

# Paradigm Generation and Northern Sámi Stems

Peter Svenonius\*

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## 1 Introduction

Northern Sámi, a Finno-Ugric language spoken mainly in Northern Norway, Sweden, and Finland, has a system of consonant gradation which affects consonants at the center of a prosodic foot: the coda of the stressed syllable and the onset of the following syllable (stress is word-initial). Consonant Gradation is illustrated in (1).

- (1) a. guolli ‘fish’ NOMINATIVE
- b. guoli ‘fish’ ACCUSATIVE

Historically, the alternation was phonologically conditioned (see Sammallahti 1998 for details), but in the modern language, it is morphologized, so that it occurs without any phonologically overt trigger. The form used in the nominative singular (for this class of nouns) is known as the Strong Grade, and the form used in the accusative is known as the Weak Grade.

Northern Sámi has a three-way length contrast in consonants, so that alternations like that in (2) are also found.

- (2) a. gol:li ‘gold’ NOMINATIVE
- b. golli ‘gold’ ACCUSATIVE

The extra-long consonant center in (2a) is known in the literature on the subject as Quantity 3 (Q3), while the geminates seen in (2b) and (1a) are known as Quantity 2 (Q2), and short consonant centers like that in (1b) are known as Quantity 1 (Q1).

The general pattern is the one already illustrated in (1)–(2):

- (3) a. Strong Grade Q2 — Weak Grade Q1
- b. Strong Grade Q3 — Weak Grade Q2

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Consonant Gradation is not always a simple matter of consonant length. For certain stops, it involves preaspiration, as illustrated in (4) for the Q2—Q1 alternation, and in (5) for the Q3—Q2 alternation.

- (4) a. neahpi ‘nephew’ nominative, Strong, Q2  
b. neabi ‘nephew’ accusative, Weak, Q1
- (5) a. lahhti ‘floor’ nominative, Strong, Q3  
b. lahti ‘floor’ accusative, Weak, Q2

The pattern in (4) also involves voicing, and sometimes other changes, e.g. in *goahhti*—*goađi*, a word for a kind of large tent. There are also alternations involving prestopped nasals.

- (6) a. joʔna ‘lingonberry’ NOMINATIVE, Strong, Q2  
b. jopna ‘lingonberry’ ACCUSATIVE, Weak, Q1
- (7) a. gomʔmii ‘ghost’ nominative, Strong, Q3  
b. goʔmii ‘ghost’ accusative, Weak, Q2

Phonological processes may conspire to obscure the pattern (see Bye 2001). In particular, there are lengthening processes which give rise to alternations between short and overlong consonant centers as in (8), alternations in which the alternation appears to be one of voicing rather than length as in (9), non-alternating pairs as in (10), and even alternations in which the Weak Grade is phonologically longer than the Strong Grade, as illustrated in (11).

- (8) a. jahhkii ‘year’ nominative, Strong  
b. jagii ‘year’ accusative, Weak
- (9) a. ružžuu ‘ravine’ nominative, Strong  
b. ruččuu ‘ravine’ accusative, Weak
- (10) a. beaska ‘tunic’ nominative, Strong  
b. beaska ‘tunic’ accusative, Weak
- (11) a. nieida ‘daughter’ nominative, Strong  
b. nieitta ‘daughter’ accusative, Weak

Examples like (8)–(11), I will argue, have phonological explanations, and are actually consistent with the pattern demonstrated here that the nominative is consistently Strong Grade (along with the essive and illative) and the Accusative is Weak Grade (along with the other cases), and furthermore that the Strong Grade is always created by the addition of a segment to the form underlying the Weak Grade.

Especially important for the understanding of paradigms is the existence of systematic reversals. There are entire classes of nouns for which the nominative (and essive) are Weak Grade and the accusative (and other cases) is Strong Grade. Two examples are illustrated in (12) and (13).

- (12) a. suoluu ‘island’ nominative, Weak (!)

- b. sul:lo ‘island’ accusative, Strong (!)
- (13) a. baalggiis ‘path’ nominative, Weak (!)
- b. baalåga ‘path’ accusative, Strong (!)

In this paper, I discuss the system of Consonant Gradation and its significance for our understanding of morphological paradigms. Consonant Gradation pervades the morphological system of Northern Sámi; it is an important part of the verbal, nominal, and adjectival inflectional systems, and interacts with morphological derivation. It affects not only roots, but also derivational suffixes and even some inflectional suffixes. It is phonologically complex, but systematic, affecting even recent loan words.

Because of the productivity of Consonant Gradation, the system that generates paradigms must be able to effectuate Consonant Gradation; the root alternations in Northern Sámi are not learned by rote, and Bals (2002) has shown that children learn to correctly use the Consonant Gradation process before the age of three (in fact, the phonologically simplest alternation is already being correctly used by the age of two).

The data in this paper represent the Kautokeino (Guovdageaidnu) dialect (see Bals et al. to appear for further information about the phonological details). I use phonemic representation throughout, based on the conventions presented in Bals et al. (to appear) and Bals (in preparation).<sup>1</sup>

## 2 The nature of the alternation

### 2.1 The direction of the alternation

The alternation, as already seen, generally involves the prosodic weight of the coda of a stressed syllable. Given that it is fully productive, part of the linguistic competence of a Northern Sámi speaker is knowing how to create an alternating pair; the simplest statement of this knowledge will be as a rule applying to an underlying form. This leads us to the question of which form is the underlying one, a question that turns out to be surprisingly difficult to answer. I quickly examine three possible approaches to deciding which form is underlying, none of which are conclusive, and then make a practical decision on essentially theory-internal grounds.

A possible clue regarding the direction of the alternation is the markedness of the forms themselves. For example, since the Strong Grade is used the nominative singular of bisyllabic nouns and for the infinitive and third person singular present of bisyllabic verbs, it might be thought that Strong Grade is the unmarked form. However, Weak Grade is also used for some extremely frequent

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<sup>1</sup>Following the standard orthographic conventions for Northern Sámi (and the practice of Bals et al. to appear), I use the following non-IPA symbols:

Here: š č ž c z  
 IPA: ʃ tʃ dʒ ts dz

Overlong geminates are written C:C. Other symbols correspond more or less to their usual IPA values.

forms, including the syncretized accusative/genitive in the nominal paradigm, and the first person singular present and second person singular present in the verbal paradigm; so both Strong and Weak Grade appear in forms which are high in frequency and low in markedness.

