

MERLE LEPPIK (Tallinn)

## ON THE NON-PHONOLOGICAL CHARACTER OF CONSONANT GRADATION IN PROTO-FENNIC

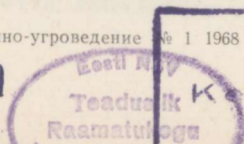
1. Little attention has been paid hitherto in studies of PF consonant gradation and in historico-phonetical investigations of the present-day Fennic languages and dialects to the phonological interpretation of consonant gradation in PF. Some authors seem to be of the opinion that the gradation which occurred in PF and which is generally believed to have involved single stops and geminate stops, was not an alternation of phonemes, but is definable as positional allophony within the range of one phoneme (or sequence of phonemes), and that consequently it was purely phonetic in character.<sup>1</sup> But in the actual transcription of reconstructions different symbols have generally been used to indicate the strong and weak grades. In the present paper an attempt is made to sum up the different current views on the presumable scope and character of consonant gradation in PF. It is against the background of these views that the possibility is considered of whether consonant gradation in PF can be dealt with as an allophonic phenomenon. Such an interpretation of gradation in PF would permit an appreciably simpler transcription of reconstructed forms in phonological investigations and it would also contribute to a credible elucidation of a number of problems in linguistic history.<sup>2</sup>

2.1. The majority of linguists have assumed that the single stops in PF were originally fortis in character (\**p*, \**t*, \**k*), and that, hence, they later underwent weakening in some positions (in connection with the development of gradation). This is not, however, the only view. In his theory of consonant gradation E. N. Setälä proceeded from the voiced stops (\**b*, \**d*, \**g*).<sup>3</sup> Among contemporary specialists in the field of Fennic languages, T.-R. Viitso also presupposes the existence of originally voiced stops in PF, and he has dealt accordingly with problems of the origin and

<sup>1</sup> L. Posti, From Pre-Finnic to Late Proto-Finnic. — FUF XXXI 1953, p. 88; R.-T. Harms, review of L. Hakulinen's book "The Structure and Development of the Finnish Language", Bloomington 1961. — Word, Vol. 20, 1964, No. 1, p. 110; E. Kangasmaa-Minn, Vepsän klusiilisysteemi. — Sananjalka 6, Turku 1964, p. 27 ff. Cf. also T.-R. Viitso, Tüvelisest astmevaheldusest (eriti eesti keeles). — ESA VIII, Tallinn 1962, pp. 57, 60.

<sup>2</sup> Thus, e. g., E. Kangasmaa-Minn finds that the absence of gradation in Veps is due to the fact that gradation in PF was allophonic in character. See E. Kangasmaa-Minn, *op. cit.*, p. 33.

<sup>3</sup> E. N. Setälä, Yhteissuomalainen äännehistoria, Helsinki 1891, p. 123.



development of gradation in PF.<sup>4</sup> P. Ariste has suggested that the original stop (\**B*, \**D*, \**G*) was lenis in character.<sup>5</sup> P. Ravila, however, has produced indirect evidence even from the Mordvin languages to prove that the original sounds were fortis stops.<sup>6</sup> This seems to be the most plausible view.

The original strong geminate stops have been generally represented as \**pp*, \**tt*, \**kk*. It is only in a few investigations that some authors have employed a mark of half-length placed above the first element of a geminate: \**ṗp*, \**ṫt*, \**ḱk*.<sup>7</sup>

2.2. The weak geminate stops have been traditionally reconstructed as having a short first element, i. e. with a mark of shortness above the first component, e. g. \**seppä*—\**seṗṗän* (gen.) 'smith'.<sup>8</sup> The weak counterparts of single stops in PF, however, have been represented variously. E. N. Setälä assumed that the spirants \**β*, \**δ*, \**γ* occurred as the weak grade forms of stops.<sup>9</sup> The system of notation devised by E. N. Setälä has been comparatively strictly adhered to in traditional reconstructions. The use of a spirant symbol is supported not only by established tradition, but also by the fact that spirant consonants were (at least in a vocalic environment) phonetically the most probable means of expressing the weak grade of stops in PF. (Spirants occur even in present-day Finnish dialects as counterparts of weak stops, e. g. *paḁan* (gen.) 'pot'<sup>10</sup>, and obviously the original occurrence of a spirant created the preconditions for the rise of vocalized forms, e. g. \**paḁan* > *pān*, etc.)

In some positions, however, e. g. in a syllable initial position after a nasal, already E. N. Setälä found it was possible "for phonetic reasons" that voiced stops could occur instead of spirants.<sup>11</sup> This leads to an inevitable lack of uniformity in transcription and to several problems which have been pointed out by L. Kettunen.<sup>12</sup> Neither does the use of spirants to indicate the weak grade of stops in reconstructions permit any transcriptional parallels with the marking of gradation in the case of geminate stops.

L. Kettunen considers it expedient to abandon the use of a spirant symbol and to indicate the weak grade of a stop in all positions in PF by means of a small character of a stop placed at the top of a line (e. g. \**lu<sup>h</sup>en* > *lugen* '(I) read', etc.). He adduces convincing arguments in favour of this system of notation.<sup>13</sup> In his later works L. Kettunen has made more use of a small character at the bottom of a line (e. g. \**ve<sub>h</sub>en*,

<sup>4</sup> T.-R. Viitso, *op. cit.*, p. 58 ff.

