominence star above *Elena* at the ip level it would mean that this noun would carry the local NPA, something which is empirically wrong; moreover, there can only be one ip in this sentence, since, according to standard ToBI assumptions we cannot have headless phrases.

- (49) (*) IP
 (*) ip
 (*) (*) (*) PrWd
 (me ton Oresti) (horepse) (i Elena)

4.2.2 Wh-questions

As discussed in Section 2.2, Greek direct wh-questions are prosodically on a par with focus-movement structures in that sentential stress is aligned with the fronted wh-item; compare the metrical structure of (50) shown in (51) with (49). The two structures also have similar interpretation in that the *wh*-item in (50) can be understood as the focus

¹⁹At least not full-fledged pitch accents—recall that we found compressed postnuclear pitch accents in Section 3.3, which we will deal with in Section 4.3.

²⁰Although the postnuclear pitch accents are erased, non-primary prominences can survive in other forms: it has been shown in the literature that non-primary foci following the NPA in German will not receive pitch accents but their prominence will be marked by duration and intensity (see for example Beaver et al. 2007, Fery and Ishihara 2005, Jaeger 2004).

of the sentence; as with (48b), the focus value of (50) is the set of propositions entailing that *x danced with Elena*.

(50) me PION horepse i Elena
 with whoACC danced-3SG the-NOM Elena
 With who did Elena dance? (*Direct question*)

(51) (*) IP
 (*) ip
 (*) (*) (*) PrWd
 (me pion) (horepse) (i Elena) (*Direct question*)

As already discussed in Section 2.2, indirect wh-questions have default sentential stress of broad focus declarative sentences, i.e. with the rightmost edge of the sentence; compare the metrical structure of the indirect question in (53) with (51). The first wh-word *pion* carries a pitch accent and is contained in the first ip, with the local NPA on the right, aligned with *horepse*²¹.

(52) (rotisa) me pion horepse i ELENA
 (asked-1SG) with whoACC danced-3SG the-NOM Elena
 With who did Elena dance?

(53) (*) IP
 (*) ip
 (*) (*) (*) PrWd
 (me pion) (horepse) (i Elena)

Recall that IP-HEAD-RIGHT results in erasure of post-nuclear accents and de-accenting in the direct question while all prenuclear accents are preserved in the indirect question. This allows multiple "local" nuclei/foci resulting in a broad focus interpretation for indirect questions, consistent with their Information. An indirect question can be an answer to a question like (54a). The focus value of (54b) is the set of propositions entailing *I asked x*, where *x* involves propositions which, in turn, can have their own Information Structure. For instance, in (54) the indirect question is a broad focus sentence.

(54) a. Q: ti tus rotises
 Q: what them-ACC asked-2SG
 What did you ask them?
 b. A: me pion horepse i ELENA
 A: with who-ACC danced-3SG the-NOM Elena
 Who Elena danced with.

The contrast in the Information Structure of direct and indirect questions is illustrated in (55). In both sentences the wh-item is a focus. However, in the indirect question the wh-phrase is not the only focused item and sentential stress is aligned with the rightmost constituent *Elena*.²²

²¹Once again the proposed prosodic structure is testable, cf. Footnote 18.

²²Note that indirect questions are not necessarily broad focus sentences. They may involve a narrow focus reading for any item within, including the wh-phrase, as indicated in (i). But note that the narrow focus reading of *pion* in (ia) is contrastive or involves a metalinguistic correction, readings that are absent from the corresponding direct wh-question.

(i) a. rotisa PION filise o Petros (ohi pia)
 asked-1SG who-NOM.MSC kissed-3SG the-NOM Petros-NOM, (not who-NOM.FEM)
 I asked which man Petros kissed not which woman.

- (55) a. Direct question: [me PION_{F1} horepse i Elena] ~₁ CC
 b. Indirect question: [me pion_{F1} horepse_{F1} i ELENA_{F1}] ~₁ CC

The prosodic and interpretational properties of direct and indirect wh-questions indicate that in the former the wh-item moves like a focused item to the left periphery, while the indirect question involves ordinary wh-movement. This is the hypothesis put forward by Tsimpli (1995), which, in her analysis, amounts to the assumption that in direct questions the wh-item moves to the Specifier of a Focus Phrase (FP) at the left periphery while indirect questions involve ordinary wh-movement to Spec,CP. One interesting aspect of this analysis is that it captures a relevant contrast between direct and indirect questions; according to the literature, focus is unavailable in direct wh-questions like (56a) but perfectly possible in indirect questions, where the wh-item need not receive NPA (Tsimpli 1995; Alexopoulou 1999; Baltazani 2002) (we will return to this issue in Section 4.3 to discuss the results of experiment 3). If *pion* moves like a focused phrase in (56a), then (56a) is a case of multiple focus like (57) which is also unavailable in Greek. By contrast, (56b) is not an instance of multiple focus since, by hypothesis, the wh-item does not undergo focus-movement in indirect questions.²³