Another kind of attempt to establish the directionality of an alternation is to examine its acquisition. The forms that children acquire first might be taken as unmarked, and their overgeneralizations might reveal what kinds of rules they are postulating. Here the data reported in Bals (2002) gives a complex picture. For many Q1–Q2 alternations, children appear to prefer Q1 over Q2, that is, they use the Weak Grade. However, for several Q2–Q3 alternations, they prefer Q3 over Q2, that is, they prefer the Strong Grade. There seem to be overgeneralizations in both directions. Furthermore, the phonological processes which obscure or even reverse the length contrasts (a few of which were illustrated in (8)–(11)) are being acquired at the same time as the morphological process. Thus, while the examination of the acquisition process may eventually determine which form is to be treated as basic, the data currently available do not settle the matter.

Evidence may also be sought from loan words and nonce formations. Here, again, the evidence is somewhat equivocal; there are many loan words in which the donor word is used as the base for the Weak Grade, for example the Norwegian word *sjarm* ‘charm’ has recently been borrowed, and alternates between Strong *šarəʔma* (nominative) and Weak *šarʔma* (accusative); judging from the phonological dissimilarity of the Strong form to the Norwegian /šarm/, it seems that the word was introduced into Sámi as a Weak form. If the donor word had been used as a Strong Grade form, then the alternation would presumably be between *šarʔma* and *\*šarma*. However, there are examples where the donor word seems to have been adopted as the Strong form. In many cases, it seems that foreign words which are borrowed are matched to whichever pattern seems to resemble them best, whether the closest similar form is Strong or Weak. For example, Norwegian *lefse*, a thin potato-meal tortilla, has been borrowed as Weak *leaʔssaht* in the nominative plural, alternating with Strong *leaksa* in the singular; there is no alternation in which the Strong form closely resembles the Norwegian /fs/. The word *doctor* (Norwegian *doktor*) has entered the language as Strong *doaktaara*, Weak *doaʔttiir* (thanks to Berit Anne Bals for discussion on this point).

A more useful indication might come from non-alternating forms. If the process is a shortening process, then any form which entered the lexicon as underlying short would remain short, never lengthening morphologically; so if the process is a shortening process then there should be a set of non-alternating short words. There is a set of non-alternating words with Q1 centers, but it is very small. There are even fewer non-alternating words with Q3 centers; the vast majority of words in Northern Sámi regularly undergo Consonant Gradation.

A neutralizing alternation could be instructive; for instance, there is an alternation between /nn/ and /n/ in Strong *meannu* Weak *meanu* ‘disposition,’ and between /ʔn/ and /n/ in Strong *deaʔnu* Weak *deanu* ‘large river.’ This would seem to force an account in terms of shortening, if no underlying distinction

between the two short forms could be found. But Bals et al. to appear point out that all four examples in their database of non-glottalized geminate nasals are in words with an initial nasal (like *meannu*), and no words with glottalized nasals begin with a nasal (cf. *deaʔnu*). Thus, a systematic lengthening process can be stated even here.

Since Consonant Gradation is morphologized, and it is far more common for morphology to be essentially additive, I will assume that Consonant Gradation involves the addition of material to a basic form. This means that the accusative form of bisyllabic nouns, and the infinitive form of bisyllabic verbs, are taken to be basic. If the basic form is Q1, then a morphological process of Strengthening makes it Q2, and if a basic form is Q2, then Strengthening makes it Q3. This has the appealing result that the three-way length contrast need not be represented underlyingly; I will argue that non-alternating Q3 roots are underlyingly Q2 but undergo a phonological lengthening process in their Weak Grade form. In fact, all Q3 forms can be derived.

I will assume that the Consonant Gradation process is the addition of a timing slot to the coda of a stressed syllable. In the nominal domain, I associate it with number and case suffixes; they attach to the right edge of the word, and Consonant Gradation affects the closest stressed syllable to the left. In the verbal domain, I associate Consonant Gradation with agreement suffixes. Again, the process affects the closest suitable consonant center.

## 2.2 A little more phonology

I assume, then, that there are underlyingly just two different kinds of codas for stressed syllables in Northern Sámi, those with a single consonant and those with two consonants. The Weak Grade is the surface realization of the underlying form, and the Strong Grade is the surface realization of the underlying form plus one extra timing slot in the coda.

The simplest patterns are illustrated in (14)–(15), for a few selected phonemes; for fuller inventories see Sammallahiti (1998), Bye (2001), or Bals et al. (to appear).

- (14) Fricatives and Sonorants
- |              | Short |    |    | Long |     |     |
|--------------|-------|----|----|------|-----|-----|
| Underlying   | l     | m  | f  | ll   | mm  | ff  |
| Weak Grade   | l     | m  | f  | ll   | ʔm  | ff  |
| Strong Grade | ll    | ʔm | ff | l:l  | mʔm | f:f |
- (15) Stops and Affricates, and Preaspirated Stops and Affricates
- |              | Short |    |    | Long |     |     |
|--------------|-------|----|----|------|-----|-----|
| Underlying   | p     | t  | c  | hp   | ht  | hc  |
| Weak Grade   | b     | ḑ  | c  | hp   | ht  | hc  |
| Strong Grade | hp    | ht | hc | hhp  | hht | hhc |

Thus, it is important to keep in mind that Q1, Q2, and Q3 are phonological descriptions, while Strong and Weak Grade are morphological notions.

Some deviations from this simple pattern were seen in (8)–(13) above. First, there was the case of *jahhkii*, ‘year,’ repeated here in (17), in which the alternation is between Q3 and Q1. The same was true of *suoluu* ‘island,’ repeated in (17) (which demonstrated the additional complication of reversing the Strong–Weak alternation; I discuss the morphological situation below).

- (16) a. jahhkii ‘year’ nominative, Strong
- b. jagii ‘year’ accusative, Weak
- (17) a. suoluu ‘island’ nominative, Weak
- b. sul:lo ‘island’ accusative, Strong

Sammallahti (1998) proposes a rule which he calls Primary Lengthening, which lengthens a geminate consonant following a short vowel and preceding a long one. If the underlying consonant in *jahhkii* is a /k/, and if consonant gradation lengthens that /k/ to something satisfying the conditions for Primary Lengthening, then the overlong consonant in the Strong Grade form in is phonologically changed from Q2 to Q3. Similarly, if the underlying form of *suoluu* has a long final vowel, as seen in the nominative form in (17), then after consonant gradation applies, the form will meet Sammallahiti’s conditions for Primary Lengthening, and the surface Q3 is phonologically derived.

