The intonation of Standard and Northern European Portuguese: A comparative intonational phonology approach

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Abstract

It has been generally thought that Northern varieties of European Portuguese (EP) are more conservative than Standard (Lisbon) EP, and show some similarity with Spanish. However, the intonation of the different varieties of EP has not attracted the attention of phonologists or phoneticians until very recently. This work has two main goals: (i) to characterise the differences between Northern and Standard EP by offering a first account of the intonational system of Northern dialects; (ii) to add to the understanding of intonational variation within Ibero-Romance languages and language varieties. It is shown that the two varieties resort to different nuclear accents in declaratives, wh-questions and yes-no questions. Realisational, phonotactic and semantic differences are also found. Both the facts of pitch accent distribution and the intonational phrasing choices displayed suggest that Standard EP has innovated from Northern EP and Spanish by reducing phrase-internal pitch accents and producing larger major prosodic phrases.

1. Introduction

Although it seems intuitively clear that there are important cross-dialectal intonation differences in European Portuguese (hereafter EP), the topic of dialectal variation in intonation has not attracted the attention of phonologists and phoneticians concerned with the prosodic analysis of EP. It is a common hearsay that Northern varieties and certain southern varieties, like those spoken in the Algarve, are more 'chanted' than the Lisbon variety which is often reputed to be rather 'dull'. However, the inspection of the facts (if any) behind these impressions has not gained the status of a research question until presently, and only the Lisbon variety, that is Standard EP, has been described

in prosodic studies (e.g. Frota 1993, 1997, 2000, 2002a,b, 2003, Grønnum & Viana 1999, Mata 1999, Viana 1987, Vigário 1997, 1998, 2003a,b) and compared with other languages (Elordieta, Frota, Prieto & Vigário 2003, Frota 2000, 2002b, Frota & Vigário 2000, Frota, Vigário & Martins 2002, Vigário 2003a).

Only in recent years has the intonational analysis of EP become an active area of research (see Frota 2000a: section 1.5 for an overview) and it is thus not surprising that interest on intonational variation within the language follows from the growing knowledge on the intonational system of Standard EP. The present work has two main goals: (i) to establish the chief intonational differences between Standard and Northern EP, by offering a first account of the intonational system of the Northern urban variety spoken in Braga; (ii) to add to the understanding of intonational variation within Ibero-Romance. The analytical framework followed is the autosegmental-metrical (AM) theory of intonational phonology (see Pierrehumbert 1980, Beckman & Pierrehumbert 1986, Ladd 1996, as landmarks in the development of this theoretical model). The AM model is perhaps the prevalent framework of intonation analysis since the early 90s, thus allowing for easier and more direct comparisons across the languages described. In addition, the AM model offers a framework for cross-language comparison of intonation, according to which intonational differences can be evaluated against a taxonomy of semantic, systemic, phonotactic and realisational differences (Ladd 1996: Chap.4). This approach can be straightforwardly extended to the evaluation of intonational differences within-languages (e.g. Grabe 2002, Grabe & Post 2002).

Before presenting our results on intonational variation in EP, some background on the EP varieties established by traditional dialectology research is provided (Section 2). The methodological details concerning the data collection procedure and the prosodic transcription and analysis of our speech materials are given in Section 3. Section 4 constitutes the core of the present work, where the nuclear contours of declaratives, wh-questions, yes-no questions, as well as pitch accent distribution and intonational phrasing choices in Standard and Northern EP are analysed and discussed. Some of the differences found between the two varieties are also contrasted with Spanish and a path for how the EP intonational system has evolved is suggested. Section 5 concludes the paper with an outline of our major findings.

2. Background: Continental varieties of European Portuguese

Research on the dialectology of European Portuguese has focussed mainly on segmental phonetic differences and varying lexical choices (Vasconcelos 1893, 1901, Boléo & Silva 1962, Cintra 1962, 1971, Barros Ferreira 1992, Segura & Saramago 2001, among others). The analysis of the continental

dialects of EP proposed in Cintra (1971), which has been accepted by most scholars and is used to the present day, distinguishes between two main groups of dialects: the Northern varieties and the Central-Southern varieties (Figure 1). The two groups are set apart by an array of phonetic traits: Northern EP is characterised by the most conservative traits, such as the absence of phonological distinction between /v/ and /b/, the presence of /tʃ/, the apical realisation of the dento-alveolar fricative (i.e.[s̪], [z̪]), or the preservation of /ow/. Some of these features are common to Spanish, like the absence of /v/ or the presence of the palatal voiceless affricate.

Figure 1. Dialects of EP according to Cintra (1971). Figure adapted from Segura & Saramago (2001), with permission from the authors. The regions of Braga and Lisbon, where the varieties of Northern and Standard EP studied in this paper are respectively spoken, are located on the map by means of diamond shaped dots. The bold black line sets apart Northern (light and strong blue) and Central-Southern EP (brown and white).

As pointed out by Cintra, Standard EP, which corresponds nowadays to a Central-Southern variety, was the result of a process of incorporation of innovations and Southern features into the varieties spoken by Northern people as they extended their territory to the South (from the 13th century onwards).

Within Northern dialects, a subdivision has been proposed by Cintra between the Trás-os-Montes and Alto Minho group and the Baixo Minho, Douro and Beiras group (respectively, light and strong gray in Fig.1). Although both groups show conservative features when compared to Central-Southern varieties, the former presents a higher degree of conservativeness than the latter. The urban variety of Northern EP studied in this paper is spoken in Braga, which belongs to the Baixo Minho group.

Central-Southern dialects are also subdivided into two groups: Littoral Center and Interior Center and South (medium gray and white in Fig.1). The main trait that sets the two subgroups apart is the reduction of the diphthong /ej/ to [e] in the Interior Center and South. Although Lisbon is located within the area of the latter group, it should be noted that it shares with the Littoral Center the preservation of the diphthong /ej/ that is realised as [ɐj].

