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CROSSING BORDERS TO ENHANCE OUR UNDERSTANDING OF VARIATION IN HERITAGE LANGUAGES

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ABSTRACT

The 'Norwegian in America' project, led by Janne Bondi Johannessen, has provided continued inspiration and access to document and study American Norwegian. This has contributed to a growing body of research on morpho-syntax and, to a lesser extent, phonetics-phonology. Using compositional definiteness as an illustration, we show the benefits of incorporating these two perspectives to analyse variation in heritage languages. We strive for a holistic approach to two examples in order to demonstrate how variation in each grammatical domain interacts. In one case, this leads to an enriched understanding of the data, whereas the other case highlights an explicit need for future research. We believe that further work that includes both morphosyntax and phonetics-phonology is fruitful for our understanding of how multiple language domains interact in a heritage language setting.

[1] INTRODUCTION

Janne Bondi Johannessen's work to document and investigate dialectal variation in the Nordic languages, including those spoken in diaspora, is one of her many crucial contributions to the field of linguistics. The *Nordic Dialect Corpus* (Johannessen et al. 2009) and the *Corpus of American Nordic Speech* (CANS; Johannessen 2015) are critical tools not only for documentation purposes, but also as resources for language scientists concerned with a host of linguistic phenomena and their interactions. In this chapter, we focus on her work with CANS and American Norwegian (AmNo), a moribund heritage language in the United States. We centre our discussion on two examples of this population's complex morphosyntactic and phonetic-phonological variation. These patterns reveal critical insights into the relationships between these modules of grammar.

Heritage languages are acquired in a naturalistic setting along with another

language that is spoken as a socially dominant or national language (e.g. Rothman 2009). Within heritage language research, several factors have been shown to shape the heritage language. These factors include differential acquisition, attrition (or decreased language use over the lifespan), transfer from the dominant language, and processing difficulties (e.g. Benmamoun et al. 2013, Montrul 2016, Polinsky 2018). Although different factors can shape individual linguistic phenomena, how they affect the different linguistic domains is a field of ongoing research. Differential input, for example, potentially influences the morphosyntactic feature associations as well as the phonetic and phonological representations (see Putnam et al. 2019). We must therefore evaluate and investigate heritage language speaker competence and performance accordingly. Heritage language speakers differ drastically compared to monolingual populations with respect to the context of their acquisition and the intensity of their use of the heritage language over time. It is therefore necessary to consider how these social and acquisitional factors impact the different components of the heritage language grammar and their interactions. We as researchers have to consider all available evidence, or as Lauersdorf (2018, p. 112) puts it: 'it is imperative to use all the data!'

In this chapter, we examine two examples of Norwegian definiteness marking, generally expressed in phonologically weak or unstressed positions. These environments often result in ambiguous surface forms, illustrating the complexity and interrelatedness of different linguistic domains. Variation in, or changes to, the phonetic realizations of unstressed vowels influences how we analyse morphosyntactic patterns and how we understand the relationships of different domains of grammar.

The paper is structured as follows. Section 2 undertakes a brief description of the phenomenon under investigation with a presentation of the relevant data. In Section 3, we discuss two situations in which the interpretation of the heritage language data is ambiguous or not straightforward, and we show that drawing information from morphosyntax and phonetics-phonology is beneficial in understanding the variation found in heritage language data. We conclude in Section 4.

[2] BACKGROUND AND DATA

[2.1] *American Norwegian*

Norwegian immigration to the United States and Canada began in 1825. The first Norwegians arrived in New York, some of them moving westward and settling in Illinois. In the century that followed, many more followed and established Norwegian-American communities stretching across the Midwest and Pacific

Northwest. Between 1850 and the 1920s, approximately 850,000 Norwegians moved to the US and Canada (Haugen 1969 [1953], p. 28). Most Norwegian immigrants settled in the American Midwest in the states of Wisconsin, Minnesota, Iowa, North Dakota and South Dakota, bringing with them Norwegian customs, traditions, and language. Contemporary AmNo speakers are primarily concentrated in these areas.

