SPANISH-ENGLISH LANGUAGE SWITCHING IN SPEECH AND LITERATURE: THEORIES AND MODELS

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Language switching among Spanish-English bilinguals living in the United States is one of the most salient characteristics of this speech population and has been the subject of comment and research by educators, psychologists, linguists, anthropologists, and literary investigators. Originally, before critical focus was directed at this phenomenon, language switching (later to become known as "code-switching" was taken as evidence for internal mental confusion, the inability to separate two languages sufficiently to warrant the designation of true bilingualism. With the advent of interest in sociolinguistic and ethnolinguistic investigations of non-prestige groups, code-switching became the object of scientific scrutiny, with the unsurprising result that it was shown to be governed by a complicated and as yet not fully delimited set of constraints, indicating a complex and structured interaction between the two languages in the internal cognitive apparatus of the bilingual—a far cry from the anarchical confusion postulated previously. At present, scholarly interest in bilingualism is high and code-switching, particularly between Spanish and English, is an almost constant topic of discussion.

Many states are under a mandate to provide bilingual education for language minorities and in the concomitant process of determining language standards for classroom use the problem of language mixture continues to appear, often encumbered by a clutter of anecdotal, misleading, and incomplete descriptions that reflect ignorance, prejudice, and disinterest. Despite this almost overwhelming diversity of motivations for directing attention to bilingual language switching, certain common denominators may be extracted, which promise both immediate and long-range dividends for research scholars and educators alike, and as such are worth comparing.

It is the purpose of this article to offer an appraisal of the major research strategies affecting the linguistic study of Spanish-English code-switching, which have implications for the determination of the linguistic competence of bilinguals and the manner in which the two languages are represented in the cognitive apparatus. Particular emphasis will be placed on the potential benefits of work currently in progress, by both the present writer and other investigators who have dedicated themselves to the study of bilingual code-switching.

Code-switching provides evidence on two interrelated planes: linguistic and psychological. The latter includes the situational variables that permit a switch to occur, while the former includes the linguistic factors that facilitate the switch and the precise form that a switched utterance takes. An additional dichotomy is the study of language switching in the spontaneous speech of bilinguals and switching as reflected in written documents in which it becomes a literary device; this is found most frequently in the works of certain contemporary United States Hispanic writers. An analysis of written code-switching may be of great value in tracing the psychological variables that come into play and promises to provide a broader perspective on the affective values of language mixing.

It is obvious that language switching in literature is not the result of confusion or inability to separate the languages, but rather stems from a conscious desire to juxtapose the two codes to achieve some particular literary effect, which in turn presumably reflects an inner drive that

cannot find ready expression by remaining within a single language. On the other hand, because of the very fact that written documents, particularly those classed as literary, involve not only conscious reflection but also the inherent correction, editing, and rewriting process that accompanies any act of writing, it cannot be claimed that such texts may be used as specimens of naive, spontaneous linguistic production. That is, writing involves a clear exercise of self-consciousness,[1] comparable to the self-consciousness in speech found in certain stressful situations (interviews, television announcements, etc.), and therefore does not represent the uncontaminated output of the internal linguistic mechanisms of the speaker. Although such edited phrases may be closer to the linguist's notion of "competence" in the theoretical sense, they provide only a limited amount of usable data about the active and passive filtering mechanisms in the cognitive apparatus, which account for the vast jumble of mixing, analogy, slips, and other forms of linguistic *bagasse* that theoretical linguists write off as "performance phenomena," but which, like the anomalous functioning of any mechanism, often provide the only insight into the internal workings of the bilingual brain.

Despite the obvious methodological imitations inherent in the use of literary examples of code-switching, such examples have received a great amount of attention due to the interlocking and overlapping domains of study represented by linguistic and literary analysis. In an attempt to incorporate the corpus of literary bilingual code-switching into the scope of theoretical discussions, two questions must be addressed. The first concerns the extent to which code-switching in literature (or, in general, in any written format) is truly representative of the speech norms of the linguistic community it purports to represent. The second question is the potential value that may accrue to literary code switches that are manifestly deviant from observed societal norms. Although no one has claimed that written texts are equivalent, as sources of theoretical data, to spontaneous spoken utterances, there is nonetheless a vast amount of linguistic, psychological, and aesthetic information to be obtained from a careful consideration of code-switching in its written form.

Remaining within the domain of English-Spanish alternation, one finds the majority of such linguistic behavior in the literature of United States Hispanics of Mexican and Puerto Rican origin. Within these groups, literary code-switching is most common in poetry, less so in narrative, and least frequent in essays, although individual exceptions may be found. A key feature of such bilingual code-switching writing is that it presupposes a readership not only capable of understanding the texts, but whose own linguistic behavior in some way is reflected by the language of the texts. Mere comprehension is not sufficient, although it is necessary for the literary aims to be achieved. For example, E. Díaz-Valcárcel's *Figuraciones en el mes de marzo* contains much pseudo-code-switching material and neologisms formed on English patterns that could be understood not only by Puerto Ricans living in the United States, but also by those in Puerto Rico itself and by most other readers who know both Spanish and English. Similarly, *Se está haciendo tarde (final en laguna)* by the Mexican novelist José Agustín, contains a humorous mixing of English and Spanish which reflects the speech habits of few if any speakers of any known language and yet is readily understood by those familiar with both colloquial Mexican Spanish and colloquial American English.[2]

Bilingual writers themselves come from linguistic communities where code-switching is the norm, at least in everyday speech contexts. It is therefore legitimate to search for examples of linguistically valid alternation in the literary output of such writers, albeit tempered by the self-consciousness and self-editing feedback mentioned above. It is a mistake, however, to assume automatically that all examples of code-switching in literature, especially in poetry, in fact represent specimens likely to be spontaneously produced in a normal nonliterary environment. A careful examination of literary code-switching reveals that many, if not most examples—

particularly in bilingual poetry—represent configuations that would be most unlikely to occur spontaneously in unreflective speech.

Keller (1979: 268) defines two assertions with respect to literary code-switching. The stronger assertion, which would be most difficult to sustain, is that all literarily acceptable code-switching would need to sound natural to the members of the bilingual community. The weaker assertion, which Keller prefers, allows for the literary acceptance of code switches that create "powerful bilingual images" and sound acceptable to members of the bilingual community, even though in active speech production such forms might never occur. Keller thus proposes to extend the analyses of Valdés-Fallis (1976a, 1977), who places more emphasis on the application of the strong hypothesis—that is, deviations from societal norms in code switches detract from literary value. Although Valdés does not actually demand the application of the stronger hypothesis, she does include it in the criteria for literary evaluation of bilingual poetry.

An evaluation of the accuracy of literary code-switches is difficult to make, since the only method of verifying the existence of such a form in the bilingual community, other than the fortuitous circumstance of finding a pre-existent example in another linguistic corpus, is to present the literary examples to members of the speech community for approval, asking them in effect if they sound like something they or their acquaintances might say.[3] Such a methodology is notoriously inaccurate, as any investigator who has done field work will testify. On the one hand, some speakers will not admit to language switching, even if such usage forms part of their linguistic behavior. On the other hand, a large number of speakers will accept, in passive recognition tests, material that deviates substantially from observed norms of the linguistic community.

