

Proto-Eskimo-Aleut */ə/ and the Origin of Aleut Pre-Aspirated Consonants¹

José Andrés ALONSO DE LA FUENTE

Universidad Complutense de Madrid / UPV-EHU
ocitartson@hotmail.com

Recibido:9 de febrero de 2009

Aceptado:2 de julio de 2009

ABSTRACT

The aim of this paper is to analyze several points of the Aleut historical phonology which up till now had not received enough attention. The programmed agenda comprises: (I) Proto-Eskimo-Aleut */ə/; (II) the pre-aspiration; (III) the Proto-Eskimo-Aleut sequences */-nə-/ and */-ŋə-/, and (IV) Aleut lexicon containing χ- (γ.-). An ideal understanding of these processes shall help to the reconstruction of the Proto-Aleut language, an issue totally rejected in the specialized literature.

Key words: Historical and comparative linguistics, Eskimo-Aleut languages, dialectology, philology, accentology.

*La */ə/ protoesquimalaleuta y el origen de las consonantes preaspiradas aleutas*

RESUMEN

El objetivo de este trabajo es analizar ciertos aspectos de la fonología histórica aleuta que previamente no habían recibido suficiente atención. Estos puntos comprenden: (I) vocal protoesquimalaleuta */ə/, (II) el fenómeno de la preaspiración, (III) las secuencias protoesquimalaleutas */-nə-/ y */-ŋə-/, y (IV) léxico aleuta que contiene χ- (γ.-). La correcta comprensión de estos procesos ayudará en la reconstrucción de la etapa lingüística protoaleuta, hasta ahora totalmente ignorada en la bibliografía especializada.

Palabras clave: Lingüística histórica y comparativa, lenguas esquimalaleutas, dialectología, filología, acenología.

Contents: 1. Introduction. 2. Proto-Eskimo-Aleut */ə/. 3. Pre-Aspiration. 4. Summing up: toward a provisional formulation of Proto-Aleut prosody. 5. Proto-Eskimo-Aleut */-nə-/ y */-ŋə-/. 6. Aleut χ- (γ.-). 7. Conclusions. 8. Bibliographical references.

To the lonely Scandinavian giant.
In memoriam Knut Bergsland (1914-1998)

1. Introduction

Knut Bergsland (1914-1998) spent half of a life among the Aleuts with the goal of saving their language from the oblivion. Nowadays nobody would deny the fact that he is, and surely he will be, the most authoritative specialist on the Aleut language. Given his other field of specialization, namely Uralic (historical) linguistics with special emphasis on Finno-Ugrian, it is not surprising that Bergsland also devoted a considerable amount of time to study its (pre)historical vicissitudes. In fact, he translated

¹ It gives me great pleasure to express my gratitude to Iván Igartua (Universidad del País Vasco-Euskal Herriko Unibertsitatea) and Juliette Blevins (Department of Linguistics at the Max Planck Institute for Evolutionary Anthropology, Leipzig) who read the manuscript of this paper and made many valuable suggestions and corrections. Any remaining factual or interpretative errors are, of course, my own responsibility.

into scientific terms the long time suspected relationship between Aleut and the rest of Eskimo languages. In his prodigious Aleut dictionary, it is even possible to appreciate his care on these matters, since many lemmata offer etymological explanations, most of them still valid. However, he could not develop in deep many questions regarding the (pre)history of the language², and after the publication of his seminal paper on comparative Eskimo-Aleut phonology (Bergsland 1986; see also 1966 and 1989), no more works on the history of Aleut were produced –with the exception of CED–, despite the fact that it is still necessary to work out dozens of questions in order to understand properly how Aleut came to be from Proto-Eskimo-Aleut³. Two of those dozens of questions will be addressed in this paper: the Aleut reflects of PEA */ə/ and the origin of Aleut pre-aspiration⁴.

2. Proto-Eskimo-Aleut */ə/

Proto-Eskimo-Aleut vowel system comprised four phonetic units: three «full» vowels */a i u/, and the so-called «reduced» vowel */ə/. In its evolution to historical languages, PEA */ə/ is merged with */i/ in the Inuit branch (except in the Bering Strait Inupiaq of Diomedes), whereas Yupik as well as Sirenik preserved it (general statement *i.a.* in Woodbury 1984: 58a, CED xviii/b-xix/a, Bergsland 1986: 28). A well-known phenomenon occurring in Sirenik is the almost automatic reduction of every vowel beyond the first syllable, in word-final position being realized as /a/ (Krauss 1985b: 176-82), although the identity of the original vowel can appear after suffixation, e.g. PE */iyaqur/ ‘wing’ > Sir *yaqəX* ‘wing, arm’, but *yaqun* ‘your wing, arm’ (CED 149b). As for Aleut, Bergsland (1986: 92) describes the outcome of PEA sequences */CəCə/ as follows: «In most of the examples the sequence *ə – ə, as indicated by the Eskimo cognates, is reflected in Aleut either *i – i*, *i – Ø*, or as *Ø – a*, once perhaps depending upon what followed». When Bergsland says «[...] depending upon what followed», he wants to mean mainly /a/ in the surrounding of uvulars: «With an

² Furthermore, Bergsland was a very careful scholar, always looking for the adequate degree of certainty in the etymological exercise, always trying to avoid by all means tentative or speculative solutions. Unfortunately, as the particular history of the historical linguistics has shown, a bit of such tentativeness is necessary, otherwise the relationship, let’s say, of Albanian or Armenian to Indo-European would have ever been elucidated. The present author has been criticized just because to attempt to introduce a bit of tentativeness in the field, despite the fact that such attempts are equal to those already commented for example in the field of the Indo-European linguistics. Bergsland identified basic etymological involving trivial or almost self-evident semantic shifts and sound correspondences. The next step, necessary for example in explaining non-basic cognates between Samoyedic and Finno-Ugrian or the deep structure of Indo-European verb, has not been given in the field of Eskimo-Aleut historical linguistics. It seems as if the homogeneity of the Eskimo branch would have to be respected also in the case of the entire family, despite the fact that Aleut is markedly different from the Eskimo branch in many respects (*i.a.* chronology, morphology, phonology or lexicon).

³ The present author has produced several exploratory papers on both individual items (Alonso de la Fuente 2006/2007, 2008a, 2008c, 2009, In press) and general aspects of the Proto-(Eskimo-)Aleut reconstruction (Alonso de la Fuente 2008b).

⁴ Bergsland talks about «pre-aspirated» consonants in AD, but about «aspirated» consonants in AG. It remains unclear to me why Bergsland changed the nomenclature (but not the treatment!) of those phonemes, and I still prefer to accept the possibility he just used them interchangeably.

intervening uvular one finds $a - a$, $a - \emptyset$ and $\emptyset - a$ » (Bergsland 1986: 93), and less frequently /u/ with labials: «With an intervening labial the choice seems to be $u - (i)$ or $\emptyset - a$ » (Bergsland 1986: 92). Curiously enough, modern Aleut epenthetic vowels –Bergsland’s «auxiliary vowels» (AG 38-9)– are the identical that those vowels resulting from the evolution of PEA */ə/, namely /i/ and /a/. Moreover, Bergsland explains that the choice between /i/ and /a/ depends partly on the preceding consonant, i.e. /a/ if the consonant is uvular, /i/ elsewhere, e.g. *slay-idyu-* ‘to make (several) wider’ vs. *atxay.-adju-* ‘to put (several) in order’⁵. It must be noted that Aleut epenthetic vowels are not the continuation of any PEA vowel, but an internal mechanism which could go back to Proto-Aleut times⁶, i.e. in theory there is no way to distinguish between the outcome of the inherited PEA */ə/ and those of the epenthetic (but secondary!) PA */ə/.

The reflect of sequences containing PEA */ə/ and a «full» vowel is always the same: lost of */ə/, with the logical rising of consonant clusters in initial and internal position (and eventual introduction of epenthetic vowels), and preservation of the full vowel. In fact, the lost of */ə/ seems to be the main evolutionary route of this vowel in Aleut, rather than it is merged with other vowels, as it is commonly stated (*i.a.* Woodbury 1984: 62a). This fact makes rather surprising the results */i...i/ and */a...a/ mentioned by Bergsland. Why are both PEA */ə/ retained in these cases? Are factually both Aleut vowels the continuation of two PEA vowels? Could it be that at least one of them has actually a secondary origin, e.g. epenthetic? To the best of my knowledge, this obvious abnormality has received no explanation in the specialized literature. Be that as it may, the systematic dropping of a reduced vowel and the preservation of a full vowel or another contiguous reduced vowel reminds of similar scenarios in other languages, e.g. Common Slavic, where *grosso modo* the so-called *jery*, ultra-short or reduced vowels, dropped in weak position, while were retained in strong position with secondary vocalization, e.g. (late) Common Slavic */sьnъ/ (nom.sg.) ‘dream’ > Russian сон, Czech *sen*, Serbo-Croatian *san*, but */sьna/ (gen.sg.) > Russian сна, Czech *sna*, Serbo-Croatian *sna* (elemental exposition of facts in Carlton 1991: 165-7). How weak and strong position are determined is of no interest here, but rather the diachronic typology behind the fate of those *jery*: «weak» reduced vowels are dropped and «strong» reduced vowel are preserved and later vocalized, and the motivation behind their evolu-

⁵ The articulatory features of epenthetic vowels are in fact highly conditioned by the surrounding consonants (Blevins 2004: 155-8), so uvular assimilation should not be surprising by any mean. Besides, we can safely consider that /i/ is original, and /a/ secondary, because of the fact that in vowel systems with three units /i/ a u/, like in the case of Aleut, [i] is phonologically the shortest vowel, which would partially explain the phonetic shift of /ə/ to /i/ (Juliette Blevins, p.c.).

