

# The Feasibility of Content and System Morpheme Hierarchy in the Analysis of Tamazight Bilingual Corpora: The Case of Kabyle and Mzabi Bilingual Speech in Oran

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**Abstract:** This study examines the empirical validity of the hierarchy of system and content morphemes on Tamazight bilingual corpora. This dichotomy is one of the underlying principles of the Matrix Language Frame model and the 4-M model as they have been advocated by Myers- Scotton in 1997, 2002 and 2016. These socio-psychologically based syntactic models have been used by contact linguists as viable alternatives in the investigation and interpretation of the morphosyntactic processes underlying bilingual corpora. The present paper investigates Kabyle and Mzabi bilingual data; it focuses on these two Berber or Tamazight varieties as they are in contact with Algerian Arabic, Standard Arabic and French in an Algerian context, namely Oran city. The study of the communities under light here reveals that the languages composing the verbal repertoire of these Tamazight minorities living in Oran overlap at different linguistic levels including the morpho-syntactic one.

**Keywords:** Content Morphemes, System Morphemes, Berber Minorities, MLF Model, the 4-M and Its Sub-Models, Tamazight/Mzabi Bilingual Speech

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## 1. Introduction

The present paper puts into test one of the underpinning principles of the Matrix Language Frame Model (Myers-Scotton; 1997) and its subsequent development; the 4-M Model (Myers- Scotton; 2002) i.e., the System versus Content morphemes dichotomy. This model is used in the analysis and the interpretation of the morpho-syntax of bilingual corpora. We will try to test the feasibility of this dichotomy on a bilingual corpus involving Kabyle and Mzabi, two varieties of Berber (Ber) or Tamazight, Algerian Arabic (AA), Standard Arabic (SA), in addition to French (Fr). The linguistic communities investigated at this level are the Kabyle and Mzabi Berber minorities at Oran. These minorities are put into light in this research work as they display language contact phenomena (Code-Switching and

borrowing) where different languages and language varieties are intermingled at different level, mainly their overlapping morphosyntactic systems.

## 2. System and Content Morpheme Hierarchy in Language Processing

Myers-Scotton [2002]: 9 establishes hierarchies between different types of morphemes in language production and processing. She [ibid]: 9 argues that morphemes are not equal whether they are used in monolingual or in bilingual speech<sup>1</sup>.

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<sup>1</sup>This argument is based on Garrett's [1990]: 165 findings in relation to the psycholinguistic investigation of speech errors. Garrett could demonstrate that there are two types of morphemes (*content and system morphemes*). These morphemes have different statuses, and consequently behave differently in

Myers-Scotton [1997]: 58 also points out that there are two types of morphemes (*System and content morphemes*). These morphemes operate on an asymmetrical basis in bilingual corpora. This asymmetry is related to the occurrence of system and content morphemes in mixed islands (mixed Matrix Language and Embedded Language constituents; ML+EL constituents) which are the most important in the interpretation of code switching. Myers-Scotton [2002]: 15 claims in this vein that: “*All the participating languages may contribute content morphemes to bilingual CP<sup>2</sup>s, but not all can contribute critical system morphemes*”.

The distinction between content and system morphemes is one of the most important principles of the Matrix Language Frame Model (henceforth, MLF Model) and its subsequent developments (Myers-Scotton, 1997, 2002, 2007 and 2016). We thus find it important to briefly discuss these two types of morphemes and their oppositions in light of the data that we have investigated for the present investigation.

### 3. Content Morphemes

Content morphemes usually include nouns, verbs, adjectives, and most prepositions. They are activated at the early conceptual level of the formulation of the message. These morphemes are activated as heads of maximal projection i.e., verbs are activated as heads of verb phrases (VPs); nouns are activated as heads of noun phrases (NPs); adjectives are activated as heads of adjective phrases (AdjP); prepositions are activated as heads of the maximal projection of prepositional phrases (PrePs). Content morphemes may be from either ML or EL in mixed bilingual constituents i.e., in ML+EL constituents or islands. Below are some instances from the data that we have investigated:

aʃu ad-ɖa-ħku-ɖ kam a-**xalt-i** Zaina

What perfective aff-2<sup>nd</sup> sing fem aff- tell-2<sup>nd</sup> sing aff you  
Oh- aunt-1<sup>st</sup> sing pos clitic aff Zaina

What can you tell us aunt Zaina

Berber-Algerian Arabic CS

u-θa-**sɛi-ɖ** aʃu ig-jə**sɛa** ʃwit aθ-ij-**qumaar** ʃwit

Neg aff- 2<sup>nd</sup> sing-have-2<sup>nd</sup> sing aff what that-3<sup>rd</sup> sing mas-have a bit of which-3<sup>rd</sup> sing aff-bet

You do not have (any idea about) what that he has some (money), he bets (some of his money)

You never know the amount of money that he has, for he spends some of his money in betting and some of it for the house expenditures.