When presenting passive acceptance items to linguistically naive subjects of any language, it is not uncommon for the speakers to accept as "correct" anything that they can reasonably understand, regardless of appropriateness, commonness, or regional applicability. In practice, each investigator of bilingual code-switched literature has employed personal criteria of acceptability, perhaps obtaining additional verification from friends or colleagues. As a result, except for very broad categories, which verge on being truisms, there is no accurate measure of the extent to which code-switched literature deviates from societal usage. This alone might be sufficient reason for according to literary examples of code-switching a position subordinate to, or at least secondary to, spontaneous spoken utterances in the context of writing theoretical grammars. It is only by extrapolating from established corpora of spontaneously produced utterances that linguistic criteria applicable to literature may be derived; to proceed in the opposite direction is to put the cart before the horse.

In accepting the caveat that literary examples do not necessarily reflect societal usage in spontaneous speech contexts, one still faces the thorny and philosophically tangled problem of the relationship between literary norms, aesthetic values, and grammars of natural languages. Keller and Valdés speak of the redeeming value of "powerful bilingual images" which may be formed from code switches that are deviant with respect to actual usage. Defining precisely what is meant by a powerful bilingual image and how to recognize one if it occurs constitutes the key difficulty in spanning the gap between linguistic analyses of literary texts and linguistic analyses of natural language texts. Keller (1979: 270), elaborating upon the work of Russian formalists and New Critics, states that "literary texts . . . while they may be related to contexts, are separate from them. They are complete in themselves, and their textual significance is accordingly enclosed within the limits of the form they take." Expanding upon this notion, he further remarks (p. 275) that "the literary texts create a secondary language system that is the result of organizing deviations from the communal language into patterns that are critically discernible in those very texts . . . the text subsumes, or rather replaces, the functions of what in sociolinguistics would be distinguished as code and context."

Keller (1976, 1979), Valdés-Fallis (1975, 1976a, 1977, 1978), Timm (1978), and others who have applied linguistic criteria to literary code-switching are certainly correct in maintaining that one is first and foremost confronting an aesthetic artifact, which must be evaluated as such and not solely as a natural language text. However, one must not seal off the literary artifact entirely from sociolinguistic criteria, for to do so would be to create the paradoxical configuration of two grammars, one for literature and one for normal speech contexts, with readers (who are assumed to possess perhaps only latent abilities as literary writers) somehow bridging the gap between the two grammars in order to relate the literary message to the environments in which they live. Even in cases of highly deviant poetry (for example, the texts of e.e. cummings, Dylan Thomas, and James Joyce), it is difficult to justify the existence of an entirely separate literary grammar to generate the texts in question.[4] In the case of bilingual literature (poetry or prose), which comes much closer to societal norms, such a contention would be almost impossible to sustain seriously. Only in exceptional texts, usually parodies or highly experimental works, could a truly separate "deviant" grammar be postulated, but such a grammar would serve only to generate the text that spawned it and could not be used to characterize a wider range of literary examples.

The Russian formalists provide a pathway out of this dilemma and several investigators have taken up the theme of foregrounding. Keller (1979: 283) has presented this matter most explicitly, stating that "the very act of switching from one language to another constitutes a radical moment of foregrounding ... code-switching is so radical a phenomenon that in itself it constitutes foregrounding." Armed with this criterion, Keller postulates that literary code-switches are valid to the extent to which the foregrounding implied by the switch is justified in terms of other literary parameters. This characterization, while deceptively simple, is both concise and definitive, providing it is tempered by some restraints. First of all, it must be borne in mind that it is the switch itself, that is, the dynamic act of changing, that constitutes the foregrounding and not necessarily the particular choice of languages involved nor the direction of the switch (i.e., English to Spanish or Spanish to English). The majority of investigators of bilingual Spanish-English literature have attempted to attach literary and sociological significance to the absolute language categories of lines of poetry, the fact that a given line is in Spanish or in English. In the examples cited as evidence, it is possible to postulate a definite literary value for the choices involved, but this is not axiomatic. Indeed, in examining specimens of spontaneous code switches it is often difficult to discern a valid reason and many speakers are unaware of having switched even when the alternation is pointed out to them.

Jacobson (1978a: 21), in defining a set of criteria which allow for code-switching, establishes the catchall category of "preference," which must be applied when no other reason is apparent. The literary value of code-switching is largely one of relative weighting, the proportion of Spanish to English in the entire text and in the immediate context of the switch. It is the tension represented by the difference that is more significant, from both a linguistic and a literary point of view, than the specific choice of languages, although clearly such choice is far from arbitrary. As long as foregrounding is taken to mean foregrounding of the switch, the act of transition, and an underscoring of the fact of membership in a bilingual community, then the above characterization is unobjectionable; indeed, it is admirable. One must be wary, however, of confusing language switching with choice of languages, since the two factors, although related, are nonetheless distinct.

Another caveat involves specifying the exact moment of the switch. As will be detailed below for examples derived from spontaneous speech, it is quite difficult and sometimes impossible to precisely describe the points at which a switch will occur, other than in general syntactic/semantic terms.[5] Much work has been done to determine syntactic criteria for

intrasentential switches and the results seem to indicate a considerable latitude of variation. Only the construction of a bilingual grammar ultimately holds the possibility of a truly complete linguistic explanation. On the other hand, the pioneering work of Keller, Timm and Valdés points the way toward a text-grammar or pragmatics of intersentential literary code-switching, an establishment of criteria and values for assigning entire sentences to distinct languages.

Keller's explanation of foregrounding must also be supplemented by a distinction between intersentential code-switching, where a complete logical proposition is being highlighted, and intrasentential code-switching, where the fact of a bilingual grammar rises to prominence. There are three categories to be defined, each of which presupposes a different series of linguistic, psychological, and sociological connotations. Type I is the monolingual text, perhaps with a handful of L_2 words thrown in for flavor. Much Chicano and Boricua poetry written entirely in English falls into this category and does not necessarily presuppose a high degree of bilingualism, although biculturalism is clearly assumed. Some writers (and readers) of such poetry speak little or no Spanish; the Spanish words that crop up from time to time are frequently common to the lexicon of most Americans and serve as cultural/ethnic markers and not necessarily as part of a well-integrated bilingual grammar.

Type II bilingual literature exhibits intersentential code switches, where entire lines of poetry or entire sentences of prose are produced in a single language, with switches occurring at phrase/sentence boundaries. This type of writing, which any type of bilingual individual may produce, including one who has learned a second language late in life, is most typical of the so-called "coordinate bilingual,"[6] who has learned each of the languages in a different setting and who therefore associates entire contexts and, consequently, entire propositions with a specific language. It is impossible, from such texts, to establish the true bilingual competence of the writer, but the fact that entire propositions are expressed monolingually indicates that the writer sees fit to separate the two linguistic and cultural domains. The work should be evaluated accordingly.

Type III bilingual literature exhibits intrasentential code switches typical of the "compound bilingual" who has learned both languages at approximately the same time and in similar or identical contexts. It is in such texts that the high degree of integration of a bilingual grammar becomes most apparent. Although the texts can be read by a wide range of bilingual individuals, they are truly representative of only a relatively small segment of the national population. Since intrasentential code switches are most closely restricted by linguistic limitations, it is in Type III literature that faithfulness to societal norms may be most easily measured. It is also here that one may most profitably apply linguistic criteria to determine the degree of integration in the writers' bilingual grammars.

In each type of text, the role of the foregrounding is different. In Type I, there is no real L_2 discourse, but merely insertion of individual items for a variety of reasons and effects. The impression is of a superposition of isolated elements. Type II offers two complete sets of logical propositions and a language switch automatically entails a shift of total domain of discourse. Type III presupposes a more or less balanced bilingual grammar, with the extent of balance being reflected by the relative proportion of discourse in each language. Although it may be possible to apply Type II criteria to the the language switches, the prime feature being foregrounded is the fact of bilingualism, the existence of a linguistic in-group in which knowledge of two languages is not sufficient to share the bilingual grammar, constructed of a finely integrated blend of the two languages. It is not coincidental that the Type III texts, which have also attracted the attention of linguists and psychologists when they occur in spontaneous speech, provide the richest and most rewarding terrain for literary analysis.