- (56) a. *me PION efige o MANOLIS
 with who-ACC left-3SG the-NOM Manolis-NOM
 Who did Manolis leave with? (*Direct question melody*)
 b. me pion efige o MANOLIS
 with who-ACC left-3SG the-NOM Manolis-NOM
 Who did Manolis leave with? (*Indirect question melody*)
- (57) a. *i MARIA efige me to MANOLI
 the-NOM Maria left-3SG with the-ACC Manolis-ACC
 Maria left with Manolis.
 b. *o PETROS ipe oti i Maria efige me
 the-NOM Petros said-3SG that the-NOM Maria-NOM left-3SG with
 to MANOLI
 the-ACC Manolis-ACC
 Petros said that Maria left with Manolis.

In sum, there is robust evidence that Greek direct and indirect questions involve distinct operations: direct questions involve focus movement while indirect ones wh-movement. Two questions arise: (i) if a wh-item can undergo focus-movement or wh-movement, what forces focus-movement in direct questions? and what is the source of the contrast between English and Greek direct questions? and (ii) if the two types of sentences involve different interpretation in terms of Information Structure, how is it possible to have indirect questions in direct question contexts, as we saw in Section 2.2? and

-
- b. rotisa pios IRTHE (ohi pios EFIGE)
 asked-1SG who-NOM left-3SG (not who-NOM left-3SG)
 I asked who came, not who left.
 c. rotisa pion DIADILOTI travmatisan (oxi pio astinomiko)
 asked-1SG who-ACC protester-ACC injured-3PL (not who-ACC policeman)
 I asked which protester they injured not which policeman.

²³In Tsimpli's (1995) analysis, multiple focus is excluded on the assumption that focus needs to take wide scope and FP is restricted to one specifier. While we follow the essence of Tsimpli's (1995) proposal, we do not adopt her more specific assumptions about the involvement of a distinct Focus Projection, see Alexopoulou 1999 for a detailed discussion.

Let us begin with the first question, namely why the wh-item must involve focus-movement in direct questions but not ordinary wh-movement like English, or indeed Greek indirect questions.²⁴ For current purposes, we assume that focus-movement and wh-movement involve syntactically identical operations distinguished only by their prosody and interpretation.²⁵ In this context, the question is why the wh-item must be focused in direct questions but not in indirect ones. We propose that this fact arises from the combination of the morphosyntax of wh-items and the information structure of each structure. Let us consider the morphosyntax of the wh-items and their licensing conditions. Greek wh-items are morphologically unambiguous: *pios* is an unambiguously interrogative pronoun, morphologically distinct from the relative pronouns *opíos* and *ópíos*. The hypothesis then is that Greek *pios*, as an inherently interrogative pronoun does not need syntactic licensing (e.g. through an AGREE relation of its wh-features with C), as is the case for the English wh-items which are underspecified for a number of potential functions, e.g. interrogative or relative clause operator. This hypothesis has been put forward for the case of Greek wh-in-situ by Sinopoulou (2008) and Vlachos (2008) and here we extend it to cases with a moved wh-item in direct questions. If *pios* need not move as a wh, then it can only move as a focus. Indirect questions are different in two respects: first, the wh-item does not necessarily receive a narrow focus interpretation, so focus-movement is not obligatory; second, as a subordinate clause, an indirect question needs to be marked as such; wh-movement is, thus, instigated for clause-typing.

Let us turn to the second question, which is how covert indirect questions are acceptable in contexts that normally elicit direct questions. As hinted in Section 2.2, while (covert) indirect questions can appear in direct question contexts and alternate with direct questions, their interpretation is slightly different. In (58a) the indirect question melody implies that I have already asked the question but did not get an answer, so the sentence means something like *I ask again, who wants ice-cream*. The indirect question in (58b) also implies that I have already considered the question and carries the implicature that I doubt that there is someone appropriate to receive the parcel from the bank. In these contexts then, narrow focus on the wh-item is not felicitous or appropriate, as it is indeed the whole question that is focused; this then can result in the choice of an covert indirect question over a direct one. In the same contexts the choice of the direct question carries no such implicatures, and, indeed the focus is the wh-item.