<sup>5</sup> P. Ariste, Läänemere keelte sõnasiseste üksiksulghäälükute olemusest. — ENSV TA Toimetised. Ühiskonnateaduste seeria VIII 1959, nr. 4, p. 427 ff.

<sup>6</sup> P. Ravila, Onko viro painotukseltaan voimakkaasti sentraalistunut kielimuoto? — Vir. 1936, p. 212 (in note); P. Ravila, Lisä mordvan äännehistoriaan. — Vir. 1944, p. 421.

<sup>7</sup> See, e. g., E. N. Setälä, Über quantitäswechsel im finnisch-ugrischen. — JSFOu XIV<sub>3</sub> 1896, p. 10; E. A. Tunkelo, Vepsän kielen astevaihteluttomuudesta. — Suomi V 20, Helsinki 1938, p. 43.

<sup>8</sup> E. N. Setälä's notation *ḱk*—*kk*, *ṗp*—*pp*, etc. did not find extensive application. See E. N. Setälä, Über quantitäswechsel im finnisch-ugrischen, p. 10.

<sup>9</sup> E. N. Setälä, Yhteissuomalainen äännehistoria, pp. 116, 123.

<sup>10</sup> L. Kettunen, Suomen murteet III, Helsinki 1940, p. 109 ff. See also P. Virtaranta, Pääpainollisen tavun jälkeisen soinnillisen dentaalispirantin edustus suomen murteissa, Helsinki 1958.

<sup>11</sup> E. N. Setälä, Yhteissuomalainen äännehistoria, p. 116.

<sup>12</sup> L. Kettunen, Klusiilin heikon asteen merkintä. — Vir. 1928, p. 25 ff.

<sup>13</sup> *Ibidem*, p. 25 ff. (To the present writer's knowledge, L. Kettunen has used this notation only once in his actual research work. See L. Kettunen, Suomen *teeri* sanasta ja sen vanhasta «astevaihtelusta». — Vir. 1928, p. 177.)

\**ham<sub>p</sub>as*, \**korke<sub>t</sub>alla*).<sup>14</sup> In view of the fact that it is almost impossible to ascertain the quality and quantity of both grades of stops in PF (at least not for all environments), there seems to be more justification in principle for L. Kettunen's system of notation where the precise phonetic character of the weak counterparts of stops is deliberately left undetermined and where similar symbols are used in all positions to indicate the weak grade.<sup>15</sup>

Of the possibilities suggested by L. Kettunen, the representation of the weak grade of a stop by means of a small character at the top of a line is more in keeping with traditional Fenno-Ugric phonetic transcription. This is because small characters at the top of a line indicate "over-short schwa vowels and transitional sounds as well as over-short sounds in general"<sup>16</sup>, and as mentioned by L. Kettunen "it is just the shorter character of the weak grade in comparison with the strong grade that is generally observable wherever consonant gradation occurs", and hence "such a mark of indeterminate shortness" is appropriate in every respect.<sup>17</sup> In Fenno-Ugric transcription the small symbol of a sound at the bottom of a line indicates a shade of pronunciation conditioned by preceding or following sounds<sup>18</sup>, and might therefore be somewhat misleading when used to indicate the weak grade of a stop.

In indicating the weak grade of a geminate stop, however, L. Kettunen has retained the traditional mark of shortness (e. g. \**va<sub>k</sub>kan*, \**pel<sub>k</sub>ättäk*, etc.)<sup>19</sup>, although then it would also be theoretically possible to transcribe, e. g. \**va<sub>k</sub>kan*, \**pel<sub>k</sub>ätäk* or rather \**va<sup>k</sup>kan*, \**pel<sup>k</sup>ätäk*. P. Ravila is the only specialist in the field of Fennic languages who, on the basis of his theory of consonant gradation, recommends the use of the same symbols to mark the weak grade forms of geminates as well as of single stops: \**kk*, \**pp*, \**tt*; \**ḳ*, \**p̣*, \**ṭ*.<sup>20</sup> Thus, in the case of weak geminates P. Ravila has retained the traditional (and phonetically the most practicable; see 3. 1.) transcription and has refrained from the use of special symbols to indicate the weak counterparts of single stops (where differences of opinion have arisen anyhow and where it is not possible to achieve phonetic authenticity for all positions).

P. Ravila's system of notation is preferred in the present paper because he has succeeded in combining expediency and a systematic character (cf. the transcription of weak geminate stops) with a minimum deviation from tradition.

We shall now attempt to show that consonant gradation in PF can be interpreted as an allophonic phenomenon. Thus, in phonological discussions it is possible to dispense entirely with special symbols for reconstructions of weak forms and the above-mentioned transcription would find use only in non-phonological, phonetical reconstructions of stops and geminate stops in PF.

3.1. It has generally been considered that the oldest variety of consonant gradation is the gradation of geminate stops which occurs to a

<sup>14</sup> L. Kettunen, *Vatjan kielen äännehistoria*, Helsinki 1930; L. Kettunen, *Eestin kielen äännehistoria*, Helsinki 1962; L. Kettunen, *Suomen murteet II, III*, Helsinki 1930, 1940.

<sup>15</sup> L. Kettunen, *Eestin kielen äännehistoria*, p. 16.

