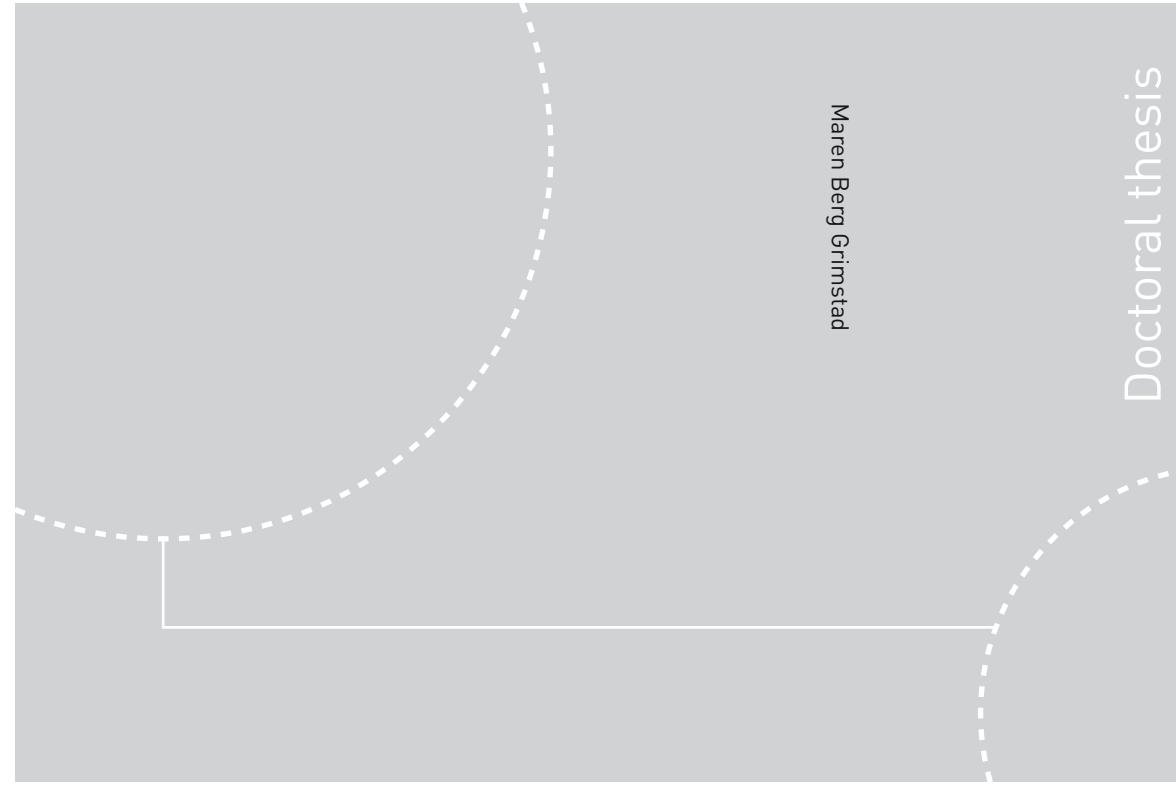


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**NTNU**  
Norwegian University of Science and Technology  
Thesis for the Degree of  
Philosophiae Doctor  
Faculty of Humanities  
Department of Language and Literature



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Maren Berg Grimstad

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A morphosyntactic analysis of mixed verbs

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Trondheim, September 2018

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## Abstract

American Norwegian is the Norwegian heritage variety spoken by some of the descendants of those who emigrated from Norway to America roughly between 1825 and 1925. It is characterized by extensive language mixing of English and Norwegian. The current dissertation aims to account for the English-origin verbs that occur in the CORPUS OF AMERICAN NORWEGIAN SPEECH and provide a formal, generative analysis of how they pattern morphosyntactically.

There are three distinct papers that make out this dissertation, introduced by a cover article which discusses the overarching topics in more detail. The first investigates English-origin verbs and nouns in American Norwegian that have been morphosyntactically integrated into Norwegian, and concludes that whereas a late-insertion exoskeletal model can account for the data, a lexicalist minimalist one cannot. Strong lexicalist minimalist models assume lexical items that are stored with inherent, functional features that determine the syntactic derivation as well as the phonological shape and semantic content of the items, assumptions that are not very conducive for the explanation of language mixing. In contrast, fully exoskeletal models assume that syntactic structures are generated independently from the lexical items that will come to realize them, thus allowing an English-origin item to be inserted into a Norwegian syntactic structure just as easily as into an English one.

The second paper broadens the empirical scope and shows that although *most* English-origin verbs and nouns in American Norwegian have been morphosyntactically integrated into Norwegian, there are also a substantial amount that display English morphosyntax. It demonstrates that whereas a lexicalist model can explain only the latter pattern, an exoskeletal one can explain both.

The third and final paper focuses exclusively on English-origin verbs. Whereas the previous two papers concluded that lexicalist minimalist models fail to account for lone other-language items that have been morphosyntactically integrated into the recipient language, this paper shows that they *can* explain them, but not without some unfortunate side effects. Exoskeletal approaches are therefore still put forth as advantageous. It also discusses *why* these speakers utter such a high proportion of lone English-origin verbs with English inflection in otherwise Norwegian utterances, which is very rare in other bilingual corpora discussed in the literature. My conclusion is that this stems from them being heritage speakers and therefore extra prone to lexical retrieval problems (*pave* the simultaneous bilinguals mostly discussed in the literature), combined with being asked specifically to speak Norwegian (i.e., their heritage variety). I also suggest a revision of the typical terms used to describe these language mixing patterns.



## Acknowledgements

My first thank you goes to the American Norwegian speakers who have participated in the recordings that make out the CORPUS OF AMERICAN NORWEGIAN SPEECH, as without them, I would not have had these amazing data on which to build my analysis. On that note, I also wish to thank the researchers and technicians employed at the Text Laboratory at the University of Oslo, who not only organized the data collection and created this corpus, but also decided to make it available to other researchers from the very beginning. Having access to recent data that other researchers have compiled and organized is by no means a given, and I am very grateful.

Second, it is said that it takes a village to raise a child, and it appears to take even more to get a PhD candidate through from start to finish. First, a big thank you to my supervisors, Professors Tor A. Åfarli and Terje Lohndal, for giving me this opportunity to begin with and supporting me every step of the way. This really could not have been achieved without you. I have also been so fortunate as to be part of a research group consisting of my supervisors and two fellow PhD candidates, Brita Ramsevik Riksem and Ragnhild Eik; and our regular mini seminars, joint travels to conferences and workshops and general comradery has made this a much more enjoyable experience than it otherwise could have been (and, I surmise, has also made this dissertation a whole lot better). I am likewise indebted to several anonymous reviewers as well as participants at various conferences, workshops and PhD courses for all their constructive criticism and suggestions for improvement. And finally, my proof reader, Bridget Samuels, deserves a special mention here. Whether the job has consisted of sorting out the use of commas, spell checking or fixing things when yours truly for example had decided that licentious is a good synonym for felicitous, she has been amazing. It goes without saying that any remaining errors, whether grammatical or theoretical, are mine entirely.

Last, those children raised by villages would not have grown up to be healthy adults with all work and no play, and the analogy still holds for PhD candidates – at least for this particular one. I am forever indebted to my friends and family for bearing with me and keeping me as sane as possible throughout these 4,5 years. You all know who you are, and I assure you, I will do my best to make it all up to you in the years to come.

Trondheim, May 2018

Maren Berg Grimstad

## List of papers

1. Lohndal, Terje, Maren B. Grimstad & Tor A. Åfarli (2017). Language mixing and exoskeletal theory: A case-study of word-internal mixing in American Norwegian. In T. Lohndal (ed.), *Formal grammar: Theory and variation across English and Norwegian*, 381-412. New York: Routledge.
2. Grimstad, Maren B., Brita R. Riksem, Terje Lohndal & Tor A. Åfarli (2018). Lexicalist vs. exoskeletal approaches to language mixing. *The Linguistic Review* 35 (2): 187-218.
3. Grimstad, Maren B. (2017). The code-switching/borrowing debate: Evidence from English-origin verbs in American Norwegian. *Lingue e Linguaggio* XVI: 3-34.

## **Notes on Papers 1 and 2**

### **Note on Paper 1**

Paper 1, “Language mixing and exoskeletal theory: A case study of word-internal mixing in American Norwegian”, is joint work with Terje Lohndal and Tor A. Åfarli. This is an early work and one of the first to develop an exoskeletal approach to the analysis of language mixing phenomena. This is truly a joint work where all the co-authors have been actively involved in developing both theory and analysis, as well as the gathering of data and the organization and writing of the text. Still, I want to emphasize my role in the development, fine-tuning, and presentation of the exoskeletal model itself (section 3) and my role in using this model to analyze data (section 4). I also took an active part in revisions of the whole text after peer reviews.

### **Note on Paper 2**

Paper 2, “Lexicalist vs. exoskeletal approaches to language mixing”, is joint work with Brita Ramsevik Riksem, Terje Lohndal and Tor A. Åfarli. This article criticizes a particular lexicalist-type analysis of language mixing between Spanish and English in DPs and shows how an alternative exoskeletal model fares better in analyzing the data. Together with my co-authors, I have been particularly involved in the criticism of the lexicalist analysis of Spanish/English mixing in DPs (section 4), as well as the theoretical development of the alternative exoskeletal model that we propose ourselves (section 6). In addition, I was solely responsible for the collection of data presented in section 7 of the article, as well as the theoretical analysis of those data in the same section. I also contributed to the introductory sections as well as the conclusion, and to revisions after peer reviews.



## List of abbreviations

There will be some distinct abbreviations that denote the same thing, since the different researchers I quote from and discuss at times use distinct forms.

|        |  |
|--------|--|
| #      | Pause  |
| √      | Root   |
| a      | Adjective  |
| A      | Adjective  |
| Agr    | Agreement  |
| C      | Complementizer   |
| CANS   | Corpus of American Norwegian Speech / Corpus of American Nordic Speech |
| CL     | Class  |
| CS     | Code-switching   |
| dat    | Dative   |
| DM     | Distributed Morphology   |
| EL     | Embedded Language  |
| ENG    | English  |
| GB     | Government and Binding   |
| GEN    | Gender   |
| HPSG   | Head-driven Phrase Structure Grammar                                   |
| I      | Inflectional   |
| IMP    | Imperative   |
| Inf    | Infinitive   |
| INF    | Infinitive   |
| L1     | First language   |
| L2     | Second language  |
| LexMP+ | Strong lexicalist minimalist model                                     |
| LexMP- | Weak lexicalist minimalist model                                       |
| LF     | Logical Form   |
| LFG    | Lexical-Functional Grammar   |
| LOLI   | Lone other-language item   |
| LOLV   | Lone other-language verb   |
| ML     | Matrix Language  |

|                  |                              |
|------------------|------------------------------|
| MLFM             | Matrix Language Frame Model  |
| MP               | Minimalist Program           |
| n                | Noun                         |
| N                | Noun                         |
| NBH              | Nonce Borrowing Hypothesis   |
| NUM              | Number                       |
| PAST             | Past tense                   |
| Perf             | Perfect tense                |
| PERF             | Perfect tense                |
| PF               | Phonetic form                |
| PFIC             | PF Interface Condition       |
| PL               | Plural                       |
| PRES             | Present tense                |
| PST              | Past tense                   |
| REFL             | Reflexive                    |
| RQ               | Research question            |
| S                | Singular                     |
| SG               | Singular                     |
| synsem           | Syntactico-semantic          |
| T                | Tense                        |
| TNS              | Tense                        |
| U                | Unvalued                     |
| UG               | Universal Grammar            |
| US               | The United States of America |
| v                | Verbalizer                   |
| V                | Verb                         |
| V2               | Verb second                  |
| VBLZ             | Verbalizer                   |
| VI               | Vocabulary Item              |
| V <sub>MAX</sub> | Maximal V projection         |
| VP               | Verb Phrase                  |
| XSM              | The Exoskeletal Model        |
| ∅                | Zero (empty set)             |

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# Cover article



## 1. Introduction

This thesis is concerned with language mixing and how to analyze it formally. I will address what I mean by LANGUAGE MIXING in Section 4.1., so for now, suffice to say that it is meant as a broad, observational term, encompassing all speech perceived by the speaker and/or listener in question as a mix of languages. To narrow down the field of study, I have focused on verbs of English origin that appear in a corpus where the speakers predominantly speak a specific variety of Norwegian, called the Corpus of American Norwegian Speech (CANS) (Johannessen 2015a). Examples are given in (1) – (3), where the English items are boldfaced and # marks pauses:<sup>1</sup>

- (1) *Vi bare satt der og **watch-a** da* (rushford\_MN\_01gm)  
we just sat there and watch-PAST then  
'We just sat there and watched then'
- (2) *og hun # nettopp nå # em # **died*** (albert\_lea\_MN\_01gk)  
And she # just now # em # died  
'and she # just now # em # died'
- (3) *kjørte opp til Nordfjord # og **ferried across Nordfjord*** (coon\_valley\_WT\_12gm)  
drove up to Nordfjord # and ferried across Nordfjord  
'drove up to Nordfjord # and ferried across Nordfjord'

As one can see from just these three examples, there are many things to address for someone attempting to give a formal morphosyntactic analysis of these mixed verbs. First, some are morphosyntactically integrated into Norwegian, as in (1), whereas others appear with English inflections, as in (2) and (3). In addition, some appear alone in otherwise Norwegian utterances, as in (1) and (2), while others appear as part of larger English utterances, as in (3).

This thesis analyzes these and other patterning factors, keeping three main research questions in mind:

- RQ1: How do the English-origin verbs in CANS pattern empirically?  
RQ2: What kind of formal model do these mixing patterns support?  
RQ3: How can these mixing patterns inform the code-switching/borrowing debate?

To clarify RQ3, CODE-SWITCHING and BORROWING are two terms that often are used to describe different sub-types of language mixing; the debate mainly concerns what specific sub-types they should refer to, as that is far from agreed upon. Leaving that topic aside for now, I will instead

---

<sup>1</sup> The information in parentheses identifies the speaker who uttered that specific utterance.

<sup>2</sup> Although *Nordfjord* literally means 'north fjord', it is a proper name in this context, and hence I did not mark it as a switch back to Norwegian.



relate what motivated this particular thesis topic, and that began with questions about what a formal grammar model should look like.

My work is positioned within generative linguistics, more precisely the MINIMALIST PROGRAM (MP) (Chomsky 1995). The programmatic nature of this approach allows for quite different models to fit under the MP umbrella, and one of the big points of dissension regards the nature of the building blocks of grammar. Although everyone agrees that we need building blocks of some sort and that those need to be listed somewhere, there is little consensus beyond that. In a recent dissertation titled “Grammar construction in the minimalist program”, Herring (2016: 5) writes the following:

At least as regards the backbone architecture of the human language faculty, agreement among minimalist researchers is near-universal. There is assumed to be a set of linguistic features **F** which is universally available and language-independent. (...) Individual languages **L** choose from among these features, so that human languages will select a subset of those available in the universal inventory, but never the entire set.

So far, we are in accordance. However, he goes on to say that “[f]eatures are bundled into lexical items - LI - which are collected into a Lexicon - **Lex** - available to the language faculty” (Ibid.: 5-6). This is descriptive of the position held in the original MP proposal by Chomsky (1995) as well as many later minimalist works, and this position is usually referred to as LEXICALIST.<sup>3</sup> Given a strong lexicalist position, the lexical items – in essence, words – are the building blocks of syntax, and they are built in the lexicon and contain all the morphosyntactic, phonological and semantic features necessary to specify what they potentially can mean and sound like as well as what syntactic configurations they can participate in.

However, as Embick & Noyer put it, “[t]here is no reason to suspect that our intuitive or traditional notions like ‘word’ should correspond in any way to a natural class of objects in the theory of grammar” (2007: 302). In recent years, the idea that the syntactic building blocks are in fact smaller than these words has gained a lot of traction. Although it differs *how* small the proponents of this idea assume the building blocks to be, the most radical view is that all of the morphosyntactic, phonological and semantic features are stored separately and combined with what is left of the notion of a word – called a ROOT – in the syntax. This efficiently eradicates the central differences between syntax and morphology, as the building of both words and sentences

---

<sup>3</sup> Although many, like Herring, include only these lexicalist-type models under the MP umbrella, I find it useful to include another type as well. If I merely describe them as different generative models, that sidelines them along with generative frameworks that branched off from the “Chomskyan” line many decades ago, such as Head-driven Phrase Structure Grammar (HPSG) and Lexical-Functional Grammar (LFG).

is done by the same generative system, namely the syntax. The models that adhere to this view will in this thesis be labelled FULLY EXOSKELETAL.

I will address all of these issues further in Section 4.2., but for now, it is important to remember that new ideas do not take on everywhere at the same time.<sup>4</sup> In 2013, Marantz (2013: 153) observed that what I call EXOSKELETAL analyses seemed more common than lexicalist ones among his contemporary MP linguists – at least for those working specifically on verbs and the syntactic configurations they can and cannot appear in. My supervisors were among those, and in 2012, when I was beginning to ponder about writing my PhD proposal, I was also becoming more and more interested in the explanatory possibilities that lay in these exoskeletal approaches, especially with regards to explaining linguistic flexibility. However, although exoskeletal accounts were rapidly becoming popular when I began homing in on a PhD topic, hardly anyone had applied them to language mixing data.

In the early 2000s, there was a heated language mixing-related debate in the journal *Bilingualism: Language and Cognition* between MacSwan (2000, 2005a,b) and Jake, Myers-Scotton & Gross (2002, 2005). All of these articles made use of a lexicalist type of MP model, and the debate mainly concerned whether or not additional machinery is needed besides that formal model in order to explain the mixing data (with MacSwan saying no and the others saying yes).<sup>5</sup> Variants of these approaches still dominated the language mixing literature in 2012, when I was writing my PhD proposal. Note that multilingualism is the norm, not the exception – and multilingual speakers mostly mix languages in some way or another. This means that to adequately model the human language capacity, language mixing needs to be among the phenomena the model can handle. As the exoskeletal approach had proven promising for several types of monolingual data and hardly had been applied to mixing data, it seemed useful to see how it would fare in that domain as well.

Moving on to the methodology, I decided to collect data from an existing speech corpus, and the reason was twofold. First, it had to do with the type of data I was interested in. A major point of contention in the language mixing literature concerns word-internal mixing where the word stem comes from one language and the inflectional affix from another, as in example (1), *watcha* ‘watched’. Although no one can contest that such data exist in abundance in many different

---

<sup>4</sup> Although I am calling the exoskeletal idea “new” within the context of the MP, note that variants of it have emerged at different points throughout both the history of generative linguistics as well as in other frameworks. The debate over the degree to which a model should be lexicalist or exoskeletal has, in many ways, been a constant push and pull.

<sup>5</sup> Jake et al. (2002, 2005) are proponents of the MATRIX LANGUAGE FRAME MODEL (MLFM), a non-generative model of code-switching proposed by Myers-Scotton (1993). The insights from this model outline the “additional machinery” they believe is needed, regardless of what formal model one makes use of. In these two articles, they are attempting to combine MLFM machinery with MP machinery.

language pairs, some – like MacSwan (1999 and later instantiations) – have chosen to set them aside as something fundamentally different from other mixing phenomena. Whereas examples (2) and (3), with the mixed items *died* and *ferried across Nordfjord*, for MacSwan would be examples of code-switching, (1) – *matcha* – would instead be an instance of borrowing. Jake et al. (2002, 2005) and others criticize the notion of setting these apart as distinct mental processes, with Jake et al. (2002: 72) stating that

[r]efusing to account for them evades not only providing a unified account of the competency of bilinguals, but also accounting for one of the most challenging aspects of CS. Accounts appealing to borrowing are thus weaker and less explanatory than ones which account for these forms as well as the rest of CS data.

As will be argued throughout this thesis, much of this disagreement seems to be the result of different researchers appearing to misunderstand each other's usages of the same terms, such as CODE-SWITCHING and BORROWING. This was why my third main research question – asking how these mixing patterns can inform the code-switching/borrowing debate – got the prominent position it did alongside the two more obvious questions relating to how mixed verbs pattern and what formal model that can explain that pattern.

The second reason I chose to make use of a speech corpus was that a potentially highly relevant one was available to me. In 2010, researchers at the Text Laboratory at the University of Oslo began to collect speech data and create CANS, the Corpus of American Norwegian Speech, which I am using.<sup>6</sup> These speakers are descendants of Norwegians who immigrated to America during the century of such mass immigration, from 1825 and onwards, and AMERICAN NORWEGIAN refers to the variety of Norwegian they speak. They are what we can call HERITAGE SPEAKERS of Norwegian, meaning they learned Norwegian as children although the dominant language in the larger speech community was English (Rothman 2009: 156). Because they have been dominant in English for most of their lives, they mix languages a lot when speaking Norwegian. This meant that by using this corpus, I had a good chance of getting much relevant data.

The very same fact – that they are heritage speakers – could also have been seen as a problem, however. As MacSwan (2005a: 2) puts it,

[b]ecause there is reason to believe that second language may be represented differently in the mind/brain of non-native speakers than it is for natives, CS research should be based as much as possible on the language of simultaneous bilinguals for whom CS is not stigmatized.

---

<sup>6</sup> After I did my data collection, the corpus changed its name to the Corpus of American Nordic Speech and currently includes recordings from both American Norwegian and American Swedish speakers.

I agree that we should gather data from simultaneous bilinguals for this reason. At the same time, however, I believe gathering data from other types of bilinguals – e.g., sequential bilinguals or heritage speakers – can provide us with interesting insights. If their mixing patterns indeed are fundamentally different from those seen in simultaneous bilinguals, that would show us that such languages actually could be represented radically differently in the mind/brain of those speakers, as MacSwan suggests. If, on the other hand, we see the same types of patterns, it would indicate the opposite. As such, looking at how mixed items pattern in a corpus of heritage speakers compared to how they pattern in corpora of simultaneous bilinguals can inform us about how heritage languages are represented in the mind/brain of the speakers.

Concluding the introduction, this cover article is organized as follows. First, Section 2 provides summaries of the three papers that are included in this article-based thesis. The articles themselves follow after the cover article. Section 3 introduces the empirical area, i.e., heritage languages in general and American Norwegian in particular. In Section 4, the theoretical background is laid out, with 4.1. addressing language mixing and 4.2. looking at exoskeletal models and also comparing the exoskeletal position within the MP to the lexicalist one. Section 5 deals with the methodology, with 5.1. addressing research techniques, 5.2. presenting CANS and 5.3. explaining the data selection process. Finally, Section 6 relates the main findings, with sections 6.1.-6.3. each being devoted to one of the three main research questions each. As I have chosen to discuss results from Papers 1-3 throughout the cover article whenever relevant, Section 6 merely provides a short summary before rounding things off with some final remarks on my contribution to the field and the road ahead.



## 2. Summary of papers

Before summarizing the individual papers, some general remarks are in order. Whereas Paper 1 was written at the start of my thesis work, both Papers 2 and 3 were written at a later stage. Although Paper 2 was begun more than a year prior to Paper 3, the different lengths of the review processes resulted in them being finished more or less simultaneously. For this reason, the latter two are more consistent with each other in their description of the theory, the literature and the data. Paper 1, however, reflects earlier and, at times, somewhat divergent views. These differences will be addressed, when relevant, throughout the cover article.

### 2.1. Paper 1

The first paper is titled “Language mixing and exoskeletal theory: A case study of word-internal mixing in American Norwegian”. It is a joint work with Professors Terje Lohndal and Tor Anders Åfarli, both of whom supervised this thesis as well. A first version of the paper was published in *Nordlyd* 41 (2) (Grimstad, Lohndal & Åfarli 2014), but the version included in this thesis is a slightly updated one which was published in *Formal Grammar: Theory and Variation across English and Norwegian* (Lohndal, Grimstad & Åfarli 2017).

This paper focuses on the English-origin verbs and nouns in American Norwegian that have been morphosyntactically integrated into Norwegian. As the subtitle indicates, the data discussed are mainly of the “word-internal” mixing type, i.e., where the English verbs and nouns receive Norwegian inflectional affixes, as in the case of *watcha* ‘watched’ and *riveren* ‘the river’. In addition, we include English nouns with Norwegian determiners, such as *ei fjeild* ‘a field’. The paper concludes that whereas an exoskeletal model can account for English-origin nouns and verbs that are morphosyntactically integrated into Norwegian, a lexicalist one cannot.

### 2.2. Paper 2

The second paper is titled “Lexicalist vs. exoskeletal approaches to language mixing”. It is a joint work with fellow PhD candidate Brita Ramsevik Riksem and our supervisors, Professors Tor Anders Åfarli and Terje Lohndal, and is published in *The Linguistic Review* 35 (2) (Grimstad, Riksem, Lohndal & Åfarli 2018).

As the title suggests, this paper continues the job of comparing lexicalist and exoskeletal approaches to language mixing. It is a critical review of Moro (2014), which makes use of a lexicalist MP model of the type discussed in Paper 1. Moro posits that whereas an English noun can have a Spanish determiner, a Spanish noun cannot have an English one. The first part of our critique

addresses the fact that her overall lexicalist MP model seems to predict the opposite of what she claims. More importantly, however, other researchers have attested both English nouns with Spanish determiners and vice versa in English-Spanish language mixing, so a successful model should be able to explain both. We go on to show that an exoskeletal account does exactly that. In other words, just like we concluded in Paper 1, a lexicalist model fails to adequately describe the attested mixing patterns, whereas an exoskeletal one succeeds. Furthermore, we show that the same is true for mixed noun phrases in CANS, in which we also find both English nouns with Norwegian determiners and vice versa.

Although Moro only looks at noun phrases, we added a section on lone English-origin verbs appearing in otherwise Norwegian utterances in CANS, to show that an exoskeletal model also could explain those better than her lexicalist model could. Recall from the introduction that in addition to some English-origin verbs being morphosyntactically integrated into Norwegian, as with *watcha* ‘watched’, others appeared as they would in English, as with *died*. Paper 1 discussed how the former type could be explained exoskeletally, and here, we show how it can be done for the latter type as well. A lexicalist MP model of the type Moro (2014) employs can also explain this latter pattern, exemplified by *died*, but as we saw in Paper 1, such a model cannot explain the former pattern, exemplified by *watcha* ‘watched’.

### 2.3. Paper 3

The final paper is titled “The code-switching/borrowing debate: Evidence from English-origin verbs in American Norwegian” and was published in *Lingue e Linguaggio* XVI (Grimstad 2017). It looks at another phenomenon I mentioned in the introduction, namely the tendency for different researchers to use the terms CODE-SWITCHING and BORROWING to mean different things. Whereas the previous two papers concluded that lexicalist MP models of the type used by, e.g., Moro (2014) and MacSwan (1999 and later instantiations) fail to account for lone other-language items that have been morphosyntactically integrated into the recipient language, this paper nuances that view. The way, e.g., MacSwan (1999: 235) defines code-switching and borrowing hinges on the existence of language-specific lexicons, where code-switching involves lexical items drawn directly from the donor language lexicon into the syntax whereas borrowed items first are copied to the recipient language lexicon and provided with appropriate features and feature bundles. Returning to the examples in 2.2., then, *died* can be seen as the result of code-switching whereas *watcha* ‘watched’ is the result of borrowing. Such a solution does, however, mean that *watch* becomes listed as a Norwegian item. I discuss why that is problematic and, consequently, why an exoskeletal analysis therefore still is advantageous.

As the use of CODE-SWITCHING and BORROWING for disparate things causes confusion in the literature, I also show how we can describe all the important phenomena by, e.g., using slightly revised versions of Muysken's (2000, 2013a) terms INSERTION, ALTERNATION and LISTEDNESS. Finally, I investigate *why* the CANS speakers sometimes utter lone English-origin verbs with English inflections in otherwise Norwegian utterances. My analysis of all the lone English-origin verbs in CANS suggests that English-origin verbs in American Norwegian usually only receive English inflectional morphology when speakers try and fail to remember the equivalent Norwegian verbs and make a conscious switch to English. This explains why this pattern is rarely found for balanced bilinguals, as they have fewer lexical retrieval problems than these heritage speakers.





### **3. Empirical area: American Norwegian**

As mentioned in the introduction, American Norwegian is the variety of Norwegian spoken by some of the descendants of the Norwegian immigrants who came to the US roughly between 1825 and 1925. Most of the immigrants settled in tightly knit Norwegian communities, and as a consequence, Norwegian remained the prominent home language as well as being actively used in the community at large for quite some time (Haugen 1953). This resulted in children growing up in the US with American Norwegian as their L1. As such, American Norwegian can rightly be characterized as a HERITAGE LANGUAGE, which, as we have seen, typically is characterized as a non-dominant language in the larger speech community that is available to certain children (Rothman 2009: 156). This brief preamble already touches upon two of the three points I will focus on in this section, namely 1) heritage languages and 2) the specific American Norwegian population group and the sociolinguistic factors that influence their language use. The first topic will be briefly dealt with in Section 3.1., before I turn to American Norwegian specifically in Section 3.2. Finally, Section 3.3. will present the earlier research that has been conducted on American Norwegian.

#### **3.1. Heritage languages**

There are several (mostly overlapping) definitions describing what a heritage language is within a formal linguistics framework, as seen in, e.g., Montrul (2008), Polinsky (2008) and Benmamoun, Montrul & Polinsky (2013). As already established, I will follow the one given in Rothman (2009: 156), which reads as follows: “A language qualifies as a heritage language if it is a language spoken at home or otherwise readily available to young children, and crucially this language is not a dominant language of the larger (national) society”. Rothman goes on to state what it takes for someone to be a heritage speaker, specifying first that the heritage language must have been acquired naturalistically in childhood. In addition, for the speaker to be seen as a heritage speaker at the present date, he or she must still have some command of the language in question. This hints to a typical trait regarding heritage speakers, namely that they mostly lack full, “native-like” proficiency.

I put “native-like” in quotes because it suggests that heritage speakers are not native speakers of their heritage language, when in fact, I would argue the opposite and follow Rothman & Treffers-Daller (2014) in defining a native language as the first language someone learns, regardless of later proficiency. However, the point I mean to get across is that if one were to compare the language of a heritage speaker to that of a native speaker of the non-heritage variety of the same

language, the varieties would typically not be identical, and from the point of view of the latter speaker, the former would most often come across as less proficient. Formal linguists who study heritage languages are typically interested in what aspects of the grammar that differ (or not) from the non-heritage variety as well as how and why these differences arise in the first place. As pointed out by Rothman, Tsimpli & Pascual y Cabo (2016: 14), studying these phenomena might give us insight into the nature of the human language capacity itself, in particular with regards to the issue of nature vs. nurture.

Extensive reviews of the relevant literature can be found in, e.g., Montrul (2008) and Benmamoun et al. (2013). To sum up, studies show that there are great individual differences when it comes to how and how much heritage speakers' grammars deviate from those of non-heritage speakers, but there still appear to be some overall patterns. For example, many argue that constructions assumed to depend on the interfaces between different linguistic modules tend to be affected more often than those only depending on core syntax (see, e.g., Tsimpli, Sorace, Heycock & Filiaci 2004; Sorace 2011). As to how and why the heritage variety ends up different from the non-heritage one, I will here present three hypotheses that are prevalent in the literature. Bear in mind that these might very well all be contributing factors – it does not have to be an either/or scenario.

By far the most debated hypotheses are INCOMPLETE ACQUISITION and ATTRITION. The former is quite self-explanatory, and describes a situation where the heritage speaker never fully acquires the language of the parents in the first place. Attrition, on the other hand, is used to describe speakers who experience a weakening in their mastery of the language as time progresses. Given the typical circumstances under which heritage languages arise, both scenarios make sense. Regardless of whether a given heritage speaker starts out as simultaneously bilingual or monolingual in the heritage language, at some point or another, he or she will come in contact with the dominant language of the larger speech community. If it has not already happened in early childhood, it mostly becomes inevitable upon starting school; most end up being more dominant in that language than in the heritage variety. As such, the lessened use of the heritage language and the heightened use of the societally dominant one might lead to the former becoming attrited (see, e.g., Polinsky 2011; Pascual y Cabo & Rothman 2012 for discussion). If the child becomes dominant in the societally dominant language early enough and/or never receive the amount of input needed to fully acquire the heritage language, incomplete acquisition has been put forth as a likely outcome (e.g., Polinsky 2006; Montrul 2008).<sup>7</sup>

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<sup>7</sup> See, e.g., Putnam & Sanchez (2013) for a critique of the term INCOMPLETE ACQUISITION. Amongst other things, they point out that much of the work on incomplete acquisition has focused on an assumed result state, at which point the acquisition is thought to be finished and can be labelled as either complete or incomplete. As they point

Finally, some researchers (e.g., Sorace 2004; Pires & Rothman 2009; Montrul & Sanchez-Walker 2013) point out that yet another scenario is possible if we broaden our scope beyond first generation heritage speakers. If heritage speakers themselves have children that also grow up somewhere with another societally dominant language (typical for immigrants), those children would have a heritage variety as their input. In such a situation, both further attrition and/or incomplete acquisition are possible, but it might also be that the children in question replicate the variety they hear in their input more or less perfectly, the same way monolingual children normally would do, and that whatever changes one can observe between that variety and the non-heritage one occurred in a previous generation. This fourth approach is called INPUT DELIMITED DIFFERENCES.

This thesis does not look specifically at such core heritage language-related issues, like the debate about which of the above-mentioned factors contribute to explain the typically observed heritage language patterns. As mentioned in the introduction, I mainly chose to use American Norwegian data because among the existing corpora I had access to and considered using, the Corpus of American Norwegian Speech (CANS) (Johannessen 2015) was likely to contain the most language mixing data. This is precisely because American Norwegian is a heritage language, as extensive mixing between the heritage language and the dominant language in the larger society, not surprisingly, is typical for heritage speakers. Secondly, since most research on language mixing has involved relatively balanced bilinguals, I thought it would be of interest to see whether the language mixing done by a group of unbalanced bilinguals would pattern similarly to that of balanced ones or not.

Section 3.3. will present previous research on American Norwegian, much of which *does* focus on what factors seem to best explain the specific traits of heritage languages; but before that, I will look at the historical background and sociolinguistic setting of American Norwegian and how these fit with what we now have established as defining factors of heritage languages.

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out, acquiring and maintaining (or not) a language is an ongoing *process* without a clearly defined end state, and in either case, even monolinguals have slightly different mental grammars from one another, meaning it is difficult to see what “complete acquisition” would entail anyhow. Therefore, they argue that we need to focus on the acquisition, maintenance and, if relevant, attrition process throughout a speaker’s life to adequately explain the observed differences between heritage and non-heritage varieties. As they themselves point out, however, later work within the incomplete acquisition framework also urges for a focus on the process rather than an assumed end state (e.g., Polinsky 2011), so there seems to be more consensus here than the terminology might imply. I will return to related questions concerning what the term LANGUAGE entails both for individual speakers and on a societal level in Section 4.1.4.

## 3.2. American Norwegian – language and society

### 3.2.1. Immigration and settlement patterns

The 19<sup>th</sup> and early 20<sup>th</sup> centuries saw massive waves of immigration to America from various European countries, Norway included. In fact, besides Ireland, no other country had a higher rate of immigration to the US and Canada during this period. By 1930, more than 850 000 Norwegians had come; to put that number into perspective, it is close to the total Norwegian population number in the year 1800 (Haugen 1953: 28-29).<sup>8</sup>

This century of Norwegian immigration to America was initiated by a man named Cleng Peerson, known as THE PATHFINDER FOR NORWEGIAN EMIGRATION (Lovoll 1999: 12-13). Word of English, Irish and German emigrants travelling to America in the hopes of better lives had inspired a group of people in Stavanger, and in 1821, they sent Peerson ahead to investigate. He found the prospects to be good and made the arrangements necessary to enable the others to come, so four years later, 53 Norwegian emigrants sailed to New York. Echoing the Pilgrims who came on the Mayflower in 1620, these were religious dissenters, and American Quakers helped them settle near Rochester, New York (Haugen 1967: 8). Their first settlement proved less successful than hoped, and it was not until about a decade later, when most of them moved to cheaper and more fertile land in the Midwest, that more Norwegians were tempted to follow their example and immigrate to America. As of 1836, the “America fever” had taken hold in Norway.

Few of the migrants who followed were religious dissenters, but as Haugen (1953: 18) puts it, their various reasons for leaving can be summed up as hopes for social betterment. To quote Lovoll (1999: 23), “[t]he image of America as the land of freedom and opportunity was effective throughout the era of emigration”. Through distributing letters from the early immigrants, word of mouth and, eventually, books, they heard of the opportunities overseas (Ibid.: 16-18); the possibility to purchase good farmland cheaply<sup>9</sup> in the Midwest was particularly tempting. Mass emigration from Norway ensued over the following century or so, with a handful of dry spells mostly caused by wars and economic depressions (Haugen 1953: 24). Those who came tended to settle in close proximity to other Norwegians, which in time created “a chain of Norwegian settlements” that began with the first one, in northern Illinois, and stretched north-west through Wisconsin, Iowa and Minnesota into the Dakotas (Haugen 1967: 9). As of 1890, the good land in

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<sup>8</sup> As a side note, bear in mind that it is debatable whether the original immigrants should be labelled heritage speakers alongside their descendants. As an example, Larsson & Johannessen (2015a) distinguish between HERITAGE SCANDINAVIAN, EUROPEAN SCANDINAVIAN and EMIGRANT SCANDINAVIAN, the latter referring to the language of the generation that emigrated from Norway. Since my concern is language mixing in general and not heritage languages as such, such a distinction is not crucial here. I therefore use the general term AMERICAN NORWEGIAN, introduced in Haugen (1953), to cover both emigrant and heritage Norwegian. My informants are also all 2<sup>nd</sup> to 5<sup>th</sup> generation speakers, and thereby unequivocally heritage speakers.

<sup>9</sup> And after the Homestead Act of 1862, it was even possible to get land for free.

this region had largely been taken and new immigrants had to go elsewhere, resulting in settlements in, e.g., Canada, the state of Washington and several American cities. But despite some urban settlers, as Haugen stresses, “[p]roportionally, Norwegians have shown a greater attraction for farm life than any other immigrant group” (Ibid.: 14).

As mentioned, this mass emigration period is typically said to have lasted for about a century (Haugen 1953: 28), meaning it did not continue long into the 20<sup>th</sup> century. As Jeppesen (2017: 25, my translation) puts it, “the stream of immigration was reduced first as a consequence of the First World War, then due to the effect of the new immigration laws, and finally, the economic crisis of the 1930s followed by the Second World War led to an almost complete stop”. Note that although this specific period stands out due to the sheer magnitude of the immigration, there have obviously been Norwegians immigrating to North America in the years following that period as well. Still, it is the language of those who went during this particular century of mass migration, as well as that of their descendants, that have been collected and studied in the existing works on American Norwegian.

### **3.2.2. Norwegian America**

As Jeppesen (2017: 23) shows, the wish to settle close together with others from their home country was a particular trait of Norwegian immigrants; Danish and Swedish ones, for example, were more scattered and appear to have chosen to go wherever the land or job opportunities were best, regardless of where their fellow countrymen lived. This difference also persisted in the second generation. Whereas many Swedes and Danes scattered even further and married outside of their groups, the Norwegians were more likely to stay in the established Norwegian enclaves and marry each other (Ibid.; Lovoll 1999: 335). This enabled them to retain their “Norwegian-ness” more easily. As Lovoll (1999: 63) puts it, “[i]n the Norwegian settlements as much of the old peasant culture as possible was preserved; in many respects the settlers continued to live much as they would have in the Norwegian home community”. This also involved the continued use of Norwegian language.

This preservation of both culture and language was made possible not only by their proximity to others of Norwegian heritage, but also by the formation of three types of immigrant institutions in particular with Norwegian as the language of choice: churches, newspapers, and various secular societies (Haugen 1953: 33). Norwegian-speaking Lutheran pastors first arrived in the 1840s, and the churches and their congregational schools became important general meeting places that served a key role in maintaining Norwegian language in the settlements. The first Norwegian newspaper on American soil saw the light of day the same decade, and many more quickly

followed. In addition to bringing news from Norway, introducing the immigrants to American society and helping the different settlements keep in touch with each other (Haugen 1967: 26), the column spaces also made it easier for secular organizations to establish themselves and attract members. Whether one's particular interest lay within culture, sports, politics, charity or something else entirely, there was, after a while, a Norwegian organization catering to those needs. One American Norwegian peculiarity was the formation of organizations of people originating from the same Norwegian district, known as BYGDELAG, that began around the turn of the century (Haugen 1967: 28). Although some Norwegian regions saw more people emigrating than others, people did come from all over the country (Lovoll 1999: 16), and these organizations allowed them to socialize with others from the same cultural and dialectal background.