- (58) a. Isihia! Prot'ap'ola pios theli pagoto
 Quiet! first-from-all who-NOM want-3SG ice-cream
 Quiet. First of all who wants ice-cream (covert indirect question melody)
- b. ENA pragma thelo na ksero. Pios tha paralavi to
 One thing want-1SG SUBJ know-1SG. Who-NOM will receive-3SG the
 dema apo tin trapeza.
 parcel from the bank
 I want to know one thing. Who will receive the parcel from the bank? (*direct or indirect question melody*)

4.2.3 Multiple wh-questions and multiple foci

Let us begin the discussion of multiple questions and their answers with indirect questions. As established in the last section, indirect questions like (54b) repeated in (59) have the

²⁴A related question we are not addressing here is why accent does not shift to the wh-item in English, if a (narrow) focus reading is available for English wh-questions as for Greek ones.

²⁵See Alexopoulou (1999) for argumentation for this position and Tsimpli (1995) for an alternative view linking each syntactic operation with distinct landing sites in distinct functional projections. We do not offer here a full fledged technical syntactic analysis of focus and wh-movement. The basic explanations, though, are consistent with both types of analysis.

crashes.

- (65) (*) (*) IP
 (*) (*) ip
 (*) (*) (*) PrWrd
 (pios) (horepse) (me pion)

There is only one case where the first wh-item receives NPA and the second wh-item may fall within the de-accented domain; this is available in indirect questions when the wh-item receives a narrow focus reading as in (66c) which illustrates an indirect question with stress on the wh-item rather than at the rightmost edge (cf. (i)); the only interpretation for such sentences is one of metalinguistic correction (e.g. for (66c) *I asked WHO danced with who, not WHEN*).

- (66) a. Direct question: *[PIOS_{F1} horepse me PION_{F1}] ~₁ CC
 b. Indirect question: [pios_{F1} horepse_{F1} me PION_{F1}] ~₁ CC
 c. Indirect question with focus on wh-item: [PIOS_{F1} horepse me pion] ~₁ CC

In sum, only indirect questions allow multiple wh. Recall that (covert) indirect questions can appear in direct question contexts in Greek in general (see (13) in Section 2.2). It is then not surprising that they are systematically employed for multiple wh-questions given the unavailability of direct ones.

What about the answers to multiple wh-questions? As in English, multiple wh-questions elicit pair-list answers which more often than not involve topic-focus patterns rather than multiple focus ones (Bolinger 1978). Büring (2003) explains the apparent mismatch between a focus-focus context set up by a multiple wh-question and the standard (contrastive) topic-focus answers such questions receive due to a strategy of answering a set of subquestions implicitly involved in the “super-questions” denoted by multiple questions. A question like *Who followed who* involves two sets of subquestions, sorted by “followers” (*Who followed Bill/John/Peter?* and “followed” *Who did Fred/Mary/Peter follow?*). A topic-focus pattern, as an answer to a multiple question reflects a choice of one set of subquestions. So the question in (67a) elicits two sets of pair-list answers, one sorted by followers and one sorted by followed-people. Depending on the choice, the result is a topic-focus answer involving a preverbal subject as in (67b) or a CLLD-ed object with a focused postverbal subject.

- (67) a. pite mu pios parakoluthise PION
 tell-2PL me who-NOM followed-3SG who-ACC
 Tell me who followed who.
 b. [TOP o Petros] parakoluthise [FOC ti MARIA
 the-NOM Petros-NOM followed-3SG the-ACC Maria, the-NOM Stavros
], o Stavros tin Eleni
 the-ACC Eleni
 Petros followed Maria, Stavros Eleni
 c. [TOP ti Maria] tin parakoluthise [FOC o
 the-ACC Maria her followed-3SG the-NOM Petros-NOM, the-ACC
 PETROS], to Yani i MARINA...
 Yani-ACC the-NOM Marina ...
 Maria Petros followed, Yannis Marina...

Though not typical, focus-focus patterns are not excluded. According to Büring (2003) focus-focus patterns are expected in strategy-less contexts like (68a), where there are no

sets of subquestions.²⁶ The intuition here is that because there are no sets of subquestions, there is no reason to sort them.

- (68) a. Q: I don't get it. Did Carl sue the company, or did the company sue Carl?
 b. A: I told you: carl_{F_1} sued the COMPANY_{F_1} . (Büring 2003, ex.32).

Let us consider such contexts in Greek, illustrated in (69) (where, as expected, the multiple wh-question in (69a) has the melody of an indirect question).

