L1 and L2 as merging systems

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Introduction

Ever since Weinreich’s influential ‘Languages in contact’ book from 1953, linguists of different hyphenation have looked at languages as entities that can be studied in the same way as biologists study different species: languages are separate entities that have their own history and characteristics. For various socio-political reasons languages have been defined and labeled and linguists have studied them in various forms looking at ‘the grammar of French’ or ‘the Spanish morphological system’. A common idea has been that there is a direct link between what descriptive and theoretical linguists have to say about language and how language in used in individuals and groups. In my view there are now good reasons to review these positions and at least consider alternatives for it. There seems to be arguments from different fields that call into question both the link between description and use and the idea that there are separate languages in our head.

The main thesis for this contribution is the following

While we tend to see different languages in the individual language user as separate entities, both as communicative tools and as cognitive systems, there is substantial evidence from different sources that such a separation is primarily a cultural artifact that probably resulted from the emergence of script and the use of language as a political tool. Evidence for this position comes from linguistics, brain research, psycholinguistics, studies on second language development and language policy.

A linguistic perspective on languages as entities

In the structuralist tradition, languages were seen as systems of rules that were consistent and could be described with ever more advanced tools and paradigms. A language could be defined as a unique set of specific rules and elements. Languages may share some elements but each language is its own fixed and unique set. Speakers of that language are assumed to be highly similar with largely overlapping sets.

An alternative view on what constitutes a language has been developed by researchers working from an emergentist perspective. ‘The term “emergentism” emphasizes the progressive nature of the process (of language development), namely that qualitatively new and more complex representations can emerge on the basis of knowing its simpler component parts.’ (Behrens 2009, 40). The most outspoken representative of the emergentist movement is probably Paul Hopper. An often quoted statement comes from his 1998 article:
‘There is no natural fixed structure to language. Rather, speakers borrow heavily from their previous experiences of communication in similar circumstances, on similar topics, and with similar interlocuters. Systematicity, in this view, is an illusion produced by the partial settling or sedimentation of frequently used forms into temporary subsystems’ (Hopper 1998: 157-158)

What this boils down to is that there are no separate language but only discourses. This means that if we accept this position, we need to rethink what languages are both in terms of development and cognitive processing.

Hopper argues that the idea that we acquire a language that then represents a fixed set in our mind is wrong:

‘This means that the task of “learning a language” must be reconceived. Learning a language is not a question of acquiring grammatical structure but of expanding a repertoire of communicative contexts. Consequently, there is no date or age at which the learning of language can be said to be complete. New contexts, and new occasions of negotiation of meaning, occur constantly. A language is not a circumscribed object but a loose confederation of available and overlapping social experiences. (…) That what adults know, and what children learn, is not an abstract system of units with meanings and rules for combining them, but are integrated normative modes of interactive behavior and the accompanying social use of corporeal signs such as words and gestures, to which concepts like language and grammar are almost entirely secondary.’ (171-172)

Because Hopper sees language not as an entity, but rather as ‘the set of sedimented conventions that have been routinized out of the more frequently occurring ways of saying things’ (161), there is little reason to assume different languages in bilinguals, which is a rather radical deviation from mainstream thinking at the moment. In his writings, Hopper never explicitly refers to the repercussions of his ideas for bilingualism, though these are far reaching. His work is mainly concerned with historical changes and language universals on the pragmatic and semantic level. Recently, Larsen-Freeman & Cameron (2008) have proposed a link between Hopper’s emergentism and a dynamic systems perspective on language development. The dynamic perspective implies that the language system is constantly changing due to external input and internal restructuring. They therefore argue against the idea of a language as a fixed and stable entity: ‘While it is convenient to use a simplifying metaphor and conceive of the language system contained somehow as a static entity in someone’s head, we think this is not an apt way to think of a person’s language resources’ (2008, 125)

1 ‘I believe theories of bilingualism that entail the existence of parallel but separate codes are misconceived.’ (Hopper p.c. 24/02/09)
Transfer and code switching: the assumption of languages as separate entities.

