

A Note on Sakhalin Ainu Morphophonemics

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1. Introduction

In her grammar of the Sakhalin (Raychiska) dialect of Ainu, Murasaki (1979) presents four rules governing the realization of stem-final /h/ which share the peculiar property of converting /h/ into a consonant whose identity is not predictable but must be indicated in the lexicon as an idiosyncratic property of each stem. I propose here an alternative analysis in which these rules are replaced with a single phonological rule that requires no diacritic information in the lexicon. This reanalysis has the further consequence that the observed constraints on the appearance of consonants in syllable-final position turn out to be attributable to the application of a phonological rule and not to constraints on syllabification *per se*.

2. The Problem

The four rules in question fall into two classes, which Murasaki terms *morphophonemic* and *morphophonotactic*. One rule is classified as *morphophonotactic*. This is Murasaki's morphophonotactic rule #17 (p. 9), which converts the sequence /h+y/ into /p/, /t/, /k/, /c/, or /r/.¹ According to Murasaki, which of these five consonants results must be indicated in the lexicon.

The other three rules fall into Murasaki's category of *morphophonemic* rules. They are triggered by particular suffixes rather than by a purely phonological condition.

The first of these rules (morphophonemic rule 1(i), pp. 12-13) governs the realization of the possessed suffix, which has the form VhV, where the quality of the two vowels is determined by other rules. The stem-final /h/ becomes /p/, /t/, /k/, /c/, or /r/, the choice again being a lexical idiosyncrasy.

The second rule (morphophonemic rule 2, p.13) is triggered by the first person plural subject suffix /'an/. Here again the stem-final /h/ is converted into a consonant whose identity is lexically determined.

The third rule (morphophonemic rule 5a, p. 15) is triggered by the third personal plural subject suffix. In the relevant forms, this suffix takes the form /ahci/. Stem-final /h/ is converted into a consonant whose identity is a lexical idiosyncrasy.

These rules have two peculiar properties. First, they all make use of extensive diacritic information in the lexicon in order to specify which consonant alternates with /h/. Second, in all four rules we get exactly the same idiosyncratic behaviour, including not only three different morphological contexts but also a phonological context (before /y/). We may illustrate this by gathering together the examples

¹ Murasaki's *c* represents a palato-alveolar affricate, i.e. [tʃ].

Murasaki cites containing the stem /'itah/ “speak, speech” in (1), where I have given the underlying form, the glosses of its components, the resulting surface form, and the number of the applicable rule. We see that in all four cases the stem-final /h/ becomes /k/.

(1)

'itah + yahka	speak + although	>	'itakahka	MT 17
'itah + VhV	speech + possessed	>	'itakihi	MP 1i
'itah + 'an	speak + 1pl subj.	>	'itakan	MP 2
'itah + ahci	speak + 3pl subj.	>	'itakahci	MP 5a

Since, as stated, the four rules have nothing in common, it is entirely unexpected that they should induce the same alternations.

3. The Solution

A simple solution to this problem is based upon two observations. First, the suffixes that trigger the four rules converting /h/ to another consonant are all suffixes that yield an ultimate syllable structure in which the putative /h/ is in the onset. In two cases (*VhV* and *ahci*) the suffix is underlyingly vowel initial, whence the /h/ will go into the onset.

The third case, Murasaki’s *'an*, is arguably regarded as underlyingly vowel-initial as well. The phoneme that Murasaki indicates by /' / is realized as a glottal stop in word-initial position. Elsewhere it does not appear, although Murasaki emphasizes that there is a distinction between a sequence of two vowels and a long vowel. This, of course, does not require the presence of a glottal stop in the former case. In view of the completely predictable occurrence of glottal stop in Ainu, I regard Murasaki’s positing of a phoneme /' / in underlying representations as unjustified, to be replaced by a rule inserting glottal stop word-initially. In any case, if there is an underlying /' /, it is eventually lost so that /h/ comes to be in onset position.

Finally, in the case of the suffixes beginning with /y/, such as /yahka/ “although”, the /y/ is deleted in the course of the derivation. Thus, in all four cases the /h/ comes to be pre-vocalic and hence in the onset of its syllable. /h/ is never converted into another consonant in pre-consonantal position. Moreover, the four environments in which /h/ alternates appear to be all of the environments in which it comes to be pre-vocalic. In other words, /h/ is converted to another consonant when and only when it is in the onset.

Secondly, we note that the consonants derived from /h/ by these rules, namely /p/, /t/, /k/, /c/, and /r/, are exactly the consonants that do not appear in syllable-final position, with the exception of /' /, which appears only word-initially and is probably not a phoneme at all.

This suggests that the stems ending in /h/ actually end in underlying /p/, /t/, /k/, /c/, and /r/, and that there is a rule that converts these consonants to /h/. Positing such a rule eliminates the need for lexical diacritics, since the

only information necessary to predict which consonant will be selected is the purely phonological information in the underlying representation. It also explains why it is that the four rules all produce the same alternations; there is only a single underlying representation for each stem-final consonant.²

Such a rule may be readily formulated as deleting the supralaryngeal features of the consonants /p/, /t/, /k/, /c/, and /r/ in coda position. Let us refer to this rule as Coda Debuccalization. Notice that the supralaryngeal features of a following consonant, if present, do not spread in to occupy the newly emptied positions, in contrast to the presumably more common situation in which such feature deletion results in complete assimilation to, and hence gemination of, the following consonant.