- (69) a. *telika pios horise pion; i Maria horise to Yani i o Yanis ti Maria?*
 In the end who divorced who; Maria divorced Yanis or Yanis Maria?
 b. *?o Yanis (horise) ti MARIA*
 the-NOM Yanis divorced the-ACC Maria
 Yanis (divorced) Maria.
 c. **o YANIS (horise) ti MARIA*
 d. *o YANIS (horise) ti Maria*

As in the case of direct questions, a sentence with two focused items like (69c) is excluded due to the unavailability of a second nucleus in the de-accented domain following nuclear stress on the first item. The most natural answer to (69a) is (69d), in which the first focused item, *Yanis*, is treated as a narrow focus followed by de-accenting including the predicate and the second focused item *Maria*, which is treated as a ground element. As in the case of direct questions, HEAD-RIGHT cannot apply simultaneously to both the subject and object in (69d), which both need to have a narrow focus interpretation. Consider for instance (69b) which does have a right edge prominence. This sentence has a broad focus feel that makes it infelicitous in a context where both *Yanis* and *Maria* have been clearly established. In addition, *Yanis* could be a topic in this sentence but such an interpretation is again infelicitous since the context does not set up *Yanis* as a topic (e.g. the previous question is not one about *Yanis* as a locus-of-update—see Reinhart 1982; Vallduví 1992). In absence of a true "two narrow focus" prosody/structure that is the required one in this instance, the language resorts to (69d), i.e. to a "single-narrow-focus" sentence, accommodating the second narrow focus as a ground element.²⁷

²⁶Büring's (2003) claim that (68)[b] involves two A-accent is not uncontroversial. In the context of his (Büring 2008) paper, we should expect IP-HEAD-RIGHT to override Focus Prominence and result in sentential NPA on *company* with *Carl* bearing a pre-nuclear accent.

²⁷Note that another possible answer to (69a) involves an answer very similar to (69c) except for the fact that a clear boundary separates *Yanis* from the rest (indicated as II in (i)). An important naive intuition about (i) is that it somehow involves two sentences rather than one. But note that while, (ia) is a possible answer to (69a), it is by no means a preferred or a natural answer. Further, (ia) could also have an interpretation along the lines of (ib). Under this interpretation, it sounds like a natural answer to (ic) (rather than (69c)). Crucially (ic) involves two separate questions asking about the subject/agent and object/theme of "divorce" and does not elicit the pair-list answers multiple wh-questions elicit. Finally, we should also point out that examples like (ia) are somehow hard to produce and intuitions about them are very subtle.

- (i) a. *o YANIS II horise ti MARIA*
 the-NOM yanis-NOM II divorced the MARIA
 b. *o YANIS horise ke horise ti MARIA*
 the-NOM YANIS-NOM divorced-3SG and divorced-3SG the-ACC Maria
 c. *pios horise ki pion horise*
 who-NOM divorced-3SG and who-ACC divorced-3SG
 Who divorced and who did he/she divorce?

4.3 Maximal and Non-maximal Focus

So far we have established that sentences involving focus movement, that is, ordinary declaratives with a preverbal focused constituent and wh-questions do not allow more than one primary foci, that is, foci with maximal domain. The basic idea is that the second focus will fall within the de-accented domain following the clause-initial focus which receives sentential stress. What about cases involving a maximal and non-maximal focus? As we saw in Section 3.3, in English, non-maximal focus, primarily realised by cases of associated 2OF, *can* receive prosodic prominence (metrical stress) within a prosodic domain following NPA, as indicated by (39), repeated below as (70).

- (70) *
 * *
 Even₁, John_{F₁,F₃} only₂ drank juice_{F₂}

Crucially, in (70), stress on *juice* follows NPA on *John*. So there is no reason why this possibility should not be available in Greek as well. And indeed it is as indicated by examples (6) and (21) repeated below as (71) and (72), and shown in the experimental results reported in Section 3.3.

- (71) a. PIOS protine na stilume to **Yani** stis
 who-NOM suggested-3SG SUBJ send-1PL the-ACC Yanis-ACC to-the-ACC
 Vrikseles
 Brussels-ACC
 Who suggested that we send Yanis to Brussels?
 b. o PETROS itan aftos pu epise tin
 the-NOM petros-NOM was this-NOM that convinced-3SG the-ACC
 epitropi na stilume to **Yani** stis
 committee-ACC SUBJ send-1PL the-ACC Yanis-ACC to-the-ACC
 Vrikseles
 Brussels-ACC
 Petros was the one who convinced the committee to send Yanis to Brussels.
- (72) me PION efige **o manolis** apo to party?
 with who-ACC left-3SG the Manolis-NOM from the-ACC party-ACC
 Who did MANOLIS leave the party with?