Berber-Algerian Arabic CS

/aʃu d-**stɪɣfaar** ma-θ-xadma-ɖ/ betise

What nom aff- appraisal when-2<sup>nd</sup> sing fem aff-do-2<sup>nd</sup> sing fem aff fault

What praise (you ask when you make a mistake)

Berber-Standard Arabic-Algerian Arabic-French CS

/ħɛdaar aθ-**saɖaɛ-ɖ** əl-**mux-iw**

Watch (it)-null imperative aff 2<sup>nd</sup> sing fem aff-annoy-2<sup>nd</sup> sing aff def-brain-1<sup>st</sup> sing possessive clitic aff

Be careful you started to annoy my brain

Berber-Algerian Arabic CS

The content morphemes in these instances of code switching are:

- The Algerian Arabic verbal stems /ħku/ (tell), /sɛa/ (earn), /xɖam/ (do), saɖaɛ (annoy), ħɖr (watch(it)), and qamar (bet)
- The Nouns xalt (aunt), əl-mux (the brain), stɪɣfaar (appraisal), and betise (fault)

We have observed that switching of nominal and verbal stems represents a non-negligible percentage of the bilingual instances in the data that we have analysed. Verb stems (apart from copula verbs) are prototypical thematic (semantic) role assigners while Nouns are prototypical thematic role receivers<sup>3</sup>. These two categories are the most reliable and unproblematic content morphemes across languages. We may interpret this finding by the fact that it may be a reason why our informants switch verbal and nominal stems from Algerian Arabic and French so often. We may also put forward the hypothesis that the big number of nouns, verbs, and to a lesser extent, adjectives switching are related to the morphological typology of Berber<sup>4</sup>. This hypothesis will be verified in future investigations devoted to the relationship between the morpho-syntactic typology of Berber and code switching patterns involving this language.

### 4. System Morphemes

While content morphemes assign or receive thematic roles, system morphemes<sup>5</sup> do not fulfil any semantic or pragmatic function. These latter are also labelled functional elements (Muysken: 2000: 158) in the sense that they have a syntactic function within the clause e.g. definite and indefinite articles, quantifiers, plural affixes, gender affixes. Myers-Scotton and Jake (2000: 1054) argue in this vein that:

“*The characteristic properties of content morphemes should be largely self-evident; they convey the core semantic/pragmatic content of language. The three types of system morpheme carry the relational aspects of language*” (Myers-Scotton and Jake, 2000: 1054)

The hierarchy between the ML and the EL operates during the distribution of system morphemes in bilingual language production. This is an important reason why they are at the core of Myers-Scotton's (1997, and 2002) insertional approach to bilingual corpora. This claim is formalized by

3 Thematic roles assignments have been used by Radford (1988) as theta roles that are the roles of people and entities in the clause (James Smith 2002: 34).

4 We hypothesize that the typology of Berber facilitates the penetration of verbal and nominal stems from Algerian Arabic, French and to a lesser extent Standard Arabic that are adapted to Berber morphology through the affixation of derivational and inflectional Berber prefixes, suffixes, and circular affixes.

5 Bolinger (1968) was the first scholar to use the concept System Morpheme. This concept has since then been used as a cover term for both inflections and function words.

language production. System morphemes are part of the frame and content morphemes are part of the semantic and pragmatic load of the lexical message.

2 Complement Projection.

Myers-Scotton [1997]: 83 in her System morpheme principle, which stipulates that: “In ML+EL constituents, all system morphemes which have grammatical relations external to their constituent (i.e. which participates in the sentence’s thematic role grid) will come from the ML.” [1997]: 98.

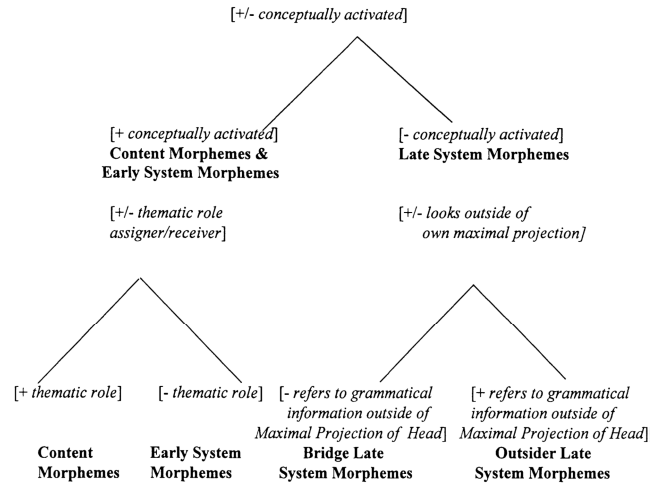
Myers-Scotton and her associates refined the definition of system morphemes several times (1997, 2000, and 2002) because of the prominence of these morphemes in the interpretation of code switching and because of the strong criticisms and the counter evidence put forward in the code switching literature (Boumans, 1998; Muysken, 2000, Li Wei, 2000). Myers Scotton and Jake (2000) put forward the 4-M model in order to elaborate the concepts of content and system morphemes. They [ibid]: 1062 divided these into four different types of morphemes according to two criteria:

1. +/-conceptual activation<sup>6</sup>: Content morphemes are definitely conceptually activated, for they are accessed at an early stage. So are early system morphemes, which are differentiated from the other types of system morphemes because they are conceptually activated. We will come back to the early system morphemes below.
2. +/-looks outside its maximal projection: This criterion is used to see if the system morpheme looks outside its immediate maximal projection or not. It is used to separate system morphemes that operate at the supra-segmental level of the CP and others that operate within the maximal projection.

