Categorial equivalence, Selection and Code-Switching

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Abstract

In the literature on the grammar of code-switching, linear equivalence, as exemplified by the Equivalence Constraint, has received most attention with alleged counter-examples. On the other hand, categorial equivalence---the idea that the category of a code-switched element is the same as a non-switched element which would make up an otherwise monolingual sentence---has been seldom examined and it does not seem to meet with so many exceptions. Although the idea has been implicit in most earlier syntactic/processing models of code-switching (e.g. Joshi 1985, Sridhar and Sridhar 1980), these models are based on a Matrix Language/Embedded Language distinction which are not optimal in the light of the recent Null Theory (Mahootian 1993, MacSwan 1999, Chan 2003). The objectives of this paper are fourfold: First, it is argued that categorial equivalence is much more powerful than linear equivalence in accounting for code-switching data. Second, categorial equivalence is reduced to a generalized selection constraint which does not necessitate a Matrix Language/Embedded Language distinction and perhaps other principles governing their behaviour (e.g. such as those in the Matrix Language Frame Model). Third, some apparent counterexamples are explained with reference to this selection constraint. Fourth, implications of this constraint on syntactic/linguistic theory will be discussed. Some recent criticisms against the grammatical approach to code-switching (Gardner-Chloros and Edwards 2004) will be addressed as well.

Keywords: code-switching, categorial equivalence, selection, The Null Theory, Matrix Language, Embedded Language

1. The grammar of code-switching, linear equivalence and categorial equivalence

1.1 The grammar of code-switching (cs)

After several decades of research there is still no consensus as to whether there are grammatical constraints on code-switching, what the constraints are, and whether these constraints, if any, are universal. An additional concern, for some, is how to represent these constraints in a most economical manner. Criticisms of the grammatical approach to code-switching include: (Bokamba 1989, Gardner-Chloros and Edwards 2004)

(i) constraints proposed have often met with counter-examples from other language-pairs
(ii) constraints, mostly generalized from performance data, are difficult to test because of unreliability of judgment on cs
(iii) constraints ignore the social/pragmatic motivations for cs

Defence of the grammatical approach to cs includes:

(i) Recurrence of code-switching patterns in datasets suggest that cs is rule-governed, even though these patterns may be different across communities (Muysken 2000), generations (Bentahila and Davis 1992) or proficiency levels (Toribio 2001)
(ii) Universal constraints are not totally inconceivable: For instance, after surveying various language-pairs, Chan (2003, 2005) concluded that the language of functional categories has to determine the word order of its code-switched complement.
(iii) The fact that cs is syntactically patterned or constrained is no denial of cs being prompted by social/pragmatic/conversational factors.
(iv) CS does not destroy or "blow up" grammatical structure, resulting in some sort of "wild grammar" (Chan 2003, Toribio 2001).

To quote Myer-Scotton (1993), "[t]here are no cs utterances with 'helter-skelter' constituents" (Myers-Scotton 1993: 69)

The central question this paper investigates is as follows:
How do we account for (iv)? What is the bottom line which cs has to meet despite all its creativity and variability? In other words, is there any pattern that cs cannot produce?

It has to be reminded that answers to these questions may not be very useful in accounting for why code-switching takes place in the first place; rather, they aim to account for what cs patterns are allowed and, hopefully, to shed interesting insights into the structure of the (bilingual) language faculty.

1.2 Linear equivalence

The notion of **equivalence** in code-switching has played a crucial role in the grammatical studies of code-switching: CS does not appear anywhere in a sentence; it can appear at points where the two participating languages have some "**equivalence**".

There have been two versions of equivalence in the literature. One version is **linear equivalence**: CS can appear at points where the linear order of the constituents is the same. Linear equivalence has been captured by The Equivalence Constraint (Poplack 1980, Sankoff and Poplack 1981)

(1) The Equivalence Constraint (Poplack, 1980: 586)
"Code-switches will tend to occur at points in discourse where juxtaposition of L1 and L2 elements does not violate a syntactic rule of either language, i.e. at points around which the surface structures of the two languages map onto each other."

