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Nonfinite verbs and negotiating bilingualism in codeswitching: Implications for a language production model*

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This paper argues that a set of codeswitching data has implications for the nature of cognitive control in bilingualism and for models of language production in general. The data discussed are Embedded Language (EL) nonfinite verbs that occur in Matrix Language (ML) frames with appropriate ML inflectional morphology in some codeswitching (CS) corpora. Notably EL infinitives are involved, as in wo mu **conçevoir** be nuḍe *. . . "they don't imagine that something . . . " (from Ewe–French CS). The main argument is that such nonfinite forms are selected because they only need checking at the lexical-conceptual level of abstract structure with the speaker's intended semantic-pragmatic meaning. That is, they do not project information about syntactic and argument structure that is included in the abstract structure of finite verbs. Nonfinite EL verbs occur because they better satisfy the speaker's intentions regarding semantic and pragmatic meaning than NL finite verbs. The employment of nonfinite EL verbs instead of EL finite verbs partially explains why codeswitching in general and such verb phrases in particular is perceived as fast and effortless. How one lexical entry (the EL nonfinite verb) can take on the morphosyntactic role of another one (the ML finite verb) implies flexibility in cognitive control at an abstract level. It also implies a certain malleability at an abstract level in the ML morphosyntactic frame that makes it possible to take in a nonfinite verb in a slot for a finite verb.*

Keywords: codeswitching, language production model, Matrix Language Frame model, nonfinite verbs

Introduction

This paper suggests how structural patterns that occur in natural codeswitching (CS) demonstrate the fine tuning and flexibility in the bilingual's cognitive control of both languages. Such patterns also indicate the cross-linguistic accommodation that must be occurring at an abstract level. The nature of the control in many instances of CS has implications for models of language production in general. The specific data discussed here are verbs from one language which occur within the grammatical frame supplied by another, and inflected with the second language's inflectional morphology. The data differ a great deal from those studied by those psycholinguists who increasingly are interested in bilingualism. However, at least one of the goals is similar. It is to address the following question: What is the nature of the cognitive control that must underlie rapid switches from one language to another? The reason at least some psycholinguists turn to studies of bilingualism is that "the presence of two languages provides a lens into the way that cognitive systems interact that cannot otherwise be seen in research that is restricted to speakers of a single language" (Kroll, Dussias, Bogulski & Valdes Kroff, 2012, p. 231).

Psycholinguistic and neurolinguistic studies have made a good deal of progress in recent times in recognizing that interaction characterizes bilingual speech production. In 1989, Grosjean (1989) put it this way: "The bilingual is not two monolinguals in one person". Since then, these scientists have demonstrated several findings about bilinguals and their speech. First, there is always parallel activation of the speaker's two languages; that is, speakers do not switch off one of the languages, even when it is not being spoken (e.g. Dijkstra, 2005). Psycholinguists refer

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to this as "non-selective access". Second, neuroscience advances indicate that a bilingual's two languages involve the same neural systems (e.g. Abutalebi & Green, 2007). Third, not only can the L1 influence the L2, but eye tracking studies show that the L2 can influence the L1 so that certain syntactic patterns in the L1 may change (Dussias, 2003). Fourth, the extent to which switching languages has a cost in terms of Response Time (RT) in an experimental setting remains a debate (e.g. Meuter & Allport, 1999), but at least some studies show no or reduced cost (e.g. Costa & Santesteban, 2004; Gullifer, Kroll & Dussias, 2013; Moreno, Federmeier, Kara & Kutas, 2002). Kroll et al. (2012) offers a current overview and Kroll and De Groot (2005) is an edited volume surveying the complexity of issues and approaches. Fifth, bilinguals – even in experimental conditions – rarely are affected by the context to the point that they unintentionally switch; this has led many researchers to argue that bilinguals have a degree of inhibitory control (e.g. Green, 1998). Finally, the degree of accuracy that bilinguals show in selecting the "right" language in lexical decision tasks suggests a plasticity in their cognitive control.

These findings do not surprise those linguists who study naturally-occurring CS. Although they have not focused on cognitive issues, these researchers recognize that switching patterns showing elements from both languages must involve resolving competition between them. But a surface feature of CS that has long been very obvious to CS linguists is that most switching of languages, even within a clause, seems to be fast and effortless, with few or no hesitations. As early as 1980, Sridhar and Sridhar (1980) recognized this and suggested that CS may have a small cost or none at all. Just recently, Charles Bwenge, a Tanzanian linguist who studies CS, spontaneously characterized the bilingual language usage of the Tanzanian elite, including members of the Bunge (Parliament) in this way: "What has never stopped amazing me is the fluency . . . The educated elite in Tanzania and the MPs [Members of Parliament] in particular speak more fluently and confidently when they codeswitch than when 'forced' to speak in English or Swahili only" (personal communication, October 9, 2013).

However, even though they may recognize the effortless quality of CS, linguists have not studied the "production costs" systematically. In contrast, switching time has been studied extensively by psycholinguists. The two topics, language switching (what psycholinguists study) and CS (what linguists and sociolinguists study) differ in many respects. Below we survey the main differences briefly.

How CS and language switching studies differ

First, language switching (LS) studies may study real linguistic elements, but they do so under experimental conditions that involve a manipulation of the data. CS studies almost always consider strictly naturally-occurring data – language "in the wild" aptly characterized by Gullberg, Indefrey & Muysken (2009, p. 37). Sometimes the data occur in interviews, but they are even more likely to occur in ordinary conversations.

Second, the nature of what is being switched is different. LS studies largely have examined unconnected words, digits, or even unconnected sentences. The words studied are often concrete nouns. Recently, some LS studies involve larger phrasal units, such as determiners and their nouns, or progressive vs. perfect verb phrases. But the majority of LS studies still focus on single lexical switches. Linguists study CS at every linguistic level, from its phonetics to discourse or narrative structure (see Bullock & Toribio, 2009, an edited volume). They frequently analyze which language provides the grammatical frame for the clause (the Matrix Language, or ML) and what kinds of elements from the other language (the Embedded Language, or EL) occur. Sociolinguists study social motivations for CS in their most general sense (e.g. Auer, 1998; Gardner-Chloros, 2009; Myers-Scotton, 1993b, *inter alia*). For many linguists, the interest is in patterns in grammatical structure and this generally involves studying intra-clausal CS. Today, there are a few LS studies that are referred to as code switching studies, but most CS researchers would not agree that the data studied approximate naturally-occurring CS.

Third, for psycholinguists, a major issue is whether a switch across languages incurs any processing costs; such costs are measured in terms of Response Time. The idea is that RT is assumed to reflect processing difficulty: the longer the RT, the more difficult something is to process, whether to produce or to comprehend. As already indicated, linguists have rarely noticed any lapses of time in naturally-occurring CS, although some may identify some switches as "flagged" (Poplack, 1980).

