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Compound-Internal Language Mixing in American Norwegian

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Abstract: This paper investigates cases of compounding in the heritage language American Norwegian (AmNo), where elements from Norwegian and English are mixed word-internally, e.g., *hostecandy* 'cough candy', where the Norwegian item *hoste* 'cough' is combined with the English item *candy*. Norwegian and English create compounds in similar ways, but with certain important differences, e.g., the use of linking elements. Based on data from the *Corpus of American Nordic Speech*, we investigate the encounter of these two languages within one word and find that both Norwegian and English lexical items occur as both left-hand and right-hand members of mixed compounds. Moreover, these mixed compounds are generally accompanied by Norwegian functional items. Hence, we argue that the overall structure of mixed compounds in AmNo is Norwegian, and English lexical items may be inserted into specific positions. This is successfully analyzed in a DM/exoskeletal model of grammar. We show that our results are in line with what we expect based on previous accounts of AmNo language mixing and Norwegian compounds, and our specific focus on compound-internal mixing provides a novel perspective and new insights into both the structure of compounds and the nature of language mixing.

Keywords: compounds; language mixing; American Norwegian; heritage language

1. Introduction

This paper investigates compound-internal language mixing in the heritage language American Norwegian (AmNo). An illustrative example is *hostecandy* 'cough candy', where the Norwegian item *hoste* 'cough' and the English item *candy* are mixed word-internally. The example is drawn from AmNo, the language spoken by descendants of Norwegian immigrants who settled in the U.S. in the 1800s and early 1900s. Due to the contact with English, AmNo speakers often use English items when they speak Norwegian, and language mixing, understood as utterances composed of lexical items and grammatical features from two or more languages (e.g., Muysken 2000), is therefore a frequent phenomenon in AmNo.

Norwegian and English create compounds in similar ways, but with certain important differences, such as the use of linking elements, which is common in Norwegian, but not in English. We investigate the outcomes of the encounter of these two languages within one word, and we argue that this provides new insights into both the structure of compounds and the nature of language mixing. Our main goal is to present and discuss the patterns that occur in compound-internal language mixing between Norwegian and English, and to provide formal analyses of these. In doing so, the paper also contributes to the general typology of compound-internal language mixing with different language pairs (cf. Alexiadou 2020).

The paper is structured as follows. In Section 2, we present the structure of compounds in Norwegian and in English, and in Section 3, we discuss AmNo and the language mixing attested there in previous research. On this foundation, we introduce our predictions for AmNo compound-internal language mixing in Section 4. Section 5 presents methodology

and data, and in Section 6, we present our results and analyses. In Section 7, we discuss our findings in relation to some more general questions, and Section 8 concludes the paper.

2. The Structure of Compounds

2.1. Compounds in Norwegian

Compounding in Norwegian is similar to compounding in other Germanic languages. Norwegian compounds are endocentric, right-headed, and sometimes contain linking elements. Compounds may be created from both simple and complex elements (bare forms, derivations, compounds, phrases), and with various lexical categories. Some examples are given in (1).[1]

1. a.   et   bok-kapittel
         a.INDF.SG.NEUT   book.N.FEM-chapter.N.NEUT
         'a book chapter'

    b.   ei   fred-s-due
         a.INDF.SG.FEM   peace.N.MASC-LINK-dove.N.FEM
         'a peace dove'

    c.   jul-e-mat-en
         christmas.N-LINK-food.N-
         DF.SG.MASC
         'the Christmas food'

    d.   observ-asjon-s-notat-bok-a[2]
         observe-N-LINK-note-book.N-
         DF.SG.FEM
         'the observation notebook'

    e.   skriv-e-bord-a
         write.V-LINK-table.N-DF.PL.NEUT
         'the desks'

    f.   små-kak-ene
         small.A-cake.N-DF.PL.FEM
         'the cookies'

    g.   med-skuld-ig
         with.P-guilt-A
         'complicit'

    h.   det [du tror det ikke før du får se det]- stor-e tre-hus-et[3]
         the.DF.SG.NEUT [you believe it not before you see it]CP-big-A.DF
         tree.N-house.N-DF.SG.NEUT
         'the *you-won't-believe-it-until-you-see-it* big treehouse'

All of the examples in (1) are right-headed. This means that the grammatical treatment of the compound as a whole aligns with the grammatical properties of the compounds' right-hand member. Hence, the compound belongs to the same word class as its right-hand member, and it is accompanied by functional material accordingly. This is shown explicitly for (1a–b), where the gender of the indefinite article agrees with the gender of the right-hand member, i.e., neuter in (1a) and feminine in (1b), and not with the gender of the left-hand member. This pattern holds for all the examples in (1), although detailed

information about individual components is only included in the first two examples, for illustrative purposes. Note that in Norwegian, most lexical categories can participate in compounding, but nominal compounding is most common.

Examples (1b–e) demonstrate the use of linking elements in compounds. Linking elements in Norwegian occur after certain nominal and verbal left-hand members and are usually realized as -*e* or -*s*, but other forms also occur (-*a, -ar, -en, -er, -es*). Most linkers in Norwegian are historically derived from nominalizers and genitive markers. Since Norwegian no longer has case marking, except on personal pronouns, linking elements cannot be considered case markers in the synchronic grammar.[4] Instead, they are compound-specific forms that attach to the compound's left-hand member.

The choice of linking element is determined by the left-hand member. For example, the simple nominal left-hand member *bok-* in (1a) never takes a linker in compounds, *fred-* 'peace' and the suffix -*(a)sjon-* always take an *s*-linker, cf. (1b,d), and *jul-* as a left-hand member always takes an *e*-linker, cf. (1c). Furthermore, verbal left-hand members usually take an *e*-linker, (1e), and adjectival, prepositional, and phrasal left-hand members usually take no linker. Based on this, we may distinguish two types of linkers. One type is lexically determined and must therefore be listed on an item-to-item basis (e.g., *jul+e, fred+s*). The other type is determined by the category and declension class of the left-hand member (e.g., verbs take *e*-linkers, with a few exceptions, and prepositions take no linkers). See Eik (2019) for an extensive discussion of Norwegian linkers.

It has been argued that compounding in Scandinavian is best analyzed as adjunction of the left-hand member to the right-hand member (Josefsson 1998 on Swedish; Harðarson 2017 on Icelandic and Eik 2019 on Norwegian).[5] An analysis of compounding as left-adjunction accounts for the right-headedness of Norwegian compounds in the following way: a compound behaves like its right-hand member because it *is,* in the relevant sense, the right-hand member. Adjunction simply adds new material (the left-hand member) without altering the properties of the host structure (the right-hand member) in any significant way.

Using the specific analysis of Eik (2019), the structure of the Norwegian compound *barndomsåra* 'the childhood years' is as in (2). This analysis is couched in a Distributed Morphology (DM)/exoskeletal model of grammar (see, e.g., Embick 2015; Borer 2005a, 2005b; Grimstad et al. 2018), where syntax operates both above and below the word level. We provide a brief explanation of the structure below.

2.
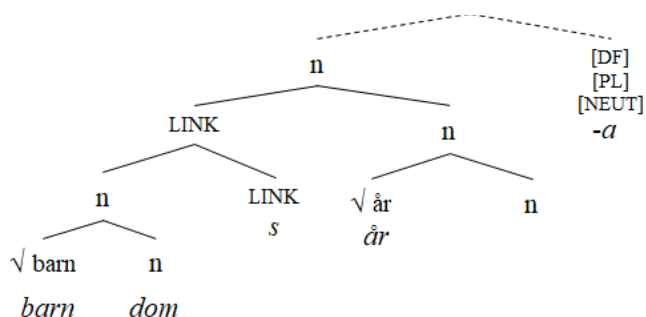
Complex linguistic expressions, such as *barndomsåra,* are composed of a set of abstract morphological building blocks (roots and functional feature bundles), which are realized by phonological exponents post-syntactically (marked in italics in the structure). The compound in (2) is generated in the following way: the left-hand member is composed of the acategorical root √barn 'child', a nominalizer, and a linking element.[6] Together, these are realized phonologically as *barndoms-*. The linker is realized as -*s* due to the suffix -*dom*, which always takes an *s*-linker in compounds. The right-hand member is composed of the acategorical root √år and a phonologically silent nominalizing head. Thus, categorizing

heads can be either silent or realized by a derivational suffix in this framework. Finally, the entire left-hand member is adjoined to the categorizer of the right-hand member, before the compound as a whole is inflected, indicated here by the dotted line.