⁶ The epenthetic vowel has been highly productive as a «re-structuring device», since from very ancient consonant-stem nouns were transformed in new and secondary vowel-stem ones by means of it. The departure point is the resulting form before suffixes with an epenthetic vowel /i/ or an initial long /i/, since consonant-stems does not differ from a vowel-stem in /-i/, e.g. *anax* ‘club’ → pl. *anax-i-s*, third person sg. reflexive *anax-iin* ‘his own club’ vs. *anjali-x* ‘day(light)’ → pl. *anjali-s* (Atkan), third person sg. reflexive *anjali-[i]in* ‘his own day(light)’ (AG 50). In the former case, it is also attested *anax-i-x* (AD 70a) due to the paradigmatic leveling after derivate forms like *anax-iin*. An etymologically clearer instance can be found in the non-etymological vowel-stem *kanuuy.-i-x* ‘heart’ → pl. *kanuuy.-i-n* (from 1834 onwards), after paradigmatic analogy from the old consonant-stem *kanuux* → pl. *kanuuy.-i-n*, third person sg. reflexive *kanuuy.-iin* (from 1780 onwards), cfr. CSY *kanuk* ‘spot or streak of blood’ < PE(A) */kanuy/ ‘blood’ (AD 229b; CED 156a).

tionary behavior. Then, what could trigger such scenario? Undoubtedly, prosodic patterns. Vowel reduction accompanied by total syncope, as it is attested in Aleut, brings to mind prosodic patterns where intensive stress plays the main role.

Thus, if it is assumed for a while that unstressed PEA */ə/ dropped in Aleut, and stressed */ə́/ was preserved and later vocalized according to the environment, then forms like PEA */ə́řə/ ‘eye’ (CED 97a: CSY *iya*, GRI *iši*) could be elegantly explained as the result of the following evolution: PA */ə́δə́/ > */δə́/ > A *da-x* ‘eye’ (AD 158a)⁷, with */ə́/ > /a/ under the influence of the following (fricative) uvular. Following this line of reasoning, Aleut *iγi-γna-x* ‘fermented seal blubber’ (AD 178a) is supposed to go back only to PA */ə́γə́-/ ‘render oil from bubbler’ (CED 99a: CAY *əγə-* ‘became rendered (fat), release liquid’, GRI *iγi-* ‘melt (blubber, snow, ice), suppurate (wound)’), otherwise the result would have looked like ***γi-*, an inexistent word. Where does the second vowel /i/, so far considered to be (also) the continuation of PEA */ə́/, come from then? Obviously enough, it is the Aleut epenthetic vowel added after suffixes beginning with consonants, in this concrete case *-γna-* ‘(to be a) result of V’ (AD 514): */ə́γə́-γna-r/ > */ə́γə́-γna-r/ > *iγi-γna-x*. Consequently, this simple rule accounts for each instance of bases with PEA */ə́/ and full vowels too.

So far, the argument is terribly circular: there is stress because there is no /ə́/, there is no /ə́/ because there is stress. In case of pushing forward a bit further this question, what could help to break this uncomfortable circular argumentation? In the following section PA stressed/strong vs. unstressed/weak syllables will be correlated with the phenomenon of Aleut pre-aspiration, hoping to find a convincing answer about the reliability of what has been explained up till now.

3. Pre-Aspiration

The origins of Aleut pre-aspiration are obscure, but not polemic. Nobody has discussed them in any sense, so there is no room for polemics. The only thing seemingly clear is that due to the fact that no Eskimo language has pre-aspiration, then Aleut pre-aspiration must be an innovation. As in several previous cases concerning the reconstruction of Proto-Eskimo-Aleut, once again it has been committed a severe misunderstanding of linguistic method, whose standard application dictates strictly that if a correspondence cannot be explained away by some other means, then it is to be assumed to have been present in the proto-language. Is there no way of explaining the Aleut pre-aspiration without having to resort to PEA processes?

First of all, it would be appropriate to establish which are the features of Aleut pre-aspiration. From a synchronic point of view:

- [1] It appears only with sonorants, i.e. nasals /m n ŋ/, lateral /l/ and approximants /y w/. The compound grapheme <hd> is used to render the Eastern Aleut voiceless dental or postdental fricative appeared after sequences of the sort */-VtδV-/ , e.g. *iθa-nu-lux* ‘we never go out’ vs. Atkan *hit-δa-* ‘to go or come out all the time, each time, or one after the other’ (AD xviii-a, 215b). Even though diachronically /θ/

⁷ Unstressed or weak */ə́/ are noted with <̂>, while stressed or strong vowel with an acute stress <̃>.

can be straightforwardly derived from a cluster */hδ/ (Bergsland had something like that in mind when depicting it by means of such grapheme), the grapheme <hd> does not render a pre-aspirated anymore.

[2] It can appear in initial and medial position.

[3] It is phonologically redundant.

From a historical point of view, some comments are worth noting.

[1] Although synchronically pre-aspiration only touches sonorants, it must be remembered that PEA */p-/ and */m-/ were merged as /h-/ (< PA */p-/, like PEA */n-/ & */t-/ > (P)A *(*)/t-⁸), while internally merged with */m/. Curiously enough, PEA */-p-/ yields always /-hm-/, while PEA */-m-/ and */-v-/ yield /m/ (Bergsland 1986: 69-70, AD xxxi). Thus, in theory Proto-Aleut could have other combinations which unfortunately are not to be recovered from modern Aleut phonology.

[2] At least two postbases display pre-aspiration: *-hluγ-* ‘straightway, soon, sooner’ (AD 527) < PEA */-tluk-/ ‘(too) much’ (CED 428a), and *-hli-* (after consonant *-smi-*, with metathesis) ‘to still, constantly V; while V; to be rather V; *et alii*’ (AD 521-3) < PEA */-mli-/ ‘casually (on and on)’ (CED 412b). These cases illustrate one of the origins of Aleut pre-aspiration: dissimilation. Bergsland already noted this when commenting «[i]n Eastern Aleut the combination of two prelingual consonants over a morpheme border was eliminated by the deletion of the stem final *t*, possibly leaving an aspirate [...]» (AD xxviii), e.g. *ihδanan* (E) vs. *hit-δanas* (A) ‘they use to go out’.

[3] It is true that in contemporary Aleut pre-aspiration has no phonemic value. However, it could be the origin of the so-called «secondary (initial) aspiration», i.e. a probable device to differentiate words otherwise identical after the merger of pre-aspirated and non-pre-aspirated, e.g. *huyu-x* ‘(woman’s) brother’ (AD 457a-b) < PEA */uyu(raq)/ ‘younger sibling’ (CED 387b, only in Y: CAY *uyuraq*) vs. *uyu-x* ‘neck’ (AD 457a) < PEA */uya(qur)/ ‘neck’ (CED 385b: CSY *uya-quq* ‘neck’, GRI *uya-mik* ‘necklace’). For further details, *vid.* §4.

From a dialectal point of view, pre-aspirated are preserved in Atkan and Attuan, specially in initial position, but lost in Eastern Aleut, e.g. *Hla-kuča-* (A) ‘Little Boy’ (name of man) vs. *lak-aaya-* (E) ‘boy; son’ (AD 253b), or *tahla-x* (A, E 1791), *tala-x* (E 1870) ‘slave, servant’ (AD 385b). Some Attuan clusters were solved by means of metathesis, e.g. *hal(-an)* < */ahl-an/ vs. *asl-an* (A, E) ‘opposite it’ (AD 101b). In two instances Eastern Aleut has /l- and Western dialects Ø or /hn-/: *lu(h)ma-x* (E), *uhma-x* (A), *huma-x* (Au) ‘flank, side’ (AD 258a), and *huyuqaaya-x* (E), *h(n)uyuqaaya-x* (A) ‘maggot, fly larva’ (AD 258b). In Attuan /h/ and /hw/ merged with the respective nasals, i.e. /m/ and /hm/. In words with an initial vowel, the medial pre-aspiration became

⁸ It seems that PEA */p-/ & */m-/ > A /h-/ is another typical case of diachronic cycles. In phonology diachronic cycles may lead to merger, making the reality of a repeated change difficult to demonstrate without documentary support, e.g. if */p/ > /f/ and subsequently */b/ > */p/ > /f/ all that can safely be stated after the fact without historical documentation is that */b/ and */p/ merged as /f/. Although it is true that in Aleut there is no documentation supporting the merger of */p-/ and */m-/ as PA */p-/ (from which /h-/ modern dialects), the (parallel) evolution of PEA */t-/ > A /n-/ enables us to think about similar behavior in the case of PEA */p-/, i.e. first nasalization, and after that, spirantation.

initial in Eastern Aleut, e.g. *halaya-x* (E) vs. *a(h)laya-x* (A) ‘board’ (AD 51b), *(h)ungi-* (E) vs. *uhngi-* (A) ‘(his) sister’ (AD 447b), etc., and at Unalaska aspiration disappeared beyond the first syllable of a word. All these facts point out that, from East to West, there is a clear tendency to lost both pre-aspiration and aspiration.

