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Introduction

Sónia Frota, Marina Vigário and Maria João Freitas

The twelve papers in this book were selected from submissions by participants to the Phonetics and Phonology in Iberia (PaPI) conference, held in June, 2003, at the University of Lisbon. PaPI was launched as a new international interdisciplinary forum in Europe, with the aim of bringing together researchers interested in all areas of phonetics and phonology, with a special focus on the relationship between the two. The first edition of PaPI has fulfilled that aim, not only due to the active contribution of 26 researchers from 8 different countries, but mainly due to the diversity of the topics addressed where phonetics and phonology hardly ever lose sight of each other.

The contributions to this book deal with prosodies, in the broad Firthian sense, that is phenomena which extend over stretches of (segmental) units and features which require an account of their interaction with other features for the understanding of their role in the phonetics or the phonology of language. Data from languages and language varieties that have been underrepresented in the phonetics and phonology literature are discussed, such as Arabic (Cairene Arabic and Lebanese Arabic), Catalan (Central Catalan, and the insular dialects of Majorcan, Minorcan and Alguer Catalan), Galician, Italian, Portuguese (Standard European, Northern European, and Brazilian Portuguese), and Spanish (Peninsular Spanish and different varieties of Argentine Spanish). Other languages referred to are English, Dutch and German. Most papers take a cross-linguistic or cross-dialectal view of their research topics, favouring a better understanding of language similarities and differences, as well as of language variation and change. This is particularly crucial in the case of neighbouring languages/varieties and an important contribution to the development of language typologies.

The contributors to this book develop their work following recent laboratory approaches and/or theoretical developments couched in the autosegmental-metrical or optimality phonology frameworks. Both production and perception studies are included, dealing with a wide range of subjects like intonation, prosodic phrasing, rhythm, word stress, phrasal prominence, syllable structure, segmental changes, and the perception of segments, features,
and their acoustic properties. The two parts into which the book is organised reflect the main focuses of the research presented. The five papers in Part I focus on issues in the realm of intonation, prominence, and phrasing. In the opening chapter, Elisabeth Selkirk develops a new and integrated account of intonational phrasing within the framework of the standard T-model of the architecture of grammar. She proposes that the Intonational Phrase (IP) of the phonological representation is grounded on the Comma Phrase of the interface syntactic representation, that the Focus-intonational phrasing relation is prominence-based, that the phonological constituent type immediately below the IP in the prosodic hierarchy may be stylistic promoted to IP level, and that the IP may be subject to prosodic constraints on its minimum and maximum size. In this restrictive theory of intonational phrasing, IPs are accounted for by edge-alignment and wrapping syntax-phonology constraints, just like any other prosodic constituent type. Another syntax-phonology interface constraint affects intonational phrasing: the requirement that a contrastive focus phrase in the syntax corresponds to a phonological string containing the metrical prominence of a IP. Variation in intonational phrasing is further obtained by the coming into play of prosodic constraints on IP length and stylistic promotion to IP level. Although the proposal is mainly based on English data, the author makes the strong claim that this theory is able to characterise the intonational phrasing patterns found in any language.

Mariapaola D’Imperio and colleagues examine the role of syntactic and prosodic structure in intonational phrasing in Romance. Data from a compared database of SVO broad focus sentences including five languages/language varieties was observed. In a first experiment, syntactic complexity in terms of branchingness and constituent length measured in number of syllables were manipulated. In a second experiment syntactic branchingness was replaced by prosodic branchingness at the prosodic word level. The utterances were prosodically labelled as to their perceived phrasing by two or more listeners and the authors make no claim with regard to the level(s) of phrasing annotated across languages (which may be the intermediate phrase, the phonological phrase, or the intonational phrase). They found that in Catalan and Spanish the most common phrasing pattern is (S)(VO), whereas in Italian and Standard European Portuguese (SVO) dominates. In Northern European Portuguese (S)(VO) phrasing is pervasive, though not as much as in Catalan or Spanish. Constituent length is an active phrasing constraint in Catalan and Standard European Portuguese. Only branchingness matters for Spanish. Italian has both a branchingness effect and a length effect, similarly to Northern European Portuguese. When a constituent branchingness effect
was present, it was actually due to prosodic and not syntactic branchingness. Finally, only Catalan shows a strong tendency to produce (SV)(O) phrasing, due to a constraint on balancing the weight of each prosodic phrase. Having clearly shown that the five Romance varieties display different phrasing patterns, the authors discuss their results in terms of the requirements imposed by the processing apparatus on intonational boundary placement and suggest that language-specific factors can override those requirements.

