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FINNIC GRADATION: TYPES AND GENESIS *

Finnic grade alternation, or briefly: gradation, is worth one more study; first, in order to acquire a still better understanding of it and, second, because, due to its multistadiality, it has good classificatory properties and, hence, should yield some new evidence on the genesis of Finnic dialects.

Gradation in Finnic has been studied for a long time. There are several theories about its age and development in different Finnic languages and in the Finnic languages in general (cf. Castrén 1839; Veske 1873; Setälä 1891 : 116, 123; 1896, 1912; Kettunen 1922 : 57—59; 1928, 1938; Collinder 1929; Posti 1938, 1942; Ariste 1947, 1959; Ravila 1951; Tauli 1953—1954; Viitso 1962; Harms 1964 : 110; Kangasmaa-Minn 1964, 1968, 1970; Bańcerowski 1968; Leppik 1968, 1975 : 14—26; Itkonen 1970; Hammarberg 1974). Still far not all that is related to the gradation is clear. The more or less reliable results of the study of Finnic gradation are (1) the formulation of conditions of its rise (for the most part already by Castrén (1839 : 15—16), (2) the knowledge that gradation is not of Proto-Uralic or Proto-Finno-Ugric origin, (3) the establishment of the existence of different varieties of gradation.

It must be noted that the term gradation has here two meanings, indicating, first, the synchronic paradigmatic alternation of the (strong and weak) grades of a single sound, a cluster, a stem or a suffix, and, second, a former change of the grade of a stem or a suffix, in which case the corresponding stem or suffix may not participate or even have participated in a paradigmatic alternation.

The following varieties of gradation are distinguished: (1) suffixal vs radical, (2) that of single obstruents (more usually: stops) vs geminate obstruents or of quality alternation or consonant mutation vs quantity alternation. The need for distinguishing suffixal gradation arises in historical grammar as suffixal gradation is one reason for the suffix allomorphy of various Finnic dialects. Radical gradation has an essential role both in historical and synchronic grammar. Alternation of single and geminate obstruents and quality and quantity alternations are usually distinguished in the framework of radical gradation, nevertheless, this distinction is meaningful even in the framework of suffixal gradation.

Suffixal gradation results from weakening of a single stop, in Estonian also of a geminate obstruent or a consonant cluster in a voiced environment after an unstressed syllable, cf. the occurrence of the partitive case ending **ta* after a monosyllabic, a disyllabic and a trisyllabic stem, respectively: **mā-ta* 'land, country, earth, ground' > Livonian (L)

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mõdâ, Estonian (E) *māv*, Finnish (F) *māta*; **su-kkata* 'stocking' > **su-kkata* > L *suk̄k̄k̄ā*, E *sukka*, F *sukkā*; **ju-mala:ta* 'god' > L *jumält*, E *jumalat*, F *jumalā* ~ *jumalata*.

In the case of radical gradation a stress group (a sequence of syllables beginning in a stressed one and ending before the next stressed one or before the word boundary) is in the weak or the strong grade depending on whether there has occurred a weakening in the stressed syllable or on its boundary conditioned by the former closedness of the unstressed syllable following directly after the stressed one or it has not occurred because the unstressed syllable was open.

The gradation of single obstruents is a variety of gradation consisting, first of all, in weakening of the stops **p*, **t*, **k* (that was followed by a qualitative change or drop), in some dialects also in weakening of sibilants and affricates. Here the weakened obstruents are written as halfshort, cf. **p̄*, **t̄*, **k̄* (the more usual designation **β*, **δ*, **γ* is graphically too different and suggests a kind of fricativization).

