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## Greek “emphatic stress”: a first approach

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### ABSTRACT

Τα τελευταία χρόνια έχει γίνει ιδιαίτερα αισθητή στη γλώσσα των μαζικών μέσων ενημέρωσης η παρονομα ενός επιπέδου “τόνου” — τον οποίο λόγω έλλειψης πιο ακριβούς ορολογίας στο εξής ονομάζω “εμφατικό τόνο”. Καθώς ο “εμφατικός τόνος” τυπικά εμφανίζεται στη λεξικά άτομη πρώτη συλλαβή πολυσυλλαβών λέξεων, θα μπορούσε να θεωρηθεί εκδήλωση γυναικού τόνου, του τόνου δηλαδή που οι Malkouli-Drachman & Drachman (1980) και Nespor & Vogel (1989) προτείνουν ως μηχανισμό για τη λήψη των τονικών χαρακτηρισμάτων. Ο “εμφατικός τόνος” όμως δεν φαίνεται να έχει γυναική (δηλαδή κορυφωτική — *culminative*) λειτουργία: δεν εμφανίζεται σε τακτικά διαστήματα ώστε να βοηθήσει στην επίλυση των τονικών χαρακτηρισμάτων που κανονικά εναλλάγη τονούμενων και άτονων συλλαβών. Αντίθετα προτείνεται εδώ ότι ο “εμφατικός τόνος” της ελληνικής έχει κυρίως οροθετική (*delimitative*) λειτουργία, και συγκεκριμένα αποτρέπει δείκτη του αριστερού όριου των επιτονικών φράσεων, δημιουγγώντας έτσι ένα νέο επιτονικό σχήμα για τα ελληνικά.

### 1. INTRODUCTION

The phenomenon examined here, which for want of a better term will be referred to as “emphatic stress”, is increasingly noticeable in the speech of those involved in the media, such as newscasters, politicians and television announcers. Specifically, one of the salient characteristics of the type of speech used by these speakers is the presence of extra “prominences” associated with syllables not usually prominent, such as proclitic articles. An example is shown in (1) (“**emphatically stressed**” syllables are in bold).

- (1) [se a ftus pro steðikan 'samera i i paliti tu ipur'jinu jeor'jias]  
 to these were added today **the** employees of **the** ministry of-  
 agriculture  
*Today the employees of the ministry of agriculture were added  
 to these.*

The issue at stake is the placement and *function* of these extra "prominences". In particular, one possible interpretation could be that what is referred to here as "emphatic stress" is in fact what Malkouti-Drachman & Drachman (1980) and Nespor & Vogel (1989) call rhythmic stress, i.e. a type of stress that falls on lexically unstressed syllables in order to alleviate stress lapses. The idea that such stresses exist in Greek was called in question in Arvaniti (1994) on the basis on acoustic data, but in that study "emphatic stress" was not taken into consideration. It is thus important to establish the role and function of "emphatic stress" in order to have a clearer picture of Greek rhythmic structure. To do so it is essential to take into account the placement patterns and acoustic characteristics of "emphatic stress", and in particular to examine whether it shares the acoustic parameters established for Greek stress in previous studies (among others, Arvaniti, 1991).

## 2. METHOD

### 2.1 Corpus

In order to examine in more detail both the placement and the acoustic characteristics of "emphatic stress" a two hour recording from ET1 (one of the Greek state television channels) was made. The recording was made in Edinburgh via satellite in July 1995. It included the main news bulletin of the day, the weather forecast, the stock-market update, part of a basketball game, interviews with politicians and union leaders, advertisements and the program *Paraskinio* which reported on a folk dance festival. In short the material included a variety of both styles and speakers and can be considered representative of media speech.

### 2.2 Procedure and measurements

The data were recorded on DAT tapes and redigitised at 8 KHz using Waves+ on a Sun workstation at the Department of Linguistics of the

University of Edinburgh. The material was listened to carefully in order to locate the "emphatic stresses", and the relevant extracts were transcribed phonetically and analysed acoustically using Waves+. In all, the recording included 70 instances of "emphatic stress".

