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CONSONANT ASSIMILATION IN INUPIAQ ESKIMO

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I. Introduction

Consonant assimilation is one of the outstanding phonological processes of Inupiaq Eskimo¹ and grows in scope as one travels eastward across the Arctic. While the southernmost dialects of Alaskan Inupiaq maintain a high degree of differentiation within consonant clusters, Greenlandic dialects have all but done away with clusters entirely. To the end of comparing differing degrees of consonant assimilation, I have chosen two Alaskan dialects for consideration. The Kobuk River dialect maintains clusters of obstruent plus continuant where the Barrow dialect contains assimilated versions of these clusters.

The facts of assimilation in the two dialects will be presented below with comparisons drawn between the systems. After a set of rules is proposed to account for assimilation in each dialect, I will discuss historical implications of the data and of my solution. The overall problem will then be viewed in light of the universal claim of natural phonologists that, as a grammar evolves, phonological rules may become morphophonemic rules, but not vice versa.²

The writing system used to represent data in this paper is the standard orthography for Alaskan Inupiaq, which is straightforward except as noted in the following consonant inventory of the language, where symbols in angle brackets indicate standard orthography where it differs from phonetic notation.

p	t	č <ch>	k	q
	s		x <kh>	X <qh>
v			ɣ <g>	ʃ <g̃>
	ɬ <ɬ>	ɬʷ <ɬʷ>		
	l	lʷ <ɬ>		
m	n	ñ	ŋ	
	ř <r>	y		
	ʀ <sr>			

All consonants occur both short and long, except for s which is never long. Clusters contain exactly two consonants, both short, and like long consonants are never word initial or final. Thus, long consonants behave phonologically like clusters.

The three vowels--a, i, and u--may occur short, long, or as diphthongs in all six possible combinations. All vowels and diphthongs may occur in any position.

The Kobuk and Barrow dialects are syntactically nearly identical and morphologically very similar. The major difference lies in phonology and phonetic detail. Because of the polysynthetic nature of Eskimo, affixation is highly productive, and the variety of potential environments for a given morpheme results in extensive allomorphy.

II. Assimilation phenomena

Assimilation applies at morpheme boundaries, adjusting a morpheme-final C to a succeeding C in features of continuancy,³ voicing, and nasality. Velars and uvulars are not nasalized preconsonantly in some dialects; in any case the orthography does not reflect this nasalization. The following data exemplify assimilation in both Barrow and Kobuk:

mayuq	+	niaq	+	tuq	→	mayuḡniaqtuq
climb		future		3 sg		'he will climb'
mayuq	+	li			→	mayuḡli
climb		3 sg optative				'let him climb'
katak	+	luni			→	katagluni
fall		3 sg participial				'he, falling'
makit	+	niaq	+	tupa	→	makinniaqtupa
stand		future		1 sg		'I will stand'

Based on these examples and other similar ones, a rule of regressive consonant assimilation may be written, assuming a dialect where velars and uvulars are regularly nasalized:

1) Regressive assimilation

$$C \rightarrow \left[\begin{array}{l} \alpha \text{ continuant} \\ \beta \text{ voice} \\ \gamma \text{ nasal} \end{array} \right] / \text{---} \left[\begin{array}{l} \alpha \text{ continuant} \\ \beta \text{ voice} \\ \gamma \text{ nasal} \end{array} \right]$$

Rule 1 accounts for assimilation in the examples above and moreover, allows for no unassimilated clusters whatever since it contains no restriction on the position of clusters which satisfy its structural description. In fact, the Kobuk dialect contains clusters which must not undergo assimilation.

<u>Kobuk</u>	<u>Barrow</u>	
qapvik	qavvik	'wolverine'
itri	irri	'bitter cold'
qipmiq	qimmiq	'dog'
ipnaq	imnaq	'cliff'
mitniq	minniq	'jump'
tla	lla	'be able'
atniq	anniq	'be hurt'
mannik	mannik	'egg'

These single morphemes are intended to demonstrate that Kobuk contains clusters which do not undergo assimilation, while Barrow does not. In terms of relating the two dialects, Rule 1 will account for the differences if Kobuk forms are taken as basic and Barrow forms derived from them. Predictability does not work in the other direction, however, as shown by atniq vs. mannik. The Barrow forms both contain nn and give no suggestion as to which long C reflects a cluster in Kobuk.