Having presented the content morphemes above, we shall concentrate on how Myers- Scotton & Jake [2000]: 1062 present system morphemes<sup>7</sup>. Using the criteria listed above, Myers Scotton and Jake [ibid]: 1062 argue that there are three different types of system morphemes. The relevance of this new division is that it helps account for most bilingual corpora involving code switching and other contact phenomena. It also helps by pass the counter evidence<sup>8</sup> put forward to the system morpheme principle as it has been expounded by Myers Scotton (1997: 98). The three different types of system morphemes are the following ones: Early system morphemes, bridge system morphemes, and outsider system morphemes. We shall now try to present the three types of morphemes in light of the data that we have analysed.

Before we proceed in our discussion of the different types

of system morphemes, it would be interesting to start by the general picture (in the form of a figure) of the 4M. This model as it has been expounded by Myers Scotton & Jake [2000]: 1062 divides the different types of morphemes into content morphemes, early system morphemes, bridge system morphemes, and outsider late system morphemes.



**Figure 1.** Feature-based classification of morphemes in the 4-M Model (Myers-Scotton & Jake, 2000: 1062).

## 5. Early System Morphemes

These morphemes are the only system morphemes that are activated at the early phase of conceptual level i.e. at the early stage of the formulation of the semantic message; therefore, they behave differently from the two remaining system morphemes. Early system morphemes satisfy the criterion of conceptual activation together with content morphemes. These two types of morphemes are associated to transform the speaker’s intentions into a semantic and pragmatic message.

Early system morphemes do not however assign or receive any thematic roles. They are elected indirectly by the content morphemes that point to them (Myers-Scotton & Jake [2001]: 98; besides, they are realized within the maximal projection of the head which elects them(the Noun in NPs, the Verb in VPs, the Adjective in AdjPs, the Preposition in PREP-Ps, and the Adverb in AdvPs). Early system morphemes include, for example, indefinite and definite articles, plural affixes, gender affixes, possessive adjectives, and prepositions related to verbs (preposition functioning as particles in verbal phrases). These morphemes map onto the form of the content morphemes, which elected them within the maximal projection.

Myers-Scotton & Jake [2000]: 18 argue that under her 4M Model early system morphemes may come from both ML and EL as they put it:

In the original statement of the model, the system-morpheme principle states that “all system morphemes which have grammatical relations external to their head constituent... will come from the ML” (Myers-Scotton, 1997: 83). Under the new 4-M model, this class of system

<sup>6</sup> This criterion is related to the way morphemes are accessed (Myers Scotton and Jake, 2000: 9) some morphemes are accessed at an early stage in language production i.e. simultaneously to the formulation of the semantic or pragmatic message or at the lemma level. This stage is called the conceptual level. Examples of these include definiteness. Others are on the contrary accessed at a later stage which is called the formulator stage or level

<sup>7</sup> System morphemes have been given a paramount importance in insertional approaches to code switching. This may be related to the fact that they are more salient than the content morphemes at the syntactic level. This may also be due to the fact that defining system morphemes has been one of the biggest challenges to syntactic theory in general and to cross linguistic research in particular. Content morphemes seem not to be problematic as there is a relative consensus among contact linguists as to what constitutes a content morpheme and in relation to the conduct of content morphemes in bilingual corpora.

<sup>8</sup> This counter evidence includes for example cases of embedded language definite articles that are inserted with their nouns.

morpheme is more explicitly identified as the late outsider system morpheme. While other types of system morpheme may come from the embedded language (EL<sup>9</sup>), in fact, almost all - not just those required by the System Morpheme Principle. (Myers-Scotton & Jake: [2000]: 1071)

## 6. Testing the Early System Morphemes Principle against the Data

Below are some instances of code switching from the data where there are early System morphemes. These early system morphemes are not only from the Matrix Language (Berber in many instances) but also from the embedded one (Algerian Arabic, French, and Standard Arabic)

i-θ-ʃix-a-t aʃu imdana as-agi

And-fem nom aff-teacher-fem nom aff -fem nom aff what she told day-this

And (your) teacher what did she tell you today

Berber-Algerian Arabic CS

In this instance of code switching, the mixed constituent /i-θ-ʃix-a-t/ (and (your teacher)) contains a content morpheme /ʃix/ (teacher) and two early system morphemes the Berber circular affix /θ...t/ that is a feminine nominal affix in Berber (The ML in the mixed constituent), and the suffix /a/ which is a feminine nominal affix from Algerian Arabic (the EL in this mixed constituent).