The assumption of languages as separate entities has had a tremendous impact on research in the area of Second Language Acquisition (SLA). In the early days extensive research has been carried out on Contrastive Analysis and its predictions, the idea being that contrast between language systems lead to problems in learning while similarity leads to facilitation. The predictions of CA have not come out too well, but thinking along these lines of languages having an impact on each other has reemerged under new labels such as language transfer, Cross linguistic influence and Substrate influence. Odlin (1989) defines transfer as follows: “Transfer is the influence resulting from the similarities and differences between the target language and any other language that has been previously (and perhaps imperfectly) acquired” (27). He further distinguishes between borrowing transfer (the impact of the first language on the second) and substrate transfer (the impact of the second language on the first).

One of the most influential articles on crosslinguistic influence (CLI) is probably Kellerman’s 1995 ‘Crosslinguistic influence: Transfer to nowhere?’ He states: ‘At its simplest, the L1 can be seen as a direct cause of erroneous performance, especially where such performance is shown to vary systematically among learners with different L1 backgrounds’ (125). For Kellerman, deviation from some norm appears to be a crucial aspects of CLI. Later on he adds: ‘In the give and take of unplanned conversation, where there may not be sufficient attentional resources to devote to perfect monitoring of linguistic performance or to the ongoing generation of long and detailed circumlocutions (…) the learner can have recourse to ‘quick and dirty’ alternatives, among which are those based on LI lexis.’ (129). Why these alternatives are ‘quick and dirty’ remains unclear. Is it the language learner’s perspective or the prescriptive grammatician’s one?

The notion of insufficient resources for perfect monitoring assumes the existence of fixed knowledge somewhere in the system that can be used to check language production. This reveals a kind of thinking that is very much based on a strict competence/performance distinction: there is underlying knowledge and this may not be applied correctly. In the perspectives taken by Hopper and Larsen-Freeman & Cameron such a distinction is no longer seen as valid.

In the literature on transfer there seems to be a tendency to interpret synchronic and diachronic aspects as similar. So changes in the Scottish language contact situation are discussed along similar lines as the L1/L2 use of migrant children in various linguistic settings (Odlin 2009). It seems to me that while from a descriptive linguistic perspective the assumption of such similarities may be warranted, this seems to be unfounded when it comes to online language use. Again the starting point is that there are two more or less independent systems and that elements of one are inserted in the other. The analysis of the linguist may reveal signs of transfer in the language use of speakers, but that tells us hardly anything about the processes that have led to this particular language use. From the perspective of the speaker there is a communication problem to be solved and she will use whatever is available.
To summarize this part: In the tradition starting with Weinreich’s Language in contact till Odlin’s 2009 article on transfer, the thinking behind it is based on the ‘monolingual’ assumption:

- There are separate language systems that have an impact on each other
- Languages exist as stable entities in our brain

The real question from an emergentist perspective is whether belonging to a certain language is a defining and processing-relevant characteristic of a linguistic element. In the sections that follow some of the literature on multilingual processing will be discussed that is pertinent to this question.

The psycholinguistic evidence

What evidence is there for stable and language specific processing and storage? There is a wealth of literature, mainly on the bilingual lexicon in which various experimental techniques have been used to study bilingual processing. The discussion has been defined in terms of selective vs. non-selective access (Laheij 2005). The consensus now is that the lexicon is organized in a non-selective way according to Paradis’s subset hypothesis (2004/2009): In the lexicon subsets are formed based on use. Since words of a given language tend to be used together they form a network. For speakers who often code switch subsets may develop that consist of words that come from different languages according to an external norm. It should be noticed that for that particular speaker words need not be defined as belonging to one language or another. Paradis model is clearly usage-based and emergent. What the elements in the lexicon are, is not entirely clear: it may be single words, but more likely there will be larger units that are ‘sedimented’ on the basis of frequency of use. It may well be that ‘words’ don’t have a separate status in the language system at all, since they are hardly ever used in isolation.

