Intonation and Prosodic Coherence in Greek Discourse

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ABSTRACT

The present contribution is part of a larger investigation on tonal structuring in spontaneous Greek discourse. In this paper, we present our observations on prosodic coherence and the role of intonation in signalling different types of prosodic boundaries. Our analysis is concentrated on tonal sequences that may be used at intonation unit boundaries. The results support the view that various combinations of prosodic parameters are used for discourse segmentation, but they also bring into light evidence that different tonal manifestations at prosodic boundaries may imply different prosodic coherence and discourse interpretation.

INTRODUCTION

This paper reports our latest results on the use of intonation for prosodic coherence in spontaneous Greek discourse. Our current research on Greek prosody is in the framework of an ongoing project on speech technology (LOGOS, 1991-93) in which the University of Athens (Phonetics Laboratory) participates with three additional partners: the Institute for Language and Speech Processing (Athens), Athens Polytechnic (Dept. of Computer Science), and Knowledge S.A. (Patras). Research on Greek (e.g. Botinis 1989, 1992) as well as investigations on different languages (e.g. Bruce et al. 1991 for Swedish) refer to alternative strategies a speaker may use for prosodic segmentation. In Greek, a regular tonal pattern at prosodic boundaries is an abrupt pitch-change, from a high pitch-level associated with continuative accent of the preceding prosodic unit to a low pitch-level for the following prosodic unit. However, in this paper we report our latest observations, with reference to another prosodic pattern, i.e. a complex rise-fall pitch pattern realised as one pitch gesture; the pitch-rise is associated with the preceding prosodic unit, whereas the pitch-fall is associated with the following prosodic unit. We assume that the different tonal sequences at prosodic boundaries represent different types of prosodic coherence and discourse interpretation.

SPEECH ANALYSIS

The speech material presented in the present article consists of small speech units from a spontaneous dialogue between a programme leader and a programme participant (both males) that exemplify different patterns of intonation sequences associated with different types of prosodic coherence. The dialogue was recorded on a consumer-quality cassette recorder and analysed on the CSL of Kay Elemetrics Corp. at a sampling rate of 10 KHz at the Phonetics Laboratory, University of Athens. Our

analysis is organised into four complementary stages: (1) text-discourse analysis in terms of syntactic-units, turn-units, and discourse structure; (2) auditory-phonetic analysis in terms of auditory-prosodic units; (3) acoustic-phonetic analysis in terms of acoustic-prosodic units; and (4) perceptual analysis and analysis-by-synthesis. In the present paper we shall confine ourselves to the acoustic-phonetic analysis, concentrating to specific prosodic units and their discourse interpretation.

TONAL SEQUENCES IN PROSODIC BOUNDARIES

Discourse prosody has taught us that a speaker may segment his turn-unit in unpredictable ways and, quite often, at great variance with syntax. At the present, we do not have sufficient knowledge "... as to what makes a speaker segment his speech in one way rather than another and, furthermore, what are the consequences of segmentation for communicative meaning?" (Botinis 1992, p. 49). Our current research on prosodic units on spontaneous speech has revealed a new pattern at intonation unit boundaries and, at the same time, has thrown light on recent observations about their interpretation. We shall thus present our material in four successive steps that represent our accumulated work on discourse prosody.

First, Figure 1 represents the programme participant's pitch-contour of the speech-unit /'ezisan ke meγa'luryisan/ '(they) lived and grew bigger' which is within a larger turn-unit. This speech-unit shows two pitch-gestures each beginning at the stressed syllable of the corresponding stress group. Our present interpretation of this pitch-pattern is that the speaker wants the listener to consider this speech-unit as two relatively independent communicative entities and, for that purpose, the speaker assigns one pitch-gesture to each stress group. On the other hand, these communicative entities, in this example two lexical items, are closely related since they have the same pitch pattern and not any higher pitch/prosodic disjuncture but the two pitch-gestures.

Fig. 1. 'e z i s a n k e meγa'l u r γ i s a n
'(They) lived and grew bigger'

Second, Figure 2 shows the programme participant's pitch-contour of the speech-unit /kata δi'afores epo'xes egata'staθikan sti makeδo'nia/ 'in different times (they) settled down in Macedonia' which is also within a larger turn-unit. This speech-unit appears with hardly any pitch-change (but microprosodic interferences) except for the boundary of the speech-unit which is associated with a major pitch-up. In our earlier analysis (Botinis 1989, 1991) we have referred to this pitch-gesture as "continuative accent" that is realised on the final syllable(s) of the boundary and may have its turning point either at a stressed or an unstressed syllable; it has been attributed to a turn-keeping function with forward directionality. Our present position on this pitch pattern is that the speaker intends to convey the information of this speech-unit as a

single unit and not as several; hence, the flattening of the tonal structure up to the major pitch-up at the boundary. This flattening denotes a high degree of prosodic coherence whereas the major pitch-up contributes to a relative strong independence of this speech-unit as well as its structuring with what it follows.