There are two important differences between the English example in (70) on the one hand and the Greek examples in (72) and (71) on the other. The first difference is semantic. *to Yani* and *o Manolis* are free rather than associated foci and, at least under Buring’s (2008) assumptions, they ought to have maximal scope. But they don’t. Descriptively, *to Yani* in (71) indicates a contrast between *Yanis* and someone else, i.e. the example means something like *Who suggested to send Yanis to Brussels instead of Petros?* But the crucial point here is that the proposition *We are sending Yanis to Brussels* is given in (71). In other words, the focus value of (71) does *not* include a proposition like *x suggested to send y to Brussels* but a proposition like *x suggested to send Yanis to Brussels*. This explains why it is the wh-item that has maximal scope and, is therefore, associated with sentential stress.

What about focus on *Yanis*? We assume that the relevant antecedent for (71) is a proposition like *We are sending YANIS to Brussels* where *Yanis* is the focused item. In other words, we assume that *Yanis* is a case of 2OF, i.e. an item that has been focused in a previous utterance. It appears that, at least in Greek, it is not necessary for the utterance containing the “first” occurrence of a 2OF to be explicit in the domain of discourse. It

can be implicit.²⁸ This is certainly true for an example like (72). What is crucial for (72), is again that its focus value does not include a proposition like *x left with y from the party* which would entail maximal scope for *x* and *y* (and would, in effect, be like a multiple wh-question). Rather, the relevant antecedent is *MANOLIS left with x from the party*. The Information Structure of (71) and (72) is given in (73) where we assume that the scope of the non-maximal operator is restricted to the embedded clause in (71) and the VP in (72). If this analysis is correct, it entails that free foci do not necessarily take maximal scope.

- (73) a. [PIOS_{F_1} apofasise [na stilume to **Yani** $_{F_2}$ stis Vrikseles] \sim_2 CC] \sim_1 CC
 b. [me PION_{F_1} [efige o **Manolis** $_{F_2}$ apo to party] \sim_2 CC] \sim_1 CC

The second difference between the Greek and English examples relates to the prosodic realisation of 2OF. In English, post-nuclear 2OF is marked only by increased duration and intensity, but not, pitch accent. As shown in Section 3.3 this is not true in Greek. In addition to increased duration and intensity, a pitch movement is clearly present in examples of 2OF. There is evidence for such postnuclear accents in other languages as well (Frota 2000; Vella 1995). It is not obvious how to account for this under our set of assumptions, since HEAD-RIGHT entails de-accenting of postnuclear material. Some relaxation of HEAD-RIGHT is required to allow for post-nuclear accents. But note that, despite the involvement of post-nuclear accents, the material following the focused wh-phrase in (73) is interpreted as given/background. In terms of the interface between prosody and Information Structure this is a crucial difference between pre and post nuclear accents. While pre-nuclear accents can mark focus, for instance in broad focus sentences, post-nuclear accents can only be part of given information. A comprehensive answer to the issue requires lies beyond the scope of the current paper.

5 Conclusion

We presented an analysis of multiple focus sentences in Greek. On an empirical level, we showed that the current generalisation in the Greek literature that multiple focus is unavailable in Greek is too strong and crude as it stands. On closer examination it seems that what is unavailable is multiple maximal foci in sentences where one focused item has moved to the left periphery. By contrast, multiple maximal foci in sentences where the relevant focused items stay "in-situ" are available. We attributed the contrast between the two types of sentences to their prosodic properties. In sentences involving focus movement the nuclear accent is aligned with the focused constituent at the left periphery with subsequent material de-accented. As a result, maximal foci following a focus-moved constituent cannot receive prosodic prominence, violating the requirement that a focused element must be associated with prosodic prominent in its domain.

We analysed direct wh-questions as sentences involving focus movement of the wh-item and accounted for the unavailability of direct multiple questions as cases of multiple focus in a sentence with a focus-moved constituent. By contrast, we showed that indirect multiple wh-questions, which do not involve focus-movement, allow multiple maximal foci and, in effect, multiple wh-questions.

While previous analyses have provided syntactic explanations for the unavailability of multiple (maximal) foci, we approach the phenomenon as an interface mismatch. Our proposal is that what is unavailable is not multiple focus but multiple sentence nuclei in the IP. We couched this intuition in Büring's (2008) analysis which provides a theory of mapping the domain of focus operators to domains of prosodic prominence. Even though

²⁸We would like to thank Reiko Vermuelen for bringing this issue to our attention. Note also that whether 2OF necessitates and explicit "first" occurrence might not be a contrast between Greek and English, but rather, a contrast between associated 2OF and free 2OF.

our explanation is not a syntactic one, we argued that morphosyntax is relevant in two ways; (i) the fact that Greek freely employs focus-movement and (ii) the fact that Greek wh-items are inherently interrogative. These facts support the analysis that wh-items move like foci in Greek direct wh-questions.

