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Pite Saami Metaphony

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1 Introduction

Pite Saami metaphony is a regressive assimilation of vowel closure in which the vowel of the first syllable of a foot becomes more close when the vowel of the second syllable is a close vowel /i/ or /u/. It is one feature of the language that both sets it apart from other Saami languages and makes it interesting from a general linguistics perspective. As the language is in fact a conglomerate of isoglosses which overlap to various degrees (as is typical for any language situated in the middle of a dialect continuum), the extent to which metaphony affects lexical items is also subject to variation within the Pite Saami area; however, the central dialects feature the most comprehensive contexts in which metaphony applies, and this will be the focus of this chapter.

The fact that Pite Saami exhibits metaphony is hardly a secret; indeed, it is typically catalogued as one of the main features that sets the language apart from other Saami languages. For instance, the section concerning how Pite Saami differs from neighboring Lule Saami in Pekka Sammallahti's 1998 introduction to the Saami languages begins with metaphony, writing that "[i]n Pite Saami the extensive metaphonic alternations in stressed vowels depend mainly on the second syllable vowel" (Sammallahti 1998: 70). Although Sammallahti does not go into much more detail than that (as this would clearly have gone beyond the scope of the introductory part of his book), other descriptions of Pite Saami grammatical and sound systems have dealt with metaphony in more detail. Specifically, the topic is presented to some extent in Halász (1896), Lagercrantz (1926), Lehtiranta (1992) and Sjaggo (2015) in Hungarian, German, Finnish and Swedish, respectively; these will be discussed in more detail in Section 1.2 below. However, for the most part due to the languages these were written in, the details of Pite Saami metaphony have remained unnoticed in general linguistic circles as a result. Since publishing my own main contribution, *A grammar of Pite Saami* (Wilbur 2014), I have come to a more thorough understanding of Pite Saami metaphony, and this discussion is intended to revise and improve the descriptions in that monograph.

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With the above in mind, the present chapter attempts not only to fill this gap in English-language literature on Pite Saami, but to add to previous descriptions by presenting more recent data as further evidence. In addition, the digital format of this online reference series allows me to providing audio samples of the phenomenon.

This chapter is structured as follows. After presenting a brief background on Pite Saami in Section 1.1 and what related previous work has been done in 1.2, the features of metaphony in Pite Saami are dealt with in the main part of the paper (Section 2). In this, I present prosodic constraints in 2.1, the relevant phonological context in 2.2, where metaphony can show up in morphology in 2.3, some notes on variation in 2.4, and finally how metaphony is dealt with in the Pite Saami orthography in 2.5. Finally, Section 3 concludes with a summary and ideas for future research to help understand metaphony in Pite Saami even better.

1.1 The Pite Saami language

Pite Saami (ISO-639-3 code: *sje*; Glottocode: *pite1240*) is a critically endangered Uralic language spoken in northern Sweden, with currently around 35 speakers whose families are originally from the area corresponding roughly to the municipality of Arjeplog and adjacent areas in Norway today. The language is also known as *Arjeplog Saami*, and speakers themselves tend to use the endonym *bidumsámi giella* (although a true consensus has not been reached). Historically, the language community was relatively small but robust, and initial North Germanic speaking settlers to the area supposedly even spoke some Pite Saami (Wallström 1943: 20-21). A steady decline in the number of native speakers has taken place over the last decades, due mainly to colonial political and cultural factors from the surrounding majority cultures in Norway and Sweden. However, interest in revitalizing the language has increased significantly over the last ten or fifteen years.

In August 2019, a standard orthography was officially recognized for Pite Saami, thus giving the language official status (see Wilbur forthcoming for details), although at the Swedish state level, only "Saami" is an official language, which fails to name specifically any of the Saami languages spoken in Sweden. The language does not have an extensive collection of literature, but Lars Rensund has several Pite Saami publications from the second half of the previous century, and recently the first Pite Saami children's book was published (Somby 2020). In 2016, the first Pite Saami dictionary was published (with translations in Swedish and English; Wilbur 2016). Language technology tools are being developed for Pite Saami, and several online lexical databases as well as an Android app are available. For more details on the language and its speakers, see Valijärvi & Wilbur (2011) and the introduction in Wilbur (2014: 1-7).