In addition to providing the basis for the study of the literary effects of bilingualism, an examination of written texts undoubtedly will reflect the major constraints governing code-switching and may be used to corroborate observations of spontaneous utterances. The data of most immediate interest to the linguist wishing to construct a theoretical competence-based model remain those representing the spoken language, which exhibits a greater diversity in terms of switching types and which presumably can be taken as evidence of the unreflective output of whatever internal linguistic apparatus the speaker possesses to store what for the linguist are two distinct codes.

One traditional approach to determining linguistic constraints on code switches has been to examine the semantic dimension, to observe in which domains switches occur.[7] Thus, for example, it may be observed that a woman will switch when talking about cooking, children, etc. A man might switch in discussions about sports, cars, women, and so forth.[8] Although apparently based on semantic criteria, it is obvious that this type of determination relies heavily on the psychological or affective domain and that it is the context and level of the conversation that facilitates language switching. A similar observation might be made in the case of diminutive suffixes such as -ito and -ico, which represent a different type of code-switching—of the stylistic or affective realm within a single language. There are obvious semantic categories that encourage (amiguito, suavecito) or discourage (*muertecita, *oceanito) diminutive suffixation, but overriding these considerations are the affective variables, which determine the appropriateness of diminutive usage in a given situation. Once again, purely linguistic criteria, although they are necessary, are not sufficient to predict occurrences of diminutive forms.

An analysis of the affective variables constraining code-switching is a necessary preliminary to any theoretical linguistic investigation, since the exigencies of natural language grammars are highly dependent on psychological factors that may, when occasion demands, override normal constraints and forge new communicative strategies. As in the case of literary examples, when investigating spoken examples of Spanish-English language variation, it is necessary to distinguish between intersentential and intrasentential switches in addition to the mere insertion of lexical items. Intersentential alternation is common in the speech of most Spanish-speaking bilinguals in the United States and the reasons for preferring one language or the other are often quite subtle and ramified.[9]

A necessary prerequisite for such dual language behavior is that the listeners are capable of understanding both languages and are willing to participate in a bilingual conversation. Thus, the presence of a monolingual speaker is usually enough to put an end to intersentential switching, while the participation of an individual who does not wish to speak in this fashion, even though he or she may have the ability (usually an older parent, relative, or neighbor), similarly reduces or eliminates casual alternation between the languages. Fantini (1978) has shown that even at a very young age (around 2 years) bilingual children can already evaluate such situational variables and act accordingly. Assuming these constraints have been controlled, the consensus of opinion is that Spanish usage, or the dynamic switch to Spanish, is fundamentally an identity marker[10] in speakers whose linguistic abilities would allow them to express themselves equally well in English. Determining the latter contingency is much more difficult in practice than might be supposed.

Early observations of code-switching, which frequently sought to belittle or mock the linguistic behavior of bilinguals, suggested that language switches, particularly from Spanish to English, resulted from lack of familiarity with a term in the first language. Later studies, which demonstrated the elaborate and systematic nature of bilingual behavior, sought to refine such facile claims of lexical and semantic inadequacy. Legitimate cases of lexical deficiency were sometimes obscured or ignored in these studies. Most contemporary investigators would

concede that lack of familiarity with a term in a given language (as opposed to the lack of existence of a technologically or culturally related term) is one sufficient cause of language switching, although it is not a necessary cause. At times, hesitating before the switch may indicate a groping for words or ideas, particularly if only a few L_2 words are inserted before returning to the L_1 discourse, but hesitation often stems from other considerations. Conversely, the mere fact that a speaker repeats something in both English and Spanish in the course of a bilingual switch does not necessarily mean that the two items are equally recoverable from the internal memory stores. It may be the case that implication relations exist, that a presentation of the word or phrase in one language is necessary in order to jog the memory to elicit the equivalent term in the other language. Examination of the speech of some bilingual speakers appears to bear out this possibility, since in a given speaker such self-translations tend to occur always in the same order, that is Spanish + English or English + Spanish.[11]

It is such considerations that led Clyne (1967) to develop the elaborate categories of "triggers," forms or configurations which lead to lexical switches. However, the fact remains that there is no ready methodology for determining the psychological motivation for any particular switch by a given individual nor is it likely that such a methodology will ever be developed, given the nature of the problem. Needless to say, it is not possible to query someone after the fact, since even if the case is remembered, chances are great that the speaker will be unwilling or unable to describe the motivation for the language alternation. This is not to say that psycholinguistic investigations of code switches should be abandoned; quite the contrary, they provide the necessary foundations for any other type of linguistic research. The problematic area resides in the impossibility of assigning unequivocal motivations to particular cases, as opposed to the elaboration of general categories and drives.

In analyses based on syntactic categories, it has been verified[12] that nouns are most easily switched, proper nouns usually somewhat more frequently than common nouns. This is understandable for several reasons. First, given the minimal inflection of nouns in English and Spanish and the great similarity in the canonical plural pattern, a borrowed noun can easily be fit into a language without dislodging any other elements or creating an incongruent sequence. Moreover, nouns, being one of the two most important categories of speech,[13] represent precisely the type of concept likely to be borrowed: a thing or idea for which a ready word may not be found in one language or which, for whatever reason, seems more appropriately expressed in one language than in the other: It is often quite impossible to determine whether code-switching has occurred in the case of a borrowed noun or whether the word has merely become lexicalized in the second language, since there is an accepted continuum between borrowing and switching. Switching is probably more common[14] and the majority of examples adduced in early studies on code-switching are of this type and hence of little value from a psycholinguistic point of view.

Of much greater interest and importance are analyses based on sentential function. For example, it is usually possible to switch at a phrase or clause boundary,[15] as in

(1) He says que viene mañana.
(2) We went downtown y entonces nos perdimos.

Within prepositional phrases switches are possible, but usually not if they will result in a three-or-more-word phrase with alternating English-Spanish constituents.[16] Thus

(3) En mi mathematics class

but not

(4) *In mi slass de mathematics

Subjects and direct objects are readily switched away from the verb, but since nouns are involved it is difficult to separate these instances from the simple borrowing of a noun. It has been suggested that, although there may exist certain specific constraints, the general constraint of code-switching is a quantitative question, that of creating too much categorical diversity in a short expanse of text, or a notion of logical coherence: closely related elements, conjoined linguistically or semantically, tend to remain in the same language.[17] Some of the suggested impossible examples (i.e., those that have been rejected by native speakers) seem to violate such general restrictions.

A more detailed approach is that of overall syntactic pattern congruence. English and Spanish share a highly similar syntactic background, both in view of their common Indo-European heritage and through later common influences. There is often complete syntactic parallelism between an English sentence and its Spanish counterpart. When radical departures do exist, they are often due to lexical differences that entail a different syntactic categorization, such as English *like* vs. Spanish *gustar*.[18] Spanish has in general a more variable word order than English and this includes the relative placement of major sentence constituents, adjectives, and clitic pronouns. English, however, has a greater liberty with respect to prepositions, relative clauses, and certain types of questions, as well as greater morphological interchangeability.