Now, among the several features of pre-aspirated segments, Blevins (2004: 102-3) mentions their bisegmental duration. This holds true also for Aleut, where, as it has been already seen, the Attuan and Eastern dialects take initial aspiration by metathesis of former /-hC-/ groups. More interesting however, Blevins explains that this bisegmentality is mainly due to the very origin of pre-aspirated consonants, i.e. geminated or consonant clusters⁹. Several examples have been already quoted with dissimilation of consonant cluster, to which can be added *kahlu-* (E) ‘(to) shoot with bow and gun’ (AD 225b) < PEA */katluɣ(-)/ ‘(to) thunder’ (CED 161a: CSY *katuk* ‘thunder, lightning’, WCI *kalluk* ‘thunder’). If one applies the prosodic rule described in the previous section, those Aleut cases with pre-aspirated in initial position can be easily accounted for, e.g. PEA */nəpət-/ ‘stick’ (CED 229a: CAY *nəp(ə)tə-*, GRI *nipit-* ‘id’) > PA */nəpət-/ > */Npət-/ > */Nmət-/ > *hma-t(a)-l* ‘put in pocket under parka’ (AD 270a), PEA */tənu-/ ‘push or poke’ (CED 341a: CAY *ənuur-* ‘id’, GRI *tinu-* ‘swell’) > PA */tənu-/ > */Nnu-/ > A *hnu-* ‘reach’ (AD 412a), but PEA */nəməq(-)/ ‘wrap around’ (CED 226b: CAY *nəməq*, GRI *nimiq*) > PA */nəməq/ > */tməq/ > *tmax* ‘very long seaweed’ (AD 399b). These three cases not only demonstrate that initial pre-aspiration is in reality the result of cluster simplifications after syncope, but also illustrate the need for establishing a relative chronology of the internal changes that took place from PEA to Aleut: nasal dissimilation had to occur before */-p-/ and */-v-/ merged with */m/, i.e. nasal dissimilation only occurs with original PEA nasals. Thus, PA */Nm-/ underwent dissimilation, but */Np-/ did not.

Unfortunately, every case of Aleut pre-aspiration cannot be etymologically explained by resorting to ancient clusters, especially in those cases where pre-aspiration appears in internal position. Geminate, the first option mentioned by Blevins, offer the advantage that they only appear in medial position. Geminate consonants are one of the few phonological diagnostics which separate neatly Yupik and Inuit languages. If it is taken for granted that PE had geminate consonants, then Inuit preserves them, while Yupik, and traditionally Aleut, reduced them (*i.a.* Bergsland 1986: 67-8, CED xix). In Yupik new geminates appeared as a consequence of new prosodic configurations, some of them of great complexity (see in general Krauss 1985a). However, as Kaplan notes (1981: 221, 1985: 208), etymological word-internal geminates in PE are very rare. Moreover, there is no way to relate the Yupik (secondary) geminates to the Inuit geminates, unless in a couple of very concrete examples. Therefore, it is not out of the line to consider that both Inuit and Yupik branches developed independently different processes for generating geminates, maybe continuing an incipient tendency in PE as those concrete examples with genuine geminates seem to point out. What look like the conditions under which these «original» geminates arose in PE is unknown. But what seems to be true is that PEA maybe did not have geminates. Thus, if Aleut pre-aspiration should be explained as the dissolution of former geminates, those

⁹ Blevins and Garrett (1993) offer a very illustrative example of geminates > pre-aspirates.

geminate have to be proposed as an Aleut innovation, independently created, similarly to those of Yupik and (supposedly) Inuit.

Some authors, specially Bergsland (specially 1959: 8-10) and Rasmussen (1979) have argued that geminates sometimes are the result of compensatory lengthening after losing the final-consonant stem in morphological processes, e.g. */caviγ/ (sg.) ‘knife’ → */cavviγ/ < */caviγ-γ/ (du.) ‘two knives’. Other researchers, e.g. Ulving (1953) and more recently Kaplan (1982, 1985: 207-10) have argued for a prosodic configuration as the origin of geminates¹⁰. After all, prosodic patterns regulate the origin of geminates both in Yupik and Inuit. Thus, Jacobson (1985: 29-30) comments that when /ə/ is stressed and in an open syllable, the following consonant geminates in Norton Sound-Unaliq. Many different languages around the world could be enumerated where similar rules apply (Blevins 2004: 168-91). If one assumes that in PA geminates appeared in similar contexts (after open stressed syllables), then there must be a correlation between the stress determining the evolution of PEA */ə/, just explained in the previous section, and the cases of pre-aspiration (since it is argued that the origin of modern Aleut pre-aspiration lies in the dissimilation of ancient geminates).

Potential cases where lost of PEA */ə/ and pre-aspiration via geminates could be observed are offered in the following table¹¹ with provisional solutions:

Aleut	PA	PEA ¹²
<i>čahmit-</i> , <i>čihmit-</i> ‘to block, obstruct’ (AD 143a)	*/čámmə-/ < */čáppə-/	*/čapə-/ ‘block’ (CED 69a: CAY <i>capa</i> ‘barrier, curtain’, GRI <i>sapi-</i> ‘block, drive together’)
<i>či(h)mix</i> ‘track’ (AD 143a)	*/čúm̄mə/ < */čúm̄ə/	*/čumə/ ‘track, footpring’ (CED 349b s.v. */tumə/: CAY <i>tuma</i> , GRI <i>tumi</i> ‘id’)
<i>qa(h)lu-</i> ‘hot springs’ (AD 304b)	*/qálla/ < */qála/	*/qała/ ‘boil, churm’ (CED 280b: CSY <i>qala</i> ‘boiling, bubbling sound’, GRI <i>qalay-</i> ‘boil’)
<i>qi(h)luγ-</i> ‘to bark (of dog, fox)’ (AD 323b)	*/qílluγ/ < */qíluγ/	*/qiluγ-/ ‘bark’ (CED 305a: CSY & GRI <i>qiluγ-</i> ‘id’)
<i>sahmi-</i> ‘to pull oar or paddle fast’ (AD 350b)	*/sammə/ < */sáppək/	*/čapək/ ‘drop’ (CED 69b, only PI: GRI <i>sapañit-</i> ‘drop, release’)

Every step from PEA to modern Aleut dialects via PA should be revised and described by analyzing more individual cases. Examples:

¹⁰ Bergsland (1959: 8) qualified this hypothesis of «error» and had no problem to blame Ulving and Sauvaegot for their mistake. More a historiographic curiosity than a scientific statement, consonant gradation and geminate consonants put Bergsland not once in troubles. Thus, in 1945 the Norwegian linguist concluded that the reconstruction of geminates in Proto-Lapp was very dubious, given the lack of this feature in Southern Lapp. Unfortunately for Bergsland, nowadays the reconstruction of consonant gradation even in Proto-Finnic-Lapp is not a serious problem anymore (Helimski 2000: 168) as well as apparently the acceptance of a prosodic origin in explaining PE geminates.

¹¹ Unless otherwise stated, etymologies have been already proposed and partially analyzed in Bergsland’s works (mainly AD and 1986). CED’s authors repeat Bergsland’s etymologies and eventually reject them, although seemingly always after Bergsland’s consultation.

¹² The reconstruction of affricates in this paper has been done according to Alonso de la Fuente (2008b).

- (a) PE */aɣyir/ ‘oldsquaw duck’ (CED 21a: CAY *alxiar(aq)*, ECI *ayyiq* ‘id.’) and A *aal(h)η-aaɣ* (E), *aŋal-aaɣ* (A) ‘oldsquaw duck’ (AD 55a). With PEA */-ɣ-/ > PA */-ŋ-/ after the first syllable (Bergsland 1986: 86). Similar metathesis, inscribed in general dialectal processes, is described by Bergsland for another bird-name, namely E *qalŋ-aaɣ*, but *qaŋl-aaɣ* (A), *qayl-aaɣ* (Au) ‘raven’ (AD xxviii, 304a-b), but in this case there is no trace of pre-aspiration. Unfortunately, I have no suggestion as to the origin of geminate/pre-aspiration in this word.
- (b) PI */allaq/ ‘(s.th.) ripped’ (CED 18b: GRI *allaq*, SPI *allaq*) < PEA */allaq/ ‘ripped, cut’, from the verbal root */aɣy-/ ‘to tear’, may be related to Aleut *ahla-ya-x* (A), *halayaɣ* (E), *alayaɣ* (E) ‘board’ (AD 51b). CED states correctly that Yupik forms (PY */aɣayaq/ ‘cutting board’, CED 21a: NSY *ayalaq*, AAY *allaq*) are borrowed from Aleut, but fails to see the etymological relation between Aleut and Inuit. PEA geminate */ll/ can be deduced from the rules commented above: PEA */aɣy-q/ > */aɣy-q/ > PI */allaq/ & PA */alla-q/ > *ahla-*. In this case geminates can be traced back to PEA, so in theory it is trivial to argue for initial stress in Proto-Aleut¹³.
- (c) PY-S */aqəʂ(tə)-/ ‘sneeze’ (CED 39a: CAY *aqəʂtə-*, *aqəʂŋ(aar-*, Sir *aqəʂxiir-* ‘id’) is related to A *haqi-sxa-* and *haqisya-* (A) ‘to sneeze’ (AD 96a). Surprisingly enough, CED does not label these Yupik words as an Aleut loanword. Secondary initial aspiration could be a device introduced to avoid homophonies after the merger of pre-aspirates and non-pre-aspirates. In this case secondary aspiration would have been triggered by similarities between ***aqi-* ‘to squeeze’ and *aqi-* (A), with secondary vowel assimilation in *iqi-* (E, Au) ‘to run’ (AD 209b). Bergsland related these forms to PE */aqva-/ ‘to run’ (CED 41a: CSY *aqfar-*, GRI *arpaɣ-* ‘id’), however it seems he changed of opinion some time later, since in CED no Aleut cognate is mentioned anymore. Thus, I propose that Aleut *aqi-* is the historical continuation of PEA /aqə-/ ‘to run’ (CED 38b s.v. */aqə-/ ‘kick (ball)’): CAY dialectal *aqə-*, GRI *aqi-* ‘id’) > PA */aqə-/.
- (d) PE */ayayɣ-/ ‘thrust or push with a pole’ (CED 57b: CSY *ayay-* ‘id’, SPI *ayak* ‘tent pole, house post’) and A *a(h)ya-aku-* (E) ‘play dart’ (AD 115a). In CED are only quoted Aleut forms without pre-aspiration, but Bergsland records them. Aleut pre-