I turn to the situation in which the Weak Grade was phonologically longer than the Strong Grade, illustrated with *nieida* in (11), repeated here as (18).

- (18) a. nieida ‘daughter’ nominative, Strong
- b. nieitta ‘daughter’ accusative, Weak

This pattern is systematic for what I analyze as glide-initial clusters (cf. Bye 2001), a few examples of which are illustrated in (19).

- (19) Glide-initial clusters
- Underlying    jv    jst    jd    wr    wg    ws
- Weak Grade    ivv    isst    itt    urr    ukk    βss
- Strong Grade    iv    ist    id    ur    ug    ks

The usual effect of consonant gradation is to lengthen the coda of the stressed syllable. But the coda in each of these clusters is simply a glide, which shows no length contrast elsewhere in the language. The Strong Grade of underlying /j/ surfaces as /čč/ as in *vuojā-vuočča* ‘butter,’ but there are no clusters with /č/ as their first member elsewhere, so to change /j/ to /č/ in these clusters would yield an otherwise unattested output. Therefore, I suggest, the morphologically predicted lengthening of /j/ is prevented or undone by phonological rule, and it surfaces as a vowel. A separate rule lengthening consonants after (non-geminate) syllable-final glides (and liquids, as will be seen below) makes the Weak Grade form long at the surface.

It seems that a similar surface neutralizing effect takes place in certain /s/-initial clusters. There are many apparently non-alternating forms like *beaska*, a word for a reindeer-skin tunic, repeated here in (20).

- (20) a. beaska ‘tunic’ nominative  
b. beaska ‘tunic’ accusative

There is no difference here in consonant length, and thus there is a contrast with forms like that in (21).

- (21) a. muoskii ‘isthmus’ nominative, Strong  
b. muoskii ‘isthmus’ accusative, Weak

However, for many speakers, there is a difference in the quality of the diphthong in (20) (this was brought to my attention by Berit-Anne Bals). Descriptively, it is as if the stress peaks earlier in the nominative form than in the accusative. This suggests that there is in fact a consonant gradation alternation which is obscured by some phonological or phonetic process. I have not yet determined conclusively that the difference between forms like (20) and forms like (21) can be phonologically stated, but will assume it in what follows.<sup>2</sup>

Another example mentioned in the previous section was that for certain consonant centers, both Strong and Weak forms are approximately the same length, but the Strong form is voiced while the Weak form is voiceless, e.g. as illustrated in (22), repeated from (9).

- (22) a. ružžuu ‘ravine’ nominative, Strong  
b. ruččuu ‘ravine’ accusative, Weak

Phonetically, the voiced version appears to be slightly longer than the voiceless one, but it is usually assumed that it is a simple geminate and not overlong (as indicated). Bye (2001) analyzes such forms as underlyingly clusters of a voiced and a voiceless stop (or affricate, as here). In the Weak Grade, the voiced stop assimilates and the cluster surfaces as a geminate. In the Strong Grade, a timing slot is added to the coda of the stressed syllable, and this preserves the voicing in the voiced segment (phonetically, the Strong Grade form appears to be voiced only in its initial stages, i.e. [rud:tšuu]).

One final example I will point out is the one mentioned above in (13), repeated here as (23), in which a schwa appears in the Strong Grade.

- (23) a. baalggiis ‘path’ nominative, Weak  
b. baaləga ‘path’ accusative, Strong

Recall that this word is one of the reversing class, so that the accusative is the Strong Grade form. This is irrelevant to the phonology of the alternation, which is regular for heterorganic clusters starting with /r/ and /l/ and /ð/, as illustrated with a regular noun in (24). Homorganic clusters do not surface with schwa, as illustrated in (25).

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<sup>2</sup>Bals et al. (to appear) give the following words as failing to undergo consonant gradation, like *beaska*: *meastu*, *feastu*, *leastu*, *faasmi*, *maaski*, *goaski*; all have /a/ before the /sC/ cluster. Like *muoskii* are words with some other vowel before the cluster, for example (in the Weak Grade): *giista*, *biistu*, *duuski*, *luosti*, *luosku*, *šuušmi*, *luuspi*, *oostu*, and *oosku*; but Bals et al. (to appear) also list three alternating words with /a/ before an /s/-initial cluster: *baaste*, *laasta*, and *aaski*.

- (24) a. *maarəfi* ‘sausage’ nominative, Strong  
 b. *maarffi* ‘sausage’ accusative, Weak
- (25) a. *alduu* ‘female reindeer’ nominative, Strong  
 b. *aldduu* ‘female reindeer’ accusative, Weak

As usual, I assume that the Strong Grade adds a timing slot to the stressed syllable, which ends with /r/ or /l/ here. In (25), this has the expected effect, namely lengthening the /l/. The lengthening of the following consonant in the Weak Grade forms can be assumed to be due to a regular phonological rule (cf. the lengthening seen in (19)), as can the realization of the extra timing slot as a schwa just in case the liquid-initial cluster is heterorganic (see Bye 2001 for a formal proposal).

There are many more complicated phonological rules at work in Northern Sámi, but I will not attempt to elucidate them here, as they are in general not relevant to the analysis, once it is appreciated that the Strong Grade systematically represents (the phonetic manifestation of) the addition of a timing slot to the stressed syllable. This is important because it reduces a great deal of the apparent morphological complexity of the Northern Sámi paradigm to phonology.

Several of the phonological rules mentioned here have the result that they ensure that there is a difference between the Weak and Strong Grade forms.<sup>3</sup>

It is a reasonable question whether that is something that should be represented in a linguistic system. In my analysis, it is not; the Strong Grade adds a timing slot, and if the phonology has a way to express that phonologically, it will. If other phonological rules conspire to obscure the alternation, they will. Any model that tries to build into the linguistic system a preference for distinguishing cells in a paradigm will have to take into account the fact that syncretisms happen all the time (and there are many in the Northern Sámi paradigms, as will be seen below).

### 3 The nominal paradigm

#### 3.1 Even numbers of syllables

A typical disyllabic nominal paradigm is illustrated in (26); since the Essive never distinguishes singular from plural, only one form is given.