Intrasentential code-switching is one of the most striking bits of evidence in favor of the hypothesis that bilingual speakers, as least those who are sufficiently proficient in both languages to engage in spontaneous switching, have, in addition to two essentially distinct grammars, a mechanism that fully integrates the two, to the point where it becomes more useful to speak in terms of a bilingual grammar. The next step in the study of linguistic constraints on language switching therefore is to examine the overall form that sentences take in each of the two languages, since it appears that many if not most bilingual speakers form the sentences first at some abstract semantic level.[19] Haugen (1973: 530) suggested that such abstract formation may occur even before the speaker knows in what language the sentence will emerge, while Clyne (1972: 41) offered conditions where a sentence may be originally formulated in one language but produced in another. A study of the transformational structure of bilingual Spanish-English speech[20] may also indicate the transformational convergence of two lexically distinct grammars. However, abstract processing does appear to be correlated with major sentence constituents, since it can be demonstrated that switching in the middle of a major constituent renders comprehension significantly more difficult.[21]

In effect, intrasentential code-switching has served as the springboard for the formulation of various theories and counter-theories about the representation of two languages in the bilingual brain. Two competing hypotheses form the axes around which all theories are based: (1) that two distinct and entirely separate representations exist or (2) that a single, mixed, or shared representation serves the communicative competence of the bilingual speaker. Evidence has come chiefly from situations of forced code-switching in performance and responses to code-switched stimuli. In the case of forced switching during reading passages, it has been found[22] that production time is significantly increased in switched discourse, due presumably to the need to shift registers or production mechanisms, which thereby provides psycholinguistic evidence for a "language switch" or channeling mechanism.[23] Lenneberg (1967: 18) noted that the time for a regular language shift approaches the minimum threshold of speed for all language operations, while Haugen (1973: 550) noted that, "Formulation in two languages increases the uncertainty of choice and the necessity of monitoring the language tags that identify the items and rules of each language." On the other hand, most studies have shown that the reception of switched utterances when subjects are bilingual takes generally the same amount of time as monolingual material. Thus there is evidence both for a language-switching mechanism, which channels productive forces, and for a shared mechanism at an abstract level,

which does not differentiate between languages. Kolers (1966b) found that repeating a word in two languages had the same effect on perception in bilingual subjects as repeating it in the same language. Interlingual word associations produced the same results[24] and as a consequence the conclusion has been offered[25] that the entire question of polar opposites in the bilingual storage of language is probably invalid and that bilingual competence may be characterized simultaneously by a shared component and a pair of separated components.

The evidence is thus far from clear, but all signs point to the principled interaction of the two grammatical bases of the languages of the bilingual. The fact that forced switching requires additional production time is irrelevant to the degree of integration of the two grammars, since it represents an artificial situation in which additional demands are placed upon the linguistic mechanisms of the speaker. More weight should be given to the observation, repeated for several different language pairs, that the reception time of switched utterances is essentially the same as for monolingual material. This indicates that at some level of processing the two grammars are not being kept apart, but are both subject to some central mechanism for extracting the information content. A detailed examination of the syntactic structures of code-switched utterances may therefore be highly valuable in tracing the course of this bilingual processing mechanism.

In the case of Spanish-English bilinguals, several investigators have attempted to characterize bilingual intrasentential switching in terms of global syntactic patterns representing the common intersection between the two grammars in question. This has led to the suggestion[26] that in most cases when a switch occurs the portion of the sentence following the switch will have the same essential syntactic pattern in both languages. One of the first attempts at offering an explicit formulation of this constraint is found in Lipski (1977: 270):

> Given an underlying semantic representation S, let X_1 and X_2 be the actual realizations of S in [languages] L_1 and L_2, respectively. Furthermore, for any point p_n in X_n (where $n = 1,2$) let a_n indicate that portion of X_n lying to the left of p_n and let b_n be that portion of X_n lying to the right of p_n. In order to produce a code-switched utterance by combining X_1 and X_2 with a break at p_1/p_2, it is necessary that b_1 and b_2 be syntactically equivalent.

A similar suggestion was independently arrived at by Poplack (1979), namely that juxtaposing L_1 and L_2 elements does not violate a syntactic rule in either language. The above constraint accounts for the fact that, when considering overall sentence form, certain types of shifts obviously predominate over others.

If the portion of the sentence following the shift is essentially the same in syntactic terms, regardless of which language is used, then the shift can proceed as required, facilitated by whatever other psychological/affective factors come into play. Thus in

(5) My uncle Joe es (un) carpintero.

the English version of the postswitch portion would be "is a carpenter," following the same relative syntactic pattern. A similar case would be

(6) There are many families on the block que tienen chamaquitos.

where the English postswitch portion would be "who have (small) children," again following the same syntactic pattern. It is not difficult to imagine cases where such congruence would not obtain, thus in the English sentence

(7) This is the car that we were parked behind.

a switch would be nearly impossible after *that*, since in Spanish the preposition must precede the relative pronoun *detrás del cual*... A switch before *that* would be possible, since the

Spanish continuation, beginning with *detrás del cual*, or a similar variant, corresponds to a more formal but still possible English continuation, "behind which we were parked." It must be noted, however, that even where syntactic rules are not violated, as they would be in (7), syntactic parallelism of the postswitch portions favors a switch, whereas nonparallelism while not absolutely prohibiting a switch does noticeably reduce the frequency. Thus in the two English sentences

(8) My brother, who likes to play baseball, lives in Los Angeles.
(9) My brother, who lives in Los Angeles, is an accountant.

the first sentence would less frequently be shifted after *brother*, since the Spanish continuation using *gustar* diverges from the English pattern, while in (9) the Spanish *que vive en Los Angeles* is identical to the English version and would therefore be more frequently shifted.

Observations of actual specimens of code-switched material bear out these hypotheses. In other words, code-switching seems to depart from a sort of shadowy version of overall sentence pattern or at least of the constituents immediately following the point of the switch. If the alternative sentences would take approximately the same form in both languages, a switch may occur, while if a radical syntactic departure would quickly separate the equivalent sentences in the two languages, switches are less likely to occur. This is not to suggest that speakers really think so far ahead as to have two fully planned sentences in their mind for each one they utter, switching at will when parallelism permits.[27] Indeed, the fact that switching only occurs when parallel structures would result suggests that no such complete pre-analysis has been performed, for if it had there would be no solid reason for prohibiting switches where parallel constructions were absent. The notion of syntactic parallelism is perceived only vaguely, and only in short, relatively simple sentences that typify the speech styles in which code alternations occur most frequently.

It is not unlikely that the mental imaging that precedes the production of any well-formed semantically coherent and relatively short sentence includes the choice of the most typical syntactic pattern that would realize the idea. Moreover, there is every reason to suppose that there are also certain syntactic, semantic, and/or pragmatic cues in the discourse preceding the switch that hint at the following structures and thus, indirectly, at the appropriateness of a switch to the other language. Consider, for example,

(10) They only use English when they have to, like cuando van de compras.

Here the *when* of the first clause suggests that it or some equivalent adverbial expression will appear later in the sentence; it is also suggested, given the usual word order of the sentences and also the implicit subject of the first portion, that following the equivalent of *when* will come a verbal expression with or without a subject, with perhaps an adverbial complement occurring afterward. This is certainly the case with Spanish *cuando van de compras*; the English equivalent would be *when they go shopping*, where the two-word verb *go shopping* is equivalent to the expression *ir de compras*.

We can hypothesize that even before the sentence has proceeded from a cognitive image to a concrete realization in either language, the speaker/thinker had an image of people going shopping, that is, doing something and not, for example, passively experiencing an action. In the vast majority of such cases in both languages, such a mental image will correspond to a simple subject + verb (+ adverbial complement) type of sentence. Since this type is one of the most frequent in both languages, the transference from mental image to syntactic realization is essentially identical, regardless of whether English, Spanish, or a mixture is the output. Thus this particular switch, although not specifically predictable, is at least possible right from the

moment of conceiving the thought and does not rely on a specific well-formed sentence in each language for its realization. Consider also

(11) No sé, porque I never used it.