¹³ At this point it would be interesting to note that most of the cases of Eskimo geminated (voiceless) sonorants are in the end old Proto-Eskimo clusters after assimilation. This observation is not gratuitous. One could argue that, based on typological parallels, e.g. Blevins (1993: 268-75) describes how in Klamath, a North American native language spoken in Oregon, geminate voiceless sonorants are realized as pre-aspirated sonorants, original PEA geminate voiceless sonorants could be the origin of Aleut pre-aspirates. However, the reality offered by the available materials would be at this respect very disappointing. Thus, for the sake of argument CSY *ala* and GRI *alla* ‘another, a different one’ could have come from PE */aɣa/, but: (1) there is no even one language reflecting a pre-aspirated sonorant that could support Blevins’ typological parallel, not even Aleut, and (2) Aleut itself enables us to reconstruct a very different scenario: PEA */atə-IV/ > PA */atəɣ-a/ > */asəɣ-a/ > *asl-a* ‘point, position’ (AD 101b-102a), with regular assibilation of PA */t/ before */ə/, being PE */atla/ (CED 52a) the easiest starting point for CSY and GRI historical forms. The origin of voiceless sonorants in Eskimo is secondary (and sometimes sporadic), basically due to assimilation to adjacent stops, e.g. PE */əpnar/ ‘cliff’ > pre-CSY */əpnar/ > CSY *pəNar* (CED 114a), PE */atla/ > */atla/ > GRI *alla* (CED 52a), PE */ukyur/ ‘winter or year’ > NSY *ukYur* (CED 364b), etc. Therefore, they are irrelevant in solving the origins of the Aleut pre-aspirates. In fact, the very question about the origin of those Proto-Eskimo clusters forces us to go back to Proto-Eskimo-Aleut times, from which it is easier to see that they are secondary, i.e. in many cases they arose after Proto-Aleut branched off under rules still to be defined.

- serves this root only through derivatives. PA */áya-/ > */ayya-/ > i.a. *a(h)ya-aku* (E) ‘play dart’.
- (e) PE */at(ə)/ ‘down’ (CED 59b: CAY *acitm(un)*, GRI *at(i)-* ‘area below’, *ammut* ‘down’) is related to A *ač-a* ‘the lower part of it’ < */at-(i)a/ < PA */átə/, where /-(i)a/ seems to be a deictic element (the so-called «anaphoric 3rd person», cf. AG 48). To this comparison is usually added Aleut *ahyu-x* (du.) ‘buttocks’ (AD 121a). Bergsland derived this word from *at-* ‘low, down part’ (AD 103b) and *-yuɣ-* ‘unknown meaning’ (AD 556), thus PA */átə-yu-/ > */attyu-/ > */ahtyu-/ > *ahyu-*.
- (f) PE */civvur/ ‘to wring out’ (CED 90a: CSY *sivur-*, GRI *siffur-* <*sivfor-*> / *sixxur-* <*sivgor-*> ‘id’) has been related to A *či(h)mi-γlu-* (E), *čivilu-l* (Au) ‘to wring (washed clothes)’ (AD 143b) by both Bergsland and CED’s authors. If it is assumed that geminates are, like in case (a), original, it is necessary to identify root and suffix. To the best of my knowledge, this task remains to be done. Then, I propose that PE */civvur/ is made of PEA */čivə-/ ‘chop, plane’, only attested in PY */civə-/ ‘cut through’ (CED 87b: AAY *suγə-* ‘be cut through by water (of land)’, dialectal *cuu<γ>uk-* ‘adze’ [n.], ‘chop, plane with an adze’ [v.], CSY *səvə-* ‘cut or tear along a straight line’) and the postbase */-ur/ ‘repeated or prolonged action’ (CED 430b-431a). Thus, PEA */čivə-/ > PA */čimə-/ > */čimmə-/ > *či(h)mi-γlu-* (E), *čivilu-l* (Au).
- (g) PE(A) */kəlu/ ‘area behind’ (CED 168a: CSY *kəlu*, GRI *kilu*) > PA */kə́lú/ > A *klu-* ‘go in, get into (e.g. a bay)’ (AD 243a). A couple of examples seem to point out that PA clusters */kR/, where T is any stop and R any sonorant, are preserved without changes, e.g. PE(A) */kəpə-/ ‘cut or sever’ (CED 171a: CSY *kəpə-*, GRI *kipi-* ‘id’) > PA */kəpə-C/ > *kma-tikða-* (A), *kav-tiγya-* (Au) ‘to be brittle (breaks easily when bent)’ (AD 243b). Cf. above instances with A *tmax-* and *hnu-*.
- (h) PE(A) */mə́lɣur/ ‘water beetle’ (CED 197b: CAY *mə́lɣur*, GRI *miŋɣuq*) > PA */mə́lɣú-/ > */m̄lɣnu-/ (?) > */Nlu-/ ~ */Nnu-/ > *lu-uqa-aya-x* (E), *h(n)u-uqa-aya-x* (A) ‘maggot, fly larva’ (AD 258b). In this case it is highly probable that the uncommon three-sonorant cluster in pre-PA triggered the double solution.
- (i) PE */məcay/ ‘swampy ground’ (CED 195b: CSY *məsak* ‘bog’, NAI *misak*) is related to A *(h)ya-* (E) ‘flood tide’ (AD 461b-462a). Already Bergsland proposed that this sort of comparisons point to PEA */mətya-, with cluster */ty/ solved as affricate in PE and by simplification as /y/ in Aleut after losing the first segment */mə(t)/. Thus, PA */mətyá-/ > */mtya-/ > */myə-/ > *hya-x* ‘flood tide’. It must be assumed that the three-consonant cluster */mty/ was solved as usually by erasing /t/, i.e. the consonant taking the in-between position.
- (j) PE(A) */mətər/ ‘eider duck’ (CED 199b: CAY *mətXaq*, GRI *mitiq* ‘id’) > PA */məʒá-r/ > */Nsə-r/ > *sa-x* ‘bird, duck’ (AD 342a). With regular */t/ > /s/ before /ə/ (Bergsland 1986: 72-3) at the very beginning of the Proto-Aleut stage (cf. ft. 12).
- (k) PE(A) */pəkə(-t)-/ ‘to jump up, move off; move around (refl.)’ (CED 253b: CAY *pəkə-* / *pək<ə>tə-* ‘id’, GRI *piki-* ‘get ready to leave’ / *pikiγ-* ‘become agitated, jump up’) > PA */pəkə-t-/ > */pəkə-t-/ > A *hiki(t)-* ‘disappear; lose, miss, cast’ (AD 188a).
- (l) PE */puvə-/ ‘swell’ (CED 270b: CAY *puvə-*, GRI *pui(k)* ‘swelling, tumor’, *puir-* ‘inflate, bulge, swell (sail)’) is related to A *(h)wa-x* (E), *(h)magi-x* (A, Au) ‘smoke (as from fire, pipe, stove, volcano)’ (AD 460b) and to *(h)um-* ‘inflate, swell’ (AD

- 438a). The former is the expectable continuation of PA */púvə-/ , but the latter, according to Bergsland, must be the outcome of PEA */puvvaq/ , with the nominalizer */-q/ like in (a).
- (m) PE */qəvlər-/ ‘glitter’ (CED 301a: CAY *qəvlə-Xtə-* ‘shine, glitter’, GRI *qillir-* ‘be bright, shine’) < PEA */qəvə-/ ‘(to) shine, light’ > PA */qəwə-/ > */qəmmə-/ > *qu(h)ma-* (E) ‘to be white, to be light, bright, shiny’ (AD 335b).
- (n) PE */əqə-/ ‘shrink or contract’ (CED 114b: CAY *əqə-*, GRI *iqi-* ‘id’) > PA */əqə-/ → */(ə)qə-tyá-/ ‘to try to contract’ > */qtya-/ > *qya-* ‘to be tight’ (AD 340b), with *-ya-* ‘to try to make V’ (AD 555, CED 394 s.v. *car-* ‘try to cause to’). The three-consonant cluster was solved as in (j). From this example it must be concluded that some postbases attract the stress.
- (o) In the prehistory of Aleut there is at least one case in which pre-aspiration was blocked to avoid the merger of two bases. This instance was already noted few decades ago by Bergsland (1986: 93-4): *imli-x* ‘single hair of head’ (AD 198a) < PA */mələ-r/ < PEA */mələ-r/ ‘plug or cover’ (CED 197a-b: CAY *mələk* ‘door’, GRI *milik* ‘plug, stopper, nail head’) contains an unexpected initial prothetic vowel (with secondary vowel assimilation */i...a/ > /i...i/) whose origin can be safely ascribed to the need to avoid similar identity with *hla-x* ‘son; boy, child’ (AD 253b)¹⁴.

This etymological corpus, which covers a high percentage of Aleut words displaying pre-aspiration, enables us to propose a provisional chain of rules in order to account for every case: 1. lost of unstressed */ə/; 2. geminates after open stress syllables & nasal dissimilation; 3. PEA */-p-/ & */-m-/ & /-v-/ > PA */-m-/; 4. dissimilation of geminates & cluster simplification; 5. phonetic configuration of */ə/. Obviously, step 5 could happen earlier in the chain of rules, and I have no special reason to leave it the last one¹⁵. The assibilation of PEA */t/ to PA */s/ before */ə/ took place obviously before the lost of unstressed */ə/, that’s why it is not included in this relative chronology, since what concerns here is what happened after the lost of unstressed */ə/.

