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Bilingual complexes: the perspective of the Gradient Symbolic Computation framework*

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The paper to which this commentary responds (Goldrick, Putnam & Schwarz, 2016) represents a big step forward in a field which was showing signs of stasis – the study of the grammatical properties of intra-sentential code-switching or code-mixing – and this for two reasons. First of all, it explicitly links the insights from the grammatical study of code-mixing to the rich array of results from psycholinguistic research in the domain of bilingual language processing, making use of the Gradient Symbolic Computation framework (GSC; Smolensky, Goldrick & Mathis, 2014). Second, it provides a set of tools to handle problems in the domain of code-mixing having to do with simultaneous representations in the domain of bilingual complexes.

I briefly discussed this phenomenon, which is actually quite common in many bilingual corpora, in Muysken (2000: 193–219, 253–261), but without really providing a solution. The reason I could not provide a solution is that almost all code-mixing models presuppose some kind of integrity of the component language sections, either sequential (as in Poplack, 1980) or in terms of 'language islands', to use Myers-Scotton's (1993) metaphor. Neither in sequential or alternation models nor in island or insertional models is it possible to represent complex dependencies as found in the following examples (1)–(2), picked at random from a large set. What these examples have in common is the fact that a collocational expression from one language (~~*haar mee*~~ *naar* ~~*de*~~ *bioscoop vragen* 'to ask her along to the movies' in (1) and 'play ~~a~~ negative role' in (2)) is embedded, often in discontinuous fashion, in a frame derived from another language.

(1): iki gün once işte [*bioscoop*-a
two day earlier INTERJ cinema-DAT
[*vragen* yap-tʉydɩ-m]]
ask do-PLUPF-1SG
'Only two days before I had asked her along to the movies.'
Turkish–Dutch (Backus, 1996)

(2): *media* [[*negative role*] hu
Media negative role indeed
[*play* kaw-i]]
play do.PRS.IPFV -3SG
'Media indeed play a negative role.'
Pashtu–English (Khan & Muysken, 2014)

Notice that the functional elements associated with the embedded expression are either entirely absent or have been replaced by elements from the language providing the overall syntactic frame, in short the matrix language.

The following example illustrates that even meaningful functional elements (here the negation) can be left out:

(3): *politiek* essahtan [[*reet*] [*interesseren*] yapiyor
politics really a bit interest does
'Politics really does not interest me a bit.'
Turkish–Dutch (Boeschoten, 1990: 90)

The idiomatic negative polarity expression ~~*me geen*~~ *reet interesseren* 'not interest me' (*reet* is a vulgar term) is reduced to its lexical content.

While many examples in the literature involve bilingual compound verbs, it is not limited to these, as can be seen in the following example:

(4): mwanaume eko-na-tafuta mwanamuke
man 3SG-PRS-look.for woman
njo ku-*satisfaire* ma-*besoins*
to INF-satisfy PL-needs
'A man looks for a woman to satisfy his needs.'
Shaba Swahili-French (Van Rooij, 1996)

Here the complex expression *satisfaire* ~~*ses*~~ *besoins* 'satisfy his needs' is embedded into a Shaba Swahili infinitival complement.

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The structures cited have in common that a complex expression, a collocation, from one language is inserted into the frame of another language. In this process, functional elements of the inserted language disappear or are replaced by matrix language elements. Crucially, the components of the collocation may be separated by morphemes from the matrix language, showing that it is not a single constituent that is inserted. The examples supporting the analysis of a single complex insertion involve a collocation of a verb + noun. These examples can well be analyzed in terms of simultaneous access within a Gradient Symbolic Computation framework. However, this requires a way of separating the functional frame from the lexical content: somehow there must be a weighing procedure favoring certain types of elements from a particular language.

Glosses

DAT	dative	PL	plural
INF	infinitive	PLUPF	pluperfect tense
INTERJ	interjection	PRS	present tense
IPFV	imperfective aspect	SG	singular

References

Backus, A. (1996). *Two in one. Bilingual speech of Turkish immigrants in the Netherlands.* Tilburg: Tilburg University Press

Boeschoten, H. E. (1990). Asymmetrical code-switching in immigrant communities. *Papers for the workshop on Constraints, Conditions, and Models, London, 1990*, pp. 85–100. Strasbourg: European Science Foundation.

Goldrick, M., Putnam, M., & Schwartz, L. (2016). Coactivation in bilingual grammars: A computational account of code mixing. *Bilingualism: Language and Cognition*. doi: dx.doi.org/10.1017/S1366728915000802.

Khan, A. A. & P. Muysken. (2014). Strategies for incorporating nouns and verbs in code-mixing: the case of Pashto-English bilingual speech. *Lapudum*, *18* (Special issue on bilingualism and language contact), 97–137.

Muysken, P. (2000). *Bilingual speech. A typology of code-mixing*. Cambridge: Cambridge University Press

Myers-Scotton, C. (1993). *Duelling languages: Grammatical structure in code-switching*. Oxford: Oxford University Press.

Poplack, S. (1980). Sometimes I'll start a sentence in Spanish y termino en español: toward a typology of code-switching. *Linguistics, 18*, 581–618.

Van Rooij, V. (1996). *Cohesion through contrast: Discourse structure in Shaba Swahili/French conversations*. Amsterdam: IFOTT.

Smolensky, P., Goldrick, M., & Mathis, D. (2014). Optimization and quantization in gradient symbol systems: A framework for integrating the continuous and the discrete in cognition. *Cognitive Science, 38*, 1102–1138.

https://doi.org/10.1017/S1366728916000031 Published online by Cambridge University Press