Code-switching in Bilinguals:
Impacts of Mental Processes and Language Awareness

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1.   Introduction: types of code-switching

Code-switching is a widespread phenomenon in bilingual speech, and it is therefore not surprising that a great proportion of research on bilingualism focuses on this topic. Most researchers, who have paid attention to code-switching, have however been concerned with the sociological interpretation and discourse functions, i.e. the socio-pragmatic aspect, of code-switching. For this reason, linguists who do not specialize in bilingualism often automatically assume that research in code-switching means sociolinguistic research. It is certainly an interesting issue to investigate when and why a speaker chooses one linguistic variety rather than another: this can be explained by stylistic or metaphorical motivation, where factors such as the interlocutor, social role, domain, topic, venue, medium, and type of interaction play an important role. In this case, language alternation can also serve as a conversational cue, expressing attitudes towards language or marking linguistic identity (cf. Tabouret-Keller 1995, Auer (ed.) 1998).

Only in recent years has research on the *patterns* of code-switching, i.e. its grammatical structure, become increasingly focused on in bilingualism research (s. Myers-Scotton 2002: 10ff). Researchers in this field discuss the types of code-switching structures that are possible within a given data set. It is possible to offer interesting indications about the underlying structure of language systems by analyzing code-switching constraints, i.e. the points within a sentence at which the transition from one language to the other is possible. This approach can be described as the grammatical approach to code-switching (cf. Auer 1998: 3).

Beside this merely systematic aspect, there is a third approach to code-switching that has not yet been widely considered, but which has been discussed by Michael Clyne in a number of his publications (e.g. Clyne 1967, 1991, 2003). This third aspect is psycholinguistically motivated code-switching: language alternation that is prompted not by the intentions of the speaker but by the specific conditions of language production. In this case it is not the use of language (as in the sociolinguistically conditioned approach) nor the system (as in the grammatical approach) that is the focus of discussion but the processes taking place in the speaker's brain:[1] lexical items that are similar or identical in both languages can function as a trigger for the alternation from one language to another. Such instances provide interesting insights into the processes of mental representation of bilingualism on the one hand and bilingual language processing on the other. In contrast to socio-pragmatically conditioned code-switching, the speaker in this case does not alter the language with a specific conversational aim. This means that the code-switching has no function in the local conversational context, especially when the "global interactional behaviour" (Franceschini 1998: 61) is based on code-switching, i.e. when languages or codes are not discrete in a given context (Franceschini 1998: 58 speaks of "non-functional uses of CS [= code-switching]").[2] Because of the obvious difference between these two types of code-

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[1]   In both cases, the sociolinguistic and psycholinguistic approach, the focus is on the speaker who uses the different codes, whereas the grammatical approach focuses on the language system.

[2]   Franceschini (1998: 65) calls it the *dual focus*, i.e. the speaker uses several codes simultaneously for a longer period of time. She points out that this takes place in less normative contexts and in situations where code-switching is highly accepted at a macrosocial level. She even gives evidence that in this case code-switching can be acquired directly without a full knowledge of both languages involved (ibid. 56f).

switching some scholars have suggested giving them different names: the term code-switching should be used only for socio-pragmatically conditioned code alternation, whereas the psycholinguistically conditioned type should be termed "code-mixing" (cf. for instance Berruto 1990) or "language mixing" (Auer 1999).[3] But as Franceschini (1998: 59) points out, this does not "present a satisfactory answer, as the basic problem remains: The speakers do use CS [= code-switching] – but what do they do with it?"

We also have to take into account that in bilingual speech both kinds of code-switching can occur within the same utterance, and it is sometimes difficult to decide which type of code-switching we are confronted with in a given sequence.[4] Moreover, even though triggering effects can facilitate transition to the other language at a given point, it is still up to the speaker whether he/she decides to continue the utterance in that language or to switch back to the base-language again.

In this paper I shall concentrate on psycholinguistically motivated code-switching and expound its implications for mental processes: in the first part I will provide instances of psycholinguistically conditioned code-switching by listing the various types of lexical items that can trigger code alternation. The examples are taken from corpora compiled by various scholars in addition to my own, as yet unpublished, corpora of German-Romance and German-Russian code-switching.[5]

To explain these data I will subsequently consider the cognitive prerequisites that can demonstrate the plausibility of triggering effects. I will present a model of the mental representation of bilingual speech production that can elucidate the highly complicated intertwining of languages and codes in the bilingual brain.

Although psycholinguistically conditioned code-switching, unlike pragmatically conditioned language alternation, is not intentional on the part of the speaker,[6] there are differences between language users concerning the frequency of language alternation. I will argue in the last part of this article that this variation can be explained by the language awareness of the speaker, at which point the concepts of monitoring processes and metalinguistic awareness come into play.

2.   Psycholinguistically conditioned code-switching and *triggering*

Psycholinguistically conditioned code-switching, or non-functional code-switching, is non-intentional, it just "happens" in the conversation of bilinguals and is promoted by so-called *trigger-words,* which are defined as "words at the intersection of two language systems, which, consequently, may cause speakers to lose their linguistic bearings and continue the sentence in the other language" (Clyne 1991: 193). Those lexical items can usually be identified as belonging to more than one language (of the bilingual speaker or the entire bilingual speech community). However, it has to be stressed that these kinds of lexemes are not the result, but the *cause* of code-switching (cf. Clyne 2003: 162). This means that the trigger word should not itself be regarded as a code-switched item, because it is part of the language of interaction. It is a lexeme that is shared by both languages. The simple fact that it is at the same time part of the 'other' language as well can cause the switch (= *triggering effect*). In other words: this specific item subsequently elicits more 'other'-language material. In the remainder of this chapter I shall list the different types of *trigger-words* following the classification posited by Clyne (1991: 193ff, modified in 2003: 162ff).