In the remainder of this paper, we provide simplified representations in which left-hand members of compounds are not broken down into category-less roots + categorizers. It is often difficult to determine whether left-hand members of compounds are in fact categorized, or whether they are category-less roots, a question which is also debated in the literature (Josefsson 1998; De Belder 2017; Eik 2018).[7] This distinction is not crucial to our purposes here, and we therefore provide slightly simplified syntactic representations where this part of the internal structure of left-hand members is not specified.

Some key factors in the DM/exoskeletal approach become especially relevant here and in our further analyses. First, the DM/exoskeletal approach does not assume that lexical items hold functional features, specified in the lexicon, that project syntactic structures. Instead, DM/exoskeletal approaches assume that syntactic structures are generated independently from the lexical items that are subsequently inserted into these syntactic structures. Second, the abstract syntactic structure is assumed to separate between functional and non-functional positions. In the non-functional positions, lexical items (roots/stems) may be inserted freely. This is the case with *barndom* and *år* in (2).[8] The functional positions, on the other hand, hold functional features or feature bundles, and insertion into these positions is regulated by specific feature matching requirements, formulated as the Subset Principle:

> 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.
>
> (Halle 1997, p. 428)

In other words, a functional exponent may only be inserted into a functional position if it matches the features required by the syntactic structure and does not hold features *not* specified in the structure. Moreover, when there is competition between two or more eligible exponents, the one matching the most features is inserted.

As is seen in (2), the compound enters into a larger DP structure where the functional position holds functional features appropriate for Norwegian nouns: definiteness, number, and gender. Following the Subset Principle, this position is realized by *-a*, the Norwegian functional exponent for definite, plural, and neuter phrases. We return to how the DM/exoskeletal approach is especially well suited for analyzing cases of language mixing in Section 3.

2.2. Comparing Norwegian and English Compounds

English and Norwegian create compounds in similar ways. Like in Norwegian, English endocentric compounds are right-headed, they can be formed with both simple and complex elements (bare forms, derivations, compounds, phrases, cf. *observation notebook* in 1d), and they can be formed with elements of different lexical categories (e.g., *a bluebird*, *to ninja walk*). However, there are also some differences. First, English compounds do not take linking elements.[9] Second, English seems to be more restricted in terms of the lexical categories that are combined. Notably, Norwegian more easily allows verbal left-hand members (cf. Norwegian *skrivebord* vs. English **write table,* i.e., 'desk'), although verbal left-hand members also occur in English. Third, English, unlike Norwegian, is known to allow some regular plural inflection on left-hand members (e.g., *neurosciences department*). Finally, English has exocentric compounding (e.g., *pickpocket*), which Norwegian does not have, except for a handful of examples (Faarlund et al. 1997, p. 67). Such differences and

similarities between English and Norwegian make it interesting to investigate the outcomes that occur when the two languages meet in AmNo compounds.

In the next section, we present general properties of AmNo and patterns of language mixing that are known to occur in the language. Along with the previous section, this allows us to make certain predictions for mixed compounds in AmNo, which are presented in Section 4.

3. Language Mixing in American Norwegian

As mentioned in the introduction, AmNo is a heritage language of Norwegian spoken by descendants of Norwegian immigrants who settled in the U.S. in the 1800s and early 1900s. Rothman (2009, p. 156) defines a heritage language as a language acquired naturalistically and spoken at home, but which is not the dominant language in the society at large. In the case of AmNo, these speakers have AmNo as their L1, whereas the dominant language in society is English, and for today's speakers of AmNo, English is also their dominant and preferred language. The contact situation between AmNo and English has, nevertheless, changed considerably over time. Up until the 1920s, AmNo was a language actively spoken at home and in smaller communities (Haugen 1953). Then started a period where English gradually took over key functions in AmNo societies, and today, AmNo is a moribund language. Nevertheless, despite great variation in individual competences, all speakers are relatively fluent (see, e.g., Johannessen and Salmons 2012; Johannessen and Laake 2017).
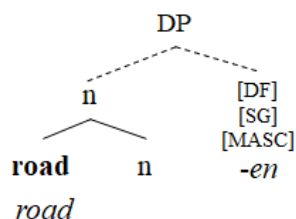
Despite the linguistic dominance of English in society, AmNo remains unequivocally Norwegian. However, due to the contact with English, speakers of AmNo frequently use English words or phrases in their AmNo. Recent studies show that the typical pattern for such language mixing is English lexical items being integrated into a Norwegian functional structure (Grimstad et al. 2014; Alexiadou et al. 2015; Grimstad 2018; Riksem 2018a; Grimstad et al. 2018; Riksem et al. 2019).[10] Interestingly, this pattern of language mixing was attested already in the early 1900s and also at various stages in the following years, showing that the typical pattern is consistent across time (see, e.g., Flaten 1900; Haugen 1953; Hjelde 1992; Riksem 2018a). This means that even though AmNo speakers might be under more influence from English today, the general pattern of language mixing persists (see Riksem 2017 for a discussion of some diachronic changes). In the following, we briefly show how language mixing can be analyzed.

Taking noun phrases as our example, Norwegian nouns are inflected for definiteness, number, and gender, and this is visible on functional suffixes and through agreement relations within the noun phrase. Indefinite singular phrases in Norwegian have a prenominal article, whereas definite and/or plural phrases are realized with a functional suffix on the noun stem. Moreover, Norwegian has three genders, masculine, feminine, and neuter, and both the prenominal article and the functional suffixes agree with the noun's grammatical gender.[11]

Language mixing within noun phrases in AmNo are typically cases where English nouns are accompanied by Norwegian functional items. A couple of examples are shown in (3), with the structure for (3b) provided in (4).[12] English items are given in **bold**.

3.   a.   et   **shed**   (coon_valley_WI_02gm)

                         a.INDF.SG.NEUT   shed

                         'a shed'

         b.   **road-**en   (westby_WI_01gm)

                         road-DF.SG.MASC

                         'the road'

4.

Employing a DM/exoskeletal model, Riksem (2018a) analyses data like those in (3) as cases where an English root or stem has been inserted into a non-functional position in the abstract syntactic structure. As these positions are not restricted by feature matching requirements, roots/stems from any language may be inserted. The functional positions, on the other hand, hold a functional feature (bundle) containing grammatical features associated with Norwegian, as these phrases occur in otherwise Norwegian contexts. Following the Subset Principle, these positions are realized by Norwegian functional exponents, as these exponents will provide the best match to the features required. While a Norwegian exponent provides a match to all three features in the structure, an English exponent will not be able to provide a gender feature, and is thereby ousted by the more specified Norwegian exponent. Hence, following this analysis, we expect the functional positions in AmNo structures to be realized by Norwegian functional exponents, but an exception to this rule is discussed in Section 6.5.2.

Especially noteworthy in (3) is, moreover, the fact that English lexical items are assigned genders and that different genders are used (neuter in (3a) and masculine in (3b)). This strengthens the analysis of these lexical items as being inserted into a Norwegian functional structure, as English, being a non-gender language, is not expected to provide gender features for nouns. In other words, the lexical item itself does not provide a gender feature but is assigned gender by virtue of being inserted into a syntactic structure holding such a feature.[13]

4. Predictions for Mixed Compounds in American Norwegian

Based on previous analyses of language mixing in AmNo simple nouns (Riksem 2018a), and the structural analysis of Norwegian compounds (Eik 2019), we are now able to make certain predictions for the mixing patterns that occur within AmNo compounds.