All of these factors help explain why the language preservation rates were higher among Norwegians than similar immigrant groups. Naturally, the first immigrants had had to learn some English to get by, but once the Norwegian settlements were established, “[f]armers who chose to restrict their contact with the English-speaking world to a minimum could live an entire life here as monolinguals” (Haugen 1953: 45). Remaining monolingual was not an option for the second generation, however. Although there were a few attempts at establishing Norwegian schools, the overall consensus was that the children should go to English public schools; this meant that if they had not learned English already, they were forced to by the time they were 5-6 (Lovoll 1999: 98). Haugen (1967: 17) describes the situation in the following way:

The young people in these communities grew up bilingual: that is, they had one language, Norwegian, for their more intimate experiences, in the home, among friends, and in church; and another language, English, for their more external contacts, with the schools, the stores, and the authorities.

Recalling the characteristics of heritage speakers, we can now ask whether speakers from these communities meet the criteria. For a time, the “Norwegian-ness” of certain rural settlements was so strong that the majority language of the larger society, at least the larger society the children came into contact with, in fact can be said to have been Norwegian. As an example, Haugen (Ibid.) describes how some children only spoke English inside the classroom where the teacher enforced it, and that their dominance was such that any non-Norwegian children in the area wound up learning Norwegian to be able to partake in games and social activities.<sup>10</sup> For children in the more urban areas, however, English was without doubt the societally dominant language, and quite soon,

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<sup>10</sup> In fact, one of Haugen's American Norwegian informants (1953: 505) was a man of German ancestry, born in Wisconsin, who describes how he learned Norwegian under precisely such circumstances; in 1942, when Haugen recorded him, he still spoke a Norwegian variety.

that was true also in even the most Norwegian rural enclaves. This ensured their status as heritage speakers.

The decline in the use of Norwegian language in America was probably caused by a multitude of factors, but I will highlight two that were particularly important. First, World War I (1914-1918) instilled a very pervasive sense of nationalism in the Americans, and anything foreign – including the languages and cultures of immigrants – was frowned upon (Ibid.: 30; Lovoll 1999: 298). Second, recall that immigration from Norway dwindled drastically around 1930, meaning the settlements received no new first-generation speakers of American Norwegian, and as the existing first generation aged and died, the use of Norwegian dwindled with them. Norwegian-Lutheran church services went from being held in Norwegian 73,1% of the time in 1917 to less than 3% in 1947 (Haugen 1967: 30), and simultaneously, the use of Norwegian in secular societies dropped and American Norwegian newspapers went out of press. Although English also became the home language in many American Norwegian families around this time, some did pass Norwegian on to their children, which is why we today still find heritage speakers of Norwegian who descend from those who left Norway during this century of mass migration. I will present the Corpus of American Norwegian Speech (CANS) (Johannessen 2015) and its speakers in more detail in Section 5.2. For now, note that they report having been dominant in English since childhood (for most, since they started school) and mostly were born in the 1920s and 30s, placing their childhood exactly in the time period when use of Norwegian declined. It also means they are mainly elderly today, with most in their 80s and 90s, and as they report not having passed Norwegian on to their own children, their varieties of American Norwegian are dying.

### 3.3. Previous research on American Norwegian

Since the American Norwegian speakers left today are a dying breed, it is very fortunate that data collection for a corpus on American Norwegian speech began in 2010, before the opportunity was lost. A great many studies of American Norwegian have ensued since CANS came into existence, and I will describe those works shortly. However, scientific interest in American Norwegian did not begin in 2010; in fact, it goes back more than a century.

In 1897, while immigration was still going strong, Peter Groth held a doctoral lecture on American Norwegian that later was published as an article in both *Morgenbladet* and *Decorah-Posten* (Hjelde 1992: 11).<sup>11</sup> This was quickly followed by the works of George T. Flom and Nils Flaten, who both wrote short articles for the second volume of *Dialect Notes*, comprising work from the

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<sup>11</sup> *Morgenbladet* is a Norwegian newspaper still in press in Norway, whereas *Decorah-Posten* was one of the most influential American Norwegian newspapers published in the Midwest (Lovoll 1999: 181).



years 1900-1904 (Ibid.). These were mainly focused on American loanwords in American Norwegian, and contained word lists collected from a few settlements. Flom continued studying American Norwegian and published five more articles on the topic up until 1931. That same year, Didrik A. Seip and Ernst Selmer from the University of Oslo went to the Midwest not just to create wordlists, but in fact *record* American Norwegian speech. Haugen (1992: 330) explains that they had learned of the new American immigration laws, and set out to collect and study American Norwegian before it died out.<sup>12</sup> In the end, not much research resulted from these efforts, and the recordings were mostly destroyed or lost (Ibid.: 331).<sup>13</sup>

Although Seip and Selmer's fieldwork might seem wasted, something very important for American Norwegian research *did* come of it, for on their travels, they met a newly appointed Assistant Professor of Scandinavian who was inspired by their plans and decided to pick up the mantle when they failed to publish on the topic (Ibid.). His name was Einar Haugen, and his extensive fieldwork in the 30s and 40s, coupled with the multitude of publications he produced on the topic, make him the most influential contributor to the field by far. His seminal work *The Norwegian Language in America* (1953) not only gives a thorough description of all aspects of American Norwegian, complete with both formal and sociolinguistic accounts, but also places it in a larger context of bilingualism and language mixing in general, both areas of research to which he made substantial contributions.<sup>14</sup>

The next surge within this field came in the 1980s, when fieldwork on Norwegian place names in America uncovered that there still were living speakers of American Norwegian (Hjelde 1996: 285). Among the research that ensued, Arnstein Hjelde was the only one who focused on American Norwegian speech. He interviewed and recorded speakers with dialects originating from the Norwegian region *Trøndelag*, and focused in particular on the phonology and morphology (Hjelde 1992).

The biggest wave of American Norwegian research is more recent, however. Funding was granted to investigate Norwegian language in America as part of an ongoing project on the syntactic variation of Norwegian dialects, and fieldwork began in 2010 (Johannessen & Salmons 2012b: 139). The recordings made over the subsequent years make up the CANS corpus, which researchers have so far used to study a number of subjects, primarily of a formal, historical and sociolinguistic nature. Many of the publications are found in a special issue on American Norwegian in *Norsk Lingvistisk Tidsskrift* (Johannessen & Salmons 2012a) as well as the volumes

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<sup>12</sup> As we now know, American Norwegian proved more resilient than they had expected.

<sup>13</sup> The ones remaining are available at <http://tekstlab.uio.no/norskiamerika/english/recordings.html>, along with most of the later recordings of American Norwegian.

<sup>14</sup> I will return to the topic of language mixing in Section 4.1.

*Germanic Heritage Languages in North America* (Johannessen & Salmons 2015) and *Moribund Germanic Heritage Languages in North America* (Page & Putnam 2015a). In addition, a special issue on formal linguistic approaches to heritage languages in North America is forthcoming in *Journal of Language Contact*.<sup>15</sup>

The formal work on American Norwegian has focused both on aspects of the Norwegian words and constructions as well as on the mixed elements of English origin. As an example of the former, one of the things Seip and Selmer had intended to study in the 1930s was how the different Norwegian dialects had affected each other and whether a common form, or KOINÉ, was emerging. This has recently been investigated by, e.g., Hjelde (2012, 2015) and Johannessen & Laake (2012, 2015, 2017). And as seen in Section 3.1., the question of whether the particularities of heritage languages are caused by attrition, incomplete acquisition or something else is much discussed in the current literature; American Norwegian is no exception (see, e.g., Johannessen 2015b; Larsson & Johannessen 2015a,b; Westergaard & Anderssen 2015; Lohndal & Westergaard 2016; Riksem 2017, 2018, in press). For more on this topic, as well as topics related to language mixing in the nominal domain, see the recent doctoral thesis *Language mixing in American Norwegian noun phrases: An exoskeletal analysis of synchronic and diachronic patterns* (Riksem 2018).

As previously mentioned, language mixing has been a focal point for researchers working on American Norwegian since the very beginning, when lists of loanwords formed the core of the publications, and it is still much studied (e.g., Eide & Hjelde 2012, 2015; Åfarli 2012, 2015a,b; Alexiadou, Lohndal, Åfarli & Grimstad 2015; Riksem 2017, 2018, in press; Riksem et al. in press). These later studies not only describe and analyze mixed items, but also contribute to the more general question of how to formally account for language mixing. If we focus on lone items of English origin, the research conducted before CANS only found items that were morphosyntactically integrated into Norwegian with appropriate Norwegian inflectional morphemes. Åfarli (2012, 2015b) analyzes the English-origin verbs described in Haugen (1953) and Hjelde (1992) and argues that the attested pattern – English verbs with Norwegian inflection – supports a formal model of grammar in which the tense inflection is generated independently from the verb stem (i.e., an exoskeletal model). As you will recall from the introduction, this stands in opposition to classical lexicalist models of the type presented in Chomsky (1995), where lexical items are stored with inherent inflectional features. The specific model Åfarli proposes involves different functional projections being generated as a sort of a grammar frame into which lexical stems, stored separately, can be inserted without constraints (Åfarli 2015b: 167). That way, even

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<sup>15</sup> As the last three publications suggest, the study of American Norwegian is part of a larger research trend focused on heritage languages in America.

though the grammar frame is Norwegian, nothing requires the lexical stem to also be of Norwegian origin.

Áfarli's work on English-origin verbs was one of the main inspirations behind the present thesis. It also focuses on English-origin verbs in American Norwegian, but makes use of CANS rather than the earlier corpora. In CANS, the pattern described in Áfarli (2012, 2015b) is still the main one; but as presented in Paper 3, I found that the lone English-origin verbs there appear with what looks like English inflection around 28% of the time. I further analyze both of these patterns, showing how the occasional presence of English inflection on English-origin verbs in fact is expected, given the heritage status of the speakers. The formal model proposed here is still exoskeletal, but with slightly different machinery than that of Áfarli (2012, 2015b), incorporating elements from Lohndal (2014) and recent developments within Distributed Morphology. I will present this in detail in Section 4.2. Another focal point of this thesis relates to language mixing in general and the debates regarding whether there are different, formally distinct types of mixing. That is the topic I now will move on to.

## 4. Theoretical background

### 4.1. Language mixing

#### 4.1.1. Terminology

I follow Lohndal (2013: fn.1) in using the term LANGUAGE MIXING to “describe a situation where a speaker produces linguistic outcomes constituted by a mixture of elements from two or more languages”.<sup>16</sup> This is similar to how Muysken (2000: 1) presents CODE-MIXING: “all cases where lexical items and grammatical features from two languages appear in one sentence”. However, Muysken excludes BORROWING because, in his view, borrowed items have become part of the recipient language. As such, items from only one language, not two, appear in sentences with “native” words and loanwords. In contrast, I intend to use LANGUAGE MIXING as an observational, pre-theoretical term that encompasses anything perceived by the speaker and/or listener in question as a mix of languages.<sup>17</sup> This way, it more closely resembles the way Jørgensen et al. (2011: 33) describe CODE-SWITCHING; i.e., as “the juxtaposition of features associated with different codes when both producer and recipient of the resulting complex sign are in a position to understand this juxtaposition as such”.

We see that these three different terms – LANGUAGE MIXING, CODE-MIXING and CODE-SWITCHING – here have somewhat overlapping meanings. As if that were not confusing enough, the descriptions given here are by no means ubiquitous for these terms. As Milroy & Muysken (1995: 12) put it,

The field of [code-switching] research is replete with a confusing range of terms descriptive of various aspects of the phenomenon. Sometimes the referential scope of a set of these terms overlaps and sometimes particular terms are used in different ways by different writers.

In other words, one cannot assume to know what any of these terms mean when encountering them in a given text on the basis of having encountered the same term elsewhere before.<sup>18</sup> In fact, as is made clear in Paper 3, the literature has many examples of researchers appearing to misunderstand each other’s use of these and related terms, like BORROWING, leading them to argue against views they seem to think some other researcher holds as opposed to the view said researcher actually advocates. This is partly why, in Paper 3, I propose to abandon some of them in favor of more recent terminology that does not have that same history of being used in many

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<sup>16</sup> See Section 4.1.4. regarding what I mean by LANGUAGE.

<sup>17</sup> See Paper 3 for an in-depth discussion of these terminological issues.

<sup>18</sup> See Treffers-Daller (2009) for a similar sentiment and an attempt at an overview of the different terms.

different ways and therefore is less prone to being misunderstood. I will summarize my position here before I present the previous research.

In Paper 3, I present what I call the CODE-SWITCHING/BORROWING DEBATE, focusing on two typical positions. One emphasizes that whereas some mixed items are morphosyntactically integrated into the recipient language, others retain the morphosyntax of the donor language. Many researchers see the former type as borrowed and the latter as code-switched, imagining two different underlying mental processes that give rise to these different grammatical patterns. In Paper 3, I call that view POSITION B. Those who adhere to Position A, on the other hand, do not use the terms CODE-SWITCHING and BORROWING to refer to two different mental processes, but instead use them for two different stages of the same diachronic continuum. Code-switching, for them, is the spontaneous language mixing done by someone at least partially bilingual; if a donor-language item over time becomes frequent in use and well-dispersed across speakers in the recipient language speech community, it has become borrowed. The two positions are summed up in Table 1.

|            | Empirically   | Formally   |
|------------|---|--|
| Position A | Something mixed for the nonce is code-switched, whereas an established mix is borrowed.                   | Code-switching and borrowing share the same underlying mental process.   |
| Position B | Code-switched items have donor language morphosyntax; borrowed ones have recipient language morphosyntax. | Code-switching and borrowing have different underlying mental processes. |

TABLE 1. POSITIONS A AND B.

As I mentioned above, this use of identical terms to cover disparate phenomena easily leads to confusion and should be avoided, if possible. In Paper 3, I therefore suggest using the terms INSERTION, ALTERNATION and LISTEDNESS (Muysken 2000, 2013a, 2015) to clarify Positions A and B. Listedness covers Position A, in the sense that an item is more listed the more frequent in use and dispersed it is across a speech community.<sup>19</sup> Insertion and alternation can replace the older terms used by Position B in the following manner:<sup>20</sup>

<sup>19</sup> Bear in mind that LISTEDNESS here does not refer to being listed in a lexicon, something which would be an either-or type of phenomenon, not a gradual scale.

<sup>20</sup> In Paper 3, the meanings of these terms are explained by appealing to technical machinery from the formal grammar model I make use of. As this section pertains to language mixing in general and the formal model is introduced later, here I chose to explain them in less technical terms, focusing on the output as opposed to the underlying formal machinery. I will return to the formal descriptions in Section 4.2., where I will also present another term from Muysken used in Paper 3, namely CONGRUENT LEXICALIZATION; but for the present discussion, these two will suffice.

- INSERTION:           the donor language item has recipient language morphosyntax  
*(previous: borrowing)*
- ALTERNATION:       the donor language item has donor language morphosyntax  
*(previous: code-switching)*

I will discuss this further at the end of Section 4.1.3., when I introduce my own data findings from CANS, as well as in Section 4.2., while discussing the formal model I adopt. For now, merely bear in mind the following regarding my position:

- i. I use LANGUAGE MIXING in a broad, observational sense, encompassing anything perceived by the speaker and/or listener in question as such.
- ii. I assume (at least) two formally distinct subtypes of language mixing, namely insertion (recipient language morphosyntax) and alternation (donor language morphosyntax).
- iii. Both highly listed and non-listed items can be both inserted and alternated.

In what follows, I will give a historical overview of the research on language mixing with a special emphasis on the grammatical approaches to those phenomena described in Positions A and B above – whether the specific writer calls them CODE-SWITCHING and BORROWING or something else entirely (4.1.2.). I will in particular address those works that aim to account for the mixing patterns formally. The next section, 4.1.3., zooms in on LONE OTHER-LANGUAGE ITEMS (LOLIs), which this thesis is particularly concerned with. Bear in mind that as my characterization of language mixing includes loanwords,<sup>21</sup> the dedicated literature on those will be relevant alongside the literature on non-listed or spontaneous mixing. In addition, Section 4.1.3. will include a recap of the mixing data presented in Papers 1-3, so that they can be seen in the larger context of the relevant language mixing literature. I will end Section 4.1. with a discussion of whether we are correct to view these data as mixes between discrete languages or not (4.1.4.).

#### **4.1.2. A historical overview**

In this section, I will highlight some major developments in the language mixing field with a focus on grammatical approaches to mixing. For more on how language mixing became a field of study, I recommend language contact literature such as Oksaar (1996). For more thorough overviews of grammatical approaches to mixing, see, e.g., Mahootian (1993), Muysken (2000), MacSwan (2013) and Poplack (2015). An overview of the specific literature on borrowing can be found in, e.g.,

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<sup>21</sup> Given that the speaker and/or listener in question recognizes it as a loanword.

Hoffer (1996), whereas Haspelmath (2009) gives a good account of how borrowing has been defined and how it relates to other language contact terms, such as code-switching.

#### 4.1.2.1. Early beginnings

Oksaar (1996: 2-3) writes that language contact and the linguistic outcomes thereof were first systematically addressed from a diachronic point of view, by linguists in the mid to late 19<sup>th</sup> century who were interested in how languages change. A pioneer of this era was Schuchardt (1884), who went against the common “purist” view of the time by professing that all languages are mixed to some extent and that linguists should study language mixing synchronically to better understand how languages develop. The former thought – that all languages are mixed – was shared by contemporaries like Whitney, whose 1881 paper has been referred to as the first real scientific work on loanwords (Wohlgemuth 2009: 11). The latter idea, however – to study mixing synchronically – did not really gain traction until nearly a century later, in the 1970s, when the study of the online, spontaneous language mixing of bilinguals (often labelled CODE-SWITCHING) became firmly established as a prolific research field in its own respect (Gardner-Chloros 2009: 9). As formal accounts of language mixing aim to explain how a grammar model can allow an item to be mixed in the first place, they have first and foremost been discussed in the literature on such non-listed, spontaneous language mixing. This section will therefore mainly trace that strand of work. However, that is not to say that the loanword literature has nothing to say about the formal aspects of the borrowing process itself.

#### 4.1.2.2. The diachronic approach to language mixing: looking at established loanwords

Beginning with Whitney (1881), different word classes have been found to be more or less borrowable, with nouns typically agreed upon as the easiest to borrow. In addition, he pointed out that different languages seem to have different amounts of loanwords and that there are also differences in how loanwords are integrated into recipient languages. As an example, he noted that whereas borrowed verbs in English receive appropriate English inflections and in all morphosyntactic respects act as native English verbs, a language pair like Persian-Arabic has a very different outcome. To put it in his words, “we see the Persian, for example, receive no Arabic verb, but always add an auxiliary of native growth to an Arabic adjective or noun, in order to make a quasi-Arabic verbal expression” (Ibid.: 20). This perceived variation in borrowability led him and other researchers working on loanwords to discuss what factors might facilitate or hinder the borrowability of items (Wohlgemuth 2009: 8 ff.).

At least dating back to Paul (1920)<sup>22</sup>, extralinguistic factors have been put forth as explanations for the variations in borrowability. In the case of verbs borrowed into English and Persian, one might imagine that the contact situations between English and its donor languages were different – perhaps in intensity, duration and other things – from the contact situations between Persian and its donor languages. Such differences might then explain why the borrowed verbs are treated differently. However, morphosyntactic factors have also long been suggested. For example, Whitney (1881) introduced the idea that borrowing in general – and borrowing of words from certain classes, especially verbs, in particular – might be easier if the grammatical systems of the donor and recipient languages are similar. If true, this would have implications for the design of formal grammar models, especially concerning the storage of morphosyntactic building blocks in the bilingual mind. Wohlgemuth (2009) therefore conducted a very thorough typological study of borrowed verbs in order to decide which proposed factors for verbal borrowability in fact hold cross-linguistically, and I will discuss that further in Section 4.1.3.2., in relation to lone other-language verbs (henceforth LOLVs).

#### 4.1.2.3. The synchronic approach to language mixing: studying spontaneous mixes

Even though the systematic study of loanwords can give some indications about how they enter their recipient languages in the first place, many factors are only visible if the mixing process itself is observed. This brings us back to the original suggestion by Schuchardt (1884), i.e., that we should study language mixing synchronically to understand how languages develop. As I wrote above, that type of research did not really become mainstream until the 1970s, and MacSwan (2013: 324) attributes this to the emergence of sociolinguistic university courses around that time. Blom & Gumperz's (1972) study of dialect mixing in a Norwegian fishing village was included in the textbook used in most of those courses, and with that, code-switching – in the sense of two or more languages or language varieties being used within the same discourse – established itself as an important field of study. That does not mean, however, that the phenomenon had remained completely unstudied before that time.

##### 4.1.2.3.1. The early years

In a paper called “The neglected early history of codeswitching research in the United States”, Benson (2001) recounts the research that was done on this topic in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries. She writes that Espinosa (1914, 1917), in his anthropological-linguistic study of Spanish-speaking communities in New Mexico and Colorado, probably was the first to make a distinction

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<sup>22</sup> 1<sup>st</sup> edition 1880.



between loanwords and non-listed, spontaneous instances of mixing. He called the latter type ACTUAL SPEECH MIXTURE and commented that “[t]he line between the regularly developed New Mexican-Spanish words of English source and the English words and phrases used at random and with the usual English inflection, is as a rule, easy to draw” (1914, 1917, in Benson 2001: 30-31). In terms of the code-switching/borrowing debate discussed in Paper 3 and recounted at the beginning of Section 4.1., this partly places him in the Position B group, as he makes the distinction between English-origin items that are morphosyntactically integrated into Spanish and those that are not. However, he clearly also sees a diachronic continuum from non-listed items to highly listed loanwords, as the following quote illustrates: “this very kind of speech mixture is at present the great factor in introducing English words into New Mexican Spanish [since a] word frequently used, even if known to be English by those who use it, can be easily adopted as a regular Spanish word” (Ibid.: 31). In other words, this early set of characteristics for borrowing and code-switching combines Positions A and B into one. He also briefly addresses the “switchability” of items, noting that “[t]he part of speech least used in such mixtures is the verb” (Ibid.: 32).

Given that Espinosa did this work at the very beginning of the 20<sup>th</sup> century, why did it take until the early 1970s, give or take, for research on such spontaneous language mixing to become mainstream? In fact, there were works that touched upon it in between – but they were relatively few in number and mostly mainly interested in other related topics. As an example of the latter, Haugen (1956: 40) mentions code-switching, describing it as what “occurs when a bilingual introduces a completely unassimilated word from another language into his speech”.<sup>23</sup> However, the bulk of his work on the language mixing<sup>24</sup> process deals with how loanwords can be separated from what he calls LOANBLENDs and LOANSHIFTS (Ibid.: 59-60) and how they gradually, in his opinion, become phonologically integrated into the recipient language (Ibid.: 56). He does not give clear answers concerning what happens at the actual mixing point and, for instance, whether loanwords are morphosyntactically integrated from the get-go (Position B) or start out as completely unassimilated code-switches (Position A).<sup>25</sup>

The fact that most earlier researchers working on language mixing paid little attention to spontaneous mixing had an influence on the phenomenon’s perceived importance for successive

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<sup>23</sup> On the same page, he describes switching as “the alternate use of two languages”, so although he only mentions the mixing of single words when he explains the term CODE-SWITCHING, I think that is because he is comparing the phenomenon to loanwords (and therefore is focused on lone other-language items (LOLIs)) and not because he means for code-switching to exclude the switching between larger utterances in different languages.

<sup>24</sup> He does not use the term LANGUAGE MIXING, instead using DIFFUSION as his cover term (Haugen 1956: 40).

<sup>25</sup> On page 32, he hints towards Position B when he says that while the phonological integration of loanwords is gradual during the intermittent diffusion stage, called INTERFERENCE, they are always morphosyntactically integrated. However, he also refers to switching as the earliest diffusion stage, indicating a diachronic continuum in line with Position A (Ibid.: 40), and he later appears to support that notion by writing that complete language switches “may be the initiation of later interference” (Ibid.: 68).

generations of linguists. Languages enrich their vocabularies by adopting loanwords, so the general consensus has long been that the description of a language needs to say something about that. However, although there were notable exceptions (e.g., Espinosa 1914, 1917; Barker 1947; Vogt 1954), the prevalent view of actual switches between languages prior to the 1970s was very prescriptive. As an example, Weinreich (1953: 73) writes that “the ideal bilingual switches from one language to the other according to appropriate changes in the speech situation (interlocutors, topics, etc.), but not in an unchanged speech situation, and certainly not within a single sentence”. This negative view of especially intra-sentential switching unfortunately seems to have been one reason why this phenomenon was paid little attention.

#### 4.1.2.3.2. The era of code-switching research: 1970s and onwards

The negative attitude towards spontaneous language mixing displayed by Weinreich (1953) and others of his period had changed by the time we get to the 70s, and as Auer (2013: 1) puts it,

code-switching has developed from what used to be looked upon as ‘possibly a somewhat peculiar...act’ (Luckmann 1983:97) into a subject matter which is recognised to be able to shed light on fundamental linguistic issues, from Universal Grammar to the formation of group identities and ethnic boundaries through verbal behaviour.

While the burgeoning interest in spontaneous language mixing was at first mainly sociolinguistic, towards the second half of the 70s, several researchers began conducting studies with the grammatical aspects of language mixing as the main focus. Typically, they would postulate different constraints specifying what mixing patterns were possible or not. In 1971, Labov stated that “no one has been able to show that such rapid alternation is governed by any systematic rules or constraints” (1971: 457). In the years that followed, however, several researchers tried to remedy that.

#### *Structure-specific constraints*

The first suggestions were mostly structure-specific, as exemplified by Timm (1975) and Lipski (1978). One of the former’s suggestions was that subject and object pronouns must be in the same language as the main verb, as exemplified in (4a-c).<sup>26</sup>

- (4) a. \**Él wants*                      b. \**Mira him*                      c. \**Him mira*  
           he wants                              look.at him                      him    look.at  
           ‘he wants’                              ‘look at him’                      ‘look at him’

<sup>26</sup> Timm only gives the examples themselves as presented in italics; the glossing and translations are mine.

Lipski (1978) built on the work by Timm and others and added some suggested constraints of his own. As an example, he claimed that especially in a language like Spanish, where the “article adds the further information of gender and number” (Ibid.: 254), it is virtually impossible to switch between the article and the noun. He does not provide examples, but such a case would be as in (5a-b).

- (5) a. ?? *the casa*                      b. ?? *la book*  
           the house                            the book  
           ‘the house’                         ‘the book’

In both cases, the researchers had relied heavily on grammaticality judgments to arrive at their proposed constraints.<sup>27</sup> When others looked at data from speech corpora, however, they found several counterexamples that seemed to effectively disprove the constraints in question (e.g., Pfaff 1979; Poplack 1978/1981). To quote from the latter, the following (given here as 6a-b) are counterexamples to the constraints given in (4a-c) and (5a-b), respectively (Ibid.: 174-175):<sup>28</sup>

- (6) a. You *estás* diciéndole la pregunta in the wrong person.  
       (You are asking the question to the wrong person.)                      (B9b, 43.)
- b. Where are they, *los* language things  
       (Where are they, the language things?)    (003)

This shows how important the methodology is; I return to this issue in Section 5. Note that some of the researchers relying on grammaticality judgments also noticed signs that indicated the methodology was less than trustworthy. For example, Lipski writes that “[e]ven in some of the cases judged generally unacceptable, informants questioned by the present writer disagreed with each other” (1978: 252).

From the perspective of the code-switching/borrowing debate and what I call Positions A and B, it is also interesting to see how loanwords are discussed. Lipski (Ibid.: 253) writes, e.g., that “[t]he splitting of articles from nouns, except in cases of borrowed forms, appears also to violate a fundamental principle of linguistic structure” – but in fact, he gives no explanation of what he means by the terms CODE-SWITCHING and BORROWING. Without such descriptions, his claims can neither be verified nor falsified and have little scientific merit.<sup>29</sup> Timm, on the other hand,

<sup>27</sup> Although they use asterisks, as in (4a-c), both Timm (1975) and Lipski (1978) are more nuanced in their descriptions, e.g. stating that there always will be exceptions (Timm 1975: fn.24).

<sup>28</sup> I present the examples as they appeared in Poplack 1978/1981, except I added a line break between the example and the translation.

<sup>29</sup> His claims are potentially circular: his code-switching constraint works because any counter-example will be defined as borrowed rather than code-switched.

establishes early that code-switching is “characterized by frequent shifts from one language to the other (typically without phonological interference) throughout the flow of natural conversation” (1975: 473), and later suggests that an item is borrowed as opposed to code-switched if it shows morphological and phonological adaptation to the recipient language (Ibid.: 478-479). As far as I can see, however, she never mentions whether or not code-switched items also have to be spontaneous, so depending on that, this is either a pure B position or a combination of A and B, along the lines of Espinosa (1914, 1917).

#### *Global constraints*

The proposals of such construction-specific constraints were quickly followed by suggestions that were more general in their nature. The first type had to do with the syntactic equivalence of the languages in question, and was proposed almost simultaneously by several researchers, including Lipski (1978), Pfaff (1979) and Poplack (1978/1981, 1980). The EQUIVALENCE CONSTRAINT by Poplack is the most famous, and although she has changed the exact wording of it several times, the general gist is that “[t]he order of sentence constituents immediately adjacent to and on both sides of the switch point must be grammatical with respect to both languages involved simultaneously” (Sankoff & Poplack 1981: 5). Poplack (1978/1981: 176) provides the following Spanish-English mixing examples as violations of the Equivalence Constraint:<sup>30</sup>

- (7) a) \*told    *le*                      b) \**le*        told  
           told    *him*                        *him*        told  
           ‘told him’                        ‘told him’

They fail to follow the constraint because indirect pronominal objects follow verbs in English but precede them in Spanish, meaning we have non-equivalent surface word orders.

Many researchers have disputed this constraint by providing seemingly counter-evidential data, as seen, e.g., in the works referenced in Gardner-Chloros (2009: 96) and MacSwan (2013: 326-327). The following corpus example from Aaho (1999: 43, in Gardner-Chloros 2009: 96) shows violation of the English adjective-noun order in mixing between English and a Cypriot Greek dialect:

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<sup>30</sup> Bear in mind that although she marks them with an asterisk, i.e., as ungrammatical, she has the same approach as, e.g., Timm (1975) and Lipski (1978); i.e., she contends that the restrictions show what are highly improbable data, not necessarily unthinkable. Her text reads “[b]ecause of surface discrepancy, (...) the probability of a switch (...) is lower” (Poplack 1978/1981: 176). She also adds that she found no examples like those in (7a-b) among her data. Note that she provides no glossing or translation.

- (8) Irthe dhaskala **private**  
*Came teacher private*  
*A private teacher came*

In the responses by Poplack (see, e.g., Poplack 2013: 13-14), the code-switching/borrowing debate again becomes evident, as she dismisses most of the apparent counterexamples as instances of borrowing rather than code-switching and, as she stresses, the Equivalence Constraint was never intended to hold for borrowing. This is reminiscent of Lipski (1978), but unlike him, Poplack thoroughly explains what she means by CODE-SWITCHING.

There is some disagreement in the literature as to what constitutes a “true” instance of code-switching. For the purposes of this study, I define a *switch* according to degree of adaptation to the other language. At one extreme is complete adaptation of items from one language ( $L_1$ ) to the phonology and morphology of the other ( $L_2$ ) (Poplack 1978/1981: 170).

She then presents some examples and explains that when any items had been phonologically, morphologically or syntactically integrated into the recipient language, “they were not here considered instances of code-switching (...). At the other extreme is the complete lack of adaptation of patterns from one language to the patterns of the other, which I am calling *code-switching*” (Ibid.).

As far as I can see, Poplack (1978/1981) is the first researcher who explicitly adopts a pure form of Position B. Borrowed items have in some way (seen through the lens of phonology, morphology and/or syntax) been integrated into the recipient language, whereas code-switched ones have not – and diachrony and the listedness of the items do not affect the classification whatsoever. This claim is what kick-started the specific code-switching/borrowing debate that this thesis is concerned with. As the debate concern LOLIs, I will return to these matters, including Poplack’s other constraint, known as the FREE MORPHEME CONSTRAINT (Poplack 1978/1981, 1980), in Section 4.1.3.

Since the 1980s, a major trend in the grammatical language mixing literature has been to make use of machinery in current generative grammar models to explain the mixing patterns. Researchers like Di Sciullo, Muysken & Singh (1986) and Belazi, Rubin & Toribio (1994) took GOVERNMENT AND BINDING THEORY (GB) (Chomsky 1981) as their starting point. Di Sciullo et al. (1986) suggest that what they call CODE-MIXING “is constrained by the government relation that holds between the constituents of a sentence” (1986: 1). They define government in the following manner (Ibid.: 6):

- (9) X governs Y if the first node dominating X also dominates Y, where X is a major category N, V, A, P and no maximal boundary intervenes between X and Y.

Their proposed GOVERNMENT CONSTRAINT says that if Y is governed by X, then Y has to be drawn from the same mental lexicon as X; i.e., X and Y must belong to the same language. Since code-mixing is described as “a form of linguistic behavior which produces utterances consisting of elements taken from the lexicons of different languages” (Ibid.: 1), this effectively bans code-mixing between elements when there is a government relation between them.

MacSwan (2013: 329-330) rebuts the arguments for this position, and part of his critique is the fact that we *do* find code-mixing between elements that stand in a government relation to one another. For example, verbs and prepositions govern their complements, yet as we see in the following examples from MacSwan, there is a code-mix between the verb *comprar* ‘buy’ and its complement *some milk* in (10a) and between the preposition *avec* ‘with’ and its complement *il-ku:ra* ‘the ball’ in (10b).<sup>31</sup>

- (10) a. English-Spanish  
 This morning *mi hermano y yo fuimos a comprar* some milk  
 This morning *my brother and I went to buy* some milk
- b. French-Arabic  
 J’ai joué avec *il-ku:ra*  
 I have played with the-ball  
 ‘I have played with the ball’

Note that the description of code-mixing which Di Sciullo et al. (1986) adopts amounts to a clear case of Position B, as was the case with Poplack. This is further substantiated as they specify that “the mixed codes remain phonologically and morphologically separate” (Ibid.: 2) and emphasize that code-mixing as such is fundamentally distinct from, e.g., borrowing (Ibid.). Although most use the term CODE-SWITCHING, all the generative accounts I will discuss here – except some of those conducted by myself and the research group I am part of<sup>32</sup> – are firmly positioned in the B camp as well. I will therefore refrain from commenting on that in each particular case.

The proposal by Belazi et al. (1994) builds on the same type of government machinery, but here it is only the code-switching between a *functional* head and its complement that is disallowed (1994: 221), which is why they call it THE FUNCTIONAL HEAD CONSTRAINT. This is possible within the GB theory because selection of a complement by functional heads and lexical heads are seen as two distinct processes, meaning it is possible to restrict one without affecting the other. In order

<sup>31</sup> MacSwan (2013) does not provide any information about these mixes, but I recognize (10a) as English-Spanish, and he identifies (10b) as French-Arabic in MacSwan (2014: 12). According to my informant who has Arabic as her L1 and French as her L2, *the ball* in Arabic would be *al-ku:ra*, not *il-ku:ra*, whereas the correct options in French are *le ballon* or *la balle*. I therefore assume that MacSwan is correct that the switch is between *avec* ‘with’ and *il-ku:ra* ‘the ball’, and that in the latter, the Arabic article has either been misspelled or reflects some local variety of Arabic.

<sup>32</sup> I.e., Professors Tor Anders Áfarli and Terje Lohndal as well as fellow PhD candidate Brita Ramsevik Riksem.

to make the constraint work, Belazi et al. suggest specific language features, like [+English]. The language feature on the complement of a functional head needs to match the language feature on said functional head, just as is the case with other types of features, like tense (Ibid.: 228). However, the notion of “language features” is not quite as straightforward as they make it out to be. As MacSwan (2013: 331) puts it,

There are many particular languages, (...) and the dividing line between them are often quite obscure and sociopolitical in nature. Thus, a language feature set to [-Greek] introduces extreme, possibly unresolvable computational complexity, and the feature [+Chinese] would presumably include all the mutually unintelligible languages of China while [+Norwegian] would exclude Swedish even though Swedish and Norwegian speakers generally understand each other.

I will explore these problematic aspects of the term LANGUAGE, which lacks any type of formalized definition, in more detail in Section 4.1.4.

#### *Constraint-free approaches vs. a separate code-switching theory*

Moving on from the GB theory era, more recent studies have often used different versions of the MINIMALIST PROGRAM (MP) (Chomsky 1995) as their explanatory basis. As mentioned in the introduction, the first variants of the MP were highly lexicalist in their nature, with syntactic structures derived from feature bundles inherent to the lexical entries themselves. The main proponent of this model type in the language mixing literature is MacSwan (1999 and later instantiations). He points out that there has been a general consensus in the field in recent years that an ideal theory of language mixing should make do without any mixing-specific constraints or mechanisms (2014: 18); this is often called a NULL THEORY after Mahootian (1993). However, according to MacSwan, most attempts have failed to formulate a true null theory because the formal grammar models they used were incapable of explaining the mixing patterns on their own. Here, he stresses, lies the advantage of his lexicalist MP model, where “lexical items may be drawn from the lexicon to introduce features into the lexical array, which must then be valued [...] in just the same way as monolingual features must be valued, with no special mechanisms permitted” (MacSwan 2009: 326). Papers 1-3 argue specifically against this type of lexicalist MP model, and I will address the issue again in Section 4.1.3, as it pertains to LOLIs.

As we saw in the introduction, MacSwan’s view stands in opposition to one of today’s main non-generative explanatory models, called the MATRIX LANGUAGE FRAME MODEL (MLFM) (Myers-Scotton 1993, 2002; Jake et al. 2002, 2005; Myers-Scotton & Jake 2017). The MLFM specifies a MATRIX LANGUAGE (ML) and an EMBEDDED LANGUAGE (EL) where, in the typical case, the first functions as a sort of morphosyntactic frame into which lexical items from both languages may be inserted (Myers-Scotton 1993: 7). As this makes the notions of ML and EL

theoretical primitives, it does not amount to a null theory. If we look at the specific predictions the model makes, however, there are many overlaps with the exoskeletal MP model my colleagues and I argue for in Papers 1-3. As I summarized at the beginning of Section 4.1., language mixing data I study can be described as cases of insertion or alternation:

|              |   |
|--------------|---|
| INSERTION:   | the donor language item has recipient language morphosyntax |
| ALTERNATION: | the donor language item has donor language morphosyntax     |

Recall that Poplack, as well as the researchers behind the generative accounts I just described, all subscribed to what I have called POSITION B in the code-switching/borrowing debate; i.e., what I call INSERTION and ALTERNATION are to them BORROWING and CODE-SWITCHING, respectively. Myers-Scotton and her associates hold Position A instead, meaning both insertions and alternations are code-switches as long as they are spontaneous, but she does still distinguish between them. Insertions, in this model, are the EL parts of MIXED ML + EL CONSTITUENTS, whereas alternations are examples of EL ISLANDS.<sup>33</sup> In the Swahili/English example in (11) (Myers-Scotton 2002: 57), *so many problems* is an example of an EL island, whereas *repeat* is an EL element in a mixed ML + EL constituent:

- (11) [Lakini a-na **so many problems**, mtu [a-me-repeat mara ny-ingi]<sub>CP</sub>]<sub>CP</sub>  
 but 3S-with so many problems, person 3S-PERF-repeat time CL9-many  
 ‘But he has so many problems, [that] [he is] a person [who] has repeated many times’

I will not attempt a more thorough overview of the MLFM here.<sup>34</sup> Note, however, that as mentioned in fn. 5, the MLFM is strictly a code-switching model and must be combined with other models to explain other aspects of language and its use. Exoskeletal MP models of the type I argue for, however, are capable of preserving some key insights from the MLFM – most importantly, the idea of the grammar as a sort of frame into which lexical items can be inserted – while at the same time remaining null theories. In these models, as I remark on page 11 in Paper 3,

what might appear to be properties of a lexical entry – which, depending on the specific version of the theory, may include argument structure, syntactic category and morphological information – are derivatives of a syntactic structure which is generated independently from the lexical items that will come to realize them.

<sup>33</sup> Note, however, that Myers-Scotton & Jake (2017: 352) argue explicitly “that the EL verbs that occur in ML finite verb slots in CS are nonfinite verbs, not finite verbs”. As I have counterexamples from American Norwegian, I will address that in Section 4.1.3.2., on lone other-language verbs (LOLVs).

<sup>34</sup> See Myers-Scotton (2002) and Myers-Scotton & Jake (2017) for updated MLFM accounts and how the MLFM is supported by, e.g., the 4-M MODEL, which models “the nature of morpheme types in general” (Ibid.: 341), as well as the ABSTRACT LEVEL MODEL, which sets out to explain the abstract grammatical structures of lexical items (thought to consist of three different layers) (Ibid.: 348).



