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THE MATRIX LANGUAGE FRAME MODEL: AN EMPIRICAL EVALUATION

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ABSTRACT : *The present study is an attempt to evaluate the capability of Meyers-Scotton and her associates' Matrix Language Frame (MLF) Model in predicting code-switching (CS) patterns found across different language-pairs. For this purpose, it employs both naturally-occurring and elicited datasets as 'positive' and 'negative evidence to assess empirical adequacy of the Model. The naturally-occurring dataset consists of a corpus of 1767 sentences in the form of 29 different interactions involving 42 competent Urdu/English bilinguals whereas the elicited dataset consists of grammaticality judgments about 41'constructed' versions of randomly-selected naturally-occurring data; grammaticality judgments have been obtained from 20 competent Urdu/English bilinguals with positive attitude towards code-switching. Analysis of both naturalistic and elicited datasets exposes the inability of the MLF Model in correctly predicting switching patterns found in the data. The data provide multiple instances of C being supplied by the Embedded Language (EL) instead of the Matrix Language (ML) which violates the System Morpheme Principle (SMP). In the same way, the data also provide multiple instances of constituents whose internal linear order is not determined by the ML nor can they be considered 'singly-occurring' EL Islands; and hence they violate the Morpheme Order Principle (MOP). The instances which violate either SMP or MOP should constitute counter-examples to the MLF Model. The study concludes that the MLF Model is empirically inadequate by demonstrating its inability of correctly predicting switching patterns found in Urdu/English CS data.*

Keywords: Code-switching, Matrix Language, Embedded Language, System Morpheme Principle, Morpheme Order Principle

INTRODUCTION

Purpose of the Study

The paper attempts to evaluate empirical adequacy of the *Matrix Language Frame* (MLF) *Model* proposed by a researcher in [1],a researcher in[2], a researcher in [3] and in [4] with negative and positive evidence from Urdu/English code-switching (CS) data. The naturally-occurring and elicited CS data have been employed to test the potential of the Model in predicting recurring switching patterns in the data. Contrary to the claim made by its proponents, the data pose many empirical challenges to the Model, providing multiple instances which contradict the claims made by the Model. The data provide multiple instances which violate both *System Morpheme Principle* (SMP) and *Morpheme Order Principle* (MOP). The Model has been found incapable of correctly predicting recurring switching patterns observed in the data under examination.

Background to the Study

Mixing of two different grammatical systems is generally referred to as CS. Though it has always been hard to make a clear-cut distinction between CS and other contact phenomena such as borrowing, code-mixing etc., CS has always been the focus of research on bilingualism. Earliest of the approaches to the grammatical aspects of code-switched sentences considered mixing of two languages during the course of production of a single sentence random and a marker of confusion on the part of bilinguals who code-switch [cf. 5, 6,7]. However, the studies conducted later vindicated that mixed data are as much systematic as unmixed data.

Mixing of two different grammatical systems in a discourse may be divided into two broader categories by making switching of larger chunks of two languages in a discourse distinct from the occurrences of isolated items. While switching from L(anguage)x to L(anguage)y within the boundary of a single sentence is considered intra-sentential CS, switching from Lx to Ly at clause boundaries is referred to as inter-sentential CS [cf. 8, 9, 10, 11, 12] Inter-sentential CS has been studied primarily to understand the sociological, socio-economic, socio-political and sociolinguistic factors which motivate speakers' choices of codes or even mixing of two codes as a communicative strategy in different functional domains. Intra-sentential CS, on the other hand, has been studied from a grammatical of view. The focus of research on intra-sentential CS has been to explore the constraints which govern the mixing of two distinct systems within the boundary of a single sentence. Although it is unanimously agreed that the contribution of two grammatical systems in the production of a single sentence is not random, there has generally been no agreement among them regarding the nature of these constraints which regulate the mixing of two languages. Different studies employ different methodologies and different types of data to account for grammatical features of mixed sentences.

The MLF Model of Meyers-Scotton and her associates reject previous models on the basis of weak theoretical footings and too much reliance on constraints and propose a production-based model to account for CS. The two languages involved are viewed as *Matrix Language* (ML) and *Embedded Language* (EL) on the basis of their contribution to the morpho-syntactic structure of mixed CP. However, although Meyers-Scotton and her associate reject CS-specific constraints- 'third' grammar, they themselves end up proposing MOP and SMP which are external to monolingual linguistic competence as argued by MacSwan[13]. According to a Researcher [13] the Model suffers from theoretical inconsistencies and makes appeal to the MOP and the SMP which are not needed in monolingual linguistic competence. In addition to a sholar in [13] objections to the Model, the present study is an attempt to demonstrate its empirical inadequacy with evidence from naturalistic and elicited Urdu/English CS data.