If this sentence had been continued in Spanish, it would be

(12) No sé, porque nunca lo usé/usaba.

The relative order of verb and object pronoun varies, but the order of the adverb and main verb is identical. Following the conjunction *porque/because*, both languages use the normal declarative order. In reality it is not even necessary to fully specify the remaining portions of the sentence in order to substantiate the acceptability of a shift following the conjunction. In other words, we may postulate that following the conjunction nearly any final clause could theoretically occur, since it is already implicitly known that a declarative order will result in both cases. The subject pronoun is optional in Spanish, but if it occurs it will be found in the same place as in English. Adverbs will also occupy the same relative position. Clitic pronouns present the only major difference (although fully specified direct and indirect objects are identically placed in both languages), but in view of their status as unstressed clitics—inherent parts of the verb phrase—it is probably not as significant that the order of the individual constituents is somewhat different.

The above observations suggest that the constraint on relative syntactic identity following the point of the switch be supplemented by or subordinated to a more general condition, that the material following the switch in the two languages be somehow predictable without the need to produce a complete sentence in each language: either through syntactic congruence or through a reasonable supposition, based on clues found in the preswitch portion, which hint at the postswitch portion, even if slight deviations from total congruence may occur. Thus,

(13) It's the first shag que se me hace que looks nice on a girl.

Here the inserted *se me hace que* is considerably different from English *it seems to me that, I think that*, etc. However, following the complementizer *que/that*, given the need to express eventually the notion of "looking good on a girl," one knows that an additional subordination with *que/that* or a similar element must occur. One also knows that in general the word order is predictable following such a complementizer, although Spanish exhibits more variations than does English, for example in the inversion of subject and verb:

(14) Es la casa donde vive José.

The fact that *se me hace* differs structurally from *it seems to me*, etc., is not crucial to the possibility of a switch, since both expressions are short, stereotyped forms, almost automatisms, which fit neatly in between the two complementizers without affecting the overall semantic value of the sentence. The main sentences are quite similar:

(15a) It's the first shag that looks good on a girl.
(15b) Es el primer shag que le va/queda bien a una muchacha.

Such partial congruences have apparently motivated the "dual structure principle" of Sridhar (1980), roughly that the internal structure of an L_2 sequence in an L_1 sequence need not conform to L_1 syntactic rules as long as its overall co-location corresponds to L_1 rules. It must still be postulated, however, that a stronger constraint may be defined, at least for Spanish, for a certain amount of looking ahead does occur in such cases as adjective concord, where an adjective or clitic pronoun must agree with an element that may not occur until much later in the sentence

(16) Antes de conocer*la* personalmente, él sabía ya que *María* lo iba a querer.

Additional evidence for a vague but nonetheless real perception of material about to occur later in a sentence comes in what Jacobson (1978 b) calls "anticipatory embedding," where a switch is caused by a lexical element occurring later in the phrase which is untranslatable in the language of the first portion. In most cases, these lexical items are proper nouns. Jacobson (1978b: 22-23) gives examples, such as *Sonny's* (the name of a bar), a name that cannot be translated into Spanish and which therefore causes a sentence originally begun in Spanish to be switched into English:[28]

(17) Allá en el parque there's a little place called Sonny's.

Jacobson also notes that certain idiomatic expressions and metaphors may trigger a switch for the same reason: "to achieve unilinguality within the boundaries of a given syntactic unit." However, although an item such as *putter* (in golf) or *take for granted* may not be easily rendered into Spanish so as to achieve syntactic fluency, it is harder to accept that the word *pimples* in

(18) porque tenía como—porque he had a lot of pimples

represents a concept so foreign to Spanish that it forces the sentence to switch to English.

Thus it is necessary to avoid the circular reasoning that switches necessarily occur because of untranslatability or lexical unavailability, within a given group of speakers, of certain items. On the other hand, in the unequivocal cases where a proper noun or other manifestly unique idiomatic expression draws the preceding context into a language switch, it is difficult to avoid the conclusion that the speaker's cognitive apparatus has the sentence worked out before it has been produced and that semantic/lexical information, as well as the congruence of syntactic configurations, may be part of the material that must be manipulated and balanced in order to stabilize the eventual output, which may be unilingual or switched in mid-sentence.

In the preceding cases, syntactic congruence was a relative affair, that is, a factor subject to considerable variation and on occasion subordinate to more general criteria. In all cases where the conditions governing a switch are involved, it is assumed that something less than a complete processing of two sentences is brought into play. It is the nature of this mechanism, be it anticipatory or the interpretation of sentential clues early in the sentence, that remains to be determined. Of particular interest is the observation that a switch may occur only at certain boundaries. In (15), for example, switches are possible after conjunctions. Such words introduce new clauses, that is, new propositions, into the sentence, therefore allowing for a single coherent idea to be presented in one language before switching to the other. Nouns may also be substituted in an L_2 environment, for the reasons mentioned above. This suggests that the speaker who switches is aware, consciously or unconsciously, of which language he or she is using at all times or at least of the necessity to stay within the same language except at certain indicated points.[29] On the other hand, it is an observable fact that after a switch many speakers are not aware of having switched or of the precise spot where the switch occurred, particularly if there is more than one acceptable position within the sentence. The same holds for listeners who are asked to report on a switched phrase. The fact that speakers will when presented with sentences with unacceptable switches reject these sentences does not contradict the observation that they may not be aware of where the switch had taken place.

There exist certain pivotal points in the typical English or Spanish sentence, points that represent a convergence in the mental representations in the two languages. Occurring or potential code switches may be grouped into two categories: lexical substitutions and what may be called syntactically congruent shifts. Lexical replacements usually involve nouns, less often

verbs or other parts of speech. The L_2 word may be inserted into an L_1 discourse due to lack of familiarity with the L_1 term, or if an L_1 term does not exist, due to psychological pressure, etc. The important point is that the inserted L_2 items are effectively bracketed by L_1 elements, enough so as to be regarded, both subjectively and objectively, as insertions. In congruent shifts, the discourse passes smoothly from one language to the other and remains in L_2 at least long enough to shift the linguistic focus from L_1 to L_2. The duration in L_2 varies enormously; the discourse may shift back to L_1 in the same sentence or considerably more L_2 discourse may occur. The crucial point is that following the shift there is every indication that the speaker has transferred his or her attention entirely to L_2 and is no longer merely inserting items in the midst of an otherwise L_1 context. The actual point of the switch, however, cannot pertain exclusively to one language or the other, regardless of the lexical source of the word(s) involved. This is because the elements in question serve as pivot points or entry/exit ports between the two codes and must therefore pertain to some sort of metasystem of relational words, which, in a sufficiently well-defined context, permit a code shift to occur. On the other hand, to postulate an entirely separate metasystem pertaining neither to L_1 nor to L_2, merely to accommodate the pivotal points (which do, after all, belong to real languages available to the speaker) is entirely gratuitous, especially since these very same elements in other contexts may not be switch points and may be unequivocally analyzed as pertaining to a single language. Needed is a model of the situation by means of which certain key elements cause (or more accurately, facilitate) a switch by virtue of a unique form of category inclusion. The highly embryonic state of research into the psycholinguistics of code-switching presents little more than a black-box situation in which one sees the input and output of a system without gaining any substantive knowledge as to the system's internal mechanism. The system in this case is the linguistic organization of two codes and the process permitting congruent shifts, and the black box is the assignment of appropriate category values to the specific elements of phrases. To model this situation, the mathematical theory of fuzzy subsets is of great utility and some tentative first steps in the direction of an integrated theory of code-switching have already been taken.[30]