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[3]   Similar suggestions are made by Muysken (2000), who differentiates between *alternation* (= "code-switching") and *insertion* (= "code-mixing").

[4]   As Auer (1998:7) shows, borrowed items that are repeatedly employed in subsequent turns can also possess a discourse related function.

[5]   For further information about the context of these data see Riehl (2001) (for the German-Romance sample) and Riehl (forthc.) (for the German-Russian sample).

[6]   I am quite aware of the problem which "intentionality" poses in this context. It is, however, meant to implicate that there is no apparent discourse function connected with language alternation.

2.1. Proper nouns

In almost all bilingual speech communities proper nouns usually have no translation equivalent in the other language, but are used in both languages in a phonologically identical form:

(1a) *Es war Mr Fred Burger, der wohnte da **in Gnadenthal** and he went out there one day and Mrs Roehr said to him:* *Wer sind denn die Männer do her*?

It was Mr. Fred Burger, he lived at **Gnadenthal** and he went out there one day and Mrs Roehr said to him: *Who are all these men around here?* (Clyne 1994:112)

Gnadenthal is the name of an old German settlement in Australia and is used both in English and German. The presence of the lexeme in both languages triggers the transition from German to English at this point. The second switch, however, which introduces the section of direct speech, is pragmatically conditioned. The sequence was originally uttered in German and the code-switching here functions as a quotation. This, too, is evidence for the intertwining of both types of code-switching, functional and non-functional.

But as I mentioned above, code-switching is only *facilitated* at this point: it need not occur necessarily. For this reason Clyne (2003: 162ff) points out that *trigger-words* facilitate transversion (= switch), but do not necessarily promote it. In the following example taken from a mixed code conversation both possibilities (switching and non-switching) occur immediately after one another within the same turn:

(1b) [...] *se tu ti mangi **emmentaler** o se tu ti mangi una **fontina** isch au en unterschied, oder?*

If you eat **Emmental cheese** or if you eat **Fontina cheese**, there is also a difference, isn't there? (Preziosa di Quinzio 1992, quoted from Franceschini 1998: 59f)

In this example the first proper noun of German origin (*Emmentaler*) does not trigger code-switching, whereas the second proper noun – although part of the language of interaction – initiates a code-switch to the other language (= German). As will be shown later in this article, the frequency of triggering effects is mainly based upon the language awareness of the speaker and the speech mode (or "language focus" according to Franceschini 1998) of a given interaction sequence. One instance where language alternation frequently occurs is when a conjunction such as *and* or *or* connects one or more proper nouns of 'other'-language origin: in this case the conjunction is most likely to be uttered in the 'other' language (in 1c: Russian *i* 'and'):

(1c) Bei uns ware viele Mar/ äh fünf Marschall, (--) Marschall. **Jüngster *Tuchačevskij, Bljucher (-) Bljucher, Vorašilov, Budenyj* i Egorov**. Und der - wenn der Tuchačevskij kam nach Hause [...]

There were many mar/ five marshalls with us. The youngest (was) Tuchačevskij, Bljucher (-) **Bljucher, Vorašilov**, **Budenyj** and **Egorov**. And when Tuchačevskij came home [...] (Russia, R9, 56 years, teacher)

In this case in an otherwise German-language interaction the speaker refers to five Russian proper names, and although the rest of the sequence is in German, the Russian conjunction *i* connects these names.

2.2. Lexical transfers

The second and even larger group of *trigger-words* is lexical transfers that are phonologically unintegrated (or integrated at a low level only) in the language of interaction:

(2a) *Come che l'ha conosciuto su i **film**?* **Not in the films, are you, these pornographic films he gets in?**

How he recognized him in the **films**? Not in the films, are you, these pornographic films he gets in? (Bettoni, quoted from Clyne 1991: 194)

In this example *film* is a lexicalized loan (i.e. a dictionary-attested loanword) in Standard Italian that has no native Italian counterpart and is still marked as a non-native word by the word-final consonant (Italian autochthonous lexemes usually end in a vowel).[7] In example (2a) this loan triggers the transition from Italian to English.

In addition, there are also idiosyncratic loans, so-called *nonce borrowings,* which are lexical transfers used only by a certain speaker, but not necessarily exclusively (i.e. in alternation with its translation equivalent). There has been a long discussion about whether this kind of code alternation should be considered code-switching or not.[8] I agree with Poplack/Meechan (1998), who maintain that code-switching and borrowing are two distinct phenomena. Poplack/Meechan (ibid.) suggest that single lexeme language alternations are not instances of code-switching but forms of borrowings, since they are not distinct linguistically from dictionary-attested loanwords. In a crosslinguistic comparison, Poplack and others[9] established that the overwhelming majority of single word language alternations had a similar pattern to base-language lexemes, and therefore concluded that "lone major-class content words of one language incorporated in discourse of another are almost always borrowings" (Poplack/Meechan 1998: 135). Examples of this type of inserted items constitute the majority of lexical transfers in the corpora:

(2b) *Ich les grade eins/ das is' ein/ handelt von einem alten/ **secondhand-dealer** and his son*

I'm just reading one/ that's a/ about an old **secondhand-dealer** and his son (Clyne 1991: 194)

In this case the lexeme *secondhand-dealer* is borrowed from English and integrated as a loan into the German language. Thus from a structural point of view there is no difference between this lexeme and the attested loan in (2a) or the third case below, which concerns a loanword that is conventionalized in a certain bilingual speech community:

(2c) *Der war über die ganze **Oblast'**. **Nu on mne srazu dal napravlene.***

He was responsible for the whole **oblast'** (district). Well, he introduced me immediately to the job. (Russia, R17, 82 years, chemical laboratory assistant)

The term *oblast'* does not exist in Standard German, only in the Russian-German speech community, but here it is commonly used by all speakers of this community. So it has a semi-lexicalized status, equal to the type attested in example (2a).

2.3. Bilingual homophones

A third category mentioned by Clyne (1967ff) is bilingual homophones, words that sound the same or nearly the same in the two (or more) languages (or language systems) of the speaker.

Homophones occur for the most part in genetically closely related languages, but they happen to appear also in less closely related languages. Thus in Russian German the discourse particle *no* (a dialect variant of Standard German *nun* 'well') is phonologically identical to the Russian adversative

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[7] Thus this example also underlines the assumption of Poplack/Meechan (1998: 134) that phonetic and phonotactic criteria are a poor predictor of loanword status.

[8] For a discussion see Romaine (1995: 142ff), Heller/Pfaff (1996: 601). But, as Grosjean (1995: 263) points out: "the line is very fine between [...] codeswitching for a very short segment and borrowing."

[9] Cf. the special issue on code-switching and borrowing in the International Journal of Bilingualism, 2nd issue 1998.

particle *no* ('but'). In ex. (3a) this particle triggers a transition from the German variety of the speaker to Russian:

> (3a) *gib mir her deine Frau, wir wir gehen zusammen da in die Wiste.* **No, kak ja i ne mogla ego videt'**.
>
> Give me your wife, we we'll go out together into the desert. **Well/but** how, I couldn't see him either. (Russia, R17, 82 years, chemical laboratory assistant)

In this case it is impossible to decide whether the particle *no* was meant in the German sense ('well') or in the Russian sense ('but'), since both interpretations are plausible. Examples such as (3a) occur relatively often in Russian-German bilingual settings (see Blankenhorn 2003).

There are also "compromise forms" of both languages that can be regarded as homophones, cf. the following example:

> (3b) *Keine Apfelsinen. Wir haben se gehabt but oh großes Feuer* **come** [kam] **through and killed all the trees**.
>
> No oranges. We had them but oh big fire **come** through and killed all the trees. (Clyne 2003: 164)

Although engl. *come* [kʌm] and germ. *kam* [ka:m] are not real homophones in the respective standard languages, they are phonologically identical in the particular varieties of this speaker: he uses [kam] both for German past tense and English present and (non-standard) past tense (cf. Clyne ibid.).[10]

2.4. *Discourse markers*

Discourse markers that had been borrowed from the contact language constitute a special type of *trigger-words* that Clyne also counts as bilingual homophones (cf. Clyne 1991: 194). I wish to consider them here under a separate label, because throughout my corpora these elements turned out to be the most frequent trigger of language transversion. This is due to the fact that in all language contact situations these kind of lexemes are borrowed at an early stage, because they are easily detachable.[11] According to Matras (1998), there are three possibilities for borrowing: either the system of discourse markers of the recipient language or the donor language can be used for both languages, or a mixed system can emerge (using discourse-marking devices from either language, and that have pragmatic functions differing from those in their language of origin). The frequency of this kind of borrowing is due to the fact that discourse markers are elements used to organize the communication process and are therefore pragmatically detachable from the language system: they are perceived as "gesture-like, situation-bound devices" and that makes them "detachable from the content message of the utterance" (see Matras 1998: 309). Thus, in many bilingual speech communities, discourse markers from only one of the speaker's languages (generally from the dominant language) become part of the interactional system of the speaker, irrespective of the language in use. The more "gesture-like" these elements appear and the less their lexical or content-relation is, the more likely they are to be integrated into the recipient-language system. According to Matras' definition, "the less content an expression has and the less analyzable it is to the speaker, the more gesture-like and situation-bound it is likely to be" (1998: 310). [12] For instance, in the English-German bilingual speech communities, a discourse marker such as

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well was borrowed into German at quite an early stage, because it cannot easily be analyzed in terms of lexical meaning.[13] It is very often responsible for triggering effects:

(4a)   *Wenn ich mich so fühle, geh' ich 'raus in den Garten und/ **well** **look after my flowers**.*

When I feel like it, I go out in the garden and */ **well** look after my flowers. (Clyne 1991: 194)

That these markers are fully integrated into the recipient language system can be proved by examples where a switch is triggered from the donor language to the recipient language:

(4b)   *mein zweiter Bruder sei Frau war von Don/ **ėto** **Stavropolskij. No russkaja.** **Potom** hat man Moldavan. Ein Bruder hat eine Jud*.