Fourth, to measure RT involves laboratory experimental conditions with many controls. Increasingly today – although this was not always a practice earlier – psycholinguists evaluate their subjects carefully to ensure that they meet the experiment's requirements regarding language proficiency; often very fluent bilinguals are the subjects. In contrast, linguists are concerned less with measuring proficiency; many respondents are judged to be proficient in both or all the languages involved. CS itself does not require equal proficiency; speakers with limited proficiency in the EL can produce single words in a clause framed by the ML. Proficiency is more required in the ML. Also, the CS data that are collected normally do not occur under artificially-controlled conditions, although some controls are possible, such as recruiting equal numbers of males and females or persons in certain age groups.

A fifth difference is the methodology employed in the analysis of results. Most LS studies use methodologies that

promote objectivity. In many studies, neither the subject nor the researcher can affect the data collected, beyond the research design. For example, eye-tracking methodologies are frequently used to assess comprehension. Participants' eye movements are recorded while they listen to auditory messages, but the participants are not aware of what is being studied. More recent studies measure brain activity under experimental conditions (Kutas, Moreno & Wicha, 2009). In contrast, CS analysts rely almost entirely on empirical, naturally-produced CS data rather than laboratory-generated data (see Gullberg et al., 2009). The analyst seeks to support an argument regarding CS structure with relevant examples; the data studied may reflect the research paradigm of the analyst. Often, the point of discussion is the relative roles of the different participating languages and constituent types. Counting the number of examples produced is generally not the point; demonstrating patterns in the data is. Because CS analysis is almost always a usage-based approach, some analysts relate their findings to such syntactic theories as Cognitive Grammar (Langacker, 2008; Talmy, 2000, *inter alia*). Other linguists produce grammaticality judgments to support their arguments; some of these linguists relate their claims to generative linguistic theories such as the Minimalist Program (Chomsky, 1995, *inter alia*).

Goals of the paper

We have shown how psycholinguistic studies focus on measures of processing costs as evidence of underlying cognitive control. However, the focus of this paper is not on measuring cost, but rather on HOW COST IS AVOIDED in one specific type of naturally-occurring CS involving nonfinite verbs. Thus, this paper argues that CS studies provide clear evidence of another type of flexibility in the cognitive system in addition to those results from psycholinguistic experiments.

This discussion follows from the Matrix Language Frame (MLF) model (Myers-Scotton, 1993a, 2002a, *inter alia*), a model designed to analyze naturally-occurring CS. In brief, under the MLF model, the language with the most critical grammatical contributions to the bilingual clause is called the Matrix Language (ML), and the other participating language, which largely supplies some content elements in the clause, is called the Embedded Language (EL). The ML construct interacts with several other assumptions about language and language production. Relevant to the notion of ML is the Uniform Structure Principle (USP), which applies to all language. It states that any constituent/construction has a uniform structure that must be observed whenever it appears (Myers-Scotton, 2002a, p. 8). The critical provision of the USP for CS is that it preferences uniform structure from the ML in bilingual constituents.

The data considered in this study come from bilingual clauses exemplifying CS in naturally-occurring conversations. EL verbs in such bilingual clauses as in (1) and (2) below are the specific topic in regard to how production cost in terms of perceived switching time is avoided when they appear. (EL verbs are underlined in the examples; abbreviations used in glosses are listed at the end of the paper.)

(1) *Tanzanian Swahili–English* (Bwenge, 2010, p. 31)
Zi-ko sababu ny-ingi lakini sababu
CL10-LOC reason CL10-many but reason
moja ni kwamba ma-benki y-etu
one is COMP CL6-bank CL6-our
ya-na-**operate** katika ma-zingira
CL6-NONPST-operate in CL6-environment
ma-gumu sana . . .
CL6-difficult very
"There are many reasons but one of them is that our banks are operating in very unfavorable conditions."
(MP, discussing a bill in the Tanzanian Parliament)

(2) *Ewe–English* (Amuzu, 2010, p. 155)
nyɔnu-wó, **all the time** a, wó a nɔ
woman-PL all the time TP 3PL POT be
wo-**respect**-m . . .
2S-respect-PROG
"Women, they are supposed to respect you all the time . . . "

Rapid switching of EL verbs, while receiving inflections from the ML, but with little or no perceived response time costs, may be the most unexpected phenomenon in naturally-occurring CS. Moreover, the various ways an EL verb is integrated into the morphosyntax of the ML also provide evidence regarding the nature of this flexibility and for why production costs seem low. The dilemma is how to avoid the expected production cost of the assumed need to check the EL verb for congruence with an ML counterpart and/or with the requirements of the ML frame.

Illustrating CS: How verbs are different

Of all EL elements that occur in CS corpora, singly-occurring nouns are almost always the most frequent; verbs are less frequent. For example, in Pfaff's (1979) study of Spanish–English CS, only 71/932 (7.6%) switched elements are verbs; in contrast, 818 (87.8%) switched elements are nouns. Similarly, in Poplack (1980), there are 141 nouns that are switched, as compared to 13 verbs and 13 verb phrases; switched nouns are 10.84 times more common than verbs in this Spanish–English corpus. In Okasha's (1999) Arabic–English corpus, in the Generation 1 data, only 23 English verbs occur, as compared to 139 singly occurring nouns; nouns are

switched six times more frequently. In her Generation 2 data, verbs are even less frequent (8 verbs vs. 838 nouns). Backus (1992, 1996) presents two different pictures. In his 1992 data, 108 singly-occurring Dutch nouns and 21 NPs occur in Turkish grammatical frames; 41 single-occurring verbs and 12 VPs occur. That is, nouns and NPs are 2.4 times more frequent than verbs. However, in the Backus (1996) corpus, only 15 verbs occur out of 259 intrasentential switches. Treffers-Daller (1994, pp. 98–99) points out that in her Brussels Dutch–French corpus, "nouns form the largest category of French borrowings [single word switches]". French nouns represent 58.4% out of all lexical categories and verbs represent 8.9%. In some CS data sets, verbs are much more frequent. Myers-Scotton (1993a) reports 91 English verbs in Swahili finite clauses; 24.6% of the switches. Nouns represent 46.5% of the switches (141 types/174 tokens). In one Acholi–English corpus (Myers-Scotton & Bernsten, 1995), 89 English nouns and N-bars occur (60% of the intrasentential switches) in comparison with only 48 English verbs. Of these 48 verbs, 10 are gerunds and occur as NPs (e.g. subjects of a clause); only 38 (25.5%) English verbs occur in verb positions in Acholi-framed clauses. Not all CS analyses report quantitative data. For example, Boumans (1998) explains that he does not, observing that data sources may be so heterogeneous that quantitative data would be misleading.

As just illustrated, nouns are the most commonly switched constituent type in intra-sentential CS. Example (3) illustrates an EL noun in a noun phrase headed by an ML determiner. While nouns receive thematic roles, they do not supply them. Thus, when an EL noun occurs in an ML frame, the only congruence checking that is needed is that its semantic/pragmatic features make it *le mot juste* from the speaker's point of view. From a production point of view, EL nouns are "free" in regard to grammatical checking.

(3) *Spanish–English*
(Jake, Myers-Scotton & Gross, 2002, p. 81)
. . . eso ya lo pusimos
this already DET.M.OBJ put.1PL.PRET
dentro del **time**
within of.DET.M.S time
". . . we already included this within the time."