In essence, the theory of fuzzy subsets represents a generalization of the notion of set inclusion. In classical Boolean set theory a particular element x is either a member of a given set A $(x \in A)$ or it is not $(x \notin A)$. Fuzzy logic permits the coefficients of set inclusion to range continuously between zero (representing nonmembership) and one (representing full membership). The intervening values represent the "fuzzy" portion of the spectrum, where an element in a sense both belongs and does not belong to the set in question. An elaborate computational theory has been evolved to permit the arithmetical manipulation of fuzzy sets and subsets, but in order to apply them in particular circumstances the theoretical notions must be given a substantive content.[31]

We may, for the purposes of discussion, assume the entire universe of discourse to consist of the union of the two languages: $L_1 \cup L_2$. Therefore, one may define the complement of L_1 to be L_2 and vice versa. Furthermore one may assume that the intersection of the two languages $L_1 \cap L_2$ (i.e., those elements common to both) is empty, although strictly speaking this is not true in the case of English and Spanish. It is then necessary only to define coefficients c_a of inclusion in one language since the complement $(1 - c_a)$ represents the degree of inclusion in the other language. Thus for every element e one may define the coefficient of inclusion c_i which represents the degree to which e belongs to L_1; $(1 - c_i)$ then represents the extent to which e belongs to L_2. In other words, if $c_i = 1$, then e is entirely and exclusively a member of L_1; if $c_i = \phi$, then e belongs exclusively to L_2; if $c_i = .5$, then e is equally shared between the two languages, etc.

These nonbinary coefficients can then be used to characterize the putative mental representation of a bilingual code-switched phrase. In most cases, it is assumed that the

coefficients of the elements will be either zero or one, or close to these points, that is, the words will be identified as either L_1 or L_2. The case of inserted nouns or (particularly nonconjugated) verbs is more complex, given the range of variation that has been shown for such borrowings. If only one L_2 item is inserted into an otherwise L_1 context, this suggests that the coefficient of the L_2 item is relatively low. It is, however, probably not zero, given that the following context redirects itself to an L_1 orientation. It is also necessary to consider the degree to which the L_2 item has been integrated into the lexicon of L_1.

Some borrowed words have become so frequent that they become lexicalized, and it is not always possible to positively identify such words. In many cases pronunciation will provide a clue. If, for example, when speaking Spanish a bilingual speaker pronounces an inserted English word with a Spanish accent, this may suggest complete integration of the word.[32] However, the greater the degree of bilingualism and in particular the more precise the speaker's command of English phonology, the less the likelihood of doing so. So-called "verbal quotes" are another indication: When a speaker verbally brackets an inserted L_2 word by a pause, an exaggerated pronunciation, a particular facial or body movement, etc., one may assume that the word is still identified as foreign to L_1. The same would hold for words which, regardless of their pronunciation, do not participate in the normal morphological and syntactic patterns of L_1. For example, if someone says *voy a hacer fix la televisión*, the word *fix* is probably L_2, with a low coefficient, although one might argue in this case that the entire combination of *hacer +* English verb has become lexicalized.[33] Similarly, when one says, perhaps facetiously, *he's going to get in mucho trouble*, pronouncing *mucho* with English phonological patterns, the word *mucho* behaves neither as an English word nor as a Spanish word; it is foreign to the overall context of the sentence.

Clyne (1967: 86), in the course of an elaboration of the "trigger categories," speaks of "overlapping words," that is, words which have the same essential form in both languages; such a word "causes the speaker to lose his linguistic bearings. He momentarily forgets which language he is speaking, and later utterances are automatically in the other language." Overlapping words in Clyne's sense are also characterized by fuzzy category membership, in this case because of morphological configurations that must be bound up with syntactic considerations, since the same word may be ambiguous in one context and unambiguous in another. It is this type of lexical ambiguity that has been exploited in many bilingual dominance tests, where an item which is either graphically ambiguous (Spanish/English *dime, capital, pan*) or phonetically ambiguous (Spanish/English *ay/I*) is presented to subjects to elicit a category membership value. Barkin (1978b: 2) similarly speaks to a mechanical or unconscious switching "caused by a trigger word, usually resulting from paradigmatic association." Jacobson (1978a: 21) notes that "conjunctions like *que* seem to be below the speaker's level of awareness and surface therefore unwillingly." At the lexical level, Albert and Obler (1978: 215-17) review pertinent literature and indicate that even under the best of circumstances language tagging is imperfect, although there is a tendency for accuracy to increase with the age of the speaker, to a certain point.

Most previous discussions of categorical ambiguity have dealt with the lexical level, although Albert and Obler (1978: 250) remark that "in some sense those syntactic structures that occur in only one of the two languages must be 'tagged' as pertaining to that language." It is clear that the notion of ambiguous category membership must be extended to the syntactic function of individual items as well as to more extensive syntactic structures in order to fully characterize the language switching potential of the bilingual speaker.

The question of fuzzy set membership becomes most useful when considering the pivotal points at which congruent shifts occur, for it is at these points that one finds the strongest

evidence of vague category membership. Syntactic couplings such as *porque, since, and, para,* etc., lexically belong to a single language, but in view of their relational function and the potential for redirecting the discourse into the other language, they are prime candidates for fuzzy set inclusion. In a sentence such as

(19) There are various families in the neighborhood que tienen chamaquitos.

que is a fuzzy joiner, belonging neither entirely to English nor (despite its lexical origin) entirely to Spanish.[34] The precise value of its coefficient cannot be precisely specified at this time, but the mere fact of its Spanish origin is not enough to argue for a coefficient less than .5, since if *que* were replaced by *that* a less acceptable sentence would result:[35]

(20) There are various families in the neighborhood that tienen chamaquitos.

This is presumably a question of transition probabilities: In English *that* is regularly followed by a minimally conjugated form often identical to the infinitive. In Spanish, *que* usually demands a conjugated form, which by its very nature conveys more information than its English counterpart. The opposite switch sounds equally strange:

(21) Hay varias familias en el barrio que have kids.

By definition a coefficient of .5 implies the possibility of a congruent shift at that point, although it is possible that additional research will reveal more subtle distinctions that result in finer subdivisions.

The conjunction *and/y* is another candidate for a value of .5: Not only does it permit ready switches, but semantically as well as syntactically it conjoins equivalent phrases. Neither is considered subordinate to the other, except inasmuch as linear order dictates that one comes first. Even after clearly subordinating conjunctions, the equivalence of clause structure seems to hold, although a dominance relation is defined.