- (26) *čiehkka* ‘corner’

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<sup>3</sup>We have seen several examples where lengthening processes change Weak Grade with underlying Q2 into a surface Q3, but in all cases except possibly *beaska* (cf. (20)), some other change occurred to distinguish the Strong and Weak Grades. An example is the alternation between /β/ and /k/ seen in *leaβssa/* ~ */leaksa/* (‘potato tortilla’). On my analysis, the underlying form is something like */leawsa/*, and /s/ lengthens in the Weak Grade phonologically. If the phonological lengthening (of /s/) and the morphology-induced strengthening (of /w/) targeted the same segment, then the Weak and Strong Grade would be neutralized.



	<b>Singular</b>	<b>Plural</b>
Nominative	čiehkka	čiegaht
Accusative	čiega	čiegaht
Illative	čiihkii	čiegađđe
Locative	čiegas	čiegajn
Comitative	čiegajn	čiegajkujn
Essive	čiehkkan	

The Strong Grade form /hk/ is seen in the nominative singular, the illative singular, and the essive. The Weak Grade of /hk/ is always /g/. Note the absence of the /a/ ending in the illative singular. There is a regular diphthong simplification process which applies to the diphthongs before /ij/ (realized /ii/ in the illative singular for nouns ending in /a/ like *čiehkka* in (26)), for example as seen in (27), where /oa/ is realized as /oo/ if there is an /ij/ in the suffix.

(27) *goahti* ‘big tent’

	<b>Singular</b>	<b>Plural</b>
Nominative	goahtii	goađiiht
Accusative	goađii	goađijht
Illative	goahtaađ	goađijđđe
Locative	goađiis	goađijn
Comitative	goađijn	goađijkujn
Essive	goahtiin	

As with the first example, the Strong Grade is seen in the nominative singular, the illative singular, and the essive. As with the first example, the vowel in the ending is special in the illative singular.

Two more examples are given below. As with the other forms, the Strong Grade appears in the nominative singular, the illative singular, and the essive.

(28) *viessuu* ‘house,’ *basste* ‘spoon’

	<b>Singular</b>	<b>Plural</b>	<b>Singular</b>	<b>Plural</b>
Nom	viessuu	viesuuht	basste	basteht
Acc	viesuu	viesuujht	baste	bastijht
Ill	viissuj	viesuujđđe	bastii	bastijđđe
Loc	viesuus	viesuujn	bastes	bastijn
Com	viesuujn	viesuujkujn	bastijn	bastijkujn
Ess	viessun		bassten	

The case suffixes in the singular are *-s* in the locative, *-jn* in the comitative, and *-n* in the essive. The illative singular has a *-j* suffix in all cases but sometimes also has a special vowel before it. There is a plural *j* in the non-nominative cases, and a nominative plural *-h* (word-final [h] surfaces regularly as [ht] utterance-finally; since these words were elicited in isolation they are transcribed with a final [ht]). There are also plural allomorphs of the other case suffixes.

The exact same pattern, including the Consonant Gradation, can be seen in stems with four syllables.

(29) *saaʔmelaš* ‘Sámi person’

	<b>Singular</b>	<b>Plural</b>
Nominative	<i>saaʔmelaš</i>	<i>saaʔmelaččaht</i>
Accusative	<i>saaʔmelačča</i>	<i>saaʔmelaččajt</i>
Illative	<i>saaʔmelažžii</i>	<i>saaʔmelaččajõe</i>
Locative	<i>saaʔmelaččas</i>	<i>saaʔmelaččajn</i>
Comitative	<i>saaʔmelaččajn</i>	<i>saaʔmelaččajkujn</i>
Essive	<i>saaʔmelažžan</i>	

Once again, it is the nominative singular, the illative singular, and the essive which show the Strong Grade, here realized as voicing of the geminate affricate in the *second* foot, not the first. The first remains unaffected. As with *čiehkka*, there is an /a/ in most forms, absent in the illative singular; but unlike *čiehkka*, this ending is absent in the nominative and present in the accusative. The only other difference in the four-syllable paradigm is the phonological weakening of the coda affricate in the nominative singular to /š/.

The first step in understanding this case paradigm is to observe that the essive is always closely related to the nominative singular form; in fact, it is always identical to the nominative singular plus *-n*. There may be a good semantic reason for this; cross-linguistically, the nominative has often been analyzed as a caseless form, and the essive is essentially predicative. Historically, the nominative and the essive were similar in one class of nouns, but not in another; but now they behave alike in all classes, as will be discussed in the next section.

Next, the ‘local’ cases locative and comitative can be seen as ‘outer’ cases closely related to the accusative; they share the same stem. The illative, which can appear in a ‘local’ case function but also has important roles as a kind of dative, stands alone.

Thus, there are three important stems to derive: The nominative singular, the illative singular, and the rest. Since the plural forms for the illative and the nominative are derived from the same stem as the accusative, and the essive is derived from the same stem as the nominative singular, these three stems should not be equated with the surface cases. For convenience, I will call them the absolutive, basic, and dative stems.

Since certain final vowels are changed in the illative singular, stem formation involves the final vowel. I will represent the vowel as *n*, with a particular value of *n* being lexically specified for each nominal root. The special value of *n* selected for dative stem formation will be represented as *n*<sub>2</sub>.

In addition, stem formation involves consonant gradation, which I propose to treat as an infixal timing slot. In order to be able to call all morphemes as suffixes, I will represent this infixal timing slot as  $\mu\curvearrowright$ , the  $\mu$  suggesting a mora and the curve suggesting that it is infixal, skipping the unstressed syllable.

Now the pattern of stems seen above can be represented as follows.

(30) Stem formation for *čiehkka* ‘corner’

	<b>Absolutive</b>	<b>Basic</b>	<b>Dative</b>
Basic pattern:	$\sqrt{-n}^{-\mu}\frown$	$\sqrt{-n}$	$\sqrt{-n_2}^{-\mu}\frown$
Example of stem:	čiek-a- $\mu$ $\frown$	čiek-a	čiek-ij- $\mu$ $\frown$
Example of surface form:	čiehka (nom sg.)	čiega (acc sg.)	čiihkii (ill sg.)

(31) Stem formation for *goahtii* ‘big tent’

	<b>Absolutive</b>	<b>Basic</b>	<b>Dative</b>
Basic pattern:	$\sqrt{-n}^{-\mu}\frown$	$\sqrt{-n}$	$\sqrt{-n_2}^{-\mu}\frown$
Example of stem:	goat-ii- $\mu$ $\frown$	goat-ii	goat-aa-j- $\mu$ $\frown$
Example of surface form:	goahtii (nom sg.)	goađii (acc sg.)	goahtaa-j (ill sg.)