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1.2 Previous studies

A number of published academic studies have dealt with Pite Saami in the past, and most of them treat metaphony to at least a limited extent, and mainly from a historical, philological perspective. Juhani Lehtiranta worked with secondary sources (both published and archival) from the 1950s and earlier, and his section on metaphony provides the most succint overview of the phenomenon, but also pays special attention to details concerning phonetic and dialectal variation (Lehtiranta 1992: 77-79).[1] Ignász Halász briefly outlines metaphonic variants for /a/, /aː/, /ɔ/ and /ɔː/ (Halász 1896: XII). Eliel Lagercrantz' complex phonology of Pite Saami deals with metaphony (Lagercrantz 1926), which he referred to as "Sektion", from a historical perspective, but at the same time includes detailed phonetic transcriptions of pronunciation variants (cf., e.g., the table in Lagercrantz 1926: 184). Lagercrantz also provides a number of examples in the brief summary of Pite Saami vowels in Lagercrantz (1957: 9-11). While Israel Ruong (himself a native speaker of Pite Saami) archived a dizzying amount of handwritten materials and also analog recordings (currently archived at *Institutet för språk och folkminnen*[2] (ISOF) in Uppsala), to my knowledge, he never published anything on Pite Saami metaphony aside from a paragraph in the introduction to Ruong (1943: VIII) (in this, Ruong uses the terms "*i*- und *u*-Umlaute").

Metaphonic variation can be found in a table created by Olavi Korhonen to summarize all Pite Saami vowel alternations in the first syllable's vowel. This table presents the various first syllable vowels as dependent on both the grade of the consonant center and the second syllable vowel, and thus, concerning the latter feature, shows Pite Saami metaphony. Although Korhonen's table was never published (to my knowledge), variations of it have been, namely by Peter Steggo on his blog *Muv Árbbe*,[3] and in Sjaggo (2015: 6) (Sjaggo uses the term "omljud" (umlaut) when referring to metaphony). Furthermore, as mentioned at the beginning of this chapter, general overviews of Saami dialects typically mention Pite Saami metaphony as one of its defining features, e.g., Larsson (1985: 161) and Sammallahti (1998: 70).

Finally, my own work on Pite Saami (Wilbur 2014) presents an incomplete picture of metaphony (referred to in that book as both "vowel harmony" and "*j*-suffix vowel harmony" when referring to the phenomenon in nouns; pp. 79-81, 94-95, 102, among others). While the morphological paradigms present the data accurately per se, describing metaphony in Pite Saami as a morphophono-

[1] Note that Lehtiranta (1992) uses "archiphonemes" in his phonemic transcriptions, so that the metaphonic structure is only apparent when a phonetic transcription is provided, e.g., "*vattiv*" for /vitːiv/ 'give.1sg.prt', on p. 77.

[2] The Institute for Language and Folklore.

[3] Cf. arbbe.blogspot.com (last accessed 22.05.2020).

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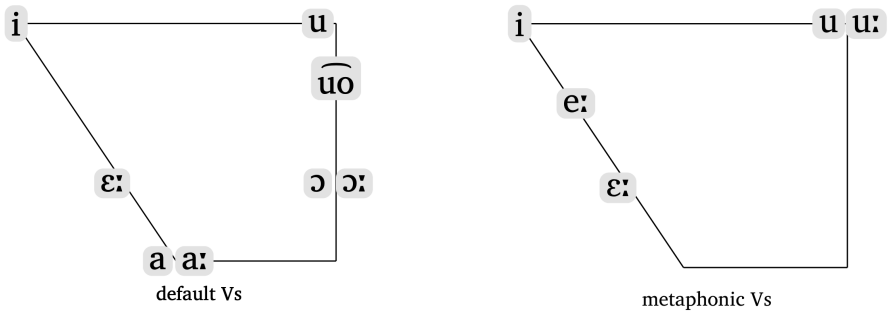

Figure 1: Phoneme inventories for the initial vowel position of a foot (V1). The vowels on the left are the default vowels, while the vowels on the right are the set of vowels triggered by metaphony.

default V		**metaphonic V**
/a/	~	/i/
/aː/	~	/ɛː/
/i/	~	/i/
/ɛː/	~	/eː/
/u/	~	/u/
/u͡o/	~	/uː/
/ɔ/	~	/u/
/ɔː/	~	/uː/

Table 1: Correspondences between default and metaphonic vowel phonemes.

logical feature is incorrect, and the term “metaphony” is preferred over the more general term “vowel harmony” used there. In addition, an adequate summary of the phenomenon is lacking.

2 Pite Saami metaphony

The phenomenon that is the subject of this chapter is regressive assimilation in the aperture of the first syllable vowel in the presence of a close vowel /i/ or /u/ in the second syllable. The assimilation is complete for all back vowels and for two front vowels, while the other front vowels exhibit various partial assimilations. Figure 1 shows the phoneme inventories of the two sets of first syllable vowels that are relevant here (the “default” vowels, and the metaphonic vowels), while Table 1 lists how the members of these two groups correspond. This figure and this table are included here to provide an initial overview; more details can be found in the discussions in following sections, especially in Section 2.2.

default	**metaphonic**
/kʊ̂ɔ̂lːe/	/kʉːlijt/
'fish.NOM.SG'	'fish.ACC.PL'
/aːjʰten/	/ɛːjʰtijn/
'shed.INESS.SG'	'shed.COM.SG'
/atnet/	/itniv/
'have.INF'	'have.1SG.PRT'
/lɛːkːa/	/leːkːit/
'warm.ATTR'	'warm_up.INF'

Table 2: Four examples of metaphony in Pite Saami.

