Schneider's Law Revisited: The Syllable-level Remnant of an Older Metrical Rule*

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SUMMARY

In this paper, we propose a synchronic analysis of so-called Schneider's Law (SL), a dynamic system of alternations between closed and open syllables documented in several dialects of Inuktitut. SL has thus far eluded proper analysis, because of paradoxical properties of the system which both point toward metrical conditioning but yet cannot be analyzed within conventional approaches to metrical phonology (Dresher & Johns 1995). We focus on two particular dialects, Siglitun and Labrador Inuttut, which display different varieties of the general pattern. We propose that SL must be synchronically analyzed as a prohibition against sequences of prominent syllables, with prominence structurally defined in terms of rhymal complexity, independent of the notion of mora count. We then explore the potential origins of SL through a consideration of the dialectology of the Eskimo-Aleut language family. We propose that SL is in fact the historical remnant of a full, metrically-conditioned rule.

RÉSUMÉ

Dans cet article, nous proposons une analyse synchronique de la "Loi de Schneider" (LS), un système dynamique d'alternances entre syllabes fermées et ouvertes documenté dans plusieurs dialectes de l'inuktitut. La LS est demeurée sans explication jusqu'à maintenant, à cause de propriétés paradoxales de ce système qui, d'une part, suggère un conditionnement métrique mais, d'autre part, ne peut être analysé à partir de considérations métriques conventionnelles (Dresher & Johns 1995). Nous nous concentrons sur deux dialectes particuliers: le siglitun et l'inuttut du Labrador, lesquels présentent des variations du patron général. Nous proposons que la LS doit être analysée synchroniquement comme une contrainte contre des séquences de syllabes proéminentes, définies structurellement en termes de complexité au niveau de la rime, indépendant de toute considération morique. Nous explorons ensuite les origines potentielles de la LS à partir de la dialectologie des langues eskimo-aléoutes. Nous proposons que la LS est un artéfact historique d'une règle métrique au sens conventionnel du terme.

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1 INTRODUCTION

This paper provides a new analysis of a consonant cluster simplification rule that obtains in several dialects of Inuktitut. Known alternatively as Schneider's Law (henceforth, SL) or as the Law of Double Consonants, a plausible, though imprecise, first pass at a description of the rule would be to say that it blocks a consonant cluster from following another consonant cluster, doing so by deleting the initial consonant from the second cluster.[1] This introductory section will serve to more precisely define what effect(s) this rule has on the dialects in which it is present.

The Inuktitut language/dialect group forms part of the subfamily of Inuit languages. Spoken across the North American Arctic, from Little Diomede Island, off of Alaska's Seward Peninsula, to the community of Ittoqqortoormiit in eastern Greenland, the languages of the Inuit form, together with the Yupik languages of western and southern Alaska and the northeastern corner of Russia, the Eskimo branch of the Eskimo-Aleut language family.[2] Within Inuktitut, the distribution of SL is limited to three main dialect groups: Inuttut (including Rigolet Inuktut), spoken in Labrador; Inuttitut, comprising both the Itivimiut and Tarramiut dialects, spoken in Nunavik (northern Quebec); and Siglitun (also sometimes referred to as Inuvialuktun), spoken in the western Northwest Territories. None of the other Inuktitut dialects show signs of SL effects.

1.1 SCHNEIDER'S LAW IN LABRADOR INUTTUT AND NUNAVIK INUTTITUT

For reasons of space, we present only Labrador Inuttut data in this paper, though we argue, essentially following the analysis found in Dresher & Johns (1995), that the relevant properties discussed here for Inuttut with respect to an explanation of SL hold equally true for the Inuttitut dialects spoken in Nunavik.

If we were to look only at Labrador Inuttut, we might reasonably conclude that an accurate description of SL effects is something like the following: Given a sequence of two consonant clusters spanning three adjacent syllables, the second consonant clusters undergoes simplification, with the initial consonant being deleted from the second cluster, as in (1).[3,4]

(1)	a.	/illuk + kkut/	→	[illukut]	*[illukkut]
		house VIA		'through the house'	
	b.	/nunak + kkut/	→	[nunakkut]	*[nunakut]
		land VIA		'through/across the land'	

In (1a), all things being equal, we would expect that the addition of the suffix that marks vialis case, *-kkut*, onto the root *illu(k)* should result in the word *illukkut*. That it does not is a result of an application of SL. This can be compared with *nunakkut* in (1b), where no trigger for SL to operate is present and the geminate contained within the suffix surfaces. Inuttut has extensive (regressive) assimilation of consonant clusters, and (2a) demonstrates SL affecting a

[1] Schneider's Law, after Father Lucien Schneider, who was the first to discuss this phenomenon (see Schneider 1966, 1970, 1972-1976).

