

# The Prosodic Encoding of Discourse Functions

Louise Mycock and John Lowe

University of Oxford

[louise.mycock@ling-phil.ox.ac.uk](mailto:louise.mycock@ling-phil.ox.ac.uk), [john.lowe@ling-phil.ox.ac.uk](mailto:john.lowe@ling-phil.ox.ac.uk)

Analysing interface phenomena such as intonation-only Focus marking (1)–(3) presents a challenge to LFG because under a strictly modular approach distinct components of linguistic structure must be permitted to interact but they must be neither conflated nor assumed to be isomorphic. In addition, any analysis must account not only for those cases where the Extent of Focus (marked by square brackets in the examples) and Focus Exponent (i.e. prosodic marking, shown in bold) align, such as (1), but also in utterances where there is a mismatch between the two, i.e. when the Extent of Focus is greater than or smaller than the Focus Exponent, as in (2) and (3) respectively.

- (1) Q: Who did Anna hit?                      (3) Q: Who did you see in Paris?  
A: Anna hit [**Norman**].                      A: I saw [**Lily**] in Paris.
- (2) Q: Who hit Norman?  
A: [Some old **woman**] hit Norman.

In order to capture the prosodic encoding of discourse functions, we streamline and extend the model of the syntax-prosody interface in LFG first introduced in Dalrymple & Mycock (2011), in which prosodic and other grammatical information interface only via the string, specifically via the relation between a string’s syntactic (s-string) and prosodic (p-string) form; see Fig. 1. It is not clear how such mismatches can be captured by the original Dalrymple & Mycock (D&M) model because of the automatic nature of category-edge inheritance that is a feature of their analysis. For example, in a case such as (2) where a multi-word phrase is the Focus, the leftmost word belonging to the relevant syntactic unit (*Some*) will automatically inherit the Focus property. However, there will be no corresponding marking on the prosodic side, since only the rightmost element (*woman*) is marked as Focus. This violates the requirement for interface harmony in the D&M model.

We propose to emend the D&M model by removing the two separate ‘interface structures’, e-structure and chi-structure, that were introduced. Instead of treating elements in the s-string and p-string as atomic, we represent each unit in the s-string and p-string as an attribute-value matrix (Fig. 1). These AVMs include two attribute-value pairs (attributes L(ef) and R(ight)) which express information associated with the edges of syntactic or prosodic constituents that is potentially relevant at multiple levels of linguistic structure, e.g. whether the clause type is interrogative. We argue this is desirable both on empirical and theoretical grounds.