The gradation of geminates is a variety of gradation consisting, first of all, in weakening of geminate stops **pp*, **tt*, **kk* that in some dialects affected also sibilants and affricates. It is assumed that the weak grade of a geminate was first half-short-initial, cf. **p̄p*, **t̄t*, **k̄k*. It is supposed also that on the analogy of the gradation of geminates the weakening of stressed syllables took place in Livonian and in most Estonian dialects — since the initial part of a geminate closed the stressed syllable the weakening of the geminate was also the weakening of the stressed syllable. In Livonian such a weakening took place only after a short monophthong (or a short diphthong descending from the latter). The Livonian and Estonian cases of weakening of long syllables and the corresponding paradigmatic alternations are called quantity alternation, which in Estonian grammars is terminologically opposed to quality alternation. As in long stressed syllables the stress, tone and durational features are intertwined so that quantity cannot be regarded always as primary, in Livonian and Estonian phonology accents are distinguished. Quantity alternation can be treated at least at a certain stage as accent alternation. In Livonian three accents occur: the light /'/, the heavy /'̄/ and the broken (*stød*) accent /'̄̄/. Except words where the secondary lengthening of a vowel preceding a syllable-final sonorant or semivowel in a light-accented syllable was followed by accent change (received the heavy accent), the weak grade is similarly to short syllables characterized by the light accent and the strong grade by the heavy accent. The broken accent has been called forth by the loss of **h* that followed the vowel of the first syllable or by the strengthening of the short stressed syllable, for the most part by gemination. In Estonian the dialects having quantity alternation have at least two accents: light /'/' and heavy /'̄/'̄, one part has also a third, the overheavy accent /'̄̄/'̄̄. The light accent occurs with short syllables and with the weak grade of quantity alternation, the heavy and overheavy accents with the strong grade, where the overheavy accent is related to certain late strengthenings, especially before long syllables resulting from contractions. Quality and quantity alternations in Estonian are not mutually exclusive. As single stop weakening and the subsequent change or loss occurred in the beginning of the unstressed syllable preceded both by short and long syllables, the weakening of long syllables took place also in all such long syllables that remained long after single stop weakening and loss had occurred, cf. (**turska* 'cod' :) gsg **turskan* > **turskan*, > **tursan* > **tuřsan* > *tuřsa*, (**selkä* 'back' :) gsg. **selkän* > **selkän* > **seljän* > **seljän* >> *selja*

with the weakening of the first syllable and (**jalka* 'foot, leg' :) gsg **jalkan* > **jalkan* > **jalan* > *jalà* where the stressed syllable could not weaken. Moreover, synchronic quantity alternation includes, by analogy, also the diphthongs and long monophthongs that arose after stop drop, cf. *tēme* < **tēme* << **tekemek*/**teķekmek* < **tekekmek* 'we do' and *tēksin* < **teķeksin* << **tekeksin* 'I should do', where *tēme* and *tēksin* (~ *tēksin*) represent the phonological forms /t'ēme/ and /t'ēksin/ (~ /t''ēksin/).

It is expedient to distinguish the alternation of an original geminate with a single consonant i. e. degemination, as is always the case with the Votian, Ingrian, Finnish and Karelian alternation of geminate obstruents, from such weakenings of long syllables as the proposed original geminate alternation and quantity alternation in Livonian and Estonian. Thus, in Estonian *sābe* << **sāttek* 'accompaniment, concomitant, transmission' (gsg *sätte* < **sätteken* < **sätteken*) has undergone both degemination and quantity alternation whereas *sätte* << **sätte* < **saktek* 'you (pl) get' has undergone only the latter. Note that **tt* < **kt* after the first syllable only in 2pl forms may be a special development under the influence of other cases of 2pl forms as after a nonfirst syllable **kt* has become **tt* unexceptionally (cf., on the other hand, the common change **kt* > **ht* after the first syllable, e. g. in E *vaht* 'foam' from **vākto* or **vakto*). The influence of other 2pl forms has apparently prevented the degemination of **tt* after the first syllable in 2pl forms. As such alternations as F *palkka* 'wage' : gsg *palkan*, *sukka* 'stocking' : gsg *sukan* are similar to such instances of single stop alternation as *jalka* 'foot, leg' : *jalan*, I regard them to be cases of the quality alternation of geminates or geminate mutation, and not of quantity alternation.

In several Finnic dialects there occurs an inverse to gradation as a weakening, namely the gemination of a single consonant following a short stressed vowel and, for the most part, preceding a long vocalic component (a long monophthong, diphthong or a heterosyllabic vowel sequence) or, more rarely, standing in the beginning of a nonfinal open syllable. Although gemination was originally a positional strengthening, it results in alternations of singles and geminates that are to a great extent, in Livonian even entirely, parallels of the gradational alternation of singles and geminates. In Livonian such complete parallelism became possible because of the fact that the retained original geminates relate to the heavy accent and the geminational ones to the broken accent. Although gemination should be dealt with together with gradation, it is not done so here. Note that Lappologists have included a strengthening of singles that is, for the most part, entirely analogical to gemination in their concept of Lappish gradation in the form of the strong grade of single consonants.