[2] Nomenclature for the languages being discussed is not entirely agreed upon. Unless explicitly stated otherwise, for the purposes of this paper, all occurrences of the term *Inuktitut* should be construed broadly as referring to those languages of the Inuit excluding only Inupiaq/Iñupiaq. It should be noted that this definition includes a number of languages/dialects in both Canada and Greenland whose speakers would not refer to their own languages as such (see, among others, Dorais 1990, 2010, Lowe 1991, and various papers in Collis 1990 for more complete overviews of the languages belonging to the Eskimo-Aleut family).

[3] The following abbreviations are used in this paper: ABS=absolutive (case) and VIA=vialis (case).

[4] Examples unmarked for sources come from fieldwork carried out by the second author in 2009 and 2010 in Nunatsiavut and by the third author in 2011 in Happy Valley-Goose Bay, Labrador.

derived geminate straddling a morpheme boundary.

(2)	a.	/tuttuk + vak/	→	[tuttuvak]	*[tuttuffak]
		caribou big		'moose' or 'cow'	
	b.	/kiŋuk + vak/	→	[kiŋuffak]	*[kiŋuvak]
		sea.louse big		'prawn' or 'shrimp'	

In (2b), the surface form *kiŋuffak* illustrates that there is a very late, possibly phonetic, rule in Inuttut that devoices voiced obstruent geminates (/vv/→[ff] and /ɣɣ/→[xx]) (see Dresher & Johns 1995:83 for additional discussion of this rule).

In addition to degemination, Inuttut also appears to exhibit heterogenous consonant cluster simplification as a result of SL. Consider (3).

(3)	a.	/mumik + siutik/	→	[mumitsiutik]	
		turn.something.over thing.used.for/when		'spatula'	
	b.	/anniak + siutik/	→	[anniasiutik]	*[anniatsiutik]
		be.in.pain thing.used.for/when		'medicine'	

In (3b), the underlying sequence /ks/ appears to undergo regressive place assimilation to [ts], as in (3a), which is then targeted for simplification by SL. However, we assume, following Dresher & Johns (1995), that <u>all</u> surface heterogenous consonant clusters in Inuttut are phonological geminates, and that the [ts] sequence is derived via a late affrication rule.[5] Thus, application of SL in (3b), as in (1a) and (2a), results in a degemination process.

Two additional important facts about SL are revealed in the examples in (4).

(4)	a.	/nanuk + ŋŋuak + kχa: + lluni/	→	[nanuŋŋuaχa:lluni]
		get.a.polar.bear pretend.to first by		'by first pretending to shoot a polar bear'
	b.	/tuttuk + ŋŋuak + kχa: + lluni/	→	[tuttuŋuakχa:luni]
		get.a.caribou pretend.to first by		'by first pretending to shoot a caribou'

(adapted from Smith 1977:82, 83)

First, vowel length, phonemic in the language, can be seen to be of no consequence in triggering when SL does or does not apply. The cluster [kχ] (the phonological geminate /χχ/) in (4a), for example, is targeted by SL solely because the immediate preceding syllable contains a coda; we cannot posit a strict relationship between syllable weight and application of SL, since the presence versus absence of long vowels or diphthongs plays no role in the application of SL. Second, the examples in (4) demonstrate that the rule operates iteratively, from left to right.

1.2 SCHNEIDER'S LAW IN SIGLITUN

Unlike contemporary Inuttut and Inuttitut, the western Canadian dialect of Siglitun exhibits many heterogenous consonant clusters. This fact provides the opportunity to more precisely define the nature of SL. Consider the examples in (5), from Lowe (1984:116).

[5] Dresher & Johns (1995), in fact, convincingly argues that all consonant clusters in contemporary Labrador Inuttut and contemporary Nunavik Inuttitut are (underlyingly) geminates, although the details are slightly different in the two dialects (see also Massenet 1986 for relevant background argumentation pertaining to Inuttitut). We also adopt this position here.