<sup>16</sup> A. Sovijärvi, R. Peltola, *Suomalais-ugrilainen tarkekirjoitus*, Helsinki 1961, p. 4.

<sup>17</sup> L. Kettunen, *Klusiilin heikon asteen merkintä*, p. 29.

<sup>18</sup> A. Sovijärvi, R. Peltola, *op. cit.*, p. 5.

<sup>19</sup> L. Kettunen, *Eestin kielen äännehistoria*, pp. 45, 49.

<sup>20</sup> P. Ravila, *Astevaihtelun arvoitus*. — *Vir.* 1951, p. 298.

different extent and in a different form in the majority of present-day Fennic languages.<sup>21</sup> Despite the fact that in most of the present-day Fennic languages a geminate stop alternates with a single stop (except in Estonian and also in Livonian where a longer geminate alternates with a shorter one), the majority of specialists maintain that in PF there could occur only the quantity gradation of geminate stops (a longer geminate — a shorter geminate) and not the alternation of a geminate with a single stop. Opinions to the contrary have also been expressed.<sup>22</sup> Nevertheless it is difficult to imagine that after the development of the alternation of a geminate stop with a single stop in PF it was possible that, for instance in Estonian, a single stop occurring as the weak grade form of a geminate could develop into a short geminate (more precisely a geminate with a short first element). Moreover, the alternation of a geminate with a single stop presupposes the previous occurrence of the alternation of single consonants. It seems probable that whatever the quantitative or qualitative character of the strong and weak grades of geminate stops in PF, the original gradation of geminates remained a purely phonetic gradation and could acquire a phonological character only in the later PF dialects, which gave rise to the present-day Fennic languages. Since the phonetically close strong and weak grades of geminates were determined by the accentuation of the preceding syllable and by the open or closed character of the following syllable, there seem to be grounds for the treatment of the gradation of geminate stops in PF as a positional variation within the range of one and the same phonological form — a geminate *\*/pp tt kk/* (the geminate being phonologically a combination of two identical consonants). The geminates *\*/pp tt kk/* were thus realized on the boundary between a stressed and an unstressed syllable before a closed syllable, and probably also after an unstressed syllable, as weak grade allophones (variants), which are generally reconstructed as geminates with a short first element *\*[ṗp ṡt ḱk]*. Proceeding from a phonological standpoint there has thus not been any alternation, and, consequently, one may simply reconstruct, e. g. *\*/vakka — vakkan/* (= *[\*vakka — vaḱkan* (gen.) 'bushel']). Hence in certain positions *\*/pp tt kk/* = *\*[ṗp ṡt ḱk]*, and in other positions *\*/pp tt kk/* = *\*[pp tt kk]*.

3.2. The gradation of single stops in PF appears to have been more

<sup>21</sup> There are no traces of an original consonant gradation in Livonian. L. Posti has pointed out that the alternation which occurs after a stressed syllable in Livonian today has developed from the stress and quantity relations specific to Livonian (L. Posti, *Grundzüge der livischen Lautgeschichte* (= MSFOu LXXXV), Helsinki 1942, p. 190).

In present-day Veps the paradigmatic gradation of geminate stops has been observed only in the Onega-Veps dialect and even here it occurs only to a limited extent (E. A. Tunkelo, *Vepsän kielen äännehistoria*, Helsinki 1946, p. 145). Nevertheless, E. A. Tunkelo believes that the tenuis geminates in the Onega and Central Veps dialects are for the greater part descendants of earlier geminates which underwent consonant gradation in PF (E. A. Tunkelo, *Vepsän kielen astevaihteluttomuudesta*, p. 43). This view is shared, on the whole, by L. Posti (L. Posti, *Über den Stufenwechsel im Wepsischen*. — FUF XXVI 1938, p. 25). L. Kettunen, however, does not believe that the geminate stops in present-day Veps have come from PF, and assumes that they are a result of the special development of Veps (L. Kettunen, *Onko vepsässä ollut astevaihtelua?* — Vir. 1938, p. 379 ff.; L. Kettunen, *Lõunavepsa häälik-ajalugu*, Tartu 1922, p. 42).

<sup>22</sup> E. N. Setälä, *Yhteissuomalainen äännehistoria*, p. 117. (In later works Setälä, however, changed his position, e. g., E. N. Setälä, *Über quantitäswechsel im finnisch-ugrischen*, p. 10); T.-R. Viitsi, *Tüvelisest astmevaheldusest (eriti eesti keeles)*, p. 57. See also K. B. Wiklund, *Entwurf einer uralpischen Lautlehre I* (= MSFOu X(1)), Helsingfors 1896, p. 85. (K. B. Wiklund assumed that in Proto-Lappish likewise a geminate alternated with a single stop.)

complicated. In the first place, because of their phonetic character single stops have a much wider distribution than geminates, but they have undergone gradation only in some phonetic positions. To be more exact: if the character of the preceding and following syllables was decisive for the gradation of geminates, then in the case of the gradation of single stops there are additional positional restrictions depending on the character of neighbouring sounds. There is no complete agreement among specialists in the field of Fennic languages as to the phonetic environment in which stops underwent gradation and where they did not. In the second place, it is difficult to find an expedient transcription because the presumed weak grade of a stop in PF has been indicated differently by different investigators (see 2.2). There is divergence of opinion also as regards the presumable character of the original single stop (which later underwent gradation; see 2.1).