In some data sets, larger EL constituents, EL islands, are also frequent. They consist of well-formed phrases in the EL and generally include a noun. Such examples of EL elements can be explained relatively easily because many EL islands are adjuncts or formulaic in nature. Example (4) illustrates a PP EL island (*met een brusselaar*), and there is a formulaic EL island in (2) above (*all the time*). EL islands of any type, PP EL islands, NP EL islands or VP EL islands, are not the subject of this paper.

(4) *French–Brussels Dutch*
(Treffers-Daller, 1994, p. 209)
. . . quand elle est mariée [PAUSE] **met**
when 3S.F COP.3S married with
een **brusselaar**
a Brusseler
". . . when she married a Brussels person."

EL verbs are another matter. In contrast to nouns, verbs carry a good deal of grammatical information relevant to the phrase structures in which they occur; they assign thematic roles. Further, verbs determine how thematic roles are mapped onto predicate–argument structure. For this reason, one prediction is that switching a verb should carry a higher production cost than a noun. Earlier, it was assumed under the MLF model that all EL verbs must be checked for congruence with the requirements of the ML grammatical frame (see Myers-Scotton, 1993a; Myers-Scotton & Jake, 1995). However, we now revise that analysis, as is discussed below. We now posit that not all aspects of the grammatical structure projected by EL verbs are checked for congruence in CS. Similar to nouns, only the lexical-conceptual structure of EL verbs is checked for congruence with the ML, as is discussed below.

Example (5) illustrates switching of an EL verb inflected with ML morphology. The ML supplies inflections. In this example, the ML supplies the EL verb with elements that mark it as a finite verb. Such EL verbs occurring in ML finite slots are the main topic of this paper. Under the System Morpheme Principle of the MLF model, verbal inflections such as these must come from the ML, and this is the case with all EL verb forms that are discussed here.

(5) *Swahili–English* (Myers-Scotton, 1993a, p. 30)
Ni-ka-i-safisha na maji moto,
1S-CONSEC-OBJ.3S-wash with water hot
ni-ka-i-**rub** na ki-tambaa
S-CONSEC-OBJ.3S-rub with CL7-cloth
"And I washed it with hot water, and then I rubbed it with [a] cloth."

Other assumptions about bilingual production: The Abstract Level model

In addition to the MLF model and the USP, the analysis explaining the relative ease of switching verbs assumes another model, the Abstract Level model (Myers-Scotton, 2002a; Myers-Scotton & Jake, 1995). This is a model of the abstract lexical structure of entries in the mental lexicon. According to the Abstract Level model, the levels of abstract structure include lexical-conceptual structure, predicate–argument structure, and the level of morphological realization patterns. Thus, the reason many EL nouns occur is that they need only convey

a speaker's intended message at the abstract lexical-conceptual level; that is, an EL noun need not match an ML counterpart at the levels of predicate–argument structure and morphological realization patterns.

Unlike EL nouns, EL verbs occur only infrequently in some language pairs, although very often in other pairs, as noted above. This makes their switching something of a puzzle. The analysis here offers at least a partial answer, including the conclusion that EL verbs in naturally-occurring CS imply a sense in which the bilingual cognitive system is open to modifications. As noted above, some psycholinguistic studies imply that the L1 may be influenced by the L2; similarly, some CS researchers distinguish what is referred to as classic CS from composite CS, that is, CS with convergence phenomena (see e.g. Amuzu, 2010, published online April 22, 2013; Fredsted, 2008; King, 2001, *inter alia*). In this paper, we only consider classic CS in which all the critical grammatical elements in bilingual constituents come from one language, the ML.

Codeswitching in a model of language production

CS may take different forms, but many bilingual speakers often switch from one language to another in the same conversation or even the same clause. There may be several levels in production at which one language is inhibited or not. Early on, in language production, at least in regard to the grammatical frame of the bilingual clause, the initial competition is always resolved in favor of one of the languages, called the ML under the MLF model. This resolution occurs at the planning stage (the conceptual level in the production model we follow, a modified version of Levelt, 1989). A set of pre-linguistic factors helps determine the language of the grammatical frame for a bilingual clause (the ML) at this stage, including both sociolinguistic and psycholinguistic factors. For example, the sociolinguistic profile of the macro-community may influence the selection. But more critical in specific interactions is what would be the unmarked choice if the interaction involving CS were negotiated monolingually. That is, which language is considered primary in monolingual speech in interactions of a given type is likely to become the ML of a bilingual clause in those interactions. It may be the L1 of some or all of the speakers, or it may be a lingua franca that differs from the L1s of most or all of the speakers (for example, in Swahili–English CS, Swahili is a lingua franca for most speakers). Various interpersonal factors are weighed when one language is considered more appropriate or unmarked for an interaction (see Myers-Scotton, 1993b, *inter alia*, on the notion of the unmarked choice). But when speakers are communicating via CS, and especially when switching is at length or frequent, neither language is the unmarked choice, although the language of the grammatical frame, the ML, is more unmarked; in fact, CS itself may be the unmarked choice. What is important is that CS allows the speaker to have the best of two worlds – the best of the socio-pragmatic messages that are associated with the use of elements from more than one language.

Obviously, a major psycholinguistic factor that influences selection of the ML is the relative proficiency of the speakers in both languages. The reason is that speakers must be sufficiently proficient regarding the grammatical frame of whatever linguistic variety is the ML. Of course this need not be the standard variety of the language involved; it is whatever variety is expected as appropriate in the interaction. For the variety that is the EL when speakers are engaging in CS, less access to the grammatical frame of an EL is needed if all a speaker does is select nouns or other content morphemes from the EL that have enough congruence with the ML that permits them to fit in ML constructions.

As noted above, psycholinguists have demonstrated experimentally in LS studies that both languages are active, even when only one language is cued. CS also offers empirical evidence that both languages are active whenever a bilingual engages in CS. Under the MLF model, the ML supplies the grammatical frame of the bilingual clause. A critical characteristic of the ML is that the whole store of generalized grammatical knowledge associated with that language is available, too. In bilingual speech, positing an ML assumes that there is an EL, but not an EL that can project the same structures as the ML can. Thus, an EL form may occur in the ML frame which is fleshed out by the ML generalized grammatical knowledge, plus the specific grammatical information that also informs the rest of the clause and ties the verb to the clause. That is, the ML also determines how such ML morphology as subject or object inflections, tense inflections, and passive or causative morphology maps predicate–argument structure onto morphological realization patterns at the positional (surface) level.

The ML can inhibit the EL in various ways while accepting its participation in other ways. Specifically, empirical evidence makes it clear that the EL can contribute conceptually-salient lexical elements to a bilingual clause that satisfy a speaker's intentions. For example, the frequently-occurring EL nouns do this.