We further identified a set of previously unreported data indicating the availability of 2OF in Greek. This set of data is of particular interest for a number of reasons. First, they call for a refinement of the generalisation that multiple focus is unavailable in Greek. The data suggest instead that what is unavailable is multiple foci with maximal domain (in sentences with a focus-moved constituent). On the other hand, non-primary foci with a smaller domain, which we showed are 2OF, *are* available. An interesting implication of Greek 2OF is that it can be a free focus, and not an associated one as in English. Our experimental data further showed that the phonetic realisation of non primary/2of in Greek involves not only increased intensity and duration but a compressed postnuclear pitch accent, in contrast to its English counterparts but on a par with evidence from other languages.

6 Appendix

6.1 List of sentences for experiment 1

Part I:

Instructions: "Read the following sentences in a natural way."

1. *Ton rotisa pios anagnorizi kapion.* I asked him who recognizes someone.
2. *Ton rotisa pote sas anaplirose kapios.* I asked him when you were replaced by someone.
3. *Ton rotisa pios parakratise kati.* I asked him who withheld something.
4. *Ton rotisa ti anagrafete stis kartes.* I asked him what is written on the cards.
5. *Ton rotisa pios siblirose ena giro.* I asked him who completed a round.
6. *Ton rotisa pu strifogirizi kapios.* I asked him where is someone spinning.
7. *Ton rotisa pies stolizode me bizu.* I asked him who are dolling up with jewels.
8. *Ton rotisa pote girizi i Eleni.* I asked him when is Eleni returning.
9. *Ton rotisa giati apagorevete to poto.* I asked him why is drinking forbidden.
10. *Ton rotisa pote to katalavenete oi idioi.* I asked him when you understand yourselves.
11. *Ton rotisa poso mazevoume tin imera.* I asked him how much we gather per day.
12. *Ton rotisa pios sas anaplirose tin Paraskevi.* I asked him who replaced you on Friday.
13. *Ton rotisa ti parakratise o tamias.* I asked him what did the cashier withhold.
14. *Ton rotisa pos anagrafete stis kartes.* I asked him how it is written on the cards.
15. *Ton rotisa poso siblirose o ergatis.* I asked him how much the worker completed.
16. *Ton rotisa pios strifogirizi gia timoria.* I asked him who is spinning for punishment.
17. *Ton rotisa pos stolizode oi kyries.* I asked him how the ladies are dolling up.
18. *Ton rotisa ti girizi tin Paraskevi.* I asked him what is returning on Friday.
19. *Ton rotisa ti apagorevete stin arxi.* I asked him what is forbidden in the beginning.

Part II:

Instructions: "A friend of yours did not hear the question you asked your professor and is asking you to repeat it to him. Read the mini-dialogues that follow in a natural way."

1. *Pios anagnorizi kapion.* Who recognizes someone.
2. *Pote sas anaplirose kapios.* I asked him when you were replaced by someone.
3. *Pios parakratise kati.* I asked him who withheld something.
4. *Ti anagrafete stis kartes.* I asked him what is written on the cards.
5. *Pios siblirose ena giro.* I asked him who completed a round.
6. *Pu strifogirizi kapios.* I asked him where is someone spinning.
7. *Pies stolizode me bizu.* I asked him who are dolling up with jewels.

8. *Pote girizi i Eleni*. I asked him when is Eleni returning.
9. *Giati apagorevete to poto*. I asked him why is drinking forbidden.
10. *Pote to katalavenete oi idioi*. I asked him when you understand yourselves.
11. *Poso mazevoume tin imera*. I asked him how much we gather per day.
12. *Pios sas anaplirose tin Paraskevi*. I asked him who replaced you on Friday.
13. *Ti parakratise o tamias*. I asked him what did the cashier withhold.
14. *Pos anagrafete stis kartes*. I asked him how it is written on the cards.
15. *Poso siblirose o ergatis*. I asked him how much the worker completed.
16. *Pios strifogirizi gia timoria*. I asked him who is spinning for punishment.
17. *Pos stolizode oi kyries*. I asked him how the ladies are dolling up.
18. *Ti girizi tin Paraskevi*. I asked him what is returning on Friday.
19. *Ti apagorevete stin arxi*. I asked him what is forbidden in the beginning.