In the following section, we will present a brief review of different model of CS. Section 3 is dedicated to the general

introduction to the MLF Model. In Section 4, we will turn to the naturalistic and elicited datasets along with the participants and consultants. Section 5 presents empirical evaluation of the Model with evidence from naturalistic and elicited datasets.

THIRD' GRAMMAR AND NULL THEORIES OF INTRA-SENTENTIAL CS

As noted in previous section, different studies on grammatical aspects of CS may be grouped together on the basis of whether or not they imply such grammatical postulates as are not found to be independently motivated. One way of categorizing different studies on formal aspects of CS is to determine whether or not a particular study assumes essential differences between monolingual and bilingual linguistic 'competence' i.e., the knowledge of a language, thereby implying a 'third' grammar- the by-product of mixing of two distinct grammatical systems. A 'third' grammar arises if a study assumes that monolingual and bilingual competence are differently designed and to deal with their product i.e., mixed and unmixed data, one needs different sets of grammatical apparatus; hence, CS-specific constraints. Thus, assuming CS-specific constraints leads to posit essential differences between monolingual and bilingual linguistic competence. Following this line, one can broadly divide different studies on grammatical aspects of CS into two categories- constraint-free models and constraint-based models of CS [cf. 14].

Following equivalence-based tradition, A researcher in [11, 12] argues that switching remains possible in discourse at points where grammatical rules of both the languages are respected by the juxtaposition of two languages involved in CS. This restriction on CS is formally captured as the Equivalence Constraint (EC) [11, p: 586]. According to the EC, switching is possible only where word-orders of the two languages involved in CS converge; otherwise switching is disallowed. However, the EC has been found making incorrect empirical predictions. For example, consider the naturalistic Urdu/English CS data (1) below which is wrongly predicted to be ungrammatical by the EC:

(1) *Iss koshish mein loag* wrong sentences use *kertay heyn.* this^{D} attempt^{N} in^{Ad} people^{N} do^{v} be^{T}
SG 3/SG/Fem 3/PL/MasAsp/Mas Pre/PL
In this attempt, people use wrong sentences..

English, being the head-first language, requires its complement at a post-head position. However, the complement DP *wrong sentences* in (1) are placed at pre-head position in clear violation of what the EC stipulates. Thus, the data (1) is incorrectly predicted by the EC to be ungrammatical.

In addition to the EC, a researcher in [11, 12] also proposes the Free Morpheme Constraint (FMC) which restricts CS within the boundary of a word. However, involvement of two languages in a word is allowed by the FMC if guest item is morpho-syntactically integrated into the host language. Although The FMC has been found doing better than better than the EC on empirical grounds, the criteria it employs to distinguish CS from borrowing have been challenged by Malik (forthcoming) on both empirical and theoretical grounds. Along with its empirical inconsistency, both the EC and the FMC have also been challenged on theoretical grounds too. It has been argued that both the EC and the FMC are not needed by monolinguals because they possess one grammatical system and never encounter clashes in the grammatical requirements of two languages involved in CS. Thus, the EC and the FMC are discarded for implying a 'third' grammar which should be avoided unless compelled by empirical evidence [14].

Joshi's [15] Constraint on Closed Class Items (CCIC) focuses on asymmetry in the contribution of two languages in CS. The CCIC accounts for this asymmetry by assigning dominant role to one of two languages involved in CS. The CCIC stipulates that members of open-word classes like Adj, N, V etc., may be provided by either of the language but members of closed-classes (e.g., determiners, quantifiers, prepositions, possessive, Aux) must come from a single language for a code-switched sentence to be grammatical. However, the CCIC, like the EC and the FMC, suffers from both empirical and theoretical challenges. It has been found making incorrect predictions regarding recurring switching patterns across different language –pairs. Consider the naturalistic Urdu/English CS data (2) below:

(2) *Sub ye kehtay heyn ke* this is not possible**.**
Everyone this^{D} say^{V+v} be^{T} that^{C} 3/PL SG Asp/PL/Mas Pre/PL Fin/Dec Eeryone says that this is not possible.

The embedded CP in (2) consists of all English items except C which must be a closed-class item in a research in [15] terms. Since closed-class items must be provided by a single language, the data (2) should be judged to be ill-formed by the CCIC. However, the data (2) and many other instances like it are perfectly grammatical and uttered by 'balanced' bilinguals (who will be introduced in Section 4). The CCIC fails empirical tests such as those performed by some scholars in [16,17,18]. The CCIC not only suffers from empirical inadequacy as demonstrated by (2) but it also implies a 'third' grammar because one cannot find any reason for positing the CCIC if monolinguals are supposed to possess only one grammatical systems. Thus, like the EC and the FMC, the CCIC proposes a mechanism that is available only to bilinguals, proposing thereby a so called CS-specific constraint. In contrast, the general tenancy is to avoid such constraints and "clearly we should aim for universal explanations when looking for grammatical constraints" [19], p.178].