What naturally-occurring CS tells linguists

In many CS corpora, one language continues as the ML throughout all clauses in the data set; however, in some corpora, the ML does change from one clause to another, but still one variety generally dominates as the ML across the data set. Obviously, selecting the ML (and necessarily inhibiting the non-ML language for frame-building functions) at the planning stage and sticking with

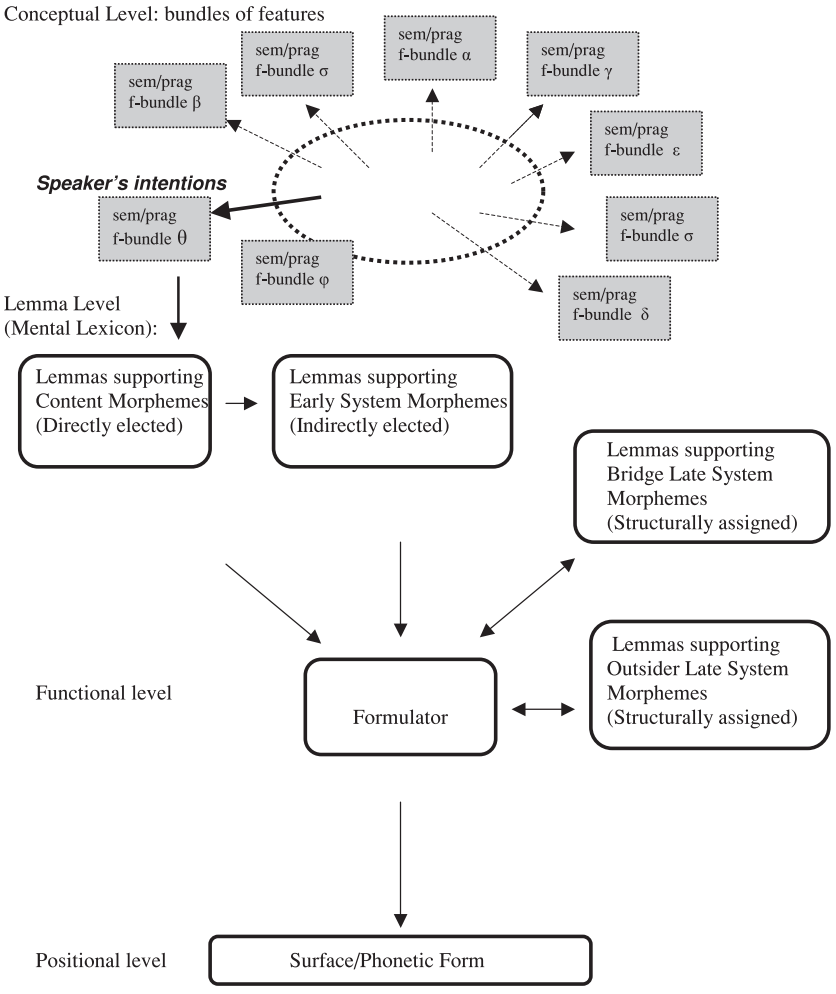

Figure 1. Production model.

it throughout the corpus of the bilingual interaction would seem to be more efficient and would lower production cost. But switching MLs within a conversation or even within one speaker's turn is evidence that both languages are generally available without pauses and that plasticity characterizes the language system. Speakers may switch for a single word or for longer stretches; the motivations are largely socio-pragmatic; the speaker is negotiating some change in the "footing" of the conversation (see Goffman, 1981, on footing, Chapter 3). In another sense, competition does not end with designation of the ML. The main reason speakers speak at all is to communicate through meaningful elements and those elements may come from either language.

We emphasize the rationale for CS because it takes advantage of the socio-pragmatic features from two or more languages; not only can switching provide "the right word", but changing languages can also signal changes in the speakers' relationships or the topic or other features of the interaction (Myers-Scotton, 1993b, on the Markedness model). Thus, because of their content, EL verbs may meet a speaker's desire to encode a particular message better than an ML counterpart can.

At an abstract level in the production model that we propose, semantic and pragmatic feature bundles underlying meaningful elements that satisfy a speaker's communicative intentions are selected at the conceptual level, along with the ML (see Figure 1). The bundles become salient as language-specific lemmas at the level of the mental lexicon. Lemmas enable the mapping of lexical patterns onto patterns of ML grammatical structure in the sense of Talmy's conceptual approach to language. He states that this approach "is concerned with the patterns in which and the processes by which conceptual content is organized in language" (Talmy, 2000, vol. 2, p. 2). At the conceptual level, lemmas underlie semantically-salient morphemes that contrast with the structurally-assigned units that only become salient when further mapping occurs at the level of the formulator. These structurally-assigned elements are called late system morphemes under the 4-M model of morpheme classification (see Myers-Scotton, 2002a; Myers-Scotton & Jake, 2009, *inter*

alia); they are not discussed further because they are not especially relevant here.

However, what concerns us here are not the advantages of CS, but rather its cost: what makes using two languages together sufficiently economic to warrant engaging in CS? That is, its advantages are not without assumed production costs, and we turn now to a cost/benefit analysis of one aspect of CS. As already indicated, the lemmas that underlie verbs are more complex than those for nouns, even though both nouns and verbs are content morphemes in the model of morpheme classification followed here, the 4-M model.

As indicated above, earlier proposals regarding selection of EL elements assumed congruence checking must occur, although there was little consideration of the production cost. The Blocking Hypothesis in the original formulation of the MLF model is that a blocking filter blocks any EL content morpheme that is not sufficiently congruent with the ML with respect to three levels of abstraction regarding subcategorization (Myers-Scotton, 1993a, p. 120). Later, Myers-Scotton and Jake (1995) argued that all EL forms are checked twice – once at the conceptualizer and once at the mental lexicon. That is, at the conceptual level, the activation of the EL form must satisfy the semantic/pragmatic features of the speaker's intentions. Then, within the level of the mental lexicon, we suggested that three levels of abstract lexical structure were checked for congruence. Congruence at the level of lexical-conceptual structure was requisite for any CS. We suggested congruence at the levels of predicate–argument structure and morphological-realization patterns determined the way an EL form might be integrated into an ML frame – as a singly-occurring morpheme, or perhaps as a larger EL island. The analysis considered here revises this assumption; we illustrate below our argument that EL verbs are only checked for lexical-conceptual structure.

What is the cost of inflecting EL verbs in an ML frame?

But if CS is viewed in a cost/benefit analysis, CS has to make the benefit it provides worth the cognitive costs (in utterance time and other possible ways) of employing more than one language. No matter what, all EL elements must undergo some sort of congruence check at the conceptual level for meeting the speaker's intentions. But after that, we now hypothesize that EL forms are "free" once they pass this check, even verbs. This may be one reason why EL nouns occur frequently in many data sets. Still, in some CS corpora, such as those with a Bantu language as the ML, many EL verbs occur with ML inflections, as seen in the Swahili–English example above (example (5)). The example below illustrates a clause that consists almost entirely of EL (English) content words, but with a Bantu ML frame (SiSwati). The English EL verb *discuss* is inflected with the siSwati subject agreement (*i-*) and the perfect aspect suffix (*-ile*).

(6) *siSwati–English* (Kamwangamalu, 1994, p. 75)
Tennis association i-**discuss**-ile le-**problem** ku **meeting** yabo ye kugcina
"The tennis association discussed that problem at their last meeting."