3.3. In an intervocalic position after a stressed syllable and after a voiced consonant the quality of a stop in PF is determined in all cases by the open or closed character of the following syllable: a strong grade before an open syllable, a weak grade before a closed syllable (e. g. *\*sota* — *\*soŋan* (gen.) 'war'; *\*jalka* — *\*jalŋan* (gen.) 'foot').

Some problems may arise only in the case of the word *\*sütän* 'heart'. Some Fennic languages reflect the expected relation: *\*sütän* — *\*sütämen* (gen.), viz. krAun *süväin* — *südäme*<sup>23</sup>, fi (Salmi dialect) *süväin* — *südämen*<sup>24</sup>, est *söandama* 'venture' — *südame* (gen.) 'heart' (the strong grade form *süda* has been generalized in the nominative of the noun).<sup>25</sup>

In the majority of the present-day typical Fennic languages and dialects with consonant gradation, however, the genitive, too, is weak and seems to reflect the relation *\*sütän* — *\*sütämen*: fi *sydän* — *sydämen*, vt *süä* — *süäme*, estS *süä* ~ *söä* — *süäme* ~ *söäme*, kr *šeän* ~ *šiän* — *šeämen* ~ *šiämen*, etc.

In the third group of Fennic dialects the genitive is indeed likewise weak, but here it is in harmony with the closed character of the following syllable: on the boundary between of the second and third syllables there occurs the geminate *mm*. L. Hakulinen lists a number of geminated genitives with *mm* from Finnish dialects (e. g. *syräm̄men*, *syläm̄men*, *syväm̄men*) and points out that a geminated pronunciation has spread even in Standard Finnish.<sup>26</sup> The present author has noticed some analogical forms also in dialects of Vote and Karelian: vt *süämmè* (ill.), *mēp süämmel* 'feel sick'<sup>27</sup> (Lužicy village dialect), *süä* — *süämmē* (gen.)<sup>28</sup>; krN *syöm-*

<sup>23</sup> See A. Genetz, Tutkimus Aunuksen kielestä. — Suomi II 17, 1885, p. 101.

<sup>24</sup> See P. Pohjanvalo, Salmin murteen sanakirja. Täydennysosa, Helsinki 1950, p. 336.

<sup>25</sup> L. Kettunen, Onko vepsässä ollut astevaihtelua?, p. 374.

<sup>26</sup> L. Hakulinen, Suomen kielen rakenne ja kehitys, Helsinki (Keuruu) 1961, p. 48.

<sup>27</sup> These examples have been taken from P. Ariste's collection deposited at the Sector of Fenno-Ugric Languages, Institute of Language and Literature, Academy of Sciences of the Estonian S.S.R.

<sup>28</sup> L. Kettunen, Vatjan kielen äännehistoria, p. 196. (In his index L. Kettunen lists the above-mentioned genitive form as general Vote in character. According to the card index of Vote available at the Sector of Fenno-Ugric Languages (Institute of Language and Literature, Academy of Sciences of the Estonian S.S.R.) the geminated genitive form has been registered only in the Lužicy village dialect (see above). Gemination may, however, be frequently observed in other cases, e. g. iness. *süämmezä* ~ *süämmez* is predominant alongside *süämezä* ~ *süämez*.)

*men* (gen.).<sup>29</sup> A genitive with the same form occurs in the Savo dialect of Finnish.<sup>30</sup> M. Rapola also points out that the geminated genitive and other case forms of the word under discussion are characteristic of a number of Finnish and North Karelian dialects, and have spread as pronunciational variants in Standard Finnish. Nevertheless, he regards these phenomena as being of recent origin.<sup>31</sup>

There are several ways of accounting for the forms mentioned above. To begin with, we may regard the reconstructions *\*sütän* — *\*sütämen* as PF in origin, while the weak grade genitive in part of the present-day Fennic dialects would simply reflect the generalization of the weak grade (in the same way as North Estonian *süda* — *südame* would reflect the generalization of the strong grade, cf. *üdi* — *üdi* (gen.) 'marrow'; *ige* — *igeme* (gen.) 'gum', etc.).<sup>32</sup> The geminate would then apparently have had a secondary origin in order to "justify" the weak grade. It appears, however, that in the dialects under discussion there are no convincing parallel cases of the generalization of the weak grade in other words.

Another possibility would be to proceed from the reconstructions *\*sütän* — *\*sütämen*.<sup>32a</sup> Among the well-known authors who have dealt with consonant gradation and the historical phonetics of the present-day Fennic languages, H. Ojansuu alone has suggested the reconstructions *\*südüin* — *\*südüämen*.<sup>33</sup> A diphthongal reconstruction of the nominative form is unacceptable in the light of M. Rapola's investigation.<sup>34</sup> The reconstruction of the genitive form is also improbable (all the more so as the original form of the Aunus Karelian strong grade genitive as presented by Ojansuu), because such a reconstruction would be the only word where the weak grade of a stop occurred before an open syllable (and at the same time the only word which would confront us with the phonological opposition of *\*t* and *\*t̥*). It would likewise be difficult to account for the Aunus Karelian and North Estonian strong grade by proceeding from the relation *\*sütän* — *\*sütämen* or *\*sütäin* — *sütämen* (there would be no basis for the development of the strong grade through grade generalization; although, it is conceivable that the relation *\*sütän* — *\*sütämen* developed on analogy from *\*sütän* — *\*sütämen*, e. g. on the model of *\*üün* — *\*ütimen*).