The idea of subsets is not limited to the lexicon, the same principles may be at work for syntactic or phonetic patterns. As argued in de Bot (2004) there may be links between elements at different levels that may coactivate each other: a sound that is associated with a specific language may activate elements that ‘belong’ to that language.

One of the continuing discussions is about whether elements are not labeled for language. Laheij (2005) argues that if the conceptual specification is detailed enough, no language labels are needed, while Hartsuiker & Pickering (2007) present a model in which the language tag is a integral part of the conceptual specification. From an emergentist perspective is it unclear why there should be explicit language tagging, since co-occurrence and associations of linguistic elements with specific settings and interlocutors would suffice to lead to the selection of the right words and thus the right language. This is the general mechanism: languages elements are encountered in specific settings and stored as such, similar settings will lead to the activation of related elements. Elements will thus be associated with language use activities. Elements can be labeled consciously as belonging to a specific language set but language as such does not act as a cue in selection. For monolinguals the associated linguistic elements will come from one language, for a regular code switcher from 2 or more languages. But again, such labeling is only done post-hoc and at a metalinguistic level and it is not necessarily a selection criterion.
Evidence from code switching research

The most compelling evidence for the non-existence of separate and parallel language systems in bilinguals seems to come from research on code switching (CS). Here, a distinction should be made between natural code switching and experimentally induced CS. There is a growing literature on experimentally induced code switching following the seminal publication of Meuter & Allport (1999) who showed that there are larger switching costs going from the L2 to the L1 than the other way around. In the experiments participants had to name numerals in different languages. Cues were given for the language to be used. The prediction would be that if there are separate systems, and there really is switching between languages, then there should be switching costs. The findings from the experimental studies seem to support this idea, but the question is how relevant experimental data are for natural code switching. Experimentally induced CS and natural CS are clearly rather different sorts of activity: natural CS typically takes place in an interactional situation (Kootstra, Dijkstra & van Hell 2009) and so there is priming and anticipation of language use. Experimentally induced CS is very artificial compared to natural CS, and in natural tasks there is no evidence for switching costs (Grosjean & Miller, 1994).

An example of such natural CS comes from a study on Dutch immigrants in Australia that have been tested several years after their arrival in Australia (de Bot & Clyne 1994). The following transcript is from Mrs. G who arrived in Australia in the early 1950s and is now retired. She was interviewed by a bilingual Dutch/English interviewer and she was asked to talk about her experiences after arrival in Melbourne.

 quatrepot ‘My son was daar, hij was first here op de NZbank en hij studyde nog bij voor ‘t bookkeeping and after than he go to de ANZ bank. Four and a half years toen had ie een overplaatsing naar Geelong en toen was die in Geelong en toen was hij (eh) op de day was ie op de ANZ bank, maar ‘s avonds deed hij study in de college van de reformed church en zo heeft ie dat zo four years gedaan en toen is die (eh) nou verder heeft ie nog twee years hebben wij voor hem te pay dat wij eh dat hij zou ministeren.

There is abundant CS here and as a pilot we looked at the time taken to switch between words from English and Dutch and the time between words in one language. Again the assumption was that the existence of switching costs would reflect the existence of two systems that had to be switched on and off, while no switching costs would point to one integrated system.

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<th>Table 1: switching costs in habitual CS</th>
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<td>Mean pause</td>
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These findings are only preliminary and not without problems: as the transcript shows there are many words that are similar in the two languages which makes it difficult to assess where a switch occurs. The fact that the mean pause between languages was shorter than with languages is confusing and there is no clear explanation for this. The SD is fairly high for both conditions, which suggests considerable variation in the data.

The type of CS exhibited by Mrs. G. shows that it is very difficult in such cases to establish what the matrix language is. No language seems to be preferred over the other and it looks like a truly merged system.