In comparison to the distribution of EL nouns in mixed constituents, the appearance of EL verbs across corpora reflects variation in the way they are integrated, variation of a qualitative as well as quantitative nature. That is, even though EL verbs are less frequent than EL nouns, the grammatical frames in which they occur are more varied. Of interest to a model of language production is the way this variation provides an answer to the question of why CS appears effortless. That is, while EL verbs are integrated into bilingual clauses less frequently and in more diverse grammatical structures than nouns, CS involving verbs appears effortless in the same way as the insertion of singly-occurring EL nouns.

The EL is active in CS at the level of lexical-conceptual structure, when an EL verb is selected as the lemma that best satisfies the speaker's intentions. Thus, the EL verb brings along its meaning, but it is the ML that integrates it into predicate–argument and morphological realization patterns. That is, how thematic roles are realized in the syntax is determined by the ML; similarly, the ML determines how tense and agreement are realized.

However, the non-occurrence of EL verbs with ML inflections is a hint that insertion of EL verbs, in those pairs where it does occur, is not straight forward – at least not in the same way as insertion of EL nouns. This is because the well-formed occurrence of a verb entails production costs beyond satisfying a speaker's intentions regarding desired semantic/pragmatic messages. If verbs bring with them directions to the formulator in the language production model, referring to the levels of predicate–argument structure and morphological realization patterns, the insertion of an EL verb, presumably, would mean that these levels have to be checked for congruence with the directions underlying the ML grammatical frame. Because verbs would appear in a phrase called by the ML frame, they would occur with system morphemes that may co-index subjects and objects as well as refer to other grammatical elements outside of their immediate grammatical projection. This implies that EL verbs would have to be checked with potential ML counterparts concerning the specific directions they contain regarding predicate–argument structure and morphological realization patterns.

Yet, if EL verbs were to undergo extensive checking that EL nouns do not face, how would we explain that when EL verbs do occur, the conversations appear to be effortless and fast? In brief, the problem is this:

how to reconcile the apparent "low cost" in terms of response time that is perceived when EL verbs occur in some data sets. There is a confluence of evidence that points to a solution, including evidence from specific insertion strategies across language pairs, evidence from ongoing language contact situations, and, most obviously, evidence from revisiting and reanalyzing the EL verb forms occurring in ML finite frames.

EL nonfinite verbs as the cost/benefit solution

First, our analysis looks for the type of EL verb that does not direct mapping of thematic roles onto predicate–argument structure or assign morphological realization patterns. The answer is that nonfinite verbs fit this low-cost scenario. We propose that nonfinite verbs do not carry the same costs as finite forms because their levels of predicate–argument structure and/or morphological realizations patterns are not salient in structure building. Their only salient level of abstract structure is the level of lexical-conceptual structure, as is the case with nouns. Thus, such verb forms as infinitives and present participles can take ML verbal inflections without creating any congruence problems regarding the abstract levels referring to grammatical structure. That is, they do not send directions regarding EL late system morphemes that need to be accommodated – and, presumably, inhibited – in CS, if an EL finite verb were employed.

Because of this, nonfinite verbs fit the low cost scenario that can be observed in CS for the phrases that would contain finite verbs in monolingual data. Examples such as (7) make it very clear that the English verb is not a finite form because the speaker's intentions call for a past tense marking, but *watch-ed* does not occur; the past meaning comes only from the ML inflectional morphology that *watch* does not influence.

(7) *Swahili–English* (Myers-Scotton, 1988)
... a-li-vyo kuwa karibu ku-**faint**-i
3S-COP-COMPAR COMP near INF-faint-FV
wakati tu-li-po-**watch** filmi y-a
time 1PL-PAST-LOC-watch film CL9-ASSOC
Dracula ...
Dracula ...
"... how she was near to fainting when we watched [the] film of Dracula ..."

Second, earlier analyses (by us and other CS researchers) did not discuss in detail the nature of EL verbs. Without a model of abstract lexical structure with multiple levels that can be split and re-combined across lexemes and a compatible production model, such discussions did not seem relevant. Further, the variety of EL verb forms in CS initially did not seem amenable to generalizations. A closer look at the shared characteristics of the EL verb forms does provide an answer. In the data considered here, the EL verb is always a nonfinite form.

For example, a surface English verb could be assumed to be finite because it appeared in a frame for finite verbs. No one seemed to consider that these verbs might be nonfinite verbs that the ML frame could accommodate. Also, no one considered the psycholinguistic costs of having both the EL and ML send directions to the Formulator for activating production of finite verbal morphology. Further, if the verbs in question were finite verbs, at some point, the levels of predicate–argument structure and morphological realization patterns that would underlie an EL finite verb would have to be checked with those levels underlying the ML frame. There would be a psycholinguistic cost. Either the EL would be checked with the ML for sufficient congruence at all levels (see Myers-Scotton & Jake, 1995) or the ML would inhibit all of the checking, not allowing any EL verbs at all.

To this point, then, we have argued against the likelihood that EL finite verbs would occur in ML frames with ML inflections. We have also argued that EL nonfinite verbs are better candidates to occur in the finite verb slot in ML frames because they only need to be congruent at the abstract level of lexical-conceptual structure, meeting the requirements of the speaker's intentions. That is, their other levels of abstract structure are not activated. What remains is to argue that those EL verbs that occur in such examples as we have already given (examples (1) and (2) and (5)–(7)) can be identified as nonfinite verbs.

As we already noted, the nature of these verbs did not attract our attention (and that of other CS researchers) because we were not relating the ease of CS to the abstract nature of these verbs. However, a second factor may be that English is often the EL in many the CS corpora studied to date. The problem with English as the prototype EL is its bare infinitives are identical to most present tense finite forms. So when an EL verb occurs, which is it? Of course the full infinitive is most common in monolingual English (a bare verb form plus the morpheme *to*). But the presence of *to* depends on the construction. Consider small clauses in monolingual English, such as *go* in *Let that man go*. Or compare the infinitive in *She likes to play the piano* with this "do" construction, *Did she play the piano as a child?* Thus, the ambiguity of the English infinitive is a reason to overlook the possibility that the English verb occurring as an EL form in ML finite frames is an infinitive.

Of course the nature of the infinitive is not necessarily the same across languages. But there are sources of ambiguity in other languages. For example, phonology of other EL verbs in other language pairs is potentially ambiguous. We turn to French, which is the EL in a number of data sets, especially in North Africa and Sub-Saharan Africa. French has more than one conjugation, but infinitives in the most common one end in *-er*. In conversational data, it is hard to distinguish the

pronunciation of this infinitive from some finite French forms. However, when CS data contain French EL verbs from other conjugations, these data provide evidence that it is the French infinitive that occurs in the ML slot for finite verbs, even for *-er* verbs.

Exemplifying nonfinite EL verbs in ML frames

Examples of CS with a number of different languages as the ML illustrate the role of French infinitives serving where finite verbs would be assumed to occur. Clear examples come from Ewe–French CS in Togo in West Africa (Amuzu, 2011) (see *promettre* in (8) and *conçevoir* in (9) below), and from cases in Central Africa, such as Chiluba–French CS from Congo (Kamwangamalu, 1987, 1994) (see *rendre* in (10) and *soumettre* in (11)). In addition to occurring with agreement morphology, the EL verb in (10) occurs with the reciprocal verbal extension *-angana*, essentially coindexing the subject and object. Also, there are examples from eastern Congo Swahili–French and Lingala–French that make it clear that it is the French EL infinitive that appears in the ML slot for a finite verb.