Four examples which exemplify this quite clearly are presented in Table 2. Here wordforms exhibiting metaphony are on the right, with lexically related wordforms on the left which do not undergo metaphony (referred to as "default") as a point of comparison.

Note that Pite Saami metaphony is in fact a special case of vowel harmony because it is a long-distance spreading of a feature (aperture closing) within a prosodic domain (the foot) that is valid whenever the relevant phonological and prosodic contexts are present, and regardless of grammatical or historical components (from a synchronic perspective). This same choice of terminology is found in some of the literature on Pite Saami and other Saami languages.[4] While in many descriptions of Saamic grammar and phonology, the term *metaphony* implies a certain amount of sound change, I do not intend this aspect in using this term here because the assimilation it references is not best described as a historical process, as is evidenced by the extensive number of even recent loanwords which adhere to this phonological rule, as well as to the striking fact that essentially no exceptions exist. While the term *umlaut* is another potential candidate (cf., e.g., Sjaggo 2015), that term is used differently by various scholars in various traditions, and could be avoided for that reason alone. In addition, I prefer to use the term *umlaut* to refer to phonological phenomena which are indeed similar in being long-distance assimilations, but different because they are restricted either by morphology or the lexicon.[5]

The term *metaphony* is of course also used outside Saami linguistics. For instance, the term is used in a similar way in North Germanic dialectology, e.g.,

[4] Cf., e.g., Lehtiranta (1992) and Sammallahti (1998).

[5] Pite Saami does exhibit umlaut (following this definition), namely concerning the choice of vowel in the initial syllable, but dependent on whether a paradigmatic slot requires a grade III vs. grade II/I consonant center; this allophony is presented in a bit more detail at the end of Section 2.2; see also Wilbur (2014: 78-79).

by Kusmenko & Rießler (2000), who even compare some North Germanic variants with Saamic languages (but without mentioning Pite Saami specifically). In addition, it is quite striking how well Pite Saami metaphony seems to align with general metaphony in Romance languages. According to Calabrese (2011: 1), in Romance languages, "a vowel assimilates partially or totally to the height of a following vowel." and "the fundamental difference [to vowel harmony] lies firstly in the feature that is spread – a height feature [...] in the case of metaphony – and secondly in the restriction on the target of the process – a stressed vowel." This description fits Pite Saami equally well.

The dialects that I focus on can be considered central Pite Saami variants, corresponding roughly to the Barturte and Tjidjak areas (cf. the map in Lehtiranta 1992: 193). The data I have looked at comes mainly from two sources. The first is a collection of recordings of individual lexical items done for the project *Insamling av pitesamiska ord*,[6] which was initiated in 2008 by members of the Arjeplog Saami association with funding from the European Union's regional development fund. Many of these audio clips are available to the public via the lexical database at saami.uni-freiburg.de/psdp/pite-lex/ and are the source of audio files in the current digital publication.[7] The other main source is my own work that I have carried out at various times since 2008.[8] In addition to my own notes, my data consists of an extensive collection of recordings (both elicitations and spontaneous speech), many of which are on deposit at the Endangered Language Archive[9] at SOAS, the University of London (Wilbur 2008–2019).

2.1 Prosodic structure

To understand how metaphony works in Pite Saami, it is important to understand the prosodic structure of multisyllabic words;[10] the relevant facts are provided here and illustrated in Figure 2; a more thorough description of prosodic structure can be found in § 2.2 of Wilbur 2014. Multisyllabic words are divided prosodically into bisyllabic feet with a trochaic stress pattern, starting at the

[6] "Collection of Pite Saami words" (my translation).

[7] I am responsible for maintaining this website and the database behind it, which is, as most lexical projects are, an ongoing project that is continuously and regularly being corrected, improved and added to. The initial data and the accompanying audio files were derived from the project *Insamling av pitesamiska ord*; see the website for more details.

[8] Funding for my Pite Saami projects has come from the Hans Rausing Endangered Language Project, the German Research Foundation (grant no. 286335341) and Duoddara Ráfe Pite Saami Center.

[9] elar.soas.ac.uk/Collection/MPI201072 (last accessed 2020-05-26).

[10] Monosyllabic words will not be dealt with here because such words are not subject to metaphony, not even in the rare cases that they may seem to attach phonologically to a neighboring host, even if this results in a "two-word combination", as Lehtiranta (1992: 78) puts it (my translation).