3. Methods

The speech materials on which the present research is based are drawn from an extension of the comparable Romance Languages Database (RLD) created by Elordieta et al. (2003). The RLD was designed to allow a direct comparison between Catalan, European Portuguese and Spanish with regard to the manipulation of constituent length and syntactic complexity in SVO sentences. In D'Imperio, Elordieta, Frota, Prieto & Vigário (2003), Italian was added to the RLD. For the purpose of the present study, the RLD was extended with *wh*- and *yes-no* questions, declaratives with various syntactic structures, and utterances with parentheticals. The *wh*- and *yes-no* questions corpus was designed, recorded and analysed for Standard EP in Frota (2002b). Similarly, the various declaratives corpus is taken from Frota (2003), and the parentheticals corpus from Frota (2000). Examples of the speech materials are given in (1).

(1) a. A loura mirava morenos
'The blond girl watched dark-haired boys'
A nora mirava velhinhas lindas
'The daughter-in-law watched beautiful old ladies'
A nora da mãe mirava velhinhas lindas (from the RLD)
'The daughter-in-law of (my) mother watched beautiful old ladies'

b. Quem pintou uma manhã âmbar?
'Who painted an amber morning?'
Os rapazes compraram lâminas? (from Frota 2002b)
'Did the boys buy slides (for the microscope)?'
c. A lâmina longa é mais eficaz
'A long blade is more efficient'
O mármore amarelou com facilidade (from Frota 2003)
'The marble became yellow easily'
d. O nível actual, segundo dizem, corresponde à inflação na Europa
'The present level, so they say, matches inflation in Europe'
(from Frota 2000)

A total of 130 utterances were read three times in random order by two speakers of each variety. 780 target utterances (130x3x2) were obtained per language variety. The sentences were read as all new information, that is the readers were instructed to utter declarative sentences as if they were answering to questions like 'What happened?', and yes-no questions had a previously given context to ensure broad focus interpretation (e.g. 'I don't know what happened.'). Therefore, our data consists of broad focus utterances in reading style.

Speakers were educated females in their 20s or 30s, two of them native speakers of Standard EP (SEP) and the other two native speakers of Northern EP (NEP). It was ensured that the same set of data was produced by a homogeneous group of speakers.

The recordings took place in quiet rooms at the University of Lisbon (for SEP) and the University of Minho (for NEP). They were made on audiotape and were later digitized for acoustic analysis, using SpeechStation2 (from Sensimetrics). For each target utterance a spectrogram, waveform and pitch contour was produced. Pitch contours were phonologically transcribed according to the AM model and assuming the proposals for European Portuguese in Frota (2000) as a baseline. F0 alignment was annotated as early (in the consonant or beginning of the vowel), central (in the middle of the vowel) or late (near the end of the vowel or in a coda consonant) in the syllable. After prosodic transcription, intonation patterns in identical and/or equivalent utterances were compared across dialects.

4. Comparative intonational phonology

4.1. Nuclear fall in declaratives

All previous descriptions of EP declarative intonation characterise the declarative contour as consisting of an initial rise, a plateau and a sharp final

fall through the last stressed syllable of the intonational phrase (e.g. Martins 1986, Viana 1987, Frota 1991, 1993, 1997, 2000, 2002a,b, Grønnum & Viana 1999, Mata 1999, Vigário 1997, 1998). However, none of the earlier studies had considered a variety different from SEP. Figure 2 illustrates the declarative contour, and thus the respective nuclear fall, found in our data for SEP and NEP.

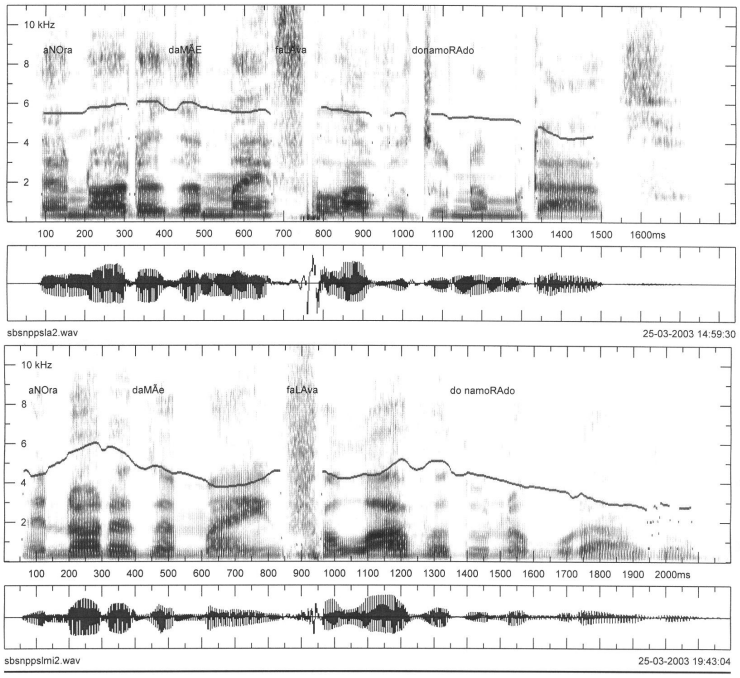


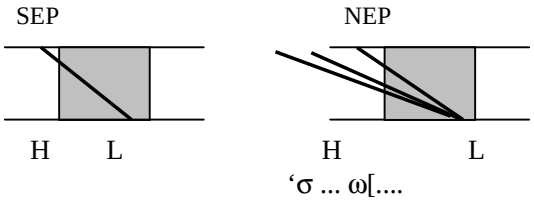
Figure 2. F0 contours of the declarative sentence *A nora da mãe falava do namorado* 'The daughter-in-law of (my) mother talked about the boyfriend': panel A, SEP; panel B, NEP. The nuclear syllable is underlined. Word initial boundaries are signalled by text alignment.