As this is the framework adopted in this thesis, it will be addressed in detail in Section 4.2. For now, I will present some of the other studies that make use of exoskeletal frameworks to analyze language mixing.

An early example is the work of González-Vilbazo & López (2011), who use the exoskeletal framework DISTRIBUTED MORPHOLOGY (DM) to analyze Spanish/German code-switching.<sup>35</sup> They focus on something which, as we recall from Section 4.1.2.2., had been noted as early as in Whitney (1881), namely that different bilingual communities integrate other-language verbs in different ways. In the Spanish-German speech community González-Vilbazo & López studied, the pattern is as follows (their examples 4 and 16a):

- (12) a) Juan *hace* nähen das Hemd  
 Juan does.3<sup>rd</sup> sew.inf the shirt  
 ‘Juan sews the shirt.’
- b) Wir *utilisieren* palabras alemanas.  
 We use words German  
 ‘We use German words.’

In other words, when introducing a German verb into Spanish, these speakers use the German infinitive with a Spanish light verb;<sup>36</sup> whereas when Spanish verbs are introduced into German, the Spanish root/stem is given appropriate German inflections (the verbalizing affix *ier* plus the infinitival affix *en*). The opposite pattern is not attested and deemed unacceptable by the speakers (Ibid.: 839). This latter point, however, is only true within this particular (so-called ESPLUGISH) speech community; when these speakers converse with other Spanish-German bilingual speakers who are not part of the Esplugish speech community, examples like the following are attested (Ibid.: 840):

- (13) *Mañana* te tienes que anmeldear  
 tomorrow you.dat must.2sg that register  
 ‘Tomorrow you have to register’

Here, *e* is a verbalizing affix and *ar* is an infinitival affix.

Following this work, both Bandi-Rao & den Dikken (2014) and Alexiadou (2017) use exoskeletal-type DM analyses to explain similar types of situations – i.e., bilingual communities where they use at least two distinct verb mixing strategies productively in some way – where other language pairs are involved. I will return to these three papers and the issues that arise from them

<sup>35</sup> As will be discussed in Section 4.2.1.2., although they did use aspects of this exoskeletal framework, their model also made use of more lexicalist ideas.

<sup>36</sup> Note that *hacer* ‘to do’ only is a light verb when the main verb is German, not when it is Spanish (Ibid.: 839).

when I discuss LOLVs in Section 4.1.3.2 (see also fn. 33 in Paper 3). Although my analysis differs from theirs on at least one key point, I commend the fact that they recognize that there are different verb mixing strategies in use and attempt to analyze them. The previous failure to find mixing constraints or at least probabilistic patterns that seem to hold cross-linguistically may stem not from the fact that there are no patterns, but rather from the fact that they are far from universal; if this is the case, identifying and analyzing the different patterns would seem to be the most fruitful way forward.

Another strand of work within the realm of exoskeletal models applied to language mixing focuses specifically on BIMODAL BILINGUALISM, i.e., bilingualism where one language is spoken and the other is signed. These bilinguals can mix between their languages just like unimodal speakers can, but importantly, the two distinct modalities also allow for *simultaneous* production of the speech and sign language. This phenomenon is called CODE-BLENDING, and studying it can hopefully get us one step closer to understanding things like bilingual language processing and, further, how languages are stored in the brain.<sup>37</sup> Examples of exoskeletal-type accounts of code-blending are Pierantozzi (2012) and Lillo-Martin, de Quadros & Chen Pichler (2016).

Other exoskeletal analyses of language mixing have focused on several different theoretical issues, such as, e.g., ellipsis (Merchant 2015) and phases (López, Alexiadou & Veenstra 2017). In addition, the research group I am part of and our collaborators have produced more research on this topic. As seen in Section 3, Riksem (2017, 2018, in press) has focused in particular on American Norwegian noun phrases and related issues like gender, whereas Åfarli (2015b) analyzes lone English-origin verbs and discusses the tense-verb relation in particular. Others, e.g., Åfarli (2015a), Alexiadou et al. (2015) and Riksem et al. (in press) look at language mixing in American Norwegian more generally.<sup>38</sup>

#### 4.1.2.3.3. The road ahead

This brings us up to speed with the status quo, and moving forward, there are both new and previously often overlooked trends of a theoretical, methodological and empirical nature that I believe are worth mentioning. As we saw in the previous section, the recognition of different verb mixing strategies and the willingness to let that shape one's formal model is one theoretical development I very much welcome. As for new methodologies, classic sources of data like speech corpora and acceptability judgment tasks are still relevant. However, various researchers have proposed new ways of controlling for potentially confounding factors when using these methods,

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<sup>37</sup> See, e.g., the keynote article *Psycholinguistic, cognitive, and neural implications of bimodal bilingualism* (Emmorey, Giezen & Gollan 2016) for more on this.

<sup>38</sup> Alexiadou et al. (2015) looks at language mixing in American Norwegian as compared to Greek-German mixing.

something which hopefully will lead to more reliable results in the future. This is further discussed in Section 5.1. There, I also mention methods of a more recent date, such as psycholinguistic and neurolinguistic experiments. Even though these do not render the older methods superfluous, they are helpful additions that hold promise for allowing us to pose and answer yet more research questions in the future.

And finally, discoveries in new empirical domains might further the field. As seen above, an example is the field of bimodal bilingualism, where one language is spoken and the other is signed. In addition, we might also learn more by joining forces with researchers who study closely related phenomena. As an example, Muysken suggests that comparing language mixing data and theories with those of INTERFERENCE, in the sense of “morpho-syntactic structure from two languages, but lexical material from only one of them” (2013b: 194), might further both fields.<sup>39</sup>

### **4.1.3. LOLIs**

As mentioned earlier, this thesis is focused on lone other-language verbs, or LOLVs. These are a specific type of lone other-language item, or LOLI, which can be characterized as items from one language that are both preceded and followed by items from another language. This section will focus on issues specifically related to LOLIs. Section 4.1.3.1. will address aspects that pertain to all LOLIs, ending with the insights Papers 1-3 provide on the topic; 4.1.3.2. will focus on LOLVs in particular, especially how the verb mixing patterns found in CANS compare to those found elsewhere in the literature.

#### 4.1.3.1. General remarks

Poplack & Dion (2012: 280-281) state that LOLIs “are by far the predominant manifestation of bilingual mixing in every language pair empirically studied”; and even though it may not be correct that this holds for *every* language pair (see, e.g., Gardner-Chloros 2009: 30), it is certainly true for most. This means that any theory of language mixing needs to account for them. Of more particular importance to grammatical studies, recall from Section 4.1.2. that I build on the typology provided by Muysken (2000, 2013a, 2015) and conclude that language mixing can take at least two forms: insertion and alternation. To recap, here are examples from my data that illustrate the two (examples 1 and 2 from the introduction, repeated here as 14 and 15):

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<sup>39</sup> See also Tracy (2000: 29).

- (14) INSERTION  
*Vi bare satt der og watch-a da* (rushford\_MN\_01gm)  
 we just sat there and watch-PAST then  
 ‘We just sat there and watched then’
- (15) ALTERNATION  
*Og hun # nettopp nå # em # died<sup>40</sup>* (albert\_lev\_MN\_01gk)  
 and she # just now # em # died  
 ‘and she # just now # em # died’

While the vast majority of LOLIs are morphosyntactically integrated into their respective recipient languages, i.e., inserted (e.g., Poplack, Sankoff & Miller 1988; Myers-Scotton 1993), there are exceptions as well (Poplack 2012; Papers 2 and 3). In addition, as I mentioned in Section 4.1.2.3.2., the insertion and alternation of verbs can take different forms (Muysken 2000; Wohlgemuth 2009). This will be addressed further in Section 4.1.3.2. As I pointed out in fn. 33 in Paper 3, in order for a grammatical theory to model our linguistic capacity correctly, it would need to somehow allow for all of these mixing possibilities.

#### 4.1.3.1.1. “Word-internal” mixing

As seen in Section 3 and Papers 1-3, American Norwegian constitutes a type of language pair in which LOLIs usually are integrated by means of affixation. This is illustrated in example (14) above. As we have seen, such “word-internal” mixing has been the focus of a heated debate during the past decades. An early and influential, albeit much-contested claim concerning such cases is Poplack’s (1978/1981, 1980) FREE MORPHEME CONSTRAINT, which I mentioned in Section 4.1.2.3.2. It states that “[c]odes may be switched after any constituent in discourse provided that constituent is not a bound morpheme”,<sup>41</sup> which means word-internal switching is banned; that is, “unless one of the morphemes has been integrated phonologically into the language of the other” (1980: 586). This constraint is a good starting point to discuss some of the main issues that have been debated, namely the phonology of LOLIs and whether word-internal switching is licit or not.

First, let us look briefly at the phonological claim. MacSwan and his associates (MacSwan 1999, 2014; MacSwan & Colina 2014) are among those who still maintain that this constraint is correct, although adding that MacSwan’s PF INTERFACE CONDITION (PFIC) “has a significant advantage over the Free Morpheme Constraint in that it follows from independently motivated principles of grammar and is not stipulative” (MacSwan & Colina 2014: 203). Interestingly,

<sup>40</sup> For clarification, note that *died* here is characterized as a LOLI, even though it consists of two building blocks – a root and an inflection – according to our exoskeletal account.

<sup>41</sup> This is the wording in Poplack (1980: 585-586); it was slightly different in Poplack (1978/1981) (see Eliasson 1990: 33-34 for more on the different versions of this constraint).

however, one of today's strongest *opponents* of this phonological claim is Poplack herself. Following the publications of the early 1980s, she and her associates analyzed a large corpus of bilingual French-English discourse containing almost 20 000 LOLIs, and the empirical findings, reported in Poplack et al. (1988), caused them to dismiss the Free Morpheme Constraint and instead propose the NONCE BORROWING HYPOTHESIS (NBH). As Poplack (2015: 419) sums up, "because phonological integration is gradient, in both long-attested [...] and more recent borrowings [...], as well as in [code-switching] and in unmixed speech more generally, on its own it is a poor predictor of language status".

The NBH states that bilinguals can both code-switch and borrow items for the nonce, and that the difference between the two is structural: whereas borrowed items are morphosyntactically integrated into the recipient language, code-switched ones retain the morphosyntax of the donor language (Poplack 2012: 645). This brings us to the second dispute, related to the claim that word-internal switching is banned. Following the NBH, a LOLI with recipient-language affixes would per definition be borrowed, not code-switched; so in that sense, it supports the ban on word-internal switching. However, note that this really is a question of terminology, as we have seen throughout the code-switching/borrowing debate. Poplack does not dispute the fact that LOLIs with recipient-language affixes exist; in fact, recall from the beginning of this section that just like Myers-Scotton, one of the strongest opponents of the word-internal switching ban, Poplack has found virtually all LOLIs to be morphosyntactically integrated into the recipient language. She merely calls them BORROWINGS as opposed to CODE-SWITCHES. Since Myers-Scotton and others (e.g., Van Coetsem 2000; Thomason 2003) instead use the term BORROWING to refer to established mixes and CODE-SWITCHING for the spontaneous ones, i.e., what I call Position A, this is bound to result in confusion.<sup>42</sup>

#### 4.1.3.1.2. Insights on LOLIs from Papers 1-3

The issues described above are at the center of Paper 3, which, as you will recall from the summary in Section 2.3. and the beginning of Section 4.1., was where I suggested to use the terms INSERTION, ALTERNATION and LISTEDNESS in the following manner to sort out the confusion surrounding the terms CODE-SWITCHING and BORROWING:

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<sup>42</sup> Confusion on account of the use of identical terms to cover disparate phenomena in fact existed at the very beginning of research on language mixing as well, as can be seen in the following quote by Whitney (1881: 6), who describes two earlier linguists: "Mr. Clough should have set before him the doctrine in some such form as the above, and then have addressed himself in an orderly manner to its refutation. Instead of so doing, he goes laboriously onward, gathering evidences of mixture, according to his definition of the term, which do not at all touch his antagonist; since the latter, acknowledging them all, nevertheless declares that they do not constitute mixture according to *his* definition of the term."

- INSERTION: the donor language item has recipient language morphosyntax  
(previously: *borrowing*, Position B)
- ALTERNATION: the donor language item has donor language morphosyntax  
(previously: *code-switching*, Position B)
- LISTEDNESS: an item is more listed the more frequent in use and dispersed it is across  
a speech community  
(previously: *a scale from code-switching (non-listed) to borrowing (listed)*, Position A)

Paper 3 (p. 28-29) also points out that although our terminology differs, my position is very much in accord with that of Poplack (2012: 647-648). As mentioned earlier, she holds the B position in the code-switching/borrowing debate, meaning her terms CODE-SWITCHING and BORROWING cover what I describe as ALTERNATION and INSERTION, respectively. Further, she uses NONCE BORROWING for non-listed items and LOANWORD for the listed ones. We still differ in how we envision the listing or storing of lexical items in the mind/brain, however, and I will get back to that in Section 4.2.<sup>43</sup>

In Section 4.1.2.3.2., I ended the discussion about lexicalist MP models by saying that I would return to them here, as this thesis argues specifically against such models on account of issues that have to do with LOLIs in particular. This is especially clear in Paper 2, which is devoted to comparing a lexicalist MP model of this type, given in Moro (2014), to our own exoskeletal MP model. Moro looks at nouns with determiners and finds that whereas an English noun can have a Spanish determiner, a Spanish noun cannot have an English one.

- (16) a. *el employer*      b. \**the casa*  
      'the employer'      'the house'

In our paper, we identify two problems with this claim. First, her overall lexicalist MP grammar model in fact predicts the opposite pattern. Determiners have unvalued features that must be valued by features on the noun, and the structure for *el employer* 'the employer', e.g., is as in Figure 1 ((5) in Paper 2):<sup>44</sup>

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<sup>43</sup> As mentioned in the introduction to Section 2, Papers 2 and 3 were revised during the same time period, meaning they are fairly consistent with each other. In Paper 1, however, we did not venture as far into the code-switching/borrowing debate and only focused on the inserted LOLVs in CANS, not the alternated ones, meaning some arguments were not as developed as they would become once we looked at the full spectrum of data. This only goes to show how important it is to look at all the data as opposed to just what appears as the main pattern. Just as, e.g., González-Vilbazo & López (2011) would have missed the bigger picture had they only focused on the verbalizer pattern or the light verb construction pattern in their data, my analysis of American Norwegian LOLVs would have been incomplete had I not looked beyond the insertional main pattern and discovered a second, alternational one.

<sup>44</sup> The structures are explained in more detail in Section 4.2. and in the individual papers.

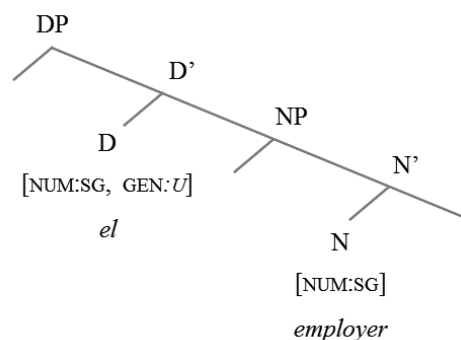


FIGURE 1. LEXICALIST MP ANALYSIS OF *EL EMPLOYER* ‘THE EMPLOYER’

Since *el* ‘the’ has an unvalued gender feature that *employer* lacks, the derivation should crash, meaning (16a) should be ungrammatical. In the case of (16b), on the other hand, *casa* ‘house’ can value all the unvalued features on *the*, meaning that derivation should be fine – contrary to Moro’s (2014) claims.

The second problem has to do with the data themselves and the ungrammaticality marking on the Spanish nouns with English determiners. In the English-Spanish bilingual community Moro looks at, the speakers may well accept (16a) but not (16b), but that is not evidence that the grammar of English, Spanish or the combination of the two prohibits (16b). Speakers may deem certain constructions unacceptable without them being ungrammatical,<sup>45</sup> and as I have addressed in Section 4.1.1., extralinguistic factors have often been proposed to be relevant here. In this particular case, we have several accounts (e.g., Liceras, Spradlin & Fuertes 2005; Liceras, Fuertes, Perales, Pérez-Tattam & Spradlin 2008; Pierantozzi 2012) of different English-Spanish bilingual communities where both of the patterns shown in (16a,b) are attested. That means that the formal grammar model also should allow both, regardless of whether or not specific speech communities choose to make use of only one of them.

Paper 2 details how an exoskeletal model is able to explain both of these patterns. As mentioned, I will delve into the formal model in more detail in Section 4.2.; for now, just remember that under an exoskeletal account, the building blocks of syntax are roots and separately listed features and feature bundles, and nothing in the syntax hinders English-origin roots, like  $\sqrt{\text{EMPLOYER}}$ , from combining with Spanish features instead of English ones and thereby giving rise to a noun with exactly the features needed to value the unvalued features on the Spanish determiner. The same goes for a Spanish-origin root and English nominal features, of course. As

<sup>45</sup> See Section 5.1.2.1. for more on this topic.

a consequence, both (16a,b) are grammatical and will have the simplified structures shown in Figures 2 and 3, respectively.<sup>46</sup>

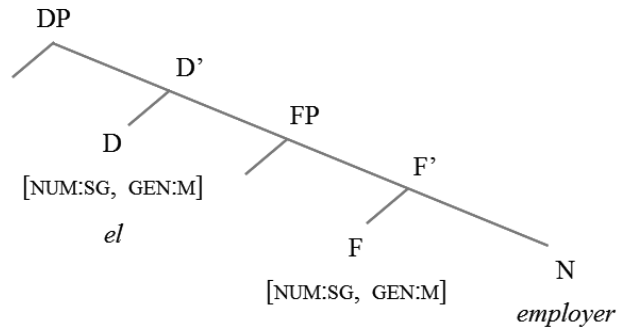


FIGURE 2. EXOSKELETAL MP ANALYSIS OF *EL EMPLOYER* 'THE EMPLOYER'

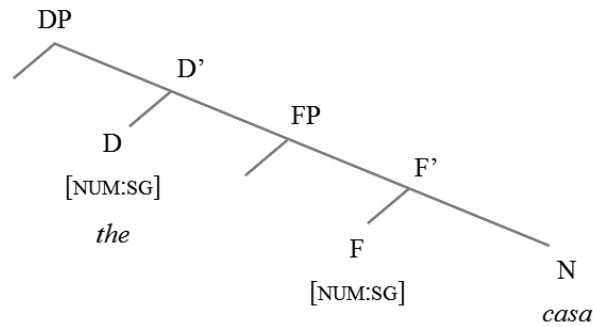


FIGURE 3. EXOSKELETAL MP ANALYSIS OF *THE CASA* 'THE HOUSE'

Paper 2 also demonstrates that the English-Norwegian mixing in CANS can be explained exoskeletally in precisely the same way.

Before moving on to the next section, it should be pointed out that Paper 3 discusses how another analysis makes it possible for a lexicalist MP model to explain both of the patterns. Recall from the beginning of Section 4.1. that I sum up Positions A and B in the code-switching/borrowing debate in the following manner in Table 1, repeated here as Table 2:

<sup>46</sup> For simplicity, I only show the noun stem, N, but this is thought to consist of the root  $\sqrt{\text{EMPLOYER}}$  and the nominalizing projection n. The inflectional properties, i.e., the features that must match those of the Spanish determiner in D, are generated under the separate functional projection F.



|            | Empirically   | Formally   |
|------------|---|--|
| Position A | Something mixed for the nonce is code-switched, whereas an established mix is borrowed.                   | Code-switching and borrowing share the same underlying mental process.   |
| Position B | Code-switched items have donor language morphosyntax; borrowed ones have recipient language morphosyntax. | Code-switching and borrowing have different underlying mental processes. |

TABLE 2. POSITIONS A AND B.

As mentioned above, the lexicalist analysis of *el employer* ‘the employer’ crashes because *el* ‘the’ has an unvalued gender feature that *employer* lacks. However, that is only true if *employer* has the feature bundle used for English nouns. If the feature bundle instead is the one used in Spanish, *employer* would have the valued gender feature necessary to value the unvalued feature of *el* ‘the’. This option is available to those who hold Position B, e.g., MacSwan (1999 and later instantiations). He assumes speakers to have language-specific mental lexicons for each language they speak, and whereas code-switched items are drawn directly from the donor language lexicon into the syntax, borrowed ones are copied to the recipient language lexicon and given a suitable recipient-language feature bundle before entering the syntax. If we therefore assume *employer* to be borrowed into Spanish, it will have a Spanish-type feature bundle. Note that the table above specifies that borrowed items have recipient-language morphosyntax, which might seem to be a problem for analyzing *employer* as borrowed, since it has no overt Spanish inflectional affix. However, since neither Spanish nor English indefinite singular nouns have overt inflectional affixes, the morphosyntax could just as well be Spanish as English.

Assuming language-specific lexicons and a process by which items can be copied from one to the other is not without its costs, however. Bear in mind that although it is typically called BORROWING, it is in fact a copying process; which suggests that the copied item from then on will be listed in the lexicon it was borrowed into as well as the one it was borrowed from. Poplack & Dion (2012) looked at diachronic corpus data and saw that, of the items borrowed from Language A into Language B that had not become established loanwords in Language B, most were never observed to be repeated in B. The word “observed” is obviously crucial here, since we cannot know whether they were repeated when the researchers were not recording. In either case, however, my intuition is the same: I may very well use a lone English-origin verb in an otherwise Norwegian utterance for the first time and still morphosyntactically integrate it into Norwegian, even if I never use that verb in a Norwegian utterance again. If so, why would that verb remain listed in the mind/brain as belonging to both English and Norwegian? And even if I *did* keep using

it in Norwegian utterances, my intuition could still be that the verb “is English”, which is hard to reconcile with it being drawn from a Norwegian lexicon.

Given an exoskeletal model, however, roots do not have to be language-specific, as the same bare root can combine with features and feature bundles associated with different languages. This means that the intuition a speaker has of the “language-belongingness” of a particular item, i.e., what language the item usually is used in, can be listed alongside other encyclopedic information about said item. I will elaborate on the architecture of exoskeletal models in Section 4.2, where I also will discuss how a weaker type of lexicalist MP model, not discussed in Papers 1-3, can handle mixing data. First, however, note that even though Papers 1 and 2 deal with nouns and noun phrases as well, as you understand by now, the main empirical focus in this thesis is on lone other-language verbs, or LOLVs. The following section will therefore focus on those.

#### 4.1.3.2. LOLVs

As we saw in Section 4.1.3.1., in American Norwegian, LOLVs seem to behave in two different ways as far as inflection is concerned. The majority behave the way a “native” Norwegian verb stem would, appearing with appropriate Norwegian verbal inflections. This at least mostly involves suffixation.<sup>47</sup> The other group instead seems to follow the English inflectional system, i.e., behaving as they would in a monolingual English utterance. This can involve overt suffixes or a lack thereof. Examples (17a-c) and (18a-c) illustrate this.<sup>48</sup>

- (17) INSERTION
- a. *Vi bare satt der og **watch-a** da* (rushford\_MN\_01gm)  
 we just sat there and watch-PAST then  
 ‘We just sat there and watched then’
- b. *og **hunt-er** med bue og pil nå* (coon\_valley\_WI\_04gm)  
 and hunt-PRES with bow and arrow now  
 ‘and hunts with bow and arrow now’
- c. *jeg ville ikke **bother-e** henne* (westby\_WI\_01gm)  
 I would not bother-INF her  
 ‘I would not bother her’

<sup>47</sup> Note that there are also verb forms in Norwegian, especially in certain dialects, that do not call for overt inflections, meaning some of the bare forms could be appropriate Norwegian inflected forms as well. See Paper 3, p. 23 for more on this.

<sup>48</sup> I use examples with overt inflections to illustrate, as those are unequivocally insertions or alternations. The following six examples are also found in Paper 3 as (5a-c) and (6a-c).

- (18) ALTERNATION
- a. *og bun # nettopp nå # em # died* (albert\_lea\_MN\_01gk)  
 and she # just now # em # died  
 ‘and she # just now # em # died’
- b. *de orda som vi e liksom # corrupted* (stillwater\_MN\_01gm)  
 those words that we e sort of # corrupted  
 ‘those words that we e sort of # corrupted’
- c. *før vi reiste # talk snakke på telefon* (webster\_SD\_01gm)<sup>49</sup>  
 before we travelled # talk talk on telephone  
 ‘before we travelled # talk talk on the telephone’

As discussed earlier, I call the former pattern INSERTIONAL and the latter ALTERNATIONAL, following Muysken (2000, 2013a, 2015).<sup>50</sup> As pointed out by Poplack (2013: 13), the alternational pattern found in American Norwegian is very rare in studies of other bilingual speech communities. In Paper 3 (p.24), I surmise that this probably is because most speakers would switch to speaking the donor language for the rest of the utterance as opposed to just for the verb if they first made a switch.<sup>51</sup> The insertional pattern, on the other hand, is well-attested.

#### 4.1.3.2.1. Different verb mixing strategies

Section 4.1.2.3.2. made it clear that if we expand our horizon and look at other language pairs in different bilingual speech communities, we find that the array of existing verb mixing strategies make the dichotomy between insertion and alternation more fine-grained.<sup>52</sup> For example, as seen in González-Vilbazo & López (2011) and others, some bilingual communities may choose to always insert a donor language infinitive into a recipient language light verb construction or use a verbalizer between the mixed verb and the recipient language inflection as opposed to inflecting the donor language verb the way they would a recipient language verb. Even though accounting

<sup>49</sup> The type of doubling we see here with *talk snakke*, i.e., where an element is repeated in both languages within the same utterance, has not been specifically discussed neither in Papers 1-3 nor the cover article; but see Goldrick, Putnam & Schwarz (2016a,b) and references therein for detailed analyses.

<sup>50</sup> As mentioned in Section 4.1.3.1.2., whereas Paper 1 only focused on the insertional type, Papers 2 and 3 include both.

<sup>51</sup> When the American Norwegian speakers in CANS behave differently in this respect, I believe it is precisely because they are heritage speakers, and therefore prone to having lexical retrieval problems when speaking their heritage language. As that is precisely what they are asked to do in the interview context of CANS, it is likely that they feel a pressure to stay in “Norwegian Mode” even when they cannot remember a Norwegian word. This, it seems, they solve by continuing in Norwegian again after having had to say the one word they failed to remember in English instead. This is addressed again in Section 4.2.4.2.

<sup>52</sup> Although the term LONE OTHER-LANGUAGE VERB works for American Norwegian, it can be a little misleading for some of the other bilingual speech communities. Some of the strategies involve inserting something other than a verb – often a noun – in structures that give a verbal meaning – e.g., a light verb construction. In other words, it is the function an item gets in the recipient language, not what it had in the donor language, that matters. Wohlgemuth (2009) therefore calls it LOAN VERB ACCOMMODATION, not verb mixing.

for those other strategies is beyond the scope of this thesis, I wish to shed light on some findings in Wohlgemuth (2009), which to my knowledge is the most extensive typological study of how verb mixing occurs cross-linguistically.

In works that compare several different typologically diverse language pairs (e.g., Muysken 2000; Wohlgemuth 2009), researchers identify more or less overlapping verb mixing strategies, suggesting that these strategies may be universal. As an example, the direct insertional pattern found in American Norwegian is especially typical for, although not limited to, mixing between languages that are either Germanic or Romance (Wohlgemuth 2009: 88). Other bilingual speech communities opt for a strategy by which some form of verbalizer is employed to accommodate the mixed item, as we have seen in González-Vilbazo & López (2011). The recipient language inflection can then be added on top of said verbalizer. This is illustrated in examples (19) and (20), both taken from Wohlgemuth (2009).

- (19) Pitjantjatjara [pjt] < English (Australia) [eng] (Glass & Hackett 1970: 4)  
*shower-kara-la*  
 shower-VBLZ-IMP  
 'have a shower!'
- (20) Greek (Modern) [ell] < English [eng] (Wohlgemuth 2009: 96)  
*tsek-ar-i*  
 check-VBLZ-3SG  
 '(it) checks'  
 < [eng] *check*

Whereas both of these insertional strategies involve items that are inserted as separate constituents, yet other speech communities prefer to embed them in some form of light verb construction, as we have also seen. This is exemplified by example (12a), repeated here as (21), as well as (22), the latter found in Wohlgemuth (2009: 108).

- (21) Juan *hace* nähen das Hemd (González-Vilbazo & López 2011: 835)  
 Juan does.3<sup>rd</sup> sew.inf the shirt  
 'Juan sews the shirt.'
- (22) Pipil [ppl] < Spanish [spa] (Campbell 1985: 144)  
*Yab mu-chim-ki arrepentir*  
 3SG REFL-DO-PST regret  
 'He regretted (it)'  
 < [spa] *arrepentir-se* 'to regret'

Both Muysken (2000) and Wohlgemuth (2009) have shown that these subgroups can be even further differentiated, but the details are not crucial here.

As the existence of different mixing strategies is well-attested, the question is *why* different bilingual speech communities resort to different strategies. Wohlgemuth (2009: 9) has reviewed the literature and states that the following factors most often are thought to influence the choice of strategy:<sup>53</sup>

- typological compatibility of donor and recipient language
- complexity of the (recipient) languages' verbal morphologies
- sociolinguistic factors, e.g. the intensity of the language contact or the attitude toward (lexical) borrowing

If grammatical aspects – such as the typological compatibility between the two languages or their morphosyntactic complexity – were the only factors that determined what strategy the speakers employ, we would expect all similar language pairs to behave exactly the same. That is not what we find, however. To quote Wohlgemuth again, “it is not uncommon for languages to employ more than one pattern, (...) either (ex)changing them in the course of time or productively using them in parallel at the same time” (2009: 58). His database consists of 794 loan verbs from 553 language pairs (2009: 35), so provided the methodology was sound, he has a solid foundation for stating whether something is common or not. In fact, even the same language pair can adopt different verb mixing strategies, both diachronically and synchronically. The latter includes both cases of parallel strategies being used within a single speech community, and cases of two or more distinct speech communities that employ the same language pair, yet different strategies. These patterns are attested elsewhere in the literature as well, e.g., Heath (1989: 203), Muysken (2000: 191-192, 207, 212), and Bandi-Rao & den Dikken (2014: 165). More generally, several studies recounted in Gardner-Chloros (2009: 109-111) show the same for other kinds of mixing. In addition, she lists some studies that show how different language pairs use similar mixing strategies when the social circumstances are similar (Ibid.: 109). In other words, even if grammatical aspects might have some influence on the choice of strategy, other factors of a social, political and/or cultural nature apparently are able to override them. This has also been explicitly pointed out by Wohlgemuth:

any generalization about loan verb accommodation in particular and borrowability hierarchies in general, as well as other language-contact-related predictions cannot be made without a more thorough understanding of the manifold sociolinguistic factors involved in language contact.

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<sup>53</sup> As mentioned in Section 4.1.2.2., factors like these have been discussed in the literature since the very beginning of language mixing research, as exemplified by Whitney (1881) and Paul (1920).

Grammatical factors alone were often insufficient for the explanation of the status quo of verb borrowing in the languages examined (2009: 298).<sup>54</sup>

If, in the future, we are to show that a particular grammar model is successful in accounting for all verb mixing strategies, we need to know which aspects should actually be explained by the grammar model and which should instead be explained by sociolinguistic factors. As a start, Wohlgemuth describes a difference between the relevance of the donor and recipient language grammars for the choice of verb mixing strategy. Bear in mind that if the typological or grammatical compatibility of the donor and recipient languages were a relevant factor, this would mean that the grammar systems of both languages somehow are involved in the verb mixing process; otherwise, one would not know how compatible they are. However, Wohlgemuth only finds evidence for the relevance of certain aspects of the recipient language grammar:

Typological features of donor languages apparently have no significant influence whatsoever on the accommodation strategies recipient languages use. Regarding their own grammatical features, recipient languages showed significant correlations only in the domain of basic constituent order, and – slightly less so – with some features of verbal morphology (2009: 297).

We can hope that future studies will bring us even closer to ascertaining which potential factors are relevant, and for those that are, *how* they are relevant.

To sum up, Wohlgemuth (2009) has given us the following answers regarding the relevance of certain commonly cited factors in the choice of verb mixing strategy:

- typological compatibility of donor and recipient language  
*Not found to be relevant; in fact, grammatical and typological aspects of the donor language were found to have no effect on the choice of verb mixing strategy.*
- complexity of the recipient languages' verbal morphologies  
*Certain features of the verbal morphology were found to be relevant, alongside the basic constituent order. However, the relevance was not absolute; it could be overridden by sociolinguistic factors.*
- sociolinguistic factors, e.g. the intensity of the language contact or the attitude toward (lexical) borrowing  
*Such factors were found to be very relevant for the choice of verb mixing strategy, much more so than is generally believed in the literature.*

#### 4.1.3.2.2. Formal approaches to different verb mixing strategies

This brings us back to González-Vilbazo & López (2011), Bandi-Rao & den Dikken (2014) and Alexiadou (2017), all of whom use exoskeletal-type approaches to analyze bilingual speech communities where speakers use different verb mixing strategies productively in some way. I will

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<sup>54</sup> See, e.g., Gardner-Chloros (2009: 41) for a similar conclusion.

not present the studies in their entirety, but rather show how the insights from Wohlgemuth (2009) presented above appear to be incompatible with some of their conclusions.

To take Bandi-Rao & den Dikken (2014: 165) as an example, in fn. 33 of Paper 3, I relate how they show that both the light verb strategy and the verbalizer strategy are used when a Sanskrit verb is incorporated into Telugu. They assume that the light verb strategy is a result of code-switching whereas borrowing gives rise to the verbalizer strategy. As mentioned in Section 4.1.2.3.2., notwithstanding some of the work done by members of the research group I am part of and our collaborators, all of the generative accounts presented here appear to adhere to Position B in the code-switching/borrowing debate. González-Vilbazo & López (2011: 840-841) puts it as follows:

Borrowing is the copying of a lexical item from one lexicon to another. In the case of bilinguals, they are in possession of two lexica and borrowing may take place between [them]. (...) In code-switching, the item from Lexicon 2 is copied directly onto the computational system (...).

However, as Wohlgemuth (2009) has shown, these two strategies are part of a larger verb mixing typology involving at least one more type (i.e., direct insertion of the type used in American Norwegian). The existence of at least three strategies does not fit with a two-way dichotomy between items being copied from one lexicon to another vs. taken directly into the syntax.

González-Vilbazo & López (2011) and Alexiadou (2017) have different analyses, but as far as I gather, they, too, assume that the choice of verb mixing strategy in each instance is determined by grammatical properties somehow. If Wohlgemuth (2009) is correct, however, sociolinguistic factors seem to be the only really solid predictors of choice of verb mixing strategy, seen for instance in the fact that some bilingual speech communities have switched from using one strategy to another over time. I struggle to see how that is compatible with an analysis that depends strictly on grammatical factors.

Myers-Scotton & Jake (2017: 452 ff.), proponents of the non-generative MLFM, have also discussed different verb mixing strategies, and focus in particular on the direct insertion type that I find in my American Norwegian data from CANS. However, their empirical premise for the discussion seems an odd one, given what I have found in American Norwegian concerning the insertional and alternational patterns. To recap, I found that while at least 72% of the LOLVs in CANS were inserted, i.e., appeared with Norwegian morphosyntax, at most 28% were alternated. I write “at least” and “at most” because some of the LOLVs without overt inflections might be correct Norwegian dialectal forms, i.e., inserted, as opposed to correct English forms. Even so, it is clear that alternation – where the LOLVs appear with English morphosyntax – is an existing

pattern in this corpus. This is at odds with what Myers-Scotton & Jake assume to be a universal fact concerning directly inserted LOLVs, as the following quote makes clear:<sup>55</sup>

[W]hy are there many EL nouns in CS corpora but very few EL verbs and no EL verbs at all with EL-based inflections in ML frames? (...) those EL verbs that do appear in CS are relatively few compared to ML verbs in bilingual clauses. We argue that they are all nonfinite forms and generally infinitives (Ibid.: 352).

In other words, they claim that alternation of finite LOLVs never occurs – something which is clearly not the case for the American Norwegian CANS data, as examples (18a-c), repeated here as (23a-c), show.<sup>56</sup>

- (23) ALTERNATION
- a. *og hun # nettopp nå # em # **died*** (albert\_lea\_MN\_01gk)  
 and she # just now # em # died  
 ‘and she # just now # em # died’
- b. *de orda som vi e liksom # **corrupted*** (stillwater\_MN\_01gm)  
 those words that we e sort of # corrupted  
 ‘those words that we e sort of # corrupted’
- c. *før vi reiste # **talk** snakke på telefon* (webster\_SD\_01gm)  
 before we travelled # talk talk on telephone  
 ‘before we travelled # talk talk on the telephone’

Recall from the introduction that some researchers would advise against using a corpus like CANS to analyze language mixing on account of them being heritage speakers and, hence, not simultaneous bilinguals. MacSwan (2005a: 2) puts it as follows:

[b]ecause there is reason to believe that second language may be represented differently in the mind/brain of non-native speakers than it is for natives, CS research should be based as much as possible on the language of simultaneous bilinguals for whom CS is not stigmatized.

*Pace* MacSwan, I think this is a good reason to study the language mixing of non-simultaneous bilinguals, as it allows us to compare the results to those from simultaneous bilinguals and thereby see whether the languages appear to be represented differently in their minds/brains or not. As we have seen both in Paper 3 and at the beginning of Section 4.1.3.2., LOLVs in CANS act according to the general pattern found in corpora with speech from simultaneous bilinguals who use direct insertion as a verb mixing strategy: most are inserted, but some are alternated. The main difference is that alternations are “exceedingly rare” (Poplack 2013: 3) among simultaneous

<sup>55</sup> Recall that EL and ML refer to EMBEDDED LANGUAGE and MATRIX LANGUAGE, respectively.

<sup>56</sup> (23c) is probably an infinitive, but the other two are clearly finite past tense forms.



bilinguals but are produced about 28% of the time by the heritage speakers in CANS. As I have explained, I believe this to be due to a combination of the latter group having lexical retrieval problems in their heritage language and still experiencing pressure not to switch entirely to their dominant language, as the interviewer is asking them to speak the heritage language. This seems to cause a larger proportion of single-item alternations than usual.

Whether or not Poplack's observed alternations also consist of only nonfinite LOLVs, as reported by Myers-Scotton & Jake (2017), is unbeknownst to me. In either case, however, I find it more likely that the finite alternated LOLVs found in CANS are a result of lexical retrieval problems and other factors, as opposed to the heritage language representation in the speakers' minds/brains being fundamentally different from that of a regular first language. As such, the CANS data in fact show that the alternation of finite LOLVs is possible – and as a consequence, building a theory based on them being theoretically impossible, as Myers-Scotton & Jake (2017) appears to do, is empirically inadequate.

I will continue the discussion of what an empirically adequate theory might look like in Section 4.2., which focuses on the formal model I employ. Before that, however, I wish to clarify some things concerning the term LANGUAGE.

#### **4.1.4. What's in a name? Critique and support of the term LANGUAGE**

The term LANGUAGE MIXING, at least on the surface, appears to entail that languages exist as “discrete, identifiable and internally consistent wholes” (Gardner-Chloros 2009: 9). Otherwise, how can something be mixed from one to the other? Whether that in fact is the right way to look at it has been the focus of much debate recently, especially within sociolinguistics. For reasons of space, I have not addressed this issue in any of the papers in this thesis, but I wish to remedy that here, in the cover article. In this section, I will therefore briefly introduce some of the main issues and explain why language mixing as a field of study has relevance even though LANGUAGE clearly is a problematic term.

Pennycook notes that several recent approaches in sociolinguistics (e.g., TRANSLANGUAGING, POLYLINGUAL LANGUAGING and METROLINGUALISM) “[a]ll focus on contexts of multiple, mixed language use (while also trying to escape these notions of multiplicity and mixing) with an interest in talking in terms of repertoires of linguistic resources rather than bilingualism, code-mixing, or code-switching” (2016: 201). MacSwan (2017) points out that the different proponents here seem to be in discord when it comes to what level their critique actually targets. Below, I will address these issues, starting with those who target the sociopolitical level (Section 4.1.4.1.) and ending with the more relevant critique, which targets the individual level (Section 4.1.4.2).

#### 4.1.4.1. LANGUAGE on a sociopolitical level

As an example, Makoni & Pennycook (2007: 2) state that “languages do not exist as real entities in the world and neither do they emerge from or represent real environments; they are, by contrast, the inventions of social, cultural and political movements”. As MacSwan (2017) shows, far from being novel, these thoughts are well established in the linguistic community. However, what sets Makoni & Pennycook apart is that they further conclude that this being true, phenomena that hinge on the existence of language – like, say, bilingualism and language mixing – must be non-existent as well (2007: 22).