The wife of my second brother was from Don/ that's Stavropolsk district. But Russian. **Then** we have a Moldavian, one brother has a Jew. (Russia, R1, 68 years, agricultural engineer)

The first switch from German to Russian is probably motivated by the proper name. But after this transition to Russian, a second switch takes place that is triggered by *potom* (= 'then')*,* a language independent discourse marker that is borrowed from Russian into the German variety of the speaker and is fully integrated into the system of this variety. This means that these discourse markers also appear in utterances which are intended to be monolingual, and their use is widespread among members of the Russian German speech community (see 4.2. for a possible explanation).[14]

3.   Explaining triggering: a speech production model

3.1.   *Modular computational vs. parallel processing models*

As I mentioned in the introductory part of this paper, the type of psycholinguistically conditioned code-switching presented here is mainly unintentional on the part of the speaker and for this reason presents a possible way of explaining bilingual speech production processes. A number of different models have already been developed to explain bilingual speech production by the adaptation of Levelt's speaking model (cf. de Bot 1992 and de Bot/Schreuder 1993). In this model, however, the language choice is already made at the conceptual level, i.e. the level of the lemma. Thus, if information about language cues has to be available at the pre-lexical stage, how can transversion from one language to the other be facilitated by *trigger-words*? Although Levelt et al. in their 1999 version of the model suggest the possibility of a feedback effect between the levels, there is still no provision for feedback from the phonological code to the lemma (for a discussion see Clyne 2003: 197f). But the trigger-effects of bilingual homophones and proper nouns in particular, do require a basis for representing feedback between the levels of phonological and lexical encoding.

I have therefore suggested (cf. Riehl 2001, 2002) applying a connectionist rather than a modular computational model to explain bilingual speech production processes. In contrast to modular representations such as the one proposed by Levelt et al., the connectionist paradigm allows for parallel processing processes, e.g. the *interactive activation model* as conceptualized by Dell/Reich (1980ff), Stemberger (1985ff) and others:

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[13]   Cf. Fuller (2001), who cites examples from Pennsylvania German, where both English and German discourse particles are used.

[14]   Clyne (1991, 2003) also provides evidence of the anticipation of code-switching by *trigger-words.* In the present article, however, this possibility is not examined.
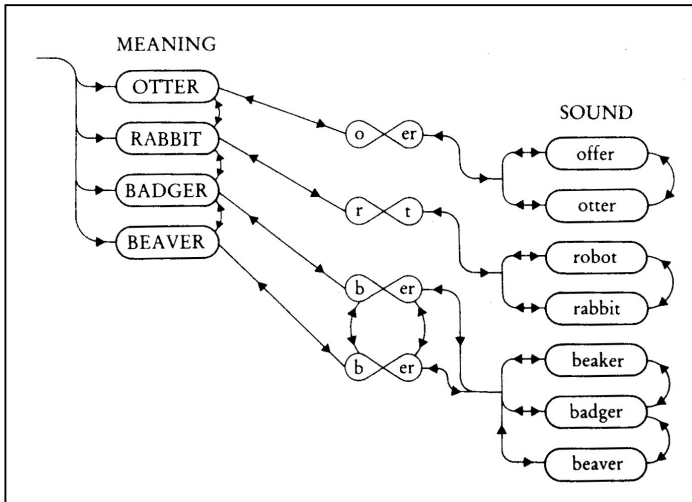
Fig. 1:   *An interactive activation model* (*from Aitchison 1994: 207*)

This model suggests that in the production of speech the current is initiated in the semantic component: a special semantic field is activated, e.g. a clutch of woodland animals as in Fig. 1 (adopted from Aitchinson 1994). Before a choice for a certain concept is made, the current flows from the semantic area to the phonological area code of each word and triggers a hoard of sound patterns here. Those activated will feed back into the semantic processing level, activating more words there and so on. In a next step the activated links are inspected, and the relevant links become ever more lively, while the irrelevant ones fade away. Since the current is flowing back and forth, any item that is particularly strongly activated at the semantic level will cause additional activation at the phonology level. So in this example *beaver* and *badger* will both become highly activated. If the speaker does not pay attention, the wrong one might be selected.

    In a bilingual brain it is plausible that a similar sounding word not only from the language of interaction (the language in which the speaker intends to utter the concept) might be chosen, but also a similar or identical sounding word from the 'other' language, as in the case of English-German bilingualism: germ. *Biber* ('beaver'):
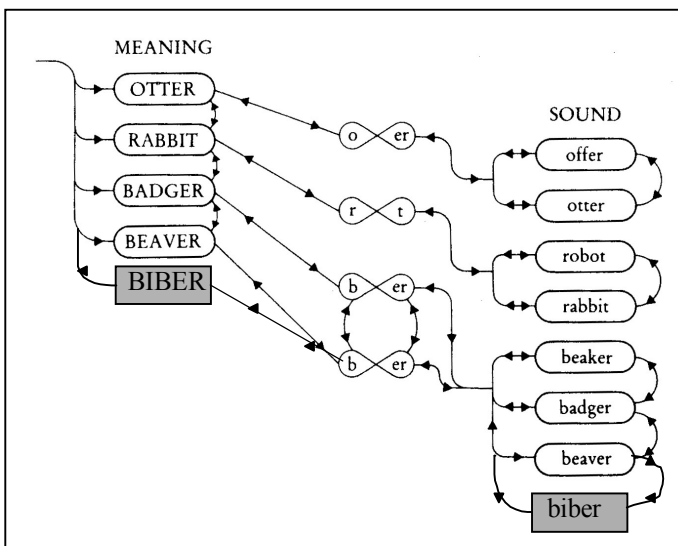

Fig. 2:   *An interactive activation model for bilingual speech production*

The more similar the phonetic codes of the 'other'-language items are, the more likely they are to become highly activated. Now exactly the same thing can happen as it does when choosing a wrong lemma in a monolingual setting: the similar-sounding 'other'-language item can be picked. This model is able to explain why words that sound similar or the same in two languages are often merged, but it still leaves the question of why items that are stored closely together and are often jointly activated are able to trigger the whole 'other'-language network.