4. Summing up: toward a provisional formulation of Proto-Aleut prosody

The relative chronology of every change described in the previous two sections can be enumerated in the following chart:

¹⁴ A similar case dealing with A *iq(y)a-x* ‘single-hatch baidarka’ (AD 210b) has been recently addressed in Alonso de la Fuente (In press).

¹⁵ According to the very same rules, some of Bergsland’s etymologies can be revisited, refined or simply rejected. Thus, PEA */əpə-/ ‘to suffocate’ (CED 112b: CSY *əpə-*, GRI *ipi-* ‘id’) cannot be connected to A *hmuqati*, *uqati*, *muquti* ‘gall cover’ (AD 449a). Apart from unlikely semantics, Aleut *hmu-* can only go back to PA */Nəpə-/ or exclusive variants of */pəpə/ and */məmə/ (*vel sim.*). Other problematical word is A *čma-* ‘thick, blood’, *čma-t-* ‘clot, coagulate’, *čma-ti-x* ‘bread’ (AD 147a), which Bergsland linked to PE */civa-/ ‘boil blubber’ (CED 87b: AAY *cuatə-* ‘fry on oil’, GRI *siat-* ‘roast, melt’). Semantics as well as new phonological obstacles make unlikely this etymology. I propose that Aleut can be connected rather to PEA */čəpə/ ‘grease of food’, only attested in the derivate (?) */čəpli/ > PE */təpli/ ‘(grease of the) food around mouth’ (CED 343a: CSY *təfli* ‘particles of food or the like around mouth’, GRI *tilli-* ‘grease from food around mouth’) and A *čimči-x* ‘something caught between teeth’ (AD 142a-b; if accepted assimilation */c...l/ > /c...c/), with an obsolete, rather fossilized, suffix **-li(-)* of unknown meaning.

PEA	*/nəpət-/	*/nəməq/	*/pəkə-t-/	*/ćipə/
1	*/nəpət-/	*/nəmóq-/	*/pəkə-t-/	*/sipə/
2	*/mpət-/	*/tməq-/	*/pəkət-/	*/sippə-/
PA	3 */mmət-/	—	*/həkət-/	*/simmə-/
4	*/hmət-/	—	—	*/sihmə-/
5	<i>hmat(a)-</i>	<i>tmax-</i>	<i>hikit-</i>	<i>sihmi-</i>

Despite all these examples, an obvious question is where all the rest of expected geminates or pre-aspirates have gone. Only Aleut /-hm-/ seems to be systematically preserved, the rest of cases being seemingly freely distributed (unless the previous prosodic interpretation is endorsed and systematically applied). It could be argued that other geminates have been solved just by simplification, since combinations like */hy/, */hx/, */hδ/ ¹⁶, */hq/ or */hč/ are not allowed, so */γγ/, */xx/, */δδ/, */qq/ or */čč/, eventually */Cγ/, */Cx/, */Cδ/, */Cq/ or */Cč/, were simplified in /γ/, /x/, /δ/, /q/ and /č/. Even more important: although simplistic, it could be assumed that the earliest documentation of Aleut in general unfortunately coincided with the last remnants of pre-aspiration. From sociolinguistic is well-know that sound change is not a uniform wave, but rather several waves affecting different lexical and phonologic context layers. Phonemes /p/ and /m/ is statistically very frequent in Eskimo-Aleut languages, so it is comprehensible that they have retained better than any other the processes here described. The fact that some words have variants with pre-aspiration and other have not, seems to point out that the fate of Proto-Aleut geminates, later pre-aspirates, is to disappear, basically by merger with the non-pre-aspirates. The reduction of contrastive environments could have favored the use of aspiration (the so-called «secondary (initial) aspiration») as a device to differentiate words, e.g. *huyu-x* ‘(woman’s) brother’ vs. *uyu-x* ‘neck’. In the first case PEA */uyu(raq)/ ‘younger sibling’ (CED 387b, only in Y: CAY *uyuraq*) > PA */úyyu-/ > */uhyu-/ > *huyu-*, perhaps with metathesis like in Attuan, while in the second instance PEA */uya(qur)/ ‘neck’ (CED 385b: CSY *uyaquq* ‘neck’, GRI *uya-mik* ‘necklace’) > PA */úyyu-/ > */uhyu-/ > *uyu-*, cf. also §3(c). As usually, the merger of pre-aspirates and non-pre-aspirates has been completed in some lexical layers, but in other layers it can be still observed the intermediate stage. The tendency to merge these phonemes can be observed directly in a larger perspective if one pays attention on recent phonological works dealing with Aleut. Both Venniaminov at the end of the 19th c. and Bergsland in the middle of the twentieth century recorded extensively the presence of pre-aspirated phonemes, already in an advanced stage of variation and even lost. In fact, at the end the same century, in the collective paper by Taff *et alii* (2001: 237) it is affirmed that, contrary to the information contained in Bergsland’s dictionary, any of the consulted informants actually pronounced

¹⁶ If every instance of such cluster would have been solved like in the case of the marginal Eastern Aleut phoneme [θ] < */hδ/ < */tδ/ (cf. §3[1]), i.e. by frication or the like, then the entire consonantal system would have resulted in a completely different fashion than actually it is.

those phonemes. Amazing as it is, the team with which Taff worked included the most renowned collaborator of Bergsland and currently maybe the foremost specialist in Aleut, namely Moses Dirks. All in all, it turns out that historical linguists may have been witnesses of the end of a very important period in the (pre)history of the Aleut language¹⁷. Thus, according to Penny's well-known chart to exemplify diachronic variation (2000: 4), Aleut pre-aspiration recording could be rendered in the following one:

	Proto-Aleut		Aleut	
Stage 1	*/qiluy-/	*/qilluy-/	—	—
Stage 2	—	*/qilluy-/	*qihluy-	—
Stage 3	—	—	qihluy-	qiluy-
*Stage 4	—	—	—	qiluy-

As it can be easily deduced, linguists like Bergsland were facing Stage 3 at the time of their field work. Stage 4 appears starred because the transit from Stage 3 has not been completed, but expectably it will be in the course of not many years. On the other hand, *qihluy- in Stage 2 is starred for it can only be told about this word that actually had two variants, the stage when it had only one (the pre-aspirated one) being a reconstruction and part of the hypothesis argued for here.

5. Proto-Eskimo-Aleut */-nə-/ and */-ŋə-/

Once the prosody of Proto-Aleut has been provisionally described, we can account quite easily for the unsolved problem which poses the evolution of PEA sequences */-ŋə-/ and */-nə-/ in Aleut. Bergsland pointed out few years ago that beyond the first syllable PEA */-ŋ-/ can be preserved in Aleut by means of -ŋ- or can be simply lost (1986: 86). To illustrate the last option, Bergsland offered the famous example «Aleut *ila-a* ‘part of it’ : CSY *ila-ŋa* ‘id’» (see AD 190b-191a-b, CED 128b-129a), where it is possible to observe that certainly PEA */-ŋ-/ is lost in Aleut. Bergsland was obviously right, but he did not make more concrete the environment nor the conditions under which such lost could have taken place. However, according to what has been explained in sections §2-4, it is possible to explain all these cases as follows (see [a] for philological data):

¹⁷ Russian loanwords are of little help. Apart from the interesting behavior of a couple of cases, e.g. Russian лопátка → luhmaat(a)ka-χ (E 1805, 1950), lupa(a)t(a)ka-χ (E 1909), lupaatxi-χ (A 1860), luvaatki-χ (Au 1909) ‘shovel’ (AD 258b), табák → tamaaka-χ (E 1909, <Tamac> in 1778), tahmaaka-χ (E 1978), tavaaka-χ (Au 1909) ‘tobacco’, it seems with retention of archaic pronunciation up till 1970s, the rest fits the expected behavior, i.e. lack of any indirect evidence of the processes under analysis due to obvious chronological considerations.

1	*/tə́nəɣ-/
2	*/tə́Cɣ-/ (where C could be /n/ or /ɣ/)
3	—
4	*/təɣ-/
5	tɨɣ-

The following list contains the material and explanation for each (new) case where it can be observed the reduction of the PEA sequences */-nə-/ and */-ŋə-/.