First, we expect the shared properties of compounds in English and Norwegian to be present in mixed compounds in AmNo as well. Thus, we expect AmNo compounds to be right-headed, to have a preference for nominal elements, and to allow for both simple and complex constituents compound-internally.

Second, seeing as speakers of AmNo are known to produce simple mixed nouns of the type in (3) above, we can expect them to produce compounds of the format in (5).

5. a. et [left-hand member]-**shed**
   a.INDF.SG.NEUT [left-hand member]-shed

   b. [left-hand member]-**road**-en
   [left-hand member]-road.DF.SG.MASC

The mixed compound type in (5) is predicted from the analysis of compounding as adjunction of left-hand members to right-hand members. Under this account, right-hand members have the structure of simple nouns, as in (3), and left-hand members are simply added to this structure, which predicts (5). By the same reasoning, we also expect to find compounds where right-hand members are fully Norwegian, seeing as these would be created like any Norwegian simple word, which speakers of AmNo already produce.

Third, in otherwise Norwegian contexts, we expect functional elements such as articles and inflectional suffixes to be Norwegian, both when occurring with Norwegian lexical

items and with English lexical items. This expectation is based on both the feature matching restrictions associated with functional positions in a DM/exoskeletal model, as well as findings in previous studies of AmNo language mixing, presented in the previous section (however, see Riksem 2017 for some exceptions).

Fourth, turning to left-hand members, we expect that these can be English or Norwegian, regardless of the language of the right-hand member. Assuming that the root/stem positions in the compound are non-functional positions, these should, following previous analyses of language mixing, be open to lexical items from either language. Moreover, it has long been observed that left-hand members of compounds in Germanic are free to contain many different types of material. As pointed out by Wiese (1996), left-hand members can be non-alphabetic signs (*the @-sign*), non-verbal gestures (*seine* [shrug of the shoulders]-*Haltung* 'his [shrug of the shoulders]-attitude'), full phrases (*over-the-fence gossip),* and even mixed phrases (*diese Rien-ne-vas-plus-Behauptung*, 'this rien-ne-va-plus claim' (see also Botha 1981; Lieber 1992). Based on this, we do not expect the language used in the right-hand member to impose any requirements for the language of the left-hand member in mixed compounds.

Thus far, our expectations for mixed compounds are clear. However, concerning one area in particular, linking elements, it is less clear what to expect. As was laid out in Section 2, linking elements in Norwegian are licensed by an interplay of formal and lexical properties of the left-hand member. Based on the close connection between left-hand members and linkers, we expect Norwegian left-hand members to occur with the appropriate Norwegian linker, and English left-hand members to occur without a linker. On the other hand, the linguistic status of linking elements is known to be a notoriously difficult and unpredictable area of morphology, and the function and general behavior of linking elements across languages is still not fully understood (see, e.g., the languages described in Lieber and Štekauer 2009). Therefore, we are curious to see how this plays out in mixed compounds.

Foreshadowing our findings, most of the predictions above turn out to be supported by our data. We do, however, find a few examples that challenge these predictions. The main patterns as well as the exceptions are discussed in Section 6.

5. Methodology and Data

The data we employ in the current study are drawn from the *Corpus of American Nordic Speech* (CANS), version 3.1, comprising approx. 773,000 words (Johannessen 2015). We focus on the 246 speakers of Norwegian heritage, and among these, we find speakers recorded as early as 1931 and as late as 2016. In this paper, we have considered both the early and the more recently recorded data under one for two main reasons. First, as discussed in Section 3, the typical pattern for language mixing, with English items being integrated into Norwegian structures, has been shown to be relatively stable across time. Second, as the data of interest in this paper, mixed compounds, may not be the most frequent, we aim to cast our net as widely as possible in the search of relevant examples.

As neither language mixing nor compounds are tagged explicitly in CANS, we have sorted our data manually. CANS provides a tag x which gives all cases in the corpus *not* found in the Norwegian dictionary. As we expect mixed compounds to be in this group, we have used the tag x as the starting point for our search for data. However, this tag accommodates a vast amount of data as it also covers, e.g., dialectal variants, interjections, and language mixing. Finding all (mixed) compounds in the corpus would be a tremendous task, and indeed, unambiguously separating all mixed compounds from monolingual compounds is also challenging as English and Norwegian in many cases have lexical overlaps (e.g., *school/skole, doctor/doktor*).

As our goal in this paper is not a quantitative one, we have not performed such detailed searches. Instead, we have selected a sample of compounds which clearly show language mixing as the basis for our analyses, and these data serve to illustrate the possible patterns of mixed compounds. Importantly, corpus data can only tell us what types of

compound-internal language mixing are possible. The data do not allow us to draw firm conclusions about impossible outcomes, seeing as the absence of evidence is not evidence of absence. That is, the absence of a particular form in the corpus, especially of the limited size of CANS, does not prove that this form could never be produced by the speakers. Yet, as we will see, a number of interesting patterns do appear from the data.

Finally, CANS provides both an orthographic and a phonological transcription as well as the actual recording with sound and video. To make sure our selected examples are in fact cases of compound-internal language mixing, we have considered both levels of transcription and also listened to the recordings of the relevant data to identify lexical and functional components from both languages. For the sake of simplicity, we use the orthographic transcription when presenting our data in the following unless otherwise stated.

6. Results and Analysis

In the current section, we present the patterns of language-mixed compounds that we find in the corpus, along with formal analyses. The compounds we present all occur in otherwise Norwegian utterances. An example of such an utterance is given in (6).

6.	Vi hadde både	kar-**teacher**-e	og vi	hadde	kvinn-folk-**teacher**
	We had both	man-teacher-INDF.PL	and we	had	women-folk-teacher

'We had both male teachers and a female teacher'
(blair_WI_28um)

The compound in (6) illustrates how speakers of AmNo can integrate English lexical items into their Norwegian. In our material, we find that this can be executed in a number of ways, notably as *English compounds with Norwegian inflection* (*sidewalken* 'the sidewalk'), *English-Norwegian compounds* (*beerflasker* 'beer bottles'), *Norwegian-English compounds* (*en hostecandy* 'a cough candy'), and recursive mixed compounds (*blackbærbusk* 'blackberry bush'). We discuss each of these types in turn. We also discuss our findings concerning linking elements and non-nominal categories in compounds.

In addition to the aforementioned types of mixed compounds, it is worth noting that we also find fully Norwegian compounds (e.g., *tippoldefar* 'great grandfather', *innkjøringa* 'the driveway') and fully English compounds in English contexts (e.g., *soybeans, the railroad station*). Such forms are not discussed here, as we limit ourselves to cases where compounds are involved in language mixing.

6.1. English Compounds with Norwegian Inflection

One of the mixed compound types in our data is the E+E-compound accompanied by Norwegian functional items or suffixes, such as those in (7).

7.	a.	**side-walk**-en	(stillwater_MN_01gm)
		side-walk-DF.SG.MASC	
		'the side walk'	

	b.	**grocery-store**-et	(sunburg_MN_10gm)
		grocery-store-DF.SG.NEUT	
		'the grocery store'	

	c.	ei	**comic-book**	(coon_valley_WI_10gm)
		a.INDF.SG.FEM	comic-book	
		'a comic book'		

In these cases, the English lexical items that constitute the compound are inserted into the non-functional positions of the structure, and the functional positions are realized by Norwegian functional exponents. Thus, the compounds in (7) follow the typical pattern of language mixing, as described in Section 3, where one language may provide lexical material and the other language provides the functional material and structure. Parallel to the examples in (3), the E+E compounds are also assigned a gender, and as (7) demonstrates, all three genders are attested.