(5) a. /iqaliq + kkuaq + tuaq/ → [iqalikkuaqtuaq]
window go.through 3sABS '(s)he/it went through the window'
b. /upkuaq + kkuaq + tuaq/ → [upkuakuaqtuaq]
door go.through 3sABS '(s)he/it went through the door'

In (5b), the consonant cluster in the root, *upkuaq*, triggers simplification of the (geminate) consonant cluster contained within the postbase *-kkuaq-*. In (5a), no such simplification is expected or found, given the absence of a consonant cluster in the root. However, note that, with the suffixation of the inflectional ending, we still find two consonant clusters contained within three adjacent syllables in (5a), a state of affairs never found in Inuttut or Inuttitut. On the one hand, this could be due to geminates not operating as triggers for SL in Siglitun, contrary to what is observed for Inuttut and Inuttitut. On the other hand, it may be that heterogenous consonant clusters are simply not targets for SL – only geminates are (recall that contemporary Inuttut and Inuttitut, where all consonant clusters are taken to be phonological geminates, can tell us nothing about this possible division). We can easily dismiss the former hypothesis. There is abundant evidence in the language that geminates do (exceptionlessly) trigger the simplification of a geminate contained within a right-adjacent syllable, as in (6).

(6) uqallak + llak + tuaq → [uqallalaktuaq]
speak a.while 3sABS '(s)he spoke for a while'
cf. sini + llak + tuaq → [sinillaktuaq]
sleep a.while 3sABS '(s)he slept for a while' (Lowe 1984:129)

We are left, then, with the conclusion that heterogenous consonant clusters are not targeted for simplification by SL in Siglitun. It would be preferable, of course, to say that geminates, and only geminates, are targeted for simplification by SL, full stop, so we will. This is consistent with the observed facts in each of Inuttut, Inuttitut, and Siglitun, and it is also predicted by the analysis of the nature of SL which we propose below, in Section 4. The description of SL effects that we have arrived at is given in (7).

(7) Schneider's Law
A geminate within a syllable that immediately follows a closed syllable is degeminated

SL in Siglitun is not, in any sense, a "basically similar, but more restricted" (Dorais 2010:69) version of the rule that holds in Inuttut and Inuttitut. We follow Dresher & Johns (1995) in maintaining that it is the same rule. Its effects are significantly more conspicuous in the latter dialects, but this is due solely to an independent factor, namely the extensive assimilation of consonant clusters in Inuttut and Inuttitut. This is of some importance in the consideration of the origination and evolution of the rule in these dialects.

1.3 SCHNEIDER'S LAW AS A RECENT INNOVATION

SL effects are unmentioned in the earliest Labrador grammars and dictionaries (Egede 1760, Kleinschmidt 1851, Bourquin 1891). Dorais (1976:391) holds that "[o]ld texts from Labrador and the memory of some elderly Itivimiut and Taqramiut speakers show us that this simplification of clusters is recent. It probably came into use at the beginning of the present century." Subsequent treatments of SL in Inuttut and Inuttitut, if they take a position on the matter, take the rule to be a relatively new development in these dialects. The foundation of this assumption, however, seems to be predicated on the understanding that SL affects non-geminate consonant clusters. Consider, for example, the word *igliuqtuq* '(s)he is making the bed', collected in Labrador in 1730, which Dorais (2010:111) cites as evidence of the absence of SL in the Inuit dialect of eighteenth-century Labrador.[6] But this is not different from what

[6] This word, originally transcribed as *igliocto*, appears in a word list compiled by Father Pierre François.

we find in contemporary Siglitun, which, like eighteenth-century Inuttut, has a large number of heterogenous consonant clusters, as illustrated in (8).

(8) niuqqiuqtuaq '(s)he is making tea' (Lowe 1984:126)

While extensive assimilation of consonant clusters in Inuttut (and Inuttitut) is indisputably a recent phenomenon, we demonstrate in Section 4 that SL is arguably the remnant of a very old rule. That is, we claim, contra Dorais (2010), that SL does not represent a recent innovation in Inuttut, Inuttitut, and Siglitun. Rather, it is a rule that has been lost in the other Inuktitut dialects.