There is one difference between the *n* added in the absolutive stem and the one added in the basic stem, which is that the absolutive one does not surface as a fourth syllable after a three-syllable root, unlike the basic one (cf. (29)).<sup>4</sup>

The basic stem forms the basis for the construction of the plural and local case forms, by straightforward suffixation. The only deviation is that the nominative plural is distinct from the others in not having a *-j* suffix before their case suffixes.

### 3.2 Odd-syllabled stems

Stems whose surface forms usually have an odd number of syllables (which Sammallahti (1998) calls imparisyllabic) show nearly the same suffixes, but a completely different pattern of Consonant Gradation—in fact it is nearly the inverse of the even-syllabled pattern.

(32) OS forms *oahpis* ‘guide,’ *beana* ‘dog’

	<b>Singular</b>	<b>Plural</b>	<b>Singular</b>	<b>Plural</b>
Nom	oahpis	oahhpaasaht	beana	bea?nagaht
Acc	oahhpaasa	oahhpaasijt	bea?naga	bea?nagijt
Ill	oahhpaasii	oahhpaasijtta	bea?nagii	bea?nagijtta
Loc	oahhpaasis	oahhpaasijn	bea?nagis	bea?nagijn
Com	oahhpaasijn	oahhpaasijkujn	bea?nagijn	bea?nagijkujn
Ess	oahpisin		beanan	

The consonant center which is affected is the one in the middle of the only full foot to the left of the suffixes; the illative plural and comitative plural forms are four syllables long, but it is the coda of the stressed syllable of the root which is affected, and undergoes the fully regular Consonant Gradation alternation: here, /hp/  $\sim$  /hhp/ (in *oahpis*) and /n/  $\sim$  /?n/ (in *beana*). The big difference here is the distribution of Strong Grade and Weak Grade: whereas in even-syllabled stems it was the nominative singular, the illative singular, and the

<sup>4</sup>I have represented the dative suffix as including a final /j/, which occurs in the illative singular of all noun classes; alternatively it could be separated from the *n* and treated as a separate case suffix.

essive which had Strong Grade, here it is the nominative singular and the essive which show Weak Grade.<sup>5</sup>

Historically, the strengthening of consonant centers before open syllables was phonological, and conditioned by the phonological properties of the suffixes (Sammallahti 1998). For example, the nominative-accusative pattern looked something like (33), with an accusative suffix closing the second syllable in *jiena* ‘voice, sound,’ preventing the strengthening process from applying; in *beana* ‘dog,’ the same suffix prevents a final vowel from disappearing, and the /k/ syllabifies with it, allowing the strengthening process to apply.

(33) Rough historical reconstruction for *jie?na* ‘voice, sound’ and *beana* ‘dog’

	Even Syllables	Odd Syllables
NOMINATIVE	*jie?ne	*peanek
ACCUSATIVE	*jiene-m	*pea?neka-m

Today, however, the conditioning phonological environment has disappeared, and the pattern is morphologized. The essive has taken on the characteristics of the nominative, although there was never any phonological reason for the essive, with its overt suffix, to fail to undergo strengthening. In modern Sámi there is a large class of nouns with only two syllables that follow the odd-syllabled paradigm (called the ‘contract’ nouns).

(34) *boazuu* ‘reindeer,’ *baalggiis* ‘path’

	Singular	Plural	Singular	Plural
Nom	boazuu	bohhoht	baalggiis	baaləgaht
Acc	bohho	bohhojt	baaləga	baaləgajt
Ill	bohhoj	bohhojðe	baaləgaaj	baaləgajðe
Loc	bohhoos	bohhojn	baaləgaas	baaləgajn
Com	bohhojn	bohhojkujn	baaləgajn	baaləgajkujn
Ess	boazuun		baalggiisin	

In these examples, Weak Grade (/c/ and /lɡg/) appears in the nominative singular and the essive, while Strong Grade (/hho/ and /ləg/) appears in all other forms. As mentioned above, regular phonological processes account for the surface manifestations of Strong and Weak Grade.

What I propose is that the odd-syllabled paradigm be thought of as an emergent declension class, call it OS. The OS class takes most of the usual case and number suffixes, but crucially there are differences. First, the absolutive stem, which appears in the nominative singular and the essive, does not have

<sup>5</sup>In addition, the coda consonant in the nominative singular of *beana* deletes, though the final /s/ in *oahpis* does not. This is no accident; Northern Sámi has a very restricted distribution of word-final coda consonants and many nouns show this alternation; word-final /g/ generally disappears in the nominative singular and /s/ generally does not, but there are some irregularities; many root-final /g/’s surface as [ht], e.g. in *bijaht* (NOM) ~ *bijaaga* (ACC) ‘(magic) spell.’ As Marit Julien has pointed out to me, verbs whose roots end in /g/ regularly surface with a word-final [ht] when there is no suffix, e.g. <bávččagit> ‘begin to be painful’ ~ <ii bávččat> ‘doesn’t begin to be painful.’ Thus the root-final /g/ in *beana* must somehow be specially marked as being subject to deletion; possibly it is underlyingly /k/.

the floating autosegment  $\mu$ . Second, and most importantly, there is a floating autosegmental  $\mu$  in the basic stem (as well as in the dative one). This makes it very similar to the theme vowels of various Indo-European languages, which are preempted by other suffixes in certain parts of their paradigms.

The connection to theme vowels is fortified by three observations. First, the largest class of disyllabic OS nouns ends in /uu/ (alternating phonologically with /o/, as seen in (34)). This suggests that these nouns have theme vowel  $^{-\mu}\sim uu$ . There are also classes ending in /e/ and in /aa/. Second, there is a large class of OS nouns ending with *-is*, *ir* and *-il* in which the absolutive /i/ alternates systematically with /aa/ (see *oahpis* in (32)). Finally, there is a large class of nouns (surfacing as trisyllabic in most forms) which do not undergo consonant gradation at all. Historically, these would be the nouns in which the vowel in the third syllable was not deleted (unlike the case in *beana*, which truncates historically from *\*beanaga* to *\*beanag*, giving a closed second syllable). These non-alternating nouns can be thought of as making up a third declension class, call it NA for non-alternating.

Now base forms for the OS paradigm can be established according to the following pattern.