maʃi ðajan swi-ɣ də-dwa swi-ɣ əd/-la pommade

(Not over take-1<sup>st</sup> sing perfective aff nom aff-medicine take-1<sup>st</sup> sing perfective aff nom aff-def (Fr) - pomade

Isn't it over I took the medicine; I took the pomade

Berber-Algerian Arabic-French CS

In this code switching instance, the mixed constituent /swi-ɣ əd/-'la pommade' (I took the pomade) is a verb phrase and its maximal projection (the object NP əd/-'la pommade' (the pomade). The NP mixed island is composed of two early system morphemes: /əd/ which is a Berber nominal affix and 'la' (the French definite Article).

i-qarh-iji aʃaas a-s-kan-əx-asts i-l-muɛalim-a

And hurt-3<sup>rd</sup> sing perfective infix-1<sup>st</sup> sing accusative obj clit aff a lot causative aff-show-1<sup>st</sup> sing perfective aff-it (accusative obj affix) to-def (AA)-teacher-nom fem aff (AA

And it hurted me a lot I showed it to my teacher

Berber-Algerian Arabic CS

The Matrix language of this example is Berber. This instance of code switching contains two mixed constituents: /i-qarh-iji aʃaas/ (and-it was hurting me a lot) and /askan-əx-asts i-l-muɛalim-a/. We will concentrate on the second mixed constituent or island /askan-əx-asts i-l-muɛalim-a/. This island is composed of a VP maximal projection. This projection is made up of two content morphemes the Berber verb /askan/ (show) and the Algerian Arabic noun muɛalim (teacher). There are two

early system morphemes in this projection. These are namely the Algerian Arabic definite article /l/ and the Algerian Arabic feminine nominal affix /a/. These early system morphemes are both from the EL (Algerian Arabic).

The three instances of code switching presented above highlight the assumption that early system morphemes may be from both the ML (Berber in this case) and the EL (Algerian Arabic and French).

## 7. Late System Morphemes

Early system morphemes got their metaphorical name from the fact they are accessed or elected early in the process of language production. Late system morphemes are comparatively accessed at a later stage during speech production process. These morphemes are not accessed during the conceptual phase of the speaker's intention, but during the formulator phase. This phase is the second in language production.

Late system morphemes obey different requirements from their early counterparts. They are not activated conceptually as the early system morphemes. They do not convey any thematic pieces of information, but they rather convey syntactic relations. Myers-Scotton & Jake [2000]: 1063 argue in this vein that:

The information contained in late system morphemes is grammatical as opposed to conceptual. The two types of late system morpheme are not elected to complete a semantic and pragmatic feature bundle with their heads; rather, they are structurally assigned to indicate relations between elements when a larger constituent is constructed.

Late system morphemes are accessed (elected) at the phase of the formulator in the sense that the pieces of lexical information needed to build them are sometimes not available until the formulator level. Myers-Scotton and Jake (2000: 1064) further divided these system morphemes into two types. This division relates to the criteria (+/- looks at its maximal projection' for its syntactic requirements. This means that first type of late system morphemes (outsider system morphemes) have to look outside of their maximal projection to have the form that they are going to take and the lexical information that they need to be produced. The second late system morphemes (the bridge system morphemes) look inside their maximal projection in order to have their form and the lexical pieces of information needed for their production.

## 8. Bridge Late System Morphemes

Bridge system morphemes' forms and syntactic requirements depend on the lexical and syntactic information within their maximal projection. This feature is shared with early system morphemes. The difference between these two types of morphemes is related to their syntactic requirements. Early system morphemes such as articles are directly elected by their heads; consequently, their syntactic requirements are the ones of their heads. The syntactic requirements of bridge

9 Our emphasis. This part of the quotation shows that the 4-M model permits the occurrence of EL early system morphemes and other system morphemes that are elected inside the maximal projection.

system morphemes are decided later and they are the ones of the maximal projection not the ones of the heads of the maximal projection.

The function of bridge system morphemes is to join content morphemes to each other within the maximal projection (Myers-Scotton & Jake, 2000: 1064). Examples of bridge system morphemes discussed by Myers Scotton & Jake (*ibid.*: 1065) and by Myers Scotton (2002: 75) include the possessive ‘of’ in English, and the genitive ‘s, the French ‘de’. The preposition ‘of’ is used to link two adjacent nouns and it is in no way under the control of any of them. One of the nouns being the head and the other one being the subordinate, this subordination needs to be signalled syntactically using either ‘of’ or the genitive case. E.g., the students of the class, my father’s friend (the friend of my father).

Bridge system morphemes may be from either the ML or the EL as long as they are within the maximal projection. Myers-Scotton & Jake [2000]: 1070 argue that the only system morphemes that are necessarily from the ML are the outsider late system morphemes<sup>10</sup>. Below are some instances of Code-Switching to illustrate this discussion of bridge system morphemes.