Present-day speakers of AmNo are typically third- or fourth-generation descendants of Norwegian immigrants (their grandparents or great-grandparents moved to the US). They acquired Norwegian in a naturalistic setting from birth and acquired English later during their childhoods. As adults, they are bilingual, but more dominant in English, having shifted to using English as the primary language for everyday communication and social interactions.

AmNo is a moribund variety. It is no longer acquired by children and transmitted from one generation to the next as a community language. The current speakers are all elderly (generally over 70 years of age) and their children and grandchildren acquired English at home as their first language. There is a rich tradition of research in AmNo, spanning over a century (e.g. Flom 1900, Flaten 1900, Haugen 1969 [1953], Hjelde 1992, 1996, Johannessen & Salmons 2015, Natvig 2016, van Baal 2020), with the most recent collection of AmNo data starting in 2010. The 'Norwegian in America' project (NorAmDiaSyn), led by Janne Bondi Johannessen, has undertaken and inspired numerous fieldwork trips to the Midwest to make audio and video recordings of AmNo speakers. The semi-spontaneous conversations and structured elicitation tasks (e.g. Rødvand 2017, van Baal 2020) gather valuable data on AmNo speech patterns that offer crucial insights into the language's grammatical structures. Many of these recordings are available through the CANS corpus (Johannessen 2015).[1]

[2.2] *Compositional definiteness in American Norwegian*

Many AmNo grammatical patterns have been investigated, including word order (Eide & Hjelde 2015, Larsson & Johannessen 2015, Westergaard & Lohndal 2019), nominal gender (Johannessen & Larsson 2015, Lohndal & Westergaard 2016, Rødvand 2017), and verbal morphology (Lykke 2018, 2020) to name only a few. Here, we discuss data on definiteness marking in AmNo from van Baal (2020). Although she elicited nominal phrases in a partially controlled setting (see below), the recordings are not always easy to interpret. For example, some utterances are simply difficult to perceive, which makes transcribing them for morphosyntactic analysis a challenge. In this paper, we discuss some of these cases and show how incorporating acoustic analysis complements

[1] CANS (v. 3) is accessible online at https://tekstlab.uio.no/glossa2/cans3

morphosyntactic research. At the same time, we will show that acoustics can only do so much: even if the transcription is clear, it is not always obvious how to analyse the utterance in morphosyntactic terms, especially due to the large amount of variation between and within speakers.

These elicitation data were collected with the goal of studying definiteness marking and compositional definiteness in AmNo. In Norwegian, definiteness is expressed through a suffix on the noun (1a). Compositional definiteness (CD) is found in definite phrases that are modified by an adjective or a numeral. In these phrases, the suffixed article is accompanied by a prenominal determiner (1b).

(1) a. bil-en
car-DEF.M.SG
'the car'

b. den rød-e bil-en
DEF.SG red-DEF car-DEF.M.SG
'the red car'

With two elicitation tasks, van Baal (2020) elicited nominal phrases in several contexts: indefinite (*en bil* 'a car'), definite (*bilen* 'the car'), modified indefinite (*en rød bil* 'a red car'), and modified definite (*den røde bilen* 'the red car'). The elicitation consisted of an oral translation task, and a picture-aided elicitation task. Twenty speakers participated in these tasks. The modified definite noun context requires CD, although some Norwegian dialects have adjective incorporation as a strategy for modifying definite nouns (see Section 3.2). In these cases, the adjective and the definite noun form a compound and there is no prenominal determiner (*rød-bilen* 'the red car').

The results show first of all that AmNo speakers use the indefinite determiner and the definite suffixed article in a manner consistent with homeland-like varieties. CD structures, however, pattern differently. In total, only 25.9% of the modified definite phrases were homeland-like, meaning they either contained CD or adjective incorporation. The scores of the individual participants vary massively and range from 0% homeland-like to 69.8% homeland-like (for comparison, many speakers scored at ceiling in the other types of nominal phrases). AmNo participants produced four additional types of modified definite phrases, illustrated in (2).