As yet no attempt has been made to establish the types of gradation and their distribution in the Finnic area. This is done here using the distinction of the qualitative and quantitative weakening of geminates.

The types of quality alternation or of consonant mutation are as follows:

- M1 the weak grade of a geminate obstruent is phonologically identical with the strong grade of a single obstruent, the weak grade of a geminate occurring
- M1a in all positions (Viru (i. e. the *õ*-less so-called Coastal North-East Estonian dialects), Votian, Ingrian, Finnish, North Karelian),

- M1b only when following a long monophthong, diphthong or sonorant (North Estonian, including standard Estonian, Vaiga (the so-called Eastern North Estonian), Alu (the \bar{o} -dialects of the so-called Coastal North-East Estonian)),
- M1c when following a long monophthong, diphthong or sonorant, and likewise, a short vowel of a derivational suffix undergoing the gradation (South Estonian);
- M2 the weak grade of a geminate obstruent is not identical with the strong grade of a single obstruent, the possible cases being that
- M2a single stops undergo mutation (South and Aunus Karelian);
- M2b single stops do not undergo mutation, while
- M2ba geminates alternate everywhere (Ludian proper, i.e. Kuud'ärv Ludian excluded),
- M2bb geminates occur only in 3sg of the present indicative, rarely in the partitive singular of disyllabic noun stems (Kuud'ärv Ludian, North Vepsian, NW Central Vepsian),
- M2bc geminates alternate only after a short monophthong or a short diphthong (Livonian).

There is no quality alternation in most Central Vepsian dialects and in South Vepsian.

There are two types of quantity alternation:

- Q1 quantity alternation occurs only in long stressed syllables which originally had a short vowel, at the same time the present diphthong-final *i* and *u* were treated as semivocalic consonant phonemes /j/ and /v/ (Livonian),
- Q2 quantity alternation occurs in all types of long stressed syllables (North Estonian, Vaiga, South Estonian).

The distribution of the gradation types in the Finnic area is shown in Figure 1.

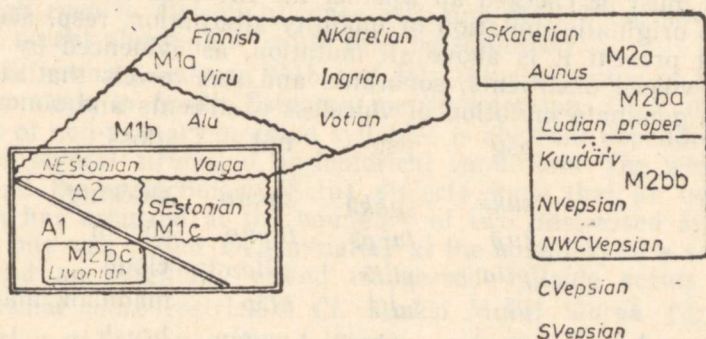


Figure 1. Finnic gradation types.

As can be seen in Figure 1, the distribution of the consonant mutation types follows roughly the location of Finnic languages and dialects (the chain from Livonian to South Vepsian), although it does not follow the traditionally accepted language boundaries. There is only one exception, namely that Livonian on the one hand, and Ludian, North Vepsian and NW Central Vepsian on the other hand, as belonging to the set of types M2b are separated from one other by dialects of the types M1 and M2a.