These findings and the arguments against separate and parallel language systems in bilinguals leads us to ask what it is that code-switchers switch between, or in other words: Does code switching exist? If there is only one merged system, and the speaker uses those elements that are associated with the setting, there is no switching in the proper sense, since the tasks are no different.

As early as 1980, Garcia has expressed the same idea on the basis of her analysis of code-switching: ‘Speakers in this situation use their linguistic repertoire as part of a single, fully integrated communication resource and the languages are to be evaluated as components of a single skill, that of communication’ (Garcia, 1980, 62-63).

The fact that elements from two languages are used does not mean that there are separate languages in the system of a code switcher: she simply takes that elements that are most appropriate and accessible. To quote Hopper again: ‘Language is not a general abstract possession that is uniform across the community, but is an emergent fact having its source each individual’s experience and life history and in the struggle to accomplish successful communication.’ (1998, 164).

The neurolinguistic evidence for separate languages in our brain

A simple solution to solve this issue would be to find out whether separate languages have their own neural substrate in the brain. There are two sources of information about this, one is the evidence from aphasia, the other is data on neuro-imaging.

For the latter, early studies (such as Kim et al. 1997) suggested that there are different substrates for L1 and L2, but more recent studies have shown that the findings were in fact caused by other factors. Stowe concludes her review of this literature by stating: ‘There is no consistent qualitative difference between the neural architecture supporting processing of (the) two languages’ (2006, 305).

Various factors have been assumed to lead to different localizations, in particular age of acquisition and level of proficiency, but the argumentation has changed: it is likely that anything acquired early is represented differently compared to what is acquired late, and that applies to language as it does for other aspects of memory and cognition. Differences in proficiency reflect frequency differences that are likely to have an effect on representations. So what leads to differences in processing and localization may be the effect of age of acquisition and frequency and tells us little about differences in neural...
substrates for different languages. As Paradis has been arguing for quite some time is that differences in proficiency may lead to other strategies being used, that may be reflected in different brain areas showing activation, but again, that is not about the localization of L1 or L2 in itself.

Views on representations and their relation to brain structures have changed considerably over the last decade. Hagoort (2006) summarizes the earlier views as follows: ‘Architectural differences in the brain structure are indicative of functional differences and, conversely, that functional differences demand differences in architecture’. (93) In other words: differences in processing reflect differences in representation, or even stronger: because there are differences in processing, there must be differences in representations. Following Hagoort again the new views on cognition and the brain focus on the plasticity of the brain on the basis of input: “Functional differences between brain areas are in this perspective mainly due to variability of the input signals in forming functional specializations. Domain specificity of a particular piece of cortex might thus not so much be determined by heterogeneity of brain tissue, but by the way in which its functional characteristics are shaped by the input.” (Hagoort 2006, 94) This means that use shapes the brain and modularity is not innate but emergent: due to repeated and associated use, certain brain areas will show module-like behavior. In the same way it could be argued that different languages in the brain are emergent: Through associated use networks will emerge that represent a given language, but these networks are constantly changing and highly individual, because individuals experiences and contacts with the language will vary.

So will we ever find the localizations of our languages? It follows from the argumentation given earlier that this is very unlikely. There is no stable substrate, only instable and constantly varying networks without language labels. Different setting will activate different language forms that have different substrates. It is therefore pointless to continue to try to find the location of different languages. There is an interesting parallel with an earlier discussion in the area of the bilingual brain. For quite some time it was assumed that in bilinguals the right hemisphere plays a more prominent role in language processing than in monolinguals. See Paradis (1990) in a biting commentary has compared this line of research with the search for the Loch Ness monster: it must be there, we just have to search harder even in the most unlikely places. But we will never find it.