In SEP, it is clear that the declarative nuclear fall involves a HL melody, thus confirming previous observations found in the literature. It is also clear that the alignment pattern of the H and L targets is as follows: H aligns immediately before the stressed syllable, whereas L aligns with the stressed syllable, irrespective of number of prestressed syllables in the nuclear word or distance from the left edge of some higher prosodic phrase. Again, this corroborates previous findings on HL alignment, and provides additional

support for the bitonal analysis of the nuclear fall in SEP - H+L* (Frota 2000, 2002a,b).

In NEP, a low melody characterises the final stressed syllable. Unlike in SEP, the nuclear fall is not necessarily realised through the nuclear syllable, as the alignment of the previous peak is highly variable. In our data, H may align as far back as the prefinal stressed syllable. Figure 2 provides an example of H alignment with the left edge of the final prosodic word (ω), that is three syllables before the locus of H alignment in SEP. This difference between the declarative nuclear fall in the two varieties can be represented as in (2), where the box stands for the nuclear syllable:

(2)



As also shown in (2), in NEP the L target tends to align later than in SEP.

The facts just reported show that the bitonal analysis of the nuclear fall cannot be extended to NEP because, in this variety, the H target does not behave as expected from a leading tone. Rather, it seems to behave as some kind of stress-seeking tone: it may align up to the prefinal stressed syllable and it may dock in the vicinity of the left edge of the final ω, possibly signalling ω-initial prominence.[1] We thus propose that the H is a tonal event independent from the nuclear L. In other words, the final fall in NEP declaratives results from a H tone and a monotonal L* accent. As to the phonological nature of the H tone, due to its stress-seeking properties and its floating character we believe it is best described as a phrasal tone or accent (in the spirit of Pierrehumbert & Beckman 1988, and Grice, Ladd & Arviniti 2000).

In short, for SEP a declarative is marked by a fall through the final stressed syllable, whereas for NEP the nuclear syllable just has to be low. We analyse this contrast by means of two different nuclear accents, respectively H+L* and L*. Besides this systemic difference, the two varieties also show a realisational difference in the alignment of the L tone.

[1] Prosodic word initial prominence in European Portuguese is extensively discussed in Vigário 2003.

4.2. Wh-question nuclear contour

In previous studies, it has been observed that wh-question intonation in Standard European Portuguese is very similar to (neutral) declarative intonation (Viana 1987, Cruz-Ferreira 1998, Frota 2002b). In particular, the nuclear contour consists of a sharp final fall through the last stressed syllable, just like in declaratives. This is shown by the example in Figure 3, panel A. The parallelism between the two contours derives from their equal phonology, as proposed in Frota (2002b): in both cases we find the bitonal nuclear accent H+L*.

As to the wh-question nuclear contour in Northern EP, our data shows two possible patterns, as illustrated in Figure 3 (panels B-C). Their common trait is the low target achieved in the final stressed syllable, whereas the difference resides in the absence (panel B) versus presence (panel C) of a pre-accented peak. It should be further noticed that, if the peak is part of the contour, it aligns consistently with the prenuclear syllable and the fall is always followed by a final rise. These facts strongly suggest that NEP has two wh-question nuclear contours: a low contour (panel B), that is the most frequent one within and across speakers, and a high-low-high contour (panel C). In the former, we find the same monotonal L* accent that characterises NEP declaratives, whereas in the latter the bitonal H+L* nucleus typical of SEP is used instead. However, this alternative melody is not simply an adoption of the SEP wh-question nuclear contour. As shown in Fig.3, panel A, in SEP the use of H+L* does not require an ensuing rise. Frota (2002b) has described the presence of an **optional** final rise, which is further conditioned by the availability of segmental material after the nuclear syllable. This rise has been analysed by means of the intonational phrase (I) bitonal boundary LHi. In NEP, by contrast, H+L* implies a final rise regardless of segmental material after the stress (panel C). Therefore, we propose that the alternative NEP contour consists of H+L* plus a boundary rise Hi. The monotonal status of the boundary tone is supported by its independence from the segmental material (not) available (a bitonal boundary would imply that more than two tones can be realised on a single syllable - see Frota 2002b for a detailed discussion of this issue).

In conclusion, SEP and NEP resort to different nuclear contours in wh-questions. The analysis we propose for these differences is given in (3) (here as elsewhere the nuclear syllable is underlined).