## 9. Testing the Prediction of the Bridge System Morpheme Principle Against the Present Data

lə-xba-a-r n t-aqvajl-i-t<sup>11</sup>  
 def-news-plu infi of-fem nom aff-Kabyle-fem nom aff)  
 The news of Berber  
 Berber news  
 Berber-Algerian Arabic CS  
 jəllis ən- xalt-i  
 Daughter of-aunt-1<sup>st</sup> sing possessive aff  
 Daughter of aunt my  
 My cousin.  
 ǝ-la sauce n-i-ji-nu  
 Nom affi- the sauce of- me  
 The sauce of me  
 My sauce.  
 Berber-French CS  
 Les toilettes /b-uxxam agi/  
 The toilet of- house this  
 This house’s toilet.

The matrix language in these examples is Berber. The content morphemes in these examples are the nouns /xbar/ (Algerian Arabic piece of news), /aqvajl/ (Kabyle), /jəllis/ (daughter), /xalt/ (aunt), and ‘sauce’ (sauce).

10 Myers-Scotton & Jake [2000]: 1070 claim in this vein that: “Under the new 4-M model, this class of system morpheme is more explicitly identified as the late outsider system morpheme. While other types of system morpheme may come from the embedded language (EL)”.

11 This instance of code switching and the one following it are in fact borrowings. The morphosyntactic treatment of borrowings and code switching is similar.

The early system morphemes are the Algerian Arabic definite article /lə/ (the) in /lə-xba-a-r (the news), the feminine nominal circular affix /t...t/ in /t-aqvajl-i-t/ (Kabyle), /i/ the 1<sup>st</sup> person singular possessive clitic affix in xalt-i (Aunt my), the nominal affix/ǝ/ in /ǝ-la sauce(the sauce), and the French plural definite article ‘les’(the) in ‘Les toilettes’(the toilet). The bridge system morpheme in these examples is the Berber preposition /n/ and /b/ (of). These prepositions are used to link the above-cited content morphemes (nouns). These examples highlight a code switching pattern whereby the Berber bridge system morphemes /n/ (of) and /b/(of) are used to link an EL noun with an ML one. This possibility is not the only one in ML+EL constituents. Myers Scotton (2002: 80) discusses another possibility in which an ML late bridge system morpheme is used to link two ML content morphemes (two nouns for example). Here are some examples from the data of this study whereby the Berber preposition /n/ (of) is used to link two nouns (a head noun and its subordinate or complement noun).

Les vacances /n-əṣaif /  
 The holidays of the summer  
 Summer holidays  
 French-Berber-Algerian Arabic CS  
 əl əaqlija n-bnadəm  
 The mentality of person  
 The person’s mentality.  
 Berber-Algerian Arabic CS  
 L’examen n-əl-əarbija/  
 The exam of-Arabic  
 The Arabic exam  
 Berber-French CS

The investigation of the data shows that there are also some other late bridge system morphemes that are used to link verbs, to link modals with verbs and to link verbs with their objects within VPs maximal projections. These late system morphemes are for example used to link a modal with its lexical verb. Below is an example which highlights this state of affairs.

wali θ-abɣa am θ-ahdar Melissa  
 Look! 3<sup>rd</sup> sing fem aff-like (want) to 3<sup>rd</sup> sing fem aff- talk  
 Melissa  
 Look! She wants to talk (to you) Melissa.

In this example /am/ may be considered as a late bridge system morpheme in the sense that it is used within the maximal projection of the VP to link the verbs /bɣa/ (like or want) and /hdar/ (talk) which are both content morphemes<sup>12</sup> within this mixed VP maximal projection where Berber seems to be the Matrix language.

lukan as-ini-x θura i-l-muealima  
 If 3<sup>rd</sup> sing accusative object clit aff-tell-1<sup>st</sup> sing affi now to-def-teacher  
 If to her I tell now to the teacher

12 We may also assume that in some contexts such as the one of this example, /bɣa/ is used as a modal with the meaning ‘want’. It may consequently be considered as a system morpheme that is used with a lexical verb.

If now I tell the teacher.

One of the components of this mixed VP maximal projection where Berber is the ML is /l-muɛalima/ which functions as the object to the verb /ini/ (tell). /i/(to), which is a bridge late system morpheme is used to link the Berber verb /ini/ (tell) with its Algerian Arabic object /l-muɛalima/ (the teacher). A similar construction exists in Algerian Arabic whereby the Algerian Arabic preposition /l/ (to) is used to link the verb /gul/ with its object when this object is a person. Here is an example from Algerian Arabic:

guul- l-hadaak əl-mahbuul

Tell to-that-mad (person)

Some instances of code switching are problematic in the sense that they lack bridge system morphemes. In the examples below the bridge system morpheme /n/ (of) is missing.

a-ddin a-rras

Religion -the race

By the religion (of) race

/əl/-Bon /ləbrid /

The invoice (of) the-route.