(8) *Ewe–French* (Amuzu, 2011)
e la **promettre** na wò be . . .
3S POT promise DAT 2S COMP
"He will promise you that . . . "

(9) *Ewe–French* (Amuzu, 2011)
wo mu **conçevoir** be nuḍe
3PL NEG.AOR imagine COMP something
tsa e la s'**accompagner**
too 3S POT-can 3S.REFL-accompany
"They don't imagine that something else can accompany it."

(10) *Chiluba–French* (Kamwangamalu, 1994, p. 75)
ba-vwa ba-**rendre**-angana **visites**
3PL-AUX.PAST 3PL-give-RECIP.HAB visits
ya bungi **quand elle etait ici**
a lot when she was here
"hey used to visit each other a lot when she was here"

(11) *Chiluba–French* (Kamwangamalu, 1987, p. 169)
Ndi n-ku-**téléphoner** bwa
1S 1S-2S.OBJ-INF-telephone COP
ku-ku-**informe(r)** ne je-n-ai
INF-2S.OBJ-inform COMP 1S.NEG-have
pas **oublié problème** u-wu-vwa
NEG forget problem 2S-1S.OBJ-have.FV
mu-n-**soumettre**
1S-CL9.OBJ-submit
"I'm calling you in order to tell you that I haven't forgotten the problem [that] you have submitted to me."

Further, in regard to a Brussels Dutch–French corpus, Treffers-Daller (1994, p.110) observes that the "[t]he French verb is integrated into Brussels Dutch in the following way: the morpheme *-er* is attached to the French verb stem (for example: *bless* + *-er*) and then the verb stem is conjugated according to the Dutch rules for the regular verbs". Elsewhere, Treffers-Daller (personal communication, September 9, 2013) comments: "there are lots of examples [from the 1994 corpus] where French verbs are fixed with the *-er* suffix and then all kinds of inflections can be added". Note that the *-er* suffix marks the infinitive in the most common conjugation in French. The example below shows that this construction "is still very common in the Brussels Dutch dialect" (Treffers-Daller, personal communication, September 9, 2013).

(12) *Brussels Dutch–French* (Treffers-Daller, 2006)
Hij . . . pakt zijn vest en hij
he takes his cardigan and strokes
carress-eer-t zijnen hond terwijl
[carress-INF-3S] his dog while
det kikvors in zeijne zak kruipt
that frog into his pocket sneaks
"He takes his cardigan and strokes his dog while that frog sneaks into his pocket."

Examples (13) through (15) below make clear that both ML prefixes and suffixes, including suffixes that change the argument structure, do occur with EL nonfinite verbs in the structure. In (13) and (14), the English verb (*spoil* and *select*) receive several affixes from Swahili, and a final vowel to satisfy Swahili phonotactics. In both, the *-i-* "applied", with a meaning "to" or "for", and a second suffix *-w-* "passive" precedes the final vowel *-a*. Both English verbs also have Swahili subject agreement morphology. In (15), three English verbs occur in bilingual clauses with Swahili affixes, *affect*, *deal*, and *backfire*. Two have subject and/or object–verb agreement morphology; *deal* has an infinitive prefix.

(13) *Swahili–English* (Myers-Scotton, 1993a, p. 120)
vitu vyangu ni-me-**spoil**-i-w-a
CL8.thing CL8.my 1S-PERF-spoil-APPL-PASS-FV
"My things were stolen from me."
[Literally: "My things, I was spoiled from/because of my things."]

(14) *Swahili–English* (Myers-Scotton, 2013)
U-li-ki-w-a u-me-ni-amb-i-a
2S-PST-COND-COP-FV 2S-PERF-1S.OBJ-tell-APPL-FV
ku-li-ku-w-a
INF-PST-CL15.OBJ-COP-FV
u-me-**select**-i-w-a kule **down** . . .
2S-PERF-select-APPL-PASS-FV there down
"You had told me that [it was] you had been selected [demoted] . . . "

(15) *Swahili–English* (Myers-Scotton, 2013)
I hope mimi si-ta-end-a **place**
I hope me 1S.NEG-FUT-go-FV place
i-ta-ni-**affect**
CL9-FUT-1S.OBJ-affect
"I hope I won't be in a place [that] it will affect [infect] me."

Si-tak-i ku-**deal** na
1S.NEG-want-NEG.FV INF-deal with
wa-tu wengi, i-ki-**backfire**,
CL2-person CL2.many CL9-COND-backfire
na-wez-a hata ku-kaa Kenya
1S.NONPST-can-FV even INF-stay Kenya
"I hope I won't be in a place that will infect me; I don't want to deal with many people. If it backfires, I can even stay in Kenya."

EL infinitives with special overt ML or EL markings, another type of nonfinite verb, seem to be less frequent in finite verb slots than the unmarked English (EL) nonfinite verb in many Bantu–English corpora, such as those just illustrated. In Arabic–Spanish data from Morocco, Spanish infinitives receive ML verbal inflections, as in (16) and (17). In (18) and (19), the French infinitive is inflected with Arabic agreement affixes, as Arabic verbs are inflected. Once the finding that EL infinitives do occur in the ML finite slot becomes understood, they may be recognized elsewhere in a more extensive review of other data sets.

(16) *Moroccan Arabic–Spanish*
(Vincente & Ziamari, 2008, p. 462)
Kā yəmšî y**trbajar**u kŭll yawm f-əs-**sentro**
"ils vont travailler chaque jour au centre-ville."
["They come to work every day in the city center."]

(17) *Moroccan Arabic-Spanish*
(Vincente & Ziamari, 2008, p. 462)
kŭnţ f əd-dār u
COP.PERF.1S in DET-house and
plančarit la ropa
planchar[iron].PERF.1S DET clothes
kŭlla
all.3S.F [kull-(h)a]
"I was at home (in the house) and I ironed all of her clothes."

(18) *Moroccan Arabic–French*
(Bentahila & Davies, 1983, cited in Backus, 1996, p. 215)

Tajbqa **jconfronter ces idees**

"He keeps confronting his ideas"

(19) *Moroccan Arabic–French*
(Bentahila & Davies, 1992, p. 450)
hija lli tat**secréter**na les **hormones** . . .
"it's that which secretes [Arabic inflections] for us the hormones . . ."

In her analysis of Mosetén grammar, Sakel (2004, p. 6) points out how Spanish verbs are integrated into Mosetén, a variety of the Moseténan family with speakers in the foothills of the Bolivian Andes and the Amazon basin: "Spanish verbs are expressed in the infinitive forms and followed by a Mosetén ending. In this way, Spanish lexical elements are treated as non-verbal Mosetén elements appearing with the marker [*-yi-*] that assures Mosetén cross-reference can be added". In an extensive discussion of contact phenomena, Matras (2009) observes somewhat similar strategies can be found to integrate EL verbs into other languages.