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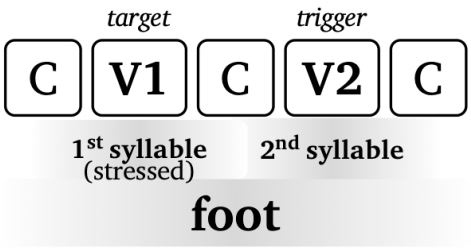

Figure 2: Prosodic structures of Pite Saami words relevant for metaphony; here, “C” stands for a slot for consonant(s), and “V1”/“V2” represent the initial and second vowel slots of a foot, with V1 being the target of metaphony, and V2 the trigger of metaphony.

initial (left) edge of a word.[11] Each foot thus consists of an initial stressed syllable, and a second unstressed syllable. This foot-based prosodic structure can be used to define the locations of the vowels that participate in metaphony: the vowel of the initial syllable (the “target” vowel, here abbreviated as “V1”) and the vowel of the second syllable (the “trigger” vowel, here abbreviated as “V2”). Note that there is minimally at least one consonant between V1 and V2, so the vowels in these two slots are never adjacent.

Metaphony is triggered when the V2 vowel is a close vowel /i/ or /u/, and this results in the accommodation of the V1 vowel such that back vowels are raised to /u/ (retaining their non-metaphonic length), and the front vowels are adapted inconsistently like this: /a/ > /i/, /aː/ > /ɛː/ and /ɛː/ > /eː/ (cf. the inventory of all correspondences in Table 1 in the introduction to Section 2). The harmonic domain is thus restricted to a single foot. The sets of examples in 1 (repeated from Table 1) and 2 illustrate this; for each, the initial wordform contains the default, non-metaphonic vowel, while the second and third wordforms feature metaphony due to the /i/ and /u/ (respectively) in the V2 vowel slot.

(1) a. /kuo͡ɔlːe/ ‘fish.NOM.SG’
b. /kuːlijt/ ‘fish.ACC.PL’
c. /kuːlijna/ ‘fish.COM.SG’

[11] In my discussion, I do not make any claims concerning theoretical approaches to prosody or phonology, nor do I attempt to embed my description in any specific theory (such as one concerning features, constraints, etc.), but instead attempt to present the data in a theoretically framework-free way as possible. Nonetheless, I use technical linguistics terminology as needed to adequately and concisely describe the phenomenon; some of these terms, even those referring to basic ideas such as features, assimilation or even phoneme, may have some theoretical implications which I do not intend.

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(2) a. /pɔːtsoj/ ‘reindeer.NOM.SG’
b. /puːʰtsu/ ‘reindeer.NOM.PL’
c. /puːʰtsujta/ ‘reindeer.ILL.PL’

Each of the third wordforms in these examples are trisyllabic, but the third syllable’s vowel is unaffected by the metaphony trigged by the V2 vowel. In other words, metaphony is restricted to only affecting the preceding V1 vowel.

While a final, odd-numbered syllable may also occur in a word, it is never stressed and the set of possible vowels for this syllable is particularly restrictive. Even when the vowel of an odd and final syllable is /i/ or /u/, no metaphony is triggered, as illustrated by the example in 3a; the ungrammatical wordforms in 3b show that metaphony would not be acceptable here.

(3) a. /saːkastit/ ‘say.INF’
b. */saːkistit/, */sɛːkistit/

As a final odd syllable’s vowel never participates in metaphony, it can thus be disregarded in the current discussion.

That a single foot is the scope of metaphony holds true even when one or more prosodic feet occur before the foot subject to metaphony. For instance, when suffixing (both inflectional and derivational) increases the number of syllables so that an additional foot is added to a base form and a metaphonic context is created, metaphony is only realized within a single foot, as in example 4. Here, the initial wordform in 4a serves as a point of comparison because it is not subject to metaphony, while the third vowel /eː/ in the wordform in 4b is V1 in the foot subject to metaphony as triggered by the fourth vowel /i/; the ungrammatical wordforms in 4c show that the vowels of the previous foot are not affected.

(4) a. /saːkastɛːʰpːen/ ‘say.2DU.PRS’
b. /saːkasteːʰpːit/ ‘say.2PL.PRS’
c. */saːkisteːʰpːit/, */sɛːkisteːʰpːit/

As could be expected, metaphony does not cross compound boundaries either, as in the grammatical example in 5a and the ungrammatical forms in 5b.

(5) a. /vu̯o̯dːo-petnik/ ‘base-amount.NOM.SG’[12]
b. */vu̯o̯dːu-petnik/, */vudːu-petnik/

Finally, and equally unsurprisingly, it is also the case that metaphony does not cross word boundaries.

[12]Literally, “base-money”.