As the characteristic of the types M1 and M2a is single obstruent mutation, one must check up whether either or both geographical groupings of the set M2b have some traces of single obstruent mutation as a weakening. Note that the typology presented above was based only on paradigmatic alternations caused by gradation. Besides such long discussed cases of Livonian as *jõlāks* (≪ **jalkaks*) 'runner of a sledge' (from **jalka* 'foot, leg'), *kõrand* (< **karjanto*) 'farm' (cf. F *kartano*), *kõnim* (≪ **kanim*) 'handle (of a bucket, basket, etc.)' (from **kanta* 'carry') presented already by Setälä (cf. e. g. 1891 : 41, 115), especially that of *kõ'itā* 'lose' : 3sg *kõ'itāB* cf. also *ka'ddā* 'get lost' : 3sg *kadūB*, deserves attention. For the first two cases one may claim also accidental allegro drops, for the third a drop caused by the analogy of the strong grade stem, cf. npl *kaīmāD* where the absence of the stop is normal. In the stem *kõ'itā*- neither the long monophthong nor the presence of stød can be accounted for by accident or analogy. Here only the development *kõ'itā* < *kā'itā* < **kahtā* < **kahuttā* < **kaŕotta*- can be proposed. Apparently this was the first case of the qualitative change of weakened intervocalic dental stop that for some reasons could not be followed by other similar changes, cf. the usual case of causative verbs such as *po'dtā* 'cause aching' : 3sg *po'dtāB* and *po'ddā* 'ache' : 3sg *po'dūB* with no stop drop. In Ludian and Vepsian no arguments for single obstruent mutation are known. But even the fact that Livonian had very restricted single stop mutation is not entirely insignificant. As the extent of single stop mutation in Livonian is very restricted and in Estonian relatively restricted in comparison to e. g. Votian or Finnish, the mutation is obviously an innovation that spread from north to south.

As Livonian consonant mutation now appears to have been rather that of type M2a (cf. also L *jõlāks*, West Livonian *jāluks* < **jalluks*, as proposed by Setälä (1891 : 115) and Aunus (*jalgu* 'foot, leg' :) gsg *jallan*), it must be checked up whether the Livonian alternation of geminates was originally mutation or quantity alternation, resp. accent alternation. At present it is above all mutation, as evidenced by the gemination of voiced obstruents, sonorants and semivowels that structurally copies the geminate mutation of voiceless obstruents and sonorants:

	nsg	psg	npl	gloss
	<i>sukà</i>	<i>sukkâ</i>	<i>sukàD</i>	stocking
	<i>tuḅ</i>	<i>tuppâ</i>	<i>tupùD</i>	sheath
	<i>pīla</i>	<i>pillâ</i>	<i>pīlaD</i>	cloud
	<i>uī</i>	<i>uīlâ</i>	<i>uīlâD</i>	madman, mad
and	<i>sugà</i>	<i>su'ggâ</i>	<i>sugàD</i>	brush
	<i>a'ḅ</i>	<i>a'bbâ</i>	<i>abùD</i>	shoulder
	<i>kilà</i>	<i>ki'llâ</i>	<i>kilàD</i>	village
	<i>je'ī</i>	<i>je'llâ</i>	<i>jelùD</i>	house

Originally the Livonian gradation of geminates was, however, not mutation but accent alternation. Namely, e. g. *pīla* could not come from the pre-gradational form **pilla* (< **pilva*) via the intermediate forms **pila* or **pilà* as then the original geminate and single sonorants would have been mixed up. The only possible derivation is **pilla* > **pilla* > **pīlla* > *pīla*, or better phonologically: */p'illa/ → */p'illa/ → |p'īlla/ → |p'īla/ → |p'īla/, and the first change here took place either simul-

taneously with a similar one of geminate stops or by analogy with it. Hence the typological similarity of Livonian and of the dialects of the type M2a is accidental. Livonian gradation, in general, differs in several points from that of other Finnic dialects: (1) in Livonian the long stressed syllable was weakened even before an open unstressed syllable if that was word-final (**sukka* > *sukà*) or followed by a nonfinal secondary-stressed syllable (e. g. *pāvalikki* 'sun', cf. *pāva* 'day' : psg *pāuvā*), (2) unlike the other dialects where the weakenings affected original di- and trisyllabic stress groups, in Livonian several vowel drops had occurred, e. g. the truncation of **i* and **u*, and also of **e* (> *?*u* > \emptyset) and **o* (> *?*u* > \emptyset), cf. **kanto* > *kañd* 'stump' etc., possibly the syncope of **i* in an unstressed syllable when preceded by a voiceless stop and followed by a sonorant, cf. **kattila* >> *kallä* 'kettle' : psg **kattilata* >> *kallä*.