At this point the Kobuk rule of assimilation must be differentiated from the Barrow rule. The former must be changed to apply only to clusters whose elements are separated by a morpheme boundary, so that morpheme-internal clusters remain unassimilated:

2) Regressive assimilation at morpheme boundaries

$$C \rightarrow \left[\begin{array}{l} \alpha \text{ continuant} \\ \beta \text{ voice} \\ \gamma \text{ nasal} \end{array} \right] / \text{---} + \left[\begin{array}{l} \alpha \text{ continuant} \\ \beta \text{ voice} \\ \gamma \text{ nasal} \end{array} \right]$$

Even this amended version of the assimilation rule is faced with apparent exceptions in Kobuk, since a small number of cases exists where it is possible to have an unassimilated cluster with an internal morpheme boundary. I separate Kobuk forms which appear exceptional to Rule 2 into three classes:⁴

- A) qĩñiq - man 'when he looks'
 look when 3 sg
 katak - man 'when he falls'
 fall when 3 sg
 qĩñiq - mi - uq 'he looks also'
 look also 3 sg
 makit - mi - uq 'he stands also'
 stand also 3 sg

- B) aɟuti + mun → aɟutmun
 man terminalis sg 'to the man'
 supputi + mun → supputmun⁵
 gun 'to the gun'

but,

- savik + mun → savigmun
 knife 'to the knife'
 imiq + mun → imigmun
 water 'to the water'

- C) qĩñiq - nak 'don't look!'
 look 2s neg imper
 qĩñiq - nagu 'don't look at it!'
 2s-3s neg trans
 imperative
 makit - nak 'don't stand up!'
 stand 2s neg imper

Failure of the assimilation rule to apply in these instances may be understood by further investigating the behavior of certain of the morphemes involved.

Class A exceptions all contain unassimilated stem-final consonants, which regularity suggests that assimilation is somehow blocked by the suffixes present. Following vowel-final stems, these suffixes are found to contain an additional segment which is not present in the A examples: nigipman 'when he eats' and nigipmiuq 'he eats also,' from nigi 'eat.' The initial p of pman and pmiuq undergoes deletion following consonant-final stems, eliminating disallowed clusters of three consonants. This process is captured in a general rule which is motivated elsewhere in the phonology of Inupiaq.

3) Cluster simplification

$$C \rightarrow \emptyset / C _ C$$

In class B only some stem-final C's fail to undergo assimilation, while others assimilate to a following C in the regular manner. Unassimilated clusters are precisely those which are not clusters underlyingly but sequences of CVC. A syncope rule which is discussed further on deletes stem-final vowels in anuti and supputi creating the clusters which fail to undergo assimilation.⁶

Exceptions under C, like those of A, show consistent failure of assimilation to apply to all stem-final consonants, indicating that assimilation is somehow blocked by the suffixes. While historical evidence points to these suffixes as having been cluster initial, and synchronic evidence from other sectors of the phonology suggests the same, no additional segment ever surfaces which can be held accountable for blocking the assimilation rule. This group of suffixes will then have to be marked as exceptional in that consonants which directly precede them are not subject to assimilation.

To this point Rule 2 accounts for all instances of regressive assimilation in the Kobuk dialect, provided this rule follows cluster simplification and syncope in order of application. Whereas a syncopated vowel creates a cluster which is not subject to assimilation in aputmun, there exist nonetheless other instances of syncope which feed assimilation. The following examples are valid for both Kobuk and Barrow:

ivik	+	ich	→	ivkich	→	ivgich
grass		plural				'grass, plural'
kamik	+	ich	→	kamkich	→	kamgich
boot						'boots'
aiviq	+	ich	→	aivqich	→	aivgich
walrus						'walruses'
imiq	+	ich	→	imqich	→	imgich
water						'water, plural'

tup ^h iq	+	ich	→	tupqich
tent	(B)			'tents' (B)
house	(K)			'houses' (K)

Deletion of a penultimate ^h within the stem upon suffixation of another morpheme yields unassimilated clusters which are then subject to assimilation;⁷ in this case, however, assimilation applies progressively. In Kobuk, regressive assimilation occurs across morpheme boundaries, according to Rule 2, while progressive assimilation applies to a morpheme-final cluster.