(2) a. stor-e mus-a
large-DEF mouse-DEF.F.SG
'the large mouse'
(sunburg_MN_04gk, baseline: *den store musa*)

b. den blå-e bok
DEF.SG blue-DEF book
'the blue book'
(sunburg_MN_11gk, baseline: *den blåe boka*) [2]

c. stor-e hjul
large-DEF wheel
'the large wheel'
(sunburg_MN_06gm, baseline: *det store hjulet*)

d. denne brun-e høn-a
DEM.SG brown-DEF chicken-DEF.F.SG
'the brown chicken' (intended)
(ulen_MN_01gm, baseline: *den brune høna*)

The most common type of phrase (46.3%) contains the suffixed article, but lack the prenominal determiner (2a). The opposite pattern, where the determiner is present and the suffixed article omitted (2b), is much less frequent (4.8%) and only used by a subset of the participants. Phrases with neither the suffix nor determiner (2c) were also found (16.8%) alongside some phrases with a prenominal demonstrative lacking a clear pragmatic or semantic demonstrative reading (6.3%, 2d).

These patterns are straightforward, but it is not always clear which categories individual data points fall into. When it is difficult to perceive what a speaker says, or when a given morpheme can have several interpretations, the researcher must decide how to analyse the utterance. The fact that heritage speakers often show less consistent behaviour than monolingual speakers, seen in the large amount of inter- and intra-speaker variation, further complicates the analysis. In the next section, we discuss two instances where the analysis was ambiguous. As we show, the researcher can and in fact should draw on several other types of data to improve the analysis.

[2] For adjectives ending in stressed monophthongs, forms like *blå* and *blå-e* are both found in the baseline.

[3] UNSTRESSED VOWELS AND THE MORPHOSYNTACTIC FEATURES THEY EXPRESS

Investigating patterns of modified definite nouns in AmNo hinges on an accurate assessment of the presence and absence of three morphemes: a preposed definite determiner, adjectival agreement, and a suffixed definite article on the noun. The definite determiners and nominal suffixes encode both number and gender features. These morphemes are in prosodically weak positions and the vowels are unstressed. As we show in Section 3.1, these vowels may range from a full vowel, to a schwa, to complete neutralization (deletion).

A core concern for the analysis of these structures is how surface variation affects morphosyntactic, phonological, and phonetic representations. Surface-level patterns may result from multiple factors, or combinations of them. These factors include, but are not limited to: (1) differential acquisition of morpho-syntactic feature associations; (2) differential acquisition of phonological and phonetic representations; (3) the online mapping of morphosyntactic heads with their phonological representations (processing factors); (4) transfer from English morphosyntactic features and structures; (5) transfer from English phonological and phonetic processes (including prosodic patterns).

We turn to two examples in order to illustrate morphosyntactic and phonetic-phonological interplay in more detail. In Section 3.1, we discuss the definiteness marking of masculine singular and plural nouns, and we turn to tensions between adjectival agreement and adjectival incorporation in Section 3.2.

[3.1] *The nominal suffixes* –en *and* –an

Homeland Norwegian CD forms require speakers to produce both prenominal determiners and suffixed articles that assemble multiple features (i.e. gender, number, definiteness) to a single form and hinge on the production of a contrast of unstressed vowels. For example, the suffix *-en* in *ungen* 'the child' encodes the features 'masculine, single, definite.' A number of American Norwegian speakers contrast the schwa in *-en* with unstressed /a/ in the plural *-an*, as in *ungan* 'the children.' In this paradigm, it may be difficult to determine if and/or when a speaker makes a distinction between singular and plural among masculine definite nouns. As an example, consider figure 1, which shows two tokens of *ungan* 'the children' from speaker coon_valley_WI_06gm, produced during a sentence translation task.

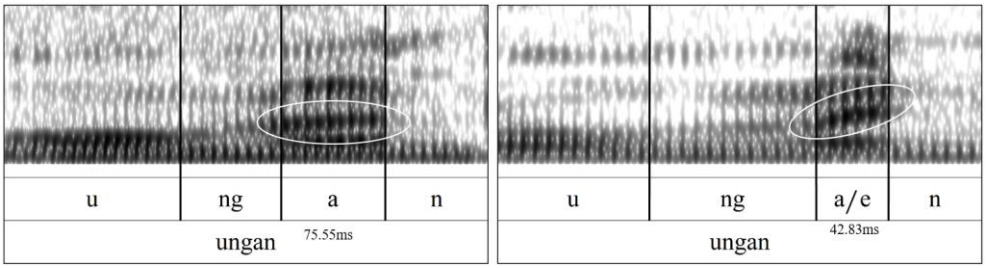

FIGURE 1: Tokens of *ungan* 'the children' from coon_valley_WI_06gm.