6.2 List of sentences for experiment 2

PART I

1. *pios anagnorizi pion*. Who recognizes whom.
2. *pote sas anaplirose pios*. When were you replaced by whom.
3. *pios parakratise ti*. Who withheld what.
4. *ti anagrafete pos*. What is written how.
5. *pios siblirose poso*. Who completed how much.
6. *pu strifogirizi pios*. Where is who spinning.
7. *pies stolizode pos*. Who are dolling up how.
8. *pote girizi ti*. When is what returning.
9. *giati apagorevete ti*. Why is what forbidden.
10. *pote katalavenete pion*. When do you understand who.
11. *poso mazevoume pos*. How much do we gather how.
12. *pios sas anaplirose pote*. Who replaced you when.
13. *ti parakratise pios*. What did who withhold.
14. *pos anagrafete ti*. How is what written.
15. *poso siblirose pios*. How much did who complete.
16. *pios strifogirizi pu*. Who is spinning where.
17. *pos stolizode pies*. How are who dolling up.
18. *ti girizi pote*. What is returning when.
19. *ti apagorevete giati*. What is forbidden why.

PART II

1. *Den katalaveno pios anagnorizi pion*. I don't understand who recognizes whom.
2. *Den katalaveno pote sas anaplirose pios*. I don't understand when you were replaced by whom.
3. *Den katalaveno pios parakratise ti*. I don't understand who withheld what.
4. *Den katalaveno ti anagrafete pos*. I don't understand what is written how.
5. *Den katalaveno pios siblirose poso*. I don't understand who completed how much.
6. *Den katalaveno pu strifogirizi pios*. I don't understand where is who spinning.
7. *Den katalaveno pies stolizode pos*. I don't understand who are dolling up how.
8. *Den katalaveno pote girizi ti*. I don't understand when is what returning.
9. *Den katalaveno giati apagorevete ti*. I don't understand why is what forbidden.
10. *Den katalaveno pote katalavenete pion*. I don't understand when you understand who.
11. *Den katalaveno poso mazevoume pos*. I don't understand how much we gather how.
12. *Den katalaveno pios sas anaplirose pote*. I don't understand who replaced you when.
13. *Den katalaveno ti parakratise pios*. I don't understand what did who withhold.
14. *Den katalaveno pos anagrafete ti*. I don't understand how is what written.

15. *Den katalaveno poso siblirose pios.* I don't understand how much did who complete.
16. *Den katalaveno pios strifogirizi pu.* I don't understand who is spinning where.
17. *Den katalaveno pos stolizode pies.* I don't understand how are who dolling up.
18. *Den katalaveno ti girizi pote.* I don't understand what is returning when.
19. *Den katalaveno ti apagorevete giati.* I don't understand what is forbidden why.

6.3 List of sentences for experiment 3

The sentences in parentheses that follow each question were given to facilitate the production of the focused noun.

1. *Me pion efige o MANOLIS ap to party? (Akusa oti o Marinis efige me ti Lina)*
Who did MANOLIS leave the party with? (I heard that Marinis left with Lina)
2. *Pios estile SOKOLATES stus sismopliktus? (Den kserun oti tus lipi to psomi?)*
Who sent CHOCOLATES to the earthquake victims? (Don't they know they're lacking bread?)
3. *Pios diadidi oti gustari to GIANI I Maria? (oli kserun oti tis aresi o Lukas)*
Who spreads the rumor that Maria fancies JOHN? (Everyone knows that she likes Lukas)
4. *Pios ithele na kalesume ti MARIA sti deksiosi? (I Niki eprepe na erthi gia na perasume kala).*
Who wanted to invite MARIA to the reception? (Niki should have been invited to give us a good time)
5. *Me pion efige o Manolis ap to party?*
Who did Manolis leave the party with?
6. *Pios estile sokolates stus sismopliktus?*
Who sent chocolates to the earthquake victims?
7. *Pios diadidi oti gustari to GianI I Maria?*
Who spreads the rumor that Maria fancies JOHN?
8. *Pios ithele na kalesume ti Maria sti deksiosi?*
Who wanted to invite MARIA to the reception?

