

## Irish Clefting and Information-Structure

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Discourse structure has been analyzed in different ways in LFG. The two major approaches are 1) include discourse functions such as TOPIC and FOCUS in the f-structure (see Bresnan 2001, Dalrymple 2001) and 2) use a separate projection called i(nformation)-structure to encode discourse functions (see King 1997, Butt and King 2000, Andréasson 2007). This paper argues for the latter analysis. I present data from Irish clefting, a construction which has not yet been discussed in LFG literature. By means of the discourse function FOCUS, I show that it is impracticable to model discourse functions via f-structure annotations. The flexible projectional architecture of LFG is able to deal with the interface between c-structure and i-structure in an easy and more demonstrative way. I present an implementation dealing with the discourse structure of simple Irish clefts, using the XLE platform (Crouch et al. 2008).

Irish, like other languages, allows a great deal of freedom as to what kind of constituent may be clefted (Ó Siadhail 1989). Constituents or sub-constituents within the clefted material usually carry stress and the discourse function FOCUS (see Lambrecht 1994). Example (1) is a simple transitive sentence and examples (2) and (3) contain cleft variations of (1); caps show stress.

- (1) Léigh múinteoir leabhar sa leabharlann inné.  
read.Past teacher book in-the library yesterday  
'A teacher read a book in the library yesterday.'
- (2) Is MÚINTEOIR a léigh leabhar sa leabharlann inné.  
COP.Pres teacher COMP.Rel read book in-the library yesterday  
'It is a teacher that read a book in the library yesterday.'
- (3) Is INNÉ a léigh múinteoir leabhar sa leabharlann.  
COP.Pres yesterday COMP.Rel read.Past teacher book in-the library  
'It is yesterday that a teacher read a book in the library.'

In these simple cases, annotating FOCUS in the f-structure would not be problematic, since the clefted material is of simple nature, i.e. it contains a single PRED. F-structure constituents and FOCUS constituents therefore completely overlap. Note, however, examples (4) and (5). Here, the f-structure of the clefted constituent does not overlap with the focus of the sentence. In (4), just the preposition *sa* 'in the' bears contrastive focus stress, hence exclusively should be analyzed as the focus; similarly, in (5), just the preposition's object *leabharlann* 'library' should be the focus. A simple f-structure annotation analyzing the whole clefted constituent as receiving the feature FOCUS cannot account for this variability, since it cannot extract either the prepositional head or its complement for inclusion in FOCUS. Contrastive focus is indicated by capitalization.

- (4) Is SA leabharlann a léigh múinteoir leabhar inné.  
COP.Pres in-the library COMP.Rel read.Past teacher book yesterday  
'It is in the library that a teacher read a book yesterday.'
- (5) Is sa LEABHARLANN a léigh múinteoir leabhar inné.  
COP.Pres in-the library COMP.Rel read.Past teacher book yesterday  
'It is in the library that a teacher read a book yesterday.'

In example (6), there are even more candidates for the FOCUS role. Either the whole noun phrase, or just the noun, or just the adjective adjunct can bear contrastive stress, hence should receive FOCUS. If we were to encode this within f-structure, we would have to be able to select either only the nominal head, only the adjunct, or both at the same time. This is not possible, since a selection of the nominal PRED would also include the adjunct.

- (6) Is é an sean múinteoir a léigh leabhar inné.  
COP.Pres AGR the old teacher COMP.Rel read.Past book yesterday  
'It is the old teacher that read a book yesterday.'

My solution is the following. As for the syntactic analysis of simple Irish clefts, I use a PREDLINK analysis, which is a common LFG analysis for copula constructions (Attia 2008). In dealing with the unusual VSO word order in Irish, I assume a flat VSO structure in my analysis; the implementation integrates theoretical insights from Carnie (2005). The c-structure rules accommodate the variability in the choice of the clefted constituent. For the encoding of discourse functions, however, I assume a separate projection called i-structure. The main motivation for i-structure lies in the mismatches between partial f-structures and discourse functions. Any discourse functions present in a sentence are projected into i-structure using special annotations on the c-structure rules of the grammar. In cases where FOCUS is to be assigned to a simple PRED only, without its arguments, I use the PRED FN notation (see King 1997). The notation has the effect that any arguments are stripped from their predicate; see (7), which shows the effect of PRED FN when applied to a prepositional phrase like *sa leabharlann* 'in the library' (see (4) and (5)). This way, we can ensure that only the preposition is in the focus of the sentence. Since *sa* is a portmanteau form of the preposition *i*, *i* is in the PRED.

(7) PRED 'i<[leabharlann]>'  
 PRED FN 'i'

In cases such as (6), there are three different possibilities in choosing the sentence focus, as described above: either the nominal, the adjective adjunct or the entire noun phrase can be in the focus. Both the nominal and the adjunct can be focused using the PRED FN annotation (strictly speaking, the PRED FN notation would not be necessary for the adjunct, as it does not contain any sub-f-structures). The remaining reading, i.e. the reading where the whole noun phrase is in FOCUS, can be modeled by annotating the entire NP as receiving FOCUS.

I propose that a one-to-many mapping between c-structure and i-structure is the approach one should aim for. An LFG grammar is not able to decide for one specific i-structure in cases like (4) vs. (5) or (6), where several i-structures emerge from the complexity of the clefted material. Therefore, an LFG grammar should be designed in a way such that all possible combinations within the i-structure can be generated from it. Then, some external device (optimality theory, discourse analysis, prosodic information, etc.) can be used to determine the correct i-structure for a given sentence; this, however, is beyond the scope of this paper. Note that there are cases in which topic and focus functions are grammaticalized (see Bresnan and Mchombo 1987); in such cases, I propose that grammaticalized discourse functions be projected directly to i-structure, not to f-structure, so that any syntactic unit bearing a discourse function is represented in i-structure. This avoids unnecessary duplication and results in slimmer f-structures. The paper also presents an implementation of both the syntax and the information-structure for Irish clefts using the XLE development platform. Since other languages contain very similar clefting constructions (e.g. German, English), the analysis can be easily transferred to those languages.

## Selected References

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