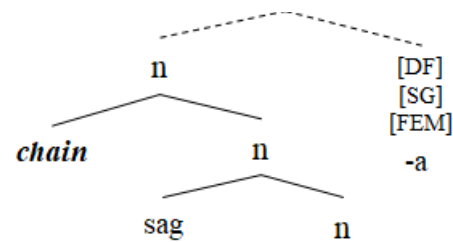*6.2. English Left-Hand Member + Norwegian Right-Hand Member*

The corpus also contains several cases of E+N-compounds, exemplified here in (8) and (9). While the E+N-compounds in (8) appear in their uninflected form, appropriate for the Norwegian context in which they were used, the compounds in (9) are inflected by Norwegian functional material.

8.   Uninflected E+N-compounds
    a.   **road**-arbeid   (coon_valley_WI_02gm)
      'road-work'

    b.   **grape**-vin   (westby_WI_06gm)
      'grape-wine'

9.   Inflected E+N-compounds
    a.   **chain**-sag-a   (blair_WI_07gm)
      chain-saw-DF.SG.FEM
      'the chainsaw'

    b.   **beer**-flask-er   (westby_WI_01gm)
      beer-bottle-INDF.PL.FEM
      'beer bottles'

    c.   **black**-bær-a   (westby_WI_01gm)
      black-berry-DF.PL.NEUT
      'the blackberries'

The inflectional suffixes in (9) all have the expected form for these right-hand members, in line with the right-hand head rule, which holds in both Norwegian and English. Moreover, from the DM/exoskeletal perspective, this is also expected as the functional positions are assumed to hold functional features typical for Norwegian structures (as the phrases occur in otherwise Norwegian contexts), and are thus realized by Norwegian functional material.

Turning to the structural analysis, a compound such as (9a) *chainsaga* can be represented as in (10). The Norwegian right-hand member *sag* 'saw' is built just like the simple Norwegian noun *sag*. The English left-hand member *chain* is then adjoined on top of this. Finally, the compound as a whole is inflected by the Norwegian functional exponent *-a*, the appropriate exponent for definite, singular, feminine phrases. In other words, the syntactic derivation precedes as expected, regardless of the language of the inserted lexical item. Note that the left-hand member can be English even though the right-hand member and inflection are Norwegian, which can be taken as confirmation of the relatively independent behavior of left-hand members.

10.

Among the E+N-compounds, we also find examples such as *farm-e-år,* where an English left-hand member takes a Norwegian linking element. Such cases are discussed in Section 6.5.[14]

6.3. Norwegian Left-Hand Member + English Right-Hand Member

N+E-compounds are also common in the corpus and occur in otherwise Norwegian contexts. Such compounds may be uninflected, as in (11), or accompanied by Norwegian functional material, as in (12).

11.   Uninflected N+E-compounds
    a.   tvilling-**study**   (flom_MN_02gm)
        twin-study

    b.   gård-**machinery**   (gary_MN_01gm)
        farm-machinery

    c.   bil-**accident**   (appleton_MN_01gm)
        car-accident

12.   N+E-compounds with Norwegian functional material
    a.   halv-**pint**-er   (westby_WI_01gm)
        half-pint-INDF.PL[15]
        'half pints'

    b.   ved-**shedd**-en   (blair_WI_27um)
        wood-shed-DF.SG.MASC
        'the wood shed'

    c.   en   host-e-**candy**   (sunburg_MN_03gm)
        a.INDF.SG.MASC   cough-LINK-candy
        'a cough candy'

N+E-compounds of this type were predicted to exist from the existence of single-word mixed forms such as *road**en*** 'the road' (Riksem 2018a) and the analysis of compounding as adjunction. In our view, the right-hand members in (11) and (12) are generated just like single-word mixed forms, and left-hand members are simply added on top of these structures to create compounds. This relationship between single-word mixed forms and compounded mixed forms is illustrated by (13) and (14).

13.
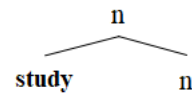
14.
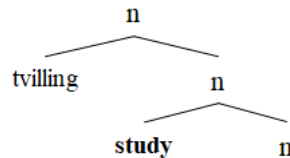
The presence of N+E-compounds in Norwegian sentences might seem surprising. Previous work on compound-internal language mixing has suggested that the language of the larger utterance is usually also the language of the compound's head (Muysken 2000, p. 150, based on data from Clyne 1967; Treffers-Daller 2005). This can be linked to the requirement that other elements in the phrase must agree with the compound's head, which in our case is the right-hand member. Yet, the compounds in (12) have an English right-hand member accompanied by Norwegian functional items. As outlined above, this can nevertheless be expected following the DM/exoskeletal model. Lexical items from either language may be freely inserted into the non-functional positions in the structure, while functional exponents are inserted into functional positions following the Subset Principle. From this perspective, it is not surprising that the lexical element of the compounds' head (i.e., the right-hand member) can be English, as long as the inflection is Norwegian. Thus, the analysis of N+E-compounds as in (12) is completely parallel to the analysis of language mixing reported in, e.g., Grimstad (2018) and Riksem (2018a).

6.4. Complex Constituents and Recursive Mixed Compounds

In both English and Norwegian, compounds may also become constituents in larger compounds, thus creating the long recursive compounds that Germanic languages are known for. We find several examples of mixed complex compounds, exemplified in (15).

15. Compounded left-hand member
   a. **[oat-meal]**-bakst-er   (coon_valley_WI_04gm)
       oat-meal-baking-INDF.PL
       'oatmeal baked goods'

   b. **[sing-song]**-norsk   (harmony_MN_01gk)
       sing-song Norwegian

   c. **[real-estate]**-mann   (rushford_MN_01gm)
       real-estate-man

   d. **[bed-room]**-glas-et   (westby_WI_01gm)
       bed-room-window-DF.SG.NEUT
       'the bedroom window'

e.	[**black**-bær]-busk black-berry-bush	(westby_WI_06gm)	

f.	[folk-e-dans]-**group** folk-LINK-dance-group 'folk dance group'	(vancouver_WA_01gm)	

g.	[lute-fisk]-**supper**-an[16] lye-fish-supper-DF.PL.MASC 'the lutefisk suppers'	(westby_WI_01gm)	

h.	[hundre-daler]-**bill**-er hundrer-dollar-bill-INDF.PL 'hundred dollar bills'	(westby_WI_01gm)	

i.	[kvinn-folk]-**teacher** woman-folk-teacher 'female teacher'	(blair_WI_28um)	

All of the compounds in (15) have the structure [[X Y] Z], where the left-hand member is itself a compound. These examples demonstrate that the left-hand member can be an N+N compound, an E+E compound, or itself a mixed compound (15e), and that these can be combined with either a Norwegian or an English right-hand member. We have not found any instances of mixed compounds with the structure [X [Y Z]] in the corpus. Compounds with the latter type of structure are also less common in Norwegian than the alternative bracketing (Lødrup 1989, p. 152), although both are possible, cf. *dialekt-[ord-bok]* 'dialect word-book'='dialect dictionary' (Eik 2019).

English and Norwegian are among the languages that allow left-hand members to be derived nominals with overt nominalizing suffixes, and this is also found in AmNo mixed compounds. In (16a), the left-hand member is a derived noun, and in (16b–c), the left-hand members are synthetic compounds, i.e., both compounded and derived.