When dealing with adjective phrases, another frequent source of shifts, it is difficult to separate true switches from lexical insertion. In most cases it is easier to shift from English to Spanish than vice versa.[36]

(22) his big red camioneta
(23) su camioneta red/su red camioneta

The second possibility may be rejected on general grounds of providing too many switches in a short space. The relative position of adjectives in the two languages does the rest. In most cases, Spanish prefers adjectives occurring after nouns, although some exceptional adjectives may also precede the noun. This occurs especially with several adjectives in a combination, to avoid difficult or impossible constructions:

(24) las principales obras modernas consultadas

Pfaff (1979: 306) postulates that in noun + adjective combinations, it is necessary to match the word order of both the language of the adjective and the language of the head noun. In English in nearly all cases adjectives precede the noun; this is often sufficient to define an adjective formed from a noun or verb. In switching between adjective and noun from English to Spanish, a possible although less likely syntactic congruence is formed; one could say

(25) su roja camioneta

although (26) would be more common

(26) su camioneta roja

On the other hand,

(27) his truck red

would be impossible in English; thus by beginning the phrase with *su camioneta*, the speaker has precluded the possibility of inserting a simple adjective; only an appropriate prepositional phrase or clause, following the same relative order in both languages, could be added:

(28) su camioneta that he just bought

In such a case it may not be immediately clear how coefficients of category membership are to be defined. In the sentence with the phrase *his big red . . .*, there is nothing in the context to suggest fuzziness of category membership, other than the fact that a similar sentence could be formed in Spanish. It is not until the moment of the lexical insertion of a Spanish word such as *camioneta* that the context becomes shifted toward English. If *camioneta* is considered by the speaker to be a purely lexicalized borrowing from English, then a switch has not really occurred and there is no reason for the context to shift to Spanish. A high coefficient could be posited in these circumstances. If, on the other hand, the word is used with full awareness of its membership in Spanish and its non-inclusion in most styles of English, then a shift has occurred and the coefficient of *camioneta* must be .5 or less. What conditions the difference in coefficients for the same item in the same syntactic and semantic context? The only available differentiating factors are pragmatic and psychological, which underscores again the impossibility of providing a purely mechanical algorithm for assigning category values. In this particular case one may postulate a multistage process. Assuming that the context continues in Spanish, the first stage would be lexical insertion. If the word is felt to be entirely Spanish then one merely has lexical replacement.

The same word, however, may shift to a higher coefficient closer to the value of .5 needed to occasion a shift, if the combination of a permissible environment and the frame of mind necessary to shift languages is present. Thus the value of the coefficient of *camioneta* would be a composite arrived at by combining the following orientations: the category value of the item in absolute terms; the intent to switch languages or to merely insert a foreign word; and the permissiveness of the syntactic environment toward a congruent shift. In the above case, we assume in absolute terms that *camioneta* has a relatively low value, signaling that it belongs to Spanish. If one assumes that the two coefficients, strength of the scale of syntactic permissiveness and willingness to switch, increase according to the parameters involved, these factors would raise the coefficient of the item; in a properly weighted mixture, if the resulting coefficient is around the hypothesized value of .5, a switch would occur. Such an approach is only a first approximation, but all evidence points to the contribution both of specific syntactic elements and of psychological and pragmatic factors in assigning the value of category membership; it is the precise weighting mechanism that remains to be worked out.

A promising line of research currently being pursued[37] is the determination of category membership values by means of short-term memory repetition tasks, in which subjects are asked to repeat sentences that contain internal code shifts. Errors in language identification appear to correlate rather well with postulated "fuzzy joiners" such as conjunctions and in certain other configurations where a switch is possible at more than one point in a sentence. It is hoped that an extension of this methodology will enable the determination of category inclusion values for other sentence constituents, although for elements at some distance from the point of the shift such a procedure will probably never be refined to the point where it will yield useful results. On the other hand, items far from potential switchpoints offer few problems to the bilingual theoretician; it is a determination of the increased potential gradient that eventually triggers the switch that is the hoped-for result of fuzzy models of language switching.

Kaufman (1975: xi) has stated that

> man possesses, in addition to the faculty of reckoning and thinking logically, that of taking things into account globally or in parallel . . . the global or parallel reasoning, as opposed to logical reasoning, is fuzzy and must be fuzzy. A living being having the possibility of initiative, perceives and treats a piece of more or less fuzzy information and adapts itself.

The incorporation of a mechanism of fuzzy inclusion presupposes a greater rapprochement between the two grammars of the bilingual than has frequently been postulated, but such interconnections are already signaled by the comparative ease with which the transition is made between the languages. Given the lack of precise neurological[38] or psychological information on language storage and transfer, bilingual code-switching must be modeled as a black box. Such a methodological appoach in no way purports to explain language switching from a developmental point of view but rather to characterize language usage in a bilingual context. Semantic factors alone are not sufficient to account for allowable switches; neither are syntactic congruences or psychological desires (although the latter could, if forceably enough applied, cause a switch under nearly any conditions). What is needed are synthetic approaches that provide for an evaluation of the contribution of these various factors, modeling the manner in which they interact to provide a smooth and often unconscious transition from one language to the other.

Fuzzy subset theory is a form of statistical modeling and yields numerical results that represent, in effect, percentages of occurrence, real or potential. As such, fuzzy subset modeling shares a similarity with the metatheory of variable rules, which has arisen from detailed sociolinguistic investigations and has reached a high degree of formal mathematical precision.[39] In particular, variable rule models have been applied to Spanish-English code-switching by Poplack and Sankoff (1980), as part of an ongoing research program designed to yield a precise model of bilingual code-switching. Numerical data for the establishment of variable rules and fuzzy category values may in fact be derived from the same corpus of code-switched data; the principal difference lies in the interpretation of the data and the metalevel on which they are applied.

A variable rule deals directly with the level of discourse, indicating the frequency of occurrence of a given phenomenon and relating this frequency to other parameters under investigation. The frequency of given code-switching types is not tied automatically to the determination of category membership values, although it is clearly related. The variable rule describes the dynamic occurrence of the switch, while the category inclusion value, which must be inferred indirectly and therefore operates at a higher metalevel, relates to the putative psycholinguistic representation of individual elements in a sentence. A category value which is sufficiently fuzzy may trigger a switch and therefore be an instance of the application of a variable rule. A variable rule frequency, in turn, may indicate an ambiguous or fuzzy category inclusion value. However, it will never be possible to directly equate category membership values with variable rule frequencies, since code-switching is constrained by a wide variety of linguistic and extralinguistic factors, of which category inclusion value is only one. However, variable rule theory and fuzzy membership theory are complementary approaches and both appear promising in the formulation of a comprehensive model of code-switching.

The great proliferation of models and methods employed to study bilingual code-switching, even when remaining within the relatively limited purview of Spanish-English bilinguals, demonstrates that the ultimate goal of a unified linguistic description is still distant. However, with respect to the psycholinguistics of bilingualism, as reflected by language switching, significant progress is being made. It can be seen that several distinct research programs are proceeding in parallel fashion and may eventually be unified and refined further.

A key feature in the contemporary analysis of code-switching is an abandonment of doctrinaire insistence on extremist models, which postulate either totally separate grammars or a single homogeneous underlying grammar. Researchers are coming to accept that all bilingual speakers, regardless of their ethnic background, the manner in which they learned the language, and the community in which they live, exhibit characteristics of both separate grammars and a unified underlying system and that it is fruitless to force a choice between what are in reality two aspects of a single phenomenon.[40] Once this fundamental hurdle has been cleared, it becomes possible to accept language switching behavior as a manifestation of the degree of integration of the bilingual modality and to use the derived data to model the linguistic competence of the bilingual speaker. This competence is both subject to formalizable linguistic constraints and governed by the infinitely variable psychological forces that interact and unite to produce the singular behavior that is language switching.

The search for adequate models and refinements, already well underway, will go on, as code alternation is seen less as a curiosity and more as a subject for serious research and the last word probably will never be said on the topic. There is a certain justice to be found in the fact that the language behavior of a group for so long considered linguistically deficient is now proving to be the most fertile territory for the investigation of all levels of bilingualism. Even more important, the interaction of English and Spanish is seen as a structured process, forging new norms and creating a definitive place for itself among the linguistic communities of the world.

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Notes

[1] Shaffer (1978: 267) notes that one rarely finds examples of code switching in written documents, but literary documents are excluded from the discussion.

[2] Cf. the discussion in Keller (1979: 285-286) for the relations of writer and reader in bilingual Spanish-English literature.