2 BACKGROUND WORK

Collis (1970) and Rischel (1974), based on data from Inuttitut and Inuttut, describe SL as a rule regulating syllable quantity which bans sequences of adjacent closed syllables: /VCCVCCV/ → [VCCVCV]. Smith (1975) formulates a similar solution for the version of SL attested in Labrador. Fortescue (1983:16) refers to SL as a quantity rule of "syllable-weight adjustment." Focussing on the Siglitun variety of Inuktitut, Dorais & Lowe (1982) and Lowe (1984) show that in this dialect, SL can be triggered by coda-onset consonants clusters and geminates alike, but that only geminates are targeted by the process, as already described in Section 1.2. However, these works, based for the most part on field explorations, fail to address the theoretical underpinnings of SL. Working toward this goal, Massenet (1986) focuses on articulatory properties of geminates consonants, which are often affected by SL, as opposed to coda-onset clusters. In an attempt to capture this difference, Massenet proposes the rule in (9), which focuses primarily on the phonetic properties of geminate consonants.

(9) Massenet's (1986: 130) formulation of Schneider's Law
Delete a word-internal coda consonant in a syllable with a tense onset

Implicit in this definition is the intuition that geminate consonants are articulatorily tense and that their articulation somehow cannot be produced in successive syllables, causing the second syllable in the string to undergo reduction. While geminate consonants do involve articulatory peculiarities when compared to non-geminates, a phonetic approach should also predict that different types of geminates, particularly stop vs. fricative geminates, would have different impacts on the following sounds or sound combinations. Further, the articulatory tension proposal by Massenet fails to account for the facts of Siglitun: heterogenous clusters trigger, but do not undergo, simplification.

Interested also in uncovering the source of SL, Dresher & Johns (1995) focus on the potential metrical properties that might underly the rule. Addressing the seemingly uncontroversial depiction of SL as quantity-based across the literature of the 1970s and 1980s, they first discuss the possibility of a metrical account, as illustrated in (10).

(10) Metrical rule (Dresher and Johns 1995:89)

```
  *    *    *    *          *        *
  *    *    *    *       ( *    * )( *    * )
  μ μ  μ μ  μ μ  μ μ  ⇒   μ μ  μ  μ μ  μ
C V C C V C C V C C V C    C V C C V C V C C V
```

According to this account, SL would operate as the reduction of a sequence of two prominent syllables on the grid, through the degemination of the first of the syllables within the clash.

While this solution elegantly captures the basic facts about degemination, it however fails in the face of a crucial observation. As Dresher & Johns point out, SL is blind to the length of the vowels contained within the string, as discussed briefly in Section 1.1, and

demonstrated in the two examples in (4). As can be seen in (4a), the underlying geminate /ll/ is preserved, even though it immediately follows the long vowel /aː/. This same geminate undergoes reduction in (4b), though not because of the preceding vowel but rather because it is preceded by a syllable with a coda consonant. Any account based on mora count must predict a distinction between short and long vowels, standardly assumed to be moraic in weight-sensitive metrical systems.

Dresher & Johns (1995) thus convincingly argue against a purely metrical account of the facts. In the same vein, they also eliminate a number of other potential accounts, many of which are based on alternations that resemble SL, for example in Siglitun, as described above in Section 1.2, and in the dialects of Inupiaq, another language within the Eskimo-Aleut family, to which we return later, in Section 4.3. Dresher & Johns conclude by suggesting that SL may in fact involve more abstract relationships between syllables than those based on articulatory or metrical considerations, formulating a hypothesis within Government Phonology (e.g. Kaye, Lowenstamm & Vergnaud 1990) which suggests that SL derives from government relations between syllables. While we reject their government-based account on the grounds that the very notion of government is theoretically ill-defined, a significant portion of our analysis in Section 4 capitalizes on several of Dresher & Johns' observations and associated intuitions. Our analysis also builds on a series of acoustic verifications based on primary fieldwork data, to which we turn next.

3 AN INVESTIGATION OF THE ACOUSTICS OF SCHNEIDER'S LAW

In 2009 and 2010, the second author conducted linguistic interviews to record, for later acoustic analysis, SL alternations in the spontaneous speech of Inuttut speakers in Nain, Hopedale, Makkovik and Rigolet, Labrador. The recordings took place in people's homes and at the OKâlaKatiget Society studio in Nain. In conjunction with ethnographic interviews, 17 language consultants completed a series of reading tasks, answered questions, and engaged in spontaneous conversation on preset topics.[7] Samples were then transcribed and segmented into *Phon*, the software program we used to assemble our corpus of SL alternations.