As a third possibility some authors have sought to proceed from the relation *\*sütän* — *\*sütämnen*.<sup>35</sup> But such a treatment also involves difficulties in explaining present-day forms in Aunus Karelian and North Estonian.

One more possibility is conceivable, viz. that two parallel (optional) relations existed in PF: (1) *\*sütän* — *\*sütämen* and (2) *\*sütän* — *sütämen*. The first pair of forms would be completely in accordance with the phonetic laws of Pre-Fennic and Proto-Fennic. When explaining the second

<sup>29</sup> A. Turunen, Pohjois-Karjalan murreopas, Helsinki 1956, p. 46. (The present writer has not come across geminated forms in the available North Karelian dialect texts, e. g., E. Leskinen, Karjalan kielen näytteitä III, Helsinki 1936.)

<sup>30</sup> A. Turunen, Itäisten savolaismurteiden äännehistoria, Helsinki 1959, p. 36.

<sup>31</sup> M. Rapola, Suomen kielen äännehistorian luennot, Helsinki 1966, p. 279.

<sup>32</sup> L. Kettunen, Onko vepsässä ollut astevaihtelua?, p. 374.

<sup>32a</sup> Cf. B. Collinder, An Introduction to the Uralic Languages, Berkeley and Los Angeles 1965, p. 69.

<sup>33</sup> H. Ojansuu, Karjala-aunuksen äännehistoria, Helsinki 1918, p. 21.

<sup>34</sup> M. Rapola, Kantasuomalaiset pääpainottomain tavujen *i*-loppuiset diftongit suomen murteissa (= Suomi IV 17), Helsinki 1919–1920, p. 262.

<sup>35</sup> P. Ravila, Über das finnisch-ugrische komparativsuffix. — FUF XXIV 1937, p. 47; L. Posti, From Pre-Finnic to Late Proto-Finnic, p. 84; B. Collinder, Comparative Grammar of the Uralic Languages, Stockholm 1960, p. 108; L. Hakulinen, *op. cit.*, p. 48.

pair of forms, it should be borne in mind that this is one of the words where the PF dental stop developed not from the Proto-Fenno-Ugric stop *\*t*, but from the spirant *\*ð*.<sup>36</sup> Taking into consideration the semantics of the word, it is entirely probable that an optional irregular (affective) gemination of *m* occurred on the boundary between the second and third syllables, and that this early gemination rendered possible a survival of the original Fenno-Ugric *\*ð* (> *\*t*) in the genitive form under discussion during the PF period while in other analogical word-forms the same sound underwent consonant gradation and turned into *\*t* at the beginning of an open syllable. Hence (*\*sütämen* ~) *\*sütämme* could occur alongside, e. g. *\*ütimen*.

At any rate, it seems that in the case of the word *\*sütän*, too, one or another manner of treatment can be found which will not prevent an allophonic definition of the conditions in which the weak grade of single stops could occur.

No irregularities have been observed in the gradation of stops occurring after a voiced consonant.

3.4. There is considerably more difference of opinion with regard to consonant gradation in a syllable initial stop after a voiceless consonant and in a syllable final stop in PF.

P. Ravila denies the existence of any consonant gradation whatever in the positions mentioned. In his well-founded suppositions concerning consonant gradation in PF, P. Ravila emphasizes the primary character of geminate gradation and its decisive influence on the gradation of single stops. P. Ravila points out that the Pre-Fennic (*esisuomalaiset*) geminate stops *\*pp*, *\*tt*, *\*kk* were weakened in all positions in Proto-Fennic (*kantasuomessa*), except on the boundary of a stressed and an unstressed syllable before an open syllable. In all those positions where geminate stops were weakened, the single fortis stops were also weakened. Single fortis stops (to the extent they were not affected by other phonetic laws) have survived unweakened in all positions where a geminate stop has survived, and, in addition, also in all positions where there never was a geminate stop.<sup>37</sup> As there were obviously no geminates either in the neighbourhood of a voiceless consonant or before a voiced consonant in PF, P. Ravila's theory meant that both syllable initial stops after a voiceless consonant as well as (pre-consonantal) syllable final stops must have remained unweakened and could not therefore undergo consonant gradation. L. Kettunen<sup>38</sup> and L. Hakulinen<sup>39</sup> also take a fundamentally negative view of the possibility of original consonant gradation in the positions mentioned.

There are, however, some opinions to the contrary, especially as regards the problem of paradigmatic consonant gradation before a voiced consonant in PF. E. N. Setälä maintained that stops in this position were subject to gradation.<sup>40</sup> The original occurrence of consonant gradation is regarded as possible also by P. Ariste<sup>41</sup> and V. Tauli.<sup>42</sup> P. Ariste has pointed out that parallel forms such as *kakla* and *kaula* 'neck' may reflect an early PF gra-

<sup>36</sup> E. N. Setälä, *Über quantitätswechsel im finnisch-ugrischen*, p. 53; L. Posti, *From Pre-Finnic to Late Proto-Finnic*, p. 85.

<sup>37</sup> P. Ravila, *Astevaihtelun arvoitus*, p. 298.