3.2. A connectionist model for bilingual speech production

In the following paragraph I will place this example in a wider context and propose a model of speech production that explains language transversion starting from the *trigger-word* level. In doing so, I follow Grosjean (1988, 1995), who assumes that bilinguals have two language networks (syntactic, morphological, and phonetic features) which are independent, but interconnected. They must be independent, because is it possible for the speaker to use only one language (the monolingual speech mode, s. 4.1.), but on the other hand, they must also be interconnected to allow transversion from one language to the other.
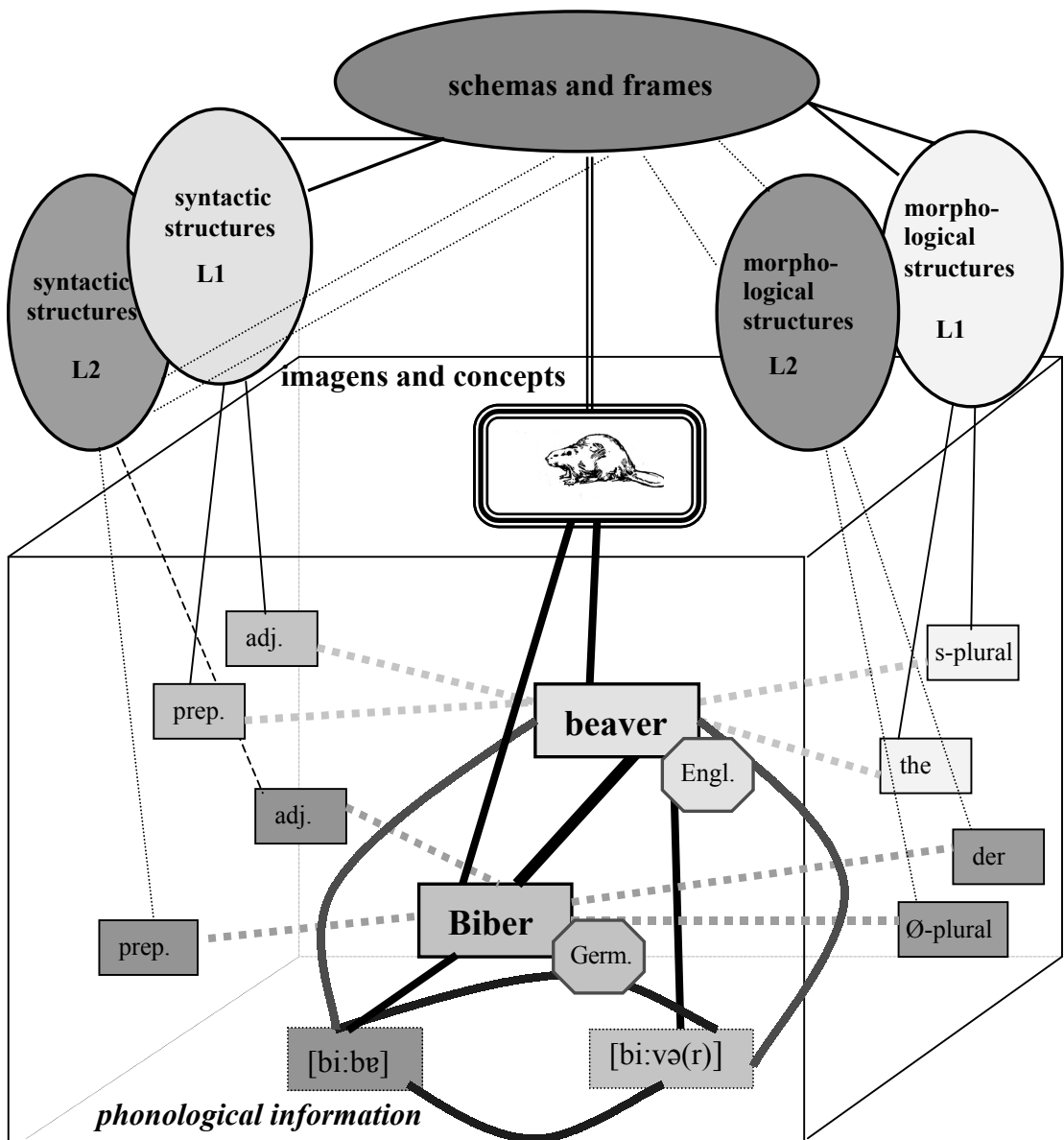

Fig. 3:   Network of language systems

The speaker activates the image of the animal beaver ("imagens" according to the term used by Paivio 1986: 239ff) and the lemma *beaver* that is connected with that image. The lemma activates the corresponding sound pattern [biːvə(r)], which for its part activates the very similar, neighbouring sound pattern [biːbɐ] from the L2-equivalent. This assumption is based on the observation, supported by the interactive activation model (see fig. 1), that phonologically similar items are closely associated.[15] The sound pattern [biːbɐ] feeds back to the lemma *Biber*, thereby activating its semantic component as well as the specific lexicon-dependent morphosyntactic information that is attached to the lemma (as also in the model of Levelt et al.). If the speaker uses a speech mode where the activation of 'other'-language items is relatively high (i.e. bilingual speech mode see 4.1.) this lemma (and its attached grammatical information) is activated most strongly and is finally uttered.