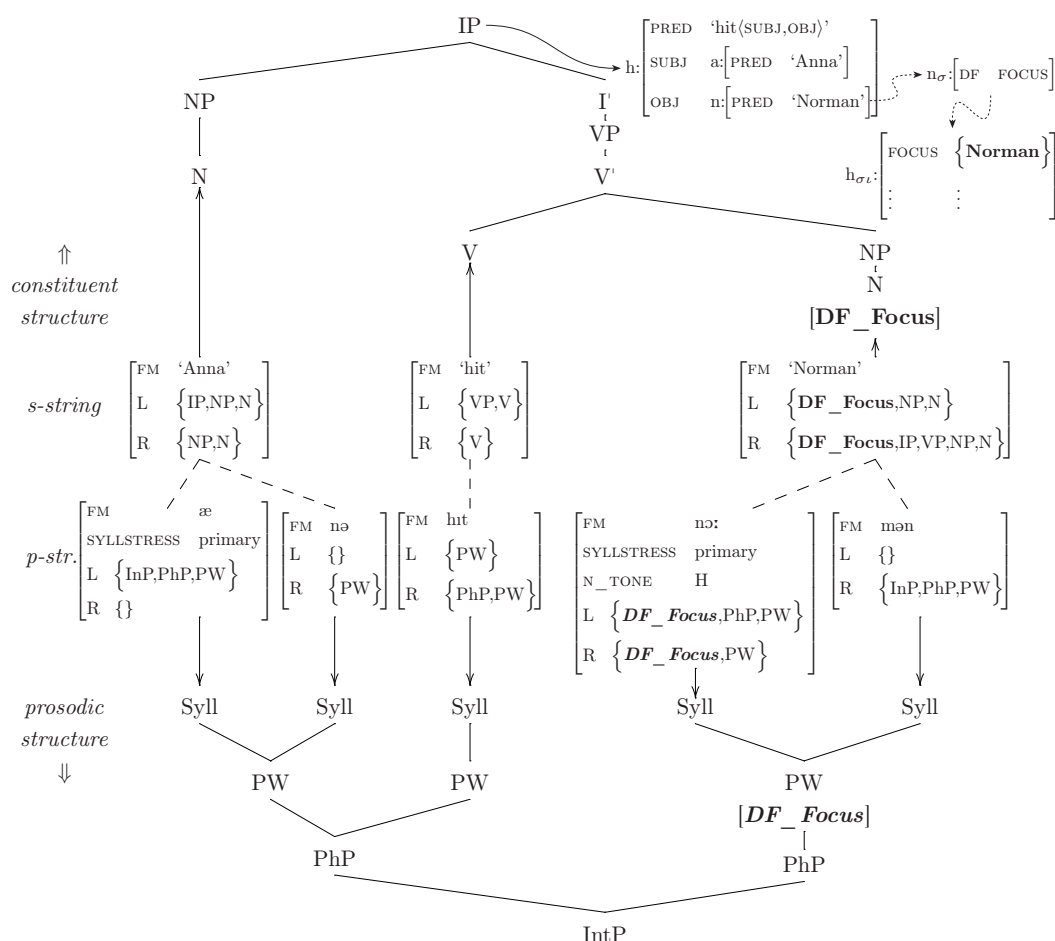
We also extend the D&M approach to prosody and its interfaces by treating Information Structure category status as another type of information which, like clause type, is potentially relevant at multiple levels of structure and therefore may be the value of a L or R attribute in a p-string or s-string AVM. This enables us to account for prosodic encoding of Discourse Functions such as Focus in examples like (1)–(3). When signalled prosodically, an Information Structure category such as Focus will be marked in the p-string as the value of a pair of L/R attributes. D&M’s principle of interface harmony, which requires the equivalent attribute-value pair to be part of the corresponding s-string unit(s), is respected, with the ultimate result that Focus is the value of the associated semantic structure’s Discourse Function (DF) attribute, as required. This is achieved by introducing inheritance rules which allow us to specify that information relevant at the interface is inherited by only the leftmost or rightmost string elements that are descendants of a particular node.

In Fig. 1, the location of the nuclear tone (N\_TONE) signals that the constituent *Norman* is the Focus. The attribute **DF\_Focus** is included in the p-string unit that bears this marking of Focus status, i.e. the stressed syllable /nɔ:/. Interface harmony requires **DF\_Focus** to be a part of the corresponding unit in the s-string, as defined by the relation

between phonological and syntactic units in the lexicon. FOCUS will also be the value of the attribute DF of the semantic structure associated with the relevant c-structure node, with the result that the meaning constructor **Norman** is a member of the FOCUS attribute's value set at i(nformation)-structure (see Dalrymple & Nikolaeva 2011). In a case of Exponent–Extent alignment such as (1), a straightforward matching relationship is involved. In cases of mismatch such as (2) and (3) the facts are more complicated, but we show that this approach can deal with such data because (i) on the syntactic side it is possible to associate the relevant **DF\_Focus** value with only one edge of a syntactic constituent that dominates multiple s-string units, accounting for cases of Extent>Exponent; and (ii) on the prosodic side **DF\_Focus** is associated specifically with the stressed syllable of the relevant prosodic unit, accounting for cases of Exponent>Extent. Thus even in cases of Exponent–Extent mismatch, interface harmony is not violated.

This model both respects the principle of modularity and is fully capable of dealing with intonation-only marking of Focus and other discourse functions. It contributes to an important ongoing strand of research which aims to provide a formal analysis of prosody and its interfaces within the LFG framework.

Figure 1: Exponent–Extent Alignment: *Anna hit [Norman]*



## References

- Dalrymple, M. & L. Mycock (2011). 'The Prosody-Semantics Interface'. *Proceedings of the LFG11 Conference*. CSLI Publications. 173–93.
- Dalrymple, M. & I. Nikolaeva (2011). *Objects and Information Structure*. CUP.