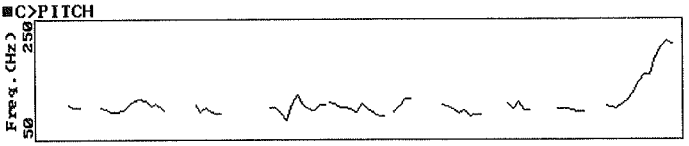

Fig. 2. kata ði'afores epo'xes e g a t a 's t a θ i k a n sti makeðo'nia
'in different times (they) settled down in Macedonia'

Third, Figure 3 represents the programme participant's pitch-contour of the speech-unit /'opos 'θaleγe ka'nis kriti'kos/ 'as one might say a Creten' which is also within a larger turn-unit. In this speech-unit the word /ka'nis/ appears with a major pitch-up which reaches its maximum at the word boundary. This pitch-gesture is not a focal accent, since the focal accent is realised as a major pitch-down at its domain of application (see Botinis 1992), but neither is it a pitch-gesture associated with a stress group (cf. Fig. 1). Furthermore, we may not consider it as a turn-keeping cue since the syntactic structure where that would be most probable is not complete at this point for this particular context. On the other hand, there is an abrupt pitch-change to a low pitch-level associated with the onset of the following word /kriti'kos/, which then takes on the same tonal pattern as /ka'nis/. We interpret this abrupt pitch-change as a prosodic disjuncture, the function of which is to assign the word /kriti'kos/ an independent information constituency.

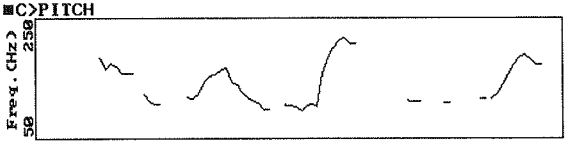

Fig. 3. 'o p o s 'θ a leγ e k a 'n i s k r i t i 'k o s
'as one might say a Creten'

Last, Figure 4 represents the programme participant's pitch-contour of the speech-unit /me sxo'lia me ekli'sies me 'xrimata/ 'with schools, with churches, with money' which is also within a larger turn-unit. We observe two major pitch-ups associated with the boundaries of the prepositional phrases /me sxo'lia/ and /me ekli'sies/, which have similar tonal patterns similar to those of Figure 3, rather than the stress groups of the coresponding words (cf. Fig. 1). On the other hand, there is no abrubt pitch-change to a low level associated with the onset of the following material, either with /me ekli'sies/ or /me 'xrimata/, the kind of which is represented at Figure 3. Instead, we observe a pitch-down which forms a single pitch-gesture in combination with the pitch-up of the preceding prosodic unit. We will call this "phrasal cross-over". Thus the series of pitch patterns is not repeated at the final boundary of the last prepositional phrase /me 'xrimata/, since this phrase forms the last paratactic

information item. We interpret phrasal cross-over as an additive prosodic disjuncture whose function is to give the relevant material an independent information constituency while at the same time adding it to a larger information unit.

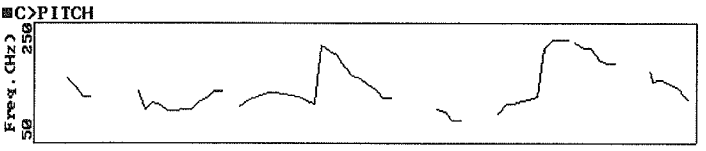

Fig. 4. m e s x o 'l i a m e e k l i 's i e s m e 'xrimata
'with schools, with churches, with money'

CONCLUSIONS

Our latest research partly presented in the present paper has opened new ways to look into discourse prosodic units. A major question which has puzzled us over the last years has been the range of freedon a speaker has to segment his speech, ranging from a single word to a whole turn-unit. We think that the speaker segments his speech into prosodic units in order to apply to them a (relatively) independent information structure, and this determines the options he may use.

On the other hand, the different prosodic strategies a speaker may use to segment his speech appear to us not as a means to an end in themselves but primarely to produce different cohesion patterns for communicative purposes in accordance with the information structure he wants to convey. Thus, a basic question put by researchers on phrasing (e.g. Bruce et al. 1991) with regard to a probable hierarchy of prosodic parameters represents a first aspect of prosodic segmentation; a second, the one we have presented, is the different patterns a prosodic parameter, and particularly intonation, may take for distinctive cohesion patterns in discourse communication.

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