The Equivalence Constraint has been frequently discussed since its appearance: from Nartey (1982) to MacSwan (2000). Counter-examples against the Equivalence Constraint have been cited in many language-pairs. Major types of counter-examples include the following patterns:

(i) CS between Adjective and Noun where the two languages have different Adj N order. (Santorini and Mahootian 1995, Mahootian and Santorini 1996)
(ii) CS between Verb and Object NP/DP where the participating languages are OV and VO. (Clyne 1987)
(iii) CS between Adposition and its Object NP/DP where the participating languages are prepositional and postpositional. (Nishimura 1997)

Nonetheless, we may note that certain datasets do comply with the constraint, including Poplack (1980) and Clyne (1987)

These problems of The Equivalence Constraint have so far elicited two kinds of responses:

(i) The exceptions are not genuine instances of code-switching; they are examples of "nonce borrowing". Objections have been raised against a clear-cut distinction between "code-switching" and "nonce borrowing." (Myers-Scotton 1993, 2002)
(ii) Linear equivalence does hold for certain datasets of code-switching or it may facilitate code-switching in certain bilingual communities: Muysken (1997, 2000) considers linear equivalence to be an important criterion for alternation, one of the strategies bilinguals may adopt for code-switching.

In any case, linear equivalence does not hold as a universal constraint on code-switching, at least, before those putative counter-examples can be independently justified as instantiations of a completely separate language contact phenomenon (i.e. "(nonce) borrowing").

1.3 Categorial equivalence

Having concluded that linear equivalence hardly holds as a universal constraint on code-switching, one may come up with the next question: What about a weaker notion of equivalence such as "categorical equivalence"? Is it likely to hold across more datasets and perhaps universal? Let's first define **categorical equivalence**.

(2) Categorial equivalence A code-switched constituent is of the same syntactic category (e.g. noun, verb, adjective, noun phrase, verb phrase, etc.) as a putative non-switched constituent which would make up a grammatical monolingual sentence

The notion seems to have been inadequately discussed, particularly in comparison with The Equivalence Constraint which implies linear equivalence (exceptions being Muysken 2000, Winford 2003).

I suggest that there are strengths of categorial equivalence over linear equivalence as a better candidate for being a universal constraint on cs. These strengths are:

(i) It covers the examples and most (if not all) counter-examples of linear equivalence (i.e. The Equivalence Constraint), as linear equivalence subsumes categorial equivalence (Muysken 2000). (There are instances where replacing the code-switched constituent by an equivalent one still yields the wrong word order, but let's put aside the issue of word order for the time being)

(ii) Intuitively, there are not a lot of counter-examples to categorial equivalence, at least fewer than The Equivalence Constraint.

Most previous proposals on the grammar and processing of code-switching also presume categorial equivalence, but they take the notion for granted and did not explain why it is the case. In addition, they impose some more constraint on top of categorial equivalence (for example, a "switched" element is congruent with its Matrix Language counterpart on semantic and morphological grounds as well, as conceived in The Matrix Language Frame Model—Myers-Scotton 1993, 2002, see below.)

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2. "Matrix Language" accounts and The Null Theory

2.1 "Matrix language" accounts

Making reference to an "imaginary" non-switched constituent somehow renders the notion of categorical equivalence easily expressible in terms of a "Matrix Language" account. That is, The Matrix Language provides the tree or structure, but the terminal nodes can be filled by lexical elements from The Matrix Language and The Embedded Language, resulting in code-switching.

In Sridhar and Sridhar (1980) the embedded language items may be multi-word phrases formed in accordance with embedded language grammar. However, these "guest

constituents" have to be checked against the node (e.g. NP, VP) in the matrix structure when they are embedded into it.

In Joshi (1985) the matrix language provides the sentence structure under which all categories can be switched to the embedded language except the root node S and close class items.

In "The Matrix Language Frame Model" (Myers-Scotton 1993, 2002), categorial equivalence appears to be taken for granted for code-switching to occur. However, certain categories are forbidden:

(i) system morphemes (mostly function words) from The Embedded Language, as stipulated by The System Morpheme Principle.
(ii) some content morphemes (roughly content words or lexical categories) from EL which are not congruent enough with their counterparts in ML either semantically, syntactically or morphologically. This idea has been captured by **The Blocking Hypothesis.** This does not imply that "incongruent" EL content morphemes cannot appear, but there are other consequences, i.e. "compromise strategies" (See details in Myers-Scotton 1993, 2002).

The formidable challenge I would like to take up in this paper is: Is it possible to eliminate the role of the "matrix language/embedded language" distinction and yet capture categorial equivalence?