References

- Alexopoulou, T. (1999). *The Syntax of Discourse Functions in Greek; a non-configurational approach*. Ph. D. thesis, University of Edinburgh.
- Anagnostopoulou, E. (1994). *Clitic Dependencies in Modern Greek*. Ph. D. thesis, University of Salzburg.
- Arvaniti, A. (1996). The intonation of wh-questions in greek. *Studies in Greek Linguistics 21*, 57–68.
- Arvaniti, A. and M. Baltazani (2005). Intonational analysis and prosodic annotation of Greek spoken corpora. In S.-A. Jun (Ed.), *Prosodic Typology: The Phonology of Intonation and Phrasing*, pp. 84–117. Oxford University Press.
- Arvaniti, A. and D. R. Ladd (2009). Greek wh-questions and the phonology of intonation. *Phonology 26*, 43–74.
- Baltazani, M. (2002). *Quantifier scope and the role of intonation in Greek*. Ph. D. thesis, UCLA.
- Bolinger, D. L. (1978). Asking more than one thing at a time. In H. Hiz (Ed.), *Questions*, pp. 87–106. Dordrecht: Reidel.
- Büring, D. (1997). *The Meaning of Topic and Focus — The 59th Street Bridge Accent*. London: Routledge.
- Büring, D. (2003). On d-trees, beans, and b-accents. *Linguistics & Philosophy 26*(5), 511–545.

- Büring, D. (2006). Focus projection and default prominence. In V. Molnár and S. Winkler (Eds.), *The Architecture of Focus*. Berlin/New York: Mouton De Gruyter.
- Büring, D. (2007). Intonation, semantics and information structure. In G. Ramchand and C. Reiss (Eds.), *The Oxford Handbook of Linguistic Interfaces*. Oxford University Press.
- Büring, D. (2008). Been there, marked that — a theory of second occurrence focus. In M. Kanazawa and C. Tancredi (Eds.), *t.b.a.*
- Chafe, W. (1974). Notes on transitivity and theme in english, part ii. *Language* 50(3), 111–133.
- Frota, S. (2000). *Prosody and focus in European Portuguese*. New York and London: Garland.
- Halliday, M. (1967). Notes on transitivity and theme in english, part ii. *Journal of Linguistics* 3(3), 199–244.
- Keller, F. and T. Alexopoulou (2001). Phonology competes with syntax: Experimental evidence for the interaction of word order and accent placement in the realization of information structure. *Cognition* 79(3), 301–372.
- Krifka, M. (2001). For a structured meaning account of questions and answers. In C. Féry and W. Sternefeld (Eds.), *Audiat Vox Sapientia. A Festschrift for Arnim von Stechow*, pp. 287–319. Berlin: Akademie Verlag (= studia grammatica 52).
- Kuno, S. (1982). The focus of the question and the focus of the answer. In *Chicago Linguistic Society 18: Papers from the Parasession on Nondeclaratives*, pp. 134–157.
- Ladd, R. D. (1996). *Intonational Phonology* (Second Edition 2008 ed.). Cambridge University Press.
- Neeleman, A. and H. van de Koot (2007). The nature of discourse templates. ms at <http://www.phon.ucl.ac.uk/home/ad/2.html>.
- Philippaki-Warbuton, I. (1985). Word order in Modern Greek. *Transactions of the Philological Society* (83), 113–143.
- Reinhart, T. (1982). *Pragmatics and Linguistics: an Analysis of Sentence Topics*. Indiana University Linguistics Club.
- Roberts, C. (1996). Informative structure in discourse: towards an integrated formal theory of pragmatics. In J. Yoon and A. Kathol (Eds.), *OSU working papers in Linguistics 49: Papers in Semantics*, pp. 91–136.
- Rooth, M. (1992). A theory of focus interpretation. *Natural Language Semantics* 1, 75–116.
- Rooth, M. (2008). Second occurrence focus and relativised stress f. ms.
- Roussou, A. and I.-M. Tsimpli (2006). On greek vso again! *Journal of Linguistics* 42, 317–354.
- Sinopoulou, U. (2008). Aples erotisis me erotimatiki lexi in-situ: i periptosi ton elinikon (simple wh-in-situ: the case of Greek). ms. University of Athens.
- Steedman, M. (1991). Structure and intonation. *Language* 67, 260–296.
- Steedman, M. (2000). Information Structure and the Syntax-Phnology Interface. *Linguistic Inquiry* 31, 649–689.
- Truckenbrodt, H. (1995). *Phonological Phrases: Their Relation to Syntax, Focus and Prominence*. Ph. D. thesis, MIT.
- Tsimpli, M. I. (1995). Focusing in Modern Greek. In K. Kiss (Ed.), *Discourse Configurational Languages*, Oxford Studies in Comparative Syntax, pp. 176–206. Oxford University Press.
- Vallduví, E. (1992). *The Informational Component*. Garland, New York.

- Vallduví, E. and E. Engdahl (1996). The linguistic realization of information packaging. *Linguistics* 34(5), 459–519.
- Vella, A. (1995). *Prosodic structure and intonation in Maltese: influence on Maltese English*. Ph. D. thesis, Edinburgh University.
- Vlachos, C. (2008). Wh-in-situ optionality in greek and related issues. ms University of Patras.