Adnominal adjectives, codeswitching and lexicalized TAG

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1. Introduction

In codeswitching contexts, the language of a syntactic head determines the distribution of its complements. Mahootian 1993 derives this generalization by representing heads as the anchors of elementary trees in a lexicalized TAG. However, not all codeswitching sequences are amenable to a head-complement analysis. For instance, adnominal adjectives can occupy positions not available to them in their own language, and the TAG derivation of such sequences must use unanchored auxiliary trees.

(1) a. palabras heavy-duty
   'heavy-duty words'
   (Spanish-English; Poplack 1980:584)

   b. taste lousy sana
      'very lousy taste'
      (English-Swahili; Myers-Scotton 1993:29, (10))

Given the null hypothesis that codeswitching and monolingual sequences are derived in an identical manner, sequences as in (1) provide evidence that pure lexicalized TAGs are inadequate for the description of natural language.

2. Heads and complements

2.1 The pivotal role of heads

Consider codeswitching between a prepositional language like English and a postpositional one like Hindi. In such a case, there are four conceivable switch sequences for an adposition and its object: an English preposition could precede or follow a Hindi object, and a Hindi postposition could precede or follow an English object. Of these four potential switches, however, only two turn out to be attested—namely those in which the adposition preserves its language-particular direction of government. This is illustrated in (2) and (3) (data modified from Pandit 1986:94).

(2) a. vo hameshaa daftar me on samay aataa hai.
   'He always comes to the office on time.'

   b. he always comes to the office time par ('on').

(3) a. * vo hameshaa daftar me samay on aataa hai.

   b. * he always comes to the office par time.

Based on a comprehensive cross-linguistic survey of codeswitching data involving adpositions and other syntactic heads (determiners, verbs, inflectional morphemes, etc.), Mahootian 1993 proposes the principle in (4) to account for the contrast between (2) and (3) (see also Pandit 1990:43).

(4) The language of a syntactic head determines the phrase structure position of its complements in codeswitching contexts and monolingual contexts alike.
2.2 Heads are anchors

Mahootian goes on to derive (4) by representing syntactic heads as the anchors of elementary trees in a lexicalized TAG. The trees for English *on* and Hindi *par* ‘on’ are given in (5a,b). The attested adpositional phrases in (2) can be derived simply by substituting an object from the ‘other’ language at the DP node (‘DP’ stands for ‘determiner phrase’ and refers to the traditional noun phrase). By contrast, deriving the unattested adpositional phrases in (5c,d) would require the trees in (3a,b). But since these trees are not part of the grammars of English and Hindi, there is no derivation for the codeswitching sequences in (3), and they are correctly expected not to occur.

(5)

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PP  PP  PP  PP
P   DP   P   DP   P   DP
| on |    | par |    | on |    | par
(a) (b) (c) (d)
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Note that since every clause contains at least one head, this analysis rules out sequences like (6), in which all the terminals of a clause are from one language, but in an order peculiar to the other.

(6) * He always office to time on comes.

The absence of such sequences is noted by Joshi 1985:204, fn. 7, but is left unresolved there.

3. Adnominal adjectives and nouns

3.1 Adjective-noun sequences are not endocentric structures

The lexicalized TAG analysis of the distribution of heads and complements covers much of the relevant codeswitching data. However, as we will show in this section, not all codeswitching sequences are instances of switches between heads and their complements.

It has been suggested a number of times in the codeswitching literature (Aguirre 1976, Wentz 1977, Bentahila and Davies 1983) that the position of an adnominal adjective with regard to the noun it modifies is determined by the language of the adjective. Conversely, Pandit 1990 suggests that it is the noun that is the head in such sequences (see also di Sciullo, Muysken and Singh 1986). Both proposals agree in taking adnominal adjectives and nouns to stand in the head-complement relationship, but differ as to what is the head and what is the complement. Neither of them, however, adequately describes the full range of codeswitching sequences that is found in connection with adnominal adjectives.

As in the case of pre- and postpositions, there are four potential sequences in codeswitching between Adj-N languages like English and N-Adj languages like Irish, Swahili or the Romance languages: an adjective from an Adj-N language could precede or follow the noun it modifies, and an adjective from an N-Adj language could precede or follow the noun it modifies. If adnominal adjectives were headed, we would again expect half of the potential sequences not to occur. Specifically, if adjective-noun sequences were headed by adjectives, then (7a,c) shouldn’t occur, whereas if they were headed by nouns, then (7b,d) shouldn’t. In fact, however, all four sequences are attested.

(7) a. Adjective from N-Adj language, noun from Adj-N language:
I got a lotta *blanquito* (‘whitey’) *friends.*
(English-Spanish; Poplack 1980:600, (16b))

b. Adjective from Adj-N language, noun from N-Adj language:
Ma ci *stanno* dei *smart italiani.*
but there are of-the *Italians*
‘But there are smart Italians.’
(Italian-English; di Sciullo, Muysken and Singh 1986:15, (40a))
It has been suggested to us that the exceptional behavior of adnominal adjectives might reflect borrowing or imperfect second-language acquisition. But since we know of no evidence that borrowing favors adjectives or that adjectives pose greater difficulties for second-language acquisition than other syntactic categories, this attempt to explain the facts in (8) would carry over to the head-complement case, incorrectly leading us to expect sequences like (3). As a result, we reject an analysis of the contrast between (2)/(3) and (7) that relies on extrasyntactic factors.

3.2 Adjective-noun sequences as exocentric constructions

Instead, we interpret the distinct behavior of heads and complements on the one hand and adnominal adjectives and nouns on the other as evidence that adnominal adjectives, like other heads, project no further than their maximal projection (see (8a,b)), but that unlike other categories, they are introduced into TAG derivations by unanchored auxiliary trees as in (8c,d). We will refer to such unanchored auxiliary trees as modifier trees (= the ‘athematic’ trees of Kroch 1989). Adj-N languages like English and the related Germanic languages use the modifier tree in (8c), whereas N-Adj languages like Irish, Swahili and the Romance languages use the one in (8d).

We would like to emphasize that monolingual data provide no evidence for introducing adnominal adjectives by using trees like those in (9) rather than by using anchored trees like those in (8).

Only in codeswitching contexts does it become apparent that trees like (8), though possible elementary trees from a formal point of view, are not elementary structures of the (mental) grammar, but are instead composed by substituting anchored trees like (8a,b) at the AdjP nodes of unanchored trees like (8c,d). It could of course be argued that adjective-noun sequences in codeswitching contexts are derived using modifier trees, whereas their monolingual counterparts are derived using anchored trees. Such a solution is reminiscent of the “third grammar” approach to codeswitching advocated by Sankoff and Poplack 1980, but roundly rejected as a violation of Occam’s razor by Woolford 1983, Joshi 1985, Mahootian 1993, and Myers-Scotton 1993, among others. Following this latter
group of authors, we assume the null hypothesis—namely, that the derivations of codeswitching and monolingual sequences are formally identical—and we conclude that monolingual grammars include modifier trees like (8c,d).

4. Implications for parsing performance

Since lexicalization improves the runtime of parsing algorithms, the question arises whether the necessity of including modifier trees in grammars for natural language significantly compromises the gains associated with lexicalization. Since the set of linguistically motivated modifier trees is extremely small (adnominal adjectives, manner adverbs, relative clauses, appositives and perhaps a few more), we expect the introduction of modifier trees to have no seriously detrimental effect on parsing performance. One practical solution, which we will leave for future research, would be to treat parsing as a two-stage process, in which the introduction of modifier trees into a derivation must be licensed by an appropriate anchored tree.

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