Unlike the EC, the FHC and the CCIC, some researchers in [20] and [21] propose such constraints on CS which are claimed to be part of monolingual linguistic competence and hence, no 'third' grammar is implied. Di Sciullo et al., [20] attempt to account for their data within the theoretical framework of Government and Binding (GB) theory. For them, CS is just an ordinary instance of language use, not requiring any CS-specific grammatical constraint in accounting for the mixed data. Based on structural relation of government among the governor (lexical head) and its governed category, they propose Government Constraint (GC) which is "when a government relation holds between elements, there can be no mixing; when that relation is

absent, mixing is possible" [20, p.4]. However, the GC has been found to be inadequate in predicting CS patterns across different language pairs [cf. 18, 21, 22]. Instead of focusing on the relation of government, Belazi et al.'s [21] Functional Head Constraint is based on strong link between functional heads and their f-selected complements in the form of a language-feature. By invoking a researcher in [23] and [24] proposal of -selection, Belazi et al., [21] posit that mismatch in language-feature of the functional heads and their f-selected complements in any code-switched sentence should lead to ungrammaticality. Thus, there should be no switching between a functional head and its f-selected complement. However, switching between lexical heads and their complements is permitted because lexical heads do not f-select their complements. However, the FHC has been found to be empirically inadequate, providing incorrect empirical predictions [cf. 18].

A researcher in [25] was among the first to propose a Null theory of CS. In her study of Spanish/ English CS, He[25] asserts that there are no CS-specific rules; rather, the two grammatical systems operate independently to produce a sub-part of the tree; hence, no 'third' grammar. She proposes a generative model of code-switched sentences which predicts that each code-switched sentence is the joint product of the PS-rules of two languages working jointly to generate part of a phrase marker independently of each other; hence, no CS specific restrictions are required to account for CS data. Although his[25] *Aspect* era approach fails in achieving the desired objectives, her approach remains successful in ruling out the possibility of any grammatical mechanisms exclusively meant for bilinguals [cf. 18].

Like researchers in [25], [22] and [26, 27] Null Theories of CS also reject all types of constraints on CS and advocate that mixing of two independent grammatical systems operate at the level of phrase structure. A researcher's [22] (1993) model of CS is based on Joshi's [28] Tree Adjoining Grammar (TAG). In the TAG, sentences are built from the partial trees associated to different syntactic categories which are available in the lexicon. These partial trees are assembled through *substitution* and *adjunction* to build a sentence following lexical insertion rules. Mahootian maintains that CS does not violate lexical insertion rules of either language nor is there any CS-specific constraint to govern such interaction. They maintain that CS is governed by the same mechanisms which are used to assemble the partial trees in monolingual context. Whether a tree is assembled through *substitution* and *adjunction* critically determines the control of the head. The trees which are assembled through *substitution* are considered complements while the trees which are assembled through *adjunction* are considered adjuncts. For her, lexical heads, being heads of partial trees, control the grammatical properties of their complements including the placement of complements in the tree assembled through *substitution* in monolingual and bilingual contexts alike. However, a scholar in [26, 27] challenges theory of a researcher in [22] proposal that lexical heads determine the position of their complements and assigns the role of determining the position of their complements to functional categories such as I, D and C. He argues that there exists a fundamental distinction between lexical and functional categories in that lexical categories never determine the position of their complements but functional categories have always been found to do so. For him, linear order of constituents is determined by the head-parameter whose particular value is associated to a functional category. In a scholar's [27] terms, since I, D and C carry a particular value of head-parameter i.e., head-first or head-last, they always play critical role in determining the placement of their complement. Although the Null Theories of CS proposed by a researcher in [22] and [26, 27] have sound theoretical footings, and successfully eliminate CS-specific constraints in an account of intra-sentential CS, both proposals have been found to be empirically inadequate in predicting CS patterns found across different language-pairs [cf. 29].