16. Derived left-hand members

a.	[forsikr-ing-s]-**office** insure-N-LINK-office 'insurance office'	(billings_MT_01gm)	

b.	[**home-stead-ing**]-dag-ane[17] home-stead-N-day-DF.PL.MASC 'the homesteading days'	(stillwater_MN_01gm)	

c.	[lefse-bak-ing]-**class** *lefse*-bake-N-class 'class for baking thin Norwegian pastry'	(sunburg_MN_06gm)	

The nominalizing suffix *-ing* is used extensively in both English and Norwegian, which means that the suffix in (16a–c) could in principle be taken from either of the two languages. Note, however, that left-hand members with *-ing* in Norwegian usually take an *s*-linker in

compounds. In the examples above, this is seen in (16a), but not in (16b–c). We return to the question of linking elements in the next section.

For completeness, the full structural complexity of a compound like (16b) is given in (17).

17.
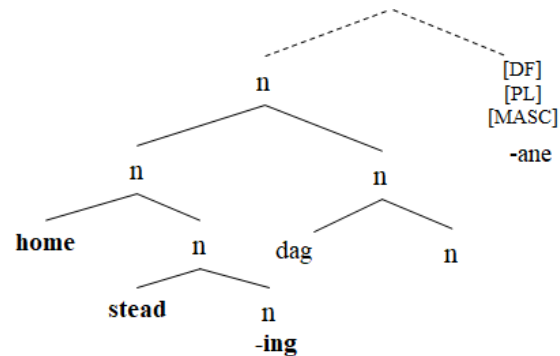
6.5. Linking Elements in Mixed Compounds

As discussed in Section 2, some Norwegian compounds take a linking element between the left-hand and right-hand member. The presence or absence of a linking element, as well as the choice of linking element, is determined by the compound's left-hand member. Some left-hand members take an *s*-linker, some take an *e*-linker or some other linker, and some take no linker.

In Section 4, outlining our predictions for AmNo mixed compounds, we pointed out that our expectations for linking elements were not entirely clear. On the one hand, we expect Norwegian left-hand members to occur with the appropriate Norwegian linker, and English left-hand members to occur without a linker. On the other hand, linking elements are known to be rather unpredictable and without a clear function in the language, making their behavior in contact situations worth looking into. In this connection, it is interesting to observe that speakers of AmNo do produce some mixed compounds with linking elements.

We first consider linking elements in N+E-compounds before moving to linking elements in E+N-compounds, the latter being the most noteworthy in this context.

6.5.1. Linking Elements in N+E-Compounds

We find several mixed compounds where a Norwegian left-hand member is followed by the appropriate Norwegian linking element. Examples are given in (18).

18.   Norwegian left-hand members with linking elements
    a.   hjort-e-**tick**   (sunburg_MN_04gk)
                deer-LINK-tick
                'deer tick'

    b.   jul-e-**store**   (chetek_WI_01gk)
                christmas-LINK-store
                'christmas store'

    c.   gift-e-**certificate**[18]   (albert_lea_MN_01gk)
             marry-LINK-certificate
             'marriage certificate'

    d.   tydal-s-**settlement**   (flom_MN_01gm)
             Tydal-LINK-settlement
             'settlement of people from Tydal in Norway'

This indicates that the use and choice of linking elements are kept in the grammars of these speakers.

In other cases, a linking element seems to be omitted by speakers of AmNo in places where it might have been expected in Norwegian, cf. (19) and (20). However, this requires some further discussion.

19.   a.   bunad-**parade**   (coon_rapids_MN_02gk)
             'parade with Norwegian national costumes'
             Expected: *bunads-*

       b.   gård-**machinery**   (gary_MN_01gm)
             farm-machinery
             Expected: *gårds-*

20.   a.   skol-**board**-et[19]   (westby_WI_01gm)
              school-board-
             DF.SG.NEUT
             'the school board'
              Expected in written Norwegian: *skole-*

       b.   heim-**brew**   (westby_WI_06gm)
             home-brew
             'home brew'
              Expected in written Norwegian: *heime-*

       c.   et   melk-**factory**   (blair_WI_34gm)
             a.INDF.SG.NEUT   milk-factory
             'a milk factory'
              Expected in written Norwegian: *melke-/mjølke-*

The left-hand members in (19) take an *s*-linker in spoken and written Norwegian, making its absence in (19) conspicuous. The examples in (20) are somewhat different. When compared to standard written norms, these compounds seem to lack an *e*-linker (pronounced schwa); however, this *e*-linker is also absent in many spoken dialects of Norwegian. Searches in the LIA corpus of traditional Norwegian dialects confirm that all the left-hand members in (20) show variable behavior with respect to linking elements in Norwegian.[20] While it is very difficult to map out the dialect background of the AmNo speakers and their ancestors, we know that many of the Norwegian immigrants came from the valley areas in the eastern part of Norway (see, e.g., Haugen 1953; Hjelde 2015), which includes areas where such *e*'s are omitted. Thus, an *e*-linker may never have been present in these speakers' variety of Norwegian, and this would explain its absence in (20).[21]

Another possible analysis is that this is a result of cross-linguistic influence from English, which does not have linkers. Linking elements do not have a clear semantic or phonological role, and theabsence of a linker is also among the most common patterns for

compounds in Norwegian (e.g., 1a). Taken together, these two facts could perhaps make linkers vulnerable in contact situations. Finally, a third potential explanation of the missing linking elements in (19) and (20) may be anchored in findings in recent investigations into changes in heritage grammars. Investigations of, e.g., heritage Russian (Polinsky 2011) and heritage German (Putnam and Sánchez 2013) suggest that these grammars may have been subject to a structural reanalysis changing the composition of the structure, which in turn would have consequences for the functional exponents that are inserted, cf. the Subset Principle. We must leave it to future investigations to pursue these issues further.

6.5.2. Linking Elements in E+N-Compounds

Among our mixed compounds, there are also E+N-compounds that occur with a Norwegian linking element. As noted earlier, linking elements are determined by and form a constituent with the left-hand member of the compound, which in these cases is English. The presence of Norwegian linking elements on English left-hand members is interesting, as it seems to suggest that English items can, to some extent, pick out a Norwegian linker to be used in compounds.

21.   English left-hand members with Norwegian linkers

    a.   **sleep**-e-værelse-**s**[22]   (chicago_IL_01gk)
        sleep-LINK-room-PL
        'bedrooms'

    b.   **farm**-e-år   (decorah_IA_02gm)
        farm-LINK-year
        'farmyear'

    c.   **rent**-ar-peng[23]   (albert_lea_MN_01gk)
        rent-LINK-money
        'rent money'

Note first that all of the English left-hand members in (21) can be interpreted as either verbs or nouns (*sleep, farm, rent*).[24] From a Norwegian perspective, *sleep* in (21a) has a distinctly verbal flavor; a common Norwegian equivalent of English *bedroom* is *soveværelse* 'sleep room', where the left-hand member *sove* (/so:və/) is unambiguously verbal (the corresponding noun is *søvn* /sœvn/). The status of *farm* in (21b) is less clear, but this also has some verbal semantics, as it seems to refer to the act of farming rather than to a farm. As for *rent*, this is also unclear, and we simply note that Norwegian verbal left-hand members are typically followed by *-e*, or, in certain dialects, *-ar*, as in (21c).[25]

The presence of linkers in E+N-compounds seems a bit of a mystery, given what has been said about linkers so far. However, if the left-hand members in (21) are all treated as verbs by the speakers, this could in fact help explain how English left-hand members can occur with a Norwegian linker. As described briefly in Section 2, Norwegian linkers seem to come in two types: (1) unsystematic, unpredictable linkers that are lexically determined and must be listed on an item-to-item basis, and (2) systematic, predictable linkers that are determined by formal, grammatical properties of the left-hand member, specifically the left-hand member's category and declension class. Verbal linkers are argued to be of the second type (Eik 2019, pp. 198–99).[26] The type of systematicity that is found with linkers of type (2) opens up the possibility that such forms can be extended to non-Norwegian forms as well. Put differently, a speaker would only need to know that the left-hand member is a verb in order to assign it the correct Norwegian linker, and the examples in (21) indicate that some speakers make use of this knowledge. This, then, would be similar to the way English lexical items may occur with Norwegian inflectional elements in language mixing.

