

Editors' introduction

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A rich amount of research has acknowledged the interconnection between syntax and phonology. The debate on how and to what extent this relationship is realized still remains lively. There have been many different approaches to such questions: various levels of phonological phrasing have been assumed to be based on syntactic information, either isomorphic to it or not (Selkirk 2002, 2007, 2009; Truckenbrodt 2007; Wagner 2005; Ishihara 2007; Ito and Mester 2008, 2010; Féry 2006, Ladd 2008, among many others). Information structure has been shown to be a fruitful area to investigate the syntax-phonology mapping and proposals for its implementation include, among others, Zubizarretta (1998), Neeleman and van de Koot (2008), Kucerova (2008), Wagner (to appear), Krifka (2008), Schwarzschild (1999), Büring (2003, 2009). The articles in this special issue explore areas of mismatches and asymmetries in this mapping from different perspectives. Prior to their publication here, earlier versions of these papers have been presented at the “Mapping Asymmetries: Phonology, Syntax and Information Structure” Workshop (3–4 April, 2009) running in parallel with the 19th International Symposium on Theoretical and Applied Linguistics, organised by the school of English, Aristotle University of Thessaloniki, Greece.

Among the issues raised by the papers are economy considerations in the syntax-phonology mapping (Dobashi), the intonation structure of exhaustive and non-exhaustive narrow focus answers (Elordieta and Irurtzun), whether prosodic structure is as recursive as syntactic structure (Féry and Schobö), the role of pitch accent type on the interpretation and projection of focus (Georgakopoulos and Skopeteas), the role of prosody and information structure in explaining the syntactic phenomenon of intervention effects for wh-questions (Hamlaoui), and the way surface ordering of topics, foci and focus-sensitive particles interact with prosody and reflect semantic form (Neeleman and Van de Koot).

Yoshihito Dobashi's paper *Computational Efficiency in the Syntax-Phonology Interface* argues that, beyond their effects in syntax and phonology alone, economy considerations have empirical consequences for the syntax-phonology mapping, too. Dobashi's initial point of departure is the adoption of Multiple Spell-Out ("The sister of a phase head is spelled out in the course of narrow syntax derivation", cf., e.g., Uriagereka 1999) and the idea that each output of Spell-Out is a phonological phrase. Following research in syntax regarding efficiency conditions such as the *No-tampering condition* (NTC, Chomsky 2008: 138) which prohibits changes in the internal structure of a syntactic object X that has already been constructed by means of breaking X or adding new elements to the inside of X, Dobashi proposes that a similar condition is applicable in the syntax-phonology mapping. This is termed the *No-modification condition* (NMC) and, similarly to the NTC, ensures that a previously defined phrasing cannot be modified by adding a new phrasal boundary to or deleting an old one within the existing phrase.

The effects of the NMC are directly visible once various cases of restructuring are considered. Dobashi first examines changes in phonological phrasing affected by syntactic branching in languages such as Italian, Kinyambo and Chichewa and argues that these instances should not be analysed in the process of the mapping from syntax to phonology, since they all violate the NMC. Instead, he claims that such restructuring occurs in the phonological component and thus should be more accurately called "rephrasing". Also to corroborate the idea that rephrasing is syntax-independent, Dobashi presents properties of rephrasing which are more phonological – rather than syntactic – in nature, such as: prosodic size, constraint violability and the roles of directionality and speech rate.

The second type of restructuring is the one induced by focus. Again, this is not treated as restructuring of the existing phrasing, but can be handled by means of superimposition of a new prosodic category (Ishihara 2005, 2007) or by means of a structural approach (Frascarelli 2000). The important point is that both conform to the NMC. While Dobashi does not take a clear stand as to which approach should be preferred, his examination of intonational phrasing data seems to suggest that he opts for the structural approach on conceptual grounds, since it allows for a simpler mapping. This goal of reduction in the complexity of mapping is one that Dobashi certainly subscribes to and adoption of the NMC does, in his view, contribute to this end.

Gorka Elordieta and Aritz Irurtzun's article *The relationship between meaning and intonation in non-exhaustive answers: evidence from Basque* analyses the prosodic properties of what the authors call 'non-exhaustive narrow focus'. Two types of focus are distinguished, exhaustive narrow focus (ENF) and non-exhaustive narrow focus (NENF). The former is used whenever a wh-question

is answered fully, as in 'Who loves Paula?' 'Peter loves Paula', where one of the potential Paula-lovers is picked to the exclusion of all others. On the other hand, the latter type of focus is used in cases where the speaker cannot assert that all other potential alternative answers are excluded (cf. Kiss 1998, Kenesei 2006, Molnár 2006, Horvath 2010).