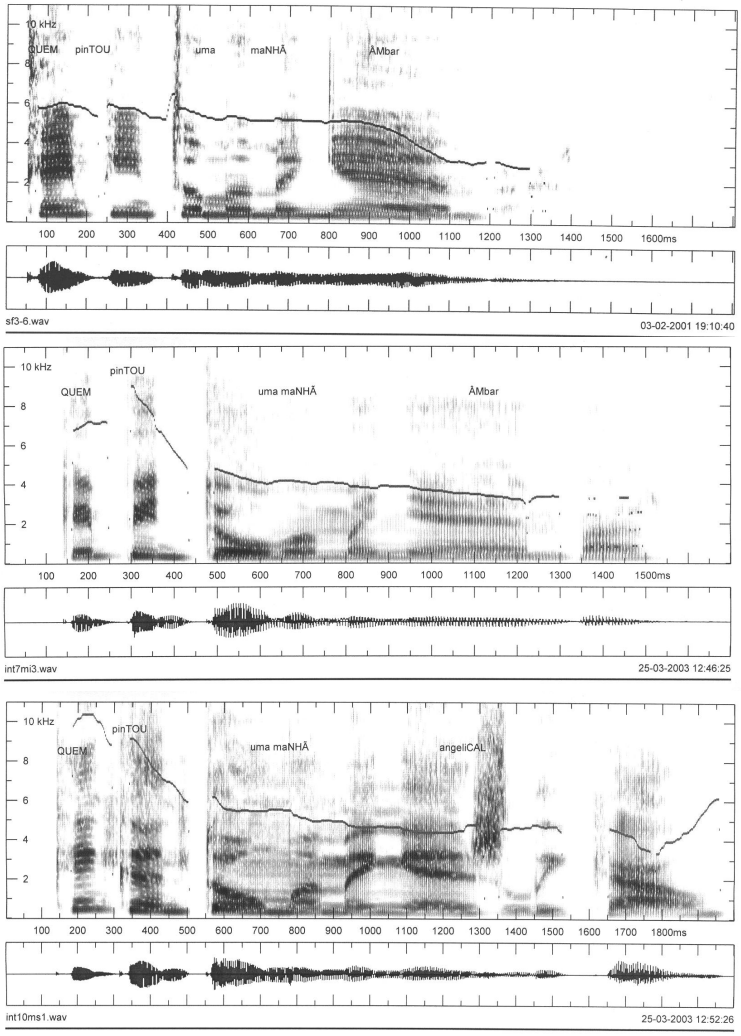


Figure 3. F0 contours of the wh-questions *Quem pintou uma manhã <u>âm</u>bar?* 'Who painted an amber morning?' (panel A, SEP; panel B, NEP) and *Quem pintou uma manhã angeli<u>cal</u>?* 'Who painted an angelic morning?' (panel C, NEP). The nuclear syllable is underlined. Word initial boundaries are signalled by text alignment.

(3) a. SEP
[quem pintou uma manhã âmbar]I
|
H+L*
b. NEP
[quem pintou uma manhã âmbar]I
|
L*
'who painted an amber morning?'
b'. NEP
[quem pintou uma manhã angelical]I
| \
H+L* Hi
'who painted an angelic morning?'

4.3. Yes-no question nuclear contour

Yes-no questions in European Portuguese are 'declarative' questions in the sense that they do not include auxiliary-subject inversion or any other morpho-syntactic mark of interrogativeness. In SEP, the yes-no question nuclear contour is characterised by a fall-rise melody (Viana 1987, Frota 2002b). Frota (2002b) describes this melody as consisting of a sequence of two discrete events: a fall through the nuclear syllable, analysed as a H+L* accent, and a steep rise in the final syllable of the intonational phrase, analysed as a bitonal LHi boundary. The fall-rise melody is illustrated by the contours in Figure 4. Our findings confirm the observations in Frota (2002b), thus supporting the analysis therein proposed for SEP yes-no questions.

In Northern EP, by contrast, the intonation of yes-no interrogatives is more complex showing two possible contours. In the most frequent case, a LH melody is involved. The nuclear syllable is low and a rise follows being the peak attained in a post-nuclear syllable, if such syllable is available (Figure 5, panel A), or at the right edge of the nuclear syllable itself, if it is the final syllable in the I-phrase (Figure 5, panel B). In addition, a final low may follow the rise. However, the final low is only present when the segmental string provides enough room for it by means of an additional post-nuclear syllable, as in *lâminas* in Fig.5, panel A. Otherwise, the final low is truncated from the contour**.** A further tonal event that may occur in the yes-no question contour is a previous peak preceding LH. This peak may or not be present and its occurrence is independent from the segmental material available, that is the peak is strictly optional. When it is present, it occurs within the nuclear word, somewhere between its left-edge and the prenuclear syllable. Fig. 5, panel A illustrates the absence of the peak, whereas Fig.5, panel B exemplifies its presence.

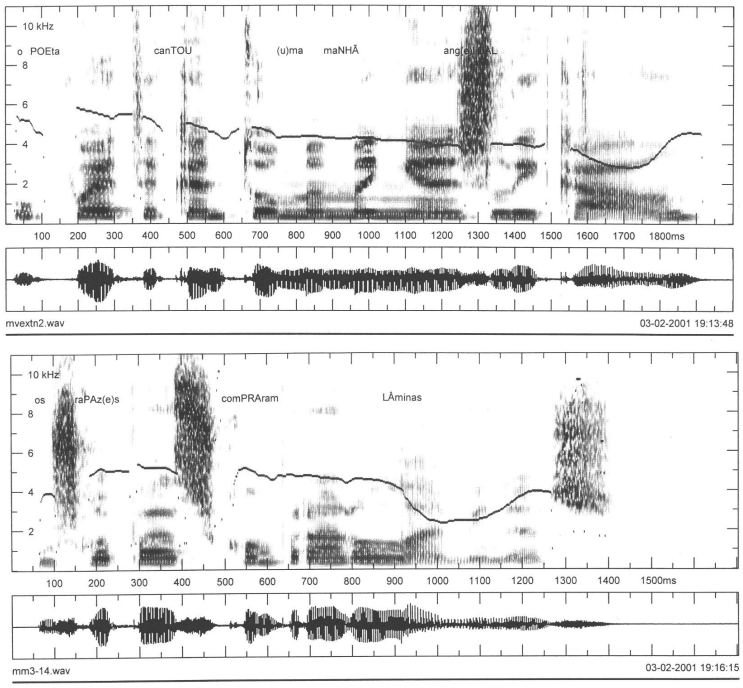


Figure 4. F0 contours of yes-no questions in SEP: *O poeta cantou uma manhã angelical?* 'Did the poet sing an angelic morning?' (panel A); *Os rapazes compraram lâminas?* 'Did the boys buy slides?' (panel B). The nuclear syllable is underlined. Word initial boundaries are signalled by text alignment.