An analysis along these lines is supported by modern Norwegian spoken in Norway, where English verbs are frequently borrowed into the language. When such forms are

used as left-hand members of compounds, they receive an *e*-linker, on par with other verbal left-hand members in Norwegian. Thus, examples such as *chilledag* ('chill/relax day'='day for relaxing') are easily built in modern Norwegian, where the left-hand member is perceived as verbal by speakers. Interestingly, in all of the AmNo cases we have come across where an English left-hand member takes a Norwegian linker, the linker seems to be of the regular, predictable type.[27]

Returning to our initial question about the behavior of linkers in mixed compounds, the main pattern is that English left-hand members occur without a linker, as in (8) and (9), but a few cases are found where Norwegian linkers are extended to English material, shown in (21). It is also worth reflecting on how this ties in with the general pattern of language mixing. As has been established, lexical material from one language can typically be accompanied by functional material from another language in language mixing. This is most often seen with inflectional elements, but less so with derivational elements (see note 8). Thus, the data from AmNo seem to place at least some linkers closer to inflection than derivation in terms of their grammatical behavior in language mixing. Although more research is needed on this point, mixing data thus allows us to shed new light on the properties of linking elements more generally.

Finally, we should point out the use of the English plural suffix *-s* in (21a). The presence of an English functional exponent is noteworthy, seeing as the functional positions in a Norwegian utterance are expected to be realized by Norwegian functional exponents. The use of the English plural *-s* in AmNo is previously observed by Haugen (1953), Hjelde (1992), as well as among today's speakers in CANS (e.g., Riksem 2017). The question is nevertheless, then, how an English functional exponent can be preferred over a Norwegian one, given the Subset Principle. Riksem (2018b) proposes that the plural *-s* might be considered a gender-neutral exponent in cases where the speaker experiences problems in establishing gender on English nouns. It may also be considered the result of a structural reanalysis of AmNo grammar where the representation of gender in the abstract syntactic structure has been diminished, thus allowing for English exponents to be inserted into otherwise Norwegian structures. If so, a Norwegian functional exponent would in fact be prevented from insertion, as it then holds features not specified in the syntactic structure, making the English exponent the most appropriate alternative. We recognize this as an empirical phenomenon that challenges the present analysis and which should be investigated further in future research. For our purposes, the important point is nevertheless that the English plural *-s* is in fact a commonly attested feature in AmNo language mixing, and we see that it also appears among our mixed compounds.

6.6. Non-Nominal Categories in Compounds

Compounds where both constituents are nominal are by far the most common in both English and Norwegian. Such compounds are also, as far as we have seen, the most common type among our data of mixed compounds in AmNo. However, compounds involving other categories also occur. This was shown already by the compounds in (21) with verbal left-hand members. Such compounds are also interesting because the use of verbal left-hand members is generally freer in Norwegian than in English. Where Norwegian has *bak-e-oppskrift* 'bake recipe', *sov-e-pille* 'sleep pill', *spis-e-bord* 'eat table', *les-e-lampe* 'read lamp', and *skriv-e-oppdrag* 'write assignment', English has *baking recipe*, *sleeping pill, dining table, reading lamp,* and *writing assignment,* all with nominalized left-hand members. Although verbal left-hand members are not completely excluded in English[28], the compounds in (21) give an indication that the speakers of AmNo are aware of Norwegian compound rules and use Norwegian compound structures. This, again, is in line with AmNo language mixing in general, where English lexical elements are integrated into a Norwegian grammatical structure.[29]

The compounds in (22) are further examples of compounds with non-nominal components in the corpus. The examples indicate that the wide range of variation found in Norwegian compounds is also present in AmNo.[30]

22   Compounds with non-nominal components

a.   **only**-barn   (albert_lea_MN_01gk)
       'only-child'

b.   midt-**company**   (westby_WI_06gm)
       mid-company
       'middle market company'

c.   stor-**machinery**   (webster_SD_02gm)
       big-machinery
       'big machinery'

d.   små-**fair**-a   (blair_WI_16um)
       small-fair-DF.PL.NEUT
       'small fairs'

e.   norsk-e-**school**-en   (saskatoon_SK_14gk)
       Norwegian-LINK-school-DF.SG.MASC
       'The Norwegian school'

f.   kjør-e-**licence**   (zumbrota_MN_02gm)
       drive-LINK-licence
       'driver's licence'

g.   åker-**cultivat-**e[31]   coon_valley_WI_04gm)
       field-cultivate-INF
       'cultivate (on) fields'

h.   opp-**clogg**-a   (coon_valley_WI_04gm)
       up-clog-PST.PRT
       'clogged up'

7. Summary and Discussion

The previous subsections have shown the types of compound-internal language mixing that occur in our AmNo data. As predicted (see Section 4), all the compounds in our materials are right-headed and endocentric. The general pattern emerging from compound-internal mixing in AmNo is, as expected, one where lexical items may be provided by both Norwegian and English, whereas functional material is generally Norwegian (the English plural suffix being a noteworthy exception). The right-hand member can be either Norwegian, created like any Norwegian simple word, or English, as predicted from the existence of simple mixed items such as *roaden* 'the road' and the analysis of compounding as adjunction. Left-hand members were expected to be relatively free, which is demonstrated by the many E+N compounds in our material. From this investigation, we can conclude that AmNo mixed compounds are generally treated in the same way as previous studies have found for mixing in AmNo simple words—Norwegian provides the grammatical structure, and lexical elements from both languages may be inserted freely into non-functional positions.

The fact that we find many compounds with an English right-hand member occurring with Norwegian functional items such as determiners and inflectional suffixes also gives nuance to findings in previous studies that the language providing the lexical material for the right-hand member usually also provides the abstract grammatical structure for the compound as a whole (e.g., Muysken 2000, p. 150; Treffers-Daller 2005), as briefly discussed

in Section 6.3. Rather, our results favor a DM/exoskeletal analysis where there is a strict separation between lexical material (roots/stems) and functional material. Norwegian builds the abstract syntactic structures including functional features, which in turn favor Norwegian functional exponents in these positions. The non-functional positions, on the other hand, are open for insertion of roots/stems from both languages. In other words, functional exponents are used independently from the language of the right-hand member as they are the realization of independent functional positions in the abstract syntactic structure.

Section 4 also pointed to linking elements as an area where clear predictions were difficult to establish. As discussed in Section 6.5, we did find linking elements in the mixed compounds, and these occurred both together with a Norwegian left-hand member and with an English left-hand member. From this, we can conclude that linking elements are to some extent productive, in the sense that they can be extended to novel forms such as loans from another language. A few similar cases are reported by Treffers-Daller (2005), where a French left-hand member appears with a Dutch linking element, as in *lain-e-matrassen* 'wollen matresses', and by Alexiadou (2020), pointing to a few cases from other language pairs. Future research could seek to determine the extent to which linking elements are similar and different across languages, and furthermore, how such elements behave in various language contact situations.

Before concluding, we will now briefly highlight some more general insights and contributions that can be taken from this paper and the data presented.

One of the main contributions of the paper lies in it being the first investigation into compound-internal language mixing involving Norwegian and English. Compound-internal language mixing has previously been studied with other language pairs, such as Greek–English (Alexiadou 2020) and French–Dutch (Treffers-Daller 2005), among others, summarized also in Alexiadou (2020). Based on the data presented in this paper, we can conclude that our general findings align with those of previous studies, confirming that 'a structure which belongs to the one language can be filled with materials taken from two different languages' (Alexiadou 2020, p. 5). In the course of the paper, we have also provided formal analyses of such compounds, demonstrating how these can be accommodated into a DM/exoskeletal model of grammar.