The token on the left (*ungan*) has a clear *-an* suffix, whereas the suffix for the token on the right (*ung(a)n*) is ambiguous for *-an*/*-en*. For both tokens, the second resonance formant (f2) is circled in white and the duration of the vowels, in milliseconds, is given below the spectrogram. F2 estimates horizontal vowel place, with a lower value indicating a more backed position. The unstressed *-a* in *ungan* has a fairly stable horizontal position in the vowel space, with an approximate min and max of 1229 Hz and 1411 Hz, respectively (a difference of 182 Hz). On the other hand, not only does *ung(a)n* start at a more centralized position, but it is clearly more diphthongal in production: it advances much more dramatically over its duration than the other token, starting at a min of about 1366 Hz and maxing near the end of the vowel at 1593 Hz (a difference of 277 Hz). Both vowels increase in f2 over their durations, but for *ung(a)n*, this change is greater and compressed within a shorter period of time than for *ungan*. Centralization and shorter duration contribute to a more schwa-like character for the ambiguous vowel.

Compare *ungan* and *ung(a)n* to *vegen* 'the road' and *hesten* 'the horse' in figure 2, spoken by the same participant.

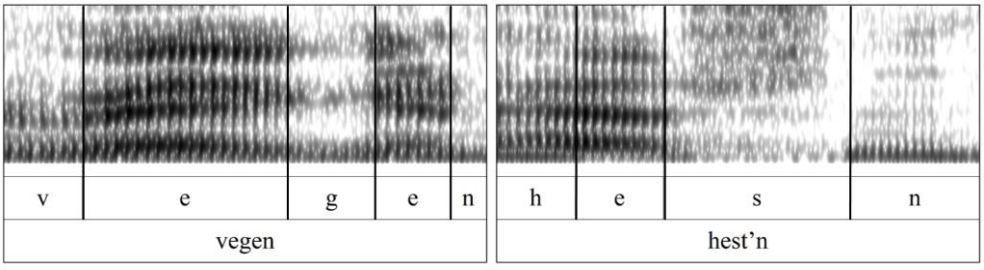

FIGURE 2: Masculine, singular definite forms *vegen* 'the road' and *hesten* 'the horse' from coon_valley_WI_06gm

Both *vegen* and *hesten* are masculine, singular, and marked for definiteness with the suffix *-en*. However, the suffix in *vegen* presents with a vowel (schwa), but as

a syllabic [n̩], with the vowel completely reduced, in *hesten*. These two examples demonstrate the range of phonetic forms for the *-en* suffix.[3] It is important to note that the form in *vegen* [-ən] shows considerable spectral similarities with the *-an* suffix for *ung(a)n*. A comparison of f2 trajectories for the three unstressed vowels discussed is presented in figure 3. Note that the unstressed vowels in *ungan* and *vegen* represent the f2 extremes, with relatively backed and centralized vowel positions, respectively. The ambiguous case, *ung(a)n*, starts closer to the backed token in *ungan* and ends within the range of the schwa in *vegen*. In cases like this, it is clear that a given morpheme cannot be read off of its phonetic representation alone because of the gradient and variable nature of its spectral features.