I cannot recount all of MacSwan’s (2017) arguments here, but suffice it to say, this conclusion fails to take into account the difference between two distinct ideas:

- 1) the idea of languages as perfectly “discrete, identifiable and internally consistent wholes”, to quote Gardner-Chloros (2009: 9) again, and
- 2) the idea of languages as mere idealizations consisting of collections of fairly overlapping idiolects of individual speakers (this latter idea, of a distinction between individual idiolects and the idealized collections of them that we can call languages, dialects etc., is what is captured by Chomsky’s terms I-LANGUAGE and E-LANGUAGE)<sup>57</sup>.

What Makoni & Pennycook (2007) (and virtually everyone else in linguistics) are dismissing is the former idea; i.e., that languages in the social, E-language sense are discrete wholes. Yet bilingualism, language mixing and other phenomena linguists study hinge on I-languages, not E-languages; i.e., the idiolects of individual speakers (per the second idea above). Languages are not passed from one speaker to another as perfect packages with all features and lexical items intact and in perfect order. Instead, every speaker constructs a unique idiolect based on their input – and as Gardner-Chloros (2009: 173) puts it, those idiolects “overlap, but do not necessarily coincide, with officially designated ‘languages’ or even with varieties used by others in their community”. We could certainly argue whether a term like LANGUAGE is the best for describing our object of study. That does not mean, however, that the object of study itself, with all its relevant phenomena, ceases to be worthy of study.

#### 4.1.4.2. LANGUAGE on an individual level

I mentioned above that the proponents of this new movement seem to direct their criticism at different levels. Makoni & Pennycook (2007) target the speech community level in that they criticize languages for being social, cultural and political inventions. Others, however, take this one

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<sup>57</sup> See MacSwan (2017: 173-175) for a thorough explanation.

step further: in addition to rejecting the notion of discrete speech communities, they reject the notion that speakers can be truly bilingual even on an individual level (see García & Otheguy 2014; Otheguy, García & Reid 2015). As MacSwan (2017: 168) puts it, they insist that “a bilingual individual has an internally undifferentiated, unitary linguistic system” as opposed to either two separate systems or some form of unitary system with subgroupings that somehow can be differentiated. As this addresses the individual idiolects, or I-languages, it is of more relevance from a grammatical point of view. Although I largely agree with MacSwan’s conclusions regarding this claim, neither the arguments that get us there nor the exact conclusions entirely overlap.

To exemplify, MacSwan presents several language mixing patterns from the literature that he takes to be the results of grammatical restrictions disproving the unitary ‘one undifferentiated linguistic system for all speakers, including bilinguals’ model (Ibid.: 180-181). Some of these are patterns I would agree have a grammatical explanation. For example, he stresses how a Spanish-English bilingual would consistently use prenominal adjectives in English and postnominal ones in Spanish, in accord with the grammar rules of those languages. In addition, he or she would strongly prefer mixed structures like *the white casa* ‘the white house’ over *the casa white* ‘the white house’. This is perfectly in accord with the patterns we find in American Norwegian and also expected given our model, as shown in Papers 1-3. If, as suggested in those papers, speakers store abstract morphemes in language-specific lists, and a speaker wished to speak, e.g., English, he or she would draw abstract morphemes from the English list they had built, not some other one. This would yield the English DP structure. Since the determiner in the mixed sentences above is *the*, not one of the Spanish equivalents, the Subset Principle dictates that the underlying abstract morpheme must be the one used in English; for that reason, it is expected that the English DP structure, with a prenominal adjective, is used as well. Normally when using English structure, the speaker would also draw from the roots associated with English, yielding, e.g., the DP *the white house*. However, as roots are bare and, hence, free to be inserted wherever the speaker chooses as far as the grammar is concerned, different sociolinguistic factors might motivate the speaker to insert a root associated with Spanish instead, yielding the typical mixed sentence above, *the white casa* ‘the white house’. This is explained in more detail in the individual papers in this thesis.

It is important to clarify that although I have proposed language-specific lists for abstract morphemes in the three papers that make up this thesis, that is not a requirement for me, but merely the easiest way to explain how the listing of abstract morphemes and roots should be different. My analysis only hinges on the two following points concerning listing:

- i. Abstract morphemes need to be stored in a way which enables a bilingual speaker to identify and select the one relevant for the language/idiolect/... said speaker wishes to speak at that point, and
- ii. Roots should be stored in a way which makes it unnecessary to make a copy of a root in order to mix languages.

If the former point can be solved without language-specific lists, that is perfectly fine. Several papers on bilingualism, some specifically on heritage languages, have, for example, argued in favor of Roeper's MULTIPLE GRAMMAR THEORY (Roeper 1999; Amaral & Roeper 2014) as a tool for explaining both monolingual and multilingual speech.<sup>58</sup> I will not enter into that discussion here, but see, e.g., Page & Putnam (2015b) and references therein. I will leave it up to psycho- and neurolinguists to figure out how such storage takes place.<sup>59</sup>

Moving back to the mixing patterns MacSwan (2017) presents as evidence against an undifferentiated linguistic system, however, I disagree when he states that properties of determiners or nouns must give rise to the fact that Spanish-English bilinguals both produce and generally accept structures like *los teachers* 'the teachers', but not *the casa* 'the house' (Ibid.). As we recall from Section 4.1.3.2., Wohlgemuth (2009) found that sociolinguistic factors could override any grammatical factors that might influence the verb mixing strategy employed by a certain bilingual speech community, and several researchers have made similar claims for different types of mixing as well (see, e.g., Gardner-Chloros 2009: 109-111, 172). If these claims are on the right track, the lack of structures like *the casa* 'the house' in these specific Spanish-English bilingual speech communities could just as well be the result of sociolinguistic factors as grammatical factors like the properties of determiners and nouns.

That disagreement aside, MacSwan presents other arguments in support of the idea of differentiated grammars for bilingual speakers. In addition to the arguments based on various supposedly grammatical restrictions, he also finds support from the field of psycholinguistics. He relates how researchers working on bilingual first language acquisition, such as Lindholm & Padilla (1978), Paradis & Genesee (1996), Genesee & Nicoladis (2006), and Müller & Cantone (2009), all "have found that children's syntactic and phonological development in two languages proceeds essentially independently of one another" (2017: 186). In addition, he adds that Kovelman, Baker

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<sup>58</sup> This is also discussed in MacSwan (2017).

<sup>59</sup> As a recent example of research within formal linguistics in which the choice of formal model hinges on psycholinguistic evidence pertaining to language mixing and what model type that best can explain it, see, e.g., Goldrick et al. (2016a,b).

& Petitto (2008) have found corroborating neurolinguistic results. All taken together, this appears to build a strong case against the unitary model.<sup>60</sup>

Importantly, I am not saying that bilinguals *cannot* create a unitary mental grammar for what we would take to be a “mixed” language, i.e., with abstract morphemes usually associated with different languages. That is precisely what happens in the case of what we call CONTACT LANGUAGES. Bear in mind, however, that a language is only a contact language if we find reasons to call it one by looking at the historical origins of the language on a speech community level. For each individual speaker, it will simply be one language. Again, since every speaker builds their own, unique idiolect, any grammatical deviations from the considered norm system will still be “native” to the speaker in question, since they emerge from the list of abstract morphemes that speaker has built for that language. In this way, there is no structural distinction between what happens in “normal” languages and contact languages – see Aboh (2015) for an in-depth analysis of this position.

In addition, my position, *pace* MacSwan, is that all roots an individual knows are stored together in a single list. This means there is no actual “language mixing”, grammatically speaking, when a root associated with one language happens to be inserted into a structure built by abstract morphemes from another language (see Paper 3 for a thorough analysis). However, *pace* García & Otheguy (2014) and Otheguy et al. (2015), I believe that even though bilinguals *can* create an undifferentiated mental grammar for a “mixed” language and mix roots freely, they can also alternate between different languages, dialects or other varieties that they have some speaker knowledge of. The difference between insertion and alternation is clearly displayed in the data and analysis in Paper 3, and I do not find it to be readily compatible with a completely undifferentiated grammar for the languages a bilingual knows. In other words, I take a middle position between García and colleagues (García & Otheguy 2014, Otheguy et al. 2015) and MacSwan (2017). I believe that individuals have linguistic systems that somehow can be kept separate, whether they are separate systems or not, as far as the grammar is concerned; but I propose that roots are stored in one single, undifferentiated list. This distinction will be further addressed in Section 4.2.3.1.3.

## 4.2. A late-insertion exoskeletal model

This thesis makes use of what I call a LATE-INSERTION EXOSKELETAL MODEL, and the goal of the current section is to explain in more detail what such a model entails and why I choose to employ

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<sup>60</sup> Bear in mind, however, that as it is beyond the scope of this thesis, I have not checked whether these psycho- and neurolinguistic findings are representative. Either way, as mentioned above, I am in no way depending on language-specific lists for abstract morphemes.

it. The three papers all make the same basic theoretical assumptions, but both the model itself and the general motivations for adopting it are described in the most detail in Paper 1. This section will therefore build mostly on Section 13.3. from Paper 1, but expand somewhat beyond what we detailed there. Starting out, Section 4.2.1. explains what it means for a model to be exoskeletal. Next, I set out to describe some of the main advantages such an approach has compared to a lexicalist MP approach (Section 4.2.2.).<sup>61</sup> Section 4.2.3 lays out the particular exoskeletal model I make use of, and finally, Section 4.2.4. aims to describe how the relation between the verb and its extended projection can be analyzed for both monolingual and mixed utterances in both lexicalist and exoskeletal MP models, focusing on tense assignment.

#### 4.2.1. Defining features of exoskeletal approaches

EXOSKELETAL refers to the overall model type and LATE INSERTION describes one of the traits such a model can have. As Section 4.2.3. will cover the properties of the exoskeletal model I adopt, I will address late insertion there and reserve this section for an overall look at what it means for a model to be exoskeletal.

As you will recall from Section 4.1.1., in an exoskeletal model,

what might appear to be properties of a lexical entry – which, depending on the specific version of the theory, may include argument structure, syntactic category and morphological information – are derivatives of a syntactic structure which is generated independently from the lexical items that will come to realize them (Paper 3, page 11).

In a model that is fully exoskeletal as far as the grammar is concerned, all the properties listed above are severed from the listed lexical item, leaving only a bare root. According to Embick (2015: 17), this is one aspect of what he calls FULL DECOMPOSITION: i.e., that “every complex object must be derived by the grammar”. Since he considers roots to be primitives, adopting full decomposition entails that any combination of a root and a morphosyntactic feature or feature bundle gives rise to a complex and, hence, non-listable object – regardless of whether the complex item is a single word or a full sentence.

This has several consequences, and one is that lexical relatedness can be explained by related items sharing one or more identical building block. As an example, the items in (24a-e) would be the result of the same root,  $\sqrt{\text{FORM}}$ , combining with different morphosyntactic features or feature

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<sup>61</sup> As mentioned in the introduction, some use MINIMALISM only to refer to the lexicalist type along the lines of Chomsky (1995). However, it is called the MINIMALIST PROGRAM (MP), and is hence not meant as a static model. For that reason, my colleagues and I have used the term MINIMALISM in a wide sense that also encompasses works done by us and other proponents of certain exoskeletal approaches. See also Section 4.1.1., where I present minimalist works on language mixing of both lexicalist and exoskeletal nature.

bundles to give rise to distinct words, whereas (25a-b) show the opposite (i.e., different roots combining with identical features).

(24) a. form<sub>NOUN</sub>    b. form<sub>VERB</sub>    c. formal<sub>ADJECTIVE</sub>    d. formalize<sub>VERB</sub>    e. formalization<sub>NOUN</sub>

(25) a. walker<sub>NOUN</sub>    b. speaker<sub>NOUN</sub>

Second, as larger phrases are built the same way as words – by roots combining with various features and feature bundles – different phrases can be related to one another in the same manner. In (26a-b), for example, the same morphosyntactic features and feature bundles have given rise to identical, transitive past tense structures, but the different roots still make the sentences clearly distinct.

(26) a. John read the book                      b. Mary danced the tango

Which primitives I assume, how categorization happens as well as how items get their phonological form and specific interpretation will be the topic of Section 4.2.3, whereas the details of how they combine to create complex objects like words and phrases will be left for Section 4.2.4.2. Now, however, I will continue discussing what it means for a formal grammar model to be exoskeletal.

#### 4.2.1.1. EXOSKELETAL and related terms

The term EXOSKELETAL originates with Borer’s (2003, 2005a,b, 2013) work, in which she develops an approach she labels THE EXOSKELETAL MODEL (XSM). I am using this term in a broader sense, however, to include all models that share the insights outlined above (see also Paper 3, page 11). As such, my use of EXOSKELETAL is parallel to Borer’s usage of the terms CONSTRUCTIONIST/NEO-CONSTRUCTIONIST (2005a) and later CONSTRUCTIVIST (2016), as well as, e.g., Embick’s (2015) use of NON-LEXICALIST. These terms are descriptive in different ways, as I now will outline.

When a term somehow echoing CONSTRUCTION is used, it tends to indicate heritage in CONSTRUCTION GRAMMAR (Goldberg 1995, 2006). This refers to a set of related approaches that belong to cognitive rather than generative linguistics. As such, they do not include a UG component; rather, the belief is that functional knowledge of language is based on an individual’s systematic collection of what can be thought of as “form and function pairings”, called constructions, that are learned by hearing them used frequently enough by others. This stands in opposition to the generative approaches laid forth here, that, as Borer (2005a: 14) puts it, view constructions as “fragments of syntactico-semantic structures made available by UG”.

The term EXOSKELETAL instead indicates that a listed item – which here is thought of as a skeleton of sorts – does not have syntax constructed around it as a result of morphosyntactic features inherent to the item. This stands in opposition to the approach we could, to follow through with the skeleton metaphor, call ENDOSKELETAL (Borer 2005a: 5) – where the opposite is the case. More often, however, endoskeletal approaches are called LEXICALIST, as these theories “posit a non-syntactic generative system that is responsible for the derivation of words” (Embick 2015: 13) – and that system is typically called a LEXICON, as you might recall from the quote by Herring (2016: 5-6) in the introduction.

In Paper 1, we used the term GENERATIVE NEO-CONSTRUCTIVIST as a cover term for the approach I here call EXOSKELETAL. We still spoke of some models being exoskeletal, but those were the ones I now call FULLY EXOSKELETAL. The view adopted here in the cover article is also present in Papers 2 and 3.

#### 4.2.1.2. Exoskeletal, yes; but to what degree?

There is a continuum of more or less exoskeletal approaches, with one endpoint represented by those I call FULLY EXOSKELETAL, i.e., models that contend roots are devoid of all grammatically relevant information, and Borer’s XSM is a good example of such a model. This fully exoskeletal position is also the one adopted in this thesis. Some others who adhere to this view are, e.g., Áfarli (2007), Acquaviva (2009), Lohndal (2014) and De Belder & van Craenenbroeck (2015). That does not mean that there is consensus regarding this topic within the exoskeletal family, however. Quite the opposite: this is the source of much debate.

As an example, some researchers hold views that are fully exoskeletal as far as syntactico-semantic (synsem) features are concerned, but feel the arbitrariness of what Embick (2015) calls MORPHOLOGICAL FEATURES, such as declension and conjugation classes (as well as maybe gender), cannot be explained without diacritic markings on the roots themselves (e.g., Arad 2005; Embick 2015). In addition, as pointed out by Gallego (2014), yet others have proposed that roots need to retain *some* synsem features of sorts that allow them to either take complements (see, in particular, Harley 2014 and references therein) or have a semantic type, like [eventive], associated with them (e.g., Ramchand 2008; Marantz 2014).<sup>62</sup> This thesis assumes roots that are completely devoid of grammatically relevant information, and I will return to how I further envision the nature of roots and other core structural building blocks in Section 4.2.3.

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<sup>62</sup> See, e.g., Lohndal (2014: 19-20) for reasons not to encode semantic types, like [eventive], on the root (he instead places it on the categorizing head). I will return to this when discussing categorization in Section 4.2.3.2.3.



A note on frameworks is in order at this point. I have mentioned Borer's XSM, but the exoskeletal framework with the most traction is DISTRIBUTED MORPHOLOGY (DM) (Halle & Marantz 1993; Marantz 1997; Harley & Noyer 1999; Embick & Noyer 2007; Embick 2015). As we see from the list of references, several of the researchers already mentioned here subscribe to the DM framework. However, as we have also seen, that does not mean that they agree on everything. In addition to the differences mentioned above, some may differ to such an extent that other DM proponents might consider them not to be DM proposals or even exoskeletal proposals at all. As an example, González-Vilbazo & López (2011: 837), whom I discussed in Section 4.1., state that they follow DM in the sense that they "view the lexicon that feeds syntax as a set of abstract features", but they follow up immediately by adding that they assume a separate morphology module. To quote Alexiadou (2016: 224), "From the perspective of DM, the internal structure of words is created by the same tools as the internal structure of sentences, i.e. there is no need for a separate word formation component other than the syntactic one". Distancing themselves even more from DM ideas, González-Vilbazo & López clarify that they assume the smallest building block to be an already categorized item, only adding in a parenthesis that a category-less root might also suffice (2011: 838). As such, rather than being clearly defined and completely separate entities, the terms FULLY EXOSKELETAL and FULLY LEXICALIST can be thought of as opposite endpoints on a scale, with the possibility for models to fall somewhere in the middle.

So far, I have discussed what it means for a model to be exoskeletal and how some models adopt many exoskeletal ideas without necessarily buying into the whole package. This has by no means been an exhaustive overview, nor will I provide one anywhere else in the present work; such an undertaking is well beyond the scope of this thesis. What I hope, however, is that this serves to illustrate that even among the models that assume we list items smaller than words, there is little consensus as to *how* much smaller the listed items can get. As we will see in Section 4.2.3., this gets even more complicated than what we have seen here, too. After all, even though one might decide on a position where all features discernable by the syntax are stripped from the root – as I have – there is still the question of whether the roots have some form of phonological and/or conceptual content. Before we get there, however, I will address some of the arguments in favor of exoskeletal accounts.

#### **4.2.2. Advantages of exoskeletal approaches**

As has become evident throughout Section 4.1. and Papers 1-3, many researchers, myself included, argue that exoskeletal models are better suited for analyzing language mixing than lexicalist ones. I will return to *how* the specific model proposed here deals with the mixing data presented in the

three papers later, once the model has been presented in more detail. However, it was monolingual data that first motivated the shift towards exoskeletal approaches to grammar (see, e.g., Parsons 1990; Schein 1993; Kratzer 1996; van Hout 1996; Borer 2003, 2005a,b, 2013; Levin & Rappaport Hovav 2005; Alexiadou, Anagnostopoulou & Schäfer 2006; Áfarli 2007; Pietroski 2007; Ramchand 2008; Lohndal 2012, 2014; Adger 2013). Reviewing all those arguments goes well beyond the scope of this thesis, so I will focus on the ones presented in Paper 1.<sup>63</sup> These concern the flexibility many items display with regards to their argument structure and word class category, and are well suited to highlight both what may be gained – but also potentially lost – by shifting the work load from the lexicon to the syntax, as exoskeletal models do.

In 2003, Hagit Borer observed that “[w]ithin generative theories, the dominant approach to the projection of argument structure crucially links it to information in the lexical entry of argument selecting heads (verbs, adjectives, possibly nouns)” (2003: 31). In other words, the dominant view was a lexicalist one, in which information about, amongst other things, what word class a specific lexical item belongs to and how many arguments a given verb can take are encoded within the items themselves. The information is thought to be stored as features that subsequently are checked or valued against corresponding features in the syntax (see, e.g., Adger 2003; more on this in Section 4.2.4.). Such a system is well equipped to explain why there are regularities in how items are used in language. As an example, Dowty (1989: 89-90) presents the curious case of the verbs *dine*, *eat* and *devour*, that permit different numbers of arguments even though, as he points out, their meanings more or less overlap:

- |                        |                            |
|------------------------|----------------------------|
| (27) a. John dined     | b. *John dined his lunch   |
| (28) a. John ate       | b. John ate his lunch      |
| (29) a. *John devoured | b. John devoured his lunch |

If verbs with roughly corresponding meanings still behave differently in these respects, what number of arguments a verb can take seems arbitrary rather than conceptually determined, and if so, it is hard to see how you could explain that (27b) and (29a) never occur without specifying it in the verb itself. Many more restrictions on argument structure flexibility have been discussed in the literature (see, e.g., Rappaport Hovav & Levin 1998 for an extensive overview), and these constituted the reason for positing argument structure as an inherent quality of verbs in the first place.

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<sup>63</sup> For more extensive summaries of the different arguments presented in the literature, see, in particular, Borer (2005a,b, 2013), Lohndal (2014) and Embick (2015).



I will elaborate on this point shortly, but first, bear in mind that similar properties of lexical flexibility are pervasive when it comes to word class categories as well, illustrating that severing argument structure specifications from the listed items is not enough to avoid multiple listings of what we perceive as the same items. Some such variations have become conventionalized, as *to walk/a walk*; but as we showed in example (13a-c) of Paper 1 (repeated here as (31a-c)), more recent innovations also exist, and some involve word classes other than nouns and verbs.

- (31) a. He ran *out* the door.  
b. My son *outed* me to his preschool.  
c. He was desperately looking for an *out*.

This shows that the flexibility is productive, and Clark & Clark (1979: 803) famously also illustrated that even novel innovations, like the use of *siren* as a verb, are readily understood by native speakers when used in various sentential environments:

- (32) a. The fire stations sired throughout the raid.  
b. The factory sired midday and everyone stopped for lunch.  
c. The police sired the Porsche to a stop.  
d. The police car sired up to the accident.  
e. The police car sired the daylights out of me.

In all such cases of lexical flexibility, we seem to preserve a core meaning (here: to produce a siren sound) even though, as we point out in Paper 1 (p. 390), “the specific meanings are augmented according to the syntactic environment”. This hints at *how* the exoskeletal models can explain restrictions on argument structure flexibility: namely, by appealing to this distinction between the core meaning of an item and the grammatical meaning of a specific syntactic construction.

Regardless of the exact machinery (which differs between various exoskeletal accounts), listed items or, at the very least, categorized items are associated with a conceptual core meaning, typically underspecified enough to accommodate all the specific meanings it can have in different syntactic environments.<sup>65</sup> These specific meanings arise from an interplay between the conceptual meaning of the (categorized or bare) item and the grammatical meaning of the syntactic structure. To illustrate, Borer (2017: 128) gives the following example:

- (33) The police car fell up to the accident

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<sup>65</sup> As will be evident in Section 4.2.3.1.1., some exoskeletal models assume that a listed item (i.e., root) does not contain any conceptual content, but there is conceptual content once an item has been categorized, if not before. As such, the basic meaning of a noun, verb or other word type can still be more or less felicitous in the specific grammatical context it appears in.

Note that she has not marked it as ungrammatical with an asterisk, and the reason is that however unacceptable it may be, “the infelicity (...) emerges not from the grammatical properties of *fall* but from a clash between the basic meaning of FALL<sup>66</sup> and the event interpretation that emerges from the syntax” (Ibid.). When we try to interpret the sentence, the interpretational constraints provided by the grammar stay fixed, but the conceptual meaning of the (categorized or bare) item FALL is more flexible, and we can therefore try to stretch it to fit with the grammatical meaning (Borer 2005a: 11).<sup>67</sup>

Here, language use also plays a role. As a novel innovation, the sentence in (33) appears very odd, and attempts at stretching the conceptual meaning are difficult, but we could conventionalize the usage so that the sentence *does* make sense. Think for example of (31b), *My son outed me to his preschool*. If using *out* as a verb in this sense was a novel innovation, it would come across as very deviant as well. However, because it has been conventionalized that *to out someone* can mean exposing someone’s undeclared sexuality or, in extended usage, disclosing private, often controversial or damaging information (Oxford English Dictionary online 2004), the sentence is perfectly acceptable to those who are familiar with this usage of *out*. And just to clarify, the combination of the conceptual meaning of *out* and the reflexive construction could have resulted in another interpretation entirely, had other aspects of the concept *out* been used. In fact, it *has* had other interpretations historically, as the following examples from the entry on *out* in Oxford English Dictionary online (2004) reveal:

- (34) a. a calling (...) *to out* Christ and his wares to country buyers. (to sell)  
(S. RUTHERFORD *Let. In Joshua Redivivus* (1671) 55, 1637)
- b. do bring in Mr. Littleton (...) – and *out* all the rest. (to expel, dismiss)  
(S. PEPYS *Diary* 11. Nov. (1976) IX. 357, 1668)
- c. ‘Looks like I’ve *outed* him,’ (...) ‘he’ll never blab again?’. (to kill)  
(G. R. SIMS *In London Heart* xlviii. 294, 1900)
- d. The Major then *outed* his jack-knife. (to take out, draw)  
(*The Strand Magazine* May 344/1, 1930)

In other words, it is arbitrary what precise aspects of the core, conceptual meaning of *out* get chosen, but it is not arbitrary that

<sup>66</sup> Borer uses capital letters (and, usually, italics) to denote substantive, conceptual meaning (Borer 2014: fn.1).

<sup>67</sup> Note that although conceptual content linked with categorized items but not bare ones can explain argument structure flexibility, one needs the listed, bare items to have some form of conceptual content to explain the apparent restrictions on word class flexibility in the same way.

- i. it is possible to conventionalize such verbal usages and
- ii. that the reflexive interpretation stays fixed throughout all of them.

To quote Lohndal (2014: 49), “[t]he idiosyncrasies that we observe are due to complex interactions between grammatical principles and conceptual knowledge, in addition to language use”.

We can now return to examples (27)-(29), in which we saw that whereas *eat* can be both intransitive and transitive, *dine* and *devour* only have one option each. Dowty (1989: 89-90) claims that this cannot be explained by appealing to conceptual meaning differences that make their compatibility with the intransitive and transitive structures different, since these concepts are virtually synonymous. If that were the case, it would indeed be an argument for encoding argument structure specifications in the lexical items themselves; however, Lohndal (2014: 46-49) convincingly argues that the premise is wrong. He consults a dictionary and finds that the core definitions of *eat*, *dine* and *devour* in fact are quite distinct from one another, and he further explains, using machinery of the type I have laid out above, how those meaning differences themselves can explain why the verbs pattern differently. In other words, exoskeletal models seem capable of explaining both lexical flexibility and the observed restrictions on said flexibility. In the following two sections, I will examine in more detail the specifics of the exoskeletal model I adopt. As a final note here, however, arguments such as those put forth here appear to have had an effect on the MP literature. A decade after Borer (2003: 31) reviewed the literature on argument structure and found the proposals to be mainly lexicalist, Marantz (2013: 153) conducted a new review and concluded that current developments in linguistic theory

have shifted discussion away from verb classes and verb-centered argument structure to the detailed analysis of the way that structure is used to convey meaning in language, with verbs being integrated into the structure/meaning relations by contributing semantic content, mainly associated with their roots, to subparts of a structured meaning representation.

Put differently, this means that within the past few years, there appears to have been a shift away from highly lexicalist views of argument structure in favor of more exoskeletal ones.

#### **4.2.3. The specific exoskeletal model of choice**

In this section, I will present the specific model employed in this thesis. It is pointed out on page 394 of Paper 1 that most, if not all, exoskeletal MP accounts are compatible with the data presented there, and that a specific model was selected mainly for the sake of concreteness, in order to model the data structurally. In my current opinion, there are, however, some advantages to DM approaches of the kind I adopt compared to some other exoskeletal accounts, and although I will not give an exhaustive account of those advantages, I will mention some particularly relevant ones

throughout this section. As I have already addressed some advantages to choosing a fully exoskeletal account as opposed to specifying any grammatically relevant content in the roots themselves, I will mainly focus on differences between fully exoskeletal DM accounts and Borer’s XSM, which also employs morphosyntactically bare roots.

Recall that in lexicalist MP accounts, there is (at least for monolinguals) a single lexicon containing all (or at the very least, some) morphosyntactic, phonological and semantic features bundled up as lexical items, and this lexicon is accessed at the beginning of the derivation.<sup>68</sup> DM instead assumes three separate lists – one for abstract structural building blocks, one for the phonological exponents of said building blocks and one for the encyclopedic information – that are accessed at different stages of the derivation. This is depicted in Figure 4:

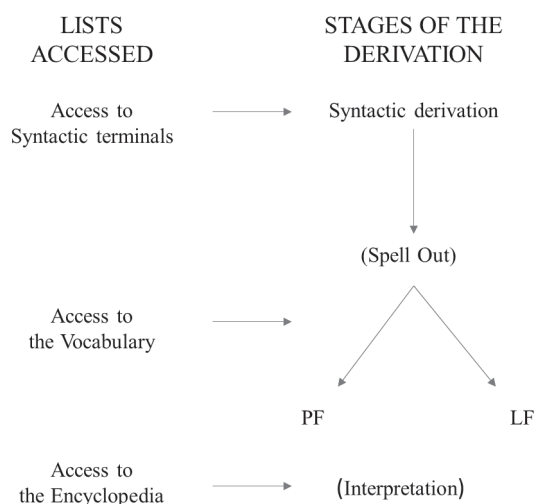


FIGURE 4. THE GRAMMAR (EMBICK & NOYER 2007: 301)

In what follows, I will present the two initial lists and phenomena related to them in two separate subsections. The third list, the ENCYCLOPEDIA, provides the semantic information that is the final key to how the syntactic structure should be interpreted. This happens at the interface known as LOGICAL FORM (LF). As none of Papers 1-3 have focused on this aspect of the model, however, I will not say more about how structures receive their interpretation beyond what I already have done in Section 4.2.2. How the model is implemented, in particular with regards to verb phrases and language mixing, will be addressed in Section 4.2.4.

<sup>68</sup> I will elaborate on the structure and implementation of lexicalist MP models in Section 4.2.4.

#### 4.2.3.1. Core structural building blocks

The core structural building blocks assumed in DM models are called ROOTS and ABSTRACT MORPHEMES. These constitute the basic inventory of the SYNTACTIC TERMINALS, i.e., the list type accessed at the beginning of the derivation according to Figure 4 above. As such, roots and abstract morphemes are the primitives of syntax given this approach, and I will discuss each type in turn. A more in-depth analysis of how verbs receive their formal features and build a verb phrase will be spared for Section 4.2.4.2., however. The final subsection here will explain how I assume roots and abstract morphemes to be listed, as that is a key issue in this thesis.

##### 4.2.3.1.1. Roots

As discussed in Section 4.2.1., the nature of roots is a murky area in which there is little consensus, whether within DM or in the exoskeletal MP research community at large. For an overview, see, in particular, the special issue “On the identity of roots” in *Theoretical Linguistics* (Krifka 2014) and the volume *The Syntax of Roots and the Roots of Syntax* (Alexiadou, Borer & Schäfer 2014), as well as references therein. In Section 4.2.1.2., I mentioned that some argue for roots to retain certain pieces of grammatically relevant information in order to allow them to take complements, have a semantic type and/or be associated with a particular gender and/or declension/conjugation class. As I went on to clarify, however, this thesis assumes roots to be devoid of all grammatically relevant information. This has to do with the advantages I wish to gain by choosing an exoskeletal model in the first place.

As argued in Section 4.2.2., for example, there are advantages to not encoding argument structure on listed items, so I would not want roots to have synsem features relevant for argument structure unless empirical evidence shows it to be unequivocally necessary. Similarly, since semantic types, gender and declension/conjugation classes are associated with particular word classes, specifying any of those on the root will, in effect, be tantamount to providing the root with a feature for word class category (Acquaviva 2009: 2; Lohndal 2014: 19-20). That would mean losing the advantages related to the word class flexibility data. In addition, it could cause problems for language mixing. As shown in Papers 1-2, for example, English-origin nouns inserted into otherwise American Norwegian utterances display gender, and since gender is a feature of Norwegian nouns, but not English ones, that is not compatible with gender being an inherent property of the listed item. The same argument could be made for the other grammatically relevant features mentioned above. Again, those advantages would not matter if it became clear that certain



types of grammatically relevant information needed to be encoded in the roots; but as long as a fully exoskeletal solution appears to handle the data, I will stick to it.<sup>69</sup>

Even if we set aside the grammatically relevant information, however, there is still the question of whether or not roots have any phonological and/or conceptual content. All exoskeletal accounts agree that *if* such information is encoded on the roots, it needs to be UNDERSPECIFIED in such a way that the same root can give rise to phonologically and/or conceptually quite distinct word forms. To begin with the phonology, Borer has, e.g., stated that roots should be phonologically “abstract enough to allow a single root to spell out as / $\pi$ catch/ or / $\pi$ caugb(t)/ in well-specified contexts” (2013: 27).<sup>70</sup> So far so good, but the question is what to do with SUPPLETIVE forms, i.e., forms that retain no phonological similarity whatsoever, like *go* – *went* or the Hiaki examples Harley (2014) discusses. If those are to be formed on the basis of the same root, it makes no sense to say that roots have phonological content, whether underspecified or otherwise. Several researchers (e.g., Acquaviva 2009; Harley 2014) therefore conclude that roots have no phonology, whereas others (e.g., Arad 2005; Borer 2005a,b, 2013<sup>71</sup>; and work by members of the research group I am part of) maintain that they do, and that forms like *go* and *went* are based on dissimilar roots. Borer, in particular, has written extensively about why roots should have phonological content, for example stating that

To wit, if roots, or listed items, have no phonological content whatsoever, there is little to ensure that the verbal instantiation of some root would be phonologically similar, in any way, to its nominal instantiation. Little, in other words, to exclude the existence of a category-neutral entry that would be realized as, e.g., *recline* in a verbal context, but as *sofa* in the nominal one (2014: fn.5).

Moving on to conceptual content, as an example, the Hebrew words *šavar* ‘to break’, *mašber* ‘crisis’, *šever* ‘fraction’ and *šavir* ‘fragile’ are all typically assumed to be built on the same root,  $\text{šBR}$  (Arad 2005: 193). The same question arises here as in the case of the phonology: is it possible to assume some form of conceptual meaning that is underspecified enough to give rise to all of these

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<sup>69</sup> An example of potentially conflicting data are adjectives in English, which, as put forth in Borer (2013: 371ff.), behave in ways that seem to suggest that they emerge into the syntax already categorized (pace English nouns and verbs). I will not discuss this further, but simply observe that nothing in my model prevents English adjectives from being listed with an inherent category feature if that would explain the data better; nor, for that matter, for roots in other languages to be listed as bare or categorized depending on what the empirical data suggests. Note, too, that language acquisition shows that we somehow must be able to learn and store inflected words and word stems (i.e., categorized roots), as those are the forms we come across in our input. Whether that means that we actually store categorized roots rather than bare ones, but that we are able to isolate something like a root from them when we need to make a novel stem (whether for a novel instance of word class flexibility, a case of language mixing or otherwise), is open to debate.

<sup>70</sup> The notation / $\pi$ \_\_\_\_/, exemplified by / $\pi$ catch/, signifies the phonological realization of the categorized root for Borer (2013).

<sup>71</sup> Note that whereas Borer (2013) and later instantiations use the concept ROOT, Borer (2005a,b) used LISTEME instead (Borer 2013: fn.23). How she envisions the nature of such listed items has also changed during those years (see, e.g., Ibid.: 27ff).

distinct word meanings? Of the researchers just mentioned, Acquaviva (2009), Borer (2013) and Harley (2014) all say no, at least in the case of some roots, whereas the rest tend to say yes, albeit recognizing that it is at least as difficult to characterize the precise nature of this underspecified conceptual meaning as it is in the case of the underspecified phonology.

This gives us the following overview:

|                                  | Roots with phonological content                                     | Roots without phonological content                  |
|----------------------------------|---|---|
| Roots with conceptual content    | e.g., Arad (2005), Borer (2005a,b), EXOGRAM (including this thesis) |   |
| Roots without conceptual content | e.g., Borer (2013 and later instantiations)                         | e.g., Acquaviva (2009), Harley (2014) <sup>72</sup> |

TABLE 3. DO ROOTS HAVE PHONOLOGICAL AND/OR CONCEPTUAL CONTENT? VIEWS IN THE LITERATURE

We concluded in Paper 1 that “the exact nature of roots is not of vital importance to this article” (p.393), and that is true for the thesis as a whole as well. I will, however, tentatively adopt the view that roots are underspecified for both phonology and conceptual meaning. I follow the arguments laid forth in, e.g., Borer (2005a,b, 2013) as far as phonological underspecification is concerned. As for conceptual content, I believe Labelle (2014: 402) argues well for roots being semantically individuated when she points out that without such individuation at the time of their selection, it is difficult to see what determines that the correct roots are selected at the onset of the derivation. I remain, however, well aware of the fact that each of the accounts of roots described above, including the one I opt for, have unsolved problems to battle with; I leave such problems and further investigation of the exact nature of the underspecification for future work.

#### 4.2.3.1.2. Abstract morphemes

Having briefly discussed the nature of roots, it is time to address the nature of the other type of syntactic primitives assumed in DM. Specifically, DM posits that abstract morphemes are made up of abstract features and feature bundles, like [PAST], [SG] or [v], and those features are believed to originate from a universal feature repository. This means that when we learn a language or variety of any kind, we are learning which features are active as well as how they bundle together, and we consequently store that information as language- or variety-specific abstract morphemes

<sup>72</sup> Even though Acquaviva (2009) and Harley (2014) assume roots to be devoid of any content, i.e., mere indices, they still individuate them to explain that they *link* to specific phonology and semantics. Thus, a specific root might be notated as  $\sqrt{279}$  or  $\sqrt{2588}$  (Ibid.: 242). Another option is to say that only abstract morphemes are inserted at the beginning of the derivation, and that instead of individuated roots, you merely have radically empty structural positions where the roots can go – and then insert the roots themselves late, along with the phonological exponents of the abstract morphemes (De Belder & van Craenenbroeck 2015).

(each consisting of one or more features). I will say more about how I envision these abstract morphemes to be listed shortly, but first, I want to address in some detail how categorization occurs, as that is another area of contention in the exoskeletal literature.

In any given utterance, each word has a specific category – verb, noun, adjective etc. The question is how a lexical item is categorized in the first place. As we have seen, lexicalist accounts assume that lexical items are stored in the mental lexicon with all or nearly all features, including that of the category, inherent to them, whereas exoskeletal models instead assign the category during the course of the syntactic derivation. In DM, categorization takes place when a root is merged with a categorizing functional head, like [n], [v] or [a], deriving nouns, verbs and adjectives, respectively. The resulting structure of such a merger, i.e., the categorized root, is further merged with a higher functional head containing some or all of the inflectional features relevant to the word class category in question. As an example, a simplified abstract structure for a verb could be the one depicted in Figure 5, with the root embedded under the *v* projection, which in turn is embedded under the *T* projection, the latter containing a tense feature.<sup>73</sup>

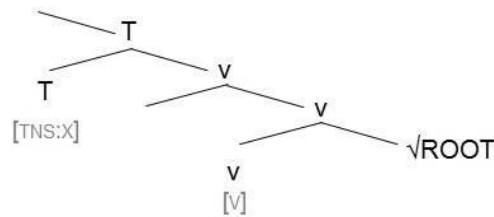


FIGURE 5. CATEGORIZATION OF VERBS IN DM

Although all fully exoskeletal accounts assign categories syntactically, not all agree that the above-depicted solution is the way to go about it. Before I state my reasons for adopting the DM solution to categorization, I will therefore briefly discuss problematic aspects of such a solution and possible alternatives.

Since *T* specifies tense, and tense only applies to verbs, anything inserted under *T* automatically must be a verb. In other words, *v* appears to be redundant if its only task is to categorize the root, unless there is independent evidence that it is indeed present. This is not a trivial point, seeing as it is unlikely that a correct grammar model contains superfluous material. In addition, it is not a given that pre-theoretical notions such as VERB, NOUN etc. necessarily correspond to actual features in the grammar. Since, as Baker (2003: 3) points out, “there is no

<sup>73</sup> For ease of exposition, I am not including all the features or functional projections I assume to be part of a verb phrase here, but merely those needed to make my point. As mentioned earlier, the detailed implementation of my model will wait until Section 4.2.4.2.

substantive generative theory of lexical categories”, we cannot be sure that there is cross-linguistic common ground on which basis to posit categories like *v*, *n* etc. as plausible grammatical entities.