It has become evident that the quantity alternation of geminate stops in the shape it was assumed for Proto-Finnic, occurs or provably occurred only in the framework of the overall quantity alternation of long syllables. Elsewhere only geminate mutation is present. Therefore geminate mutation must likewise be derived from an earlier mutation. On the analogy of e. g. **jalka* : **jalkan* : **jalkata* one must reconstruct also **palkka* : **palkkan* : **palkkata*, **sukka* : **sukkan* : **sukkata* with a weakened initial stop in the closed unstressed syllable. There is only a formal need for such reconstructions, obviously one may be contented with somewhat later weak grade forms such as **palkan*, **sukan*. Geminate mutation cannot be dated in relation to single stop mutation in type M2a, in type M1a it obviously is not older but at least simultaneous with or later than that, in types M1b and M1c it is clearly later than single stop mutation. However, in types M1b and M1c the degemination may not be related to mutation at all, it may well be a kind of further weakening of weak long syllables that became possible because after long stressed syllables the original single stops were weakened regularly enough even in dialects of types M1b and M1c. Then, however, the absence of accent alternation in Alu may be secondary.

Of the differences between M1b and M1c the alternation of geminates with single stops in South Estonian merits attention. Degemination at boundaries of non-primary-stressed syllables is aberrant depending on the dialect and several structural or historical conditions. The westernmost (Mulgi) and the easternmost (Setu) dialects show that an overall degemination has occurred at the boundary of two unstressed syllables if the second one was closed. Degemination at the boundary of a secondary-stressed and an originally closed unstressed syllable seems to have been somewhat more restricted. Cf. Karksi Mulgi *tüdrük* (<< **tü-ttä-ri:kko*) 'girl' : gsg *tüdrugu* (<< **-ikkon*) : psg *tüdrükku* (<< **-i:kkota*) : npl *tüdrugu* (<< *?*-ikkot*, *?*-ikkok*); Tarvastu Mulgi *ämärik* (<< **hä-märi:kko*) 'twilight' : gsg, psg, npl *ämäricu* and Setu *põlk* (<< **põlikko*) 'half, half-done, half-ready, half-full' : gsg *põlioē*, psg *põlioēt*, npl *põlioē?*; *tütrik* 'girl' : gsg *tütricu* : psg *tütrikko*; npl *tütricu?*; *me-šnik* (<< **me-šani:kko*) 'forester' : gsg *mešnikku* : psg *mešnikko* : npl *mešnikku?* (here all forms have the secondary stress on the 2nd syllable), *hämärik* : gsg *hämärikku* : psg *hämärikko* : npl *hämärikku?* (here all forms have the secondary stress on the 3rd syllable). The other potential cases of weakening besides the paradigmatic cases show an overall degemination at the boundary of a secondary-stressed and an originally closed final

unstressed syllable, before a nonfinal closed syllable the degemination is aberrant, depending on the dialect. In some cases geminates are degeminated even before an open syllable, apparently by analogy. Although the case is far from transparent, it seems that the South Estonian alternation of geminates and single obstruents does not stem from geminate mutation but forms a part of ongoing simplification of geminates following the nonfirst syllables.

In most Estonian dialects, **eta*-adjectives have undergone suffixal alternation without exception if the stressed syllable was long, cf. *vaļge* 'white' : gsg *vaļge* : psg *vaļgeļ* (< **valkeļa* : **valketan* : **valketata*). If the stressed syllable was short, the stop was weakened only in the nominative singular, i. e. at the beginning of an open final syllable, cf. North Estonian *pimē* 'dark, darkness; blind' : *pimeða* : *pimeðaļ*, Vaiga *pimē* : *pimeðä* : *pimeðäv*, South Estonian *piṁmē* : *pimeðä* : *pimeðäļ*. The same regularity appears in singular partitive forms on the one hand, cf. *nimē* 'name', South Estonian *niṁmē*, and in infinitives on the other, cf. *imeða*, *imeðä* 'suck'. Apparently the development of suffixal gradation took place in several phases: (1) for a long stressed syllable, (2) for a short stressed syllable at the beginning of a secondary-stressed syllable. The Estonian dialects under consideration represent the second phase, characterized by **pimeṭä* and **nimeṭä* on the one hand, and by **pimetän*, **pimetätä*, **imetäk* on the other. Of particular interest here is Viru that underwent the two last phases in different ways, cf. Kuusalu *pimē* : gpsg *pimejä*. Livonian seems to have stopped on the second phase: in adjectives there is no trace of suffixal gradation, cf. *pi'mdž*, whereas it is present in the singular partitive and infinitive forms, cf. *ni'mmā* and *i'mmā*. Here apparently the strong grade stem has been generalized into the nominative singular instead of **pi'mmā*, whereas the final **k* in infinitives and other verb forms was already lost.