- (a) PY-S */tə́nəɣ-/ ‘press down on or against’ (CED 340b: CAY *nəxtə-* ‘id’) : *tix-six* ‘to press down’, *tɨɣ-alux* ‘to rider between gunwale and hatch in baidarka; sth to sit on, support’. Proposed by Bergsland, but with reserves (AD 398a, CED 340b);
- (b) PE */qə́nər-/ ‘be angry’ (CED 297b: Sir *qə́nərər-* ‘be insulted’, GRI *qinir-* ‘groan, grumble’) : *qaxu-* ‘to be mean, grumpy, always mad; wild, fierce, mean; brutal, brutality’ (AD 297a). No previous etymology. PA */qə́nər-/ > */qə́Nɾ-/ > */qər-/ , with */ə/ > /a/ after uvular. The irregular correspondence A -x- : PE *-r- is the only negative aspect of this etymology. It is worth noting that AAY *qə́na-* ‘be sick, ill’ and CAY (dialectal) *qə́na-* ‘id’, the single survivors of PY */qə́na- ‘be ill’ (CED 297b) were related by Bergsland with A *na-* ‘to hurt, injure, maim (several)’ (AD 280b). If it assumed that the Yupik forms are somehow related with PEA */qə́nər-/ , as CED’s author do, this enables us to consider that PE had in theory a movable accent, whose position depended upon the suffix (i.e. it attracts or repels the stress). Thus, PA */qə́nər-/ vs. PA */qə́nə́-/ > */qna-/ > *na-*, as expected with different results.
- (c) PE */qir̄nər-/ ‘be black or dark’ (CED 308b: CAY *ərnəXtur(aq)* ‘blue, grey fox’, GRI *qir̄nir-* ‘id’) : *qaxčax-* ‘to be dark, to be back’ (AD 295b). No previous etymology. Since there is no postbase */-čax-, two options should be considered: (1) this is an obsolete postbase of the kind commented by Bergsland (1986: 104-5), or (2) it is necessary to posit a stem */qix- + postbase -t-, with palatalization after the (also maybe obsolete) postbase -aɣ- (AD 472), like in *aɣ.u-t-* ‘to hide’ → toponym *Aɣ.u-č-aɣ-is* (AD 40b, map 19, 629, n° 357). Thus, PA */qir̄nər-/ > */qir̄N(r)/ > */qir-/ , so in */qix-t-aɣ- > *qax-č-ax-six*, with the somewhat doubtful vowel assimilation *i-a* > *a-a* (Bergsland 1986: 91). The next example shows that postbase -aɣ- is used as well in the derivation of a color: *xu-t-* / *ux-t-* ‘to fade’ → *xu-s-aɣ-* ‘to be yellow’. This instance also shows the irregular sound correspondence A -x- : PE *-r-, already observed in (b).
- (d) PY-S */cinək/ ‘bruise’ (CED 80b: CAY *cə́nək* ‘id’) : A *či-δɣ.i-* ‘to be green or blue, to have a bruise’ (AD 135b). No previous etymology. PA */č̄inək/ > */č̄iNk-/ > /č̄i(k)-/. I cannot offer an explanation about what happened in the end with PE(A) */-k/, but its participation to trigger the lost of the nasal is essential. Since the hypothetical stem */č̄i- is attested only with the suffix -δɣ.i-, one could assume an anomalous cluster simplification: *č̄ik-δɣ.i-χ* > *č̄i-δɣ.i-χ*.
- (f) PE */uŋər-/ ‘lace up’ (CED 375a: CSY *uŋləɣ-* ‘gather or draw together with folds or pleats, wrinkle with age, withdraw from activity’, GRI *uŋir-* ‘id’) : *uɣ.(i)-* ‘be-

longing' (AD 422a), more clearly in *uy.a-l* 'to be had' (A) or *ux-t-*, *uxsix* 'to steal (appropriate)' (A). No previous etymology. PA */úŋə-/ > */uNr-/ > */ur-/.

All these example contrast with instances where those sequences are preserved, like in the following well-know case: PE */nəŋə-t-/ and */nəŋ-li-/ 'be or get cold' (CED 227b-228a: CSY *nəŋli-*, GRI *nillir-* 'id') : A *ŋa-t-* 'get cool' and *ŋa-li-* 'cool off' respectively (AD 285a-b), where it can be observed the regular lost of unstressed */nə-/ , and the expected outcome A *ŋa-* < */(-)ŋə-/ ¹⁸.

6. Aleut x- (ɣ.-)

According to the phonological description of the Aleut language provided in Bergsland (1998: 16-46, esp. 20 and 22-3), the uvular fricatives, both voiceless and voiced, are extremely rare in word-initial position¹⁹, consequently only a small frame of Aleut lexicon displays those phoneme initially (AD 166-7). Most of these words are loanwords, in which Aleut x- or ɣ.- were used to render different sort of velar stops or fricatives²⁰. However, researchers have made a generalization of this fact and they have assumed that the presence of these phonemes is by itself a definitive diagnostic of loanwords. Thus, words containing them do not deserve much attention. Be it as it may, such analysis is extremely simplistic and calls for solution.

Words containing x- or ɣ.- which in origin are loanwords can be classified in two groups:

¹⁸ The same explanation accounts for PE(A) */pəŋə-/ 'be worried' (CED 255a: CSY *pəŋə-*, ECI *piŋi-* 'id') > PA */pəŋə-/ > */pəŋə-/ > A *ŋaay-* 'be afraid, apprehensive' (AD 285b) or even the problematical PE(A) */kinə-/ (CED 175a: CSY **kinə-*, GRI *kinir-* 'have run off (water)') > PA */kinə-/ > */k(i)na(r)-/ > A *kna-δy-* 'dry, not dressed' (AD 243), both well-known etymologies already pointed by Bergsland and CED's authors.

¹⁹ In the specialized literature it is even possible to find comments like this: «There are also voiced and voiceless velar and uvular fricatives, but they occur only in medial and final position» (Taff *et alii* 2001: 234). However, farther in the paper the authors offer two words with initial voiceless fricative: *xa-x* '(halibut) stomach' and *xaaya-x* (with variant *γ.aaya-x*) 'steam bath'. In a previous comment it is indicated that «[m]any **d**, **g** are in loan words». In the next section devoted to uvular fricatives is stated that «[v]oiceless velar and uvular fricatives occur in medial and final position» (Taff *et alii* 2001: 268-9). In the bibliography is not listed Bergsland's grammar, so the authors hardly could be aware of this phonetic oddity. In addition, the materials used along the paper were obtained after working with speakers of the Atkan area, where the presence of x- (ɣ.-) is attested almost only in the two words quoted above.

²⁰ Interestingly enough, one wonders why uvular fricatives were used to adopt Russian velar stops and fricatives, when the Aleut language has velar fricatives. A quick look on the lexicon where velar fricatives appear in word-initial position (AD 162-6) reveals a high percentage of Russian loanwords, specially when Russian words shows *gV-*, where V[+back], e.g. *γyuda-x* (Ea, A) 'year', from Russian *год* 'id', or *xud-i-l* (A) 'to deal, distribute', from *khod-i-t'* 'to deal, play cards' (AD 165b). As far as the Russian voiced stop *g*, it is pretty sure that dialectal spellings in Siberia produced in word-initial positions voiced velar fricatives. This fact, however, does not explain why uvular fricatives were also popular to adopt Russian velar fricatives. In native words, ɣ- and x- are due to the lost of word-initial segments (C)V, e.g. *γi-δy-i-x* (A) 'breeze', *γi-δy-i-* (A) 'blow' (AD 164a) < */Nγə(r)-/ < PA */nəŋə-/ < PE(A) */nəŋə-/ 'wind in (in Alaska from north)' (CED 224a:), *γu-x* (Ea, A) 'tube, tubular opening', *γu-* 'to penetrate, go through' (AD 164b) < PA */əŋy-/ < PE(A) */əŋy(-t)-/ 'to go through (intr.); to pierce (tr.)' (CED 100b: CSY *γyutə-* 'shoot; dance vigorously', GRI *iyut-* 'sting (insect)'), *xa-δəŋ-* (A) 'move (espec. walk) fast' (AD 162a) < */kxa(γ)-/ < PA */kəŋəŋ-/ < PE(A) */kəŋəŋ-/ 'do fast' (CED 164a: CAY *kəŋəŋ-* 'be a fast eater', GRI *kiŋaat-*, old orthography <kigait>'be slow').

(I) Russian loanwords:

- (a) *ɣalaanka-x* (Ea) ‘jeans’ (AD 166a) ← Russian голлэндка ‘jumper’ (ЭСРЗЯС 154). The outcome in Aleut shows that in Russian the pronunciation of the word-initial stop /g-/ was /ɣ-/ , this feature being typical of the Southern Russian dialects, as well as of those located in Siberia.
- (b) *ɣayki-x*, *ɣ.ayki-x* (Ea), *ɣayku-x* (A) ‘dog salmon (*Oncorhynchus lagocephalus*)’ (AD 166b) ← Russian хайко ‘id’, from Itelmen *kajku* ‘id’ (Anikin 2000: 236-7, 602, Dal’ 1126b). The (unknown) origin of the Itelmen word is irrelevant for the purpose of this paper.
- (c) *ɣraama-x* (A) ‘temple’ (AD 166b) ← Russian храм ‘id’.
- (d) *ɣuluudna-* (Ea) ‘to eat s.th. cold’ (167b) ← Russian холодно-е ‘cold’ (ЭСРЗЯС 652). Aleut meaning is due to the ellipsis in Russian (есть) холодно-е (мясо) ‘(to eat) cold (meat)’.
- (e) *ɣulustaaka-x*, *xulustaaka-x*, *kulustaaka-x* (all of them Ea), *hulustaaka-x* (A) ‘bachelor, fur seal bull too young to have a harem, big sea lion bull’ (AD 167b) ← Russian холостяк ‘bachelor’ (ЭСРЗЯС 652). The last four words reflect the normative pronunciation of Russian /x/ and consequently they are adapted in Aleut by means of ɣ. The variety of forms in (e) can be due to different dialectal pronunciations of Russian /x/ or to irregular treatments from the behalf of the Aleut speakers.

(II) Non-Russian loanwords:

- (f) *ɣaaya-x* (Ea), *ɣ.aaya-x* (Ea & A) ‘steam bath, bathhouse’ (AD 166b) ← Tlingit *ɣaay*. Bergsland characterized this loanword as having only Eastern pedigree (AD 657), maybe because he thought that the Atkan form was borrowed from the Eastern dialects. It makes sense, taking into account that this is the single instance of Eastern and Atkan dialects sharing exactly the same phonetic shape (cfr. differences in [b] and [e]).