Borer’s (2013) solution is to discard the notion of separate categorizing heads, instead allowing the root to get its categorial specification from its immediate surroundings – namely, the functional node it is embedded under.<sup>74</sup> This is called CONTEXTUAL CATEGORIZATION. A simple syntactic structure for the verb *form<sub>v</sub>* could look like this:

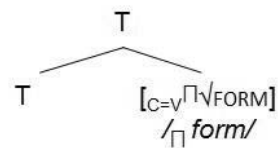


FIGURE 6. CATEGORIZATION OF VERBS IN XSM

Given XSM, T only takes complements that are V-EQUIVALENT (hence the notation  $c=v$ ), meaning something already categorized as verb-equivalent or something which *can* become categorized as such, i.e., an acategorial root. In Figure 6, the acategorial root  $\sqrt{\text{FORM}}$  has been inserted, making it verb-equivalent with the phonological realization  $/\text{form}/$ . In addition to eliminating the (potentially) redundant categorizing head and thereby also eliminating VERB (or *v*) as a (potentially) problematic grammatical primitive, Borer (2014) argues that there is another advantage to this approach. In DM, one has to assume the existence of phonologically null (“zero”) categorizers, as in Figure 7, to account for how word forms without overt categorizing affixes (such as *-ation*, *-ing* etc.) are categorized.<sup>75</sup>

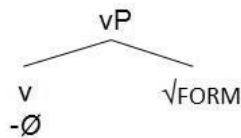


FIGURE 7. ZERO-CATEGORIZATION OF *FORM<sub>v</sub>* IN DM

<sup>74</sup> A different option for removing *v* as a feature is that of Ramchand (2008), in which *v* is split into categories that each capture part of what we think makes something “verby” (although all of them do not have to be present at the same time in all languages). Her suggestions for “verby” functional heads are INIT(IATION), PROC(ESS) and RES(ULT).  
<sup>75</sup> In a word like *formation*, however, the categorizing head – here, *n* – would spell out as *-ation*. In XSM, such categorizing affixes – known collectively as C-FUNCTIONS – head their own projections, making the analysis for, e.g., *formation* equally complex in both DM and XSM. Whereas the DM analysis for *form<sub>n</sub>* and *form<sub>v</sub>* are equally complex as that of *formation* in DM, they are less complex in XSM.

I cannot recount the arguments here for reasons of space, but Borer (Ibid.) argues that the existence of such zero categorizers makes it impossible to account for certain empirical patterns in English.

Although I acknowledge the potential problems laid out by Borer (2014), I can also identify some advantages to positing separate categorizing heads, as in DM. Recall from Section 4.2.1.2. that some exoskeletal accounts place semantic types, like [eventive], and/or what Embick (2015) calls MORPHOLOGICAL FEATURES, like gender and declension/conjugation classes, on the relevant roots themselves. As discussed in Section 4.2.3.1.1., this is tantamount to providing the root with a category feature, as all of these traits are linked with specific word class categories. If we assume separate categorizing functional heads, we can instead place the features there. For verbs, this would mean that *v* is specified for semantic type and conjugation class (if relevant in said language), meaning any root merged with *v* gets those traits as well. This effectively explains why a LOLV inserted into an otherwise recipient-language structure can be assigned to a conjugation class in the recipient language even when the donor language does not have conjugation classes. As an example, German lacks conjugation classes (Alexiadou 2017: 186), but Wurzel (1989: 162) still found that German verbs borrowed into Russian were assigned to a conjugation class.

A comment is in order here concerning what it is we mix when we mix languages. In Paper 1, we argued for categorized roots (i.e., stems) to be the smallest mixable item, at least in English-Norwegian mixing. We based this on a semantic argument. As shown in example (31b) in Section 4.2.2., *My son outed me to his preschool*, *outed* can be used as a verb with a particular verbal meaning that it does not have when appearing as, e.g., a preposition or noun. As the same meaning is preserved when it is inserted into Norwegian, as with *outa* ‘outed’, it seems likely, we argued, that “Norwegian must have mixed in a structure involving at least the categorized root for the specialized verbal meaning of *outed* to be attained as well” (p. 397; see, e.g., Arad 2003 for a similar argument). This, however, represents an earlier stage in my thinking about language mixing. After all, if roots are stored in a single list regardless of what language we typically use them in, as this thesis claims, the default, insertional mixing pattern would involve drawing a donor language-associated root and recipient language abstract morphemes into the syntax. Mixing a larger utterance than a root, be it a categorized root, an entire verb phrase or something different, is a form of alternation, i.e., a switch to the donor language. It is perfectly grammatical to alternate LOLIs, but it is a decidedly more marked option than insertion. This view is in line with, e.g., Alexiadou et al. (2015) and Alexiadou (2017), who argue that Greek-German mixing requires the mixing of roots.<sup>76</sup> As for the

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<sup>76</sup> This would also fit with approaches that place gender on *n* as opposed to some functional projection above *n*, as we do in Papers 1-2 (see, e.g., Alexiadou 2004; Julien 2005; Acquaviva 2009; Kramer 2014; Anagnostopoulou 2017). Riksem (2018: 90-91) argues against these accounts on the basis of lone English-origin compounds with derivational

semantic phenomenon discussed in Paper 1, I believe it still can be explained, as the root  $\sqrt{\text{OUT}}$  can be linked to its specific verbal meaning regardless of whether the *v* is the one used in Norwegian or English.

There are more topics related to categorization I could have touched upon, including, amongst other things, *how* roots and categorizers merge (for an overview, see Alexiadou & Lohndal 2017). For the sake of space, however, I will leave it at this and move on to the next section, which addresses how roots and abstract morphemes are listed.

#### 4.2.3.1.3. The listing of roots and abstract morphemes

Throughout Papers 1-3, I employ the following listing of roots and abstract morphemes (this illustration is a rendering of Figure 3 from Paper 3):

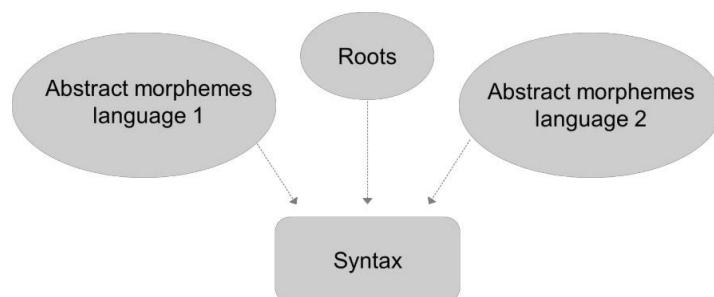


FIGURE 8. SEPARATE LISTS OF ABSTRACT MORPHEMES AND SHARED LIST OF ROOTS

In Paper 3, this model is used to explain the technical difference between insertion, alternation and, if it is a separate phenomenon, congruent lexicalization. Recall from the beginning of Section 4.1. that insertion and alternation can be described non-technically as well, by focusing on the output of the two language mixing strategies:

- INSERTION:       the donor language item has recipient language morphosyntax
- ALTERNATION:   the donor language item has donor language morphosyntax

Applying what we have now established about the exoskeletal MP model, this means the lone English-origin verbs in American Norwegian can be described as follows:

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affixes, like *township*, mixed into American Norwegian. The typical DM analysis would call *town* the root and *ship* the exponent of the English *n*, in which case, she argues, it is hard to see how the noun can receive gender if gender is a feature of the Norwegian *n*. Even so, these items *do* receive gender. I believe there are several ways around this, however. For one, it is very possible that *township* is not a productive compound for the speaker in question, instead being listed as a root, in which case, the problem disappears.

INSERTION: English-origin root + Norwegian abstract morpheme in T  
ALTERNATION: English-origin root + English abstract morpheme in T

I will depict the actual syntactic structures for these and explain the possibility of a third type, namely congruent lexicalization, in Section 4.2.4.2.

In Section 4.1.3.1.2., I clarified that even though the model above has been suggested in all three papers, this has not been meant as a requirement but rather as the easiest way to explain how the listing of roots should differ from that of abstract morphemes. As far as the listing of these primitives is concerned, my analysis only hinges on the following two points:

- i. Abstract morphemes need to be stored in a way which enables a bilingual speaker to identify and select the one relevant for the language/idiolect/... said speaker wishes to speak at that point, and
- ii. Roots should be stored in a way which makes it unnecessary to make a copy of a root in order to mix languages.

Even though I will leave the main discussion at that, a clarification is in order regarding roots. I argue that having to create a new root in order to insert it into an other-language structure seems empirically inadequate, but importantly, I still assume that new roots can – and will – be added to the root repository throughout a speaker’s life. These can be new in the sense that the speaker has enriched her vocabulary even though the terms themselves existed before, or they can be innovative coinages that are new to everyone, describing, e.g., a newly invented gadget. In addition, though – and this is especially relevant when discussing language mixing – an already listed root can receive a new usage which differs to such an extent from the original that it can be relisted as a new, distinct root. As potential examples, Arad (2003: fn.15) recounts how the German word for mobile phone, *handi*, originated from the English word *handy*, whereas the Hebrew word *buk* ‘model’s portfolio’ came from English *book*. A similar example from European Norwegian is *å bade* ‘to bad’, derived from the English adjective *bad* and with the specific meaning ‘to lose one’s temper’ or ‘experience a bad trip on drugs’ (Andersen 2015: 126). Although these specialized meanings could be instances of the respective English-origin roots for certain speakers, it is easy to imagine a bilingual English-German speaker who, e.g., learned the word *handi* ‘mobile phone’ without ever connecting that it had anything to do with *handy*. For that speaker, then, the former word will employ a separate root from the latter.

Setting further discussions about the listing of grammatical formatives aside, the following section will address how the roots and abstract morphemes receive their phonological form.

#### 4.2.3.2. Phonological exponents

The second list in the DM model is the VOCABULARY, and this is where the phonological exponents of the syntactic formatives are thought to be listed. Recall that both roots and abstract morphemes are abstract items, and although I assume the former type to be underspecified for phonology from the get-go, they are still far from having their full phonological shapes. The abstract morphemes, moreover, are thought to lack phonological content altogether before reaching the PF (phonological form) interface, making it even clearer that they need to be supplied with phonology somehow. As explained by Embick (2015: 9), the responsible mechanism is called VOCABULARY INSERTION. In order to know which phonological exponent to use to spell out a particular abstract morpheme in the syntactic structure, the exponents are stored in conjunction with synsem features. These pairings of phonology and synsem specifications are known as VOCABULARY ITEMS (VIs).

As an example, the 3.person singular present tense affix  $-s$  in English has the following VI:<sup>77</sup>

$$(35) \quad [3SG, PRES] \longleftrightarrow /-z/$$

When a syntactic structure has been built and sent off to the PF interface, Vocabulary insertion applies. This operation is regulated by the Subset Principle (Halle 1997: 428), which reads as follows:

The phonological exponent of a Vocabulary item is inserted into a morpheme in the terminal string if the item matches all or a subset of the grammatical features specified in the terminal morpheme. Insertion does not take place if the Vocabulary item contains features not present in the morpheme. Where several Vocabulary items meet the conditions for insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen.

The morphemes he describes are the abstract morphemes that make up the various functional nodes of the syntactic structure (or TERMINAL STRING, in Halle's words). The VI presented in (35) above would be eligible for insertion in a T which has at least the features [3SG, PRES], and as the English T has exactly those, this particular VI is in fact fully specified. That is not the case for the other present tense forms in English, however. Whereas the 3.person singular is the overtly suffixed form *he/she/it walk-s*, the rest of the present tense forms are all bare (*I/you/we/you/they walk-Ø*). Since these latter phonological exponents are identical (i.e., zero), it seems redundant to

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<sup>77</sup> We have not specified whether features are binary (marked as +/-) or not in Papers 1-3, and I will stick to the same notation form and remain agnostic on this issue here (see, e.g., the discussion on p.391-392 of Paper 1).



specify one VI for each of them; instead, DM economizes by positing the following UNDESPECIFIED VI:<sup>78</sup>

$$(36) \quad [\text{PRES}] \longleftrightarrow /-\emptyset/$$

In other words, this VI is eligible for insertion whenever an abstract morpheme in the syntactic structure has at least the feature [PRES], meaning that in English, it is compatible with all possible feature bundles in T ([1SG, PRES], [2SG, PRES], [3SG, PRES], [1PL, PRES], [2PL, PRES] and [3PL, PRES]). However, recall that the Subset Principle also specifies that “[w]here several Vocabulary items meet the conditions for insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen”. As we saw above, there is another VI specified as [3SG, PRES], meaning it will win the competition for insertion when the abstract morpheme in T contains the same set of features. As it is also specified that “[i]nsertion does not take place if the Vocabulary item contains features not present in the morpheme”, the latter VI cannot be inserted in T when the abstract morpheme there does not contain [3SG].

This means that we are a little imprecise in Papers 1-3 when describing English-origin verbs in American Norwegian receiving Norwegian inflectional affixes. We state, correctly in my opinion, that the Subset Principle is an excellent tool for explaining why LOLIs usually receive recipient-language inflection even though the bilingual speaker will have VIs from both languages available. Using the example *renter* ‘rent(s)’, we further argue that the different feature bundles in the corresponding English and Norwegian Ts will ensure that the Norwegian VI is inserted when the abstract morpheme in T is the Norwegian one. This is true when we have a 3.person singular construction, as in the following CANS example:

|      |                           |           |         |     |                        |
|------|---------------------------|-----------|---------|-----|------------------------|
| (37) | staten                    | renter    | f- ifra | meg | <i>(blair_WI_02gm)</i> |
|      | state.DEF.M.SG            | rent.PRES | f- from | me  |                        |
|      | ‘the state rents from me’ |           |         |     |                        |

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<sup>78</sup> Note that I am only showing the basics of how Vocabulary Insertion works here; see, e.g., Embick (2015) for an in-depth account of both how it works and what motivates it. As an example of how this gets more complicated, VIs need to be further specified in the case of CONTEXTUAL ALLOMORPHY, i.e., when different phonological exponents expressing the same synsem feature(s) are inserted in the context of different roots (one example is English past tense, with the alternative exponents /-t/ (*slept*), /-d/ (*heard*) and /-∅/ (*bit*)). In addition, these forms need to be subjected to further morphophonological READJUSTMENT RULES to account for changes in stem vowels for irregular forms, etc. (Ibid.: 202ff.). Whereas I subscribe to these elaborations, there are other parts of the DM machinery I am more hesitant to employ. Researchers working on DM have to date investigated a large amount of data from different languages, and at times, there have been phenomena that appeared not to fit nicely into the basic DM story. To account for those, certain postsyntactic operations have been suggested that either delete specific features of abstract morphemes in certain contexts or turn one abstract morpheme into two or vice versa, ensuring that the empirically attested VI can spell it out (Ibid.: 139, 213). I am inclined to see such mechanisms as extremely powerful “quick fixes” that render the model virtually non-falsifiable, so I have not employed them in this thesis. I do acknowledge, however, that although my data did not (as far as I can see) necessitate such operations, other data may well establish the need for additional machinery or another type of model altogether.

Here, the English T will have the feature bundle [3SG, PRES], whereas the Norwegian T only has [PRES]. The difference reflects the fact that English has subject-verb agreement (i.e., the subject and verb agree in person and number) whereas Norwegian does not.<sup>79</sup> As such, the English phonological exponent /-z/ is specified for features not present in the Norwegian structure, barring it from spelling Norwegian T out.

However, our claim is broader, as we state that “following the Subset Principle, English *rent* and English *rents* are ruled out as possible phonological exponents of the feature bundle of the Norwegian T projection, seeing as they include features for number and person that are not called for in the structure” (Paper 1, p.400). Again, this is true in the case of 3.person singular present tense, but as we have seen, the English VI that spells out all of the other present tense alternatives only has the synsem feature [PRES]. As that makes it identical, synsem-wise, to the Norwegian present tense VI, both English /-Ø/ and Norwegian /-er/ are equally good fits for the Norwegian T. This is also attested in CANS, with (38) as an example:

(38) jeg renter bort (coon\_valley\_W1\_02gm)  
 I rent.PRES away  
 ‘I rent out’

As mentioned in fn.26 in Paper 3, however, I think the fact that the speaker is attempting to speak Norwegian here – i.e., that she is in a Norwegian LANGUAGE MODE (cf. Grosjean 2008, 2013 for a similar use of the notion) – will cause her to both

- i. pick the Norwegian abstract morpheme when generating the syntactic structure and, when both an English and a Norwegian exponent are equally well-matched for insertion,
- ii. be more likely, in an unmarked setting, to choose the Norwegian exponent.<sup>80</sup>

The heading of Section 4.2. is “A late-insertion exoskeletal model”, and this Vocabulary Insertion process just described – where the phonological exponents of roots and abstract morphemes are inserted at the PF interface, after the syntactic structure has been built – is precisely what is meant by LATE INSERTION. This is what enables VIs to be underspecified, which in turn, to quote Lohndal (2017: 783), allows “the same vocabulary item to be inserted into multiple syntactic positions”, ensuring an economic system. Whether or not roots, which in my model have no synsem features, are spelled out late, is not discussed in this thesis; since I lack evidence to the

<sup>79</sup> See Paper 1, p. 399-400 and Section 4.2.4.1.3. for an elaboration.

<sup>80</sup> See Paper 1, p. 400 for further discussions about such scenarios and what might cause a speaker to instead make the marked choice of inserting a donor-language exponent.

contrary, I choose to treat their spell-out as parallel to that of abstract morphemes.<sup>81</sup> What *is* of vital importance to my analysis, however, is that inflected forms are treated as complex objects both syntactically and phonologically – i.e., that there are separate VIs for the roots and the abstract morphemes that will be realized as inflectional affixes (Embick 2015: 18). Another option, employed by, e.g., Borer (2013), is to specify on the roots themselves that, e.g.,  $\sqrt{\text{RENT}}$  will spell out as *rents* in the 3-person singular present tense and  $\sqrt{\text{SING}}$  as *sang* in the past tense. This effectively makes roots language-specific, however, so if we wanted to explain how a LOLI can receive recipient-language inflection, we would have to assume the creation of a new root with phonological specifications fitting for the recipient language. As I have specified above, I believe instead that roots should be stored in a way which makes it unnecessary to copy them in order to mix languages.

The following section will show how my specific model is implemented in the case of verb phrases, looking at both monolingual and mixed examples; I will also draw comparisons to how the implementation would work for some other approaches, in particular strong and weak lexicalist MP models.

#### 4.2.4. The verb and its extended projection

In this section, I will look more closely at the relation between the verb and its inflection, both in monolingual and mixed utterances. The analysis builds on Åfarli (2015b), which, as you may recall from Section 3.3., analyzes the English-origin verbs in American Norwegian that are described in Haugen (1953) and Hjelde (1992). He argues that the attested pattern – English verbs with Norwegian inflection – supports a formal model of grammar in which the inflection is generated independently from the mixed verb itself. I will present his analysis here with the alterations necessary to make it fit with the CANS data and the exact formal model I am assuming.

##### 4.2.4.1. The verb and its extended projection: GB and lexicalist MP models

If one is to describe the extended projection of verbs, tense assignment is a major topic. Åfarli (2015b: 168) begins the discussion about how main verbs are assigned tense by presenting the two possibilities laid out in Chomsky (1995: 195), repeated here:<sup>82</sup>

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<sup>81</sup> See, e.g., Haugen & Siddiqi (2013) for an overview of which DM accounts assume late/early spell-out of roots, and why.

<sup>82</sup> Note that when I speak of TENSE ASSIGNMENT in this section, I am using it in a broad sense, referring to how verbs are “tensed” in general in such a manner that they do not crash the syntactic derivation. This therefore includes accounts where the verb already has tense before entering the syntax, since such accounts still require the tense feature to be checked somehow.

The main verb typically “picks up” the features of T and Agr (...), adjoining to an inflectional element I to form [V I]. There are two ways to interpret the process, for a lexical element  $\alpha$ . One is to take  $\alpha$  to be a bare, uninflected form; PF rules are then designed to interpret the abstract complex [ $\alpha$  I] as a single inflected phonological word. The other approach is to take  $\alpha$  to have inflectional features in the lexicon as an intrinsic property (...); these features are then checked against the inflectional element I in the complex [ $\alpha$  I].

The first suggestion is the one used in Government & Binding (GB) Theory (Chomsky 1981), whereas the second one is used (e.g.) in the early type of lexicalist MP model proposed in Chomsky (1995). Note that Chomsky in the same book makes use of a separate projection which introduces the external argument (i.e., very similar to the Voice projection of Kratzer 1996, only he calls it ‘LITTLE’ v<sup>83</sup>). However, this little v projection is not introduced until later in the book. Like Áfarli (2015b) and Chomsky (1995) himself, I will therefore discuss these two tense assignment options without assuming any intermediate projection between V and T/I. Today, many standard lexicalist MP accounts, such as the one presented in Adger (2003), *do* assume both a v projection and some other alterations that make their tense assignment different from the suggestion above, so I will introduce that as a third option below. The three alternatives will be called GB, LEXMP+ (Chomsky 1995) and LEXMP- (Adger 2003) to make them easier to identify, the plus and minus sign indicating that the former is a stronger type of lexicalism than the latter.<sup>84</sup>

#### 4.2.4.1.1. Tense assignment in GB and LexMP+

Using a T projection as opposed to I for easier comparison with my own proposed model,<sup>85</sup> these two alternatives can be depicted as follows for a simple intransitive sentence:

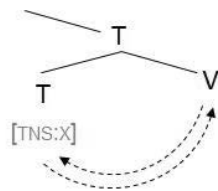


FIGURE 9. GB: UNINFLECTED V IN LEXICON

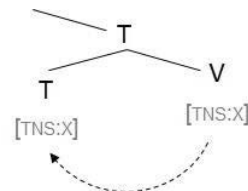


FIGURE 10. LEXMP+: INFLECTED V IN LEXICON

The GB option involves an uninflected verb that gets inserted into the V position of the structure. Tense assignment can happen in two ways, as the two arrows illustrate: either the verb raises to T

<sup>83</sup> Although they bear the same name, this is not to be confused with the exoskeletal v projection, which holds the verbalizing feature; lexicalist models assume lexical items to have inherent word class category features, making separate categorizing projections redundant.

<sup>84</sup> I mark the two MP proposals as LEX, for LEXICALIST, to set them apart from my exoskeletal MP proposal, which I will discuss in the following section.

<sup>85</sup> I also assume a C-projection above T, but as that is irrelevant for the topic discussed here (i.e., tense assignment), I will not include it in these depictions. I also only include the relevant features for ease of exposition.

and picks up the tense feature there, or the tense feature lowers itself from T to V (known as AFFIX HOPPING). Āfarli (2015: 169) argues that movement downward, as in the case of affix hopping, should be rejected “because it violates a basic principle on movement, namely that the constituent that moves must c-command the position that it moves from”. If so, the GB analysis cannot be correct, because the remaining tense assignment option – in which the verb raises to T – fails to correctly account for languages like English.<sup>86</sup>

To illustrate why, consider these English sentences:

- (39) a. He probably completely forgot the deadline.  
b. She thought that he probably had completely forgotten the deadline.

Since English perfect auxiliaries are thought to be base-generated in a separate Perf projection below T (see, e.g., Adger 2003: 171ff. for a textbook introduction), the fact that the sentence adverbial *completely* is situated after the perfect auxiliary *had* in the subordinate clause in (39b) means it must be adjoined to a projection below both T and Perf. Assuming, per usual, that it is base-generated in the same position in main clauses as well, the same is true for (39a). If so, the finite main verb *forgot* in (39a) must have received tense without moving to T prior to Spell-Out.<sup>87</sup> Such data are what caused Pollock (1989), building on Emonds (1976, 1978), to argue for affix hopping as a way to explain how English main verbs can receive tense.

If we want to explain tense assignment in English without resorting to movement downwards in the structure, it therefore appears to be necessary to discard the GB solution. LexMP+ – i.e., the lexicalist MP analysis proposed in Chomsky (1995) – fares better. The English finite main verb still cannot have moved to T prior to Spell-Out, as the word order clearly shows, but unlike the GB analysis, LexMP+ can allow the movement to take place *after* Spell-Out instead. The reason is that under the MP, the verb only moves to T to check the tense feature it already has, not to receive tense in the first place. If we send the structure to PF before the verb has moved, it will therefore be in the correct position *and* have the correct tense affix. Subsequently, movement can take place at LF, where it will be invisible and therefore not affect the perceived word order (but ensure that the tense feature in the verb matches the one in T, so the derivation converges).

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<sup>86</sup> See Āfarli (2015: 169) for a brief account of another solution, namely that the affix hopping/head movement happens after narrow syntax (at PF). As this would require a corresponding post-syntactic operation at LF, it seems cumbersome and unlikely and I will not investigate it further (see also Roberts 2010 for further critique).

<sup>87</sup> Unlike English, the other Germanic languages, Norwegian included, *can* be analyzed by having the finite verb in main clauses raise to T (and then on to C) before Spell-Out. This is because they are what we call VERB SECOND (V2) LANGUAGES; i.e., the finite verb always moves to the second position of the main clause (Vikner 1995: 39). This is illustrated by the Norwegian translation of (39a), *han glemte antageligvis belt tidsfristen* (he forget.PAST probably completely deadline.SG.DEF.M.).

#### 4.2.4.1.2. Tense assignment in LexMP-

Before we address how the two analyses just presented can handle the “word-internal” mixing pattern Áfarli (2015b) found in Haugen (1953) and Hjelde (1992), we will look at how a lexicalist MP model of the kind employed by Adger (2003) deals with tense assignment in English. As mentioned earlier, I call this analysis LEXMP-, indicating that it is less lexicalist than LEXMP+. The type of lexicalist MP model discussed in Papers 1-3 is the one employed by MacSwan (1999 and later instantiations) and his associates, since he has been the main proponent of lexicalist accounts of language mixing. His model has, as of the 2000s, incorporated elements from both LexMP+ and LexMP-. He mostly follows the former, but, like me and my collaborators, he employs the more recent checking/matching theory also employed in LexMP-. This is in part why I now will present LexMP- in more detail: because I need to describe the checking/matching system discussed in Papers 1-3. In addition, even though we for reasons of space did not include it in Papers 1-3, I think it is prudent to discuss how a weaker lexicalist MP model can handle these data as well. Since LexMP- employs some exoskeletal elements, it is interesting to see how it fares compared to my fully exoskeletal MP model and the strong lexicalist MP model employed by MacSwan and others in the language mixing literature.

As we saw in Section 4.2.3., the exoskeletal MP model I make use of assumes three different types of lists that are accessed at different stages throughout the syntactic derivation. The first contains the core structural building blocks (roots and abstract morphemes) and is accessed at the very beginning, whereas the second and third lists contain the phonological exponents (VIs) and the encyclopedic information, respectively, and are accessed at the relevant interfaces (PF and LF). In lexicalist MP models, however, all of this information is bundled together in lexical items stored in one single list, typically called the LEXICON (Adger 2003: 38). This makes the lexical items akin to the pre-theoretical notion of a WORD. The morphosyntactic, phonological and semantic information come in the form of features, and since only the morphosyntactic type is thought to be visible to the syntax, I will focus on that. As an example, a verb is a lexical item with the category feature [V], meaning its “verb-ness” is an inherent quality. It will also have other morphosyntactic features, e.g. defining how many objects it can or must take, but crucially, LexMP- differs from LexMP+ in whether or not verbs are stored in the lexicon with inherent tense features.

Recall from above that in LexMP+, the verbs *do* have tense from the get-go. This is what ensures that the correct tensed form of the verb is pronounced at Spell-Out in languages like English, where the checking of the tense feature happens as the verb moves to T *after* Spell-Out. In LexMP-, however, the listed verb does not have tense prior to syntax, nor does it have to move – overtly or covertly – to T either to receive or check its tense feature. Within this model, the idea

is that features are either VALUED or UNVALUED, and since the derivation will crash if any unvalued features reach the interfaces, they need to be valued somehow during the syntactic derivation. This valuation – also called CHECKING or MATCHING – is therefore a driving force behind the derivation. To explain further, we can use the sentence *Emma laughed* as an example and give a simplified account of how the tense assignment would work.

First, the relevant lexical items would be taken from the lexicon into a sort of workspace, which Adger calls the NUMERATION (Ibid.: 142). These lexical items would include *Emma* and *laugh*, but also functional projections like little *v* and *T*. *Laugh*, with its inherent categorial V feature, heads a  $V_{MAX}$  projection,<sup>88</sup> and little *v* merges with it and projects as the head of the new syntactic object. This is to satisfy THE HIERARCHY OF PROJECTIONS, which dictates that a clause structure at the very least will include the projections  $C > T > v > V$  in that order (Ibid.: 195, 333). Little *v* has an unvalued  $v:U$  feature,<sup>89</sup> and this is checked when *V* raises to *v* (Ibid.: 181, 212ff.). Note that the movement is necessary not in order for the checking to occur, but because the unvalued  $v:U$  feature in little *v* is strong, and the strength of features is another factor that determines the derivation. If an unvalued feature is weak, it can be valued via the syntactic operation AGREE, which only requires valuer and valuee to be in a c-command relation to one another and not have an intervening lexical item with a matching feature in the c-command chain (Ibid.: 168, 218). If an unvalued feature is strong, however, sisterhood is required. Since an item c-commands its sister (i.e., the one it is initially merged with) and all projections below the sister in the structure, the checking requirement for strong features is really a more restricted version of AGREE.

Moving on, little *v* also has a strong, unvalued  $c(\text{ategory})$ -selectional  $N:U$  feature, which is valued when the subject *Emma* [*N*] merges with the syntactic object (headed by little *v*) which was created when *V* and little *v* merged.<sup>90</sup> This is precisely why little *v* has the  $N:U$  feature in the first place: to ensure that the sentence will have a subject. Ignoring *Emma*'s other features and focusing on the tense assignment, the resulting syntactic object,  $v_{MAX}$ , is now merged with *T* in accord with the hierarchy of projections, creating a syntactic object headed by *T*. Amongst other features, *T* has a valued tense feature, in this case [*TNS:PAST*]. An unvalued tense feature ( $TNS:U$ ) resides in little *v*, and we can now return to example (39), repeated here as (40), and explain why the main verb *forgot* comes after *completely* in (40a), whereas the auxiliary *would* comes before it in (40b).

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<sup>88</sup> Since Adger (2003) operates with *X'* theory as opposed to the Bare Phrase Structure standard in MP since Chomsky (1995), he dubs  $V_{MAX}$  VP.

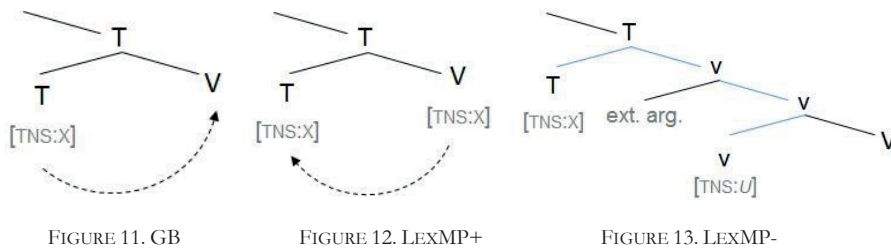
<sup>89</sup> *U* signals that the feature is unvalued.

<sup>90</sup> Since the  $N:U$  feature on *v* percolates up to the node connecting *v* and *V*, which in *X'* theory would be called *v'*, it will be in a sisterhood relation with the *N* feature on *Emma* after the merger, meaning valuation of the strong feature can take place.

- (40) a. He probably completely forgot the deadline.  
 b. She thought that he probably had completely forgotten the deadline.

Recall that *completely* had to be adjoined below T, meaning *forgot* could not have moved overtly to T to check its tense feature. Unlike in LexMP+, we cannot wait until after Spell-Out to check the tense feature in the syntactic v-V object we just merged with T, as that feature is unvalued, and an unvalued feature arriving at Spell-Out would cause the derivation to crash. However, also unlike in LexMP+, we now assume that some features do *not* require sisterhood in order to be checked, namely the weak unvalued ones. If we therefore assume the English little v to have a *weak* TNS:U feature, the TNS:PAST feature in T can value it through AGREE, since T c-commands little v – and the verb, which had to raise to little v initially because of a strong v:U in little v, does not raise any further. The same, of course, holds for the verb in *Emma laughed*. In contrast, we can assume the TNS:U feature in Perf to be strong, forcing *had* to raise to T in (40b) and thus explaining why it occurs above *completely* (Ibid.: 178-179).<sup>91</sup>

Repeating the tense assignment structures for English for GB and LexMP+ and adding the one for LexMP-, this gives us the following picture:



To sum up, the GB solution best explains tense assignment in English by allowing movement downward in the structure, so if we assume movement to always be upwards, this solution appears to be ruled out. LexMP+ and LexMP-, on the other hand, can both account for the English data. The former can assume the necessary movement to be upwards as long as it happens after Spell-Out, and the latter does not require the verb to move to T at all, since the TNS:U feature in little v is weak and therefore only requires a c-command relation with the TNS:X feature in T to be checked. I have illustrated the c-command relation with a blue line. The following section will address how the three models can handle LOLVs with recipient-language inflectional suffixes.

<sup>91</sup> (40b) is not perfect for explaining why Perf has a strong TNS:U feature, as we would have gotten the same word order if the auxiliary remained in situ in Perf and *probably* adjoined to v<sub>MAX</sub>. See, however, Adger (Ibid.: 176ff) for evidence from how auxiliary placement interacts with negation.



#### 4.2.4.1.3. Tense assignment: LOLVs with recipient-language inflectional suffixes

As mentioned earlier, all the lone English-origin verbs Haugen (1953) and Hjelde (1992) find in their American Norwegian material have Norwegian inflectional suffixes. This was what I found to be the main pattern in CANS as well, and I gave (1), repeated here as (41), as an example:<sup>92</sup>

- (41) *Vi bare satt der og watch-a da* (rushford\_MIN\_01gm)  
we just sat there and watch-PAST then  
'We just sat there and watched then'

This would not pose a problem for the GB analysis, since the verb is initially bare as far as the relevant features are concerned, and then picks up features – not caring whether those are the features typically found in English, Norwegian or some other language – through movement during the syntactic derivation. However, as it did not have an elegant way to handle tense assignment in English, it is not an option I will pursue further.

That leaves the two lexicalist MP models, LexMP+ and LexMP-. Again, Åfarli (2015b) discusses the former. He argues that the data under consideration here appear to pose a problem for LexMP+, stating that

[i]f the verb has “inflectional features in the lexicon as an intrinsic property,” as suggested by Chomsky (1995: 195), it is in fact very difficult to see how verbs borrowed into American Norwegian from the parallel lexicon can fail to have English tense inflection, contrary to fact (Ibid.: 170).

This is especially true for English and Norwegian, since they are not assumed to share the same morphosyntactic inflectional features. Whereas English verbs will have features for number and person to ensure subject-verb agreement, Norwegian ones, lacking subject-verb agreement, will not.<sup>93</sup> Since the agreement features of English verbs per standard accounts need to be checked against corresponding features on T, and the Norwegian-type T will lack those, the checking cannot take place and the derivation should crash (Paper 2, p. 19).

Åfarli (Ibid.) does, however, suggest that adopting language features could solve the problem, and sketches how such a solution could work. If the verb stems as well as the features necessary to generate the inflectional affixes were stored separately in the lexicon and could combine freely there, before entering the syntax, nothing would prevent an English-origin verb stem from combining with the feature bundle necessary for a Norwegian inflectional affix as opposed to an

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<sup>92</sup> Note that I also found a significant portion of LOLVs with donor-language inflectional suffixes in CANS, and I will discuss those as well in Section 4.2.4.2.; however, since they would appear as monolingual verbs (in American Norwegian, for example, these are English-origin verbs with English inflections), the models will deal with them the same way they dealt with the monolingual examples discussed in the previous sections.

<sup>93</sup> See Paper 1, p.399-400 for an elaboration.

English one. The reason such a system needs language features, is to ensure that the speaker has a way of identifying the feature bundle it wants the verb stem to combine with. If the speaker knows that she wants to say something in American Norwegian – what I previously have referred to as being in an American Norwegian “language mode” – she will need some way of selecting the correct feature bundle that will give rise to the American Norwegian inflectional affix. This is necessary because she could, potentially, speak many languages and thereby have an assortment of possible feature bundles to select from. If the feature bundle in question had a feature labelled NORWEGIAN, however, she would know to choose that one when speaking a Norwegian variety.

Áfarli (Ibid.: 171-172) criticizes the notion of language features by pointing at the same type of problems I quoted from MacSwan (2013: 331) when discussing the Functional Head Constraint by Belazi et al. (1994) in Section 4.1.1.3.2. Belazi et al. *do* make use of language features, and it is well worth repeating MacSwan’s critique here:

There are many particular languages, (...) and the dividing line between them are often quite obscure and sociopolitical in nature. Thus, a language feature set to [-Greek] introduces extreme, possibly unresolvable computational complexity, and the feature [+Chinese] would presumably include all the mutually unintelligible languages of China while [+Norwegian] would exclude Swedish even though Swedish and Norwegian speakers generally understand each other (2013:33).

Some of these problems might go away if, instead of thinking of the languages involved in language features as the societal types, we thought of them as being on an individual, idiolectal level, as discussed in Section 4.1.3.1.2. Bear in mind, however, that all MP accounts, lexicalist and exoskeletal alike, tend to say that language features exist in a universal repository, and that learning a language involves figuring out which features and feature bundles are active in that given language. If so, a language feature cannot be an idiolectal, “personalized” tag; and since languages as societal entities are not “discrete, identifiable and internally consistent wholes”, to quote Gardner-Chloros (2009: 9) again, it is hard to see how the notion of such features can have any merit to it.

Before moving on to how LexMP- fares, I would like to identify another potential solution for LexMP+ that Áfarli (2015b) does not discuss. That is the solution discussed in Paper 3, which I related in Section 4.1.2.1.2. To recap, we can adopt what I have been calling Position B (recall Table 1) and assume speakers to have language-specific mental lexicons for each language they speak. Whereas code-switched items will be drawn directly from the donor-language lexicon into the syntax, borrowed ones will instead be copied to the recipient-language lexicon and given a

suitable recipient-language feature bundle before entering the syntax. This was illustrated by Figure 1 in Paper 3, given here as Figure 14:<sup>94</sup>

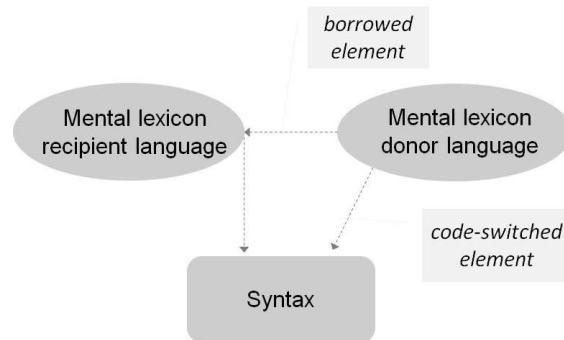


FIGURE 14. LEXICAL BORROWING AND CODE-SWITCHING WITH SEPARATE MENTAL LEXICONS

Since *watcha* ‘watched’ exemplifies an English-origin verb morphosyntactically integrated into Norwegian, i.e., the recipient language in example (41), this model will assume it to have been borrowed, and as that means it has been copied to a Norwegian lexicon and given a suitable feature bundle, it will have precisely the features necessary for the derivation to converge. This is, e.g., what MacSwan (1999 and later instantiations) does. To quickly recap my critique of such a solution, which is presented more fully in Paper 3, an undesirable property of this account is that the borrowed item – rather than being borrowed in the sense that it will be returned later – instead has been copied. Again, as I mentioned earlier, one might borrow an item in this manner without ever using it again, so it seems odd that such an item would remain listed in the mind/brain as belonging to both the recipient and donor language. In addition, the speaker’s intuition might well be that the verb “is” English, which is hard to reconcile with it being drawn from a Norwegian lexicon.

As noted above, the lexicalist MP model we mainly argue against in Papers 1-3 – i.e., the one employed by MacSwan (1999 and later instantiations) – utilizes valued and unvalued features, but is otherwise like LexMP+. As such, the unvalued tense feature is inherent to the listed verb as opposed to on little *v*, meaning the arguments just discussed against LexMP+ apply in this case as well. LexMP-, however, fares better, at least as far as tense and verbal inflection are concerned. As the unvalued tense feature is on a separate functional head, we might well imagine selecting an English verb from the lexicon, and instead of also selecting the little *v* and *T* typically used in English verb phrases, instead we might choose the ones used in Norwegian ones. The unvalued

<sup>94</sup> Note that unlike Figure 1 in Paper 3, I here use the term CODE-SWITCHING rather than CODE-MIXING.

tense feature on little *v* will be valued by the valued one on *T*, and the lack of subject-verb agreement in Norwegian means neither little *v* nor *T* have features for number and person, as they would have in English.<sup>95</sup> As such, there is no discrepancy between the inflectional features in little *v* and *T*, *pace* what we saw for LexMP+, where instead of a (potentially Norwegian-type) little *v*, we had English-type inflectional features inherent to the listed verb.<sup>96</sup>

Although LexMP- severs tense and agreement features from the verb, it retains other features that might cause problems in other domains. These include, as mentioned earlier, a category feature *V* and *c*(ategory)-selectional features that define how many objects a verb can or must take. As we recall from Section 4.2.2., one of the main arguments for positing exoskeletal analyses in the first place was to better account for the attested argument structure flexibility and word class flexibility; and LexMP- would have the same challenges with those data as LexMP+. This means that in avoiding movement downwards, language features and language-specific lexicons, we are left with the three models discussed in this section. Table 4 summarizes how they fare with English tense assignment and English-origin items with Norwegian inflection in American Norwegian:

|        | Tense assignment in English      | Tense assignment in LOLIs with recipient-language inflection   |
|--------|----------------------------------|--|
| GB     | ✗<br>(unless movement downwards) | ✓  |
| LexMP+ | ✓                                | ✗<br>(unless language features or newly listed items for every LOLI with recipient-language inflection)    |
| LexMP- | ✓                                | ✓<br>(but still lexicalist solutions with regards to, e.g., argument structure and word class flexibility) |

TABLE 4. HOW GB, LEXMP+ AND LEXMP- HANDLE THE DISCUSSED DATA.