F0 tracks and rms amplitude curves were obtained for the "emphatically stressed" syllables, while duration measurements were made from waveforms (*and* spectrograms in case of segmentation difficulties). The amplitude and duration measurements could not be analysed statistically, however, given that the data were spontaneous and thus there was no control over the possible "emphatic stress" sites. For this reason, the analysis consisted in comparing, wherever possible, the duration measurements and rms curves of the "emphatically stressed" syllables to those of similarly structured syllables that appeared in the speech of the same speaker but did not have "emphatic stress" (these "controls" were both accented and unaccented syllables). Thus, the data give a good indication of what the acoustic parameters of "emphatic stress" are, even though they were not analysed statistically.

## 3. RESULTS

The data confirm the initial impression that "emphatic stress" is used mainly by newscasters, politicians and television announcers. In contrast, "emphatic stress" was very little used in advertisements and by speakers not related to the media. For example, there were very few instances of "emphatic stress" in the program *Paraskinio*, especially in the speech of the interviewees who were people from a small Greek town (Karditsa) and unused to speaking in public.

In the speech of those who used it, "emphatic stress" appeared in two positions: on the first syllable of content words, as shown in (2) and (3), and on function words, as shown in (4) and (5). Both placements were used equally frequently (in this corpus at least) by all speakers; i.e. speakers did not appear to have a preference for one or the other placement pattern. As far as content words were concerned, "emphatic stress" fell on nouns, adjectives and verbs in descending order of frequency. The "emphatically stressed" function words were mainly proclitics, i.e. definitive articles and personal pronouns preceding a content word, but also prepositions, and conjunctions such as *xai* ([ce]

*and*), ατό [apo] *from*) and ότι ([oti] *that*)<sup>1</sup>. Of the function words, καί (*and*) and the definitive articles were those that received “emphatic stress” most often.

- (2) [i ekpomi ksanzondanevi tiz **Dr**amatices imeres tu ‘ci’a enakosca ‘evðo’mina ‘esera]  
the program again-brings-back the **dr**amatic days of thousand nine-hundred **se**venty four

*The program brings back the dramatic days of nineteen seventy four.*

- (3) [stin apofasi tis pliopsifias ja anasto’i tis aper’ias mio’psifisan ‘esera apo ta ðekatesera **so**matita tis omosponðias]  
in-the decision-of-the majority for suspension-of-the strike **w**ere-in-the-majority four of the fourteen **u**nions-of-the confederacy  
*In the decision of the majority to suspend industrial action four of the fourteen unions of the confederacy were in the minority.*

- (4) [fo simerino parascinio ‘fili mas **mas** parusi’azi ta karai’skacia] the today’s Paraskinio friends ours **to-us** presents the Karaiskakia  
*Today’s Paraskinio our friends presents Karaiskakia.*

- (5) [filokse’niðikan grup ‘zapo tin arjendi’ni tin in’ðia tin un’tra ce to izra’i] were-guests groups **f**rom the Argentina **the** India **the** Hungary **and** the Israel  
*Groups from Argentina, India, Hungary and Israel took part.*

Acoustically the presence of “emphatic stress” was nearly always signalled by an unexpected pitch excursion. Specifically, had the “emphatically stressed” syllables been pronounced in a neutral way instead, they would be either unaccented syllables between two pitch accents of an intonational phrase or unaccented syllables that precede the

first pitch accent of such a phrase. In the former case, they would be expected to have the falling F0 pattern which is typical of unaccented syllables between prenuclear pitch accents — these being associated only with lexically stressed syllables (Arvaniti, 1994; Arvaniti & Ladd, 1995). In the latter case, they would be expected to show low and flat F0 (see, for instance, Figures 4 and 5 of Arvaniti, 1994). In contrast, the F0 of the “emphatically stressed” syllables was unusually high and often showed a resetting to a high level relative to the F0 of the preceding material.