The current study is also a novel contribution to the investigation of language mixing in AmNo *word formation*. Previous research on language mixing in AmNo has focused on the integration of simple English items into Norwegian and the inflection of such mixed items. In this paper, we have extended the theories from previous work to the lesser studied area of compounding and word formation. As summarized above, our results show that both the position of the left-hand member and the position of the right-hand member of a compound are open to lexical material from both languages. Importantly, we see no indication that word formation with mixed elements is radically different from ordinary processes of word formation, indicating that, as far at the grammar is concerned, no special mechanisms are involved in language mixing as compared to monolingual language use.

Our data may also complement a discussion that has received some attention in research on language mixing in general and in AmNo in particular (Alexiadou 2020; Riksem et al. 2019): what types of elements are mixed, roots or stems? In a framework such as DM, roots are atomic, monomorphemic lexical items, whereas stems are morphologically complex. Thus, a root and a categorizer together make up a stem, as shown in (23); (24) shows this structure in a mixed phrase with a Norwegian definite suffix.

23.
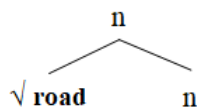
24.
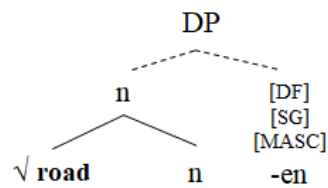
In the context of AmNo language mixing, the question is whether it is the root √road or the entire nominal stem *road* that is inserted into the Norwegian functional structure. Riksem (2018a) points to the observation that morphologically complex nouns such as *government* (assuming that *-ment* is a realization of n) also participate in language mixing, which indicates that stems can at least be mixed. AmNo mixed compounds point to the same conclusion: compounds are, by definition, complex stems, and as we have seen in this paper, an English compound such as *comic book* can be inserted into a Norwegian functional structure to create phrases such as *ei comic book* 'a comic book'. Furthermore, complex stems may be mixed into compound structures, as in *homesteading-dagane* 'the homesteading days' and *bedroom-glaset* 'the bedroom window'. This clearly indicates that complex stems can be mixed. However, our data do not reveal whether elements as small as roots may also be mixed in AmNo, or whether mixed elements are always stems.

In this context, it is interesting that not all languages allow complex compounding of this type. According to Ralli (2013, p. 94), Greek allows left-expanding compounds with the structure [W [X [Y Z]]], but right-expanding compounds with the structure [[[Z Y] X] W] are strongly disdained. Furthermore, left-hand members cannot contain derivational suffixes, but must stay as simple as possible. According to Alexiadou (2020), mixed complex elements must therefore be reanalyzed as simple roots in order to be inserted as left-hand members into Greek compound structures. Taken together, such data from AmNo and Greek indicate that both simple and complex elements can in principle be mixed, but in the process, they must be adapted to fit the functional structure of the language they are integrated into. In other words, the requirement of mixing rests not on the size of the material that can be mixed, but on how it can be integrated into the structure of the language in question. Considerations such as the ones discussed here demonstrate the usefulness of data from language mixing to assess properties of grammar more generally.

8. Conclusions

In this paper, we investigated compound-internal language mixing involving Norwegian and English. Our data are all drawn from the heritage language AmNo, a language where the speakers have experienced long-time contact with English, resulting in frequent language mixing. Concerning compounds, Norwegian and English have quite similar structures; however, the encounter of the two languages within the boundaries of compounds reveals some interesting patterns. Focusing on the structural differences that do exist between Norwegian and English compounds, we find that AmNo mixed compounds are generally accompanied by Norwegian functional material, such as determiners and suffixes, indicating that the larger grammatical structure of AmNo compounds is Norwegian. However, within a compound, both left-hand members and right-hand members are open to lexical material from both languages, and both complex (e.g., *bedroom-*) and seemingly simple (e.g., *only-*) units are used. By presenting novel data and discussing the patterns of compound-internal language mixing, this paper contributes to expanding our understanding of language contact within words.

Notes

[1] In Norwegian, compounds are usually spelled as one solid word (e.g., *bokkapittel*). In the examples in this paper, compounds are broken down into morphemes with hyphens between morpheme boundaries. We use the following abbreviations: INDF, 'indefinite'; DF, 'definite'; SG, 'singular'; PL, 'plural'; NEUT, 'neuter'; MASC, 'masculine'; FEM, 'feminine'; N, 'nominal'; LINK, 'linking element'; V, 'verbal'; A, 'adjectival'; P, 'prepositional'; ADVP, 'adverbial phrase'; PST, 'past tense'; PRT, 'participial'; INF, 'infinitive'. Note that we only provide glosses for the parts of the utterance that are relevant for our purposes, namely to illuminate crucial properties of the (mixed) compounds and their phrases.

[2] This compound is in fact ambiguous between the readings [[observasjons][notatbok]] = 'notebook for observations' and [[observasjonsnotat][bok]] = 'book for observational notes'.

[3] This phrasal compound is found in the Norwegian title of Andy Griffiths' children's book originally titled *The 52-storey treehouse*. While (1h) is a particularly complex left-hand member, similar compounds with full-fledged phrases and clauses as left-hand members are relatively easy to come by (see, e.g., Eik 2019, pp. 53–55).

[4] Norwegian has remnants of case marking in many fixed expressions such as *til sjøs* 'to sea-GEN' and *i live* 'in life-DAT'='alive'. In addition, some Norwegian dialects still have dative case marking on nouns.

[5] Alternative accounts of Germanic compounding include analyses of the linker as a head which takes the two compound members as its specifier and complement (Di Sciullo 2005, 2009; Johannessen 2001), analyses where compounds are symmetrical structures that are made asymmetrical and thus rescued by the linker (Delfitto et al. 2008), analyses where compounds are Root Phrases ($\sqrt{P}$) where the right-hand member root merges with a morphologically complex left-hand member (e.g., nP) (Harley 2009; Siddiqi 2006, 2009), and analyses where compounding is the combination of two lexical heads (Lieber 1992; Selkirk 1982). We refer the reader to Eik (2019, pp. 118–47) for an in-depth discussion of these accounts.

[6] In Eik (2019), LINK is proposed to be a functional head that drives the semantic composition of compounds. Other functions for linkers have also been proposed (see note 5).

[7] An example is *bokkapittel* 'book chapter' in (1a). Since there is no overt categorizing suffix on the left-hand member *bok* 'book', this form could in principle be either a bare, category-less root or a root + a nominalizing head. An English example illustrating the same issue is *swimsuit,* where the left-hand member could in theory be a noun, a verb, or a bare root. Josefsson (1998, p. 56) argues that such left-hand members are always bare roots in Swedish. De Belder (2017), on the other hand, argues that there are two radically distinct types of compounds in Dutch, one where left-hand members are nouns (and take linkers) and one where they are bare roots (and do not take linkers). Finally, Eik (2019) proposes for Norwegian that some left-hand members are bare roots, and some are categorized stems, but these two types do not make up two radically different compound structures, which distinguishes her analysis from that of De Belder. Eik argues that at least some categorization is necessary in Norwegian to account for the distribution of linking elements, as well as other properties of left-hand members in Norwegian.

[8] Derivational suffixes can be considered semi-functional. However, since they make up the lexical stem together with the root, we include them as non-functional in this paper. This choice is also based on the observation that derivational suffixes are often included when stems are mixed between languages, as in *Tydals-settlement* 'settlement from Tydalen' and *homesteading-dagane* 'the homesteading days', which we see later in this paper.

[9] Cases such as *sportsman* and *spokesman* have been discussed as possible examples of linking elements in English (Marchand 1969, p. 27; Bauer et al. 2013, p. 624).