<sup>38</sup> L. Kettunen, *Onko vepsässä ollut astevaihtelua?*, p. 377; L. Kettunen, *Eestin kielen äännehistoria*, pp. 36, 38, 39; L. Kettunen, *Vatjan kielen äännehistoria*, pp. 34, 35.

<sup>39</sup> L. Hakulinen, *op. cit.*, pp. 60, 62.

<sup>40</sup> E. N. Setälä, *Über quantitätswechsel im finnisch-ugrischen*, pp. 11—12.

<sup>41</sup> P. Ariste, comments to Л. Хакулинен, *Развитие и структура финского языка*, Москва 1953, примеч. 44, p. 297.

<sup>42</sup> V. Tauli, *Phonological Tendencies in Estonian*, København 1956, p. 38.

dation \**kakla* — \**kaylan* (gen.) (in our notation \**kakla* — \**kaḱlan*), the strong grade being subsequently generalized in some of the PF dialects, and the weak grade in others. To prove the existence of a sometime gradation, P. Ariste refers to a similar gradation in the Leivu dialect of Estonian. L. Kettunen, however, believes this gradation (e. g. *kaḱla* (ill.) — *kälä* (gen.), etc.) to be the result of a specific development in the dialect mentioned that has taken place on analogy with general quantity gradation as in *silma* — *silmä* (gen.) 'eye'.<sup>43</sup> He points out that the development of syllable final stops in PF followed what was obviously a different course from that followed by syllable initial stops and their gradation. L. Kettunen also adduces a number of instances from the present-day Fennic languages and dialects which contradict the existence of an original gradation (e. g. vt gradationless *eglen* 'yesterday', *adra* 'plough', *ladva* 'top', etc.).<sup>44</sup> A. Pikamäe is of the opinion that the vocalization of syllable final stops (e. g. fi *kaula*, etc.) did indeed occur via an intermediate spirant stage, but independently of stem gradation. He regards a sometime gradation as improbable on the grounds that the openness or closeness of a following syllable and the attendant stress relation could not have substantially affected the final stop of the preceding syllable.<sup>45</sup> L. Hakulinen<sup>46</sup> shares L. Kettunen's opinion that forms such as fi *kaula*, etc., must be regarded as the result of a phonetic development independent of consonant gradation. The idea of an original gradation is, of course, also rejected by P. Ravila in the light of his consonant gradation theory (see above).

3.5. There is more or less general agreement that a syllable initial stop after a voiceless consonant (i. e. in the clusters *hk*, *sk*, *tk*, *ht*, *st*) and a syllable final stop before the spirant *s* (i. e. in the clusters *ks*, *ts*, *ps*) did not undergo gradation in PF. Even E. N. Setälä believed at first that a stop after a voiceless consonant (except in the cluster *ht*, for which he assumed a sometime gradation \**ht* — \**hd* (\**hδ*) on analogy with the intervocalic gradation \**t* — \**d* (\**δ*)) was not originally subject to consonant gradation and that the gradation of a stop in the position mentioned arose later under the influence of the gradation of a stop in an intervocalic position and after a voiced consonant.<sup>47</sup> L. Kettunen does not regard an original gradation as possible because it is difficult to assume the occurrence of a spirant after a voiceless consonant.<sup>48</sup> He also finds it correct to proceed from an absence of gradation in the case of a syllable final stop occurring before the spirant *s*.<sup>49</sup> L. Kettunen's negative position is shared, as it has been pointed out already, by L. Hakulinen and P. Ravila (see 3.4). Despite widespread doubts concerning the existence of an early PF

<sup>43</sup> L. Kettunen, *Eestin kielen äännehistoria*, p. 87; L. Kettunen, *Über einen «südeestnischen Beitrag zur Stufenwecheltheorie» und über die Theorie selbst.* — MSFOu LXVII, 1933, p. 200.

<sup>44</sup> L. Kettunen, *Vatjan kielen äännehistoria*, p. 34; L. Kettunen, *Über einen «südeestnischen Beitrag zur Stufenwecheltheorie» und über die Theorie selbst*, p. 202 ff.; L. Kettunen, *Suomen teeri sanasta ja sen vanhasta «astevaihtelusta»*, pp. 176—178.

<sup>45</sup> A. Pikamäe, *Tüveline astmevaheldus läänemeresoome keeltes ja lapi keeles*, Tartu 1956, (Manuscript in the Library of Tartu State University), pp. 216—217.

<sup>46</sup> L. Hakulinen, *op. cit.*, p. 62.

<sup>47</sup> E. N. Setälä, *Yhteissuomalainen äännehistoria*, pp. 117, 123, 124. Later, however, Setälä came to regard stops after a voiceless consonant as also originally subject to gradation (E. N. Setälä, *Über quantitäswechsel im finnisch-ugrischen*, pp. 13—15).

<sup>48</sup> L. Kettunen, *Eestin kielen äännehistoria*, p. 61.

<sup>49</sup> L. Kettunen, *Eestin kielen äännehistoria*, p. 39; L. Kettunen, *Suomen ts:n astevaihtelu.* — MSFOu LVIII, Helsinki 1928, p. 82 ff.



gradation in the position described above, in practice the traditional division of presumable gradation in PF has nevertheless been adhered to in almost all historico-phonetical studies of Fennic languages, both in the treatment of syllable final stops before a voiced consonant and in that of syllable initial stops after a voiceless consonant. This is apparently the result of a desire to ensure a systematic approach.