Despite the assumption in the literature that the two potential readings (ENF and NENF) of an answer like 'Peter loves Paula' are pronounced with the same melody, the authors argue that these can be prosodically disambiguated from one another and present evidence for this claim based on an experimental study of Northern Bizkaian Basque. The study is a production experiment which explores the intonational differences of ENF sentences, NENF sentences and Verum Focus (VF) sentences.

According to the authors, the results show that ENF utterances have a high peak on the subject followed by pitch compression and no accent on the verb; NENF utterances also have a high peak on the subject and, in addition, also have a high peak on the verb; finally VF utterances show a very similar structure to NENF utterances. The interpretation that Elordieta and Irurtzun give to these results is that the F0 peak observed on the verb in NENF utterances is part of a split focus construction where neither the subject nor the polarity of the verb is the focus, but rather the pair ⟨subject, polarity⟩ is (but see Jackendoff 1972; Roberts 1996; Büring 1999, 2003; Skopeteas and Féry 2007 for an alternative view).

Féry and Schubö's paper *Hierarchical prosodic structures in the intonation of syntactically recursive sentences* proposes that recursion is possible in prosodic phrasing. Although recursion is one of the basic and probably universal properties of syntax (Chomsky 1957 onwards), prosodic structure was until very recently thought to lack this property and obey the principles of the Strict Layer Hypothesis (Selkirk 1984). In the last decade there have been a number of proposals against the Strict Layer Hypothesis and in favour of prosodic recursion (Wagner 2005; Ito and Mester 2008, 2010; Selkirk 2009).

Following this recent line of research, Féry and Schubö base their claim about recursive prosodic phrasing on experimental evidence from German and Hindi sentences which contain embedded relative clauses. German and Hindi were chosen because they belong to typologically different categories in terms of their prosody, the first being characterized as an intonation language and the second as a 'phrase language'. Sentences with and without embedded material are compared in these two languages to determine the effect of embedding on their prosodic structure.

The authors' experimental hypothesis is that different patterns of downstep will provide cues for recursion. If the prosodic structure follows a pattern of downstep shown in Assumption 1, it will support recursion, but if it follows

the pattern shown in Assumption 2, it will not (cf. Section 1.2). As the authors state, their results show that neither of their assumptions is confirmed: the result for Hindi is preliminary and the German results show a complex picture, since neither Assumption 1 nor Assumption 2 are perfect predictors of the results. Although they attribute register enlarging (see (11) for definition) to embedding, this enlarging effect could also be due to length, as the authors rightly remark, since sentences containing embedded clauses were much longer than sentences without embedding.

According to Féry and Schubö, the question of recursion cannot be answered uniformly for both German and Hindi, since each language needs to be addressed separately. More specifically, for Hindi every prosodic domain is scaled relative to the immediately preceding one regardless of the level of syntactic embedding. For German, embedding did play a role in the downstepping pattern, but a more complex one than that predicted in Assumption 1.

Georgakopoulos and Skopeteas' paper *Projective vs interpretational properties of nuclear accents and the phonology of contrastive focus in Greek* examines the phonological, syntactic and interpretational properties of nuclear accents in Greek. In particular they investigate the interaction between what they call the *projective* and *interpretational* properties of nuclear accents. An important contribution of this paper is the separation of the notions *broad* and *narrow* focus (what they call the projective property of focus) from the notions *contrastive* and *non-contrastive* (what they call the interpretational property of focus).

The projective properties have to do with the focus domain of a nuclear pitch accent: A nuclear pitch accent aligned with a stressed syllable is the phonological realization of focus, which is seen as an abstract feature F, assigned in the syntax. The Nuclear Stress Rule (Chomsky 1972, Jackendoff 1972, Cinque 1993, Zubizarreta 1998), which Georgakopoulos and Skopeteas adopt, maps the prosodic structure to syntactic structure and expresses conditions under which F is allowed to 'project' from the pitch-accent-carrying word to larger syntactic constituents – for example in SVO orders, from the O to the VO to the entire sentence. The interpretational properties, on the other hand, relate to the possibility of interpreting specific pitch accent categories as contrastive or non-contrastive. Very often in the literature narrow focus is used as a synonym to contrastive focus and broad focus to non-contrastive, but this interchangeability has not been systematically examined.