2.2 The Null Theory

According to the recent **Null Theory** (Mahootian 1993, MacSwan 1999, 2000, Brian Chan 2003), code-switching is accounted for by constraints or principles which also apply to monolingual contexts. No constraint specific to code-switching is needed. Motivations of this theory are twofold. One, theoretical economy: consistent with the traditional argument of The Occam Razor, the more economical theory is to be preferred without loss of empirical predictions (Mahootian 1993, MacSwan 1999). Two, cognitive economy (Chan 2003): language faculty would be unnecessarily complicated if there is a grammar whose function is to constrain the structure of code-switched sentences only,

One consequence of The Null theory is that the "Matrix Language" accounts invoke principles governing code-switching specifically—namely, principles of hypotheses stipulating the roles of the Matrix Language and the Embedded Language in code-switching. Recently, MacSwan (1999, 2000), in the minimalist spirit (Chomsky 1995), has proposed that lexical items can be drawn from either lexicon of the participating languages in the syntactic component as long as the derivation does not crash. What does this imply?

I think there are two testable hypotheses can be drawn following MacSwan's ideas. The first hypothesis is that code-switching may take place if selectional restrictions of heads are satisfied; these restrictions include lexical selection—i.e. selectional restrictions of lexical heads—and functional (f-)selection—i.e. selectional restrictions of functional heads. Let's name this idea as **The Generalized Selection Constraint (GSC)**

The second hypothesis is that code-switching may take place between adjuncts and heads

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3. The Generalized Selection Constraint

3.1 The Subcategorization Constraint

The idea of GSC originates from Woolford (1983) and Bentahila and Davis (1983) who suggested that the subcategorization restrictions have to be respected in order for cs to take place, and hence GSC has the empirical support of their data.

The term "subcategorization" had better be revised to "selection": The former originally refers to the selectional properties of verbs only (Chomsky 1965), but "selection" covers the complement-taking ability of a lexical or functional head.

3.2 The Government Constraint and The Functional Head Constraint

The conclusion that cs may takes place between a complement and a lexical or functional head can be drawn from previous discussions of The Government Constraint (Di Sciullo, Muysken and Singh 1986) and The Functional Head Constraint (Belazi et al. 1994). The Government Constraint disallows code-switching between a lexical head (e.g. V or P) and the "highest" functional element of its complements. Code-switching between this functional element (e.g. a D-element) and its complement (e.g. NP) is nonetheless allowed. On the other hand, The Functional Head Constraint (Belazi et al. 1994) forbids code-switching between a functional head and its complement, but code-switching between a lexical head and its complement is allowed. It is hence interesting to see that The Government Constraint (Di Sciullo et al. 1986) and The Functional Head Constraint (Belazi et al. 1994) make conflicting empirical claims.

In the literature there have been data in which code-switching takes place between a lexical head (e.g. V) and its complement (e.g. DP). There are also data in which code-switching takes place between a functional head (e.g. D) and its complement (e.g. NP).

Taking into consideration both sets of data, one may conclude that code-switching may take place between a lexical head and its complement; and it may also take place between a functional head and its complement. It is likely that code-switching is not constrained in head-complement relationship. Nonetheless, it may be necessary that the right kind (i.e. category) of sentence constituents—no matter from one language or two languages—have to be involved (Chan 2003),

3.3 S-selection or c-selection?

One important issue remains: Does GSC refer to **s-selection** or **c-selection**? It appears that in the majority of cases both c-selection and s-selection are satisfied as well when they take a code-switched complement

D-element (selecting an N/NP)
(3) It has got [a]$_{\mathbf{D}}$ [munDi]$_{\mathbf{NP/N}}$
It has got a lid
"It has got a lid."
(English-Tamil, Sankoff, Poplack and Vanniarajan 1990: 85, (24))

I-element (selecting a V/VP)
(4) [Don't]$_{\mathbf{I}}$ [tambae pyo]$_{\mathbf{VP}}$
don't cigarette smoke
"Don't smoke cigarettes."
(English-Korean, Nishimura and Yoon 1998: 127, (11d))

There are, however, some instances where c-selection seems to be relaxed but not s-selection. This happens when a head takes a complement which is a "functional projection" (Grimshaw 1991, i.e. DP/PP/IP/CP).

Verbs
In the following example, for instance, the subcategorization or c-selection of a verb is apparently violated:

(6) Watashi wa **Waseda (o)[1] graduate** shimashita
I TOP Waseda ACC graduate did
"I graduated (from) Waseda University."
(Japanese-English, Azuma 1993: 1080, (27b))

The verb "graduate" would take a PP complement in English (i.e. "*from DP"*); however, it selects an NP/DP complement in the code-switching example (ie. (6) above). Azuma (1993) explains that the Japanese counterpart "sotsugyoo" of "graduate" is nonetheless observed.

(7) **Boston ni hit**-shita toki ka
Boston P hit PAST time
"The time when we hit Boston…"
(English-Japanese, Nishimura 1985: 104, (14))

Example (7) looks very similar if not identical to example (6): In this instance of code-switching, the English verb "hit" selects a PP complement (i.e. "Boston ni") but it would select an NP/DP complement in English. It looks likely that the PP is required by the Japanese counterpart of "hit".