This pattern deviates not only from the typical pattern of unaccented syllables, but also from that of accented syllables: prenuclear accents in declarative sentences show a delayed rise, described as a L\*+H accent in Arvaniti & Ladd (1995); falling nuclear accents, on the other hand, typically create a hat-pattern with the prenuclear accent preceding them, i.e. after the H tone of the prenuclear accent F0 does not fall but stays high and flat (cf. Figure 1 of Arvaniti & Ladd, 1995).

Another feature of the “emphatically stressed” syllables was, in some cases, their long duration or high rms relative to surrounding unstressed syllables of similar structure. Unlike the F0 pattern, however, this feature was not always present, nor did duration or amplitude take values equal to those of accented syllables. These results, though, should be treated with caution as no statistical analysis could be done on the data (see 2.2). Finally, when “emphatic stress” fell on a syllable consisting of a single vowel this was preceded by a glottal stop, as shown in (6) and (7).

- (6) [‘zapo tin arjendi’ni] **f**rom the Argentina  
From Argentina

- (7) [me ton ‘zapoðoti’koteroto’ropo] **w**ith the **pr**ofitable-most way  
In the most profitable way

<sup>1</sup> Although ατό and ότι have an orthographic accent in Greek because they are disyllabic, in running speech they always remain unaccented. When ατό is “emphatically stressed”, the “stress” falls on its first syllable, not the second one.

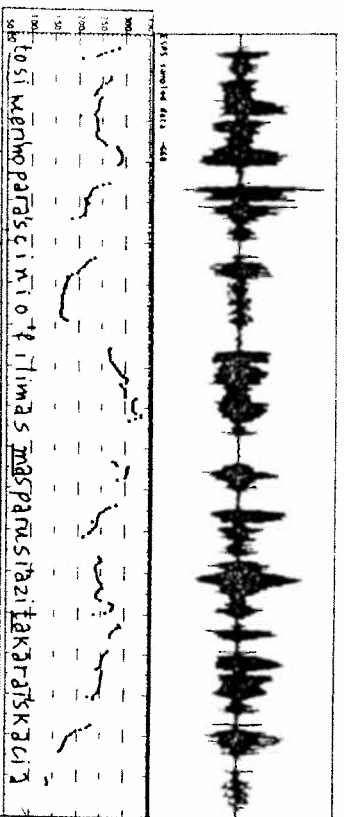


Figure 1: Waveform and F0 track of the sentence [to simerino para'scino fili mas parusi'azi ta kara'skacia]: in the figure the "emphatically stressed" syllables are underlined.

#### 4. DISCUSSION

The present data show that "emphatic stresses" appear in two positions, the first syllable of polysyllabic content words or the preceding proclitic. Acoustically, "emphatically stressed" syllables may be somewhat similar to accented syllables in amplitude and duration (though this is not necessary), but their main distinguishing feature is their F0 pattern which does not resemble either that of pitch accented syllables or that of unaccented ones.

As mentioned in the introduction, one possible interpretation could be that "emphatic stresses" have a rhythmic function, that they are in fact the rhythmic stresses referred to in Malikouti-Drachman & Drachman (1980) and Nespor & Vogel (1989). If this interpretation holds, then it goes against the claims of Arvaniti (1994) that there is no acoustic evidence for rhythmic stress in Greek.

The only argument in favour of the rhythmic interpretation of "emphatic stress", however, is the weak similarity of "emphatically stressed" to accented syllables in terms of duration and amplitude. There

are, on the other hand, many arguments against it. First, the placement of "emphatic stress" is not regular: if its function were rhythmic, one would expect it to appear more regularly in long stretches of unaccented syllables in order to alleviate lapses; in addition, one would expect that the speakers would avoid using "emphatic stress" on syllables close to accented ones. This is not what the data suggest, however. In (8), for instance, the first emphatic stress appears only two syllables before the first accented syllable [ti], while the first syllable of [sineðri'aseon] does not have "emphatic stress" although the sequence [proi'yumnon sineðri'aseon] constitutes clearly a stress lapse, since there are five syllables between the accented ones.