From the standpoint of the present paper the gradation of a stop in all the positions mentioned is positionally definable by the openness or closeness of the following syllable in the same way as is the gradation of an intervocalic stop. A phonological treatment will enable us to dispense with the problem of whether gradation occurred in these positions in PF or not. Thus, we can reconstruct, e. g. */\*kakla — \*kaklan/*, and the question of whether */\*kaklan/* = */\*kaklan/* or */\*kaĳlan/* or something else of that kind, may remain open and be relegated to a secondary, purely phonetical plane.

3.6. Up to now we have examined gradational relations between the first syllable (carrying primary stress), and the syllable following it. The same gradation dependent on the openness or closeness of the following syllable prevailed after a syllable with secondary stress (especially the third syllable) as after a syllable with primary stress.

3.7. It has been considered possible that so-called stem consonant gradation or radical gradation (i. e. gradation dependent on the openness or closeness of the following syllable) had come into being in the case of geminate stops in PF also in a position following an unstressed syllable.<sup>50</sup> It is on the basis of this standpoint that the reconstructions in most phonetico-historical studies of Fennic languages have been given.

Some authors believe, however, that geminates (like single stops) after an unstressed syllable in PF were subject to so-called suffixational consonant gradation, i. e. that an unstressed syllable was always followed by a weak grade. L. Kettunen writes in this connection: «Alkuperäinen *tt* tuskin voisi olla äänneläillinen painottoman tavun jäljessä edes avotavussa (koska yksinäisklusiilikin on siinä asemassa heikennyt), . . .»<sup>51</sup> Weak grade geminates in a position after an unstressed syllable<sup>52</sup> are likewise assumed in P. Ravila's theory of consonant gradation (see also 3.4). On the basis of this theory E. Kangasmaa-Minn regards gradation in PF as an allophonic phenomenon and points out that, e. g. the geminate stop */\*kk/* was realized in PF as two allophones: */\*[kk]* and */\*[ĳk]*, the first of which occurred on the boundary between a stressed and a following open syllable, the second in all remaining positions.<sup>53</sup>

The assumption that it was a weak grade geminate which occurred originally after an unstressed syllable, regardless of the open or closed character of the following syllable is supported by present-day Estonian where an unstressed syllable is always followed by a geminate with a short first element regardless of whether the next syllable is originally closed or open (e. g. *hüpata* = *üppäta*, *kannatanud* = *kaññätanud*).<sup>54</sup>

<sup>50</sup> L. Hakulinen, *op. cit.*, p. 60; L. Posti, Grundzüge der livischen Lautgeschichte, p. 190; A. Turunen, *Lydiläismurteiden äännehistoria I* (= MSFOU LXXXIX), Helsinki 1946, p. 160.

<sup>51</sup> L. Kettunen, *Suomen murteet III*, p. 74. (See also L. Kettunen, *Lõunavepsa häälik-ajalugu*, p. 40.)

<sup>52</sup> P. Ravila, *Astevaihtelun arvoitus*, pp. 297—299.

<sup>53</sup> E. Kangasmaa-Minn, *op. cit.*, p. 29.

<sup>54</sup> L. Kettunen, *Eestin kielen äännehistoria*, p. 47. In most of the other Fennic languages a geminate stop alternates with a single stop, e. g. fi *mansikka* — *mansikan* (gen.) 'strawberry', kr *huoletoin* (nom. sg.) — *huolettomat* (nom. pl.) 'careless', vt

As has been mentioned above, geminates after an unstressed syllable have been mostly reconstructed on analogy with geminates after a stressed syllable, i. e. a strong grade before an open syllable, a weak grade before a closed syllable, e. g. \**tarṗittalessa*, \**näküütän*, cf. \**vakkā*, \**vakkān*. A formal approach to this transcription reveals an inconsistency. Thus, although L. Hakulinen reconstructs \**taṗpettihet* before a following open syllable, he also has \**mayättähen*, \**kesträttähen*<sup>55</sup>; in the case of a following open syllable L. Kettunen reconstructs \**pelkättäk*, but also \**o<sub>o</sub>ttajak*, *paisetten*.<sup>56</sup> (The latter word-form is indeed given by L. Kettunen without the asterisk (\*).)

A treatment of the original gradation of geminate stops as an allophonic phenomenon, i. e. as positional variation within the range of one and the same phonological form — a geminate \*/*pp tt kk*/, enables us to dispense in phonological discussions with the problem of whether a strong grade geminate after a stressed syllable could occur before an open syllable or not, and to transcribe \*/*makattak*, \**makattahen*/.

3.8. The single stops after the unstressed syllable (i. e. between the second and third syllable) occurred presumably always in the weak grade as far as an intervocalic position is concerned (e. g. the partitive form \**kota-ia* 'house', cf. the partitive forms \**maa-ta* 'land', \**vasara-ta* 'hammer').