The chapter by Sam Hellmuth looks at intonation as a means of prosodic marking of information status across languages. Specifically, the author is concerned with the phenomenon of de-accenting of given information, so common in Germanic languages. The crucial research question she sets out to answer is whether Arabic, and Cairene Arabic (CA) in particular, uses de-accenting of given elements (either elements within phrases or whole phrases). The experimental methodology created by Swerts, Krahmer and Avesani (2002) in their comparative study of Dutch and Italian is extended to CA. Two production experiments were carried out: one using the elicitation methodology of the Dutch/Italian study, and another using a new design that allows contrastive focus in one (and only one) of three phrases. After both auditory and acoustic observation of each utterance, pitch accent distribution was determined. It was found that CA speakers do not use categorical prosodic marking of information status by means of de-accenting given material. A function experiment was also carried out, again adopting the methodology of Swerts, Krahmer and Avesani (2002), with the aim of finding out whether Cairene listeners were able to identify the original function of a target utterance from its prosodic structure. The results showed that monolingual CA listeners are unable to do so. In conclusion, there is converging evidence that CA does not resort to prosodic marking to signal information status, unlike English or Dutch, or even Italian and Lebanese Arabic, which de-accent given phrases.

Teresa Cabré and Pilar Prieto provide a detailed account of external sandhi phenomena in Catalan involving sequences of two vowels (V1V2) across lexical words. The study relies on collected data from a spontaneous speech corpus, as well as a set of read utterances specifically designed for addressing the topic. Like in other Romance languages (Brazilian Portuguese, European Portuguese, Galician, Spanish), in Catalan V1 may become a glide or delete. However, glide formation or vowel deletion are systematically blocked if V2 carries the phrasal nuclear stress. Contrary to what is often assumed in the literature, the authors show that the blocking of the vowel sandhi processes follows from the presence of a nuclear stress prominence on the second
vowel of a VV sequence, and not from rhythmic restrictions related to stress-clash. Their analysis of the facts relies crucially on the role played by alignment constraints, in particular of left edge alignment between the nuclear stressed foot and the prosodic word. This alignment constraint enforces the prosodic isolation of the word which starts with V2, thus preventing vowel gliding or deletion from applying.

Adelina Castelo’s chapter also deals with stress prominence, but at a different prosodic level and from a different perspective. This is a perception study of word primary stress in Portuguese (Brazilian and European Portuguese) by European Portuguese (EP) native speakers. In EP, word stress assignment depends on the morphological structure of the word, as well as on lexical information, and presence/absence of word stress on a certain syllable correlates to a large extent with the non-application/application of phonological processes, such as vowel reduction. The main goal of the study is to understand the relative role played by morphological, lexical and phonological cues in the perception of word stress. Largely following the key ideas of Peperkamp and Dupoux (2002), the author sets up a perception experiment where subjects are asked to identify word primary stress in a corpus of Portuguese words with unmarked and marked stress patterns from the morphology viewpoint, with/without affixes lexically marked for stress, and with/without stressless vowels that escape vowel reduction (among other variables, which are also manipulated in the experiment). The results obtained confirmed the importance of the various kinds of cues to word stress, although lexical information and vowel reduction seem more helpful than morphology alone. Further, they also suggest that EP subjects rely more on their linguistic knowledge than on the actual acoustic cues of stress to perform their task: it is precisely when the relevant linguistic cues are contradictory that they tend to make mistakes in word primary stress identification.

The seven contributions in Part II focus on lower level prosodies, by dealing with issues related with the syllable, the segments and their features (phonological, phonetic and acoustic). The opening chapter by John Kingston makes a strong argument for an autonomous model of speech perception, that is a model which assumes two stages: a first processing stage where an autonomous auditory mechanism with no access to linguistic knowledge comes into play, and a later processing stage which is influenced by linguistic knowledge. The author provides two main pieces of positive evidence for such a model. The effects of perceptual integration of different acoustic properties are the first: only those properties that produce similar auditory effects integrate and thus enhance discriminability. The effects of sequential
contrast are the second piece of evidence: changes in the value of one acoustical property between a speech sound and the next improve discriminability, although both changing and unchanging sequences of sounds contain sounds which belong to different linguistic categories. Contrary to sequential contrast, lexical bias is shown not to increase stimulus discriminability. The fact that speech and non-speech results match and that both non-humans and humans behave alike in this regard also support the model proposed. While discussing his arguments, the author reports on new experiments that introduce methodological innovations, and presents previously unpublished data.

The two papers by Andries Coetzee and Miquel Simonet also deal with issues in the perception of speech. Andries Coetzee’s main concern is the role of phonological grammar in speech perception. He addresses the question whether the perceptual biases apparently due to phonological grammar can also be explained by statistical patterns that characterize speech. To provide an answer to this question, the effects of the Obligatory Contour Principle (OCP) in phoneme identification tasks are examined. The OCP has been shown to be an active part of the phonology of languages like Hebrew and Arabic, and the author claims that this is also true of English. An experiment is designed to test the hypothesis that the OCP influences perception in English. The results show a bias against a percept that would violate the OCP. Importantly, the perceptual biases found cannot be accounted for by lexical statistics. It is thus concluded that the OCP is part of the phonological grammar of English, and that phonology has a role in speech perception. These results are relevant to the development of models of perception.