Northern EP has an alternative, less frequent, yes-no question contour, which resembles the declaratives and wh-questions of SEP. The alternative contour is characterised by a HL melody, where the fall is realised through the nuclear syllable and the peak is consistently aligned with the prenuclear syllable, as shown in Fig.5, panel C. Besides this similarity to the above mentioned SEP contours, this contour sounds 'declarative' to native SEP listeners. Thus, we analyse it as consisting of the nuclear accent H+L*, that characterises SEP contours.

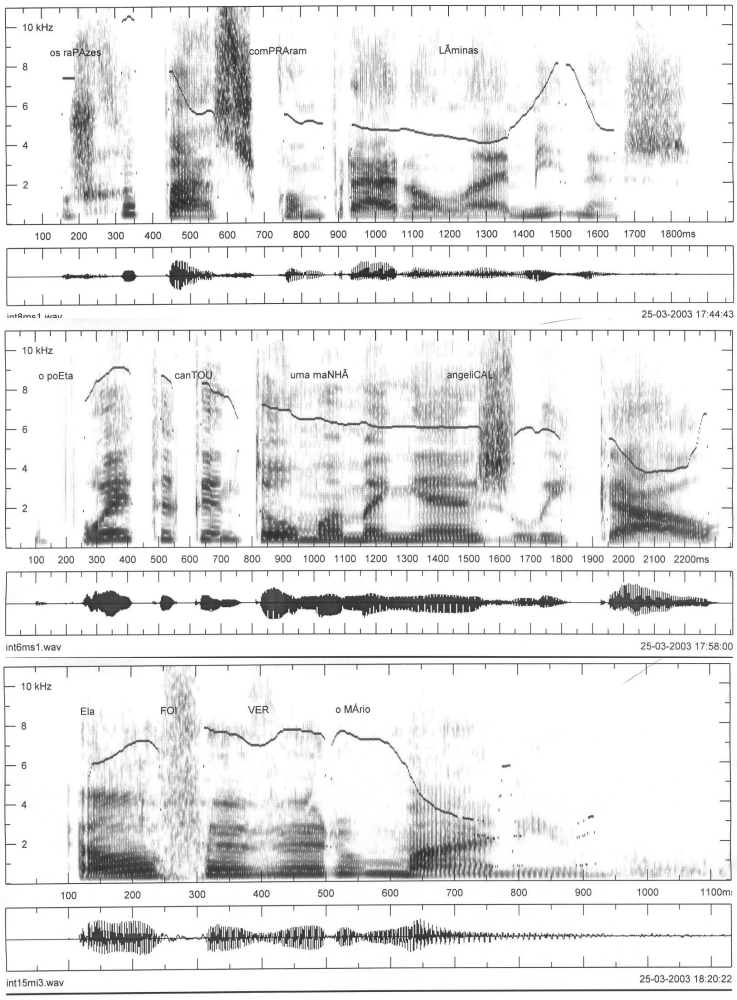


Figure 5. F0 contours of yes-no questions in NEP: *Os rapazes compraram lâminas?* 'Did the boys buy slides? (panel A); *O poeta cantou uma manhã angelical*? 'Did the poet sing an angelic morning?' (panel B); *Ela foi ver o Mário?* 'Has she gone to see Mário?' (panel C). The nuclear syllable is underlined. Word initial boundaries are signalled by text alignment.

Let us return to the most frequent melody of Northern EP yes-no question nuclear intonation, (H) L H L. It seems clear that a basic requirement of the

contour is a low tone in the nuclear syllable. We interpret this as the presence of the monotonal accent L* which is the nuclear accent used in NEP also for declaratives and wh-questions. A second requirement of the contour is a post-nuclear peak. Further, a final low is present if segmental material allows it. These two post-nuclear targets are amenable to several phonological interpretations. They may be either represented by a bitonal boundary of the HLi type, or a sequence of a high phrase accent and a low boundary tone (H- Li). The former analysis would have the advantage of not postulating a new boundary type in the European Portuguese intonational system. Complex boundary tones have been proposed as a marker of interrogation in SEP, and HLi is the boundary tone found in late focused yes-no questions in this variety (Frota 2002b). However, in NEP we found no other piece of evidence for complex boundary tones in interrogatives, both in the wh-question contour and in the alternative contour for yes-no questions. The H- Li analysis, on the other hand, would have the advantage of not introducing complex I-boundary tones in NEP, a variety that seems to display only simple boundaries in the same way that it clearly prefers monotonal nuclear accents to bitonal accents, unlike SEP. However, this analysis introduces a phrase accent into the system, and phrase accents have been extensively argued not to be a tonal category of SEP intonation (Frota 2000, 2002a,b). Interestingly, the yes-no question nuclear contour of NEP is phonetically very similar to the Eastern European Question Tune (EEQT) analysed in Ladd (1996) and Grice, Ladd & Arvaniti (2000) as consisting, precisely, of a low nuclear accent, a high phrase accent and a low boundary tone. Grice et al (2000) use the EEQT to argue for phrase accents and their specific nature. Thus, cross-linguistic evidence argues in favour of the L* H- Li analysis of yes-no questions in NEP. Such analysis, if further supported on the empirical side by more extended research on this tune in NEP, would lend additional evidence to the spread of the EEQT across Europe (Grice et al. 2000, Ladd p.c.).

4.4. Interim summary: Variation in declarative and question nuclei

An overview of the nuclear accents of declaratives and questions in the two varieties of EP under study is given in Table 1. Due to the role played by post-nuclear tonal events in the interrogative contours, phrase accents and boundary tones are also indicated. In the case of declaratives, the right edge of the utterance is always low in both varieties, and thus the low I-boundary

analysis proposed for SEP (e.g. Vigário 1997, 1998, Frota 2000) is extended to NEP.[2]

Table I. Intonational variation in EP declarative and question nuclear contours.