Georgakopoulos and Skopeteas correctly point out that if contrastive accents can project to larger constituents – like non-contrastive accents – then projective and interpretational properties are independent from each other, otherwise, we do not need both concepts and we need to simplify our grammar by only using one of them. The aim of their experimental study is to show whether these two dimensions are independent from one another. Their empirical study is

based on two nuclear pitch accents of Greek, namely H* and L+H*, which have been argued to differ in their projective properties: the L+H* pitch accent is described as a narrow focus accent, while H* as a broad focus one (Arvaniti and Baltazani 2005). Utilising these accents in a perception experiment, they explore whether word order (SVO, OVS) and position of focus (initial/preverbal or final/postverbal) might determine whether the pitch accents will project to higher constituents, and furthermore, whether they admit to a contrastive interpretation. Their results indicate that while preverbal focus does not project to higher syntactic constituents, postverbal focus can do so. Furthermore, contrary to claims in the syntactic literature on Greek that preverbal focus is obligatorily contrastive (Tsimplici 1995, Alexiadou and Anagnostopoulou 2000, Georgiafenitis 2004), their results suggest that utterances with a preverbal focus or with an L+H* accent are not necessarily interpreted as contrastive.

Hamlaoui's paper *Anti-Givenness, Prosodic Structure and "Intervention Effects"*, looks into intervention effects – the phenomenon by which a *wh*-phrase cannot be preceded by an *intervener*, that is, an item such as a negative polarity item, a quantifier, a focus, negation or a modal adverb. As has been observed in the literature, the acceptability of such sentences improves by fronting the *wh*-phrase, which is then no longer preceded by an *intervener* (Beck and Kim 1997; Kim 2002, 2006; Beck 2006; Tomioka 2007; Eilam 2008). The author bases her proposal on data drawn from French, Japanese and Korean.

Hamlaoui suggests that there is no need to invoke the syntactically defined "intervention effects", but proposes instead to unify the motley group of interveners through their common prosodic and information structural properties; in particular, she claims that the so-called interveners tend to resist givenness – an information structural property which in turn is prosodically expressed as the permission to bear sentence stress. Intervenors are thus now called Anti-Given Items (AGIs). Whenever an AGI occurs in a *wh*-question it can carry sentence stress. This has different consequences depending on the language. In French, AGIs lift the prosodic burden from the *wh*-phrase, thus allowing it to front. In Korean and Japanese, AGIs compete with the *wh*-phrase to carry sentence stress, thus forcing it to front. Language-specific syntactic, semantic and prosodic constraints are crucial to account for the ban on AGIs from co-occurring with *wh*-phrases in situ.

This account captures cross-linguistic variations as to which items act as "interveners" and also shows that investigating how information structure is expressed in *wh*-questions is crucial in order to better account for so-called "intervention effects".

In *Information-Structural Restrictions on \bar{A} -Scrambling* Neeleman and van de Koot capitalize on the distinction between the sentential and the discourse level

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and the resulting types of ordering information in various ways. More specifically, they address a number of questions relating to the ways topics and foci may surface in Dutch (and also English and German).

In effect, the restrictions found in a number of cases of \bar{A} -scrambling in Dutch can be attributed, according to Neeleman and van de Koot, to the interaction between two general assumptions: that a topic may never be subordinate to a focus (at the level of Information Structure) and that Quantifier Raising is a possibility, indeed one whose properties accounts for the details of embedding topics under foci and vice versa.

The predictions based on these assumptions that appear to be fully supported by the Dutch data concern the impossibility of moving a contrastive focus across a contrastive topic which is juxtaposed with the availability of moving a contrastive topic across a contrastive focus. The authors then move on to examine the interpretation of multiple foci in Dutch, which is argued to follow naturally from general assumptions in the literature concerning the nature of covert movement as feature movement. This forbids focus sensitive particles to undergo QR and accounts for the data examined.

Next, the authors turn to English and German data involving the interaction between topic and focus. The analysis argues against Wagner's 2008 assumption of covert movement in English and lack thereof in German. Neeleman and van de Koot dispute this claim show that, on an interpretation in which *even* outscopes *only*, structures like *Only Bill is afraid of even the least poisonous snake* are best treated as instances of PP extraposition (and that, similarly, NP extraposition is required a wide scope reading of *only* in examples like *?Even the least poisonous snake would frighten only Bill*).

Moreover, the generalization that topics may not follow foci in German can be shown to be falsified by sentences which include two foci, one before and one after the topic element. This is claimed to be accommodated under an appropriate prosodic contour, available in this information structure in German, thus providing interesting evidence for the interaction between grammar, prosody and discourse in view of the processes examined.

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