This is the point at which the triggering effect comes into play: the model suggests that the semantic information is connected, via the lexicon-dependent morphosyntactic information of the lemma, with the syntactic and morphological system of the L2. This is why the activation of one lemma of the L2 increases the likelihood of the overall activation of that language network.

A very important aspect in this context is 'language tagging' (as suggested by Poulisse/Bongaerts 1994 and Green 1998), which suggests that each lemma is equipped with additional information about the language it belongs to – in our example the tag '*German*' for *Biber* and '*English*' for the lemma *beaver*. This information is attached to the lemma in the same way as connotational information about the register or style of a lexical item. Usually the speaker recognizes a "guest-word" (Grosjean 1988, 1995), i.e. a lexical transfer that is phonologically unintegrated into the recipient language and is equipped with the language tag of the other language. But as Grosjean (1995: 291) points out, the activation of words which are similar in the two languages reduces the recognition of those "guest-words". That means that it is highly important that the speakers pay attention to language specification. It is, however, difficult to decide what happens to words that belong to both languages (attested loanwords, proper nouns, bilingual discourse markers). Do they have two lemmas, one for each language, or one lemma equipped with two language tags, or one "neutral" lemma without any tag? And how do speakers become aware of this congruence? I will argue in the remainder of this paper that language tagging is not necessarily identical among all speakers, but is – like connotational information about register or style – part of the learned system of metalinguistic knowledge.

4. The role of monitoring and language awareness

4.1. *Types of monitoring and speech modes*

As argued above, psycholinguistically conditioned code-switching is non-intentional, but this does not necessarily imply that the speaker is not aware of it. If speakers pay attention to potential *trigger-words* they are able to correct themselves and return to the language used previously. This is comparable to the way in which speakers become aware of speech errors or stylistic errors.

The mechanism controlling speech errors and "language errors" (in the sense of choosing the "wrong" language, i.e. the language that is not language of interaction) is identical: it performs an inner control role that in language acquisition and speech production theory is called the 'monitor'.[16] In language acquisition theory the model of Krashen has been widely discussed (see Selinker/Gass 2001: 198ff). According to Krashen (1981) there are three conditions that must be met for monitor use:

- a certain amount of time to be able to reflect upon the rules
- focus on form: the speaker must pay attention to the form of his/her utterance, not to the content
- knowledge of the rule: the speaker must *know* the rules (or in our case the language specification of particular items) in order to apply them.

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[15] The connection between both is strengthened by nerve bundles, and becomes stronger with each joint activation of both items.

[16] Levelt uses the term *monitoring* (1989: 9) or *self-monitoring* (1999: 3). The expression *monitor* in language acquisition theory was introduced primarily by Krashen 1981.

Beside these conditions for monitoring there are also two different types of editing as discussed by speech production theory:

- *prearticulatory editing:* the speaker listens to his/her inner voice before making an utterance. The speaker is able to eliminate speech errors before the planned utterance is transferred to the formulator.
- *postarticulatory editing:* the speaker listens to his/her output and can correct wrong expressions after uttering them.

Bilingual speakers usually have a well functioning monitoring system at their disposal, as can be seen in the frequency of corrections after transversion into the 'other' language (ex. see below).

The use of the monitor, however, does not depend solely upon the conditions mentioned above, but also on the speech mode in which the speaker interacts. The monitor is applied very frequently if the speakers are interacting in a monolingual mode: according to Grosjean (1992), the monolingual speech mode is characterized by "bilinguals adopt[ing] the language of the monolingual interlocutor. They also deactivate, as best they can, the other language [...] In the bilingual speech mode, both languages are activated. Bilinguals usually choose a base language to use with their bilingual interlocutor (i.e. the main language of interaction) but can, within the same conversation, decide to switch base languages" (p. 59).[17] Bilinguals may use various activation and deactivation procedures to keep their languages separate when they are in monolingual speech mode (ibid.). As mentioned above, Grosjean (1988, 1995) also points out that speakers recognize "guest words" from the other language in their speech and it is for this reasons that they try to avoid them when in monolingual speech mode. In my corpora, a variety of examples are present, in which speakers in monolingual mode (i.e. in a monolingual conversation with the researcher who does not belong to the bilingual speech community) often correct themselves after uttering a word or expression in the 'other' language. As it is extremely difficult to observe prearticulatory editing, most examples demonstrate the postarticulatory monitoring process.

4.2.   Postarticulatory editing

Postarticulatory editing is a widespread activity in monolingual speech mode processing, as can be illustrated by the following examples:

(5)   *Ich bin für Umweltschutz* **engagé** (--) *äh wie sagt man auf Deutsch*?