The data were measured using *Praat* analysis software for three possible correlates of stress: duration, loudness and pitch. First, the results for segmental duration show that violations of SL are virtually absent from the data and that in any given word, geminates are most often double the length of single consonants. No symmetries with the foot inventory in Hayes' (1995) Metrical Stress Theory emerged. Numerous counter-examples occur in environments where we would expect to find iambic feet, following Hayes' analysis of Yupik, a related and more conservative language in the Eskimo-Aleut family. However, measurements of contrasts in syllable duration show both iambic and trochaic patterns. Loudness is the most salient candidate as a correlate of stress with intra-word contrasts reaching at most 10 decibels. Peak intensities were also recorded in the word [anaːnaɣa] 'mother', used by all 17 consultants in the question and answer part of the interview. Following aural-impressionistic analyses from Smith (1975:105) and Dresher & Johns (1995:89), the expectation is that stress would fall on the syllable with the long vowel. Instead, the data show that intensity peaks can fall on any syllable, except the initial one.

[7] Six women (VI, SI, KM, BH, AE, JD) and eleven men (LI, PJ, JJ, BK, JM, AZ, EF, MK, JI, HW, HP) aged 37 to 81 years. Based on questions about their parents and grandparents, the language consultants were categorized as being from two sub-dialects and five historic speech communities: Inuttut ((Hebron, 9), (Okak, 2), (Nain, 4), (Hopedale, 1)), and Inuktut (Rigolet dialect, 1).

(11) Loudness as the phonetic correlate of stress Inuttut

a.	aná:naɣa	'my mother'	BH	b.	áχixxìvik	'spruce grouse'	BH
	ana:náɣa		BH		aχìxxivík		BK
	anà:naɣá		JD		àχiɣɣívik		HP

Our observations are consistent with Smith (1975), who argues that stress can fall on any vowel in a pre-cluster position. Spectrographic analysis of the data in (11) shows that stress is in fact at the speaker's discretion with intensity peaks making syllables prominent possibly for semantic emphasis, but certainly not as a form of metrical conditioning. Lastly, even though Inuttut is not a tone language, pitch was considered as a possible correlate of stress. But, in line with Jacobsen's (2000) acoustic study of durational and tonal patterns in West Greenland, no systematic or even consistent pattern for these two parameters emerged from the data. Measurements show instead HLH intonational contours at the right edge of phrases, consistent with the findings of Nagano-Madsen (1988). These effects may be perceived as stress by some authors and Inuttut speakers, but our acoustic study shows that they are not.

The fact that no recurring stress alternations can be found in the data is consistent with previous considerations of stress in Inuktitut (Rischel 1974, Dorais 1990, Dresher & Johns 1995), and provides additional support to Jacobsen's (2000) contention that Inuktitut is not a stress language. The data also support Dresher & Johns's (1995) argument that SL is not metrically motivated, as described in Section 2. Our analysis focusses on geminates in word-medial position, in order to limit word-edge effects, and on geminates that arise intervocalically between identical phonemes, so as to limit the possible influence of different segments on the acoustic results. Tokens were extracted from the base stem /aχiɣɣik/ 'ptarmigan' and from the affix /-χatta-/ 'repeatedly'. Both sequences trigger SL without exception, but peak intensity measurements of /-χiɣɣi-/[8] and /-χatta-/ show no recurring pattern of prominence.

(12) Hypothesis: Strong = 3^{+} dB louder, > 3 dB difference deemed not significant (. .)

a.	-χiɣɣi-	b.	-χatta-
	(S W) x 3 tokens		(S W) x 1 tokens
	(W S) x 30 tokens		(W S) x 7 tokens
	(. .) x 18 tokens		(. .) x 10 tokens

Even in the above sequences of SL-triggering CVC syllables with no interrupting long vowels, none of Dresher & Johns's (1995) S-W patterns emerge. The data thus offer empirical support of their argument that a metrical solution would require patterns not attested in any language and further suggests that Inuttut lacks a metrically-conditioned stress system.

4 PROPOSAL

As we can see from the previous sections, SL cannot logically operate on a metrical grid. Moreover, acoustic investigations of Inuttut (and related West Greenlandic) fail to reveal any metrical conditioning, and thus reinforce long-established observations about the absence of regular stressing across various dialects of Inuktitut.