To complete our analysis it is necessary to specify the class of consonants undergoing the proposed rule of Coda Debuccalization, which at first glance is rather mysterious. One approach to the definition of this class is that it represents the oral or obstruent non-continuants. The Ainu consonants that do not undergo the rule (/s/, /m/, /n/, /w/, /y/, and /h/) are either [+cnt] or, in the case of the two nasals, are both nasal and sonorant. /p/, /t/, and /k/ are unambiguously [-cnt], while the affricate /c/ may reasonably be so treated. What is less expected is the treatment of /r/ as non-continuant. The problem is solved by Murasaki’s phonetic description of /r/ (p. 2), where it is described as a “plosive retroflex sound”, easily confused with /t/, though clearly distinct from it, and transcribed as a retroflex stop or flap, both of which we may without embaressment treat as [-cnt]. The rule of Coda Debuccalization is thus to be formalized as deleting the features of a [-cnt] oral or obstruent segment in coda position.³

4. How Ainu is Not Like Maori

The Ainu case discussed here calls to mind the famous Maori case presented by Hale (1973). In Maori, there are two suffixes, the passive /ia/, and the gerundive /aŋa/, which are preceded by a consonant that does not appear in the unsuffixed verb stem, which consonant being a property of the verb. For example, the active form of the verb “have” is *wero*, with no final consonant, but the passive is *werohia* and the gerundive is *werohaŋa*, in which an /h/ appears. The obvious analysis is one very much like the one I have given for Ainu: the suffixes are taken to be vowel initial and the consonants to belong to the verb stem and to delete in coda position.

The problem pointed out by Hale is that there is a good deal of evidence against this analysis, pointing to the t-initial suffixes (e.g. passive *tia*) as the default. The

² To give Murasaki due credit, although she states the various morphophonemic rules using morphological contexts, she seems to have noticed the phonological generalization, as evidenced by her statement (p.14) regarding the stem-final /h/ of six irregularly derived plural stems that “... when a vowel follows [morphophonemic] rule (2) applies.”

³ The set of consonants that cannot appear in the coda is very close to the set of obstruents, the only difficulty being that /s/, which does not undergo the rule, is an obstruent. The treatment of /s/ as more sonorous than the other obstruents is not uncommon in rules related to syllabification, so the segments undergoing Coda Debuccalization are the less sonorous segments.

suffix takes this form in a variety of derived environments, such as when the causative prefix is added, and when the speaker cannot remember the correct form. This led Hale to adopt a morphological analysis rather than the simple phonological analysis. McCarthy (1981) presents further evidence for the morphological analysis, in which each verb stem selects an allomorph for each of the two suffixes, and also shows how an evaluation metric might select the rather messy morphological analysis rather than the neat phonological analysis.

Ainu differs from Maori in several crucial respects. First, nothing comparable to the evidence cited by Hale exists in Ainu; the alternations described by Murasaki are fully accounted for by the phonological analysis that I have presented. Second, whereas in Maori only two suffixes undergo the allomorphy in question, in Ainu at least six different suffixes undergo it. When six different morphemes are involved, it becomes less likely that identical alternations will be treated as purely morphological in character. Third, the nature of the allomorphy required would be different from that found in Maori.

Consider what an allomorphy analysis would be like. One possibility is to take the /h/ final stems as really being vowel-stems, attributing the consonant to the suffix. Each stem would then select an allomorph beginning in /p/,/t/,/k/,/c/, or /r/. In this case, we would have to account for the appearance of /h/ before consonant-initial suffixes and word-finally. Since Ainu has truly vowel-final stems, which exhibit no such /h/, this rule would have to be morphologically conditioned as well. That is, the stems that take allomorphs beginning with /p/,/t/,/k/,/c/ or /r/ before the six suffixes in question would also have to be marked as taking /h/-initial allomorphs of all other suffixes. They would also have to be marked as triggering a minor rule inserting /h/ in word-final position.⁴

The alternative is to attribute the /h/ to the stem, and to set up a rule deleting /h/ before the alternating suffixes. In this case, the fact that the obstruent-initial allomorphs are selected by precisely the stems ending in /h/ will be pure coincidence. Moreover, we will have a case of mutual allomorphy, since the stems will select the obstruent-initial suffixes and these suffixes will select the /h/-less allomorphs of the stems.

In sum, there is no evidence whatever against the phonological analysis, while the two possible allomorphy analyses are very much more complicated than the phonological analysis.

5. Conclusion

The revised analysis presented here greatly simplifies Ainu morphophonemics. Murasaki's morphophonemic rules 1(i), 2, and 5(a) can be dispensed with entirely, while her morphophonotactic rule 17 can be replaced with a rule deleting /y/ after

⁴ Whether such a rule is even storable is questionable. If lexically governed rules are all allomorph selection rules, the reference to word-final position is impossible.

most other consonants.⁵ Moreover, in this revised analysis no morphophonemic diacritics are needed in the lexicon. The proposed reanalysis therefore simplifies both the rule system and the lexicon. In so doing, it eliminates a case in which extensive use of morphophonemic features seemed to be required.

Another interesting point is that the observed limitations on coda consonants are seen to result not from constraints on syllabification *per se*, as is typically the case, but from a phonological rule that converts the consonants not permitted in coda position into /h/.⁶

References

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⁵ Underlying /y/ is deleted after /m/ (MT 12, p. 9) and sometimes after /n/ (MT6, p.8), as well as after /p/,/t/,/c/, /k/ and /r/.

⁶ The one limitation that may need to be attributed to constraints on initial syllabification is the apparent absence of /h/ itself in coda position. Although there is evidently no such constraint on the surface, there appear to be no instances of /h/ in coda position not attributable to the operation of Coda Debuccalization. In particular, Murasaki gives no examples of stem-final /h/ that are realized as [h] even when they appear in onset position due to the presence of an immediately following vowel, as we would expect there to be if /h/ can appear in stem-final position. There are quite a few words beginning with /h/, so it does not appear to be the case that all instances of /h/ are derived. The generalization here may well be that /h/ does not appear in stem-final position rather than that there is any constraint on syllabification.