Adoptinga researcher's [24] (1995) Minimalist Program (MP) as theoretical framework,A scholar in [13, 14, 18] also posits that no constraints external to monolingual grammatical systems are needed to account for code-switched sentence. In the MP, Faculty of Human Language (FoL) is viewed as consisting of two components: Lexicon and a Computational System of Human Language (C_{HL}) with two interfaces which connect the FoL to Articulatory-Perceptual (A-P) and Conceptual-Intentional (C-I) systems. One language is believed to be different from other languages only in terms of differences in their parameter settings which are restricted to the lexicon with the result that C_{HL} is believed to be invariant across languages, merging syntactic object in the form of convergent derivation. In minimalist terms, bilingual linguistic competence should be viewed as consisting of two different lexicons which interact through an invariant C_{HL}. A scholar in [13, 14, 18] defines CS as 'union of two lexically-encoded grammars' subject to the requirements of mixed grammars. He posits that convergent derivations involving items form one lexicon or two are governed by the same syntactic operations and mechanisms. Hence, CS is not constrained by anything other than the requirements of a mixed grammar. Although MacSwan's minimalist approach to CS has been one of the most influential approaches, Malik (forthcoming) challenges his minimalist assumptions regarding CS on empirical and theoretical grounds.

All the constraint-based and constraint-free models of CS briefly discussed above suffer from either empirical or theoretical inconsistencies or both. None of them has been able to predict recurring switching patterns found across different language-pairs. After briefly reviewing the constraint-based and constraint-free models of CS in this section, let us now turn to the MLF Model which is the primary focus of the present study.

THE *MATRIX LANGUAGE FRAME MODEL*

For Researchers in [1], the fundamental problem with the constraint-based models of CS has been either their lack of particular theoretical motivations or their too much dependence on the existing models of monolingual competence. As an alternative, Researches in[1] proposes the MLF Model which is claimed to possess the explanatory power of accounting for 'how language is accessed and

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retrieved before it takes the final form' (p. 45). Based on developments made in psycholinguistics including A scholar in [30, 31] study of speech errors and A Researcher's model of language production, the MLF Model attempts to provide a theoretical framework for modeling bilingual linguistic capacity.[32]

Instead of taking sentence as the unit of analysis as is implied by the usually employed term 'intra-sentential', Reearchers in [1] takes a CP i.e., the projection of *Complementizer* as the unit of analysis because, according to her, the grammar within a CP remains whereas there may be two different grammars involved in CS within a sentence; hence, she prefers a CP over a sentence. They posit that contribution of two languages involved in CS is essentially asymmetrical. The language which determines morpho-syntactic structure of a mixed CP is considered the ML while the language which is believed to provide only such items as are to be placed at positions determined by the ML is considered to be the EL. The earlier version of the MLF Model [cf. 1] applied a 'frequency based criterion' according to which the ML and the EL are crucially determined on the basis of the number of morphemes contributed by each language. However, this frequency based criterion of identifying the ML was widely questioned; it was argued that this way of defining the ML and the EL does not work [cf. 13, 33].

However, the later version of the Model known as the 4-M Model [cf. 2, 3,4] employ a structural criterion instead of employing frequency-based criterion to determine the ML and the EL. The distinction between the ML and EL is determined on the basis of types of morphemes provided by each of the languages involved in CS. The language which provides only *content morphemes* is considered the EL whereas the language which can provide *system morphemes* as well is considered the ML. The morphemes such as V, N and Adj etc., are considered *content* morphemes and carry the bulk of semantic and pragmatic features and usually either assign or receive thematic roles. On the other hand, the morphemes such as inflections and function words which carry no semantic content but are employed to express different relations among morphemes which express semantic content are considered *system morphemes*. According to Meyers-Scotton [1], *content* morphemes, in contrast to *system morphemes*, neither receive nor assign thematic roles.

In the recent 4-M model, all the morphemes involved in CS are broadly divided into four categories (hence, the name 4-M model). *Content morphemes*, as in the earlier Model, express semantic and pragmatic features and are activated at conceptual level. On the basis of their role in expressing links between *content* morphemes, *system morphemes* are divided into *early system morphemes, late bridge morphemes* and *late outside system morphemes*. A classification of *system* morphemes and their respective roles in the lexical and conceptual structure is illustrated in Fig. 1 below:

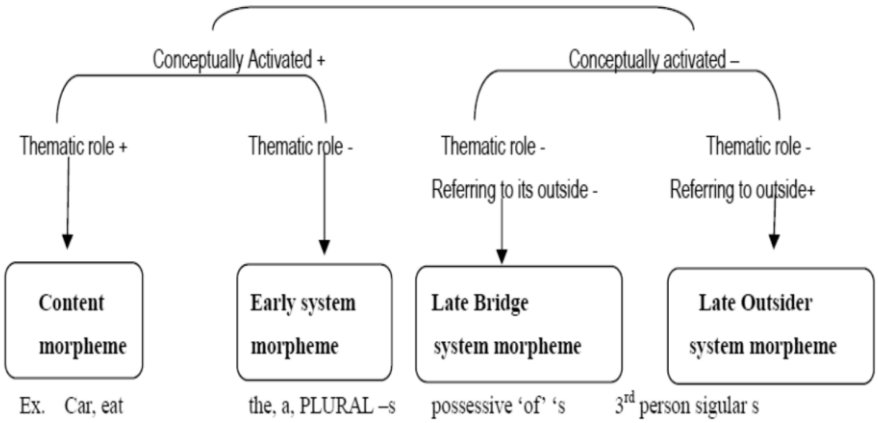

Fig. 1: Morpheme Classification in the *MLF Model*

As illustrated in Fig.1, *content morphemes* and early *system morphemes* are similar in that both are conceptually activated. However, *content* and *early system* morphemes differ from each other in that *content morphemes* may assign and receive thematic roles but *system morphemes* such as English Determiners, plural –s cannot do so. Abstractly-related to content morphemes which obliquely select them, *early system morphemes* "are always comprehended without going outside of the maximal projection of the content morpheme that selects them" and "their form depends on the content morpheme with which they arise" [2, p.96]. However, *late system morphemes* including *of* and possessive *'s* are similar to *early system morphemes* in that both of them neither receive nor assign thematic roles. However, they differ from *early system morphemes* in that they are turned on at the formulator level (instead of being activated at conceptual level) when the lemma throw direction to construct a grammatical constituent. A further distinction is made between *late system* morphemes as *late bridge* and *late outside system morphemes*. Unlike *early system* morphemes, *late-bridge system morphemes* such as 'of', -'s do not contribute to conceptual structure but, like *early system morphemes*, they also do not look for any grammatical information beyond the maximal projection in which they occur. Their primary function is to express relations between *content* morphemes to form larger constituent. Unlike *early* and *late-bridge system* morphemes, *late outside system* morphemes such as 3rd person singular –s are allocated at the surface/positional level and "depend on grammatical information outside of their own maximal projection" [2, p.100]. Although, in the earlier Model, it was proposed that all *system morphemes* must be contributed by

the ML, it was proposed in the later 4-M model that only the *late outside system morphemes* must be contributed by the ML while *early system morphemes* and *late-bridge system* morphemes may be supplied by both the ML and the EL.

The elaborate system of morphemes as outlined above is employed to identify the languages which perform the roles of the ML and the EL. The role of the ML and the EL can only be decided through respective contribution of each language involved in CS. In order to avoid grammatical chaos and achieve uniformity of structure, Meyers-Scotton and her associate propose the SMP and the MOP. The SMP ensures that *late outside system* morphemes are uniformly provided by one language which performs the role of ML in a mixed CP. The MOP, on the other hand, ensures that the linear order of the morphemes in a mixed CP is uniformly dictated by the ML. However, there exists an important exception to this general condition. Meyers-Scotton and her associate argue that certain 'singly-occurring' constituents in a mixed CP whose morpho-syntactic structure may violate the linear order of the ML. Termed as the EL islands, all the items in such 'singly-occurring' constituent must uniformly be contributed by the EL. Thus, EL islands are 'legal violations allowed by the Model.

Leaving aside the theoretical problems with the MLF Model as highlighted by MacSwan [13], the present study exclusively concerns itself with the empirical adequacy of the Model. After introducing the MLF Model above, we are now in a position to evaluate whether or not the MLF Model correctly predicts recurring switching patterns observed in Urdu/English CS. However, before we move to evaluate the Model with empirical evidence, we need to introduce both the datasets employed by the present study.

NATURALISTIC AND ELICITED DATASETS

The studies on grammatical aspects of intra-sentential CS differ a lot with respect to the types of datasets employed. There are arguments in favour of employing naturalistic data as well as elicited data which provides the evidence of what is not possible. The present study employs both 'positive' and 'negative' evidence of CS in order to determine the empirical adequacy of the MLF Model. The 'positive' evidence has been obtained from naturalistic corpus of Urdu/English CS whereas the 'negative' evidence has been obtained from the elicited data in the form of grammaticality judgments.

The naturalistic corpus of Urdu/English CS, the study employs for evidence, consists of different interactions which took place in natural setting. These interactions involve 42 competent and 'balanced' Urdu/English bilinguals who have been selected from over 6 thousands undergraduate students of University of Management and Technology, Lahore. For selecting the most competent Urdu/English bilinguals from the students, a rigorous process was followed and stringent criteria based on socio-economic status, sociolinguistic background, schooling etc., was applied. After the initial selection of 121 students, a questionnaire was administered to obtain further information about their background, academic standing and attitude to CS. In the second round of selection, further 42 students were selected as the participants on the basis of information they provided through the questionnaire. These 42 students participated in 29 different interactions spanning over 4.5 hours. Each of the interaction involving 4-7 participants took place in natural on-campus setting. The naturalistic corpus of Urdu/English CS consists of 1767 sentences with1487 mixed ones and280 either 'pure' Urdu or English sentences. The study exploits the whole of the naturalistic corpus to make generalization regarding the MLF Model but only handful of the instances are actually cited within the paper to show the inability of the MLF Model in predicting switching patterns.