I'm involved in environmental protection - um how do you say it in German?
(East Belgium, 43 years, civil engineer)

The French-German bilingual speaker unintentionally uses a French word in an otherwise German conversation. But in his *postarticulatory editing* the speaker becomes aware that he has used a French lexeme, i.e. a "guest word" from the second language. The hesitation after the word *engagé* signals that the speaker is looking for a translation equivalent. As he does not find it, he asks the interlocutor to help him: "How do you say it in German?" In most cases speakers are able to find the right expression in the language of interaction on their own:

(6)   *Da hängen dann die* **drogati** *'rum* (-) *äh die* **Drogierten** (-) *oder wie sagt man auf Deutsch* (--) *Drogenabhängige* [...]

Then the **drogati** hang around there, um the *druggated*, or how do you say it in German - drug addicts (South Tyrol, 29 years, teacher)

Here, the speaker notices that the word *drogati* is not of German origin, but is part of her second language repertoire. But the speaker doesn't think of the right expression either, so she tries a kind of "Germanized" version of the lexeme, i.e. she integrates it as a nonce borrowing into the German

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[17]   It should be kept in mind that these are the endpoints of a continuum and that intermediate levels exist between them (cf. Grosjean 1995: 262).

language system by adding the suffix -*ieren* that is usually employed to integrate Latin-based loans into German. After undergoing this process the verb can be inflected as in ex. (6), where it is used as past participle. But then the speaker edits her output again and becomes aware that this lexeme does not exist in the German language either. In the end she remembers the right one and continues her interaction in German.

After observing both speakers for a longer period of time (as I was able to do during my fieldwork in East-Belgium and South-Tyrol in 1995 and 1996, see Riehl 2001), it becomes clear that both are active users of their monitor; they not only correct themselves, but also comment on their transfers: *wie sagt man auf Deutsch?* ('how do you say it in German'?). This is due to their profession or education.

There are, however, less educated speakers who use their monitor less frequently (even in an official monolingual context). If they correct themselves at all, they usually do so without commenting upon it. They simply juxtapose the translation equivalent of the transfer:

(7)   *Und dann die Kinder ware in in **Sadik** ['Kindergarten'], in der **Jasli** ['Krippe'].
       Wo sollt die spreche? Wenn ich se zuhaus gebracht hab, hab angefangt zu
       sprechen Deutsch mit ihnen*, **oni plakali**, *haben sie geweint*.

       And then the children went to the kindergarden, to the crèche. Where should they
       speak? When I took them home and started to speak German to them, **oni plakali,**
       they cried. (Russia, R10, 80 years, worker)

This example is very typical of the Russian German speech community: language alternation in monolingual speech mode is not commented upon, but followed by a direct translation into the language of interaction. (Unlike the phrase *oni plakali* the lexems *sadik* and *jasli* are fully integrated loanwords in this speech community.)

Another example of uncommented correction is the following, where a translation equivalent is not placed immediately after the switch, but only at the end of the clause:

(8)   *Des war (-) ä **bereza** wenn sie nass ist un (-) **Birken** (-) un dann we/ fault sie.*

       That was (-) um **bereza** if it gets wet and (-) **birch** (-) and then it rots. (Russia, R2,
       82 years, worker)

Similar cases can be observed in monolingual slips of the tongue: here the correction often follows after a clause or part of a clause.

(9)   *She'd **burnt** a couple **burst** a couple* (London-Lund-Corpus, listed in Garnham et
       al. 1982: 259)

In this case the sentence is completed and the emendation is uttered only after the closing word *a couple.*

4.3. Prearticulatory editing

As mentioned above it is difficult to observe *prearticulatory editing*. There are, however, examples, in which speakers break off in the middle of the word they wanted to utter and present the translation equivalent instead:

(10a) ***Vot** is (-) is meine **komanda** ['Mannschaft'] in Ekaterinovkaja, Sekretär, die wo
       (lacht) **buma**/ Papiere meine vorbe(reiteten) (lacht)*

       This is my *komanda* ('team') in Ekaterinovkaja, the secretary who prepared
       (laughs) **buma**/ [= first part of *bumagi* 'papers, files'] my papers (laughs). (Russia,
       R1, 68 years, agricultural engineer)

Examples of this kind may point to prearticulatory editing, if we assume that part of the utterance was already in the articulator when editing took place. This is even more evident in cases where we find monosyllabic items that are only perceivable as part of a transfer, if one listens very attentively:

(10b) **Re/** *selten hat mer ein* **kolchoz** ['Kolchose'] *gefunden, wo gut gelebt hawa die Mensche*.

Re/ [= first part of russ. redko 'rarely'] rarely you found a kolchoz [Soviet collective farm] where people lived a good life.   [Russia, R2, 82 years, worker]

These fragments as well as the corrections and juxtapositions of translation equivalents in ex. (5) to (8) offer some insight into the cognitive workings of bilingual speakers and their obvious monitoring activities.[18] The more attention the speaker pays to language processing activities, the fewer instances of psycholinguistically triggered code-switching occur in their speech. But, as Green (1998) indicates, any control mechanism increases the mental load for the speaker: the combination of monitoring stress, the competition between the languages and the activities of planning and formulating can impose such a high mental load that transversion is often surrounded by other interlingual or intralingual speech errors as shown by Clyne (2003: 203). Limitations on mental load can reduce the effectiveness of monitoring. If factors like stress, fatigue, sickness or lack of concentration are added, concentration levels decrease even more. For this reason, speakers do not use the monitor very frequently in a relaxed bilingual speech situation or if they are tired after using a lesser used language for a longer time. There are, however, lexemes that are less easily detected and which can therefore slip through the editing process, e.g. unstressed, monosyllabic lexemes such as the connector *i* in example (1c). This is why such conjunctions are triggered very often when 'other'-language proper nouns are listed. According to Grosjean (1988: 271), the data collected on frequent code-switching do not prove the absence of a monitor, but "show that the processing system can do without it."