In the following section, I will summarize how the exoskeletal model adopted in this thesis handles the same phenomena.

<sup>95</sup> See Adger (2003: 220-222) for an account of how subject-verb agreement in English could be accounted for.

<sup>96</sup> Note that this is parallel to the situation for noun phrases, where LexMP- posits a little *n*, parallel to little *v*, and places agreement features on that functional head instead of on the listed noun itself (Adger 2003: 280). See Riksem (2018) for a more in-depth analysis of language mixing in American Norwegian noun phrases.

4.2.4.2. The verb and its extended projection: my exoskeletal MP model

I have already sketched how my exoskeletal MP model would analyze the relation between verbs and their inflections, but here, I will summarize the analysis and add some hitherto unmentioned details. As stated on p. 394 of Paper 1, I do not take a stand regarding *how* syntactic structures are generated. To facilitate the comparison between this model and LexMP-, however, I will describe the derivation using machinery as close to that of the latter as possible. We can thus again begin to describe the derivation of *Emma laughed* by drawing items like *Emma*, *laugh* and T into the numeration. Already here, however, there are a couple of differences between the two models, as we already have seen.

First, the models differ in the manner in which the core structural building blocks are listed. Whereas LexMP- stores all of them in a single, language-specific lexicon, my model stores the building blocks I assume – i.e., roots and abstract morphemes – in separate repositories.<sup>97</sup> Second, the nature of the building blocks is envisioned differently. In LexMP-, *Emma* and *laugh* are lexical items containing some synsem features (albeit not as many as in LexMP+), whereas in my model, they are listed as bare roots –  $\sqrt{\text{EMMA}}$  and  $\sqrt{\text{LAUGH}}$  – devoid of synsem features of any kind. Instead, the synsem features are bundled into two abstract morphemes of their own, which in my model (and all of DM) are labelled LITTLE N and LITTLE V, respectively.

Importantly, this means that the core structural building blocks of the two models that are relevant to the discussion here correspond to one another in the following way:

| LexMP-                   | My exoskeletal MP model          |
|--------------------------|----------------------------------|
| <i>laugh<sub>v</sub></i> | $\sqrt{\text{LAUGH}}$ + little v |
| little v                 | Voice                            |
| T                        | T                                |

TABLE 5. THE CORE STRUCTURAL BUILDING BLOCKS OF LEXMP- AND MY EXOSKELETAL MP MODEL

This gives us the following two structures:

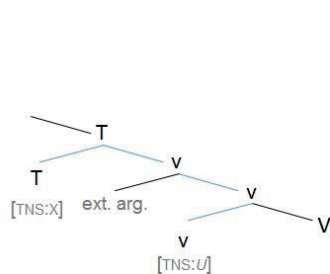


FIGURE 15. LEXMP-

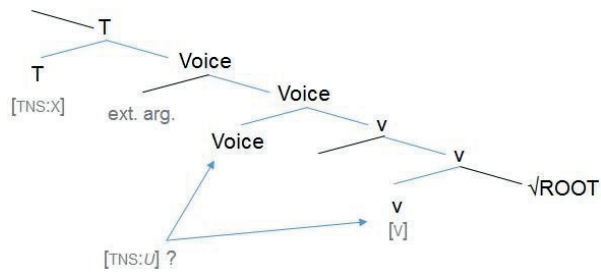


FIGURE 16. MY EXOSKELETAL MP MODEL

<sup>97</sup> Return to Section 4.2.3.1.3. for further discussion.

As I have illustrated in Figure 16, my model assumes both a Voice and a little *v* projection, and because T c-commands both of them, the unvalued tense feature can reside in either one. Note that some models posit only little *v*, not Voice. It is for this reason that, for example, Åfarli (2015b: 174) places the tense feature on little *v*, whereas we, in Paper 2, place it on Voice.<sup>98</sup> I will remain faithful to the analysis chosen in Paper 2, which also is most parallel to that of LexMP-, but both solutions appear to be compatible with the other machinery I make use of in my model.

The above illustrates how my model, using the same system of valued and unvalued features that are either strong or weak as in LexMP-, can handle monolingual tense assignment. As for LOLVs with recipient language inflections, the same holds. We saw above that LexMP- could explain those data just fine, and my model fares just as well. Even when an American Norwegian speaker selects the root  $\sqrt{\text{WATCH}}$ , which he or she may associate mostly with English, there is nothing in the morphosyntactic machinery which prevents said root from merging with an abstract morpheme of the Norwegian type. This is also what Åfarli (2015b) concludes. *Pace* his data material, however, recall that about 28% of the LOLVs in CANS have inflections from the donor language (English) as opposed to the recipient language (Norwegian). In Paper 3 as well as throughout this cover article, I have referred to these two language mixing strategies as INSERTION and ALTERNATION, respectively, and they can again be illustrated using the following two example sentences:

(42) INSERTION  
*Vi bare satt der og watch-a da* (rushford\_MN\_01gm)  
 we just sat there and watch-PAST then  
 ‘we just sat there and watched then’

(43) ALTERNATION  
*og hun # nettopp nå # em # died* (albert\_lea\_MN\_01gk)  
 and she # just now # em # died  
 ‘and she # just now # em # died’

It is now time to address the formal aspects of this pattern in more detail.

In Section 4.2.3.1.3., I suggested that insertion and alternation could be described technically as follows:

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<sup>98</sup> Bear in mind that placing the tense feature on little *v* would not be compatible with a language mixing account in which a categorized root is the smallest mixable item (which, as I discussed in Section 4.2.3.1.2., was what we assumed in Paper 1). It is also not compatible with exoskeletal accounts that lack categorizing projections, such as that of Borer (2003, 2005a,b, 2013). Note as well that the structures depicted in (29) and (30) in Paper 2 show the feature in Voice as [T:X], i.e., same as that in T, instead of [T:U]. This was meant as a simplification, however, allowing us to remain agnostic as to which of the two tense features (in Voice and T) is valued and which is not.

INSERTION: English-origin root + Norwegian abstract morpheme in T  
ALTERNATION: English-origin root + English abstract morpheme in T

Having now introduced my model in more detail, we can see that the abstract morpheme which carries the *unvalued* tense feature – in my model, Voice – also should be of the Norwegian type. A Voice projection of the English type would have the same unvalued tense feature, but just like little *v* in LexMP-, it would also have features for number and person to account for the subject-verb agreement; and since the Norwegian T would lack such corresponding features, that might cause problems for the derivation. This leads us to the following updated description:

INSERTION: English-origin root + Norwegian abstract morpheme in T+VOICE  
ALTERNATION: English-origin root + English abstract morpheme in T+VOICE

If roots are stored in the same manner regardless of what language the speaker most associates them with, as this thesis assumes, insertion should be the default option. This again has to do with communication and “language mode”: if the speaker means to speak Norwegian, i.e., is in a Norwegian language mode, her default option will be to select Norwegian-type abstract morphemes regardless of the roots she is employing (meaning the little *v* projection in my model also will belong to the recipient language in the default case). It is therefore the less common alternational pattern in CANS that needs explaining, and on p. 23 of Paper 3, I discuss it as follows:

Such sudden use of an English abstract morpheme in an otherwise Norwegian utterance might seem surprising and unmotivated, given the idea of being in a particular “language mode”; however, as we have seen, these verbs were mostly accompanied by discourse flagging. Indeed, it seems as if these speakers were searching for particular Norwegian verbs, but coming up short and as a last resort opting to utter the equivalent English verbs instead. If so, it would make sense that the speaker used an English abstract morpheme, even just for the single verb, since the language mode would be English.

The fact that a surprisingly high number of LOLVs with donor language inflections were found in CANS has been discussed several places in Section 4.1.3., most extensively in Section 4.1.3.2.2. There, I conclude that this may be due to a combination of the speakers having lexical retrieval problems in their heritage language and still experiencing a pressure to not switch entirely to their dominant language, as the interviewer is asking them to speak the heritage language. I have not, however, discussed DISCOURSE FLAGGING thus far in the cover article. The following passage by Jones (2005: 10) serves to illustrate what I mean by that term:

Case-studies in the code-switching literature often distinguish between ‘flagged’ and ‘smooth’ intrasentential switching (Poplack, 1988). ‘Flagging’ is defined by Poplack and Sankoff as marking switches at the discourse level ‘by pauses, hesitation phenomena, repetition, metalinguistic commentary and other means of drawing attention to the switch, with the result of interrupting the

smooth production of the sentence at the switch point' (1988: 1176) (...). By flagging the contact form in this way, the speaker calls attention to it, thereby presumably indicating that they are conscious of it.

I use the term in a slightly expanded manner, however, to include the possibility that the speakers are not necessarily consciously trying to call the listener's attention to the switch. Still, the interruption of the smooth production indicates that their idea of what to say next was unclear at that point, and in CANS, the reason often seemed to me to be that they were struggling to find the correct Norwegian word for something – i.e., experiencing lexical retrieval difficulties.<sup>99</sup> When they then “give up” and switch to English, even for just that word, it is not surprising that they switch language mode entirely and therefore select the English-type abstract morphemes to accompany the English-origin root.<sup>100</sup>

Having now summed up *why* I believe the speakers in CANS use insertion and alternation in the way they do and *how* we can explain the two mixing strategies formally, it is time to briefly mention the third potential strategy I discuss in Paper 3, namely congruent lexicalization. First, note that we can illustrate insertion and alternation in the following manner:

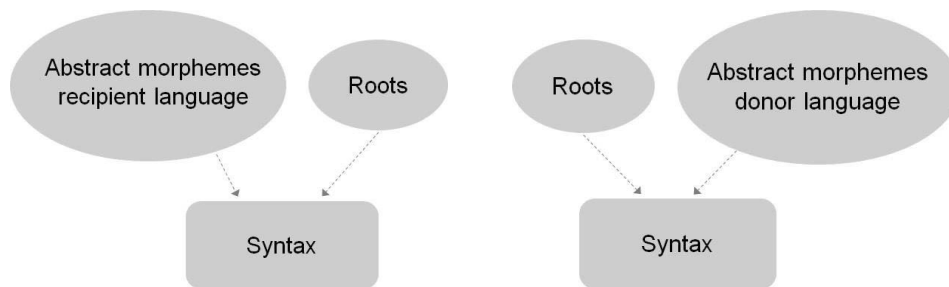


FIGURE 17. INSERTION

FIGURE 18. ALTERNATION

<sup>99</sup> See Paper 3, p. 18-21 for a discussion of why I reached this conclusion. Note, too, that this is reminiscent of the speech society pattern that Poplack (1988) reports from her Ottawa-Hull corpus, where borrowing (or in my terms, insertion) is the default language mixing strategy, whereas code-switching (i.e., alternation) is used for special purposes, like when a speaker is trying to find the *mot juste*.

<sup>100</sup> It should be noted that in an utterance like (43) *og hun # nettopp nå # em # died* ‘and she # just now # em # died’, where the LOLV appears at the very end of the utterance, it is possible that the speaker gave up on finishing the initial structure altogether and that *died* in fact is a separate utterance with a separate grammatical structure. In the cases where the speaker really does alternate to English and then return to Norwegian within the same structure, however, we see that the bottom-up manner in which we assume these structures to be built (beginning with the verb and moving up the tree) does not coincide with the processing facts, which seem to suggest a left-to-right order. If I am correct in assuming that these speakers were planning on speaking Norwegian for the entire utterance and only resorted to an English verb when they failed to recall the Norwegian one, it cannot be true that they began the entire derivation by merging the root √DIE and little *v*. This question is, however, far too big to tackle here, and I will only note a quote here by Bruening (ms.: fn.4) along similar lines: “I actually think (...) the derivation works from left to right, as in Richards (1999), Phillips (2003), Bruening (2010, 2014a). However, I will leave to future work exploring the advantages that a left-to-right derivation would have for morphology.”



Since we cannot observe the derivations directly in any way, however, we can only look at each instance of language mixing and surmise what underlying process might have led to that particular outcome. Following my exoskeletal MP model, a LOLV would be a certain instance of insertion if

- i. it had some form of inflectional affix associated with the recipient language and
- ii. the Vocabulary Item (VI) in question would not be able to spell out the relevant abstract morpheme from the donor language, as its feature bundle differed from that of the recipient-language abstract morpheme.

Similarly, a LOLV would be a certain instance of alternation if the situation were reversed; i.e., if it had a donor language affix whose VI would be barred by the Subset principle from spelling out the relevant recipient-language abstract morpheme.

So far, so good; but what if the abstract morphemes of both the recipient and donor language can be spelled out by the VI in question? As we saw in Section 4.2.3.2., this is the case for English present tense exponent */-Ø/* and Norwegian */-er/*, which are both perfectly good fits for the Norwegian T and Voice. This is the type of data that would be covered by the term CONGRUENT LEXICALIZATION (Muysken 2000); i.e., when the speaker is free to insert lexical elements from either language. Whether congruent lexicalization should be seen as a separate phenomenon distinct from insertion and alternation will not be discussed further here, and in either case, I will conclude the matter the way I do in both Paper 3 and Section 4.2.3.2. That is to say, I think the fact that the speakers in CANS mostly are attempting to speak Norwegian – i.e., that they are in a Norwegian language mode – will cause them to both

- i. pick the Norwegian abstract morpheme when generating the syntactic structure and, when both an English and a Norwegian exponent are equally well-matched for insertion,
- ii. be more likely, in an unmarked setting, to choose the Norwegian exponent.

That concludes both this subsection and Section 4, containing the theoretical background that I assume in this thesis. In what follows, I will first present the methods and materials in more detail (Section 5) before finally, in Section 6, summing up my main findings.

## 5. Methods and materials

### 5.1. Research technique

There are two main types of research techniques those who want to study the grammatical properties of language mixing might employ. First, they might study naturalistic mixing data; or second, assess the acceptability of various language mixing patterns. The acceptability assessments<sup>101</sup> can either be collected directly, as in intuition studies, or indirectly, through various experiments that tap acceptability without asking the informants openly for such assessments.<sup>102</sup> In this section, I will address the pros and cons of each type and explain why I chose to make use of naturalistic mixing data.

#### 5.1.1. Naturalistic data

Since language mixing in many speech communities is stigmatized (see, e.g., Poplack 1980; Bullock & Toribio 2009) or at least viewed as non-standard, especially in written texts, the best naturalistic data we can study are recordings of naturalistic speech (Gullberg, Indefrey & Muysken 2009: 23).<sup>103</sup> Recording devices have gotten increasingly better and more portable since linguists began using them, which has led to a steady increase in the availability of speech corpora in the past decades. Today, technology also allows us to tag these corpora, making them easily searchable. This makes them excellent resources for when we want to see how common certain mixing phenomena are and how they pattern. In addition, recording speech means we also have the context in which the mixed item was uttered, allowing us to pose even more research questions.

As pointed out by Gullberg et al. (Ibid.: 24), however, even though a corpus of naturalistic data can be great for seeing what speakers in fact do, there are several research questions that cannot be answered using this method. This is especially true for negative data, i.e., investigating what speakers do *not* do. As you might recall from Section 4.1.2.3.2., many language mixing researchers have been particularly concerned with discovering constraints on language mixing (see also MacSwan 2009: 311), in which case the goal is to determine which mixing types that are grammatical and which are not. It is important to remember that even though a corpus gives us

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<sup>101</sup> I am using ASSESSMENT as opposed to JUDGMENT since in the literature, the latter is used specifically for direct acceptability assessments.

<sup>102</sup> There are several other ways to group the available research techniques; see, e.g., Figure 1 in González-Vilbazo et al. (2013: 122). However, this division – which is identical to Schütze’s (2011) division between corpus data, judgment data and (other) experimental data – best suits my purposes.

<sup>103</sup> González-Vilbazo et al. (2013: 127) refers to studies by Grosjean (1982), Montes-Alcalá (2001) and Mahootian (2005), all of which states that language mixing (or in their word, CODESWITCHING) is a predominantly spoken phenomenon.

access to naturalistic data, it does not necessarily follow that the corpus data are representative of what the speakers in question in fact can do. In other words, the absence of any particular language mixing phenomenon cannot be taken as proof that the phenomenon in question is ungrammatical.

### 5.1.2. Acceptability assessments

In order to gain insight into what speakers *cannot* do in terms of mixing languages, it is helpful to have them assess the acceptability of different language mixing constructions. As mentioned, this can be done either directly or indirectly.

#### 5.1.2.1. Direct acceptability assessments

Obtaining direct acceptability assessments involves explicitly asking metalinguistic questions that probe the speaker's intuitions regarding a particular linguistic construction. If the researchers themselves are native speakers of the language, one possible option is to use their own intuitions. Using one's own introspection as the only source of data has been criticized repeatedly in the literature, however. As an example, Schütze (2011: 212) writes that

[o]ne practice that is clearly undesirable, however, is for researchers to present *their own* judgments as primary evidence. There is no reason to believe that people with a stake in the outcome of such judgments can remain unaffected by their theoretical stance.

Therefore, many researchers instead rely on the intuitions of other speakers, collected via what are known as GRAMMATICALITY or ACCEPTABILITY JUDGMENT TASKS. The notions of grammaticality and acceptability are often conflated, but should be distinguished: something is grammatical if it follows the rules of the grammar in question, whereas I will follow Chomsky (1965: 10) in using the term ACCEPTABLE to “refer to utterances that are perfectly natural and immediately comprehensible without paper-and-pen analysis, and in no way bizarre and outlandish”. Acceptability is a matter of degree, ranging from not at all to perfectly acceptable, whereas it is up for debate whether grammaticality is scalar as well. Either way, if humans were perfect at assessing grammaticality, the two measurements would overlap, with everything grammatical also being acceptable. As it is, however, “grammaticalness is only one of many factors that interact to determine acceptability” (Ibid.: 11). As an example, the following sentence from Chomsky & Miller (1963: 286) is perfectly grammatical, but even so, sentences like this often receive low acceptability judgments:

(44) The rat (the cat (the dog chased) killed) ate the malt

This is typically believed to be due to the cost of processing. Our memory limitations are simply such that the complexity of processing multiple center-embeddings, like what we have in (44), often becomes too much, making the sentence in question appear deviant. Factors more relevant than processing challenges when dealing with language mixing data are, e.g., speakers' attitudes to mixing as well as their metalinguistic awareness (or lack thereof) of the mixing practices in their speech community.<sup>104</sup>

As for the first of these factors, Badiola, Delgado, Sande & Stefanich (2018) tested whether someone's attitudes towards code-switching (CS) influenced their acceptance of CS data in an acceptability judgment task.<sup>105</sup> They found that it did: positive attitudes resulted in higher acceptability ratings for the CS patterns that are thought to be grammatical in the literature, whereas negative attitudes resulted in lower ratings. The variation was not subtle either. They used a 1-7 Likert scale where 1 was "completely unacceptable" and 7 "completely acceptable", and while the participants with very positive attitudes towards CS rated these sentences at between 5.3 and 5.7, i.e., at least somewhat acceptable, the ones with negative attitudes rated them at 3.1-3.3, i.e., at least somewhat unacceptable. As the researchers themselves conclude, "[t]hese results provide evidence that attitude (...) might have a confounding effect on the data, thus rendering them unreliable" (Ibid.: 17).

In addition, research techniques that directly probe acceptability assume that speakers are consciously aware of all of their own linguistic practices. However, the literature is full of examples of speakers who say they never use a certain construction, only to use said construction a little later in the conversation. Sobin (1984) decided to test how sound speakers' metalinguistic awareness is by studying how they judge adjective/noun orders in Spanish-English language mixing. This language pair was chosen because the orders often differ, English having prenominal adjectives and Spanish mostly having postnominal ones; it is therefore interesting to see which orders the speakers find acceptable or not when the adjective is English and the noun Spanish or vice versa. He found that not only was there much disagreement between the speakers, the overall tendencies only partially corresponded with findings in naturalistic data. This included cases where constructions found in the naturalistic data received low ratings in the acceptability judgment task. In other words, we should be careful to take speaker intuitions with a grain of salt, especially when studying less prescriptive linguistic practices like language mixing.

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<sup>104</sup> See González-Vilbazo et al. (2013) for more examples of potentially confounding factors.

<sup>105</sup> I use the term CS here as that is what Badiola et al. (2018) do themselves. They follow Poplack (1980) in stating that "CS can be defined as the use of two languages within the same discourse, sentence or constituent" (Ibid.: 3) and state that we have a code-switched structure when bilinguals "take lexical items from Language A and Language B and merge them in one syntactic structure" (Ibid.). However, they do not discuss, as far as I can see, whether or not to separate code-switching from borrowing and, if yes, how to do so.

Note, however, that González-Vilbazo et al. (2013: 129 ff.) present three strategies – instructions in CS, training and language priming – aimed at enhancing the validity and reliability of language mixing-assessing acceptability judgment tasks. They conclude that

[a]lthough none of the strategies presented here is fail-safe, our experience with these strategies indicates that their use results in less variability in judgments and in a more generous use of the entire Likert scale during the (grammaticality judgment tasks) (Ibid.: 131).

If this is the case, acceptability judgment tasks may still prove valuable for language mixing research, provided that the researcher takes steps to control for as many potentially confounding factors as possible. Even when that is done, however, I would recommend a multi-task approach (Gullberg et al. 2009: 36-37) where the results of the acceptability judgment task can be compared to the same respondents' results on other tasks – preferably the kind that tap acceptability indirectly. This way, the validity of the acceptability judgment task can be examined (Ibid.: 38). Alternatively, they could be compared to naturalistic data, as in Sobin (1984).

Finally, let us return to the quote by Schütze (2011: 212), in which the method of using one's own introspection as the only source of data was labelled “clearly undesirable”. I will argue that this is less clear-cut in general, but that it nonetheless holds for language mixing data. González-Vilbazo et al. (2013: 122-123) agrees that this is an inferior method compared to acceptability judgment tasks and other experiments, as the latter have the advantage of being quantitative. However, the idea of strength in numbers might well be giving rise to a false sense of safety in this instance. In 2012, Sprouse & Almeida took the 469 acceptability judgments provided by Adger in his textbook *Core Syntax* (2003) and compared them to acceptability judgments on the same sentences provided by naïve participants.<sup>106</sup> The comparison showed that the judgments matched in 98% of the cases. In 2013, Sprouse, Schütze & Almeida did the same for 296 randomly sampled researcher-assessed sentences in papers published in *Linguistic Inquiry* from 2001-2010, finding a 95% correspondence in judgments.

In other words, if the acceptability of a particular construction is difficult to judge for one person, there is no reason to assume that comparing the results from that person with those from several others will get us a clearer judgment. Fuzzy data can (and probably will) remain fuzzy even when the judgments of several people are combined. This means that the cautiousness as well as the potential solutions regarding acceptability judgment tasks probably can be extended to researcher introspection studies as well.<sup>107</sup> However, this is also exactly why I would advocate against using this method when collecting language mixing data. As we have seen, increasing the

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<sup>106</sup> Incidentally, this is the same textbook in which Adger presents the model I call LEXMP.

<sup>107</sup> Although see Gibson, Piantadosi & Fedorenko (2013) for critique of the studies done by Sprouse and colleagues.

reliability and validity of acceptability judgment tasks is done by attempting to control potentially confounding factors, and it is difficult to see how a researcher might control for factors that might be influencing him or herself.

#### 5.1.2.2. Indirect acceptability assessments

In order to collect negative data – i.e., information about ill-formed expressions – without running into the problems encountered by those researchers using intuition data, many researchers have recently begun to make use of more controlled experiments that probe speakers' acceptability more indirectly. As mentioned above, part of the problem with relying on introspection is that you are asking the speakers for their conscious opinion, and we know that much language use is anything but conscious. Moreover, when asked directly, speakers may be influenced by a number of factors. Researchers therefore hope to capture more subconscious reactions by using, e.g., eye tracking, neurological studies including EEG and fMRI, reading/reaction times etc. (González-Vilbazo et al. 2013: 122)). Gullberg et al. (2009: 26 ff.) provide an overview of some such methods that typically have been employed in language mixing studies in the past years (see also Podesva & Sharma (2013) and Schütze (2016 [1996]) for more extensive accounts).

One method that has been used involves content-judgment tasks, in which the participants are asked comprehension questions or are given sentence verification tasks where they must give true-false judgments. They are therefore unaware of the real object of study, namely their response times and error rates when certain language mixing patterns occur in the sentences they are presented with. The assumption underlying this methodology is that longer response times and higher error rates result from processing difficulties, which could be caused by a language mixing pattern that the speaker subconsciously finds unnatural. Yet another method is silent reading, where participants are simply asked to silently read a text containing various types of language mixing. Again, the researchers expect that longer reading times could be indicative of a processing difficulty; they can also use an eye-tracker to observe where the eye is fixating, assuming that longer fixation on a specific portion of the text indicates difficulty processing it.

There are certainly potentially confounding factors in these types of research techniques as well. For one thing, other factors not related to the language mixing could be causing the participants to pause, fixate on something or answer a comprehension question wrong. A well-designed study with many participants would increase the chances of getting reliable results, however; these methods must therefore be appropriately powered. In any case, I chose to use data from a speech corpus in my research rather than the methods described in this subsection, and I will next describe why such data are well suited for my particular purposes.

### 5.1.3. Why I use naturalistic data

The experimental methods described in the previous subsection are well suited to studies meant to support statements about what speakers can and cannot do. However, my focus is somewhat different. My aims include, for instance, investigating how frequent particular language mixing patterns are in relation to one another and in what linguistic contexts they tend to occur. Speech corpus data are excellent for these purposes. There was also a matter of availability, as previously mentioned: since the Speech Laboratory at the University of Oslo was in the process of creating an online speech corpus of American Norwegian speech during my studies and I was able to gain access to it, I had a great source of naturalistic mixing data available to me. This corpus was also of particular interest to me because it contains the speech of heritage language speakers. As I have stressed both in the introduction and in Section 4.1.3.2.2., I thought it would be of scientific interest to study the language mixing of non-simultaneous bilinguals, which thus far have barely been studied, as it allows us to compare the results obtained from that population group to results from the more well-studied simultaneous bilinguals.

In addition, as Gullberg et al. (2009: 37) point out, “[b]aseline data are necessary to establish what constitutes natural CS in a particular population and language pair”. Since large bilingual corpora are excellent for this purpose, corpus-based and experimental studies can inform each other (see also Schütze 2011 for a similar conclusion). The following quote sums up the situation well:

Despite the recent trend toward more experimental techniques, it should be clear from this chapter that, even though naturalistic data have their limits, experiments can never fully replicate or replace observations of naturalistic CS. There are benefits to be gained from integrated studies that seek to validate experimental methods against naturally occurring CS (Gullberg et al. 2009: 39).

Hopefully, in addition to helping answer the research questions I have touched upon here, my work can also provide baseline data for future experimental studies. With that said, we can move on to the next section, which presents the speech corpus from which my data come.

## 5.2. The Corpus of American Norwegian Speech (CANS)

### 5.2.1. The informants

As mentioned in Section 3, the data presented here come from the corpus of American Norwegian Speech (CANS).<sup>108</sup> At the time I did my final counting, i.e., June-September 2016, CANS consisted of 184 307 words and comprised recordings of 50 speakers.<sup>109</sup> The speakers came from eight different American states and one Canadian region, as shown in the pie chart in Figure 19.

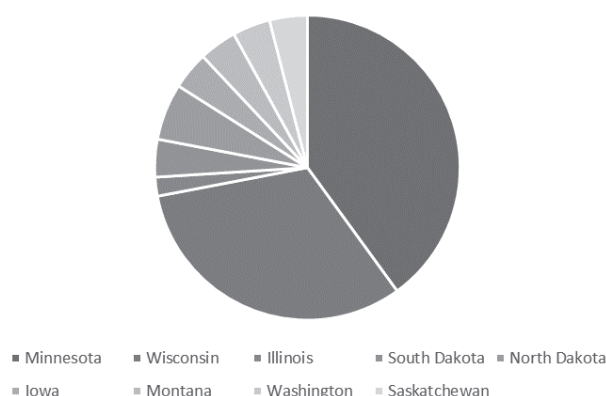


FIGURE 19. SPEAKERS PER STATE.

With the exception of one 5<sup>th</sup> generation immigrant, these speakers are all 2<sup>nd</sup> to 4<sup>th</sup> generation immigrants, most born in the 1920s and 30s and between 70 and 90 years old at the time of recording. There are 35 men and 15 women. Their ancestors allegedly originated from various places in Norway, but even though several speakers display certain clear dialectal traits, we know too little about their input to safely place them dialect-wise in Norway.<sup>110</sup> The corpus includes speakers whose ancestors emigrated from Norway some time during the great wave of Norwegian immigration to the US, as described in Section 3.2.1. This lasted from 1825, when the first ones

<sup>108</sup> As mentioned in the introduction, after I did my data collection, the corpus changed its name to the CORPUS OF AMERICAN NORDIC SPEECH and currently includes recordings from both American Norwegian and American Swedish speakers.

<sup>109</sup> Since this corpus is under construction, more data is added every so often. This makes it difficult to get a stable count. I have also on several occasions experienced going back to check something only to find the example in question has gone missing from the corpus due to maintenance. All of this is problematic for the accountability of the research, but unfortunately, that is the drawback of using a corpus that is under construction. In either case, since the corpus is merely representative rather than being an exhaustive overview of all the American Norwegian that the included speakers know, the fact that I may have missed a few lone English-origin verbs is not terribly problematic – in either case, my data still show how the verbs typically pattern. I will return to issues concerning the data selection in Section 5.3.

<sup>110</sup> As you may recall from Section 3.3., recent work (e.g., Hjelde 2012, 2015; Johannessen & Laake 2012, 2015, 2017) has been investigating issues concerning the dialect situation among the speakers.



arrived, to roughly a century later. Some speakers are unaware of the exact year or years during which their ancestors came, but for those who do know, the reported immigration years predominantly range from 1840 to 1916.<sup>111</sup>

Even though these speakers were born and raised in the US and Canada, they learned American Norwegian at home as their L1. Since the use of Norwegian in the overall community had dwindled to more or less nothing by the time they grew up, however, all of them attended English-speaking schools and were dominant in English as of school age.<sup>112</sup> We lack information from four speakers, but most of the remainder report having “some” or “often” contact with Norway (17 and 21, respectively), with only eight speakers reporting having little contact. Most (38) have also visited Norway at least once. Despite the lack of Norwegian schooling, quite a few also report reading at least a little Norwegian (only ten report not reading Norwegian at all, and we lack information for seven).

As for the future of American Norwegian, the vast majority have not taught it to their children, meaning these varieties are dying (Johannessen 2015a). In fact, the process has already begun: most of the speakers in CANS had practiced their Norwegian only sporadically, sometimes not for decades, at the time the recordings began. Although their proficiency levels varied, Johannessen & Salmons (2012b: 141) report that after some initial fumbling, they were all still able to conduct conversations in Norwegian.<sup>113</sup>

### 5.2.2. Transcriptions and tagging

CANS is a searchable online database with both sound and video files made available. Figure 20 shows how the CANS main page appeared at the time when I did my data collection (more on that in Section 5.3.).

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<sup>111</sup> With the youngest speaker in the corpus (born in 1962) as the late outlier, with one ancestor coming in 1925 and another in 1954.

<sup>112</sup> The language of instruction in school is unknown for two of the speakers, but it is likely that they received schooling in English as well.

<sup>113</sup> Whereas some are very fluent and have a distinct Norwegian phonology, others struggle more.

CANS - Corpus of American Norwegian Speech Glossa ( [my results](#) | [my annotations](#) | [help](#) )

+
-



- [Transcription guidelines, translation lists, etc](#)
- [Transcriptions](#)

**Regular expressions:**

**Hits per page:**

**Max results:**

Randomize

Skip tot. freq.

Algn. concordances

Orthographic

Phonetic

Both

|                                 |                           |                                       |                           |                                |
|---------------------------------|---------------------------|---------------------------------------|---------------------------|--------------------------------|
| <b>informant</b> <sup>+</sup>   | <b>L1/L2</b> <sup>+</sup> | <b>in Norway: county</b> <sup>+</sup> | <b>place</b> <sup>+</sup> | <b>generation</b> <sup>+</sup> |
| <b>region</b> <sup>+</sup>      | <b>area</b> <sup>+</sup>  | <b>place</b> <sup>+</sup>             |                           |                                |
| <b>decade born</b> <sup>+</sup> | <b>sex</b> <sup>+</sup>   | <b>rec. year</b> <sup>+</sup>         | <b>genre</b> <sup>+</sup> |                                |

[Choose subcorpus](#)

FIGURE 20. THE CANS MAIN PAGE.

It provides both a phonetic and an orthographic transcription, the latter one standardized to BOKMÅL, the more common of the two written Norwegian standards (see Venås 1993; Vikør 1995). For more technical information on how the transcriptions were made, see Johannessen (2015a). The tagging was subsequently done with software shown to be 96,9 % accurate for a speech corpus of the Oslo dialect of Norwegian (Søfteland & Nøklestad 2008). However, as CANS differs from the Oslo corpus in having, e.g., many English-origin words, Johannessen (2015a) points out that the accuracy probably is lower. As we will see in Section 5.3., that is what I have found to be the case, with certain minor implications for my searches.

Even though the tagging software may not have been trained for this bilingual corpus, two other tags were added manually in recognition of, amongst other things, the large amount of English-origin words. These tags are X and ENGLISH SEGMENT (ENG) (Johannessen 2015a; Kåsen, Olsen, Rødvand & Tengedal 2016). As mentioned in the transcription guide (Ibid.: 7-8; 11), +eng is used when there is a larger English text segment whereas +x is used when a word not listed in the Bokmål dictionary shows up in an otherwise Norwegian utterance. First, this means that the boundary between the two is fuzzy: even though most uses of the +x tag are for single words, it can also be used for segments of up to three words, as long as those are embedded in an otherwise Norwegian utterance. In addition, English-origin words are not the only ones not listed in the Bokmål dictionary. Others include, e.g., Norwegian dialect words and Norwegian words with either English morphology or a meaning content different from the one given in the Bokmål dictionary; see the transcription guide (Kåsen et al. 2016: 7-10) for a complete overview. Figure 21 shows the first few results when searching for everything labelled +x, and as we can see, the very

first result is the Norwegian word *gikk*, presumably with an intended meaning that differs from any given in the Bokmål dictionary.

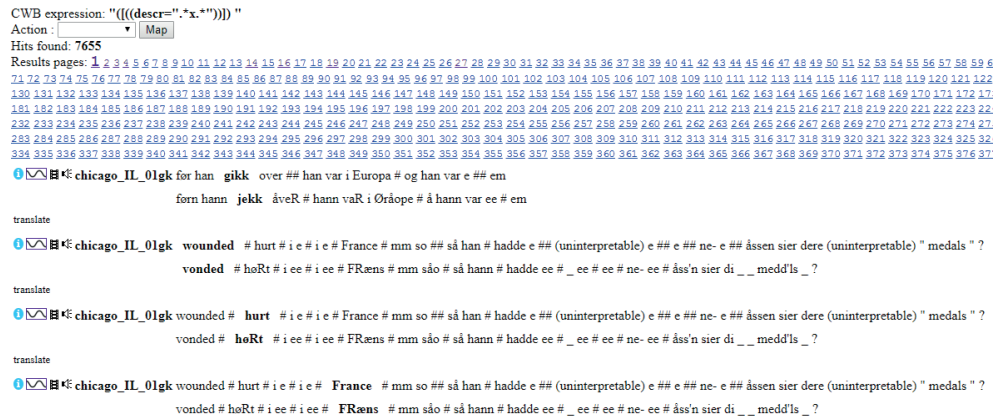


FIGURE 21. SEARCH RESULTS FOR +X.

### 5.2.3. Potential caveats

When collecting naturalistic data, one will always have to make some choices; some of the choices made when collecting data for CANS deserve mentioning.

The first caveat is that only a limited amount of speech settings have been recorded. As pointed out in Gullberg et al. (2009: 23), in order to get the most valid and reliable naturalistic data possible, one should record a variety of settings. The CANS researchers have recorded sociolinguistic interviews and conversations between the American Norwegian speakers, but all of them took place with an outsider interviewer present. Ideally, we would have wanted more settings to counter what Labov labelled THE OBSERVER'S PARADOX: "to obtain the data most important for linguistic theory, we have to observe how people speak when they are not being observed" (Labov 1972: 113).

However, bear in mind that the special circumstances of these speakers made that difficult. First, they are all elderly people, meaning the researchers could not record classroom or work interactions. Second, they are dominant in English and live in English-speaking communities, meaning one could not record the public domain or, for most of them, family gatherings etc. And third, since some of them had not practiced their Norwegian for decades, many needed the Norwegian-speaking interviewers to "kick-start" their Norwegian competence and get them into a Norwegian mode, so to speak. As pointed out by, e.g., Blom & Gumperz (1972), recording groups of speakers simultaneously might be a good solution in situations such as these, since they

hopefully will respond to each other and not just the interviewer, thus increasing the chances of actual naturalistic speech. Both the group conversations and some of the sociolinguistic interviews recorded for CANS included more than one speaker.

Note, too, that for the specific data I am interested in, it might not be a big problem if the speakers are adapting their speech to the interviewers to some extent. If they are, they are most likely trying to speak Norwegian (like the interviewer), not mix – so even though this might be a caveat for a researcher studying aspects of, say, their Norwegian dialects, it should not affect the study of their language mixing too much. If anything, they are probably making an effort to mix languages less than they otherwise would; since I am not studying their mixing frequency but rather what mixing patterns they make use of and the relative frequency of those patterns, this should not really have much bearing on my results.

Finally, however, there are some concerns regarding the data collection that specifically relate to the language mixing. Since the corpus data was not collected by researchers who study language mixing first and foremost, they have made certain choices that someone with plans for studying mixing might not have. The main issue is the fact that they themselves, in their questions, make use of loanwords they have experienced to be common in the speech community. It would have been less problematic if they only used words that the speaker in question had introduced first, but that is not the case; as we see, e.g., in the following example:<sup>114</sup>

- (45) wanamingo\_MN\_04gk    er du på university    du ?  
                                   are you at university    you ?  
                                   ‘are you at a university?’
- ah                               ja er på sånn university college sørom Oslo  
                                   yes am at such university college soth.of Oslo  
                                   ‘yes, I am at a university college south of Oslo.’
- wanamingo\_MN\_04gk    hva    du ...  
                                   what    you...  
                                   ‘what do you...’
- ah                               \* jeg    **teacher**    norsk    der  
                                   I        teach.PRES    Norwegian    there  
                                   ‘I teach Norwegian there’
- wanamingo\_MN\_04gk    du gjør du det ?  
                                   you do you that?  
                                   ‘do you do that?’

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<sup>114</sup> Recall that “wanamingo\_MN\_04gk” refers to a particular speaker in CANS, whereas “ah” refers to one of the interviewers.

I have searched through the subcorpus for this particular speaker for the lemma *teach*, but she never used it, meaning the interviewer was the one to introduce it.<sup>115</sup> We see the same in the following example:

|                |  |
|----------------|--|
| (46) ah        | har du vært borti <b>skunk</b> ?<br>have you been away.in skunk?<br>'have you come into contact with skunk?'   |
| westby_WI_06gm | skunk ?<br>skunk?<br>'skunk?'  |
| westby_WI_01gm | * skunk ?<br>* skunk?<br>*'skunk?'   |
| westby_WI_01gm | ja<br>yes<br>'yes'   |
| westby_WI_06gm | ikke på siste men jeg skal ikke (uninterpretable) på skunk<br>not on last but I shall not (uninterpretable) on skunk<br>'not lately, but I shall not (uninterpretable) on skunk'     |
| westby_WI_06gm | (uninterpretable) jeg skal fly vekk ser jeg noe slikt<br>(uninterpretable) I shall fly away see I something such<br>'(uninterpretable) I shall run off if I see something like that' |
| westby_WI_01gm | det lukter sterkt skunk gjennom bedroom-glaset mitt<br>it smell.PRESstrongly skunk through bedroom.glass mine<br>'it reeks of skunk through my bedroom window'                       |

I have searched through the subcorpora for these two speakers as well for the lemma *skunk*, and they only use it in their replies to the interviewer's question.