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2.2 Phonological context

Figure 1 at the beginning of Section 2 presents the vowel phonemes that are licensed for the initial syllable of a foot, divided into two sets. On the right are the vowels that are triggered when metaphony applies (/i eː ɛː u uː/), and on the left are the set of “default” vowels that occur when metaphony is not present (/i ɛː a aː u u͡o ɔ ɔː/). These two sets are therefore the two groups one should consider when looking at metaphony in Pite Saami. Neither group can really be considered a clear harmonic set, as opposed to a language with a classic case of vowel harmony.[13] It is perhaps not terribly problematic that the default set of V1 vowels does not share any features. However, the only phonological feature that the vowels in the metaphony set have in common is best defined in negated terms, specifically by not being fully open vowels. Thus, strictly speaking, their shared trait is [-open].

However, a more elegant and useful approach considers which vowels from the default set correspond to which vowels from the metaphony set because this allows us to describe Pite Saami metaphony as a type of aperture closing harmony. Table 1 above shows how each default vowel corresponds to a metaphonic vowel. In other words, metaphony triggers a raising (aperture closure) of the default vowel in all cases. For back vowels, the closure is complete, as all correspond to /u/, while retaining length distinctions; /u͡o/ is also monophthongized. For front vowels, the picture is quite inconsistent, as the amount of closure differs significantly between the individual pairs. While only /a/ undergoes complete closure to /i/, /ɛː/ raises to /eː/ and /aː/ is raised to /ɛː/. Of course, /i/ and /u/ do not change in aperture because they are already close vowels.[14]

Note that vowel length in general is not affected, but retained in Pite Saami metaphony, including concerning the diphthong /u͡o/, which is also long. Even though it is therefore not relevant for metaphony, I have marked it for all long monophthongs in order to be systematic, especially because not marking length would obscure the quantitative length distinction between the default open front vowels /a/ and /aː/.

Although metaphony is a strictly phonological phenomenon that is valid across the board (e.g., regardless of morphological, syntactic or other contexts), certain morphological contexts (both inflectional and derivational) allow us to collect sets of lexically related wordforms with and without metaphony. This also allows us to determine the correspondences between default and metaphony

[13] E.g., Finnish, which in general has two harmonic sets of vowels (front vowels vs. back vowels) that participate in vowel harmony in a mutually exclusive way (Hulst & Weijer 1995: 498).

[14] Whether or not /i/ and /u/ “participate” in metaphony is a theoretical discussion that I will not entertain here.

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pattern			default	metaphony
/a/	~	/i/	/atnet/ ‘have.INF’	/**i**tniv/ ‘have.1SG.PRT’
/aː/	~	/ɛː/	/aːjten/ ‘shed.INESS.SG’	/**ɛ**ːjtijn/ ‘shed.COM.SG’
/i/	~	/i/	/pi**v**ːtet/ ‘hunt.INF’	/pi**v**ːtiv/ ‘hunt.1SG.PRT’
/ɛː/	~	/eː/	/l**ɛ**ːkːa/ ‘warm.ATTR’	/l**e**ːkːit/ ‘warm_up.INF’
/u/	~	/u/	/ku**l**ːat/ ‘hear.INF’	/ku**l**ːiv/ ‘hear.1SG.PRT’
/u͡o/	~	/uː/	/k**u̯**ole/ ‘fish.NOM.PL’	/k**u**ːlijt/ ‘fish.ACC.PL’
/ɔ/	~	/u/	/pɔ^{h}ʧet/ ‘milk.INF’	/p**u**^{h}ʧiv/ ‘milk.1SG.PRT’
/ɔː/	~	/uː/	/pɔː^{h}tet/ ‘come.INF’	/p**u**ː^{h}tiv/ ‘come.1SG.PRT’

Table 3: Examples for each of the metaphonic patterns in Pite Saami.

vowels. Table 3 provides examples for each set of corresponding vowels from Table 1 (including the introductory examples from Table 2.

Note that the phonemes /u͡o/ and /ɛː/ in the default group have allophonic forms in V1 position. These allophones are leveled out under metaphony; in other words, the corresponding metaphonic vowel is the same, namely /u/ for /u͡o/, and /i/ for /ɛː/. Nonetheless, it is worth describing these allophones here for the sake of clarity, especially since the orthographic representations refer to these quite salient allophones (cf. Section 2.5). First of all, /u͡o/ is realized as [ʊ͡a] in V1 when the consonant center is in grade III and V2 is not /e/, as [ʊ͡ɛ] in V1 when the consonant center is in grade III and V2 is /e/,[15] and as [ʊ͡o] in V1 when the consonant center is in grade II or grade I (in the last case, the V2 vowel is irrelevant).[16] Secondly, /ɛː/ is realized as [ɛː] in V1 when the consonant center is in grade III, and as [i͡e] in V1 when the consonant center is in grade II or grade I. The grade of the consonant center is synchronically not a purely phonological

[15]Speakers of more northern Pite Saami variants do not have the allophone [ʊ͡a] at all, but instead only [ʊ͡ɛ].