Rule 4) Progressive assimilation

$$C \rightarrow \left[\begin{array}{l} \alpha \text{ continuant} \\ \beta \text{ voice} \\ \gamma \text{ nasal} \end{array} \right] / \left[\begin{array}{l} \alpha \text{ continuant} \\ \beta \text{ voice} \\ \gamma \text{ nasal} \end{array} \right] \text{ ---}^+$$

In Kobuk the two assimilation processes are separate in terms of their environments as well as their relationship to the syncope rule. While syncope and regressive assimilation must apply in counter-feeding order to generate forms like anutmun, syncope feeds progressive assimilation to give kamnich, aivgich, etc.

The Barrow regressive assimilation rule (1) was not constrained to apply at morpheme boundaries, since Barrow does not allow unassimilated clusters morpheme-internally as Kobuk does. As in Kobuk, however, the direction of assimilation in Barrow is conditioned by the position of a cluster in relation to a morpheme boundary, i.e. a cluster-internal boundary triggers regressive assimilation whereas a boundary following a cluster causes assimilation to apply progressively.

There is a generalization to be extracted from the two assimilation rules which is that in all cases of assimilation, it is a morpheme-final C which assimilates to an adjacent C, either preceding or following. Regressive and progressive assimilation can be collapsed into a single rule based upon the above principle.

Rule 5) Assimilation

$$C \rightarrow \left[\begin{array}{l} \alpha \text{ continuant} \\ \beta \text{ voice} \\ \gamma \text{ nasal} \end{array} \right] / \left[\begin{array}{l} \alpha \text{ continuant} \\ \beta \text{ voice} \\ \gamma \text{ nasal} \end{array} \right] / \text{ ---}^+$$

Within the overall context of Inupiaq phonology, this rule appears natural, since morpheme-final C's undergo deletion and various alternations, whereas morpheme-initial or internal C's demonstrate little synchronic alternation.

Rule 5 accounts adequately for the Barrow data, since unassimilated clusters never appear in that dialect, and assimilation may be allowed to apply wherever possible. For Kobuk, however, collapsing the two assimilation rules creates an ordering paradox with respect to the syncope rule, since syncope must

sometimes feed and sometimes bleed assimilation. Single rules of assimilation and syncope do not produce the desired result for Kobuk.

The possibility of writing separate rules of assimilation has been discussed and the problem could be solved in this way. With the order 1) regressive assimilation, 2) syncope, 3) progressive assimilation, the correct solution is arrived at. The sole advantage of dividing Kobuk assimilation thus into two rules would be precisely to resolve the ordering paradox which exists otherwise. Other than their differing environments and logical separability, I can find no evidence that regressive and progressive assimilation should be considered separate processes.

There is evidence, however, that syncope should be divided into distinct rules. From what was historically probably a productive phonological rule, syncope has become morphologized and restricted in its application. The type of syncope which counter-feeds assimilation is always morpheme-final but applies sporadically as shown by these Kobuk forms:

	agut ^ɪ	+	mun	→	agutmun
	man		terminalis sg		'to the man'
but,	agut ^ɪ	+	nun	→	agutinun
	man		terminalis pl		'to the men'
	in ^ɪ	+	mun	→	inimun
	place		terminalis sg		'to the place'

The other function of syncope is to delete penultimate ^ɪ in words like aiv^ɪq to give aiv^ɪgich, thereby feeding progressive assimilation. Penultimate ^ɪ's are regularly subject to syncope.

The distinction between two types of syncope is valid for Barrow as well as Kobuk, although in Barrow the two need not be separated in order for Rule 5 to produce the correct result.

To generate the correct Kobuk forms, however, the more productive syncope of penultimate ^ɪ should apply first.