- (8) [ʔarce'tinafi pu refstio'pi'un 'cerði proi'yumnon sineðri'aseon  
 carce'ti afti pu ʔepanato'poðe'tunde]  
 many-are-they who liquidate gains-of-previous sessions and-many  
 they who make-different-investments  
 Many are those who liquidate gains of previous sessions and many  
 those who make different investments.

Similarly, "emphatic stress" never appears on other syllables except the first one, even if there are several before the lexically stressed syllable; for instance, if the function of "emphatic stress" were rhythmic, in example (9) overleaf one could expect a second "emphatic stress" on [po] of [ʔiaponi'ku] so that the lapse is solved. This, however, never happens. In addition, one could expect this same speaker to place an "emphatic stress" either on the first syllable of [amerikani'ko] or on the article preceding it, since together they form a sequence of six unaccented syllables.

- (9) [to amerikani'ko ðollario ci'nite sto ipsi'lotero e'pipeðo apo tis  
 tri'anda 'mia mar'tiu enandi tu ʔiaponi'ku no'mizmatos]  
 the American dollar fluctuates in-the highest range from the thirty  
 first march against the Japanese currency  
 The price of the American dollar against the Japanese currency  
 fluctuates at its highest range since 31 March.

Secondly, not only does "emphatic stress" not help alleviate lapses, it may even be placed right next to an accented syllable, as shown in (10) and (11) (the relevant sequences are underlined). In such cases, if "emphatic stress" were indeed a stress its presence would create a clash; clearly, though, the idea of speakers deliberately rearranging prosodic structure in order to create stress clashes is counter-intuitive.

- (10) [ʃa na parakoluθisume ton a'yona 'bascet (pause) ʒe'laðas ino'memon polition] for to watch the game basketball (pause) of-Hellas of-United States ... in order to watch the basketball game between Greece and the United States.

- (11) [ʃine 'omos ena θema 'amesu enθia ferondos ja 'mas] is but an issue of-immediate interest for us It is though an issue of immediate concern to us.

Finally, on several occasions "emphatic stress" appears on the lexically stressed syllable of a word, as in (12) and (13). Interestingly, these "emphatically stressed" syllables are perceptually and acoustically different from the prenuclear accents that would be expected in normal speech; they are also different from emphatic accents proper, an example of which is shown in Figure 2. As can be seen in this figure, the emphatic accent shows an abrupt rise and fall, with the whole contour completed within the lexically stressed syllable. In contrast, lexically stressed syllables with "emphatic stress" show the same intonational pattern as the rest of the "emphatically stressed" syllables.

- (12) [ʃin ʒe'jipio] (13) [θmo'lis tora] the Egypt right now Egypt (ACC)