While the naturalistic corpus is exploited to obtain evidence of what is possible in CS, the evidence of what is not possible has been obtained by eliciting judgments from competent Urdu/English bilinguals about the grammaticality of certain sentences. To obtain negative evidence, the study randomly selects 41 naturally-occurring sentences and constructs their variants by simply replacing syntactic category of one language with its (best available) counterpart from the other language involved in CS. These 'constructed' variants of 41 naturally-occurring sentences are presented to 20 competent Urdu/English bilinguals who serve as the consultants. These 20 consultants have been selected from 42 undergraduate students who are selected to participate in the naturalistic corpus employed to obtain 'positive' evidence. Each of the consultants was first briefed by the task. Then each of the 41 constructed data were presented to the consultants; they were asked to judge it as either grammatical or ungrammatical in shortest possible time. Each of the constructed data was presented both orally and visually before it was judged. Thus, each of the 41 constructed variants of naturally-occurring sentences received 20 judgments about its grammaticality. These judgments further reinforce the observations made during the examination of the naturalistic data as we shall see in the following section.

THE MLF MODEL AND URDU/ENGLISH CODE-SWITCHING

In the MLF Model, morpho-syntactic chaos may be created due to involvement of two languages in the production of a single CP if there is nothing to constrain the contribution of two distinct languages. As noted in Section 3, the SMP constrains the contribution of two languages involved in CS by stipulating that *late outside system* morphemes must uniformly be provided by the language which functions as the ML in a mixed CP. The MOP, on the other hand, constrains the uniformity of structure of a mixed CP by stipulating that linear order of constituents in mixed CPs must be determined by the ML except the so-called EL islands which occur as 'legal' violations of the MOP. However, in spite of the optimistic claims of its proponents, the MLF Model has been found inconsistent in predicting the recurring switching patterns found in the naturalistic Urdu/English CS. This inconsistency is also confirmed by the evidence from the elicited data in the form of grammaticality judgments.

Let us first attempt to evaluate the empirical adequacy of the SMP as proposed by Meyers-Scotton and her associates. The

2110 ISSN 1013-5316;CODEN: SINTE 8 Sci.Int.(Lahore),28(2),2105-2112,2016

SMP is designed to constrain the contribution of two languages involved asymmetrically and stipulates that *late outside system* morphemes can only be provided by the ML. Thus, a mixed CP which contains a *late outside system* morpheme constitutes counter-examples to the SMP. Let us consider naturally-occurring Urdu/English CS data (3) and (4) below:

(3) If you feel that *aap* correct English naheen bol saktay
you^{D}not^{NEG} speak^{V} can^{T} 2/PL/Mas INF Pre/PL/Mas
If you feel that you can't speak correct English

(4) They say that *iss terha ka koi* carnival *naheen ho sakta.*
this^{D} type^{N} of^{Ad} any^{D} not^{NEG} be^{V} can^{T}.
SGMas NEG Pre/SG/Mas
They say that carnival of this type cannot be held.

The main CPs in both the sentences are purely English while the embedded CPs are mixed ones. Urdu serves as the ML in the embedded CPs in both (3) and (4) as it contributes all the *system morphemes* and determines the surface order of the constituents in the embedded CPs. However, each of the embedded CP in which Urdu serves as the ML contains a token of C from English which appears to serve as the EL. Whether or not (3) and (4) are well-formed mixed CPs, thus, critically depends upon which class of morpheme C belongs to.

As we noted in Section 3, the morphemes which look beyond maximal projections in which they originate and neither receive nor assign thematic roles are considered *late outside system* morphemes. Both *late bridge system* morphemes and *late outside system* morphemes neither assign nor receive thematic roles. However, *late bridge system* morphemes such as *'of'* and *possessive 's* do not look outside the maximal projections they originate in whereas *late outside system* morphemes such as *third person singular –s* always look outside their maximal projections for grammatical agreement. Viewed in this way, C cannot be considered a *late bridge system* morpheme as it does not express a link between two entities like *late bridge system morphemes*. Keeping in view the grammatical role of C, it can be argued that neither is C a *content morpheme* nor an *early system morpheme* nor a *late bridge system morpheme*. As the agreement among the grammatical features of V and its third person singular subject DP (marked by *third person singular –s*)goes well beyond VP, feature agreement between C and TP should also go beyond TP and CP as C always agrees to its complement TP in, at least, clause-mood and finiteness. If C is neither a *content morpheme*, nor an *early system morpheme* nor a *late bridge system morpheme*, we are left with no option other than considering C a *late outside system* morpheme. And if C is *late outside system* morpheme, it must be supplied by the language which serves as the ML. Since Urdu serves as the ML in the embedded CPs in (3) and (4) and yet C is supplied by English (which apparently serves as the EL), the naturally-occurring data (3) and (4) are incorrectly judged by the MLF Model to be ungrammatical for containing a token of *late outside system morpheme* in violation of the SMP.