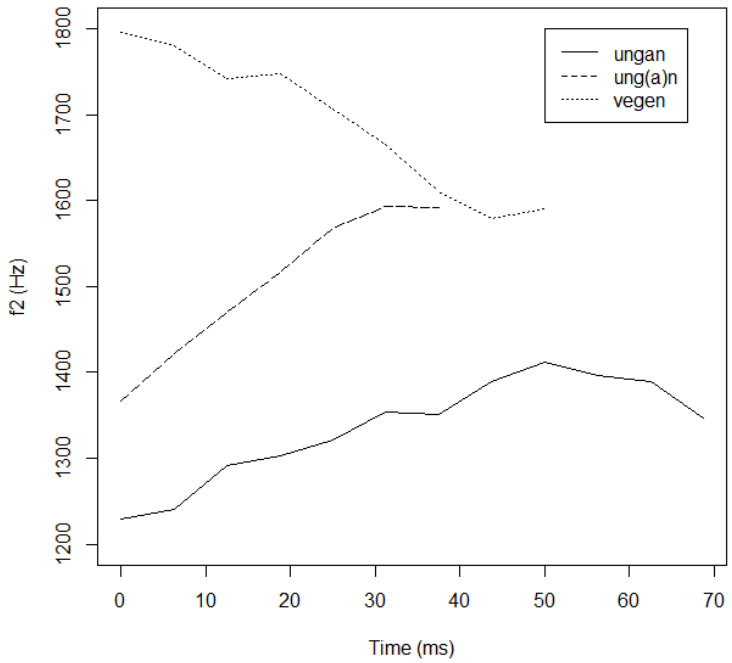

FIGURE 3: Comparison of f2 trajectories of the unstressed vowels in *ungan*, *ung(a)n*, and *vegen* over vowel duration (ms).

For coon_valley_WI_06gm, the unstressed vowels in the *-en* and *-an* suffixes are maximally contrasted with the phonetic representations of [a] and full reduction (syllabic [n̩]), respectively. A surface form with a partially reduced, that is,

[3] Syllabic nasals are also found for definite suffixes in the baseline (see Kristoffersen 2000, p. 222); a full analysis of the factors that influence these variants in AmNo is beyond the scope of this paper.

centralized and shortened, vowel may occur for each suffix. The phonetic variance for the production of each morpheme overlaps and, in overlapping tokens, obscures not only the phonological contrast between /a/ and /e/ in unstressed positions, but also the distinction between those morphemes and the syntactic and semantic features they express. Table 1 schematizes these two morphemes' surface forms, with [ən] as a possible variant of each. How these forms fit into a speaker's broader morphological and phonological patterns, i.e. how robust or consistent a speaker is with a given form in context and the range of phonological effects on unstressed vowels, will shed light on how surface reflexes relate to abstract grammatical representations.

Morphosyntactic features	definite, singular		definite, plural
Morpho-phonological representation	-en		-an
Phonetic representation	[n̩]	[ən]	[an]

TABLE 1. Distributions of surface forms of the suffixes *-en* and *-an*.[4]

[3.2] *Definite compounding*

Van Baal (2020) demonstrates that the prenominal determiner is more likely to be optional in AmNo than in homeland varieties. Accordingly, both *den raude skjorta* and *raude skjorta* 'the red shirt' are grammatical instantiations of a modified definite noun in AmNo, with adjectival definiteness agreement on *raude*. However, an adjective may lack overt agreement, i.e. *raud skjorta*. There are at least two ways of interpreting this type of phrase. It could be an instance of widely documented changes in agreement in heritage languages (Benmamoun et al. 2013, p. 141–144, Montrul 2016, p. 54–71, Polinsky 2018, p. 197–215). Alternatively, it might reflect the compounding of an adjective with a definite noun. These constructions in Nordic languages are often referred to as 'adjective incorporation' (Sandström & Holmberg 1994; Dahl 2015), which proves to be an additional strategy some Norwegian heritage speakers adopt for modifying definite nouns.

Typically, compound nouns in Norwegian comprise a prosodic unit with stress carried by the first member of the compound; the second member retains vowel quantity, but loses a tonal accent contour (Kristoffersen 2000, p. 184). Stress is indicated through syllable weight (relative duration) and the presence

[4] Both morphemes express gender features in addition to definiteness and number features. The suffix *-en* expresses masculine gender in homeland Norwegian, but is sometimes also used on feminine and neuter nouns in American Norwegian. The suffix *-an* is typically used for masculine definite plural nouns, but here we also find variation within and across speakers (see also Rødvand 2017, van Baal 2020).

of a tonal accent (Kristoffersen 2000, p. 141). Figure 4 shows pitch tracks of four nouns from a male speaker from Gauldal, in Sør-Trøndelag, from the *Nordic Dialect Corpus* (Johannessen et al. 2009). Arrows point to local maxima of the fundamental frequency (f0) that indicate the presence of a tonal accent and, accordingly, stress. In the top two examples, *anna syn* 'another view' and *anna land* 'another country', the nouns *syn* and *land* are each stressed. The bottom two examples, *nyveien* 'the new-road' and *gamɻeveien* 'the old-road' are true compounds, with f0 maxima located on the left member of the compound. The nouns *veien* do not bear a tonal accent, demonstrated by the lack of an f0 increase on the second member of the compound.[5]