(35) Stem formation for *beana* ‘dog’

	<b>Absolutive</b>	<b>Basic</b>	<b>Dative</b>
OS Pattern:	$\sqrt{-n_0}$	$\sqrt{-n^{-\mu}\sim}$	$\sqrt{-n_2^{-\mu}\sim}$
Stem:	beanag- $n_0$	beanag-a- $^{-\mu}\sim$	beanag-ii- $^{-\mu}\sim$
Surface form:	beana (nom sg.)	beaʔnaga (acc sg.)	beaʔnagii (ill sg.)

The  $n_0$  may manifest itself as actual consonant loss, as seen in *beana*, or simply as a distinct ending found only in the nominative singular and the essive, as seen in *oahpis*.

(36) Stem formation for *oahpis* ‘guide’

	<b>Absolutive</b>	<b>Basic</b>	<b>Dative</b>
OS Pattern:	$\sqrt{-n_0}$	$\sqrt{-n^{-\mu}\sim}$	(same as Basic)
Stem:	oahp- $n_0$	oahp-aas- $^{-\mu}\sim$	
Surface form:	oahpis (nom sg.)	oahhpaasa (acc sg.)	

One thing which distinguishes these forms from the ES forms is that the illative is based on the same stem as the locative and comitative; thus I have not listed a separate Dative form.<sup>6</sup>

The even-syllabled (ES) paradigm and the non-alternating (NA) paradigms are compared to the OS system below.

(37) Stem formation

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<sup>6</sup>I am assuming that the /i/ between the stem and the case endings in *oahhpaasis* etc. is epenthetic; alternatively it could be introduced by a stem distinction which distinguished the accusative singular and the nominative plural from the other cases; see (32).

	<b>Absolutive</b>	<b>Basic</b>	<b>Dative</b>
ES:	$\sqrt{-n-\mu\smile}$	$\sqrt{-n}$	$\sqrt{-n_2-\mu\smile}$
OS:	$\sqrt{-n_0}$	$\sqrt{-n-\mu\smile}$	(same as Basic)
NA:	(same as Basic)	$\sqrt{-n}$	(same as Basic)

Most of the case suffixes can indiscriminately be added to an appropriate class of stem regardless of which declension class that stem was derived from. The illative plural, on the other hand, is / $\check{d}e$ / in ES, where it constitutes a third syllable, and / $tta$ / in OS and 3, where it adds a fourth one (compare *goo.đij.đe* in (27) with *beaʔ.na.gijt.ta* in (32)). This alternation might be morphological, in which case the illative plural allomorphs are listed with their noun class features, or it might be phonological, in which case a single underlying illative plural, perhaps *-ide*, could be postulated.

## 4 Derivation

The way I have employed the autosegmental  $\mu$ , it is not connected to any particular meaning; it is like a phonemic segment in the language in that it turns up as a phonological part of various morphemes. If it were a part of a root, its effects would never be seen, since no process deletes it; it would simply be realized as an unvarying consonantal segment in a coda. Its importance to the nominal inflectional system has already been seen. Here I show that it can also be part of a derivational morpheme. The discussion is based largely on data and descriptive observations presented in Nickel's (1990) Chapter 12.

### 4.1 Derivation without $\mu$

First, there are derivational morphemes which do not have any  $\mu$  associated with them. For example, the suffix *-u* can be added to a verb root to derive an abstract nominal; it attaches to verbs of the disyllabic class, replacing the thematic vowel and deriving regular nouns of the ES class. As with all ES nouns, the derived nominal gets Strong Grade in the nominative singular, illative singular, and the essive.

- (38) bal-a- *v.* 'fear' (infinitive *ballaht*)
- a. balluu *n.* 'fear' nominative
  - b. baluu *n.* 'fear' accusative

Similarly, the suffix *-uus* can be added to a verb root to derive a noun of the OS class, which undergoes regular consonant gradation in all forms except the nominative singular and the essive, as expected.

- (39) jug-a- *v.* 'drink' (infinitive *juhkaht*)
- a. juguus *n.* 'drink' nominative
  - b. juhkosa *n.* 'drink' accusative

Derivational suffixes can also derive nouns of class NA, which do not undergo any consonant gradation. One such suffix is deverbal *-n*, which gives a kind of habitual agentive, ‘one who habitually V’s.’

- (40) soađ-a- ‘combat, make war’ (infinitive *soahtaht*)
- a. soađan *n.* ‘combatant, one who fights’ nominative
  - b. soađana *n.* ‘combatant, one who fights’ accusative

## 4.2 Consonant Gradation in suffixes

I have suggested that  $\mu$  when it is part of a suffix attaches to the coda of the nearest stressed syllable, viewed from its point of attachment at the right edge of a word. This means that if a derivational suffix is large enough,  $\mu$ -bearing affixes attaching to it will induce Consonant Gradation in the suffix, not in the root. This can be seen with various derivational suffixes, for example the instrument nominalizer *-aaldaak*.

- (41) siihk-uu- *v.* ‘wipe’ (infinitive *sihkkuuht*)
- a. siihkaaldaat *n.* ‘cloth for wiping’ nominative
  - b. siihkaaldaaga *n.* ‘cloth for wiping’ accusative
  - c. siihkaaldaahkii *n.* ‘cloth for wiping’ illative

The underlying /k/ of the suffix surfaces as /g/ in the Weak Grade form seen in the accusative. In the Strong Grade, it is preaspirated by  $\mu$  to form /hk/; but this is not a licit word-final cluster in Northern Sámi, so the nominative surfaces with a final /t/. The expected Strong Grade form surfaces where it is followed by a vowel, for example the illative singular form in (41c).

## 4.3 Derivation with $\mu$

There are also derivational suffixes which include  $\mu$  as part of their lexical entry. One important one is the ‘Aktio’ suffix  ${}^{\mu}\sim m$  (the suffixal part surfaces as *-n* when word-final). It derives Class NA nouns from verb roots.

- (42) čaal-ii- *v.* ‘write’ (infinitive *čaalliht*)
- a. čaalliin *n.* ‘writing’ nominative
  - b. čalliima *n.* ‘writing’ accusative

Another one is deverbal  ${}^{\mu}\sim iluuš$ , which derives ES nouns denoting undergoers.

- (43) soj-a- *v.* ‘yield’ (infinitive *soččaht*)
- a. sožžiluuš *n.* ‘something that yields easily’ nominative
  - b. sožžiluuša *n.* ‘something that yields easily’ accusative
  - c. sožžiluuššii *n.* ‘something that yields easily’ illative

Two important facts can be noted about the nominal forms in (43). One is that the verbal root appears in its Q3 form, as if the nominalization were added to the infinitive stem rather than to the root. This means that two  $\mu$ 's can be added to a single root. The effect is productive, and gives rise to three-way Q1—Q2—Q3 contrasts, for example *sojaan*—*sočče*—*sožžiluuš* ‘I yield, it yields, sth that yields,’ or *caagaan*—*caahke*—*cahkiiluuš* ‘I smolder, he smolders, sth that catches fire easily.’