Interestingly enough, the origin of the native vocabulary containing ɣ- (*ɣ.-*) has not been studied yet:

- (g) *ɣu-la-*, *ɣ.u-la-* (Ea) ‘to wash’ (AD 167a) is compared by Bergsland (AD 167a) and with */ər-rur-/ ‘wash or rinse’ by CED (115b: *CAV* *ərur-*, *GRI* *iXXur-*), only productive in Inuit). I propose that even the base *ɣu-* could be linked with the original Eskimo base */ərə-/ ‘run or fade (color)’ by means of PA */ərə-/.¹ In this case, Aleut ɣ- (*ɣ.-*) is the typical result of PEA sequences */[C]əCV/(²¹).
- (h) *ɣut-* (lemma in AD 167, cross reference to 425b-426a), in *ɣuta-* ‘faded grass’, *ɣut-mi-lix* (Ea) ‘to bleach [grass]’, *ɣusix* (Ea) and *ux̣t-*, *ux̣six* (Ea), *qusix* (A) ‘to fade, wither’. In Netsvetov’s Russian-Atkan dictionary (1840) is noted <u̇gsix> too,

²¹ It should be kept in mind that <ɣ> is a graphic convention used by Eskimologists, that does not apply for Aleut, where <x> (<ɣ.> is the grapheme for the voiced pair) appears instead. Both graphemes, the «Eskimo» and the «Aleut», render the same phoneme: voiceless uvular fricative. This piece of information is essential to understand the sound correspondences of the uvular fricatives and do not be misled by orthographic conventions (Bergsland 1986: 83-5).

maybe a loanword from Eastern dialects. There is no problem to accept that after metathesis *χut-* ~ *uχt-* are the same word, since the meaning of both of them is virtually the same. According to Bergsland and CED, these words are of unknown origin. I propose that they are still connected with (f): */əṛə-/ ‘run or fade (color)’ > PA */əṛə-t-/ > *χu-t-* > *uχ-t-* ‘to fade’, the latter after metathesis.

- (i) *γ.anax* (A) ‘glow’ is analyzed *γ.a-na-χ* by Bergsland (AD 166a). It can be compared, morpheme by morpheme, with PY */əṛ-nə-q/ ‘day’ (CED 116a: CSY *ərnəq*). For this it is only necessary to accept that the PEA */əṛə-/ ‘dawn’ (CED 116a, only in PY-S) evolved into Proto-Aleut */əṛə-/ > *γ.a-*, with different vocalism maybe to avoid similar results with the PEA */əṛə-/ ‘run or fade (color)’ (see [h], [g]). For another instances of metathesis, see (f).
- (j) *χα-ni-χ* (Ea) ‘red sky at dawn and sunset, afterglow’ (AD 166a) could be, as noted by Bergsland, another derivate of the above proposed root *γ.a-* < PA */əṛə-/ < PEA */əṛə-/ , this time a deverbal noun after the causative postbase *-ni-* (AD 537). This pair of words, i.e. *γ.anax* (A) and *χα-ni-χ* (Ea), shows the dialectal alternation *χ-* (Ea) ~ *γ-* (A, Au).
- (k) The toponym *Χatačxan* (E) is left unanalyzed by Bergsland (AD 166b) from an etymological point of view. If it is taken as granted that the root is *χα-*, corresponding with the very same element analyzed in (i), the morphological segmentation may look like as follows: *χα-ta-čx-an*, with *-ta-* ‘to have made V, to keep V-ed’ (AD 552) and *-čx-*, which has no apparent meaning and it occurs only in two toponyms (AD 494): *Sita-čx-i-χ* (Ea) ‘(the) other side’ (non-literal meaning), from *sita-* ‘isthmus’ (AD 364, map 9, 611, n° 159), and *Anu-qi-čx-alux* (A), from *anu-* ‘to flow, steam’ (AD 79, map 20, 631, n° 462). The last segment must be interpreted as the epenthetic vowel /a/ plus the plural mark *-n*.
- (l) *χα-χ* (Ea) ‘front of belly part of fish, down to the anus’ (AD 166a) has not been etymologized by anybody. However, it resembles suspiciously to *ay.δa-χ* ‘stomach, bladder filled with blubber, seal oil’ (AD 37b: Au, A, Ea). If the last word is segmented *ay.-δa-χ*, the root *ay.-* seems to be the non-metathesized variant form of *χα-χ*, as happened in (f) and (g). The relation of all these forms with PE */nəṛə-/ ‘to eat’ (CED 230b: CAY *nəṛə-*, GRI *niri-* ‘id’) by means of PA */nəṛə-/ > *γ.a-* ‘to clean the fish to eat’ is straightforward. The historical relation between the (general) act of eating and fish(ing) is already reflected in another pair: PE */nəqə/ ‘food’ (CED 230a: CSY *nəqa*, GRI *niqui* ‘meat’) and Aleut *qa-χ* ‘meal; fish’ (AD 289a-b).
- (m) *χαasi-x* (Ea), *haasi-x* (A, Au) ‘double-paddle for baidarka’ (AD 166a) is considered by Bergsland to be a continuation of PE */paŋəṛ-un/ ‘kayak paddle’ (CED 250a: CAY *paŋrun*, GRI (pl.) *paatit*) through PA */haaγ.usi-χ/ (I do not know why long vowel). This proposal presents two problems. The first one concerns morphophonemics. Bergsland explains in the postbases section of his dictionary that the postbase *-Vsi-* takes the shape *-asi-* mostly after the uvular or velar fricative of a polysyllabic stem, e.g. *aluy.-* ‘to write’ → *aluy.-asi-* (AD 490, see also AG 109). If the (late-late) PA form is emended according to this morphophonemic rule, i.e. */paŋəṛ-asi-χ/, it is easier to understand the haplogy which accounts for the lost of **-γ.a-* in (late-early) PA **/γ.aγ.asi-χ/* after assimilation of the word-

initial */h-. The second problem, i.e. the fate of */-ŋə-/, has been already solved in §5. Thus, early PA */páŋər-/ > */paŋr-/ > (*parr-/? > */pahr-/? >) */har-/ > */hay.- in */hay.-asi-x/ > */γ.aγ.asi-x/ > *xaasi-x* (Ea), *haasi-x* (A, Au).

- (n) *xuči-* (Ea) ‘to glance sideways out of corner of eye (without turning the head)’ (AD 166a-b) has no etymology. It could be related, after metathesis, to *uxči-* (Ea) ‘to be clumsy’ (AD 423b), in analogy with (g) or (k). In this case, however, the disparity of meanings makes harder to see the relation, if any at all.

In sum, the Aleut phonemes *x-* ~ *γ-* appear to be the result non-systematic changes, mainly assimilations or metathesis.

7. Conclusions

Aleut branched off Proto-Eskimo-Aleut maybe four millennia ago (*i.a.* Woodbury 1984: 61, McGhee 1981). In contrast, the Aleut (linguistic) history we know with direct documentation begun no earlier than three centuries ago. Thus, there is a blank of at least 3,700 years, time enough to many things on which we have no direct witnesses happened. It goes without saying that this is a fact extremely common that researchers interested in the study of non-recorded or barely recorded languages should face every day. The study of such «deep and unknown prehistory» can only be done by noting synchronic abnormalities and describing them diachronically with the help of internal reconstruction. In this paper I chose to analyze two of the abnormalities: the Aleut outcomes of PEA */ə/ and the origin of Aleut pre-aspiration. The behavior and distribution of such phonetic elements point out that a very ancient system of geminates worked in the language as early as Proto-Aleut, in some cases even as Proto-Eskimo-Aleut. What is the kind of connection between PA and PE geminates must be addressed in a following studies dealing also with the broader consequences of this hypothesis.

As far this paper is concerned, I proposed here to postulate a very simple rule affecting the prosody of Proto-Aleut (eventually Proto-Eskimo-Aleut), according to which an intensive stress determined both the evolution of PEA */ə/ and the rising of geminates. The theory exposed here is in line with what has been described by Ulving (1953) or Kaplan (1983, 1985: 207-10) as the hypothetic original initial stress in Proto-Eskimo by means of which could be explained some common patterns in the configuration of Yupik and Inuit geminates. As pointed previously, this initial stress would explain also the curious phenomenon occurring in Sirenik²². In fact, for Aleut it is necessary to extend the influence of such intensive stress to the second syllable too, maybe according to the same rules applying in Sirenik: first stressed syllable in disyllabic words, second stressed syllable in polysyllabic words. Following the lost of

²² Bergsland maybe indirectly approved this hypothesis when considering that the end of the Eskimo ergativity in Aleut came to be after the apocope of final vowels in the case markers Instrumentalis /-mi/ and Locative /-məŋ/ (now to be analyzed */-məŋ/), confused then with the Ergative */-m/ (Bergsland 1997b, *vid.* also Fortescue 1999: 291). Such «apocope» could be better understood if it is accepted that Proto-Aleut displayed an intensive stress at the beginning of the word.

unstressed */ə/ in Aleut and the rising of geminates after open stressed syllable(s), some consonant clusters (in theory intolerable) were avoided introducing an epenthetic vowel, whose quality depends upon the environment, or simplifying them, while geminates dissimilated to pre-aspirates. The price for solving the distribution of */ə/ and the origin of pre-aspiration is really low: although speculative, the scenario set up here is based on well-known diachronic typological traits, most of them observable in other Eskimo languages. It accounts almost for every case showing (lost of) PEA */ə/ and pre-aspiration, and those which in theory are counterexamples²³, as well as apparent seemingly insufficiencies of the hypothesis, e.g. no trace of fricative, affricates or other stops than */p/ with geminate/pre-aspirate pair, can also be explained assuming that pre-aspiration was partially lost from 17th c. onwards. What the first documents containing or describing Aleut material keep telling us is that pre-aspiration is progressively disappearing, as following records have shown. This process of erasing pre-aspiration culminated at the end of the twentieth century, when speakers of Aleut anymore recognized it²⁴.

Of course, only further research will help to clarify the problematic issues posed by this proposal. However, I hope this paper will contribute to discuss and improve our (for the time being limited) understanding of the (pre)history of the Aleut language.