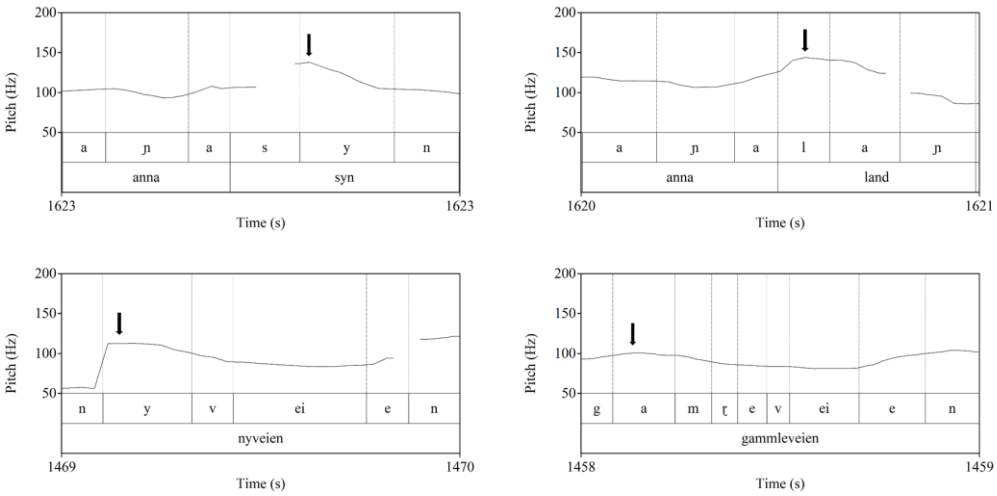

FIGURE 4: Pitch track of single and compound nouns from Gauldal_03gm.

In adjective incorporation, a phrase such as *den raude skjorta* 'the red shirt' occurs as a compound *raudskjorta*. However, it is often uncertain if such modified definite nouns are truly compounds or modified by a bare adjective. The pitch tracks of two possible adjective incorporation tokens from westby_WI_06gm judged as ambiguous compounds by a native Norwegian speaker — *grønn-bila* 'the green car' and *røu-skjorta* 'the red shirt' — are presented in figure 5. Here, local f0 maxima reveal patterns more closely related to the non-compounded forms *anna syn* and *anna land* in figure 4. There are distinct rises in the f0 on the nouns *bila* and *skjorta*, which suggest a non-compounded stress pattern. If AmNo behaves similarly as homeland varieties in stress computing processes, including

[5] A raised pitch at the end of a compound is the expected pattern in East Norwegian (Kristoffersen 2000, p. 247).

the application of tonal accent and its acoustic realizations, then these examples are unincorporated modified definite nouns, where not only the determiner, but also the overt definite agreement on the adjective, are lacking. However, AmNo prosodic patterns have not yet been systematically investigated. It is therefore unclear whether word stress and tonal accents pattern similarly to their homeland counterpart varieties. A thorough analysis of AmNo metrical behaviour and processes that target unstressed vowels will shed light on whether these examples demonstrate a change in compositional definiteness or in the expression of phonological tone patterns.

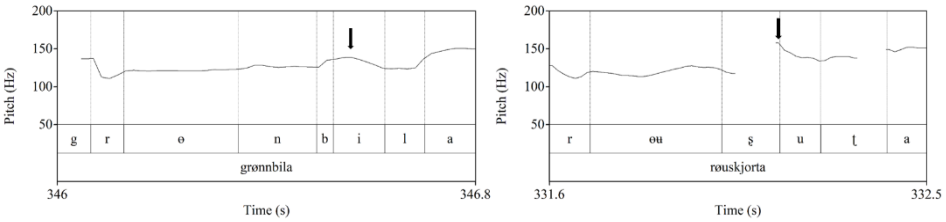

FIGURE 5: Pitch tracks of modified definite nouns with possible adjective incorporation (westby_WI_06gm).