There are two possibilities as to how to explain (6) and (7)

(i) The selectional (i.e. case/theta) properties of the "matrix language" verb are followed. Notice that this may be seen as some sort of "interference" without the need to bring back the whole MLF Model with all its subsidiary principles and hypotheses.

(ii) A more radical proposal: The preposition is a grammatical marker of the NP/DP complement, and so the PP is an extended projection of NP/DP bearing an [+N] feature (Grimshaw 1991). This also implies that P is a grammatical or functional

category, a position which has received independent evidence from Froud (2002), Baker (2003) and Brian Chan (2003, 2005).

Nouns

Take the standard assumption that nouns in English canonically select PP complements which follows the head nouns. In Cantonese-English code-switching, however, the "switched" argument s-selected by the noun only appears as a DP.

(8) go3 program ho2 ji5 waak6 chemistry leoi4 min6
CL program can draw chemistry in
[**jat1 di1 molecule**]$_{DP}$ ge3 [**structure**]$_{N}$
one CL molecule LNK/D structure
"With the (computer) program, (you) can draw **the structures of some molecules** in Chemistry."
(Cantonese-English, Chan 1992)

Preposition

In (9), the English prepositions "for" takes a code-switched complement which lack an article required in English. This complement may well be a DP (with a null D) or KP (with a null K) which is different from an English DP where (in)definiteness is syntactically represented.

(9) She bought it **for omiyage**
she bought it for souvenir
"She bought it **for a souvenir**."
(English-Japanese, Nishimura 1997: 119, (8b))

Complementizer

Assume that sentences project to different kinds of IP in various languages. Cantonese and other Chinese languages/dialects, for instance, project AspP (Aspect phrase—Cheng 1991) whereas English projects TP (Tense Phrase). It turns out that a Cantonese C-element (taking a propositional complement) may take an English TP.

(10) I can promise that the food is very good **aa3**
I can promise that the food is very good PRT/C
"I can promise that the food is very good, I assure you."
(English-Cantonese, Leung 1987: 109, (13))

The fact that c-selection may be suspended in the above cases suggests that the code-switched complement (e.g. PP/DP/KP/AspP/TP) can project into a "functional projection" different from the language of the head. This is consistent with Levelt's (1989) "Speaking' Model" and other production models in which the realization of argument structure (i.e. s-selection) is a process separate from the retrieval of functional categories

The conclusion to make is that we had better take the GSC as referring to s-selection.

4. Conclusions and remaining problems

Code-switching may take place as long as lexical elements from different languages enter into the correct grammatical relations. Previous proposals which forbids code-switching in certain grammatical relations (e.g. government, f-selection) have been found too restrictive and perhaps specific to certain bilingual groups.

Categorial equivalence may well be the "bottom-line" which cs, despite all its variability and creativity, cannot transgress. In this light, most previous proposals which pose constraints tighter than categorial equivalence may well be specific to certain bilingual groups and hence relative, lending further support to Muysken's (2000) proposal.

Categorial equivalence can be seen as the consequence of selectional properties of lexical or functional heads being satisfied, hence eliminating the need to posit the Matrix Language/Embedded Language distinction and other related principles stipulating their roles in code-switching. Some data suggest that for certain categories (e.g. "verb") c-selection is not always observed but s-selection has to be conformed to. Let's say that this constraint is called the **Generalized Selection Constraint/GSC**.

According to **The Strong Minimalist Thesis** (Chomsky 2001), there are no s-selectional restrictions in Computation; s-selection as part of interface conditions imposed by the Semantic Component (SEM). If this was indeed the case, The GSC and its effects are derived from inter-face conditions rather than the syntax proper. The consequence is that GSC is not exactly a syntactic constraint on code-switching. The remaining issue to investigate, as far as the syntax of code-switching is concerned, is word order (see Chan 2003, 2005 for an account).

As far as code-switching of specifiers (subjects) or adjuncts (adjectives and adverbs), the Null Hypothesis---which is to be confirmed---is that they are allowed in principle. The literature appears to lend preliminary support to this hypothesis:

(i) Code-switching between subjects (IP/TP specifiers) and predicates (Gumperz 1982)
(ii) Code-switching between attributive adjectives (adjuncts or specifiers) and nouns (Santorini and Mahootian 1995, Mahootian and Santorini 1996)
(iii) Code-switching of PPs or adverbs. (Pfaff 1979)

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