Rule 6) $\text{ɪ} \rightarrow \emptyset / \text{VC} __ \text{C} + \text{V}^8$

Assimilation applies next in its collapsed version, Rule 5, followed by the rule of morpheme-final syncope. This solution allows for progressive assimilation in forms like kam^ɪnich and regressive assimilation across morpheme boundaries except where a final ^ɪ is present, having not yet undergone syncope.

III. Discussion

Rule 5 accounts for consonant assimilation phenomena in both the Kobuk and Barrow dialects, although resultant clusters are often different from one dialect to the other. This situation arises from the fact that the same rule functions differently in each case. In Kobuk the assimilation rule is crucially ordered with respect to the two rules of syncope, while in Barrow

assimilation may apply whenever its structural description is met.

The actual rule, moreover, has a different significance in each dialect. In Barrow the morpheme boundary's only function is to govern the direction in which assimilation applies, since assimilation is of no importance other than at boundaries. For Kobuk, the + blocks the rule from applying to morpheme-internal clusters such as that in gapvik besides keeping regressive separate from progressive assimilation. In a strict sense, then, the two dialects have different assimilation rules whose form coincides.

The comparison of Barrow Inupiaq with Kobuk proves fruitful from an historical point of view in reconstructing those internal consonant clusters which exhibit no alternation synchronically. Several pieces of evidence point to the unassimilated Kobuk clusters as older forms from which their Barrow analogues can be derived. First, Barrow clusters and long C's can be predicted from their Kobuk equivalents but not vice-versa. Given a Barrow form with a long nasal, its Kobuk cognate may have the same long nasal or else a cluster of homorganic stop plus nasal, for example.

Cross-linguistic comparison with the Yupik branch of Eskimo indicates generally that Kobuk clusters are the most archaic to be found within Inupiaq. If it is true that Barrow clusters reflect archaic unassimilated clusters like those found at present in Kobuk, then the historical rule relating the two would be identical to Rule 1, the original regressive assimilation rule which does not refer to morpheme boundaries.

In Proto-Inupiaq it seems likely that assimilation applied at morpheme boundaries as in the Kobuk dialect, since Kobuk maintains archaic morpheme-internal clusters. The assimilation process must have been generalized at some point to apply anywhere in the word; at least this hypothesis seems best to account for the relationship between Barrow and Kobuk morpheme-internal clusters.

If the historical situation is correct as portrayed, it bears interesting implications for the universal claim of natural phonology that phonological rules may become morphologized but not the other way around. If the original Inupiaq assimilation rule was restricted in its application to clusters in the environment of morpheme boundaries, then the generalization of the rule to apply morpheme-internally in Barrow represents a loss of morphological information required for statement of the rule. This generalization of the environment in which the assimilation rule may apply runs counter to the expected trend of rule morphologization.

Notes

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1. Inupiaq is the language called "Inupik" by Morris Swadesh.
2. Hooper (1973), pp. 183-213.
3. Inupiaq nasals pattern with continuants and are therefore assigned the feature value +continuant.
4. Representative examples are given for each class, although many other exceptional forms exist.
5. The singular nouns apun and suppun result from rules of apocope and nasalization of a final consonant. I assume underlying /aputi/ and /supputi/ as does Rischel (1974) in such cases. The arguments for these underlying representations in Alaskan Inupiaq are very similar to Rischel's for Greenlandic.
6. Vowels which are subject to syncope are reflexes of the Proto-Eskimo schwa, the historical fourth vowel which no longer exists as a phonetic entity in Inupiaq, having merged with i. I use the symbol ɨ as a notational device to point out those i's which reflect schwa and may undergo syncope.
7. Linguists writing on Greenlandic have usually argued for epenthesis rather than syncope in these cases. I assume syncope to be responsible for the $\text{ɨ}/\emptyset$ alternation here but do not argue the point because of limitations of space.
8. Suffixes which trigger syncope are vowel-initial, although this is not a sufficient condition for the operation of syncope. Some suffixes will need to be specially marked as conditioning syncope when suffixed to a morpheme with a penultimate vowel.

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