Variety	Declarative	Wh-question	Yes-no question
SEP	H+L* Li	H+L* Li *or* LHi	H+L* LHi
NEP *most frequent*	L* Li	L* Li	L* H⁻ Li
alternative	_____	H+L* Hi	H+L* Li

It is clear from Table I that the main type of intonational variation found is systemic. In the most frequent NEP pattern, both in declaratives and questions, a different nuclear accent is used (L* instead of H+L*). In the yes-no question tune, besides the nuclear accent, the edge tones are also different. While SEP resorts to bitonal nuclei, and complex I-boundary tones in questions, NEP uses monotonal nuclei and simple I-boundary tones. However, the intonational system of NEP is made more complex by the introduction of the phrase accent category in the yes-no question tune.

In the alternative less frequent contours for questions in NEP, the SEP H+L* nucleus is used instead of L*. Nevertheless, the contrast between the question contours in the two varieties is maintained by the difference in boundary tones. The same cannot be said, however, of the contrast between yes-no questions in NEP and declaratives in SEP: in both cases, identical tunes are used with different meanings (i.e. H+L* Li may mean yes-no question in NEP whereas it means declarative in SEP).

A common feature of the intonational systems of both varieties of EP is the fact that declaratives and questions show the same nuclear accent (H+L* in SEP, and L* in the most frequent NEP pattern). It can thus be proposed that, as H+L* is the neutral accent in the SEP system (Frota 2000, 2002b), L* is the neutral accent in the intonation of the Northern variety.

4.5. Pitch accent distribution

European Portuguese differs from most Romance languages with respect to the distribution of pitch accents in the utterance. In EP, stressed syllables in the stretch of the contour between the first and the last stressed syllables in the

[2] Northern EP, unlike Standard EP, shows frequently the use of creaky voice to signal the utterance right-edge in declaratives. We leave this distinctive trait of NEP declaratives to future research.

I-phrase are usually accentless, unlike in Spanish, Italian or Brazilian Portuguese (Frota 2000, 2002b, Frota & Vigário 2000, Hualde 2002). In a comparative study of European and Brazilian Portuguese based on lexically and syntactically identical speech materials, it was found that only 27% of I-phrase internal stressed syllables are accented in EP contra almost 100% of accented lexically stressed syllables in Brazilian Portuguese (Frota & Vigário 2000). These observations on pitch accent distribution in EP, however, are restricted to the standard variety. As described below, Northern EP differs from Standard EP also in this regard.

The results of the present study confirm the previous findings on SEP, by highlighting the sparseness of intonational phrase internal tonal events. This property of SEP intonation is clearly illustrated in Figure 6, panel A, where an utterance containing five prosodic words shows a contour consisting of merely the initial rise and the nuclear fall. In our data, only 17% of I-phrase internal stressed syllables are accented (in utterances with more than three ωs).

By contrast, NEP intonation is characterised by a higher density of pitch accents, as shown in Fig.6, panels B-C. The difference between panels A and B in Fig.6, that show the same sentence respectively uttered by a SEP speaker and a NEP speaker, is elucidatory, as in the NEP utterance all ωs are accented:

(4) a loura gravava uma melodia maravilhosa do lagareiro

	L*H	L*	L+H*	L*+H	L*

In the speech materials analysed, 74% of I-phrase internal stressed syllables are pitch accented in the Northern variety (in utterances with more than three ωs).

The higher density of pitch accents in NEP is accompanied by the presence of additional tonal events, which do not occur in SEP. These tonal events are usually rises realised either ω-initially, possibly signalling ω-initial prominence (see footnote 1), or on a syllable bearing secondary prominence or rhythmic stress in the ω.[3] The presence of such rises is illustrated in Fig.6, panel C. This is another sort of distributional or phonotactic difference that sets the two varieties of EP apart.[4]

[3] It has been argued that Standard EP does not show rhythmic stresses, unlike Brazilian Portuguese (Frota & Vigário 2000). The absence of tonal events placed on lexically unstressed syllables in SEP and its presence in Brazilian Portuguese and Northern EP seems to indicate that NEP, just like Brazilian Portuguese, shows rhythmic stresses to the left of the lexically stressed syllable.

[4] These facts may well be behind the impression that Northern varieties are more chanted.