[16]The phoneneme /u͡o/ is realized as [o] when it occurs in V2. In general, /o/ would have potentially been a better choice to represent this phoneme here because of its simplicity, however, in the context of metaphony, I have chosen /u͡o/ because all three default allophones are diphthongs and because a diphthong corresponds better with the orthographic representations of this phoneme in V1 position, namely <ua>, <uä> and <uo>.

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	Number	
Case	SG	PL
NOM	jú͡ɛl:ke	jú͡olke
GEN	jú͡olke	**ju:lkij**
ACC	jú͡olkev	**ju:lkijt**
ILL	jú͡al:ka:j	**ju:lkijta**
INESS	jú͡olken	**ju:lkijn**
ELAT	jú͡olkest	**ju:lkijst**
COM	**ju:lkijna**	**ju:lkij**
ABESS	jú͡olketak	jú͡olketaka
ESS	jú͡ɛl:ken	

Table 4: Phonemic inflectional paradigm for the noun *juällge* ‘leg/foot’; wordforms featuring metaphony are marked in bold.

feature, but instead triggered by inflectional and derivational morphology.

2.3 Typical morphological contexts

A number of morphological contexts, both in inflectional and derivational morphology, have suffixes with a close vowel that thus provide a context for metaphony and trigger metaphonic assimilation of the first syllable vowel of the base form. As emphasized in the previous section, although morphology is not an active factor in Pite Saami metaphony, the sets of wordforms belonging to morphological paradigms of certain inflectional classes exhibit more allomorphy due to metaphony. The noun paradigm in Table 4 and the verb paradigm in Table 5 illustrate just how metaphony can be a highly visible part of inflectional paradigms. For instance, in noun paradigms for the inflectional classes featuring a bisyllabic citation form (nominative singular) with an /e/ in V2 position,[17] metaphony is triggered by all suffixes containing an /i/, as in Table 4.

Similarly, verb paradigms for the inflectional classes featuring a bisyllabic citation form (infinitive) with an /e/ in V2 position,[18] metaphony is triggered by all suffixes containing an /i/, as in Table 5. Note also that the bisyllabic suffixes themselves in the second person dual and plural present tense forms (/pú͡ɛl:tepʰtin/ and /pú͡ɛl:tepʰtit/) also exhibit metaphony, but not the stems themselves since metaphony does not extend outside a foot (cf. Section 2.1).

When foreign words are borrowed into Pite Saami, the resulting loanword

[17] This corresponds to nominal inflectional class Ie in Wilbur (2014: 102-103), although metaphony is misleadingly referred to as “*j*-suffix vowel harmony” there.

[18] This corresponds to verbal inflectional class III in Wilbur 2014: 173-174, although metaphony is misleadingly referred to as “vowel harmony” there.

Mood/ Tense	Person	Number SG	DU	PL
IND-PRS	1st	pu̯o͡lta:v	**pu:l:tin**	pu̯ɛ͡l:tep
	2nd	pu̯o͡lta:	**pŭɛl:tepʰtin**	**pŭɛl:tepʰtit**
	3rd	pu̯a͡l:ta:	pu̯ɛ͡l:tepa	**pu:l:ti**
IND-PRT	1st	**pu:l:tiv**	**pu:ltijme**	**pu:ltijme**
	2nd	**pu:l:ti**	**pu:ltijten**	**pu:ltijte**
	3rd	**pu:ltij**	**pu:ltijka**	**pu:l:tin**
IMP	2nd	pu̯o͡lte	pu̯ɛ͡l:ten	**pu:l:tit**

Table 5: Phonemic inflectional paradigm for the verb *buälldet* 'ignite'; word-forms featuring metaphony are marked in bold.

can receive inflectional morphology which includes a metaphony-triggering V2. The V1 vowel from the borrowed stem is then adapted accordingly. This is especially common in borrowed verbs, but there are a few examples for nouns and adjectives. For instance, the verb /svɛ:r:ut/ 'answer.INF' is a borrowing from North Germanic (cf., Swedish *svara* 'answer'). Here, the Pite Saami verbalizer /-u/ is suffixed to the borrowed stem /sva:r-/ (in addition to, in this example, the infinitive marker /-t/), and triggers metaphony, resulting in /ɛ:/ in the V1 vowel. According to the Pite Saami metaphony system, the harmonic counterpart to /ɛ:/ should be /a:/, and indeed the Swedish source is a long open vowel (although it is a back vowel [ɑ:]). Other loaned verbs feature the verbalizer /-i/, which has the same metaphonic effect. Similar examples include /lɛ:git/ 'repair.INF' (cf. Swedish *laga*[19] 'repair') and /pɛ:ʰk:ut/ 'bake.INF' (cf. Swedish *baka* 'bake').