[3] Variants of this methodology, although at times supplemented by other criteria, have been used by Gingras (1974), Timm (1975), and others.

[4] See Lipski (1976) for a discussion of theoretical and practical aspects of this problem, including a review of relevant literature.

[5] For example, as noted by Reyes (1976: 184), the nearly self-evident fact that code switches occur almost invariably at syntactic junctures, unless of course lexical insertion is being performed.

[6] The terms "coordinate" and "compound" bilingual are being used here in the traditional sense referring to the manner in which the two languages have been learned and the cognitive representation of the linguistic sign. Thus, a compound bilingual, usually an individual who has learned both languages at about the same time and under similar circumstances, has the same referent for two words, one in each language; the coordinate bilingual, usually having learned the languages at different times and/or in different environments, is presumed to have a distinct referent for words in each language. This distinction is clearly problematic, and some investigators refute it altogether, while others indicate that all bilingual individuals exhibit characteristics of both patterns. A thorough review of the matter is presented in Albert and Obler (1978: 227-236), where the multifaceted nature of the problem is clearly seen. Keller (1979: 284) adopts a more controversial behavioral definition. For him, a compound bilingual is "a person whose code-switching is beyond conscious or voluntary control," i.e., a person who switches languages constantly and at times with no apparent external motivation. While it is true that some individuals commonly classified as compound bilinguals by the above criteria may not have conscious control over language switching, others clearly do; hence, in this study, the more general definitions of compound and coordinate will be used. However, this does not imply that a rigorous

definition exists, or indeed that there is even any justification for supporting the dichotomy. It is merely a vote in favor of standardizing terminology.

[7] See, for example, Lance (1975) and Gumperz and Hernández-Chávez (1970), for some early ideas on the subject.

[8] Further observations are offered by Barkin (1976, 1978a), Ornstein (1972), and Sánchez (1978).

[9] Cf. Barkin (1978b), Gumperz and Hernández-Chávez (1970), Jacobson (1977a, 1977b, 1978a, 1978b) for additional discussion of the subtleties of connotation.

[10] Cf. Sánchez (1978), Jacobson (1978a, 1978b). McClure & Wentz (1975), Di Pietro (1978).

[11] Cf. Barkin (1977a: 53): "What you gonna do? ¿Qué vas a hacer, hey?" or Lance (1975: 139): "...y luego la meringue la hago con... los egg whites, la clara." Cf. also Hasselmo (1970, 1972), for a definition of base language.

[12] See Lance (1975), Timm (1975), Kolers (1966a), Gumperz and Hernández-Chávez (1970) and the references cited in these works for basic constituent constraints.

[13] The other class being, naturally enough, verbs, which some investigators have claimed to be the single most important, or primal, semantic category.

[14] There are examples, however, when groping for words and immediate translation indicates that this might not always be the case. Cf. Gumperz and Hernández-Chávez (1970: 158) where a person says, "If there's a word that I can't find, it keeps comin' out in Spanish." Lance (1975: 145), "en la grease... tú sabes, en la manteca." Cf. Also the discussion in Valdés-Fallis (1976b).

[15] Lance (1975) originally stated that no syntactic restrictions appeared to be present for Spanish-English intrasentential switching, but this observation has since been amended as more detailed observations have yielded successive refinements.

[16] Cf. Kolers (1966b), Timm (1975), Reyes (1976) and others for observations of language switching in prepositional phrases.

[17] Cf. Kolers (1966b).

[18] Clyne (1967: 80-82), in discussing bilingual German-English switching, mentions similar cases where complex separable verbs in German are equivalent to syntactically simple verbs in English, and may on occasion be replaced by them. For a more thorough discussion of the behavior of Spanish gustar, see Lipski (1975).

[19] Cf. the discussion in Albert and Obler (1978: 209-224) as well as Haugen (1973), Clyne (1972) and the references cited therein.

[20] For example, as reported in Rivas (1980).

[21] Cf. Wakefield et al. (1975).

[22] For example Kolers (1966a), Macnamara (1967b), Macnamara et al. (1968).

[23] In reading switched material, that is. Forcing a subject to switch in nonrehearsed production yields bizarre and unusable results. Although this procedure was employed in some earlier studies (e.g., Kolers 1966b), it has now been abandoned.

[24] Cf. Kolers (1963).

[25] By Kolers (1968), Albert and Obler (1978: chaps. 5-6).

[26] Made in Lipski (1977, 1978, 1979); found in modified form, in Poplack (1978/80) and in Poplack and Sankoff (1980).

[27] As apparently interpreted by Sridhar (1980).

[28] Even early non-Hispanic literature provides a few examples of this type of anticipational switching. Some of the cases in War and Peace, discussed by Timm, (1978) fall into this category. One of the most humorous examples comes from the play Ubu Enchainé (1900) by the French absurdist writer Alfred Jarry, the third play in the famous Ubu Roi trilogy. In Act IV, Jarry introduces the foppish Englishman Lord Catoblépas, who, in addition to crying "Cherchez dans le dictionary" every time he doesn't understand something, at one point remarks to his servant: "Jack! Dépliez le tente et ouvrez les boîtes de corned beef. Je vais attendre ici l'heure de l'audience du roi et du baisemain de Sa Gracious Majesty the Queen!" Tout Ubu, (Paris: Librairie Générale Française, 1962), p. 317. For German, see Clyne (1972: 42).

[29] See Albert and Obler (1978: 215-216, 250) for a review of some relevant studies on "language tagging" in order to appreciate the complexity of the issues surrounding this apparently straightforward concept.

[30] By Lipski (1980b, 1981).

[31] See Kaufman (1975) for a thorough introduction to the mathematics of fuzzy sets and subsets. An application to Spanish grammar is offered in Lipski (1980a).

[32] Cf. the discussion in Lance (1975: 140-141). It may also mean, however, that the speaker simply has poor pronunciation of English. Anisman (1975) has provided examples where prosodic features of the speech of English-Spanish bilinguals serve to define a switch as opposed to a lexical borrowing.

[33] Cf. Reyes (1976) for a discussion of hacer + English verb constructions and their integration into bilingual grammars.

[34] Cf. Jacobson (1978a: 21).

[33] Aguirre (1980: 302) claims that "the language in which the relative pronoun [sic] is expressed has been shown not to affect the acceptability of the item," giving as an example "se me hace que/that I have to respect her." However, in this sentence the conjunction is followed by a subject, minimally marked morphologically in both languages, and not by a verbal form. Aguirre does not discuss sentences in which the conjunction must be followed by a conjugated verb.

[34] Lance (1975: 145) gives an example, apparently the result of a certain confusion, where a speaker said *refritos beans* and pronounced beans with Spanish phonology.

[35] Cf. Lipski (1981).

[36] The best review of the literature on the neuropsychological aspects of bilingualism is found in Albert and Obler (1978: Chaps. 3 & 4), where the discussed results, while fascinating, indicate little consensus of opinion. In particular, the cerebral localization of the "language switch" is still very much debated, while studies of polyglot aphasia often yield contradictory results, which may stem from flaws in the experimental method, differences in the type or degree of bilingualism of the subjects, theoretical interpretation of results, or various combinations of these factors.

[37] Sankoff (1975), Sankoff and Labov (1979).

[40] McCormack (1977) recently reviewed the psycholinguistic literature on bilingual memory and language storage and eventually opted for the "single storage hypothesis," invoking Occam's Razor in addition to weighing experimental evidence. However, this is not taken to mean that there is no separation between the two languages, but only that an active process of translation is not required to mediate between the two. Albert and Obler (1978: Chap. 5) reach a similar conclusion after reviewing much neurophysiological literature.

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