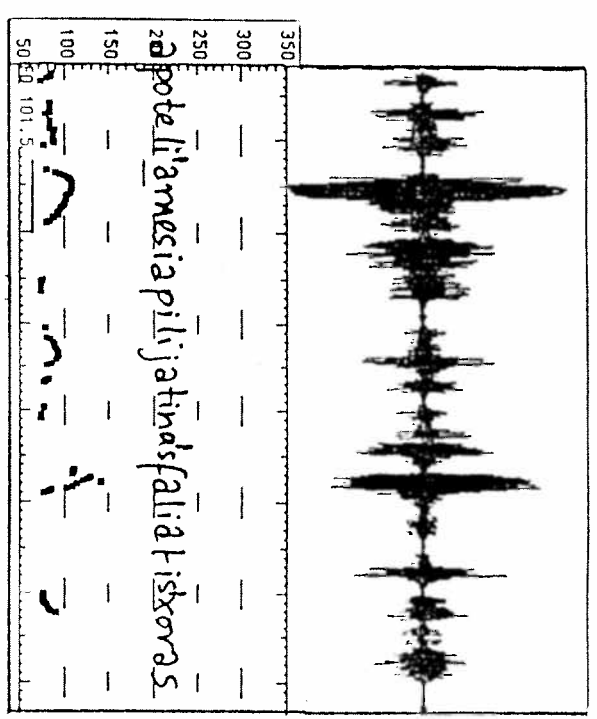


Figure 2: Waveform and F0 track of the sentence [apote'li'amesi ap'i'li ja tin a'falid'is 'xoras] - constitutes immediate threat for the security of the country - *Constitutes an immediate threat to the country's security*; in the figure the syllable with the emphatic accent is underlined.

It is thus not possible to maintain that "emphatic stresses" have a rhythmic function. An alternative interpretation is that they are H phrase accents that mark the *left* boundary of a new intonational phrase. Although it is usually the right boundaries of prosodic constituents that are marked, cases of left boundary marking do exist; for instance, Pierrehumbert & Beckman (1988) report on left-edge L% boundary tones in Japanese.

Evidence in support of the H phrase accent interpretation of the Greek "emphatic stress" comes from the following observations on the data. First, "emphatically stressed" syllables exhibit an F0 pattern unusual for both accented and unaccented syllables. In fact this pattern is closer to

that of syllables on the right edge of intermediate intonational phrases (Arvaniti & Ladd, 1995) which show a "continuation rise", i.e. a H phrase accent, this time associated with the right boundary. Moreover, such a H phrase accent frequently appears before an "emphatic stress" indicating the presence of a right-edge intonational phrase boundary. In many instances the presence of such a boundary is signalled by other cues as well: a pause before the "emphatically stressed" syllable, as in example (10), and the resetting of F0 on the "emphatically stressed" syllable already referred to (see section 3).

It turns out then that "emphatic stress" is not really a type of stress but a type of tone, namely a phrase accent. Moreover, "emphatic stress" does not seem to be really associated with emphasis either: emphasis *per se* is shown by emphatic accents which (a) fall only on the lexically stressed syllable of a word (b) are characterised by an abrupt rise and fall within the lexically stressed syllable, as shown in Figure 2. (The difference in F0 pattern between "emphatic stress" and emphatic pitch accents proper can be seen in the underlined parts of the F0 contours in Figures 1 and 2.) These emphatic accents seem to fulfil a function akin to that of the French *accent d'insistance* (among others, Séguinot, 1976; Fónagy, 1979), i.e. they are used in order to emphasise words that have emotive content for the speaker. Moreover, such accents are used by all speakers, not a particular group.

"Emphatic stress", on the other hand, seems to be closer to a special category of the French *accent d'insistance*, the so-called *accent didactique* (Lucci, 1979). "Emphatic stress" and *accent didactique* have the same limited distribution in terms of style and placement: they are used only in the speech of the media and appear only on initial syllables. In addition, neither of them is used in an emotive way. The function, that of the Greek "emphatic stress" at least, seems to be the marking of prosodic boundaries, i.e. it is delimitative rather than culminative (in a loose interpretation of Trubetzkoy's terms).

One could perhaps speculate on the reasons for the appearance of "emphatic stress" in the speech of the media: for instance, it may be a social group marker (as suggested by Lucci for the *accent didactique*); alternatively its presence may be due to the need of professional readers to signal the beginning of intonational phrases presumably containing

new information, or to parse the material they must read into small "manageable" phrases. Obviously all these explanations will remain speculative until further research with a larger corpus is undertaken; it is, however, clear from the present data that "emphatic stress" is neither a type of stress, nor is it emphatic; rather it is a phrase accent and as such part of the intonational system of Greek.

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