In this section, we propose that SL is nonetheless prosodically conditioned, but that this conditioning operates on remnants of the language's eroded stress system. In a nutshell, we propose that syllable prominence only manifests itself at the level of syllable structure, the level at which SL operates. Formally, we analyze SL as a restriction on series of syllables with

[8] Produced variably by speakers as /-iɣɣi-/, /-ixxi-/ or /-ikki-/, the result of an optional phonetic implementation rule.

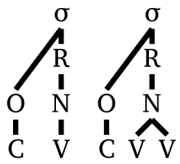
codas (branching rhymes), irrespective of the content of the nucleus (short or long vowels). We motivate our analysis through parallels between SL found both in Inuttut and Siglitun as well as a number of similar types of patterns observed in historically-related dialects within the Eskimo family (Central Alaskan Yupik; Seward Peninsula Inupiaq). We further propose that the apparent trochaic conditioning of SL in Inuttut and Siglitun in fact relates to the loss of the iambic conditioning that originally gave rise to SL.

4.1 SYLLABLE-LEVEL CONDITIONING

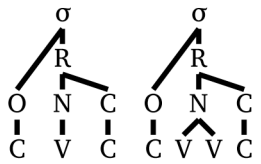
In the absence of a metrical system, the first level of representation immediately available to formally encode SL is the syllable. Given that, as mentioned in Section 2, one cannot appeal to mora count to account for SL, we propose that the structural description relevant to SL concerns the syllable rhyme. Taking Onset-Rhyme theory (e.g. Selkirk 1982) as our basic model for syllabification, we propose that SL formally restricts the rhymal branching required to accommodate codas or first halves of geminates, irrespective of the number of elements contained within the nucleus (see also Harris 1994, Rose 2000 for related discussion of rhymal structure). We thus define as 'weak' a syllable with a non-branching rhyme, and 'strong' a syllable that branches at this level, as represented in (13).

(13) Rhymal structure

a. Weak (simplex rhyme)



b. Strong (branching rhyme)



Based on these representations, we analyze SL as a constraint on prominence relations within sequences of syllables. Independent of constraints on segmental faithfulness in Siglitun (to which we return below), we propose that SL can be uniformly analyzed as a constraint on adjacent 'strong' syllables: a syllable with a branching rhyme cannot be followed by a similarly strong syllable. This constraint, which captures the intuition behind Dresher & Johns (1995), is also reminiscent of 'clash' constraints against two prominent syllables within metrical systems (e.g. Liberman & Prince 1977). The only discrepancy between this and more conventional analyses within metrical or grid accounts of stress system resides in the level at which syllable prominence is computed (i.e. moraic versus rhymal structure); crucially, prominence remains an attribute of the syllable.

4.2 SCHNEIDER'S LAW AND SEGMENTAL FAITHFULNESS

The second component of our analysis relates to faithfulness to underlying forms. Recall from Section 2 that Inuttut and Siglitun differ from one another in two inter-related ways. First, Inuttut shows virtually across-the-board place assimilation within consonant clusters, yielding vast amounts of gemination, while geminates in Siglitun are underlying. Second, the geminates of Inuttut both trigger and undergo SL while, in Siglitun, SL is triggered by both geminates and clusters, but undergone only by geminates. We relate both of these observations to segmental faithfulness. We propose that faithfulness to input segmental material derives from a requirement higher in the Siglitun grammar than it is in Inuttut, as follows.

In Siglitun, underlying consonant clusters are not subject to assimilation, neither are they subject to reduction by virtue of SL. We relate these two observations to a generally central requirement that outputs be faithful to input segments in this language. In contrast to this,

generalized gemination in Inuttut points to lower faithfulness requirements: independent of SL, C_1C_2 clusters surface with the place of articulation of C_2. As we can see back in (2b), the gemination of input /kv/ yields a surface [ff] geminate (devoicing of geminate obstruents occurs through an independent rule, discussed there). In either case, the place of articulation of C_2 is preserved. SL is thus not directly responsible for the loss of the place feature of C_1; gemination is.

Based on this evidence, we formally analyze SL as coda reduction, i.e. deletion of the dependent position of the offending syllable rhyme in the context of prominence clash. While it applies to all input clusters in Inuttut, this process is independently restricted by feature faithfulness requirements in Siglitun. This difference between the two dialects is formalized by the rankings of constraints in (14), where [F] represents any feature and [X] represents any segmental position.