In this section, we examined expressions of unstressed vowels, and their ranges of possible reductions, to demonstrate how their variations relate to morphosyntactic representations. We focused specifically on ambiguous examples to highlight that the possible sources of these ambiguities are largely uninvestigated for AmNo. Ultimately, we find that these examples demonstrate the need for systematic investigations of morphological and phonological processes and, crucially, how those processes interact and influence each other.

[4] CONCLUSION

The two examples discussed here demonstrate the value of drawing on phonetic and phonological data for a morphosyntactic analysis of compositional definiteness. We have seen that an acoustic analysis can bring clarity to some ambiguous unstressed vowels (in the *-en* versus *-an* suffix in Section 3.1) and stress patterns in words (adjective incorporation in Section 3.2). In both cases, an analysis drawing only on morphosyntactic concerns risks overlooking more far-reaching phenomena. The same is of course true for a phonological analysis that neglects changes or variations within the morphosyntax. The source of such ambiguities has not often been investigated, but we have shown how acoustic analysis can shed light on these "troublemakers".

Although the acoustic analysis is valuable in describing the ambiguity in these examples, we have also seen that more information is necessary to draw

conclusions. When it comes to the ambiguous *-en* or *-an* ending, the centralized and shortened vowel is likely the phonetic realization of two different morphosyntactic feature combinations. An analysis of other forms of the plural definite and singular definite suffixes was necessary in this respect. Regarding the ambiguous phrases that are possibly adjective incorporations, acoustic analysis helped to determine the location of stress. However, without a study of the prosodic patterns in American Norwegian – which to date has not been conducted – the location of the stress itself does not clarify this particular morpho-phonological outcome.

The examples discussed in this paper illustrate the necessity of drawing on all available information in the analysis of individual data points. Although we have argued this is the case for compositional definiteness, other types of inflections and feature-sound mappings will certainly benefit from advances in this type of theoretical work. Many functional morphemes are prosodically light or highly phonologically variable in Norwegian, such as verbal tense morphology (Lykke 2018, 2020) and present tense and nominal plurality marking with *-r* (Natvig 2019).

Although a great deal of heritage language research focuses on variation in morphosyntax and, to a lesser degree, sound systems (e.g. Rao 2016), we have drawn attention to clear opportunities for collaboration across different domains of language research. We look forward to heightened and more intense collaboration across subdisciplines to directly address these core issues in heritage language research. We believe that there are tremendous advantages to pursuing this line of research for heritage language linguistics as a discipline. It will provide insights into how the different modules of language interact in heritage language speaker competence and performance. Moreover, it will also be beneficial for the general linguistic field if we enhance our understanding of how the different domains of language interact.

With the creation of CANS, Janne Bondi Johannessen has provided an extremely valuable resource for heritage language research. It is a tool that is accessible for all linguists willing to advance the type of research we argued for. The collaboration between research on morphosyntax and phonetics-phonology in American Norwegian is possible now and in the near future. More resources like this would make similar studies possible for other heritage languages, eventually advancing our understanding of how the different domains of language interact – not only in heritage languages, but in human language in general.

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Janne meant a lot to both of us, supporting and guiding us as young scholars in the field. We'd like to individually express how important her mentorship has been for us.

David: Janne was a mentor to me in the field of heritage languages and linguistics – unofficially when I was an MA and PhD student at the University of Wisconsin–Madison and officially as a postdoc at the University of Oslo. With her work on American Norwegian, she inspired many, including myself, to do research and outreach with heritage language speakers and their communities in the Americas. Janne was the driving force behind the *Workshop on Immigrant Languages in the Americas*, which has fostered an amazingly supportive and productive scholarly community through its annual meetings and proceedings papers. After Janne passed, Joe Salmons said to me, "She built a community. It's our job to keep building." I am truly honoured to continue some of the work that Janne set in motion.

Yvonne: Janne was my supervisor when I was a PhD candidate at the University of Oslo. She laid the foundations of my academic career as well as my life in Norway. There was no limit on her energy, support and knowledge. She challenged, encouraged and inspired me, welcomed me at UiO's Tekstlab and even had time to teach me Norwegian. I am extremely grateful to have had her on my side.

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