ABBREVIATIONS AND ORTHOGRAPHIC CONVENTIONS

A(A) = Atkan (Aleut), AAY = Alutiiq Alaskan Yupik, AD = Bergsland (2001²), AG = Bergsland (1997a), Au = Attuan (Aleut), CAY = Central Alaskan Yupik, CED = Fortescue, Jacobson, and Kaplan (1994), CSY = Central Siberian Yupik, Ea = Eastern (Aleut) dialects, ECI = Eastern Canadian Inwit, GRI = (West) Greenlandic, I = (Iñu-piq-)Inuit, NAI = North Alaskan Inuit, NSY = Naukanski Siberian Yupik, PA = Proto-

²³ Remain unanswered those cases where there is no epenthetic vowel between root and suffix, e.g. *A ik-la* ‘wood, firewood’ (AD 189a) < PA */əkə-/ < PE(A) */əkə-/ ‘to burn’ (CED 101a: CAY əkə-, GRI iki- ‘be lit, smoke’), although the reason why they appear seems to be the environment: TT > T_əT, where T = stops, fricatives and affricates, but TR ~ RT are not solved by introducing epenthetic vowels. Unfortunately, there are several exceptions to the latter, cf. §3(f).

²⁴ For the sake of understanding, a parallel situation could be easily set up to try to grasp the nature of the facts faced in this paper. Imagine for a while that Romance languages were really poor attested, with scarce traces of Classical Latin and very few of Vulgar Latin. If a researcher would like to study, say, the (pre)historical antecedents of Spanish /ʎ/, the situation could look like as follows: some Classic Latin remnants seem to point out that the origin of this phoneme was /pʎ-/ or /kʎ-/ in initial position, e.g. PLŌRĀRE > *llorar* [ʎo(rar) ‘to cry’ or CLAMĀRE > *llamar* [ʎa(mar) ‘to call’], but /-ʎ-/ in internal position, e.g. GALLUS > *gallo* [ga(ʎo) ‘roster’], however blocked when following a consonant after syncope, e.g. GALLICUS > */gal(l)ku(s)/ > *galgo* [(gal)go] ‘a k. of dog’. Even more, after checking out the dialectal distribution of the phoneme under study, the researcher discovers that some speakers pronounce it as [ʒ] or [ʒ̃] due to the merger with <y> = [ʒ] or [ʒ̃] (according to the region), i.e. the so-called «yeísmo» phenomenon (Penny 2000: 120-1, 132), so minimal pairs like *mallo* ‘millet’ vs. *mayo* ‘may’ have been lost. Many speakers do not recognize the phoneme [ʎ] anymore, even though they still write it down. What would the scenario reconstructed by the researcher look like? Would the researcher be able to recognize the existence of a very process, called «(Romance) lenition» (e.g. /-pp-/ > /-p-/ , /-p-/ > /-b-/ , /-b-/ > /-β-/ , etc., *vid.* Penny 1993: 74-84), and the participation of geminated /l/ in it? Identical situation has been described here for Aleut pre-aspirated: different origins in initial and medial position, merger with other phonemes, and probable traces of a very ancient system of geminates.

Aleut, PE = Proto-Eskimo, PEA = Proto-Eskimo-Aleut, PIE = Proto-Indo-European, Sir = Sireniki, SPI = Seward Peninsula Inuit, Y = Yupik, ЭСРЗЯС = Anikin (2003).

Though an official writing system was designed for Aleut in 1972 by Bergsland (see AD xvi-xxiv), this paper will use the orthographical conventions in Bergsland (1986: 66-7), with the exception of pre-aspirated consonants, which I will write <hC> instead of capital letters, e.g. <hw> and not <W>; the uvular and velar fricatives are written <x̣>, <ɣ̣>, and <ɣ̣>, instead of <x̂>, <ĝ>, and <ĝ> respectively; the voiced dental fricative is written <ð> instead of <d> (in Eskimology this sound is written <ř> or even <ð̂>, but for the sake of clarity we will adopt the same orthography as in Aleut); the palatal stop is written <č> instead of <ch>; and the voiced velar nasal is written <ŋ> instead of <ng>.

8. Bibliographical references

ALONSO DE LA FUENTE, José Andrés.

- 2006/07 «Etymological Notes on Aleut (II)». *Folia Orientalia* 42/43: 325-337.
 2008a «Etymological Notes on Aleut (I)». *Linguistic and Oriental Studies from Poznań* 8: 105-15.
 2008b «Proto-Eskimo-Aleut *<t_{1/2} c_{1/2}> and *-ty-». *Linguistic and Oriental Studies from Poznań* 8: 97-104.
 2008c «Terminología cromática aleuta». *Revista Española de Antropología Americana* 38 (1): 75-89.
 2009 «Bering Island Aleut *anata-x* ‘Japanese’». *Studia Orientalia* 107: 7-15.
 In press «Urban legends. Turkish *kayık* vs. ‘Eskimo’ *qayaq*». *Studia Linguistica Universitatis Iagellonicae Cracoviensis*.

ANIKIN, Aleksandr E. (= АНИКИН, А.Е.)

- 2000 Этимологический словарь русских диалектов Сибири. Заимствования из уральских, алтайских и палеоазиатских языков, 2nd edition. Москва & Новосибирск: Научная книга.
 2003 Этимологический словарь русских заимствований в языках Сибири. Новосибирск: Наука.

BLEVINS, Juliette and Andrew GARRETT

- 1993 «The Evolution of Ponapeic nasal substitution». *Oceanic Linguistics* 32: 199-236.

BLEVINS, Juliette

- 1993 «Klamath laryngeal phonology». *International Journal of American Linguistics* 59 (3): 237-279.
 2004 *Evolutionary Phonology. The Emergence of Sound Patterns*. Cambridge: Cambridge University Press.

BERGSLAND, Knut

- 1959 «The Eskimo-Uralic Hypothesis». *Journal de la Société Finno-Ougrienne* 61: 1-29.
 1966 «The Eskimo Shibboleth *inuk/yuk*», in *To Honour Roman Jakobson. Essays on the Occasion of his Seventieth Birthday*, vol. 1, pp. 203-221. The Hague: Mouton.
 1986 «Comparative Eskimo-Aleut Phonology and Lexicon». *Journal de la Société Finno-Ougrienne* 80: 63-137.

- 1989 «Comparative Aspects of Aleut Syntax». *Journal de la Société Finno-Ougrienne* 82: 7-80.
- 1997a *Aleut Grammar. Unangam Tunuganaan Achixaasix*. Fairbanks: ANLC.
- 1997b «How Did the Aleut Language Become Different From the Eskimo Languages?», in *Languages of the North Pacific Rim*, Osahito Miyaoaka & Minoru Oshima, eds., vol. 2, pp. 1-17. Kyoto: Kyoto University.
- 2001 *Aleut Dictionary. Unangam Tunudgusii*, 2nd edition. Fairbanks: ANLC.
- CARLTON, Terence R.
1991 *Introduction to the Phonological History of the Slavic Languages*. Columbus: Slavica Publishers.
- FORTESCUE, Michael
1999 «Polysynthesis in the Eskimo-Aleut family», *STUF* 52 (3-4): 282-297.
- FORTESCUE, Michael, Steven JACOBSON, and Lawrence KAPLAN
1994 *Comparative Eskimo Dictionary with Aleut Cognates*. Fairbanks: ANLC.
- HELIMSKI, Eugene A. (= E.A. Хелимский)
2000 «Proto-Uralic Gradation: Continuation and Traces», in *Компаративистика. Уралистика: Лекции и статьи*, Е. Хелимский, pp. 167-90. Москва: Языки русской культуры.
- JACOBSON, Steven
1985 «Siberian Yupik and Central Yupik Prosody», in *Yupik Eskimo Prosodic Systems: Descriptive and Comparative Studies*, Michael Krauss, ed., pp. 25-45. Fairbanks: ANLC.
- KAPLAN, Lawrence
1981 *Phonological Issues in North Alaskan Inupiaq*. Fairbanks: ANLC.
1982 «Consonant Alternation in Inupiaq Eskimo». *IJAL* 48 (4): 385-393.
1985 «Seward Peninsula Consonant Gradation and Its Relationship», in *Yupik Eskimo Prosodic Systems: Descriptive and Comparative Studies*, Michael Krauss, ed., pp. 191-210. Fairbanks: ANLC.
- KRAUSS, Michael
1985a *Yupik Eskimo Prosodic Systems: Descriptive and Comparative Studies*. Fairbanks: ANLC.
1985b «Sireniki and Naukanski», in *Yupik Eskimo Prosodic Systems: Descriptive and Comparative Studies*, Michael Krauss, ed., pp. 175-190. Fairbanks: ANLC.
- MCGHEE, Robert
1981 *Canadian Arctic Prehistory*. Toronto: National Museum of Man.
- PENNY, Ralph
1993 *Gramática histórica del español*, trans. José I. Pérez Pascual. Barcelona: Ariel.
2000 *Variation and change in Spanish*. Cambridge: Cambridge University Press.
- RASMUSSEN, Jens Elmegård
1979 *Anaptyxis, germination and syncope in Eskimo: A diachronic study*. Copenhagen: Linguistic Circle of Copenhagen.
- TAFF, Alice, Lorna ROZELLE, Taehong CHO, Peter LADEFOGED, Moses DIRKS, and Jacob WEGELIN
2001 «Phonetic structures of Aleut». *Journal of Phonetics* 29: 231-271.

ULVING, Tor

1953 «Consonant gradation in Eskimo». *IJAL* 29: 45-52.

WOODBURY, Anthony C.

1984 «Eskimo and Aleut Languages», in *Handbook of North American Indians. Vol. 5: Arctic*, David Damas, ed., pp. 49-63. Washington: Smithsonian Institution.