(20) *Mosetén–Spanish* (Sakel, 2004, p. 6)
. . . Por lo menos gracias a esos señores neustros tatarabuelos –
. . . jäen'-tom mäyëdyë' **sufrir-**yi-in!
how-COM day suffer-VBL-M.S.P
". . . At least thanks to these men great grandfathers – how many days have they suffered."

The sentence in (21) is another example of the type of verb form of interest here, with Wolof as the ML. Here, an EL verb (French *organizer*) appears as *organize-waat*, with the Wolof suffix meaning "repeated action, do again". Swigart (personal communication, March, 2002) states: "For example, *organiize* has a special form of the suffix beginning with a *w*, *-waat*. If the verb ended in a consonant, it would be *-aat*. So the infinitive ending *-e* is clearly part of how the French verb is used in the Wolof context". The Wolof pronouns are conjugated to indicate the tense and aspect of the verb.

(21) *Wolof–French* (Swigart, 1994, p. 187)
War nañoo **organiize**-waat baal
should 1PL organize.INF-do.again ball
taa yii; dinaa la
time [Fr. *temps*] PL.DET 1.FUT 2PS.OBJ
ewite
invite [Fr. *inviter*]
"We have to organize another dance these days; I'll invite you."

Further, another language pair, Acholi–English in Uganda, provides additional confirming data for the central argument of this paper, that only nonfinite forms of EL verbs occur inflected by the ML. Acholi, a West Nilotic language, is a language that must mark aspect, so an English bare infinitive is an insufficient match. Instead,

another nonfinite form, the present participle, is activated because it carries the feature of aspect that satisfies the ML's requirements. See *i-boarding* in (22) and *gi-doing* in (23) from Acholi–English.

(22) *Acholi–English* (Myers-Scotton, 2005, p. 12)
Chances me **accident** pol ka
chances ASSOC accident many if
i-**boarding** **taxi**
2S-boarding taxi
"(The) chances of (an) accident (are) many if you board (a) taxi."

(23) *Acholi–English* (Myers-Scotton & Bernsten, 1995)
Gi-**doing** labongo **lunch**
3PL-do without lunch
"They do without lunch."

In some language pairs, more than one nonfinite form of the EL verb can be affixed with a "nativizer suffix" (Bolonyai, 2005) before being integrated into the syntax of the ML. For example, in her discussion of the acquisition of various CS strategies by a Hungarian–English speaking child, Bolonyai (2005) discusses how the Hungarian verbalizer *-ol/öl/el* is added to integrate English verbs in CS. See example (24) below. This is similar to the Mosetén strategy for integrating Spanish verbs. Bolonyai observes that this verbalizer is also added to other nonfinite verb forms of the English verb, although this is less frequent. See example (25), in which a present participle, *socializing,* has been activated to realize aspect, i.e., the incomplete nature of the event. Still, this present participle is not inflected directly in the Hungarian frame; the verbalizer is also added to such EL nonfinite verb forms. Similarly, in some Hungarian–English CS, the past participle of the EL verb may be selected to satisfy the speaker's intentions to convey completed aspect (see Bolonyai, 2005, for more examples).

(24) *Hungarian–English* (Bolonyai, 2005, p. 320)
order-ol-t egy **bike-jack**-et
order-VBZ-PAST/3SG/INDEF a bike-jack-ACC
"He ordered a bike-jack."

(25) *Hungarian–English* (Bolonyai, 2005, p. 320)
Nem lenne jobb ott-marad-ni egy
not be/COND better there-stay-INF a
kicsi-t **socializing**-ol-ni
little socializing-VBZ-INF
"Wouldn't it be better to stay and socialize a little?"

We assume that the choice of nonfinite EL verb depends on the requirements of the ML grammatical frame and how ML satisfies those requirements. In his study of incorporation and complex predicates, Haig (2002) discusses how Turkish participles are the forms taken in Kurdish frames. Clearly, more research is needed in CS involving language pairs in which different nonfinite EL verb forms are selected to satisfy ML frames.

Modified EL verbs in ML verb conjugations

Another clue that EL verbs must be nonfinite comes from strategies for assigning EL verbs to an ML class, usually indicated by the infinitive form. Although the speaker's intentions activate socio-pragmatic processes that call for an EL verb, the frame of the bilingual clause may call for a finite form. For example, Pfaff (1979, p. 300) reports an example from Texas Spanish–English CS of an English verb assigned to the *-(e)ar* Spanish infinitive class (*los hombres me trust-earon* "the men trusted me") in an ML slot receiving ML finite inflections. In this example, the nonfinite English verb occurs with additional ML, Spanish, derivational morphology. Backus (1996, pp. 218–222) provides an overview of "nativized" EL verbs which illustrates this phenomenon. In German–English CS, there are examples of English verbs accommodated into a conjugation of German, typically the weak conjugation (*ge*-verb-*t*). For example, in conversations among American university students and German exchange students, Fuller (2012) recorded such examples as this reference to baseball players:

(26) *German–English* (Fuller, 2012)
Die werden ge-**draft**-et von einer **High School**.
"They are drafted from a high school."

"Do" constructions

In many other data sets, a different strategy to integrate EL verbs in mixed constituents is employed, the "do" construction. It is found in many data sets across typologically diverse languages. Still, it is a strategy related to the analysis proposed here because it relies on EL nonfinite verbs, too, to express speaker intentions, but nothing else. This strategy is employed more frequently than the insertion of a nonfinite form into a finite ML frame. What this and other strategies discussed above have in common is that they all avoid a second checking of congruence between ML and EL verbs. This construction consists of an ML verb form that encodes the meaning "do", but is largely bleached of any meaning; the critical meaning in the clause comes from a nonfinite verb, often the infinitive, in the predicate called by the "do" verb. Even though this construction adds some complexity to the clause, again, as pointed out above, there is no congruence checking between the EL verb and the ML frame, or ML and EL finite verb counterparts, so production cost associated with language switching remains minimal. All

necessary ML verbal inflections occur with the "do" verb, not the nonfinite EL form.

Generally in "do" constructions, the EL nonfinite form is an infinitive, but in some data sets it may be a present participle as it is in Hausa–English CS (Bickmore, 1985). Examples (27) through (29) are typical examples of "'do' verb constructions" (with the "do" verbs underlined).

(27) *Chichewa–English*
(Simango, 1995, cited in Myers-Scotton, 2002b, p. 217)
Nthawi zambiri, **if you don't follow**
times many if you don't follow
directions,u-ma-chit-a **get lost**
directions 2S-FUT-do-FV get lost
"Many times, if you don't follow directions, you get lost."

(28) *Turkish–Dutch* (Backus, 1996, p. 238)
Ja maar toch, millet **kijken**
yeah but still people **watch**-INF
yapıyor
do-PROG-3S
"Yeah, but still, everybody is watching you."