We may consider these examples as bare forms<sup>13</sup>, for the omission of the bridge system morpheme neither follows the syntactic requirements of Berber (the Matrix language of the two instances), nor does it obey the requirements of Algerian Arabic or French (the EL languages in the two instances respectively). There is no mismatch in the syntactic requirements of the three languages. The hypothesis, which states that bare forms are accessed when there is a lack of congruence between the languages involved in code switching, does not hold to these two instances.

## 10. Outsider Late System Morphemes

The 4M model (Myers Scotton & Jake, 2000) stipulates that late system morphemes are divided into two types. The criterion used to differentiate them is +/- looks at its maximal projection for its form and grammatical requirements. Outsider system morphemes are elected during the last phase preceding language production. Their function is to integrate maximal projections into larger units with the highest units being the CP or a sequence of CPs. Myers- Scotton [2002]: 79 argues in this vein that:

Outsider System morphemes also integrate content morphemes and X-projections into larger constituents but contrast with bridges in regard to the source of information about their form. For outsider system morphemes, this information (usually) is not available until the highest-level projection, the CP, is assembled. Outsider late system morphemes perform the arguably more important function of showing co-indexical relationships across maximal projections<sup>14</sup>.

The syntactic information needed to produce late outsider

system morpheme operate at a higher level than the one of the maximal projection in which they occur. These pieces of information are used to unify the maximal projections together. An example would be the grammatical and lexical information used to unify two clauses together. One of these pieces of information would be the logical relationship holding between the maximal projections of these two clauses. This information is needed to access different types of complementizers. This represents a higher order assembling procedures. It is also possible to move to lower order procedures. Myers-Scotton & Jake [2000]: 1064 discuss the example of outsider system morphemes used to assemble subject NPs with their VPs; examples of outsider late system morphemes would be verbal inflections attached to the verb to co-index number, gender and other features.

## 11. Testing the Outsider Late System Morpheme Principle on the Present Data

Late system morphemes in Berber include affixes that are attached to the verb to signal number, gender, aspect. Other types of outsider late system include Clitic affixes attached to the verb to signal indirect objects, direct objects and the like as these affixes are used to link VPs maximal projections with the object NPs. Myers Scotton and Jake (ibid: 1071) argue that under their refined system morpheme principle, late system morphemes are obligatorily from the ML.

The data that we have investigated indicate that this prediction applies relatively well to Berber-French, Berber-Algerian Arabic, and to Berber-Standard Arabic code switching. Below are some instances from the data where Berber is the ML language and where Algerian Arabic, French, and Standard Arabic are the EL languages. In some instances, however, there is a Matrix language turnover where, for example, EL languages of the data become the ML languages and where Berber becomes the EL. Below are some instances from the data displaying outsider late system morphemes.

amak is-xaǝm-ay zik

Like third sing obj accusative aff- do-1<sup>st</sup> sing perfective aff before

Like I did to her yesterday

Berber-Algerian Arabic CS

In this mixed CP<sup>15</sup> the late outsider morphemes are the Berber complementizer /amak/ (like) and /s/ the Berber object accusative clitic affix both of them have to look (for their form and grammatical requirements) outside the maximal projection in which they occur.

13 Bare forms are code switched elements that lack system morphemes such as inflectional derivations. These bare forms are generally accessed as content morphemes. We shall come back to the interpretation of these forms below.

14Our emphasis.

15 The CP means the complementizer projection. This roughly corresponds to a clause with all its maximal projections. Myers-Scotton [2002]: 54 uses the CP as the unit of analysis to avoid using the sentence as the unit of analysis. She [ibid]: 54 argues that using the sentence as the unit of analysis is confusing especially in complex sentences which by definition contain more than one clause. Myers-Scotton [2002]: 54 also uses the CP instead of sentence to avoid getting in the trap of intersentential Code-Switching.

θ-anak mi-θ-ruḥ ɣur-i

3<sup>rd</sup> sing fem aff-say when 3<sup>rd</sup> sing perfective aff-come to-me)

She said when she came to me

Berber-Algerian Arabic CS

The outsider late system morpheme in the mixed CP /mi-θ-ruḥ ɣur-i/ is the Berber complementizer /mi/. This complementizer is used to link the mixed CP, which functions as a noun clause, to its main clause /θ-anak/ (she said).

ad-nagza-ḍ ar dag-i sjana ad-nagza-ḍ ar da haak-a ur-thaf̣-ḍ aɣama

Perfective aff-jump-2<sup>nd</sup> sing aff to here then perfective-jump-2<sup>nd</sup> sing aff to there like-that Neg aff-learn-2<sup>nd</sup> sing aff nothing

You jump to here then you jump to there like that you will not learn nothing

(If) you jump from here to there like that you do not learn anything.