The problem here is that we cannot know, in these instances, whether the speakers would have used the English-origin word in question if the interviewer had not introduced it first. One of the interviewers has commented on this dilemma, stating that when they first began their data collection, it quickly became clear that they needed to adopt certain English loanwords as well as specific Norwegian dialect words in order to be understood by the American Norwegian speakers (Kildahl 2014; see also Johannessen & Salmons 2012b). I see the point, but ideally, it would have been better for those of us studying language mixing if they had attempted to use Norwegian words first, and only resorted to English ones if that failed.

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<sup>115</sup> Note, however, that there are four other speakers that do use this verb in otherwise Norwegian utterances, so the interviewer is correct in assuming that this is in use as a loanword.



the list manually and marked every word that potentially could be an English-origin verb.<sup>117</sup> With that done, I began searching for each of those potential verb forms individually. In addition to counting the ones that turned out to be actual verb forms, I also stored them with their immediate contexts and classified them as either morphologically integrated into Norwegian (by means of an overt Norwegian suffix) or not. For quality control, I listened carefully to every example and verified that the suffixes were produced as transcribed. I also noted whether the verb appeared in an otherwise Norwegian utterance or not.

This task took time, and was spread out across three different periods: June 8 - 10, June 28 – July 8, and August 1 – 16 2016. It is worth noting that I often found many more tokens when searching for a potential English-origin verb form than what the x category had indicated. This was partly because some were part of larger English utterances, meaning they were tagged +eng instead. The other reason, however, is that the transcription guide also states that “[m]eta language and quotes, marked with “”, should not be tagged with either +eng or +x” (Kåsen et al. 2016: 8, my translation). By searching every verb form individually, however, I made sure I got every occurrence, regardless of how they had been tagged.

Next, August 16-22, I searched the eng category. I found 460 segments in total and went through those manually, selecting every verb form that I had not already encountered in the x category (as those would already have been individually counted). Finally, I searched for those individually as well and added them to the list I had built on the basis of the x category. As I went through the data, I also marked whether or not the verbs occurred with discourse flagging such as pauses, hesitations and metalinguistic commentary. This was done since, as I have mentioned, I suspected that discourse flagging might be a factor that could contribute to explaining why about 28% of the LOLVs appeared to have been alternated as opposed to inserted into American Norwegian.

All in all, I found 232 English-origin verb forms (or 1628 tokens). Eighteen of those (66 tokens) were later removed because more thorough inspection revealed that they were dubious for various reasons. First, there were some that turned out to exist as attested dialect forms of Norwegian, meaning it was impossible to tell whether it was the Norwegian dialect version or the English-origin version that was used. An example is the verb *travle* ‘walk’, which either could be the English verb *travel* with the Norwegian infinitival suffix *-e* and altered semantics, or the Norwegian dialect form *travle* ‘walk’, which, although not common, according to several speakers is attested in various parts of Norway (Johannessen & Laake 2017: 15).

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<sup>117</sup> I say “potentially” because I only had the word list without any context, meaning some forms that looked like verbs could simply have been homographs.

Second, there were instances where I could not discern exactly what the speaker was saying upon listening to the recording. For example, sometimes it was hard to discern whether the inflection was Norwegian or English.<sup>118</sup> This is shown in (47) and (48) (I give the orthographic transcription first and the phonetic one below in grey).

(47) *jeg veit ikke hvorfor vi gjorde ikke vi **could*** glasgow\_MT\_01gm  
*je veit ikke åfeRR vi jord ikke vi **kudde***  
 I know.PRES not why we did.PRES not we could.PAST  
 ‘I don’t know why we didn’t we could’

(48) *de kunne kjøre **leave** han inni der* sunburg\_MN\_03gm  
*domm kunne tjøre **liv** enn inni dær*  
 they could.PAST drive.INF leave.INF him within there  
 ‘they could drive leave him in there’

In the transcription of (47), *could* has been given the Norwegian past tense suffix *-de*; yet when I listen to this segment, I cannot tell whether he says *could-de* or *could’ve*, i.e., without the Norwegian past tense suffix and contracted with *have*. In (48), the issue is the other way around; the transcription says that *leave* is lacking a Norwegian infinitival suffix *-e*, but I cannot say whether he says *leave han* or *leav[e]-e ’n*, i.e., with the Norwegian infinitival suffix and contracted with *han* ‘him’.

In total, I was left with 214 distinct verb forms or 1562 tokens – and when the different inflections were collapsed, there were 94 lemmas.

<sup>118</sup> As pointed out by Tracy (2000: 16), “[w]henver languages are very similar this will be a constant problem”.





## 6. Main findings

In the following section, I will sum up the main findings and contributions of this thesis. I have discussed the findings and their implications throughout this cover article, so there should be no need to repeat everything in detail again; but as the discussions have been spread out over more than 100 pages, the job of this section is to distill the main findings down to their core and sum them up in one place. In the introduction, I set forth the following three main research questions that I intended for this thesis to investigate:

- RQ1: How do the English-origin verbs in CANS pattern empirically?
- RQ2: What kind of formal model do these mixing patterns support?
- RQ3: How can these mixing patterns inform the code-switching/borrowing debate?

I therefore organize this section with one subsection for each research question (6.1.-6.3.), after which I will end with a summary of my contribution and the road ahead (6.4.).

### 6.1. How do the English-origin verbs in CANS pattern empirically?

The empirical focus of this thesis has been on the English-origin verbs in CANS that occur alone in otherwise Norwegian utterances. The American Norwegian speakers recorded in CANS employ a language mixing strategy by which the English-origin items either receive Norwegian inflections the same way “native” Norwegian-origin items would, or are inflected according to the English inflectional system. In accordance with the existing literature on language pairs that adopt this mixing strategy, I found that most of these lone English-origin verbs follow the Norwegian inflectional pattern. *Pace* those previous studies, however, the English-origin verbs that receive English inflections in CANS are not exceedingly rare. Instead, they amount to about 28% of the total amount.

I found that this difference in frequency reflects the fact that whereas the corpora discussed in the existing literature mainly contain recordings of simultaneous and fairly balanced bilinguals, CANS comprises recordings of heritage speakers of Norwegian who are highly dominant in English. For both groups, the unmarked mixing pattern is to inflect the lone other-language verbs (LOLVs) with recipient-language inflections. However, bear in mind that the heritage speakers recorded in CANS are asked by the interviewers to speak Norwegian, and as such, their pressure to stay in Norwegian mode as much as possible is probably significantly higher than usual. Since these heritage speakers are also likely to experience a high proportion of lexical retrieval problems when speaking their heritage variety, they are likely to sometimes fail to recollect the correct

Norwegian word. Combined, these factors mean that the speakers might sometimes attempt to say something in Norwegian, but coming up short, opting to switch to English instead as a repair strategy. This contention is supported by the discovery that whereas the English-origin verbs with English inflections in CANS are often flagged (i.e., accompanied by hesitation, pauses, metalinguistic commentaries about the language mixing etc.), that is rarely the case for those with Norwegian inflections.

Interestingly, this also shows that we can learn important things from data that are not “perfectly natural”. For many research projects, the observer’s paradox constitutes only a problem, as discussed in Section 5. For this particular project, however, the fact that the informants were in a setting where they knew they were being observed and were asked to act in a particular way (i.e., speak Norwegian) in fact contributed greatly to the findings. Alternated LOLVs may or may not be a typical trait of their unobserved American Norwegian speech, and we would need to somehow circumvent the observer’s paradox to answer that question. What this somewhat artificial setting allowed us to observe, however, is that alternating LOLVs is an *available* option for speakers and that a model of grammar therefore should allow for it.

## **6.2. What kind of formal model do these mixing patterns support?**

I found that the mixing patterns under investigation support a late-insertion, fully exoskeletal MP model of a DM variety. Both weak and strong lexicalist MP models are able to account for the data as well, but not, I argue, without unfortunate side effects that one avoids by choosing the model I adopt. In the following, I will elaborate a bit on these findings.

In order to explain the attested LOLVs in CANS, a formal model needs to allow a LOLV to appear with both donor-language and recipient-language inflection. In addition, I advocate that an ideal theory of language mixing should make do without any mixing-specific constraints or mechanisms (i.e., it should be what Mahootian 1993 calls a NULL THEORY). Versions of the Minimalist Program (MP) (Chomsky 1995) have proven promising in both respects, and I have therefore focused my discussion on various MP model types.

Since the launching of MP, many generative linguists working on language mixing have adopted a strong lexicalist MP model wherein all syntactic, semantic and phonological features are inherent properties of lexical items (e.g., MacSwan 1999 and later instantiations). I argue that such a model can only explain the attested pattern by assuming language-specific mental lexicons. When a LOLV has donor-language inflection, it has been taken directly from the donor-language lexicon into the syntax, whereas when it has recipient-language inflection, it has first been copied to the

recipient-language lexicon and given an appropriate recipient-language feature bundle before entering the syntax.

Note that this analysis means that all LOLVs with recipient-language inflections end up being listed in both mental lexicons. Regardless of how I inflect, e.g., a lone English-origin verb when I speak Norwegian, my intuition might still be that the verb “is English”, and that is hard to reconcile with it being drawn from a Norwegian mental lexicon. This problem is avoided if we instead list all inflection-related features as separate items instead of as inherent properties of substantial items like verbs and nouns, and that is precisely what is done in weak lexicalist MP models (e.g., Adger 2003). Those purely functional items may then be stored in language-specific lexicons, whereas we have the option of storing all substantial items – like verbs, nouns and adjectives – in a single lexicon/list. As such, an English-Norwegian bilingual may draw a verb he or she feels “is English” into the syntax and be at liberty to combine it with the inflectional features of either English or Norwegian.

In such weak lexicalist models, however, features not pertaining to inflection – like word class and features that specify the argument structure – are still inherent to the substantial lexical items. I argue that this is a drawback, since such a model fails to capture the pervasive argument structure flexibility and word class flexibility without listing much information several times. I have therefore adopted a fully exoskeletal MP model in which *all* features are severed from what is left of the notion of a word, known in such theories as a ROOT. The specific exoskeletal model I adopt is a version of DISTRIBUTED MORPHOLOGY (DM).

Bear in mind that most exoskeletal MP accounts of language mixing thus far have assumed language-specific root lists. As mentioned, I propose that all roots a bilingual speaker knows are stored in one single list. Since fully exoskeletal variants of DM, like the model I adopt, allow such an organization, one of the goals of this thesis has been to adopt this organization and investigate whether or not I can still explain the American Norwegian data at hand. This, I find, has been successful, and I therefore conclude that based on LOLVs in CANS, it is very likely that

- i. abstract morphemes need to be stored in a way which enables a bilingual speaker to identify and select the one relevant for the language/idiolect/... said speaker wishes to speak at that point, and
- ii. roots should be stored in a way which makes it unnecessary to make a copy of a root in order to mix languages.

The exact configuration of this listing is something I leave for future research.

### 6.3. How can these mixing patterns inform the CS/borrowing debate?

I have demonstrated how the terms CODE-SWITCHING and BORROWING are used to cover disparate phenomena in the literature. As this easily leads to equivocation and confusion, I suggested three alternative terms that can cover the same phenomena without overlapping with each other. These terms are INSERTION, ALTERNATION and LISTEDNESS (adapted from Muysken 2000). In the following, I will elaborate somewhat on the two different ways in which code-switching and borrowing are typically used and how the terms I suggest provide more precise tools for characterizing different types of language mixing.

Espinosa (1914, 1917) was probably the first to distinguish between loanwords and non-listed, spontaneous instances of mixing, which he calls ACTUAL SPEECH MIXTURE. According to Benson (2001: 30-31), he describes loanwords as 1) having recipient-language inflection and 2) being regularly in use in the recipient language, whereas actual speech mixture 1) has donor-language inflection and 2) is a spontaneous, non-established instance of mixing. As later research has shown, however, mixed items can have recipient-language or donor-language inflections regardless of how frequent in use and dispersed they are across a speech community. I have shown how different researchers have used the same two terms – CODE-SWITCHING and BORROWING – to cover the two distinct facts that Espinosa noticed: 1) that mixed items can appear with either recipient-language or donor-language inflection and 2) that whereas some items are mixed for the nonce, others have become established loans in the recipient language. This is summed up in Table 1 of Section 4.1.1., repeated here as Table 6:

|            | Empirically   | Formally   |
|------------|---|--|
| Position A | Something mixed for the nonce is code-switched, whereas an established mix is borrowed.                   | Code-switching and borrowing share the same underlying mental process.   |
| Position B | Code-switched items have donor language morphosyntax; borrowed ones have recipient language morphosyntax. | Code-switching and borrowing have different underlying mental processes. |

TABLE 6. POSITIONS A AND B.

It is confusing to use the same terms for different phenomena, and I therefore proposed to use the following terms from Muysken (2000) to cover all of the above in the following manner:

|              |  |
|--------------|--|
| INSERTION:   | the donor-language item has recipient-language morphosyntax and an English-origin root + Norwegian abstract morphemes in T+Voice |
| ALTERNATION: | the donor-language item has donor-language morphosyntax and an English-origin root + English abstract morphemes in T+Voice       |
| LISTEDNESS:  | an item is more listed the more frequent in use and dispersed it is across a speech community                                    |

#### 6.4. My contribution and the road ahead

This thesis has investigated how LOLVs in CANS pattern, what terminology that best describe them and what conclusions we may draw from these patterns concerning how a formal model of grammar should look. In summary, the thesis contributes with the following main insights:

- i. It supports what is typically reported in the literature for bilingual speech communities that employ the same language mixing strategy, namely that insertion of LOLVs is the unmarked option whereas alternation is used for special circumstances, like when a speaker is searching for the *mot juste*.
- ii. It demonstrates that it is possible, at least for these American Norwegian speakers, to alternate both finite and nonfinite LOLVs (*pace* Myers-Scotton & Jake 2017).
- iii. It shows that corpora still are important sources of linguistic data, especially for establishing a baseline when we do not know how the data will pattern (I had not anticipated finding this high a percentage of alternated LOLVs, for example).
- iv. It demonstrates that heritage speakers and fairly balanced bilinguals that employ the same mixing strategy will showcase the same overall pattern, i.e., insertions of LOLVs as the unmarked, default option with the possibility to also alternate. This, I argue, suggests that heritage languages are represented in the same way as other languages in the minds/brains of speakers.
- v. It illustrates how code-switching and borrowing are used for disparate phenomena and suggests three other terms – INSERTION, ALTERNATION and LISTEDNESS (adapted from Muysken 2000) – that can cover the same phenomena without overlapping.
- vi. It demonstrates that a late-insertion, fully exoskeletal MP model of a DM variety is most promising in terms of how well it can explain the data at hand, at the same time showing what problems one encounters if one instead employs any form of lexicalist MP model or a non-generative model like the Matrix Language Frame Model (MLFM).
- vii. It demonstrates that we can capture the intuitions about the “language-belongingness” of roots better if we store all roots in a single list.

Taken together, I maintain that these points suggest that the proposed late-insertion, fully exoskeletal MP model of a DM variety, combined with roots stored in a single list, is a very promising tool for further investigations of language mixing phenomena. As discussed throughout

the cover article, there are several other empirical, theoretical and methodological trails that should be pursued in order to determine whether the aptness of this model.

First, we would need to see that the model can explain other instances of language mixing in American Norwegian beyond LOLVs. Papers 1 and 2 investigate lone other-language nouns as well as LOLVs, in addition to briefly discussing the mixing of larger chunks; but these and other mixed items need to be examined more closely.

Next, even if we examine all the language mixing phenomena present in CANS, there are other bilingual speech communities that employ other language pairs and/or other verb mixing strategies, and a correct formal model of grammar should be able to accommodate those as well (in addition, of course, to monolingual phenomena not discussed here). Wohlgemuth (2009) concludes that even if grammatical aspects may have some influence on the choice of verb mixing strategy, other factors of a social, political and/or cultural nature apparently are able to override them, meaning a formal model should not endeavor to explain syntactically why a specific bilingual speech community has chosen one verb mixing strategy over another. Even so, a correct formal model should be able to account for whatever mixing strategies that are in use.

Further, it would also be interesting to see whether the overall mixing pattern still holds if we study other types of bilinguals besides heritage speakers and simultaneous bilinguals, like, e.g., sequential bilinguals (i.e., L2 users). And even though I believe we can learn much from corpus studies, I hope that the data I have collected as part of this doctoral project also can function as baseline for future studies of an experimental nature. Although their high age makes it difficult to conduct experiments with these American Norwegian speakers as participants, there are many other bilingual speech communities in which that would not be a problem, and as we have seen, different experimental methods allow us to pose research questions that cannot be answered in a corpus study.

That concludes the cover article, and I hope that the dissertation as a whole is found to have shed more light on the hitherto little-studied area of language mixing in heritage varieties, and that it will inspire more research on these data and how best to account for them formally.

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# Paper 1

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# Paper 2



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and Tor A Åfarli\*

## Lexicalist vs. exoskeletal approaches to language mixing

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**Abstract:** This article presents empirical evidence that disfavors using highly lexicalist minimalist models, such as the one presented in Chomsky (1995), when analyzing language mixing. The data analyzed consist of English – Spanish mixed noun phrases discussed in Moro (2014) as well as English – Norwegian mixed noun phrases and verbs taken from the Corpus of American Norwegian Speech. Whereas the lexicalist model in Chomsky (1995) only can explain a subset of the mixing patterns attested in both authentic English – Spanish mixed noun phrases and the American Norwegian corpus, we show that an alternative exoskeletal model can account for all of them. Such a model would entail that rather than assuming lexical items with inherent, functional features that determine the derivation, syntactic structures are generated independently from the lexical items that come to realize them.

**Keywords:** Agreement, American Norwegian, Exoskeletal, Language mixing, Lexicalism

### 1 Introduction<sup>1</sup>

In this article, we argue that a lexicalist analysis relying on features being an inherent property of lexical items, as in mainstream analyses within the Minimalist Program, is ill-prepared to explain the phenomenon of language mixing, i.e., intrasentential mixing where linguistic strings contain elements from both a

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language A and a language B. The main reason is that the feature matching/agreement typically adopted by a lexicalist feature-driven syntax naturally requires matching between elements of the same language, viz. the probe and the goal need the same features. Contrary to that requirement, we will show that items drawn from different lexicons often do not have the matching/agreeing features that are required for convergence given such an analysis, yet they frequently co-occur in language mixing. We argue that lexicalist-type feature matching theories generally predict that language mixing will be extremely restricted, contrary to fact.

The focus of this article is critical since we will concentrate on the shortcomings of lexicalist feature-driven syntax as a tool for the analysis of language mixing. This relates to the debate between MacSwan (2000; 2005) and Jake et al. (2002; 2005) concerning the utility of a minimalist approach to language mixing. However, the current analysis will improve on both approaches in that it develops an exoskeletal analysis which provides a formal and more descriptively adequate generative analysis of the data. Given the programmatic nature of the Minimalist Program, we consider our exoskeletal analysis a variety of minimalism, albeit a non-lexicalist variety.

We will argue that an exoskeletal approach to language mixing can account for the data that we claim are problematic for the lexicalist approach, and further that it correctly predicts that language mixing is ubiquitous in language. The latter is not surprising, given the overwhelming evidence that both grammars are active simultaneously in the mind of bilinguals (see Kroll & Gollan 2014 for an overview). Particular exoskeletal analyses have been defended in detail in our other work (see, e.g., Grimstad et al. 2014; Alexiadou et al. 2015b). In this article, we will present a general outline of how an exoskeletal analysis works in order to demonstrate that it provides a better alternative to the analysis of language mixing.<sup>2</sup>

The article is organized as follows. We start out in Section 2 by discussing different types of theories of language mixing. In Section 3, we discuss the main characteristics of the standard version of the Minimalist Program and in particular its possible relevance to mixing phenomena. Section 4 provides a detailed criticism of one particular minimalist lexicalist analysis of mixing phenomena that has been proposed, namely Moro (2014), which seeks to explain English – Spanish mixing within the DP. In Section 5, we investigate a possible minimalist lexicalist approach to mixing phenomena within the DP as found in American Norwegian. Section 6 provides an exoskeletal analysis which is argued to be superior both descriptively and theoretically. In Section 7, we consider whether the lexicalist approach works

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<sup>2</sup> We will not discuss how to capture the fact that certain patterns of mixing are more common than others. For an approach that incorporates a probabilistic distribution of attested forms, see Goldrick et al. (2016).

better for mixing in the verbal domain, concluding that it does not, and we suggest an exoskeletal analysis of that as well. Section 8 concludes the article.

## 2 Theories of language mixing

There are essentially two types of language mixing theories: those that posit special machinery to handle mixing data and those that do not.<sup>3</sup> The latter are the so-called null theories or constraint-free theories, see, e.g., Mahootian (1993), MacSwan (1999; 2014), González-Vilbazo & López (2011; 2012), Pierantozzi (2012), Bandi-Rao & Den Dikken (2014), Grimstad et al. (2014), Áfarli (2015a), Merchant (2015), and Alexiadou (2017).

According to Mahootian (1993: 3), a null theory of what we label language mixing asserts that mixing is not constrained by any special mechanisms or principles specific to mixing, and that “exactly the same principles which apply to monolingual speech apply to codeswitching”. That a theory of language mixing should be a null theory is important simply because the internalized grammars that we postulate should be able to account for all sorts of natural language outcomes, including language mixing. If we are forced to postulate special mechanisms to account for language mixing outcomes, that would mean that neither the internalized grammar that we assume nor the special mechanisms that we adopt are on the right track. This is simply a question of theoretical parsimony. Muysken (2000: 3) states that

[t]he challenge is to account for the patterns found in terms of general properties of grammar. Notice that only in this way can the phenomena of code-mixing help refine our perspective on general grammatical theory. If there were a special and separate theory of code-mixing, it might well be less relevant to general theoretical concerns.

MacSwan (2014: 2–3) claims that whereas many language mixing theorists have considered the attainment of a null theory or constraint-free theory of language mixing to be the ideal, in practice, theories and analyses still have resorted (explicitly or implicitly) to special mechanisms for language mixing, i.e. constraint-based mechanisms in MacSwan’s terms. This has often been based on postulating constraints on where language mixing would occur (see Pfaff 1979; Poplack 1980; and Sankoff & Poplack 1981 for important early work), constraints that were unique to mixing as such. See MacSwan (2014: 2ff.) for extensive discussion of how

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<sup>3</sup> In this article, we will use the broader term “language mixing” instead of code-switching. This is mainly to set aside the issue of how to distinguish between code-switching and nonce-borrowing; see Grimstad et al. (2014) and Grimstad (2017) for discussion.



particular analyses in the history of language mixing theory have fared in this respect. Thus, according to MacSwan, there is an unfulfilled quest in language mixing analyses/theories for constraint-free or null theory solutions, something which he claims is fulfilled by the standard lexicalist version of the Minimalist Program. This version ensures that “Nothing constrains [code-switching] apart from the requirements of the mixed grammars” (MacSwan 1999; 2014: 18).<sup>4</sup>

We agree that it is important that the analysis of language mixing is based on a null theory. However, we are not convinced that a minimalist lexicalist approach or other lexicalist feature-driven approaches are ideally suited to account for language mixing phenomena, a claim that we will try to substantiate in the remainder of this article. In what follows, we will introduce the standard lexicalist version of the Minimalist Program before turning to how and to what extent both that approach and the exoskeletal approach can explain certain patterns of language mixing.

### 3 The Minimalist Program

The standard version of the Minimalist Program, or just minimalism, adopts a lexicalist feature-driven model of grammar (Chomsky 1995; see a textbook version in Adger 2003).<sup>5</sup> This is the version of lexicalism that we will discuss in the present paper, even though lexicalism comes in many different guises (see Ackerman et al. 2011). For reasons of space, we limit our focus to this particular version and set aside how other versions of lexicalism potentially could deal with the data in the present paper.

Within the minimalist lexicalist approach, phrase structures are generated or projected based on formal features of lexical items. Thus, the features of these lexical items determine in part the syntactic structure. A mechanism called *Select* in Chomsky (1995) provides a selection of items from the lexicon. These items constitute a Numeration or a Lexical Array (the difference need not concern us here). The computational system then generates a structure based on the numeration/lexical array. The resulting structure is further altered by way of agreement and movement, which in turn is partly driven by feature matching/checking/valuation, that is, the need to value unvalued grammatical features that are driving the derivation. Put differently, functional features are typically

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<sup>4</sup> For MacSwan, there is an important distinction between code-switching and nonce borrowing. As mentioned, we use “language mixing” as a more theoretically neutral and descriptive label.

<sup>5</sup> It is important to note that minimalism is a program, hence it is hard to accurately characterize what minimalism as such adopts. Nevertheless, we believe that it is fair to say that most practitioners adopt a lexicalist feature-driven view of derivations.

unvalued and need to be valued by valued lexical features. To give one example, consider subject-verb agreement in English. The assumption is that the structure looks like in (1), where  $U$  denotes an unvalued feature.

- (1)  $[_{TP} T_{[NUM:U, PERS:U, CASE:NOM]} [_{VP} [_{DP} she_{[NUM:SG, PERS:3, CASE:U]}] [v [_{VP} \dots]]]]$

Movement and agreement ensure that the correct grammatical representation is arrived at, where strikethrough denotes a copy/trace.

- (2)  $[_{TP} [_{DP} she_{[NUM:SG, PERS:3, CASE:NOM]}] T_{[NUM:SG, PERS:3, CASE:NOM]} [_{VP} [_{DP} \cancel{she}_{[NUM:SG, PERS:3, CASE:U]}] [v [_{VP} \dots]]]]$

Crucially, feature valuation takes place through Agree, which is an abstract agreement operation that connects a probe to a goal. The Agree mechanism ensures that the same feature values occur in two different places. In Chomsky (1995), a specifier – head relationship, as in (2), had to be established in order to trigger Agree (see also Koopman 2006 for a later defense of the same idea). In later versions, Agree was argued to take place long-distance (Chomsky 2000), so that movement had to be captured through additional movement-triggering features, such as a ‘generalized EPP’ feature (Chomsky 2001). Crucially, no feature can be sent off to the interfaces without being valued. An unvalued feature causes a crash at the interface.

There are several approaches to language mixing within the Minimalist Program. MacSwan (1999; 2000; 2005; 2009; 2014), Chan (2008), González-Vilbazo & López (2011; 2012), Shim (2013), Bandi-Rao & Den Dikken (2014) all pursue different versions, for example. In the present paper, we will focus on the approach most closely associated with MacSwan since this is the version that is most clearly related to lexicalism.

MacSwan (1999; 2000; 2005; 2009; 2014) relies on the technical approach in Chomsky (1995) in developing his minimalist lexicalist approach to language mixing. Given the assumption that it needs to be a null theory, MacSwan argues that “[...] lexical items may be drawn from the lexicon to introduce features into the lexical array, which must then be valued [...] in just the same way as monolingual features must be valued, with no special mechanisms permitted” (MacSwan 2009: 326). Within a lexicalist version of minimalism, differences between languages are attributed to differences regarding lexical and functional items (cf. Borer 1984). As MacSwan (2005: 2) puts it, “[i]n the MP, there are two central components of the syntax:  $C_{HL}$ , a computational system for human language, presumed to be invariant across languages, and a lexicon, to which the idiosyncratic differences observed across languages are attributed.” Furthermore, “[p]arameters [are] restricted to the lexicon rather than operating on syntactic rules” (MacSwan 2005: 2). This is an

important part of MacSwan's approach, because it generates predictions about which patterns that can be mixed and which that cannot. In the next section, we will consider an example of this which will be used to illustrate MacSwan's approach.

## 4 A minimalist lexicalist analysis of DPs in Spanish – English mixing

In recent years, there has been a lot of research into gender marking in bilingual grammars, as seen, among others, in Licerias et al. (2008), Cantone & Müller (2008), Parafita Couto et al. (2015); Valdés Kroff (2016), Valdés Kroff et al. (2016), and Johnson-Fowler (2017). We will scrutinize one particular paper because it explicitly adopts a minimalist lexicalist approach, namely Moro (2014). This paper investigates Spanish – English mixing in DPs in a linguistic variety spoken in Gibraltar from the point of view of MacSwan's approach. The article contains very little information about the status of Spanish and English in the linguistic community that the data are drawn from, or even about the immediate linguistic context of the nominal strings that she considers (a point of some importance, as we will note below), so we have at the outset to take her data at face value.

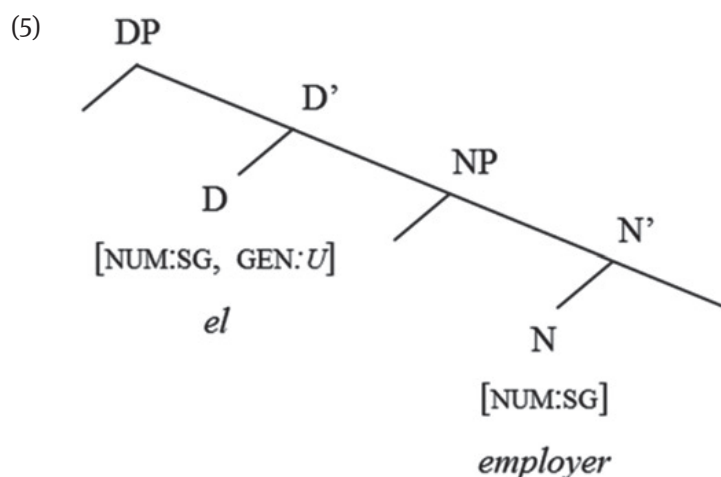
Moro (2014) considers two possible types of mixing between D and N: one where D is Spanish and N is English, as in (3), and another where D is English and N is Spanish, as in (4). According to her, only the first pattern is well-formed in the mixing variety that she considers.

- (3) a. *el employer*  
      'the employer'  
      b. *la washing machine*  
      'the washing machine'
- (4) a. \**the casa*  
      'the house'  
      b. \**the vecina*  
      'the neighbor'

Spanish is a grammatical gender language whereas English is not, and Moro implicitly assumes that the *-er* in (3a) does not indicate natural gender. The gender difference will play a crucial role in the analysis, as we will see momentarily.

Now, consider first Moro's analysis of data of the type in (3), using (3a) as our example. D exhibits gender and number, while the English noun lacks the

gender feature. Moro (2014: 223) analyzes this in the following minimalist lexicalist manner, exploiting valued and unvalued features: “I assume [...] that the number and gender features of the determiner enter the derivation unvalued and have to be valued via Agree with the corresponding N.” Although Moro does not provide structures, we assume that the structure of (3a) is as shown in (5), where only relevant features are included.



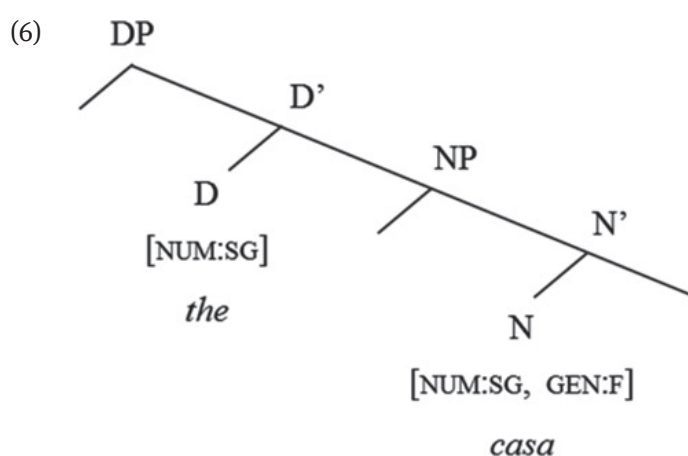
As can be seen, the NUM category on D is valued as SG by the corresponding category on N. The GEN category on D, however, lacks a corresponding valued category elsewhere in the structure and thus appears to remain unvalued. Note that despite this, the representation in (5) is the representation of a well-formed mixing pattern, according to Moro. She suggests that “[a]ccordingly, the unvalued features number and gender in the Spanish determiner can be valued via Agree with the English noun because the former bears the full set of these features (number and gender)” (Moro 2014: 223).

This is just stipulated, and Moro does not explain exactly how the unvalued GEN feature in D can be valued by a non-existent GEN feature on the English noun, given that the determiner “bears the full set of these features (number and gender).” In our view, there would in fact not be any problems for the analysis if D failed to bear the so-called full set of features, as Moro suggests. Rather, a problem arises precisely when the English noun does not bear the inherently valued feature required for valuation of the corresponding feature on D, as in this case. Therefore, it seems to us that Moro’s solution invokes an “impossible” theoretical rule or principle, namely a principle that amounts to a claim that an unvalued feature may be valued by a non-existent feature, i.e., that [GEN:U] in “*el* [NUM:U, GEN:U]” can be valued by [NUM:SG] in the noun *employer*.

Now, consider the mixing illustrated in (4), where the determiner is English and the noun is Spanish. We use (4a) as our example, repeated here for convenience.

- (4) a. \**the casa*  
'the house'

Notice, crucially, that the combination of the English determiner *the* and a Spanish noun is not well-formed according to Moro. Moro's analysis will presumably be something like the one shown in (6).



Here, N bears NUM and GEN features (since the noun is Spanish), whereas the English D does not bear a GEN feature. Given standard assumptions about feature checking, this example should be well-formed; there are no unvalued features left that could cause a crash at the interfaces.

However, this is an unwanted result as far as Moro is concerned, since this precise mixing pattern is assumed to be ungrammatical in her data. Her solution is seen in the following quotation: “On the contrary, the derivation crashes in the case of the English determiner and the Spanish noun because the feature set of the English determiner is incomplete (it lacks the gender feature)” (Moro 2014: 223). This, to us, appears to be another stipulation without any empirical or theoretical justification. First of all, we cannot see any justification for assuming something like a “complete set of features for D” that holds cross-linguistically. Moreover, since English *the* does not contain/express gender in the first place, it should not be problematic that it does not contain GEN. In fact, a more natural assumption would be that it is problematic for *the* to contain a gender feature. *Prima facie*, one should think that it would be possible for, e.g., [NUM:U] in *the* to be valued by [NUM:SG] in *casa* irrespective of the other valued or unvalued

features involved. In general, an analysis that makes valuation of a particular feature dependent on the presence of features of a completely different type is in need of strong independent motivation. Unless such motivation is forthcoming, such an analysis should be discarded.

Moreover, as Licerias et al. (2008) make clear, Moro's (2014) (cited as 2001 in Licerias et al. 2008) empirical claim is factually wrong. Contrary to Moro's claim, instances like (4) are in fact attested in spontaneous production (see the reviews in Licerias et al. 2005; Licerias et al. 2008; Pierantozzi 2012). For reasons of space, we will not delve into that debate here, but simply assume that (4) contains well-formed mixing data that have to be accounted for, contrary to Moro's claim. Licerias et al. (2005; 2008) furthermore argue that the Spanish determiner is *preferred*. They propose to account for this preference by suggesting a Grammatical Features Spell-out Hypothesis (GFSH), which claims that functional categories containing highly 'grammaticized' features will be chosen. Since Spanish determiners contain more features than English determiners, the speaker will choose the former. Note that the GFSH is a hypothesis about production preferences guided by a grammatical mechanism on the PF side.

In summary, we have shown that Moro's (2014) minimalist lexicalist analysis of DP-internal language mixing is empirically inadequate. We conclude that a lexicalist feature-based analysis is the wrong tool for analyzing language mixing in the nominal domain, the reason being that such analyses require more feature matching than is actually found in mixing. In the next section, we will look at data from American Norwegian which will lend further support to this conclusion.

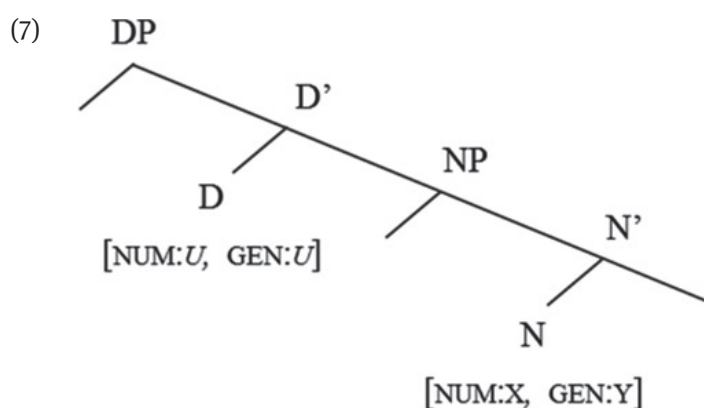
## 5 A possible minimalist lexicalist analysis of mixing in American Norwegian DPs

In this section, we will consider language mixing in American Norwegian DPs as a way of solidifying the conclusions reached in Section 4. We will first briefly give a description of American Norwegian before we attempt to envision how a minimalist lexicalist model of the sort adopted by MacSwan and Moro could possibly handle mixing of English forms into American Norwegian DPs.

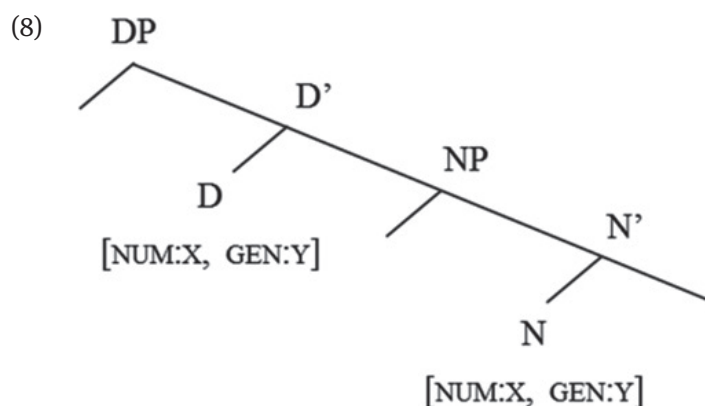
American Norwegian is a heritage variety of Norwegian spoken in North America (mainly in the US) by immigrants who came from Norway roughly from the 1850s until the 1920s, as well as their Norwegian-speaking descendants. In

other words, American Norwegian is a minority language existing in the midst of a language community heavily dominated by English. A common factor for the speakers in question is that American Norwegian is their L1 and in many cases their only language up until school age. However, through schooling and regular interaction in the community, English has come to be their dominant language. As a consequence of their language situation, these speakers often produce linguistic outcomes showing a mixture of the two languages. In the following, we will turn to analyses of such mixed linguistic outcomes in the nominal domain. The corpus we exploit for data is the *Corpus of American Norwegian Speech* (CANS) (Johannessen 2015), developed by the Text Laboratory at the University of Oslo. At the moment, this corpus comprises recordings from 50 individual speakers.

Given that American Norwegian is a heritage variety of Norwegian, let us first take a look at how the mechanism of feature valuation proceeds in a Norwegian DP without mixing. Like Spanish, Norwegian is a grammatical gender language, and we use a simplified DP structure which only contains a D-projection and an N-projection. As we are, for the moment, concerned with a minimalist lexicalist type analysis, we make the lexicalist assumption that the agreement features NUM and GEN are inherent in N, and that DP internal agreement comes about as a result of the agreement features in N valuing the corresponding unvalued features in D. This is illustrated in (7), where [NUM:X, GEN:Y] in N denotes the particular inherently fixed agreement features in question, and where [NUM:U, GEN:U] denotes the corresponding agreement features in D.



After valuation of the unvalued features in D by a probe – goal relation, the resulting agreement structure will be as shown in (8), where N and D have identical feature values.



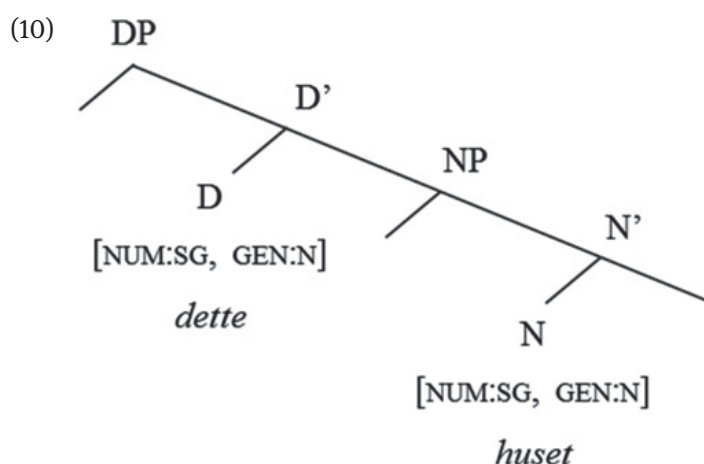
Consider now a concrete example:

- (9) a. *dette hus-et*  
 this.SG.N house-SG.DEF.N  
 'this house'
- b. \**denne hus-et*  
 this.SG.M/F house-SG.DEF.N
- c. \**dette hus-a*  
 this.SG.N house-PL.DEF.N

(9a) shows the correct agreement pattern inside the DP, with both N and D marked as SG and N. (9b) is ungrammatical due to an agreement mismatch, the N being marked as SG.N, whereas D is marked as SG.M/F. In other words, there is a gender mismatch between N and D that cannot be generated given the Agree mechanism. (9b) therefore fails to be generated, as desired. The same goes for (9c), except in this case there is a number mismatch, N being marked as PL while D is marked as SG. (9a) is shown in (10), which is the structure after valuation of the unvalued features in D.<sup>6</sup>

<sup>6</sup> Notice that (9a)/(10) exhibit double definiteness, i.e. definiteness realized both by a determiner and by a functional suffix on the noun, which is characteristic for Norwegian DPs, see Julien (2003; 2005) for discussion. Still, the definiteness feature is not shown in the representation (10) (nor in our subsequent representations of the Norwegian DP) for expository purposes, since what we concentrate on here is the logic of Moro's (2014) analysis of DP internal mixing, where definiteness is left out of consideration. In Section 6, double definiteness will play a crucial role in motivating our exoskeletal structure for the DP.