[10] Myers-Scotton's (1993, 2002) Matrix Language Frame model (MLF model) is prominent in analyses of language mixing. This model crucially separates between a Matrix Language, responsible for establishing the structural frame of the utterance and providing the relevant functional morphemes, and an Embedded Language providing content items. The MLF model is empirically convincing, but we employ the DM/exoskeletal model as this model aims at establishing a null theory of language mixing, a model capable of accounting for language mixing by the same principles as for unmixed language.

[11] Determiners, adjectives, and possessive pronouns in Norwegian nouns phrases also agree with the inflectional properties of the noun. See Julien (2005) for an extensive discussion of Norwegian noun phrases.

[12] Our AmNo data are drawn from the *Corpus of American Nordic speech (CANS),* which is introduced in Section 5, and the code in the parenthesis refers to the speaker who uttered the example.

[13] A pertinent question raised by the reviewers concerns the assignment of gender to English nouns and whether this might be done on the basis of the gender of the corresponding Norwegian noun. In language mixing in AmNo, this is, however, unlikely. Investigations of single mixed English nouns show that a considerable portion of these are assigned a different gender than their Norwegian counterpart (Riksem 2018b, pp. 93–95). Moreover, a given English noun can in many cases be translated into different Norwegian equivalents. For instance, the noun *field,* which is often assigned feminine gender in AmNo, may translate into, e.g., *åker* (M), *eng* (F), or *jorde* (N), making it difficult to establish the correct corresponding Norwegian noun. See also Åfarli et al. (2021) for futher discussion of how a noun from a non-gender language such as English can be assigned gender when mixed into a gender language such as (American) Norwegian.

[14] We found two possible cases of English plural inflection on left-hand members: *sweep-stake-s-brev* 'sweep-stake-s-letter' and *tomatoe-s-vin* 'tomato(es) wine', cf. Section 2.2. While the first case could also be interpreted as an ordinary singular left-hand member, seeing as *sweepstakes* is also used as a singular noun in modern English, the second case seems clearly plural (the *-s-* is pronounced /z/ and is therefore not likely to be a linker). Compound-internal inflection is relatively rare cross-linguistically and is usually not licit in Norwegian (Faarlund et al. 1997, p. 68), but is known to occur in some instances in English, e.g., *suggestions box* (Bauer 2009, p. 347). These data suggest that mixed left-hand members may on occasion show an English structure, which can be taken as support for the relatively free status of left-hand members as adjoined constituents; left-hand members can have their own internal structure generated independently of the right-hand member (recall also the data from Wiese (1996) in Section 4).

[15] Due to syncretism in plural inflection, especially concerning masculine and feminine nouns, it is not always possible to determine gender assignment in our examples. In such cases, we avoid glossing gender.

[16] The ortographic transcription of this example show the suffix *-ene,* but the speaker uses the suffix *-an*, which is predominantly a masculine suffix for this speaker.

[17] As in example (15g) the ortographic transcription displays the suffix *-ene,* but the speaker actually utters *-ane*, which is predominantly a masculine suffix for this speaker.

[18] It is clear from the context and pronunciation that the speaker is referring to Norwegian *gifte-* /jiftə/ 'marry'/'married', not English *gift* 'present' (although the two are etymologically related).

[19] This compound is transcribed as *skoleboardet* in the corpus' ortographic transcription, with a linking element, but the speaker does not use a linking element. Note that the pronunciation is clearly Norwegian (/²skʉːɽ/-), meaning that this too is an example of compound-internal mixing.

[20] The LIA corpus contains speech from speakers from Norway born between the middle of the 19th century to the middle of the 20th century. It is therefore superior to corpora of modern Norwegian in providing insights into the Norwegian that was spoken around the time of the emigration to the U.S.

[21] One speaker shows the opposite behavior and produces an *e*-linker in cases where this would not expected in homeland Norwegian, i.e., *høgeschoolen* 'high-LINK-school-DF.SG.MASC'='the high school' (rushford_MN_01gm).

[22] This compound is transcribed as *sleepeværelser* in the corpus' ortographic transcription, but from the recording and the phonological transcription, it is clear that the speaker uses the English plural suffix *-s* /z/.

[23] This compound is transcribed as *renterpenger* in the corpus' ortographic transcription.

[24] As mentioned in note 7, the categorial nature of left-hand members in Germanic is debated. While some authors propose that left-hand members are category-less roots, others argue that at least some left-hand members must belong to a lexical category.

[25] Admittedly, as pointed out by a reviewer, there is a circular aspect to this point. The linker is hypothesized to be realized as *-ar* because of the verbal status of the left-hand member, while the presence of an *-ar*-linker is used to hypothesize that the left-hand member is verbal. On the other hand, this type of reasoning is typical for morphological generalizations. Note, also, that both *-e* and *-ar* pose some analytical challenges because they are homophonous with other morphological markers in the language: *-e* is also the infinitival ending in many dialects and *-ar* is also used to create agent nouns from verbs in some dialects. Here, we follow Johannessen's (2001) analysis of these forms as linking elements. However, regardless of the specific analysis of these forms, the important observation is that speakers of AmNo morphologically adapt English left-hand members to fit with the criteria of Norwegian compounds. This way of adding functional material from one language to the lexical elements of another language is in line with the general patterns of language mixing in AmNo, as discussed in Section 3.

[26] Eik (2019) proposes to analyze the distinction between unpredictable, lexically determined linkers on the one hand, and predictable, categorially determined linkers on the other, as a distinction in the internal structure of left-hand members. Building on Marantz' (2001) account of "inner" and "outer" morphology, lexically determined linkers are analyzed as root-attaching while categorially determined linkers are analyzed as category-attaching, cf. (i) and (ii). This distinction is also shown to account for various linker patterns in recursive compounds.
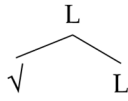
(i)   (ii)
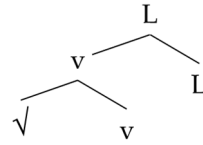
27   The reader might wonder if linking elements in Norwegian could be purely phonologically or semantically conditioned, rather than morphologically, and whether this could explain (21). This topic has been explored extensively in work such as Iversen (1924), Akø (1989), Faarlund et al. (1997), and Eik (2019), and while there are some tendencies, no one has yet been able to formulate any clear phonological or semantic generalizations for linking elements. Therefore, a morphological explanation seems preferable.

28   Selkirk (1982, p. 15) gives *swearword, whetstone, scrubwoman,* and *rattlesnake* as examples of VN-compounds in English.

29   Since these differences between English and Norwegian are tendencies rather than clear-cut rules, it is not entirely clear how they should be formally implemented. One possibility is to view the distribution of left-hand members in terms of *compound stem forms,* in the sense of Aronoff and Fuhrhop (2002) and Neef (2015). Under this view, each lexeme has a specific slot in their paradigm for compound stems, much in the same way as English has specific stems for *see* (present) and *saw* (past). Applying this to compounds, the Norwegian lexemes *sove* 'sleep' and *forske* 'research' could have *sove-* and *forskings-/forskar-* as their preferred compound stem forms, and the English lexemes *sleep* and *rattle* could have *sleeping-* and *rattle-* as their preferred compound stem forms. The details of such a system would, however, have to be worked out in later research, one challenge being to account for the cases where multiple forms are used, as with *sove/søvn* in *sovepille* 'sleeping pill' vs. *søvndagbok* 'sleep diary'.

30   In terms of their structural analysis, these compounds can be assumed to have a structure similar to that of nominal compounds, except that the categorizers previously represented as "n" are replaced by "a" for adjectives and "v" for verbs and so on.

31   Noun-verb-compounds as in this example are relatively rare in both English and Norwegian. They are, however, known to be possible when N is not interpreted as an object of V, but rather as some sort of adjunct, such as a locative or a manner specification (Ackema and Neeleman 2004, p. 55; Eik 2019). From the way (22g) is used in the corpus, it is not clear exactly how the semantic relationship between N and V should be interpreted.

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