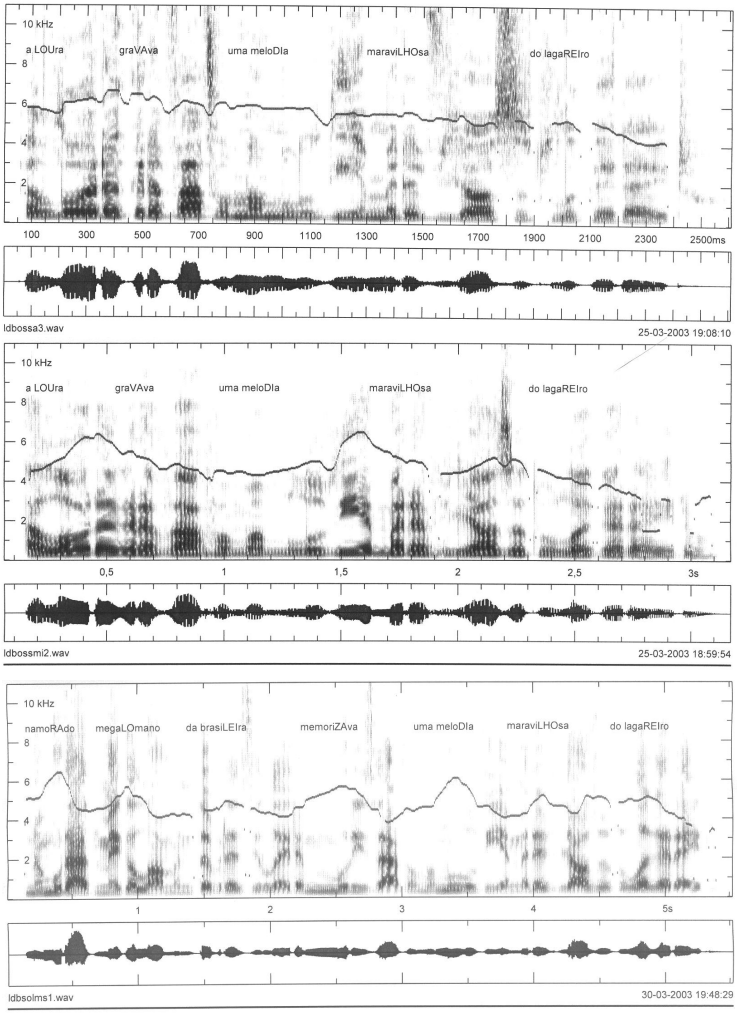


Figure 6. F0 contours of *A loura gravava uma melodia maravilhosa do lagareiro* 'The blond girl recorded a wonderful song from the olive-pressman' (panel A, SEP; panel B, NEP), and *O namorado megalómano da brasileira memorizava uma melodia maravilhosa do lagareiro* 'The Brazilian girl megalomaniac boyfriend was learning a wonderful song from the olive-pressman' (panel C, NEP). The nuclear syllable is underlined. Word initial boundaries are signalled by text alignment.

4.6. Intonational phrasing choices

In Elordieta, Frota, Prieto & Vigário (2003) the influence of syntactic complexity and constituent length on intonational phrasing choices in three Iberian languages is studied (see Section 3 above). Syntactic complexity is measured by the presence/absence of branching in subjects and/or objects, and constituent length is measured in number of syllables (a non-branching constituent with 3 syllables is 'short'; one with 5 syllables is 'long'). All sentences are SVO. European Portuguese (the standard variety) is one of the languages analysed.

The results show that with non-branching subjects the predominant phrasing pattern is (SVO), that is everything is phrased together into one phrase, whether the subject is short or long and regardless of object complexity or length (98%). Branching short subjects show a similar pattern. Only for branching long subjects does the (S)(VO) phrasing pattern become relevant (40%). This phrasing pattern, with a major prosodic break after the subject, becomes the predominant one in double branching subject sentences, reaching 94% in the double branching long subject cases. An example is given in Figure 7, panel A. These results clearly show that subject length, and not syntactic complexity, is playing a role in intonational phrasing in SEP. By contrast, length or syntactic complexity of the object is not relevant.

Our findings for the Northern variety of EP show a very different pattern. In NEP, (S)(VO) predominates in all conditions, even in the non-branching subject case (53%), as illustrated in Fig.7, panel B. Constituent length plays a role (non-branching long subjects yield more (S)(VO) phrasings than non-branching short - 56% versus 50%), as well as syntactic complexity ((S)(VO) increases with branching short subjects although they have the same length as non-branching long ones - 69% versus 56%), unlike in SEP. Also in contrast with SEP, object length is relevant to intonational phrasing in NEP (branching long objects favour (S)(VO) contra branching short objects - 69% versus 56%).

The main findings for both varieties of EP are summarised in Figure 8. In SEP, (S)(VO) phrasing is only triggered by length in number of syllables, whereas in NEP this pattern is present throughout and is mainly boosted by branchingness. In short, the two varieties intonationally phrase their utterances in different ways.

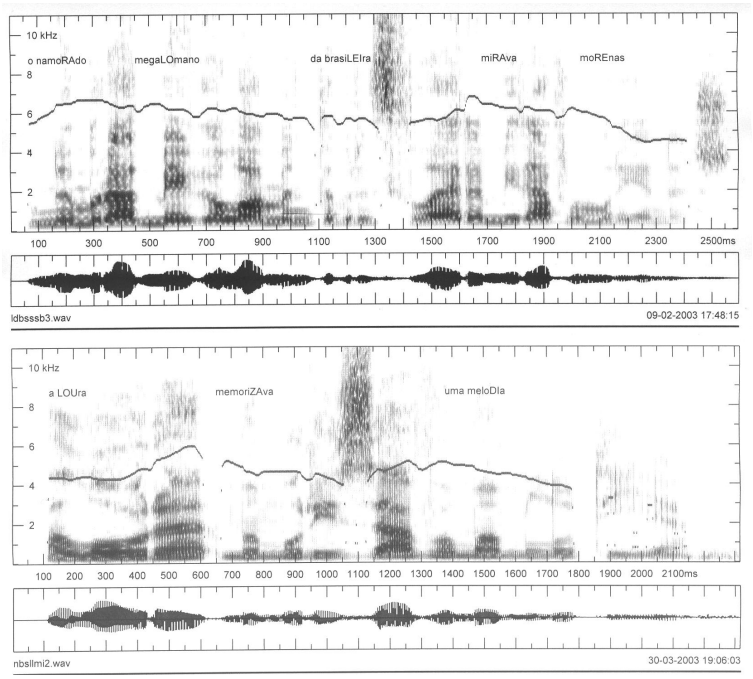


Figure 7. F0 contours of the SEP utterance *O namorado megalómano da brasileira mirava morenas* 'The Brazilian girl megalomaniac boyfriend looked at the dark-haired women' (panel A), and the NEP utterance *A loura memorizava uma melodia* 'The blond girl learned a song by heart' (panel B), showing a major prosodic break after the subject. Word initial boundaries are signalled by text alignment.