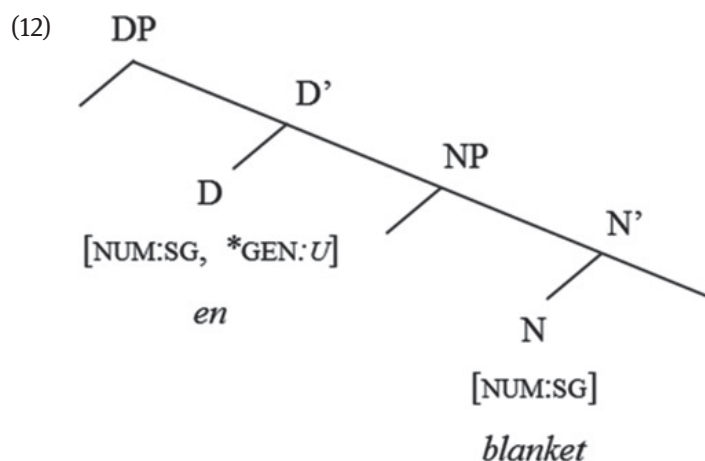
Let us next consider feature valuation in American Norwegian DPs in which English elements are mixed into the otherwise Norwegian string. In American Norwegian, it is common for an English noun to be embedded under a Norwegian determiner, e.g., an indefinite article. This is exemplified in (11). The information in parenthesis behind each American Norwegian example is a reference to the speaker in the CANS corpus who uttered that specific phrase, and the mixed English noun is boldfaced.<sup>7</sup> Note that gender is not fixed across speakers and is not in general identical to their Norwegian translational equivalents.<sup>8</sup>

- (11) a. *en* **blanket** (rushford\_MN\_01gm)  
 a.M blanket  
 'a blanket'
- b. *ei* **nurse** (coon\_valley\_WI\_02gm)  
 a.F nurse  
 'a nurse'
- c. *et* **crew** (westby\_WI\_03gk)  
 a.N crew  
 'a crew'

<sup>7</sup> We have not indicated what the Norwegian counterparts of the English words would be, but they are very different from the English ones.

<sup>8</sup> A few examples of this are: *choiren*, M (coon\_valley\_WI\_07gk) – *koret*, N (Norwegian); *ferryen*, M (harmony\_MN\_04gm) – *ferga*, F (Norwegian); *et tittel*, N (stillwater\_MN\_01gm) – *ein tittel*, M (Norwegian).

Adopting a standard minimalist lexicalist analysis, D has unvalued GEN and NUM features that must be valued by the corresponding fixed values on N, as explained above for standard Norwegian. However, there is a problem with this analysis given mixing cases like those in (11). Since English nouns do not have a gender feature, the GEN feature of D remains unvalued and the derivation will crash, contrary to the fact that such structures are common and therefore should converge.<sup>9</sup> These examples are parallel to the Spanish cases in (3), where Moro (2014) stipulated a solution where the “full set” of features in D would enable valuation from the English noun. As discussed in Section 4, we do not see how an unvalued GEN feature in D can be valued by a non-existing GEN feature in N, and therefore reject such an analysis. The ill-formed structural representation of (11a) is given in (12), the ill-formedness being indicated by an “\*” on the offending feature category.



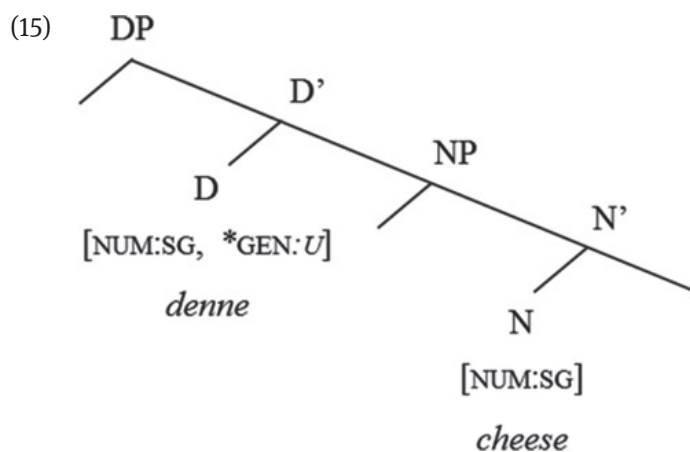
Now, consider other comparable examples where D is a demonstrative or determiner, illustrated in (13) and (14), respectively.<sup>10</sup>

<sup>9</sup> An alternative approach could be to argue that the speaker has internalized two lexical items for each English noun: One with gender and one without gender. We assume that this analysis is implausible, in part because some speakers of American Norwegian vary in their gender assignment (Lohndal & Westergaard 2016).

<sup>10</sup> From the perspective of (European) Norwegian, we would, in data like (13) and (14), expect (near) obligatory double definiteness, that is, we would expect the English nouns to have a post-nominal Norwegian definite suffix as well. This is what we find in earlier varieties of American Norwegian, but in contemporary varieties of American Norwegian, we find double definiteness only in approximately half of the relevant cases. The remaining half lacks either the suffix or the determiner, which probably is an effect of attrition. Space prevents us from discussing this further, but see Riksem (2017).

- (13) a. *denne cheese* (blair\_WI\_04gk)  
 this.M/F cheese  
 ‘this cheese’
- b. *denne heritage tour-en* (flom\_MN\_01gm)  
 this.M heritage tour-SG.DEF.M  
 ‘this heritage tour’
- c. *dette computer business* (harmony\_MN\_01gk)  
 this.N computer business  
 ‘this computer business’
- (14) a. *alt det gamle stuff* (chicago\_IL\_01gk)  
 all the.N old stuff  
 ‘all the old stuff’
- b. *den digre chopper-en* (blair\_WI\_01gm)  
 the.M huge chopper-SG.DEF.M  
 ‘the huge chopper’
- c. *den samme lodg-en* (vancouver\_WA\_03uk)  
 the.M same lodge-SG.DEF.M  
 ‘the same lodge’

Again, the problem is that the GEN feature of D cannot be valued because the English noun does not bear a gender feature, cf. the ill-formed structural representation of (13a) in (15).

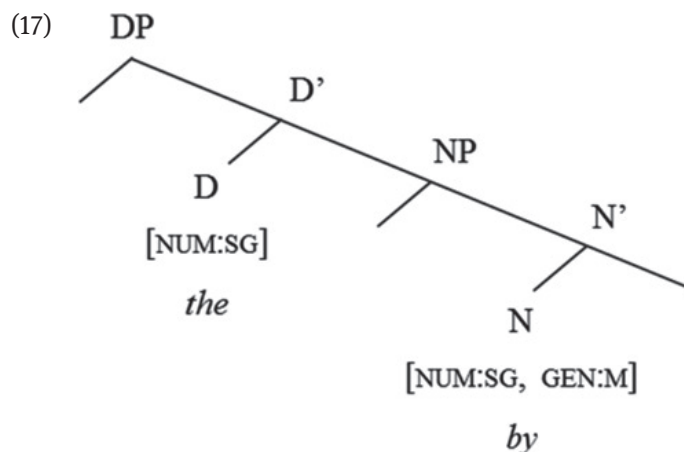


Now, consider American Norwegian DPs where the Norwegian – English mixing pattern is switched, so to speak. We will focus on patterns where there is a mix

consisting of an English definite article and a Norwegian noun, as seen in the examples in (16).

- (16) a. *the by* (chicago\_IL\_01gk)  
       the city.SG  
       ‘the city’  
       b. *the gård* (vancouver\_WA\_01gm)  
       the farm.SG  
       ‘the farm’  
       c. *the penger* (albert\_lea\_MN\_01gk)  
       the money.PL  
       ‘the money’

In these examples, there is a Norwegian noun with gender and number features, but the English definite article *the* probably bears only a number feature and in any case lacks a gender feature. The structural representation of (16a) is shown in (17).



As can be seen in (17), there are no features that remain unvalued in this representation. As such, this representation should be deemed well-formed, at least as far as feature valuation is concerned. Note that these strings are parallel to the Spanish – English cases in (4), which Moro (2014) judged to be ungrammatical. The rationale for this conclusion was that the “incomplete” set of features in D caused an inability of feature valuation from N. Again, as discussed in Section 4, we do not see how the lack of a GEN feature in D should prevent NUM in N from valuating NUM in D. (17) illustrates that after such a

valuation, there are no unvalued features left in the structure that could make the derivation crash. As discussed above, Liceras et al. (2008) argue against Moro on empirical grounds, which also aligns with the evidence found in American Norwegian.

As seen in this subsection, attempting to analyze the American Norwegian data under a lexicalist approach is problematic. On the one hand, if we were to accept Moro's analysis, mixed phrases containing Norwegian D and English N would be acceptable, whereas phrases with English D and Norwegian N would be unacceptable. Rejecting Moro's analysis based on the discussion in Section 4 and employing standard minimalist mechanisms of valuation, on the other hand, would apparently reverse the picture; the latter pattern would be acceptable and the former unacceptable. The crucial fact is nevertheless that both mixing patterns are attested in our corpus. In the next section, we will propose an alternative analysis.

## 6 An exoskeletal analysis of language mixing in DPs

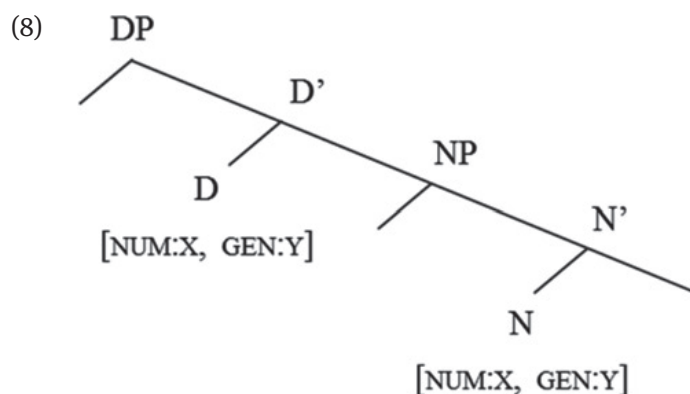
We argue that an exoskeletal approach to grammar provides a more adequate analysis of language mixing. The following outlines such an analysis and demonstrates how the previously discussed data may be analyzed.

Exoskeletal approaches to grammar, also known as generative, neo-constructivist approaches, have been developed by several scholars, e.g., Van Hout (1996), Marantz (1997; 2013), Borer (2005a,b; 2013), Åfarli (2007), Ramchand (2008), Lohndal (2012; 2014), and Alexiadou et al. (2015a). The details of the proposed models and analyses vary, but crucially, they share a common core, namely that the structures are generated independently from the lexical items that will come to realize them. Hence, lexical items do not have inherent, functional features that determine the derivation of the structures, but functional features are instead defined by the syntactic structure. Although exoskeletal models primarily have been applied to monolingual data, the approach has proven to be quite successful in analyzing language mixing, see, e.g., González-Vilbazo & López (2011; 2012), Pierantozzi (2012), Bandi-Rao & Den Dikken (2014), Grimstad et al. (2014), Åfarli (2015a), Alexiadou et al. (2015b), Merchant (2015), Alexiadou (2017), and Riksem (in press).

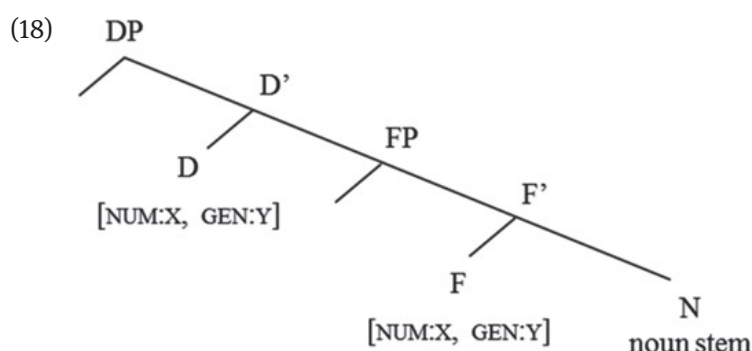
Furthermore, the model employed in this article builds on certain aspects of Distributed Morphology (DM) (see, e.g., Harley & Noyer 1999; Harley & Noyer 2000; Marantz 1997; Embick 2000; Alexiadou 2001; Embick & Noyer 2007). The

core and common ingredient is the assumption that syntactic structures consist of features that define the morphosyntactic properties. In addition, what is typically known as the lexicon is distributed in DM across three separate lists: (1) syntactic terminals, (2) vocabulary items, and (3) encyclopedic information. These are accessed at different points throughout the derivation. The structure then distinguishes between two types of terminals: functional features or feature bundles, and designated slots for root/stem insertion.<sup>11</sup> At Spell-Out, morpho-phonological exponents, known in DM as vocabulary items, are inserted and give the structure its phonological realization. This process is radically different for the two types of syntactic terminals. Following the Subset Principle (Halle 1997), functional exponents are required to match all or a subset of the functional features specified in the structure to be inserted. If two exponents are eligible for insertion, the one matching the most features will win. This ensures that a given feature or feature bundle in the structure is spelled out by the most appropriate exponent available. Substantial exponents, i.e., roots or stems, are instead inserted into designated slots in the structure without such feature matching requirements, except that they need to match the relevant category feature.

With this model, we can now provide an analysis of the mixed American Norwegian DPs. Instead of (8), repeated below, where the inflectional properties are a property of the noun itself, we assume (18), where the inflectional properties are generated under a functional projection called F, and the noun stem is generated in the complement domain of that F.



<sup>11</sup> We will not go into the discussion of roots (their nature, when they are inserted, etc.) in this article. Note, however, that the NP is a simplification and most likely contains more structure – for example a nominalizing phrase, nP, with a bare root in its complement space, as linguists working within Distributed Morphology would typically assume.

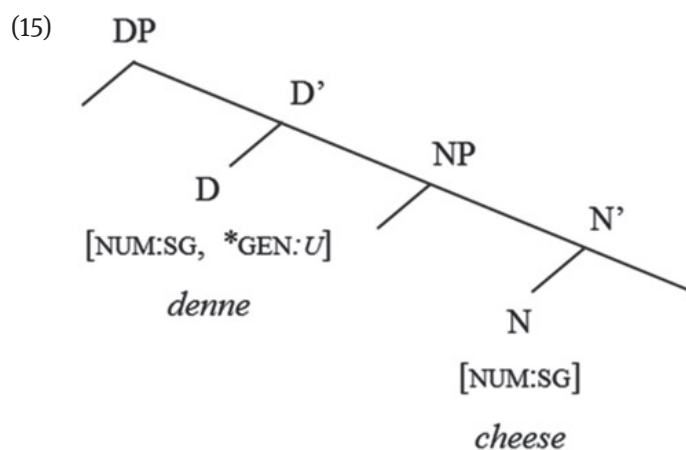


Let us briefly review some evidence in favor of the FP projection. A core piece of evidence comes from the existence of double definiteness in Norwegian and American Norwegian. Consider (19):

- (19) *den*            *gamle mann-en*  
 the-DEF.SG.M    old    man-DEF.SG.M  
 'the old man'

In (19), definiteness is encoded both pre- and postnominally. Julien (2005), building on an extensive review of previous research into the nominal phrase in Norwegian, argues that there is a functional projection for each of the two definiteness features. The prenominal one is situated in D, whereas she suggests that the postnominal one serves as the head of a definiteness projection in the lower domain of the DP. The adjective, situated as the specifier of its own projection ( $\alpha P$  in Julien 2005), then agrees with the features of the definiteness and D heads. Julien also assumes that there is a separate NumP. In (18), FP is a different label for the lower definiteness projection, which also encompasses number. We have collapsed both definiteness and number onto one head, both because we have not been able to find evidence in American Norwegian for separating them into two projections, and because the choice between one or two projections is not crucial for present purposes. Furthermore, we assume that FP is always present, but its feature content differs across varieties. In English, FP only has a NUM feature, whereas the Norwegian and American Norwegian FP both have NUM, GEN and DEF features. Just like subject – verb agreement at the sentential level differs between English and Norwegian, with Norwegian not exhibiting features for subject – verb agreement, so does the presence of the functional features in the nominal domain.

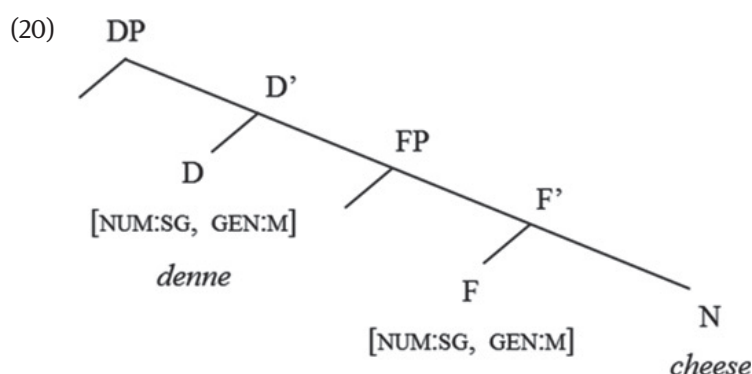
Given (18), noun stems from any language will acquire the inflectional properties of the language that specifies the syntactic frame.<sup>12</sup> Thus the prediction is that mixing is fairly free, as is actually the case in American Norwegian. Let us consider (13a) *denne cheese*, ‘this cheese’. As the structure in (15) shows, repeated below, the lexicalist approach fails to predict this pattern, as the feature matching process will leave the GEN feature of D unvalued. The exoskeletal representation in (20) fares better. The functional features are here determined by the syntactic structure, which in this case is Norwegian. Given the Subset Principle, inserted functional exponents must provide the best match to the functional features in the structure. In this case, the Norwegian exponent will provide the best match, as the structure holds a GEN feature. The complement position of F, on the other hand, is available for insertion of an English noun stem.<sup>13</sup> Mixing patterns like these can thus be characterized as English stems being inserted into Norwegian structure, and are in fact the most frequent in the corpus.



<sup>12</sup> Please note that although we will speak of an English or a Norwegian structure in the remainder of this article, this is merely informal: We do not assume any “language features” whereby syntactic features are annotated for language. Rather, we assume that the “language mode” of the speaker will determine what kind of features are selected as the basis for the abstract syntactic structure. The idea is that the speaker is attempting to speak a certain language, e.g., American Norwegian, and that this manifests itself by virtue of the overall structure of the sentence mimicking or resembling this language. Depending on the features, different structures and thereby potentially different morphosyntactic realizations will be produced. We set aside the precise implementation of this important issue for future research.

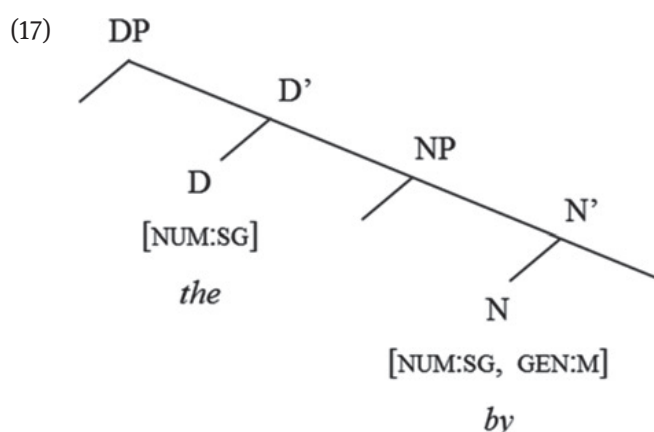
<sup>13</sup> Note that this model would work just as well for the data in this paper if the smallest lexical building blocks for the syntax were uncategorized roots merged with a categorizer. For ease of exposition, we will assume that the mixed unit is a categorized stem, but see Riksem et al. (to appear) for a discussion of whether these mixed items below word-level in American Norwegian are roots or stems.

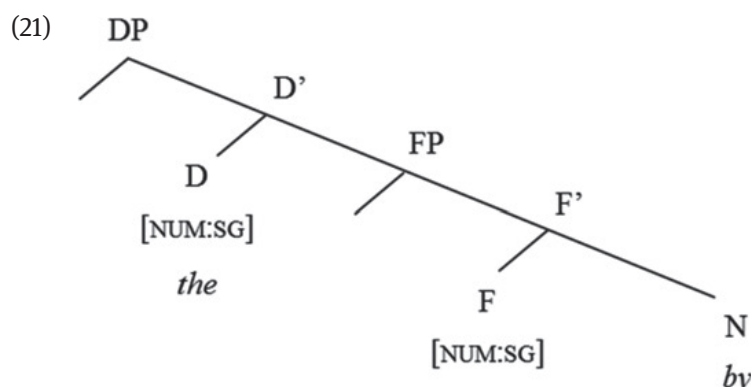




As mentioned in footnote 10, earlier American Norwegian (and also European Norwegian) would typically have double definiteness in examples corresponding to (15). As shown in (13b) and (14b, c), that is also very often the case in contemporary American Norwegian; although as noted, there is vacillation among contemporary speakers (see Riksem 2017 for an analysis of instances where the postnominal definite suffix is missing, arguing in favor of features being either rearranged or erased from the structure). However, it is important to point out that the presence of double definiteness in American Norwegian mixing examples like (13b) and (14b, c) provides further empirical support for an exoskeletal analysis. The reason is that the definiteness suffix bears number and gender features which must be Norwegian, thus providing evidence for the existence of the F head as part of the exoskeletal frame. See Riksem (in press) for further data and analysis.

Considering the second pattern of determiner – noun mixing in American Norwegian, i.e., where the determiner is English and the noun Norwegian, this, too, can be analyzed with an exoskeletal model. The lexicalist version of (16a) *the by* ‘the city’ is repeated in (17), followed by an exoskeletal representation in (21).





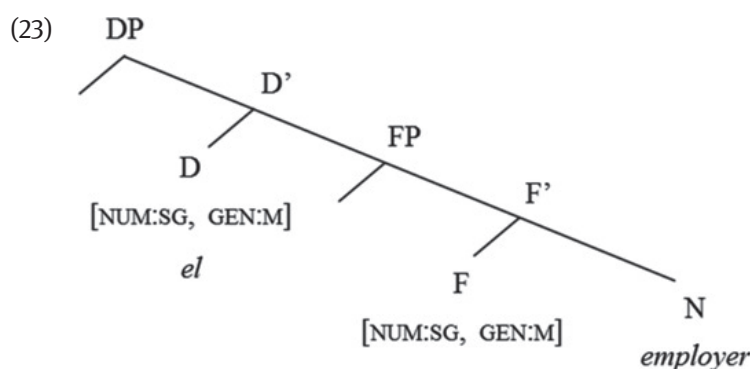
As the structures show, cases of English D plus Norwegian N are successfully analyzed in both frameworks, despite Moro's claim that such combinations are ungrammatical. The crucial difference is, however, that whereas the exoskeletal model is capable of accounting for both mixing patterns attested in the corpus, the lexicalist analysis will fail in cases like (15).

The process of generating the structure in (21) is not considered to be quite the same as the one for the structure in (20). Whereas the main language in (20) is Norwegian, hence the GEN feature in D and F, the main language for the DP in (21) is assumed to be English, meaning neither D nor F have a GEN feature. Evidence in favor of this is the absence of double definiteness, i.e., the speaker says *by* 'city' and not *byen* 'the city', which together with the English determiner suggests that the determiner causes a change into English for the rest of the noun phrase. In other words, what we assume we have here is a Norwegian stem inserted into an English structure, the opposite of what we have seen so far.<sup>14</sup> This English DP can further be inserted into the DP slot of a larger Norwegian utterance, which is the case for this particular example:

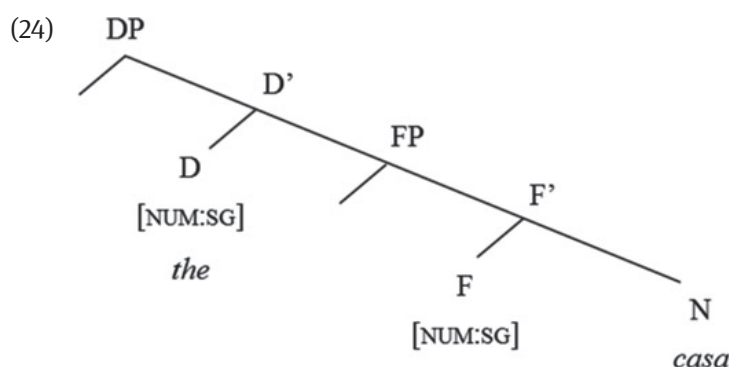
<sup>14</sup> Another possible solution would be to assume that the structure below D is Norwegian, so that the feature bundle in F is unchanged, whereas the one in D contains only the NUM feature. Thus, the feature bundle in D allows insertion of the English determiner. We have a few examples of structures with English determiner, English or Norwegian noun stem, and Norwegian definiteness suffix, i.e., double definiteness, such as *the roaden*, 'the road' and *the andre dagen*, 'the other day'. However, we are talking about only a couple of examples found in the corpus, so we will leave this issue aside for now (see Riksem 2017). The key takeaway is that both of these solutions are compatible with an exoskeletal analysis, and both possibilities may also co-exist in the contemporary American Norwegian speech community.

- (22) *Jeg husker ikke **the** by der vi stoppet.* (chicago\_IL\_01gk)  
 I remember not the city there we stopped  
 “I don’t remember the city where we stopped.”

As for the Spanish – English mixing data, the mixing pattern that is well-formed according to Moro (2014) corresponds to the American Norwegian structure (20), see (23):



In addition, the pattern that Moro (2014) claims is ill-formed is also, like the American Norwegian (21), predicted to be grammatical given an exoskeletal analysis, cf. (24).



As mentioned in Section 4, Moro (2014) provides little information concerning the status of Spanish and English in the linguistic community she draws her data from. There is also virtually nothing about the informants, the collection of data or even the immediate linguistic context of the nominal strings in question. This lack of information is problematic in several ways. From an exoskeletal perspective, in a linguistic community where Spanish is the main language spoken, it is expected

that DPs like *el employer* ‘the employer’ will be more common than those like *the casa* ‘the house’. This is simply because if you are speaking Spanish, the structures will be Spanish as well, whereas you would need an English DP for the Subset Principle to licence an English determiner like *the*.

Moreover, social factors such as prestige are likely to impact the notion of something being acceptable versus unacceptable, which is a crucial point of discussion when employing acceptability judgments in language mixing. The alleged unacceptability of phrases like *the casa* ‘the house’ may thus actually stem from sociolinguistic norms in the language community. In order to give a thorough analysis of language mixing patterns, one must consider both which language constitutes the main one as well as other factors that may influence the judgements of mixed phrases. See Liceras et al. (2008) for further discussion of preferences in the linguistic production of speakers who mix English and Spanish.

## 7 An extension: Lexicalism does not fare better in the verbal domain

So far we have seen that mixing patterns in the nominal domain provide evidence against a minimalist lexicalist analysis and that an exoskeletal analysis is descriptively more adequate. In this section, we will briefly show that mixed verb forms in American Norwegian provide additional evidence against a minimalist lexicalist analysis, and, subsequently, that the way the mixed verbs pattern is predicted by an exoskeletal analysis.

An example of mixed verb forms is illustrated in (25).

- (25) *vi bare satt der og watch-a da* (sunburg\_MN\_03gm)  
 we just sat there and watch-PAST then  
 ‘We just sat there watching then.’

Here the verb stem, *watch*, is clearly English, while the tense inflection is clearly Norwegian, *-a* being a past tense suffix belonging to the main class of Norwegian weak verbs. (26) provides additional data.

- (26) a. *teach-er* (rushford\_MN\_01gm)  
 teach-PRES  
 b. *play-de* (coon\_valley\_WI\_03gm)  
 play-PAST

The main pattern we find in CANS when lone English verbs are mixed into otherwise Norwegian utterances is that the mixed English verb stems appear with the appropriate Norwegian inflection, as shown in (25) and (26). This is in accordance with what we already saw for nouns in, e.g., (13b) and (14b, c), where the English nouns for the most part occur in exactly the position their Norwegian counterparts would in the noun phrases, with appropriate inflections.

Since the verbal stem and the tense affix belong to different languages, it is not self-evident that standard analyses of the T – V relation can explain these data. Chomsky (1995: 195) provides a classic formulation of the theoretical possibilities when analyzing the T – V relation, which again amounts to an exoskeletal vs. lexicalist analysis:

The main verb typically “picks up” the features T and Agr [...], adjoining to an inflectional element to form [V I]. There are two ways to interpret the process, for a lexical element *a*. One is to take *a* to be a bare, uninflected form; PF rules are then designed to interpret the abstract complex [*a* I] as a single inflected phonological word. The other approach is to take *a* to have inflectional features in the lexicon as an intrinsic property (in the spirit of lexicalist phonology); these features are then checked against the inflectional element I in the complex [*a* I].

Chomsky embraces the second solution, assuming that the inflected form of the verb already is created in the lexicon and subsequently inserted into the syntax with an inherent feature bundle, i.e., fully tensed. This amounts to a fullblooded lexicalist analysis of the T – V relation, and is also the one MacSwan makes use of.<sup>15</sup>

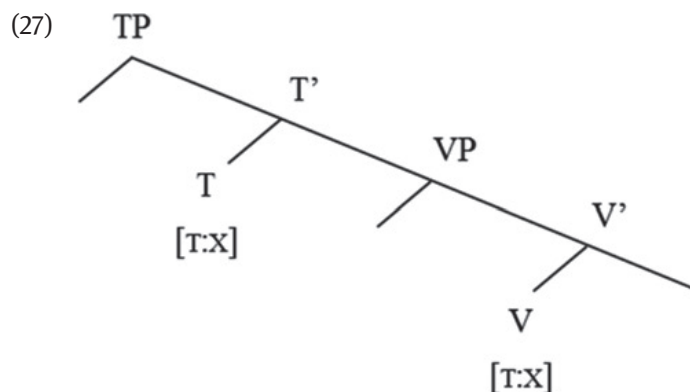
Just as we saw for the DPs, the mechanism of feature checking or valuation plays a crucial role within the lexicalist analysis of the T – V relation. In order to prohibit arbitrary insertion of tensed verbs, a given tensed form that is inserted

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<sup>15</sup> Note that MacSwan himself actually escapes the whole issue of word-internal mixing by claiming that they are not proper examples of code-switching (or language mixing) at all. Instead, they are what he calls “nonce borrowings” (after Poplack et al. 1988), and they come about by being copied from one mental lexicon to the other, thus receiving the appropriate feature bundle. This solution is not falsifiable (unless neural imaging one day were to show that that is not how the brain does it), but for an extensive discussion of this and other positions, see Grimstad et al. (2014) and Grimstad (2017).

Furthermore, if one assumes with Distributed Morphology and other theories that syntax operates “all the way down”, i.e., word-internally, then words are constructed in the syntax in the sense that the stem (or root) is inserted in one position, the inflectional morpheme in another, and syntactic or post-syntactic operations ensure that they combine or appear adjacent to one another. From this perspective, the American Norwegian data can be easily accommodated, as we will show below.

into syntax must be checked against a corresponding feature in T to ensure that it occurs in a structurally correct position.<sup>16</sup> (27) shows a relevant structure (“X” denotes a particular tense feature value).



However, there are at least three problems with this lexicalist analysis of the T – V relation.

The first problem is how to account for the overwhelming occurrence of Norwegian tense suffixes on English verbal stems if the verb has “inflectional features in the lexicon as an intrinsic property”. As argued in Åfarli (2015b: 168–169), this assumption would make us expect that an English verb stem should have English tense inflection, and it remains a mystery that the inflection instead is Norwegian.

The second problem concerns the feature checking between T and V. An English verb will, given lexicalist assumptions, bear not only a tense feature, but also agreement features. The most standard assumption is that those features of the verb must be checked against corresponding features in T. However, if an English verb is employed in a Norwegian structure, T will only contain a tense feature. Thus, the putative agreement features of the verb cannot be checked. This is parallel, *mutatis mutandis*, to the failure of feature checking in the nominal domain that we discussed earlier.

The third problem has to do with the richness of mixing varieties. As was the case for the DPs, the main pattern for mixed verbs seen in (25) and (26) is not the only type found in the corpus. We have found 292 lone English verbs occurring in otherwise Norwegian utterances in the corpus, and out of those, 210 had Norwegian inflectional

<sup>16</sup> We will not go into technicalities concerning checking vs. valuation here. For the purpose of this section, we just notice that somehow it must be ensured that the lexically given tense of the verb itself will be identical to the corresponding tense specified in T.

suffixes whereas 82 did not, instead seemingly appearing with the appropriate English morphology.<sup>17</sup> Examples are given in (28), where # marks a pause.

- (28) a. *så e # I kunne ikke # e **sing** #* (north\_battleford\_SK\_02gk)  
 so e # I could not # e sing #  
 ‘so I couldn’t sing’
- b. *og han **sends** # han er #* (vancouver\_WA\_01gm)  
 and he sends # he is #  
 ‘and he sends’
- c. *e v- vi # **translated** “Synnøve Solbakken”* (gary\_MN\_01gm)  
 e w- we # translated “Synnøve Solbakken”  
 ‘we translated (the novel) *Synnøve Solbakken*’

Since these appear to be English verbs with English inflection, (28b) even displaying the appropriate 3.P.SG. suffix *-s*, we can assume that the entire TP structure is English.<sup>18</sup> Importantly, since both the earlier patterns and the patterns in (28) are attested in the corpus, we would like an analysis that is flexible enough to handle both.

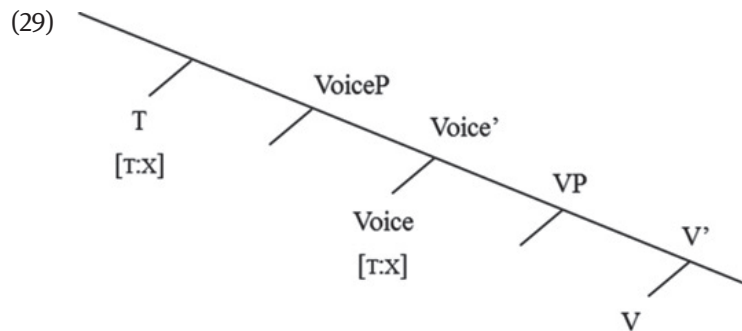
We will now sketch an exoskeletal analysis of mixed verb forms and show that it can handle the problems reviewed above and make the right predictions for American Norwegian. As in our exoskeletal analysis of nouns, we will assume an exoskeletal analysis of verbs where the inflectional properties of the verb are not an intrinsic property of the verb itself, contrary to the lexicalist analysis, but of a functional head whose complement contains the verb stem. Thus, the language of the structure and its inflectional elements may belong to a language different from the stem, as is the case for the examples in (25) and (26).

Let’s start with a structure where the verb phrase of a simple clause is c-commanded by T and the verb phrase itself consists of a Voice-projection (Kratzer 1996) with a VP in its complement domain, as in (29).<sup>19</sup>

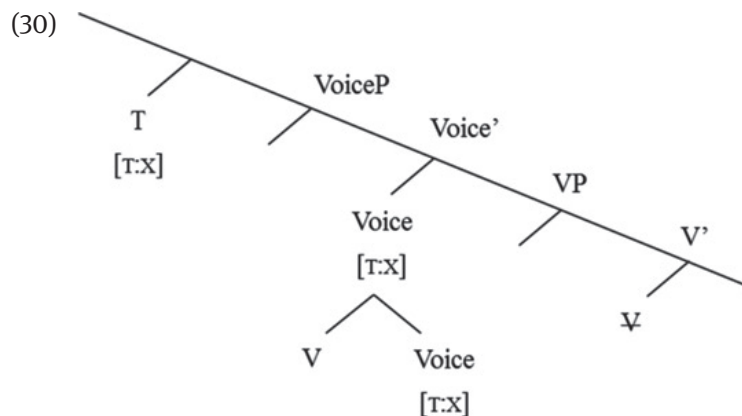
<sup>17</sup> Note that even though the written Norwegian standards, Bokmål and Nynorsk, both have tense suffixes for all weak verb forms, many of those are omitted in several Norwegian dialects. We have not checked this further (and as these are heritage speakers, placing them dialect-wise is often not possible); but we can assume that several of these 82 verb forms without Norwegian tense suffixes in fact are correct, dialectal forms of Norwegian, reducing this group even further. See Grimstad (2017) for further discussion.

<sup>18</sup> This hypothesis is further elaborated on and supported in Grimstad (2017).

<sup>19</sup> Note that the VoiceP between VP and TP in fact mirrors the FP between NP and DP, and that just like we saw for NP, VP is a simplification which most likely contains more structure. See Harley (1995), Alexiadou et al. (2006; 2015a), Folli and Harley (2007), Pylkkänen (2008), Ramchand (2008), and others.



Focusing on the T – Voice – V relation for Norwegian verb phrases, we assume, as mentioned, that the tense feature is generated under T and that Voice contains a corresponding tense feature that is checked against the feature in T. V acquires tense by obligatory movement to Voice, giving us the structure sketched in (30).



Note that V, being a stem, can be inserted into the verb phrase from any language, like N can be inserted from any language into a given noun phrase structure.

The main exoskeletal point of this analysis is that the generation of the tense inflection is divorced from the generation of the verb stem, and that these two elements are syntactically integrated during the derivation. Thus, the first and second problems for a lexicalist analysis, as noted earlier, are solved. A Norwegian tense affix is expected on the English verb, since the Voice projection, containing the lower tense feature, is part of the Norwegian structure. Furthermore, feature checking between T and the verb, now situated in Voice, is unproblematic because both T and Voice belong to the same abstract syntactic



frame and thus contain corresponding features, whereas the verb stem alone may belong to another language.

The exoskeletal analysis can also deal adequately with the other attested verb pattern, illustrated in (28), where the mixed English verb has English inflection although the rest of the clause may be Norwegian. Such a pattern may occur if the main exoskeletal structure in fact is English, with Norwegian phrases inserted in argument and adjunct positions, which is a possible mixing pattern given this analysis.

Summing up this brief section on mixing in the verbal domain, our hypothesis is that just like in the nominal domain, the exoskeletal analysis can account for all the attested mixing patterns in the corpus whereas the lexicalist one is problematic in several respects, as noted. This clearly favors the exoskeletal approach.<sup>20</sup>

## 8 Conclusion

According to MacSwan (2014: 18), generative theories prior to the Minimalist Program did not provide sufficient theoretical tools for implementing an adequate language mixing or codeswitching analysis; prior attempts were simply doomed to fail, seeing as the formal model they built on was wrong to begin with. MacSwan contrasts this approach with his own, the minimalist lexicalist one, which he finds more satisfying:

Within the [Minimalist Program], structures are built from a stock of lexical items, with lexical insertion [...] taking place at the outset. This important development permits [codeswitching] researchers to probe the structural consequences of particular lexical items from specific languages [...].

By scrutinizing one paper explicitly adopting such a minimalist lexicalist approach, Moro (2014), we contest the claim that syntactic structure is dependent on the language of the lexical items involved. In fact, we show that Moro's analysis of English – Spanish mixing between a determiner and a noun fails to predict the observed patterns. Under standard minimalist feature valuation mechanisms, the pattern Moro argues is well-formed, i.e., a Spanish D and English N, would crash the derivation, whereas the alleged ill-formed pattern, an English D and Spanish N, actually should converge.

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<sup>20</sup> Additional support for the exoskeletal analysis comes from argument structure patterns in the verbal domain. These patterns are also unexpected given a lexicalist analysis, see Áfarli (2015a: 18–20) for discussion.

Adopting an exoskeletal approach to grammar, i.e., a model that entails the independent generation of syntactic structures, we successfully analyze both patterns. This is further supported by data showing English – Norwegian mixing between a determiner and a noun in the heritage language American Norwegian, as well as mixing in the verbal domain in the same language. For instance, Sections 5 and 6 illustrate that an English noun inserted into American Norwegian has no power to influence the overall syntactic structure of the phrase, not even on its own inflection; and likewise, Section 7 shows that the same is true for English verbs inserted into otherwise Norwegian phrases in American Norwegian.

Thus, it remains to be seen what empirical shortcomings exoskeletal models might be subject to cross-linguistically, but as we have tried to argue in this article, they seem to remain our most viable options for analyzing language mixing data at present.

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