This sequence of CPs (mixed complex sentence) contains three CPs. The first one is /ad-nagz-aɣ ar dag-i/ (you jump to here). The second CP is /sjana ad-nagz-aɣ ar da/ (then you jump to there). The outsider late system morpheme in this Algerian Arabic mixed CP is the Berber complementizer /sjana/ (then). The third CP is /haak-a ur-thaf̣-ḍ aɣama/ (like that you do not learn nothing) the outsider system morphemes in this CP are the Berber negative affix /ur/ and the Algerian Arabic complementizer/haak-a/ (like that). The outsider system morpheme (the complementizer) introducing the second CP does not look inside the maximal projection in which it occurs i.e. within the VP maximal projection /ad-nagza-ḍ ar da/ (you jump to there) to have its form and lexical requirements. It rather looks at the logical relationship holding between its maximal projection and the one preceding it i.e. a logical relationship of chronological order. The second outsider late system morpheme (the complementizer /haak-a/ unifies the whole argument stated in the first and the second CPs and relates the third CP to them with a relationship of consequence.

i-w-agi ma θə-bɣu-ḍ at-kəʃma-ḍ a/- les toilettes

And-this when-2<sup>nd</sup> sing fem aff-like (want) Perfective aff-enter-2<sup>nd</sup> sing aff nom aff-toilet)

And this (prayer you say it) when you want to enter the toilet.

Berber-Algerian Arabic-French CS

The Matrix language in this mixed CP is Berber. The three content morphemes are: Algerian Arabic verbal stem /bɣa/ (like or want in this case, the Berber verbal stem /kəʃm/(enter), the French noun toilettes (the toilet). The early system morphemes are the Berber demonstrative pronoun /agi/ (this), the Berber nominal affix /a/ attached to the French code switched noun 'toilettes', the French definite article 'les'<sup>16</sup>(the) and the French plural affix /s/. The outsider

late system morphemes are:

1. The Berber coordinating conjunction /i/ which is not a free morpheme but a clitic in Berber.
2. The Berber complementizer /ma/(when) which is used to introduce the Berber-Algerian Arabic-French CP /ma θə-bɣu-ḍ at-kəʃma-ḍ a/- les toilettes/(when you want to enter the toilet).
3. The Berber unaccomplished marker /at/ attached to the verb kəʃm (enter). This affix signals unaccomplished case in Berber<sup>17</sup>.
4. The circular inflectional affix /θə...ḍ / attached to the content morphemes /bɣa/ (Algerian Arabic want to) and /kəʃm/(enter). This circular affix stands for 2<sup>nd</sup> person singular feminine conjugation.

ntaaɛ əl-ḥaaɣ-u-əl-qajjum nə-qra-ts/ qajju:m

Of def-alive def-mighty 1<sup>st</sup> plu perfective aff- read-3<sup>rd</sup> sing (The Koran Verse) of the alive and the almighty we read it Shall we read the Koran verse of the all alive and the almighty.

Berber-Algerian Arabic-Standard Arabic CS

This mixed CP contains a VP maximal projection /nə-qra/ (We read) and a NP maximal projection /ntaaɛ əl-ḥaaɣ-u-əl-qajjum/ (of the all alive the almighty). The VP /nə-qra-ts/ is composed of:

1. The Algerian Arabic verbal stem /qra/(read), a content morpheme
2. The Berber 1<sup>st</sup> person plural unaccomplished inflectional affix /nə/
3. The Berber 3<sup>rd</sup> person singular feminine accusative object clitic affix, an outsider late system morpheme. This morpheme is an outsider late system morpheme as it looks outside of the maximal projection in which it occurs (The VP maximal projection) to have its form and grammatical requirements.

wali amak id-iji-tə-qraḥ-ən

Look! Look how 3<sup>rd</sup> plu aff-1<sup>st</sup> sing obj accusative aff-3<sup>rd</sup> plu aff-hurt-3<sup>rd</sup> plu perfective aff

Look! Look how they me hurt

Look! Look how my legs are hurting me!

This complex sentence is made up of a main CP /wali/(look) and/amak id-iji-tə--ən/ (how my legs are hurting me) which is a subordinate CP which functions as a noun clause. This subordinate CP is composed of:

1. Two content morphemes: the Berber verb /wali/(look) and the Algerian Arabic verbal stem /qraḥ/(hurt)
2. The outsider system morphemes /amak/ (how) the Berber complementizer, the 3<sup>rd</sup> plural clitic pronoun /id/, the 1<sup>st</sup> person object accusative clitic affix<sup>18</sup> /iji/, and the verbal circular affix /tə...ən/ which stands for

17 In this context /at/ is used to introduce an aspect which resembles infinitive in Berber, but in which the verb receives inflections for gender and number. Verbs in Berber have got a functioning which is somehow similar to Algerian Arabic in which verbs when following the modal want to (like to) are assigned gender and number e.g. /raah baayi jə-t-ḥaak/ (Lit: He wants he jokes).

18 Myers-Scotton [2002]: 80 discusses similar cases of accusative case affixes in Hungarian. She similarly argues that these affixes are outsider system morphemes par excellence.

16 Unlike English articles that are neutral, French definite articles sub-categorize for gender and number

3<sup>rd</sup> person feminine plural in Berber.