Miquel Simonet examines the syllabification preferences of native speakers of Spanish and native speakers of Catalan (Majorcan Catalan, a conservative variety) when faced with [CiV] sequences in different prosodic conditions, in words and non-words. Both languages are described in the literature has having a hiatus/diphthong contrast, although the unmarked configuration in Castilian Spanish is the diphthong and in (conservative varieties of) Catalan the hiatus. However, the two languages are known to show a preference for hiatus in two prosodic conditions: word initial tonic position and word initial pretonic position. The author sets out to test the hypothesis that the hiatus/diphthong contrast is gradient and not categorical: the independently lengthened word initial tonic position would favour the perception of hiatus; the independently shortened prepretonic position would favour the perception of diphthong; the word initial immediately pretonic position would trigger less consistent syllabification patterns due to its duration shorter than that of word initial tonic and longer than word initial prepretonic positions.
The results show an effect of prosodic condition on both languages, in the expected direction. However, a difference between Spanish and Catalan is also obtained: in Spanish, the contrast is phonemic, whereas in Catalan there is an overall preference for hiatus. This is interpreted as an illustration of two stages of the same linguistic evolution, from widespread hiatus to hiatus versus diphthong, grounded on gradient phonetic differences that may get phonologised.

The chapter by Sonia Colina and Manuel Díaz-Campos looks at the syllabic affiliation of intervocalic velar nasals in Galician. Previous accounts of this controversial issue have proposed either onset or coda affiliation, but these proposals have been shown to face serious difficulties from a phonological viewpoint. The authors put forward an analysis that obviates the difficulties of previous accounts: underlying velar nasals are realised as surface geminates, resulting from the assimilation of an epenthetic onset to the point of articulation of the preceding nasal. They look for evidence for their phonological analysis in the phonetics of velar nasals. Should the analysis proposed be correct, a duration difference is expected between the geminate cases and nasals syllabified either as onsets or codas. A production experiment was run to test this hypothesis. The results turn out to support the gemination approach, as there is indeed a phonetic distinction in length between multiply-linked velar nasals and the other velar nasals. Consequences of this finding for the phonological representation of gemination and the phonology-phonetics interface are discussed.

The two following contributions focus on the properties of palatal segments in different varieties of Catalan and Spanish. Clàudia Pons’ paper provides a phonological account of word-final palatals in three different insular dialects of Catalan - Minorcan, Majorcan and Alguer Catalan. The output forms of these segments exhibit a pattern of allophony when followed by a word beginning with a consonant, as an effect of three different processes: depalatalization, gliding and splitting. The occurrence of these processes depends on the dialects observed and on the nature of the word-initial consonant of the following word. After an overview of the literature on the topic within the autosegmental framework, the author puts forward her own analysis, using tools of Correspondence Optimality Theory (McCarthy & Prince 1995) combined with the Transderivational Correspondence Theory (Benua 1995, 1997), the Optimal Paradigms Model (McCarthy 2001) and Comparative Markedness (McCarthy 2002). In Majorcan and Alguer Catalan, articulatory driven constraints against preconsonantal palatal segments are assumed. In Alguer Catalan, a morphologically based analysis was also
called for, due to the effect of the pressure of plural markers in the structures observed. Faithfulness constraints ruling out featural changes and the activity of the markedness constraints on coda complexity and syllable structure were used to account for the co-occurrence of depalatalization, gliding and splitting in a specific dialect.

Laura Colantoni investigates the reasons behind specific segmental changes, involving assimilated palato-alveolars, in several varieties of Argentine Spanish. On the basis of data collected for two Linguistic Atlas, it is observed that assimilated palato-alveolars, found in Buenos Aires Spanish, are spreading into other varieties of Argentine Spanish, which have assimilated rhotics in their phonological inventory. In the latter varieties, rhotics in turn are being replaced by trills in what looks like a chain shift. There are language internal factors, such as dissimilatory processes, that may account for the change. This explanation is supported, among other factors, by the disfavoured status of the assimilated palato-alveolar assimilated rhotic sequence at the word level. However, the fact that there is a correlation between the realisations found in different varieties and the distance of the locations where they are spoken to Buenos Aires also indicates that the observed changes may be due to dialect contact. The author concludes that both internal and external factors combine to promote the changes in progress.

In the final chapter, Carmen Matzenauer and Ana Miranda propose an integrated account of verbal and nominal vocalic harmony, and nominal metaphony in Brazilian Portuguese. They provide a detailed description of the similarities and differences among these phenomena. Following Clements’ (2001) approach, the authors claim that the different properties of verbal vocalic harmony and nominal metaphony as opposed to nominal vocalic harmony can be accounted for by assuming that they result from the functioning of constraints belonging to two distinct families: AGREE(X) and SPREAD(X), respectively. Essentially, the first constraint family is proposed to explain the obligatory nature of nominal metaphony and verbal vocalic harmony, seen as phenomena of morphemic structure which imply a copying instead of a spreading operation between vowels, and the second family accounts for the variable nature of nominal vocalic harmony, an assimilatory process in which there is spreading of the Aperture node, with no relation to morphemic structure.

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