In noun borrowing, the borrowed Pite Saami form is typically bisyllabic with /a/ as its V2 vowel; because the inflectional paradigms for this type of noun never feature any inflectional suffixes which introduce a metaphony-triggering vowel in V2, examples of metaphony being applied when borrowing noun stems are rare, but not unheard of. Two examples are /drutnik/ 'queen.NOM.SG' (cf. Swedish *drottning* 'queen') and /re:knik/ 'invoice.NOM.SG' (cf. Swedish *räkning* 'invoice'). Here, the *-ing* component of the source stem (phonologically /-iŋ/) is adapted into Pite Saami as /-ik/, which then provides the appropriate context for metaphony, namely a high vowel in V2, and the V1 vowel in the borrowed stem is adapted accordingly to /u/ and /e:/, respectively.

Note that the inflectional paradigms for Pite Saami verbs with a bisyllabic infinitive form and /u/ or /i/ in V2 position do not feature stem allomorphy at all, so the borrowed Pite Saami inflectional stem is the same in all inflectional slots

[19]Note that the voiced plosive from the original is retained in the Pite Saami borrowing.

(thus, it is /svɛːru-/, /lɛːgi-/ and /pɛːʰkːu-/ for the examples provided here).[20] A similar situation holds true for nouns with a bisyllabic nominative singular form with a closed second syllable, at least concerning the metaphony-triggering V2 vowel: the inflectional stem invariably has the same V2 vowel throughout the inflectional paradigm, and thus the metaphonic V1 vowel is also consistent.[21] In other words, all inflected forms of these examples feature the stems /drutnik-/ and /reːknik-/, respecitvely.

A few instances of borrowed adjectives exist featuring metaphony, such as /blɛːvːis/ 'blue.ATTR' (cf. Swedish *blå* 'blue'). However it seems unlikely that this attributive form was borrowed directly because if the metaphony triggering V2 vowel /i/ had been suffixed to the borrowed stem *blå-* featuring a back vowel /oː/, one would expect the metaphonic correlate to be /uː/, but */bluːvːis/ is ungrammatical. One explanation could be that this adjective was borrowed as its predicative form /blaːvːat/ 'blue.PRED.NOM.SG', to which the suffix *-is* was added (replacing the predicative suffix /-at/) to create the attributive form, and so the /i/ in this suffix triggers metaphony.[22]

Finally, a few examples indicate that proper nouns are no exception to metaphony. As an example, the surname /skajːle/ (spelled *Skajjle* in Pite Saami, but typically spelled *Skaile* in Swedish) inflects according to the same inflectional paradigm presented in Table 4, and thus is for instance /skijlij/ in genitive plural, and /skijlijn/ in comitative singular. Similarly, /mɛrːkit/ (spelled *Märrgit* in Pite Saami) corresponds to the Swedish name *Margareta* (with a long /a/ in V1, thus the /ɛː/ in the Pite Saami version; cf. the discussion of /svɛːrːut/ 'answer' above).

2.4 Dialectal variation

In my own data, the set of vowels subject to metaphony is more limited in more northernly dialects; in other words, there is variation in the application of metaphony, such that it is restricted to affecting only a subset of vowels in some dialects. Furthermore, even the group of vowels included in the affected subset can vary. As Lehtiranta (1992: 78) points out (citing older sources), in dialects (or perhaps only ideolects) from areas north of Barturte, the vowels /a/ and /aː/, and even sometimes /ɔ/ and /ɔː/ do not always participate in metaphony. In my own data collection, I only have a few recordings with speakers of the most northern dialects (corresponding to the Arves dialect), and my data supports this

[20] Such stems are frequently referred to as "contracted stems" in Saami linguistics, and correspond to the "Class IV" inflectional class for verbs in Wilbur (2014: 175-176).

[21] Such stems are frequently referred to as "odd-syllable stems" in Saami linguistics, and correspond to the "Class IIIa" inflectional class for nouns in Wilbur (2014: 105-106).

[22] Attributive adjectives can no longer be derived productively from the predicative form (Wilbur 2014: 134).