This type of code switching represents a clear violation to the constraints of the equivalence model of code switching as it has been advocated by Poplack and her associates (1982, 1988)<sup>19</sup>. It however is normally interpreted under the predictions of the MLF approach. This may be considered as an evidence of the practicality of using an insertional approach based on the idea of asymmetry between the languages in the data under study here. The content morphemes in this instance, for example, are from both Berber and Algerian Arabic, while the outsider system morphemes are from Berber only.

i-t-agi bɣi-ɣ nikini t-agi ur-ħfidɣ-ɣ-ara/

(And-fem aff -this want-1<sup>st</sup> sing perfective aff I fem aff- this Neg aff-learn-1<sup>st</sup> sing perfective aff- Neg aff  
and this want I this did not learn

And I want (to learn) this verse, I did not learn (it).

Berber-Algerian Arabic CS

The mixed CP /t-agi ur-ħfidɣ-ɣ-ara/ (this I did not learn it) is composed of a two content morphemes i.e. the Algerian Arabic code switched verbal stem /ħfidɣ/ (learn) and the demonstrative adjective /agi/ (this).

There is only one early system morpheme in this mixed CP, the feminine affix /t/ which is attached to the demonstrative adjective<sup>20</sup>. The outsider system morphemes are the Berber negative discontinuous affix /ur...ara/ and the Berber verbal 1<sup>st</sup> person singular accomplished affix /ɣ/. The outsider system morphemes of this Berber-Algerian Arabic mixed CP are all Berber.

There seems to be a violation in this CP as there is a complementizer missing. The predictions of the MLF and 4M models stipulate that the occurrence of ML outsider system morphemes is obligatory in bilingual corpora. The complementizer, which should be used in this context, is the Berber complementizer /ig/ (that). We have observed the dropping of the complementizer 'that' in the data that we have been analysing<sup>21</sup>. There seems not to be any lack of congruence between Berber and Algerian Arabic in relation to this complementizer (the equivalent in Algerian Arabic being /əlli/ (that)). We may hypothesize that this may be a feature of spoken discourse.

Both Monolingual and bilingual speakers sometimes drop features of their languages or use weak or contracted forms by means of economy. The dropping of complementizers is one of these features. We may hypothesize that this may be considered as a discursive strategy used by the bilingual

speakers under interest in this study. This remains a hypothesis that needs to be verified using a quantitative investigation of the use of complementizers in Berber-Algerian Arabic code switching corpora in Oran.

## 12. Conclusion

The above instances of Code-Switching covering the two Tamazight varieties, Kabyle and Mzabi, together with Algerian Arabic, Standard Arabic and/ or French were analysed and seem to validate the credibility of the principles advocated by Myers-Scotton & Jake (2000, 2001) and the ones advocated by Myers-Scotton (1997, 2000, 2002) under her MLF model and its subsequent 4-M model in relation to the distribution and behaviour of content and system morphemes<sup>22</sup>. Contrary to Early System morphemes and Late Bridge System morphemes, some instances of the data that we have examined, however, seem to violate the predictions<sup>23</sup> of the 4-M in relation to the form, grammatical and lexical requirements of the Outsider system morphemes.

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22The different refinements and changes brought by Myers Scotton (1997, 2000) and by Myers Scotton and Jake (2001) to the definition and classification of different system morphemes may be considered as a response to the strong criticism and to the counter evidence (Boumans 1998; Muysken 2000; Gardner-Chloros 2009) to the MLF model in general. These refinements are also a response to the criticisms in relation to the way this model interprets functional elements. Functional elements being at the centre of most competing insertional models, Myers Scotton herself tried to be as exhaustive as possible with this aspect of code switching data. This, however, does not prevent even the latest developments to Myers Scotton model to show weaknesses in the interpretation of some bilingual corpora.

23 These predictions state that the outsider late system morphemes are elected from the ML language only. The argument put forward by Myers and Jake (2002: 1063) is that these morphemes are elected at the latest phase in language production (the formulator phase). The requirements of these morphemes are, consequently, the ones of the ML in the sense that they intervene during the phase of uniting Maximal projections, CPs, or sequences of CPs together.

19 Examples such as this one involve a pattern of code switching whereby a Berber object clitic prefix is attached to an Algerian Arabic code-switched verb. We have claimed above that this represents a violation to both the equivalence constraint and the free morpheme constraint as it has been expounded by Poplack and her associates (1982, 1988) in the sense that Algerian Arabic verbs do not subcategorize for a Berber clitic object accusative affix in a pre-verbal position. See the discussion above on the violations to the equivalence constraints.

20 The demonstrative adjective in Berber subcategorize for two different affixes standing for Gender/t/ (standing for feminine) and /ð/(standing for masculine).

21 Bouamrane (1986, 1988) and Benali Med (2007) observed the same process of complementizer dropping in general and the one of 'that' dropping in particular during their analysis of bilingual data in Algeria.



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