(14) Relative importance of faithfulness in Siglitun and Inuttut: a grammatical sketch

a. Siglitun: Faith[Feature] >> Markedness, *ProminenceClash >> Faith[X]
b. Inuttut: Markedness, *ProminenceClash >> Faith[F], Faith[X]

This analysis correctly predicts the full behaviours of SL in both Siglitun and Inuttut. In both dialects of Inuktitut, the presence of two adjacent syllables with codas yields prominence clash. In Siglitun, only underlying codas which are first members of geminates undergo reduction, with no loss of segmental information, as the reduced geminate contains all the features of its underlying counterpart. In contrast to this, coda reduction is blocked each time it would result in loss of featural information contained in this position. In Inuttut, a dialect in which featural faithfulness is a lesser requirement, SL can apply across all contexts where two prominent syllables are adjacent within the input string.

However, in spite of the correct predictions made by our analysis, the reader familiar with Eskimo-Aleut metrical systems might have reservations about the fact that our analysis points to a metrically 'trochaic' behaviour: outcomes of SL in both Siglitun and Inuttut all yield strong-weak syllable alternations.

4.3 THE ORIGIN OF SCHNEIDER'S LAW TROCHAIC PATTERNING

The apparent trochaicity of SL is surprising, given that Eskimo-Aleut languages that do have alternating stress patterns generally display iambic, as opposed to trochaic, conditioning. We propose that the trochaic conditioning of SL in Siglitun and Inuttut directly relates to a common ancestor dialect. We argue that SL is the synchronic reflex of metrically conditioned alternations taking place in this parent dialect. We further argue that SL's trochaicity results from the reanalysis of the iambic conditioning of these historical alternations.

Our argument is based on similarities that exist between Siglitun and Inuttut, on the one hand, and remote cousin dialects within the Eskimo-Aleut family, on the other. We take as our starting point an encompassing generalization made by Kaplan (1985), who states that:

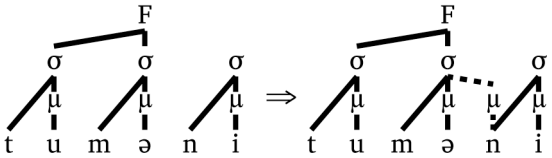
> A relationship between successive syllables which closes one when the other is open, so that variant forms may contain sequences of either VCVCCV or VCCVCV, has been shown to exist over a wide area, i.e. Greenland to Alaska, and suggests that this process may have held greater importance in an earlier stage of the language. (Kaplan 1985: 208)

Aside from the independent faithfulness requirements noted above for Siglitun, the sequences noted by Kaplan express exactly the types of alternations that arise under SL. These

alternations are also found in the form of syllable strengthening and weakening rules in related languages. In the next paragraph, we discuss two examples — one from Central Alaskan Yupik, the other from Seward Peninsula Inupiaq. We then establish a formal relationship between these dialects and Siglitun and Inuttut, all of which are part of the larger Eskimo-Aleut family of languages.

Starting with Yupik, Woodbury (1987) describes a synchronic rule in this language which consists of the strengthening of non-final light syllables located in the head of the iambic foot through gemination of the following onset, as in (15).

(15) Iambic strengthening in Yupik (adapted from Woodbury 1987: 700)

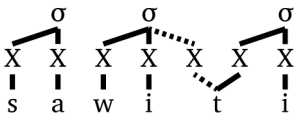


/tuməmi/ → [tuməmmi] 'on the path'

Kaplan (1985: 192-194) describes two similar effects in many Seward Peninsula dialects of Inupiaq, captured under a general rule of 'Consonant Gradation' (henceforth, CG) which he compares directly with Yupik's prosodic conditioning. CG can take place in two different ways, i.e. gemination or degemination, both of which yield alternations between 'strong' and 'weak' syllables, as follows. Initial syllables are strong if they are closed or contain a diphthong or a long vowel. Initial CV syllables with short vowels are weak. From those initial syllables, the following syllables alternate in strength based on two basic processes, both of which affect the realization of consonants. Weak syllables are strengthened through gemination of the following onset, as in (16a), a process similar to that in (15) for Yupik, except for the fact that it is not conditioned by the stress system. Conversely, strong syllables immediately following another strong syllable are weakened through a gradation of lenition processes (e.g. /p/→[v]; /ɬ/→[l]; deletion of /ɣ/ and /ʔ/, as in (16b)) which affect both singleton onsets as well as consonant clusters. In the interest of space, we limit ourselves to the observation that the cases of reduction noted by Kaplan resemble the types of reductions observed in both Siglitun and Inuttut implementations of SL.