Contrary to what the SMP stipulates, the naturalistic data, the study employs, provide multiple instances of C being supplied by the language apparently serving as the EL. This observation has further been strengthened by the evidence from the elicited data in the form of grammaticality judgments. Consider the elicited data (5) and (6) below which are constructed versions of naturally-occurring data (3) and (4).

(5) If you feel *ke aap* correct English naheen bol saktay
That^{C} you^{D} not^{NEG} speak^{V} can^{T}Fin/Dec 2/PL/Mas INF Pre/PL/Mas
If you feel that you can't speak correct English .....

(6) They say *ke iss terha ka koi* carnival *naheen ho sakta.*
That^{C} this^{D} type^{N} of^{Ad} any^{D} not^{NEG} be^{V} can^{T}.
Fin/Dec SG Mas NEG INF Pre/SG/Mas
They say that this type of carnival cannot be held.

The naturally-occurring data (3) and (4) are 'constructed' by replacing English C *that* with its counterpart Urdu C *ke*. All the 20 consultants unanimously judged the constructed version (5) and (6) to be grammatical without any significant variation in their judgments. The acceptance of the elicited data (5) and (6) by the consultants exposes the empirical inadequacy of the MLF Model in predicting that *late outside system* morphemes must be supplied by the ML The naturalistic and elicited data (3)-(6) clearly contradict this proposal and demonstrate that C which must be a *late outside system* morpheme may be supplied by both the ML and the EL without causing ungrammaticality.

Besides the grammatical role of C being more like that of *a late outside system* morpheme than of any other class of morphemes, it must also be noted that it is quite natural to expect that the head of a projection which is assumed to be a complete grammatical unit with a stable ML should be supplied by the language which provides morpho-syntactic frame to mixed CPs. It must be quite surprising if the TP selected by C to form CP has Urdu as its ML and yet C itself is supplied by English which serves as the EL as demonstrated by the data (3)-(6).If C has no role in determining the ML of a mixed CP as demonstrated by the data (3) and (4), there must also be no reason in adopting its maximal projection as the unit of analysis in the Model.

The occurrence of English Cs in the embedded CPs in (3) and (4),thus, violates the SMP as C has been found to behave more like a *late outside system* morpheme than any other class of morphemes proposed in the MLF Model. Therefore, (3) and (4) constitute counter-examples to the MLF Model. The naturalistic corpus of Urdu/English CS provides multiple instances of C being contributed by the EL in a mixed CP in which all the other *system* and *content* morphemes are supplied by the ML. The 'positive' evidence of C being supplied by the EL is further supported by negative evidence as the consultants providing grammaticality judgments readily accepted the sentences which were constructed by replacing English C with its counterpart from Urdu as demonstrated by (5) and (6). Both negative and positive data (3)-(6) demonstrate that SMP may be violated without causing ungrammaticality, thereby exposing the descriptive inadequacy of the Model in accounting for the data.

Let us now turn to the evaluation of empirical adequacy of

the MOP which is designed to create uniformity of structure by constraining linear order of constituent in a mixed CP. The MOP stipulates that the placement of the constituents in a code-switched CP is always determined by the ML. Thus, the mixed CPs containing constituents whose linear order is not determined by the ML constitute counter-examples to the MLF Model. In the corpus of Urdu/English CS, one comes across multiple instances of code-switched CPs in which certain constituents are placed in clear violation of the grammatical requirements of the ML. Consider the naturally-occurring data (7) and (8) below:

(7) Beginning *mein*, this course was very tough for all students. in^{Ad} In the beginning this course was very tough for all students.