For the set of types M2, it is conceivable that M2bb comes from M2ba via degemination, maybe under the influence of geminate mutation. This is evidenced by the fact that geminates persist, first of all, in originally trisyllabic alternationless stems and of alternating stems, above all, in such where geminates do not alternate with intervocalic single obstruents (cf. also Posti 1938 : 23). The most vivid argument for geminate mutation belongs to the latter group, cf. NVepsian *tūtär* 'daughter' : gsg *tūtären* : psg *tūtärļ* (originally a disyllabic consonantal stem **tüttär*) and *hattar* 'a linen or cotton cloth used instead of or on socks in top boots' : *hätären* : *hattarļ* and *kattila* 'kettle' : *kätļan* : *kattilaļ* (originally trisyllabic vocalic stems **hattare*, **kattila*). It is likewise conceivable that geminate mutation occurred formerly everywhere in Vepsian, as its partial occurrence vs absence are well explainable by means of degemination whose expansion began in South Vepsian. There is no ground for connecting M2a and M2b as it is unknown whether the single obstruent mutation in South and Aunus Karelian in comparison with Ludian and Vepsian is innovational or whether it has been lost in Ludian and Vepsian. Thus the voicedness of single stops that serves as a precondition for the set of types M2 remains the most essential common feature of South and Aunus Karelian, Ludian and Vepsian.

It now remains to examine the interrelation of types M1 and M2a. Apparently M2a cannot be derived from M1a: there is no way to explain the split of voiceless obstruents into voiceless and voiced in South and Aunus Karelian. Rather the opposite is possible: in types M1 there could well take place the merger of the voiceless obstruents that arose from

short stressed syllable at the boundary of unstressed syllables, (3) for geminate mutation and of the original voiced obstruents. If so, then the reconstruction of **p*, **t*, **k*, **s* in Proto-Finnic is erroneous. However, it is likewise conceivable that no such merger existed: in dialects with voiceless obstruents voiceless geminates simply degeminated, whereas in dialects with voiced obstruents voiceless geminates had the possibility of degemination without the loss of the distinction between the resulting single obstruents and the original ones. This explanation neither refutes the traditional reconstruction of single obstruents nor maintains it. Even in Livonian one cannot prove the voicing of former voiceless obstruents. However, there is one single stem, namely *tidār* 'daughter' that seems to have undergone geminate mutation and the subsequent voicing of the single voiceless stop (**tüttär* > **tütär* >> *tidār*). If so, then for other geminates there must have taken place the back generalization of the strong grade, i. e. of the geminates. (Note, however, that just the same stem has the single stop instead of the geminate also in the westernmost South Estonian dialect, in Mulgi, cf. *tüvär*. It is hardly possible that here we have the only relic of geminate mutation both in Livonian and in Mulgi.) But even if Livonian really once had geminate mutation and voiceless single obstruents, it could well be an areal feature characteristic of types M1 that proves nothing for Proto-Finnic.

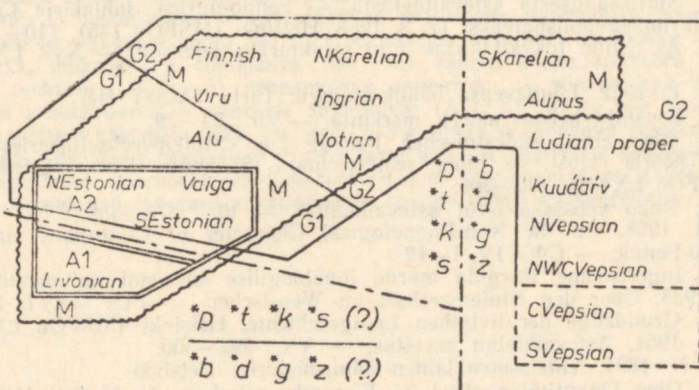


Figure 2. Finnic gradational weakenings.