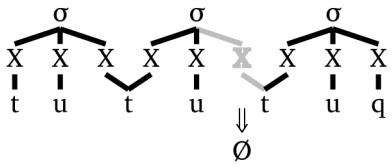
(16) Consonant Gradation in Seward Peninsula Inupiaq (Kaplan 1985: 194)

a. Strengthening



/sawiti/→[saˈwitti] 'worker'

b. Degemination



/tuttuttuq/→[ˈtuttutuq] 'he killed a caribou'

Also important is the fact that, as Kaplan (1985) argues, CG is itself independent of stress assignment in Inupiaq: "Whereas CG affects alternate syllables, […] resembling Yupik prosody in this respect, word stress is assigned individually to syllables practically regardless of what precedes or follows" (p. 193). As Kaplan describes, stress is non-alternating in Inupiaq: all non-final syllables containing long vowels, diphthongs or codas receive stress

(e.g. [inúktuyú:q] 'personal name'). CG thus has the appearance of a metrical system but instead of being metrically conditioned, it is the driver of stress assignment.

Under this view, Seward Peninsula Inupiaq in fact represents an intermediate step in the historical evolution of the language family. Yupik, on the one hand, represents the most conservative dialect, and Inuttut, on the other hand, the most innovative. Of course, the evolution of the Eskimo-Aleut family of languages and dialects is much richer, and interesting, than what this preliminary sketch might suggest. However, this sketch, illustrated in (17) supports our hypothesis that a formal relationship exists across these different systems.

(17) From iambic metrical conditioning to trochaic syllabic conditioning

Metrical conditioning		(σ	[*σ)	σ]		
Iambic lengthening	Yupik	t u t u	m ə m ə m	m i m i		
Syllable conditioning		σ	[σ	σ]	σ	σ
Weak syllable lengthening	Inupiaq	s a s a	w i w i t	t i t i		
Strong syllable degemination			t u t t u t	t u t t u Ø	t u q t u q	
Schneider's Law	Inuttut Siglitun	i i	m a k m a f	v a l f a Ø	l a: l a:	j u k j u k

'Trochaic' window of analysis

While the metrical system of Yupik operates within a disyllabic window that straddles two adjacent syllables, the syllable-level alternations found in the phonologies of Inupiaq, Inuttut and Siglitun also operate within a disyllabic window, the crucial difference being that, in the absence of a metrical system, these latter systems must scan at the level of syllable structure, the trigger syllable consistently located to the left of the target syllable. As schematized in (17), while the second syllable is enhanced by virtue of a foot-level requirement in Yupik, the contrast between the 'strong' and following 'weak' syllables offers a systematic window of analysis for syllable-level alternations in those dialects that lost metrical conditioning.

5 DISCUSSION

Our analysis outlines potential paths for language evolution, including shifts between iambic and trochaic metrical systems, or vice-versa, under the crucial circumstance that the original system manifests itself predominantly through segmental alternations, as opposed to suprasegmental levels of phonetic implementation such as fundamental frequency or intensity. Another implication of our analysis is that the remnants of a given system may be reinterpreted as part of another system, here the reinterpretation of a metrically-conditioned, weight-sensitive system into a system of alternations between closed and open syllables.

Also explicit in our analysis is the claim that the innovative aspect of Inuttut is not about SL per se (cf. Section 1.3), but rather the weakening of the requirement for faithfulness to input codas. The extensive gemination found in Inuttut, which contrasts with the more faithful realization of codas in Siglitun, is sufficient to explain the larger application of SL in Inuttut. Under the hypothesis that the original system which gave rise to SL (and associated CG processes in Inupiaq) was metrical in nature, the subsequent loss of the metrical motivation

predicts that the segmental alternations might get dropped altogether. This is in fact what we observe in all other dialects of Inuktitut, as discussed in Section 2. Without independent conditioning, it seems rather unlikely that phonological systems would spontaneously give rise to SL-type systems of alternations. The view of SL as a recent innovation would also counter to the cross-linguistic and dialectal evidence discussed above, as it would ignore the systematicity of many of the relationships observed across inter-related descendants of the Eskimo-Aleut family. Finally, the hypotheses we formulate above call for further verifications in other dialects of Inuktitut, which we leave open for further research.

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