(8) Apnay *college* mein, she has been teaching English.
Her^{D} in^{Ad} I/Gen

Apparently, English serves as the ML in both (7)and (8) as it supplies all *late system morphemes* except Urdu Posts heading and all constituents are linearly ordered as required by English. However, the PostPs in (7) and (8) serving the grammatical role of adjuncts deserve special attention. Although the placement of adjunct projection *beginning mei* and *apnay college mei* in (7) and (8) do not violate grammatical constraints of the ML, placement of the complement DPs *beginning* and *apnay college* in adjunct PostPs in (7) and (8) violate the grammatical requirements of English because English requires post-head placement of its complement DP in adpositional projection. The complement DPs are placed before the head in violation of the MOP which requires that morphemes are ordered as per grammatical requirements of the ML. Although both (7) and (8) demonstrate violation of the MOP and appear to constitute counter-examples to the Model, it might be argued that the adjunct adpositional projections in (7) and (8) are actually 'singly-occurring' EL Islands and, therefore, do not constitute counter-examples to the Model. Since Urdu serves as the EL in (7) and (8), the pre-head placement of complement DP in adpositional projection follows grammatical requirements of Urdu and, therefore, they should not constitute counter-examples to the MLF Model. Although what Meyers-Scotton and her associates mean by 'singly-occurring' is far from being clear, it goes without saying that EL Island must be 'pure' EL constituents with no morpheme from the ML if they have to count as the EL Islands. However, the adjunct adpositional projections in (7) and (8) do not meet this criterion and cannot be considered EL Islands because they contain *beginning* and *college* which are supplied by English which serves as the ML in (7) and (8). Thus, if adpositional projections in (7) and (8) cannot be considered EL Islands, the pre-head placement of complement DPs in adpositional projections of (7) and (8) should be considered violation of the MOP. For this reason, the data (7) and (8) should constitute counter-examples to the MLF Model. For further confirmation, consider the naturalistic data (9) and its constructed counterpart (10) below:

(9) Lower classes-*ko* basic necessities of life available *naheen hoteen.* $^{-Acc}$ some^{D} not^{NEG} be^{v} Pre/PL/Fem
Basic necessities of life are not available to lower classes.

(10) Lower classes-*ko* *kuchh* basic necessities of life available *naheen hoteen.*
$^{-Acc}$ some^{D} not^{NEG} be^{v}
Pre/PL/Fem
Basic necessities of life are not available to lower classes.

The naturally-occurring data (9) pose yet another challenge to the MLF Model. The placement of complement *of life* in the subject DP *basic necessities of life* in (9) violates the MOP. Although Urdu appears to serve as the ML in (9) which requires pre-head placement of complement PP in DP, the post-head placement of complement PP in the subject DP in (9) violates the grammatical requirements of the ML. However, it might be argued that the subject DP actually constitutes an EL Island and, therefore, post-head placement of complement PP does not violate the MOP. Unlike the data (7) and (8), the data (9) does not contain any item from the ML. However, it is interesting to note that the inclusion of a morpheme from ML in an EL Island does not have any impact on its grammaticality. The elicited data (10) which is constructed by adding an Urdu D to the subject DP *basic necessities of life* in (9) has unanimously been judged to be grammatical by the consultants. This positive judgement about the grammaticality of the elicited data (10) implies that it is not EL Island; if it were, the addition of an Urdu D in it should have made the data (9) sound ungrammatical. Hence, the post-head placement of complement PP in the subject DP in (9) and (10) violate the MOP and, therefore, constitute counter-examples to the MLF Model.

She has been teaching English in the college.

CONCLUSION

On the basis of empirical evidence documented in the study, we conclude that the MLF Model, in spite of the optimistic claims of its proponents, failed in predicting the recurring switching patterns found in the data under examination. Positive and negative evidence obtained from naturalistic corpus and elicited data, the present study employs, reinforce each other. Both the MOP and the SMP which constrain the contribution of two languages and create uniformity of structure have been found to make incorrect predictions. The multiple instances of C being supplied by the EL as documented in the study are highly problematic for the Model. The grammatical behaviour of C has been found to be more like *late outside system morphemes* than any other class of morphemes. Moreover, since the MLF Model takes CP instead of sentence as unit of analysis, the head whose projection serves as the highest unit of analysis should naturally be supplied by the ML which provides morpho-syntactic frame to a mixed CP. Thus, all those CPs which contain C from an EL are violations of the SMP. In the same way, the MOP has also been found incorrectly predicting grammatical CPs to be ungrammatical. Although it is least understood what Meyers-Scotton means by 'singly-occurring', we can assert that an EL Island, as 'legal' violations of the MOP, must not contain any morphemes from the ML. For this reason, the adjunct adpositional projections in naturally-occurring data such as (7)-(10) cannot be considered EL Islands; hence, they constitute plausible counter-examples to the MLF

Model. In this way, the present study highlights the empirical inadequacy of the Model by employing it to predict switching patterns in naturalistic corpus and elicited Urdu/English CS data.

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