The present study reveals that Finnic gradation does not originate from Proto-Finnic but rather took place when rather sharp dialect splits had already occurred. At least geminate mutation took place after the Chudes (Vaiga-Alu-Votian) had separated from the North Estonians and split (cf. Viitso 1978). Geminate mutation shows also that Karelian proper (consisting of North and South Karelian) is a relatively late convergent grouping: South Karelian cannot stem from the so-called Old Karelian that hitherto has been claimed to be the common ancestor of Ingrian, East Finnish and Karelian proper. Historical gradational weakenings such as (1) single obstruent mutation (M), (2) geminate mutation: (a) after a long monophthong, diphthong and sonorant (G1) — note that it may be not a real mutation, (b) also after a short vowel (G2), (3) accent alternation: (a) only for long stressed syllables containing a short vowel (A1), (b) also for long stressed syllables containing a long vowel (A2), seem to have spread in the way shown in Figure 2.

Abbreviations

gsg — genitive singular, npl — nominative plural, psg — partitive singular, 2pl — 2nd person plural of the present indicative, 3sg — 3rd person singular of the present indicative.

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ТИИТ-РЕЙН ВИИТСО (Таллин)

ПРИБАЛТИЙСКО-ФИНСКОЕ ЧЕРЕДОВАНИЕ СТУПЕНЕЙ:
ТИПЫ И РАЗВИТИЕ

Прибалтийско-финское чередование ступеней из-за своего разнообразия имеет хорошие классификаторные свойства и несколько альтернативных исторических интерпретаций. Качественное чередование ступеней (КЧС) возникло в результате ослабления одиночных и геминатных смычных в начале закрытого, следующего за ударным слога. Количественное чередование ступеней или чередование акцентов (ЧА) возникло в ре-

зультате ослабления ударного длинного слога перед закрытым слогом. Во всех таких случаях имеется в виду слабая ступень (смычного, геминаты, основы, слова) в противопоставление сильной ступени.

Типы КЧС:

M1: слабая ступень смычной геминаты тождественна сильной ступени одиночного смычного, причем она встречается: **M1a:** только после длинного гласного, дифтонга или соноранта (северный, вайгаский и алуцкий диалекты эстонского языка), **M1b:** после длинного гласного, дифтонга, соноранта, а в деривационных суффиксах также после краткого гласного (южный диалект эстонского языка), **M1c:** в любых окружениях (вирусский диалект эстонского, водский, ижорский, финский, северный диалект карельского языка);

M2: слабая ступень смычной геминаты не тождественна сильной ступени одиночного смычного, причем **M2a:** одиночный смычный участвует в КЧС (южный и олонечский (ливвиковский) диалекты карельского языка), **M2b:** одиночный смычный не участвует в КЧС, а **M2ba:** гемината чередуется в любом окружении (людиковский — за исключением лояницких говоров), **M2bb:** геминаты встречаются только в 3 л. ед. ч. наст. вр. индикатива, редко в партитиве ед. ч. двухсложных именных основ (лояницкие говоры людиковского, северновецкий и северо-западные говоры средневецкого диалекта), **M2bc:** геминаты чередуются только после краткого монофтонга или краткого дифтонга (ливский).

КЧС не встречается в большинстве средневецких говоров и в южновецком диалекте. Типов ЧА два:

Q1: ЧА встречается только в длинном ударном слоге, имевшем первоначально краткий монофтонг или краткий дифтонг, причем нынешние *i* и *u* в конце дифтонгов представляют собой бывшие согласные фонемы */j/* и */v/* (ливский),

Q2: ЧА встречается во всех типах длинных ударных слогов (северный, вайгаский и южный диалекты эстонского языка).

Чередование ступеней возникло не в праприбалтийско-финском языке, а при наличии довольно резких диалектных границ в результате происхождения следующих ослаблений: 1) ослабление и качественное изменение одиночных шумных в начале следующего за ударным слога (M); 2) ослабление геминат: а) только после длинного монофтонга, дифтонга и соноранта (G1), б) также после краткого монофтонга и краткого дифтонга (G2); 3) чередование акцентов: а) только при длинном слоге с кратким монофтонгом и кратким дифтонгом (A1), б) также при длинном ударном слоге с длинным гласным (A2), см. рис. 2. Различия ослабления геминат в северо- и южнокарельском дают основание утверждать, что эти диалекты возникли не в результате дивергенции прасобственно-карельского или пракарельского (древнекарельского) языка, а образовали собственно-карельскую группу путем конвергенции.