The use of the monitor is not only dependent upon the attention of the speaker at the moment of speech processing, but also on whether the speaker has learned to distinguish between languages. It should, however, be taken into consideration, whether a given set of co-occurring linguistic features is perceived by participants as a distinct code or not. This can be difficult to decide when the codes involved are genetically closely related, as is the case for instance with different dialects of the same language. This problem is pointed out by Franceschini (1998) who discusses examples of code-switching where the distinctiveness of codes becomes blurred.

Franceschini (1998), Meeuwis/Blommaert (1998) and others have shown that in certain speech communities mixed codes (or code-switching) are used as a default case and acting monolingual is the marked case. For this reason a code-switched type of language system can be passed from one generation to the other in a given speech community (cf. also the "learnability" of code-switching, as discussed by Franceschini 1998).[19] If code-switching is very common within a particular speech community it is likely that language tagging information becomes lost and speakers become less and less aware of triggering effects (though at the endpoint of this development it is problematic to speak even of triggering).

Children who acquire two languages at the same time usually do not differentiate between the two systems before the age of three (cf. Butzkamm 1993). In speech communities which use mixed codes it is difficult for children to acquire the language tags for the different systems. The following example is again characteristic of the Russian German speech community:

(11) *In der siebnten oder - sechsten Klasse habe ich nicht äh äh gewusst, dass* (-) **Fingerhut** (-) **und** **Wellholz** (-) *das sind* (-) *deutsche Wörter! Ich* (-) *ich habe gedacht, dass das* (-) *auf Russisch ist.* [...] *Zu Hause sagen wir immer so*. (Russia, R21, 46 years)

In seventh or - sixth grade I didn't um um know that 'Fingerhut' (Germ. for 'thimble') and 'Wellholz' (Germ. dialect for 'rolling-pin') - that these are German words! I - I thought that that was Russian. At home we always say so.

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18   The vast majority of speech errors also consist of similar kinds of fragmented or disjointed utterances (e.g. the examples taken from the London-Lund-Corpus in Garnham et al. 1982: 254ff).

19   Franceschini (1998: 57) cites an example taken from the Swiss context, where a code-switching variety is acquired directly without basic competence in both of the languages involved.

The speaker explains that she used German words in a monolingual Russian interaction, because she had never learned that these expressions were not part of the Russian language, a fact she would learn only later at school. What holds for phonologically completely (as in ex. 11) distinct words is even more true of phonologically similar items or bilingual homophones: speakers have to acquire knowledge about the source language of the different items. In addition, bilingual homophones often have a different meaning in both languages, which speakers may not acquire. The collective knowledge of a bilingual speech community about linguistic differences between different codes involves mainly phonological aspects: for example, in a conversation with a group of German-Russian bilingual speakers in St. Petersburg, I was told that there is a difference in pronunciation between germ. *Butterbrot* and russ. *buterbrod*, a dictionary-attested loan in Standard Russian. But at the same time these bilingual speakers were not aware of the semantic distinction between the two words: Germ. *Butterbrot* means 'bread with butter', whereas the Russian counterpart means any kind of sandwich, even one without butter! Such examples demonstrate that speakers have to acquire metalinguistic knowledge concerning language tagging, semantic differences, and other contrastive features. But it is also possible for knowledge once acquired to be lost again by different speakers or among different speech communities.

The examples such as those presented above lead to the assumption that different speakers have different language tagging models for bilingual homophones and loans at their disposal: two lemmas, one for each language, one shared lemma for both languages with two language tags, or only one shared lemma without any tagging.

These findings also suggest that psycholinguistic experiments should not be conducted only with educated people, who have acquired their second language system only later in their lives, because by then they have also learned how to keep both languages apart. It would be interesting to carry out lexical decision tasks with early bilingual and less well-educated speakers from minority speech communities such as the German-speaking community in Russia (see Riehl forthc.).

5.   Conclusion

Authentic language data for psycholinguistically conditioned code-switching initiated by *trigger-words* demonstrate that is plausible to assume one shared language store, where all items are interconnected. Jointly active language material is especially likely to be strongly connected and will be activated simultaneously. The lemmas are connected, but also equipped with language tags containing connotational (i.e. language specific) information. To explain triggering effects it is also necessary to assume that phonological realizations feed back to concepts and lemmas. The model demonstrates furthermore that the transversion from the *trigger word* to an actual instance of code-switching is explained by the internal linking of lemmas with morphosyntactic information.

The data exhibit individual differences among speakers that can be elucidated by the frequency of monitoring and metalinguistic knowledge:

- The more attention the speaker pays to the utterance, the less evidence will be found for psycholinguistically conditioned code-switching.
- The monitor is used less in bilingual speech situations or in situations that impose a heavy mental load on the speaker.
- If code-switching is very common in certain speech communities, language specific information (such as tags) may become lost.

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