The other thing to notice is that just as already seen in (41), the consonant gradation induced by case suffixes occurs not in the root, but in the suffix, because the infixal  $\mu$  seeks the first stressed coda to the left of its point of attachment. In the nominative singular, the consonant gradation is undone by the fact that the affected coda is word-final; thus it surfaces short. But the effects of gradation can be seen by examining the illative singular form in (43c).

The structure can be represented as a cyclic derivation of suffixation and infix alignment.

- (44) Derivation of illative *sožžiluuššii*, ‘something which yields easily, pushover’
- |                       |   |
|-----------------------|---|
| Root:                 | soj-                                      |
| Verbal Stem Affix:    | soj- $\mu^{\frown}$                       |
| Infix Aligned:        | so $^{\mu}$ j-                            |
| Derivational Suffix:  | so $^{\mu}$ j- $\mu^{\frown}$ iluuš       |
| Infix Aligned:        | so $^{\mu\mu}$ j-iluuš                    |
| Illative Case Suffix: | so $^{\mu\mu}$ j-iluuš- $\mu^{\frown}$ ij |
| Infix Aligned:        | so $^{\mu\mu}$ j-iluu $^{\mu}$ š-ij       |
| Surface realization:  | sožžiluuššii                              |

I know of no empirical evidence bearing on the order of operations, apart from the obvious linear order of the suffixes. Thus the construction could also be represented as below.

- (45) A representation of illative *sožžiluuššii*

soj	- $\mu^{\frown}$	- $\mu^{\frown}$ iluuš	- $\mu^{\frown}$ ij
<i>yield</i>	-INF	-NOMINAL	-ILL
sožžiluuššii			

## 5 $\mu$ in the verbal paradigms

There are several morphemes with the property  $\mu$  in the verbal paradigm as well. Again, the difference between even-syllabled and odd-syllabled stems is important, and odd-syllabled verbs generally do not show consonant gradation in the root at all.



## 5.1 Inflectional suffixes

First, there are agreement affixes which have the infixal component. In the most common paradigm, the first and second person singular are in the Weak Grade, while the third person singular is in the Strong Grade, as are all the dual and plural forms, in the present tense.

(46) ES verb, present tense: *boahtit* ‘come’

PERSON	Singular	Dual	Plural
1	boađaan	boohte	boahtiih
2	boađaaht	boahtibeahhtii	boahtibehteht
3	boahtaa	boahtiba	boohteht

In the past tense, the pattern is nearly the reverse, with the first and second person being in the Strong Grade, and all the other forms being Weak, except the third person plural.

(47) ES verb, past tense: *boahtit* ‘come’

PERSON	Singular	Dual	Plural
1	boohten	boođijme	boođiimeht
2	boohteht	boođijde	boođiideht
3	boođii	boođijka	boohte

Since the suffixes are also largely distinct in the different tenses, and given the hypothesis tendered here that the language has an infixal  $\mu^\frown$  segment which exists as a part of certain morphemes, it is a simple matter to identify which agreement suffixes bear  $\mu^\frown$  and which do not; in the present tense, the third singular, the dual, and the plural do, and in the past tense, the first singular, the second singular, and the third plural do.

The pattern of reversal, where the forms which are Strong in the present are Weak in the past, has historical origins just as was seen for the nominal paradigm in (33). Roughly, something like (48) must have occurred (for a more careful reconstruction see Sammallahti 1998, Appendix F).

(48) Rough historical reconstruction for *boahtit* ‘come’

	First person	Third person
PRESENT	*poate-em	*poa?te
PAST	*poa?te-j-em	*poate-j

Just as with the nouns, the consonant center is strengthened before an open syllable. This happened in the third person past and in the first person present.

On the analysis presented here, the association in the modern language of Strong Grade with first person singular in the past tense is completely independent of what happens to the first person singular in the present. An advantage of this approach is that nothing need be said about the fact that the third person plural is Strong in both present and past.

## 5.2 Derivational suffixes

Derivational suffixes that create verbs can also carry  $\mu$ , as expected, for example the transitivizer  $-\mu \frown d$ , which attaches to unaccusatives to form transitive verbs (Julien to appear).

- (49) vuojuu- *v.* ‘sink’ (unaccusative) (infinitive *vuoččuuh*)  
 a. vuoččuudiht *v.* ‘sink’ (transitive) infinitive  
 b. vuoččuudaan *v.* ‘sink’ (transitive) first person singular present

Because the output of  $-\mu \frown d$  suffixation is a three-syllabled or OS verb, there is no consonant gradation in the first person singular, as shown.

If a derivational suffix is large enough, then consonant gradation will occur in the suffix, just as was seen above for nouns. For example, the inadvertent causativizer *-haaht*, which attaches to transitive and unergative verbs.

- (50) čieruu- *v.* ‘cry’ (infinitive *čierruuh*)  
 a. čieruhaahhtiht *v.* ‘inadvertently make cry’ infinitive  
 b. čieruhaahtaan *v.* ‘inadvertently make cry’ first person singular present

As can be seen, the suffixed form has four syllables and is a regular verb of the ES paradigm. Hence, the suffixal part of the causative, /*haaht*/, appears in the Strong Grade in the infinitive (the preaspiration lengthening from /ht/ to /hht/), and in the Weak Grade in the first person singular.

In fact, a suffix can cause a non-alternating OS verb to become ES, by adding a single syllable. When it becomes ES, it shows consonant gradation effects. For example *-ast* is called a ‘diminutive’ suffix, and when added to a verb it gives an attenuative sense or a sense of something done in haste (it also replaces the stem vowel of OS stems).

- (51) mujtalii- *v.* ‘tell’ (infinitive *mujtaliht*)  
 a. mujtalashtiht ‘tell a little, tell in haste’ infinitive  
 b. mujtalastaan ‘tell a little, tell in haste’ first person singular present

Because consonant gradation is triggered by a suffix, it is the third syllable of the infinitive which receives a lengthened coda, not the first, just as was seen in the nominal paradigms.