(29) *Tamil–English* (Annamalai, 1989, p. 51)
Avan enne **confuse**-paNNiTTaan
"he confused me"

Mapping EL thematic roles onto ML predicate–argument structure

Data from Xhosa–English CS in Africa show that in some contact situations, English verbs are integrated into Bantu grammatical frames by adding of one or more verbal extensions that overtly mark the verb as transitive, as they are in the ML. That is, the valence of verbs in English as transitive or intransitive is not overt; therefore, languages such as Xhosa do not recognize it in terms of mapping thematic roles onto predicate–argument structure in. Simango (2011) reports ML verbal extensions added to English transitive verbs, further transitivizing them, as in (30) and (31) below. In (30) a causative extension is added to an English transitive verb. In (31) an applied extension is added to an English transitive verb. Such examples further show that while conceptual structure of the EL verb is available, the EL verb does not project and overtly mark predicate–argument structure. Instead the ML projects the predicate–argument structure and maps it onto the morphological realization patterns.

(30) *isiXhosa–English* (Simango, 2011, p. 131)
Ngubani oyena mntu okanye eyona **celebrity**
u-yi-**admire**r-ish-a-yo?
"Which other person or another celebrity do you admire?"
u-yi-**admire**r-ish-a-yo
2S-3S-admire-CAUS-FV-REL
"whom you admire"

(31) *isiXhosa–English* (Simango, 2011, p. 132)
u-bukel-e i-**TV** kanye u-**visit**-el-e
2S-watch-FV CL9-TV or 2S-visit-APPL-FV
ii-**friends** zakho
CL10-friends CL10.your
"Do you watch TV or visit your friends?"

Examples such as these show that, more than lack of congruence of directionality of argument structure or case assignment, it appears that the psycholinguistic processes involved in codeswitching simply inhibit checking and also production of EL processes beyond the level of lexical-conceptual structure.

Conclusion

In summary, the discussion here offers an explanation for the EL verbal structures that are identified in this paper as occurring in mixed constituents in the bilingual CS clause. It does this by looking at CS from the standpoint of abstract levels of lexical structure and production costs, and this changes our view of where explanations can be found. The basic claim is that the limited structural role and the nonfinite nature of EL verbs that appear in bilingual clauses prevent costly competition with the ML in these clauses. Not just EL nouns, but also nonfinite verbs, carry desired meanings without impinging on the ML's grammatical procedures. That is, nonfinite verbs differ from finite verbs, whose levels of predicate–argument structure and morphological realization patterns are always available to participate in the grammatical frame. Those levels are not salient in nonfinite verbs. Another way of looking at this analysis is to recognize that it explains the lack of bilingual clauses with EL late system morphemes that indicate dependency relations in grammatical structure. That is, EL finite verbs do not occur, and the role of indicating dependency relations is reserved for the ML (compare the MLF model and the USP, the latter of which preferences ML structure).

Initially, explaining how EL verbs fill the role of finite verbs in the ML frame was not obvious because CS language pairs employ many different morphosyntactic strategies to integrate verbs. However, a commonality of the insertion of all nonfinite forms and "do" verb constructions is that the various strategies allow for

EL nonfinite verbs that provide lexical meaning to be integrated into the ML grammatical frame. Either the form of the EL verb is nonfinite or ML morphology is added to an EL verb that allows it to be integrated into the ML frame. For example, a Hungarian verbalizer marks English verbs so they can be inflected in the same way as Hungarian verbs. Similarly, adding the Mosetén *-yi-* to a Spanish infinitive integrates the EL verb sufficiently so that the ML frame can inflect it. What may be considered compromise strategies (e.g. the "do" construction) appear to occur where mapping of predicate–argument structure and inflections, such as case, would be problematic, perhaps in terms of directionality of mapping. Like "do" verbs, Bantu verbal extensions are a transparent strategy accommodating the mapping of EL thematic roles onto the predicate–argument structure of the ML.

However, a key to a common explanation for these diverse strategies is recognizing that, at the abstract level, nonfinite verbs do not undergo congruence checking with the requirements of the ML frame. That is, the thematic roles of the EL verb are checked at the level of the conceptualizer so that they satisfy the speaker's intentions; however, how the thematic roles are mapped onto ML predicate–argument structure, and, further, how this argument structure is realized in the inflectional morphology of the ML, is not checked. This means that congruence checking is only at the conceptual level for EL verbs because they are nonfinite. This argument has been supported by data from typologically diverse language pairs in which EL verbs do appear in ML frames. Still, the proposed analysis does not provide the kind of evidence that controlled psycholinguistic experiments might offer about actual time comparisons between instances of inflected ML verbs vs. EL verbs in a frame of ML inflections, or EL nouns in mixed NPs vs. EL nonfinite verbs with ML inflections; psycholinguists may be able to offer more innovative experiments that consider data that approximate naturally-occurring CS.

One consequence of our analysis of the insertion of nonfinite EL verbs in mixed constituents is that it predicts limited congruence checking for all inserted EL lexemes. For example, we have suggested that to explain why costs of all CS seem to be low, including costs of insertion of EL verbs in bilingual constituents, only lexical-conceptual structure of the EL lemma is checked. Other features directing mapping of structures at the levels of predicate–argument structure or morphological realization patterns are not checked; instead, they follow from ML processes directing these aspects of abstract lexical structure. This results in two phenomena. First, EL morphosyntactic processes are inhibited. Second, ML processes provide the requisite ML system morphemes. One specific hypothesis is that in CS within a clause, only EL verbs which are nonfinite occur in an ML frame.

From the psycholinguistic point of view, what is attractive about this analysis of how EL verbs are integrated into ML frames is that it supports claims about flexibility in the cognitive structure. This suggests that the bilingual can fine tune his or her cognitive control of both languages. In terms of the production model, the bilingual's intentions and cognitive control have automatic consequences regarding how languages participate in the bilingual clause. Once lexical-conceptual structure has activated a verb lemma, the division of labor between the ML and the EL automatically determines which language can inflect the verb, free of cost.

Thus, the puzzle of "rapid, apparently effortless" speech when speakers are engaged in CS is partially solved. The varied ways EL verbs can be modified to satisfy an ML frame depends on their structure at an abstract level, but it also depends on a certain malleable quality in the abstract nature of the ML frame itself that allows it to accept EL elements. That is, the morphosyntactic structure of the ML is shown to be very flexible in regard to the nature of EL elements it can accommodate, advancing our understanding of CS in general. "The key to any advance is to be able to explain the complex visible by some simple invisible" (Carroll, 2013, citing Nobel physicist Jean Baptiste Perrin).

Abbreviations in glosses

As much as possible, we have preserved the glosses that the author(s) included with the example. Where there are no glosses, the author(s) did not supply any.

1, 2, 3	first, second, third person
ACC	accusative
AOR	aorist
APPL	applied
ASSOC	associative
AUX	auxiliary
CAUS	causative
CL	noun class [+number]
COM	comitative
COMP	complementizer
COMPAR	comparative
COND	conditional
CONSEC	consecutive
COP	copula
DAT	dative
DET	determiner
F	feminine
FUT	future
FV	final vowel
HAB	habitual
INDEF	indefinite
INF	infinitive
LOC	locative

M	masculine
NEG	negative
NONPST	non past
OBJ	object
P, PL	plural
PASS	passive
PERF	perfect
POT	potential
PRET	preterit
PROG	progressive
PAST, PST	past
RECIP	reciprocal
REFL	reflexive
REL	relative
S	singular, subject
TP	topic marker
VBL, VBZ	verbalizer

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