Iofu and Spreading Architecture in LFG

Andrews and Manning (1999) argued for a reformulation of LFG architecture which is unfortunately inconsistent with the use of 'Inside out Functional Uncertainty' and related concepts as proposed in (Dalrymple 1993), (Andrews 1996) and (Nordlinger 1998). An iofu expression such as (SUBJ ↑) means 'an f-structure of which ↑ is a case-value'. In standard LFG, an NP and its head N will have the same f-structure correspondent. Therefore, such an annotation introduced on an N can constrain the distribution of the NP headed by that N.

But Andrews and Manning's 'spreading architecture' replaces standard f-structure by a system in which few if any nodes will share f-structures; instead (similarly to HPSG), c-structure nodes will normally have distinct feature structures which will however frequently share many of their attributes. Iofu expressions as previously formulated will thus frequently be unsatsified. For example if an N bears the annotation (SUBJ ↑) ('I am the subject of something'), which might be associated with a nominative case-marker, this annotation won't be satisfied by virtue of the NP of which the N is head being a subject, since the N and the NP have distinct feature-structures.

I will show how this problem can be solved be reformulating iofu expressions to involve either projections themselves (as construed in the spreading architecture), or the features that belong to them. To illustrate the latter approach, consider an expression such as:

(1) (SUBJ CASE (↑ CASE))

Suppose '↑' designates a feature-structure with a CASE attribute. Then (↑ CASE) designates the value of that attribute, and (CASE (↑ CASE)) nondeterministically designates a feature-structure that shares this case-value (this requires that different occurrances of the same feature value introduced independently in different places be distinct but unifiable objects). If CASE is shared between an NP and its head N, such an annotation on the N can therefore usefully constrain the distribution of the NP. Alternatively, if we think of CASE as belonging to the 'projection' μ (the class of 'morphosyntactic' features, presumed to spread in accord with the same rules), we can represent projections in such a way that an annotation such as (SUBJ $\uparrow_\mu$) has the same effect.

Under either approach, not only do we get a formulation of iofu constraints that will work in the spreading architecture, but we also get an empirical benefit, which is the ability to specify patterns of case-distribution. In Warlpiri, for example, there is a constraint that case must be spelled out on a final segment of the nominals in an NP (example (2) below). This can be enforced by having CASE (or a projection containing it) shared on a final segment of the nominals of an NP, as specified for example by rule ((3)). A nominal which doesn't share CASE with its mother will then be unable to carry a case-marker because the associated iofu constraint will be unsatisfiable, and one which does will be required to show the marker by the Morphological Blocking principle. Other patterns of case distribution can be described by different formulations. Furthermore the formulations may conform to principles constraining 'headship' as standardly conceived. In the spreading architecture, a 'head' with respect to some projection is a daughter that shares that projection with its mother; rule (3) therefore says in effect that the morphological heads of a nominal in Warlpiri are final. This opens the possibility of replacing the specific sharing stipulations with paramaters to more general principles.

(2) a. *karnta kurdu wita-ngku*
female child small-ERG

b. *karnta(-ngku) kurdu-ngku wita-*(ngku)*
female(-ERG) child-ERG small-ERG

c. *karnta(*-ngku) kurdu wita-ngku*
female(-ERG) child small-ERG

small female child (Nash 1986:170)

(3) $\overline{\mathrm{N}} \quad \rightarrow \quad \mathrm{N}^{*} \quad \mathrm{N}^{+}$
$\uparrow =_{\mu} \downarrow$

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