## 5.3 Inflectional suffixes on top of inflectional suffixes

The richness of the inflectional system of Northern Sámi treats us to a sight not seen in the nominal system, where a mood suffix shows consonant gradation. Hitherto we have only seen roots and derivational suffixes affected by consonant gradation, but here we see that even inflectional suffixes undergo it. In order to see the effect it is first necessary to present the OS conjugation paradigm.

As mentioned above, there is a separate series of agreement suffix for OS verbs, i.e. those with three-syllabled stems. None of these agreement suffixes

bear  $\mu$ , so there is no consonant gradation in the OS paradigm. However, certain mood suffixes, namely the Potential and the Conditional, have the effect of causing a stem to change class, so that an ES verb with a Potential or Conditional suffix takes OS agreement, and an OS verb with a Potential or Conditional Suffix takes ES agreement.

- (52) Comparison of an OS verb (*mujhtaaliht* ‘tell’) and an ES verb in the Potential mood (*gullaah* ‘hear’)

AGR	OS Indicative	ES Potential
1 sg	mujhtalan	gulaačan
2 sg	mujhtalaht	gulaačaht
3 sg	mujhtala	gulaača
1 du	mujhtaale?ne	gulaače?ne
2 du	mujhtaaleahhpai	gulaačeahhpai
3 du	mujhtaaleabaa	gulaačeabaa
1 pl	mujhtaaliht	gulaačiht
2 pl	mujhtaalehpeht	gulaačehpeht
3 pl	mujhtaaliht	gulaačiht

I am not aware of OS verbs which fail to have consonant-final roots (giving three-syllable stems), in contrast to the situation for nouns. The choice of ES or OS agreement could therefore either be phonological (allomorphy sensitive to the shape of the stem) or morphological (sensitivity to conjugation class), if the mood suffixes can have their own conjugation class features.<sup>7</sup>

The potential morpheme for ES stems, as seen above, is -č; for OS stems, it is *eačč*; attached to an OS stem, it induces the ES agreement paradigm, as can be seen below. The ES agreement paradigm was already presented above but is repeated here for convenience.

- (53) Comparison of an ES verb (*gullaah* ‘hear’) and an OS verb in the Potential mood (*mujhtaaliht* ‘tell’)

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<sup>7</sup>Marit Julien has pointed out to me a complication for purely phonological selection of agreement allomorphs. Compare a typical ES verb like *jearr-a-t* ‘ask’ or *boah*-*i-t* ‘come’ with a typical OS verb like *veahkeh-i-t* ‘help’ (using standard orthography here).

	ES, <i>a</i> -stem	ES, <i>i</i> -stem	OS	Contract
1du	jerr-e	boht-e	veahkeh-etne	čohkk-á-jetne
2du	jearr-a-beah	boah	veahkeh-eahppi	čohkk-á-beah
3du	jearr-a-ba	boah	veahkeh-eaba	čohkk-á-ba

As indicated, the vowel in the ending of the ES verb is a stem vowel, but the vowel in the infinitive ending of the OS verb is epenthetic. The first person dual suffix (like the third person plural) attaches to the root, which is consonant-final in each case; but other agreement suffixes, like the second and third person dual, attach to the stem, which is always two syllables long. So neither consonant-finality nor syllable count consistently predicts the selection of the correct allomorph, though a combination of the two may. A clue is found in the class of ‘contract’ verbs, which take theme vowels (-á, -o, and -e) and take ES endings except where ES agreement suffixes replace the theme vowel, in which case they take OS endings, as illustrated in the fourth column above for *čohkkát* ‘sit.’

AGR	ES Indicative	OS Potential
1 sg	gulaan	mujhtaaleaččaan
2 sg	gulaaht	mujhtaaleaččaaht
3 sg	gullaa	mujhtaaleažžaa
1 du	gulle	mujhtaaležže
2 du	gullabeahhtii	mujhtaaleažžaabeahhtii
3 du	gullaabaa	mujhtaaleažžaabaa
1 pl	gullaahht	mujhtaaleažžaaht
2 pl	gullaabehteht	mujhtaaleažžaabehteht
3 pl	gulleht	mujhtaaležžeht

The important point to note here is that the third person singular, the dual, and the plural all show Strong Grade forms. Since I have coupled the consonant gradation to the suffixes themselves, rather than to cells in a paradigm, exactly the right result is achieved: the suffixes which trigger Strong Grade forms in the simple ES present indicative do the same thing in the OS potential, but since they are removed from the root by a morpheme that constitutes a (secondarily) stressed syllable, the consonant gradation effect is seen only on the Potential suffix.

The fact that consonant gradation affects roots, derivational suffixes, and even inflectional suffixes shows its phonological nature: if it is in the right phonological environment, it occurs. The fact that its distribution is absolutely constrained by inflectional and derivational categories shows its morphological nature; it is never triggered simply by a phonological environment.

## 6 Conclusion

Northern Sámi presents a rich set of paradigms in which the Strong and Weak grades of consonant gradation figure prominently. In many cases, there are patterns which appears to be of the form, if a word of Class X is associated with Strong Grade in Form A, and Class Y with Weak Grade in the same situation, then Class X is associated with Weak Grade in Form B, and Class Y with Strong Grade.

(54) Paradigmatic alternations

	Class X	Class Y
Form A	Strong	Weak
Form B	Weak	Strong

Such effects, if real, would motivate a different approach to paradigms than the one I have proposed here. For example, on my account it is quite unsystematic, in the modern language, that the Weak—Strong distribution across case forms of the ES paradigm show nearly the reverse of the OS paradigm, or that the Weak—Strong distribution across agreement form in the present are nearly the inverse of those in the past. A theory that accorded paradigms a psychological reality would make some reference to these inversions. But it would have trouble

with the aspects of the systems that are exceptions to the inversion.

I have suggested instead that there is a very reasonable explanation for the Northern Sámi situation which makes no appeal to paradigms per se, only to autosegmental phonology and to declension class features, both of which are independently necessary. I have suggested that the illusion of a paradigmatic alternation of the sort seen in (54) is due to the fact that what was historically a systematic phonological alternation has become morphologized.

At one level, this explanation does not bear on the existence of paradigms, because it simply suggests that a set of phenomena in one language are better explained without reference to paradigms. But at another level, this analysis can be taken as an argument that paradigms do not exist; because given the large number of examples of the sort in (54) that Northern Sámi provides to the learner, it seems that a paradigmatic solution would present itself if one were possible. The fact that Northern Sámi is not learned that way suggests that it could not be.

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