As mentioned earlier, data from bilingual aphasia may provide us with additional information about the processing of multiple languages. There is a whole set of studies that might be interpreted as providing counter evidence for the assumption that there are no separate and parallel language systems in the bilingual brain. These studies report on cases of patients that show selective decline of recovery (see Albert & Obler 1978 Paradis 1987 for historical overviews). Several patterns of selective decline and/or recovery have been reported:

- loss of Lx not Ly
- recovery of Lx but not Ly
- cases of uncontrolled switching
In these studies no damage to specific neural substrates has been found consistently, so there doesn’t seem to be one particular brain area that controls these processes. One explanation that has been offered is that in many of those cases the patients also showed a pragmatic deficit (Ansaldo & Marcotte 2007). Paradis (2009) interprets these data in a larger framework of declarative and procedural knowledge in language use. Pragmatic deficits of different kinds, that may lead to inadequate selection of languages reflect a problem in procedural memory.

Evidence from Second Language Development

As mentioned earlier, the idea of separate languages in the mind of the second language learner has been generally accepted in the field of applied linguistics. The use of terms like transfer and interference reflects this kind of thinking. Data from very early writers in L2 (Dutch learners of English in the first grade of secondary education, Verspoor in prep.) show that at least for this very early stage it is as difficult to talk about two language systems as in Mrs. G. case of code switching mentioned earlier. Below are short stories by two early foreign language learners:

‘Hello dis is my school he staat in apeldoorn. he is very big ai have very veel teachers op my school and ik have er to very veeler zijn to very veel kids op dese school de teachers and de kids walking door de school en have very veel lol de englisch teachers says enlish’

(Hello, this is my school, it is located in the city of Apeldoorn, it is very big and I have very many teachers at my school, and there are very many kids at this school the teachers and the kids walk through the school and have a lot of fun the English teachers speak English).

Hello, i am Arnoud. I sit op the grammar school the Driestar College. I found it well funny. I have nu veel more homework dan first. I hate english and techniek. It are very crazy teachers. We have many leerlingen in the new klas. I have veel friends. I moet heel veel biken to school. It is ongeveer ten tot vijftien km biken.

(Hello, I am Arnoud, I am at the Grammarschool named het Driestar College. I found/find it nice. I now have a lot more homework than before. I hate Egnlish and Technique. The teachers are very crazy. We have many pupils in the new class, I have many friends. I have to ride by bike a lot to get to school, it is about 10-15 km to my school)

Data such as these cast at least some doubt on the idea that in this case in early learners there are separate systems. There can be no doubt that these young writers intend to write in English, but they will be well aware of the fact that what they actually write is a mix. But it is the best they can do.

A historical look at languages as entities

The history of language and its study is far beyond the scope of the present article. Here some relevant notions will be touched upon only. It has been argued that language labels have been invented in the 19th century to support the idea of the nation state: one state, one language. (Pennycook 2004, Shohamy 2006). It could also be argued that dialectology
developed as a result of such thinking to curtail the embarrassing chaos of ways of speaking, ordering different variants under larger headings. What was needed was a standard that defined a language. “Standardization means that languages need to be used in certain ways, often in sharp contrast to how they are actually used by people, especially with regard to oral varieties, which are known to vary greatly from one person to another and from one speech community to another” (Shohamy 2006, 64).

Makoni (p.c.) argues that languages can be seen as a western invention to define ethnolinguistic groups, while the concept of distinct languages may be far from them. Mansour (1993) notes that along similar lines, language labels have been used to split groups that were basically the same. The use of language labels made languages into entities that could be defined and categorized. This fitted in with the craving of linguistics to be taken seriously as a science. By defining languages, linguists could enter the realm of science in which entities can be studied objectively and organized and categorized as natural phenomena, just like trees or insects.

Final remarks

In this contribution it is argued that we need to reconsider our thinking about languages. In fact, ‘Languages’ are cultural artefacts and there may be no ‘Languages’ in our brain at all, only one merged language system. Arguments for this position have been taken from linguistics, aphasia studies, neuro-imaging studies, and studies on code switching and second language development. What is presented here is highly speculative and needs more thinking and empirical support. It is hoped that it serves as food for thought about different aspects of linguistics.
References

Reference List