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default V			metaphonic V	
IPA	**orth.**		**IPA**	**orth.**
a	a	~	i	i
aː	á	~	ɛː	ä
i	i	~	i	i
ɛː	ä/ie	~	eː	e
ɔ	å	~	u	u
ɔː	å	~	uː	u
u	u	~	u	u
ûo͡	uo/ua/uä	~	uː	u

Table 6: The orthographic representations of default and metaphonic vowels; for each set, the phonemic representation is provided in the column “IPA”, while the graphemes used are in the column “orth.”

conclusion concerning /a/ and /aː/, i.e., e.g., /aːlːgi/ “start.3PL.PRS” (instead of /ɛːlːgi/), and /taʰkin/ “make.3PL.PRT” (instead of /tiʰkin/), but is inconclusive for /ɔ/ and /ɔː/. In addition, the forest dialects (such as the Ståkke dialect) seem to have a more limited set of V1 vowels affected by metaphony. Thus, for instance the central Pite Saami word /jɛːmij/ ‘die.3SG.PRT’ is /jaːmij/ to the north and east (cf. the citation form /jaːpmet/ “die.INF”).

For the more southern dialects Rasjvärta, Björkfjället and Svaipa, Lehtiranta summarizes (citing older sources) that the actual phonetic realization of the metaphonic vowels corresponding to /a/ are slightly more open than in the central dialects (1992: 77-79). Otherwise, these dialects feature the same metaphony as the central dialects. I have not have had the opportunity to work with any speakers from these dialects, and in fact I am not aware that any speakers are still living, so I do not have any of my own data to confirm or refute this.

2.5 Orthographic representation

Pite Saami has had an official standard writing system since August 2019.[23] In the orthography, graphemes representing the assimilated metaphonic variants are used, rather than referring to a theoretical (archi-)phonological underlying representation or a historical representation. As a result, this new writing system clearly marks metaphony, although unfortunately the length distinctions for back vowels /ɔ/~/ɔː/ and /u/~/uː/ are not indicated in the standard. The phoneme-grapheme correspondences concerning the V1 vowels in their default and metaphonic states are provided in Table 6. Note that the multiple orthographic representations for default phonemes /ɛː/ and /ûo͡/ correspond to their

[23]For more details about and a review of the Pite Saami orthography, see Wilbur (forthcoming).

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respective allophones as triggered by the allomorphy described at the end of Section 2.2.

3 Conclusion and outlook

Metaphony in Pite Saami is a foot-level phenomenon by which a close back vowel /i/ or /u/ in the second syllable vowel position (V2) triggers a decrease in aperture of the first syllable vowel (V1). I have shown that this metaphony is an interesting example of long-distance phonological assimilation (a subtype of vowel harmony) because of the inconsistent behavior of the vowels affected by this process. Specifically, all default back vowels in the initial syllable (V1), namely /ɔ/, /ɔː/, /u͡o/ and /u/, correspond to a metaphonic form which is a high back vowel /u/ (which by itself is quite consistent, although note that length distinctions are retained such that the long vowel and the diphthong are also long in their metaphonic forms). In contrast to this consistency, the metaphonic forms of the set of front vowels increase the amount of closure in the context of metaphony to differing degrees. Here, the default front vowels /a/, /aː/, /i/ and /ɛː/ correspond to the metaphonic forms /i/, /ɛː/, /i/ and /eː/, respectively. In addition to showing both the prosodic structure and phonological context relevant for this, I have also shown some of the typical morphological contexts which feature metaphony, briefly discussed some of the variation within Pite Saami, and presented how the new orthographic standard represents metaphony.

Although, as mentioned above, I am not the first linguist to address this topic for Pite Saami, this is the first time it has been presented thoroughly in English, with the hope that a wider range of linguists will now have access to this particular version of metaphony. In addition, audio has been provided for the examples, thanks to this contemporary digital format.

While previous descriptions went into some detail about specific phonetic realizations for both default and metaphonic vowels, such studies were done long before the digital age, and were based on the researchers’ own subjective aural assessment. I do not intend to question previous researchers’ abilities to transcribe phonetically, but modern digital acoustic techniques as well as perception tests could add significantly to our understanding of Pite Saami metaphony. In addition, modern recordings of speakers from the southern Pite Saami dialect would also help complete the picture.

Finally, the striking asymmetry in the completeness of aperture assimilation between the back and the front vowels, as well as the notable variation in dialectal forms are promising areas for further investigation. This could particularly include analyzing Pite Saami metaphony from a more theoretical phonological perspective, with the aim of adding to our understanding of assimilation

processes both for Pite Saami and cross-linguistically.

List of abbreviations

abbreviation	*full form*
1	first person
2	second person
3	third person
ACC	accusative
ATTR	attributive
C	consonant
COM	comitative
DU	dual
ELAT	elative
GEN	genitive
IMP	imperative
IND	indicative
INESS	inessive
INF	infinitive
IPA	international phonetic alphabet
NOM	nominative
PRED	predicative
PL	plural
PRS	present
PRT	preterite
SG	singular
V	vowel
V1	vowel slot of the initial syllable of a foot
V2	vowel slot of the second syllable of a foot

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