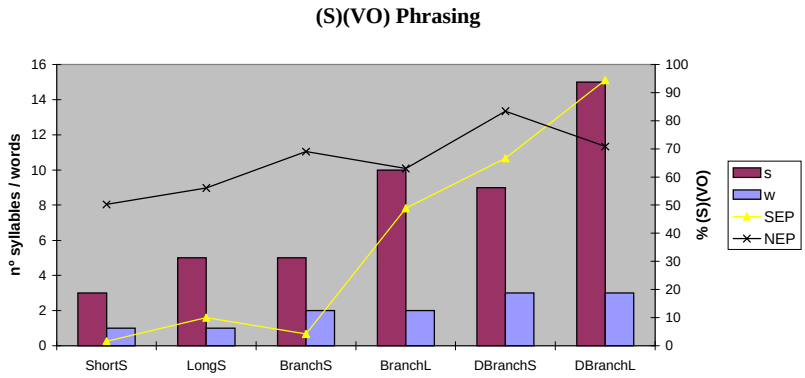


Figure 8. (S)(VO) phrasing in Standard and Northern EP. Syntactic complexity and constituent length conditions on the x-axis, number of syllables and words in the left y-axis, percentage of (S)(VO) in the right y-axis. Results of 456 utterances per variety.

4.7. Standard EP, Northern EP and Spanish: variation in phonotactics and phrasing

Besides the use of different tonal events in the most basic utterance types of the language (Sections 4.1 to 4.4), we have seen in the two previous sections that the distribution of tonal events and the intonational phrasing also distinguish between Standard and Northern EP. In other words, the two varieties are differentiated not only by distinct paradigmatic choices in the melodic system, but also by contrasting sintagmatic choices. The latter finding is somewhat surprising, as European Portuguese has been reported to be unlike most other Romance languages due to the sparseness of intonational phrase internal tonal events (see Section 4.5 above) and the common phrasing of entire utterances into just one phrase (Frota 2000). It could be thought that such particular features of EP were specific developments from the melodic Romance mainstream that characterised the language as a whole (as suggested in Hualde 2003). However, we now know that these features characterise the Standard variety, but not the Northern variety of the language, thus suggesting that they are relatively new properties of the melodic system. In an attempt to clarify this issue further, a comparison between the two EP varieties and Spanish is made below.

In a Spanish declarative, typically every lexically stressed syllable bears a pitch accent (Hualde 2002, Beckman, Díaz-Campos, McGory & Morgan 2002). This is illustrated by the contour in Figure 9, that shows a declarative from the RLD materials (Elordieta et al. 2003). Northern EP is thus clearly

closer to Spanish (and other Romance languages - see Section 4.5) than Standard EP, as the Northern variety is characterised by a high density of pitch accents (74% of I-internal stressed syllables are pitch accented versus 17% in SEP).

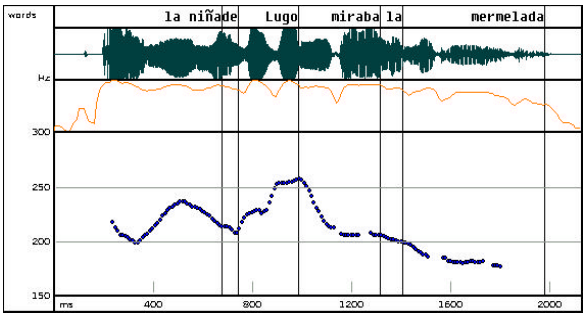


Figure 9. F0 contour of the Spanish sentence *La niña de Lugo miraba la mermalada* 'The girl from Lugo looked at the marmalade'. Example taken from the Romance Languages Database presented in Elordieta, Frota, Prieto & Vigário (2003).

The intonational phrasing facts yield a similar picture. As shown be the compared results in Table II, NEP is located between SEP and Spanish, being closer to Spanish, a language where (S)(VO) phrasing also prevails in all the conditions studied (Elordieta et al. 2003).

Table II. Variation in intonational phrasing among Standard EP (SEP), Northern EP (NEP) and Spanish (Sp). Data for Spanish taken from Elordieta et al. (2003). Numbers are percentages values.

Non-branching Subject	SEP	NEP	Sp
Short	0	50	80
Long	4	56	79
Branching Subject			
Short	4	69	100
Long	40	63	100

The findings available so far lead us to the hypothesis that the Standard variety has departed from the more conservative and more Romance-like Northern variety by means of the incorporation of two innovations: the reduction of phrase-internal accents and the construction of larger prosodic

phrases. It may well be the case that the two innovative features of the intonational system are inter-related, as the presence of fewer accents may favour the division of the string into fewer phrases. This issue, as well as the possible trigger(s) behind this development, is out of the scope of the present paper and thus left for future research.

5. Intonational variation in EP: Summary and conclusion

This study is a first look into intonational variation within European Portuguese. Two varieties of the language have been compared, namely Standard and Northern EP, and their chief intonational differences established.

SEP and NEP were shown to differ in all four possible ways that languages have been proposed to differ intonationally (Ladd 1996). They resort to different nuclear accents in declaratives, wh- and yes-no questions, respectively H+L* and L*. Besides this systemic difference, a realisational difference was also found in the alignment of the low target of the nucleus: it aligns later in NEP. Distributional differences between the two varieties are another of our major findings. While SEP is characterised by its sparseness of intonational phrase internal tonal events, NEP shows a higher density of pitch accents and the presence of additional events like phrase accents and other stress-seeking peaks marking secondary prominences or rhythmic stresses. Unlike systemic and distributional differences which are prevalent, only one semantic difference was found. The tune H+L* Li may mean yes-no question in NEP whereas it means declarative in SEP. Finally, it was shown that SEP and NEP also differ in another dimension of the intonational system, as they phrase their utterances in different ways yielding fewer but bigger phrases in SEP and more but smaller phrases in NEP.

The EP findings discussed in this paper, together with the comparison between the two EP varieties and Spanish concerning pitch accent distribution and intonational phrasing, have suggested a path for how European Portuguese intonation has evolved. It is suggested that the Standard variety departed from the more conservative and more Romance-like Northern variety and has undergone a process of reduction of phrase-internal accents licensing the construction of larger prosodic phrases.

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