In an intervocalic position no deviations from the general rule (a strong grade after a stressed syllable, a weak grade after an unstressed syllable) have been observed except Estonian word-forms with a short first syllable where a strong grade occurs after an unstressed syllable (e. g. *pimeda* (gen.) 'dark', *kanade* (gen. pl.) 'hen', *elada* '(to) live', etc.). Such cases are met with in the North Estonian dialect as well as in Standard Estonian and have been dealt with by a number of authors. This phenomenon has been variously accounted for. The general view is that the strong grade evolved during the period of the independent development of Estonian.<sup>57</sup> P. Ariste, however, regards it as possible (on condition that the first syllable was short and the third syllable was closed or there was no half-long vowel in the second syllable) that the third syllable was pronounced with a strong secondary stress, and that, consequently, a stronger consonantal element could occur at the beginning of the third syllable — a \**t* instead of \**ḍ* or \**t̃*, whence later \**t* > *d*.<sup>58</sup>

L. Kettunen believes that the stop of the 3rd person singular conjugational ending in PF was preserved unweakened also after an unstressed syllable. He sees the reason for this in the early disappearance of the vowel *i* from the conjugational ending, assuming that the disappearance of the *i* occurred before the formation of a weak grade in the stem and the

*sermika*Z (nom. sg.) — *sermikkād* (nom. pl.) 'glove', ing. *karzittā* '(to) scrape' — *karzidan* '(I) scrape'. Peculiar relations have developed in Veps and Livonian, and they do not obviously reflect the original alternation (see footnote, 3. 1).

<sup>55</sup> L. Hakulinen, *op. cit.*, p. 223.

<sup>56</sup> L. Kettunen, *Eestin kielen äännehistoria*, pp. 48, 49.

<sup>57</sup> L. Kettunen, *Selvitystä astevaihteluun*. — *Vir.* 1951, p. 222 ff.; L. Kettunen, *Eestin kielen äännehistoria*, pp. 80, 81; V. Tauli, *op. cit.*, pp. 36, 37; L. Posti, *Viron dentaaliklusiilini astevaihtelusta*. — *Vir.* 1950, p. 275 ff.; A. Raun, *Muutamia reunamuistuksia L. Postin artikkelin «Viron dentaaliklusiilini astevaihtelusta»*. — *Vir.* 1951, p. 91.

<sup>58</sup> P. Ariste, *Foneetilisi probleemide eesti keele alalt*. — *Eesti NSV Tartu Riikliku Ülikooli Toimetised. Filoloogilised teadused* 3, Tartu 1947, p. 7; P. Ariste, *Uhest eesti keele astmevahelduse küsimusest*. — *Eesti NSV Teaduste Akadeemia Toimetised* IV 1954, pp. 529—537; P. Ariste, *Sõna sõna kõrvale*, Tallinn 1965, p. 94.

ending.<sup>59</sup> The 3rd person singular forms would thus belong to a group of words ending "originally" in a stop and this phenomenon supposed by L. Kettunen would consequently transcend the domain of gradation. Other specialists have nevertheless reconstructed the 3rd person singular as ending in a vowel and with regard to the stop they have adhered to the general rules of suffixational gradation, writing *\*-pi* after syllables with primary and secondary stress, *\*-βi* (in our notation *\*-ḫi*) after an unstressed syllable.

3.9. It is generally believed that in PF a strong grade stop occurred after a liquid or a nasal consonant at the end of an unstressed syllable, e. g. *\*isäntä* 'master', *\*juutteltak* '(to) say, tell'.

E. N. Setälä<sup>60</sup> and K. B. Wiklund<sup>61</sup> have provided a number of pertinent examples from the present-day Fennic languages in support of such an assumed strong grade original form: est *parandan*, *isandale*, *ütelda*, *kähardan*, estS *paremba*, vt *vajejtan*, *avatō* < *\*avanton*, *kukertan*, krOl *parandan*, *avandot*, *nuorembat*, *viheldän*. L. Hakulinen has pointed out that alternations such as fi *puhaltaa* — *puhallan*, *alempi* — *alemman*, etc. are of recent origin.<sup>62</sup> P. Ravila associates the phenomenon with the fact that geminates could not occur originally in the positions mentioned. According to his theory single stops remained unweakened in such cases.<sup>63</sup> (See also 3.1.)

3.10. Taking into account all positional conditions, it should be possible to regard the gradation of single stops in PF as the positional variation of phonemic variants or allophones. When they stood after the vowel, liquid or homorganic nasal consonant of a stressed syllable before a closed syllable and after the vowel of an unstressed syllable, the stop phonemes *\*[p t k]* were realized as weak grade (weaker, shorter) allophones *\*[ḫ ḫ̄ ḫ̄̄]*. The strong grade allophones *\*[p t k]* probably occurred in the remaining positions. A phonological treatment would thus permit reconstructions such as, e. g. *\*kota* — *\*kotan* (gen.) 'house', *\*metsä* — *\*metsän* (gen.) 'forest, wood', *kakla* — *\*kaklan* (gen.) 'neck', *\*pimetä* — *\*pimetän* (gen.) 'dark', *\*isäntä* — *\*isäntän* (gen.) 'master', because *\*[p] = (1) \*[p]*, (2) *\*[ḫ]*; *\*[t] = (1) \*[t]*, (2) *\*[ḫ̄]*; *\*[k] = (1) \*[k]*, (2) *\*[ḫ̄̄]*. Hence, in certain positions (see above) *\*[p t k] = \*[ḫ ḫ̄ ḫ̄̄]*, and in the remaining positions *\*[p t k] = \*[p t k]*. As will be seen from the foregoing, some doubt may persist as to whether it was a "strong" or a "weak" allophone that occurred in certain positions, but at any rate the distribution of "strong" and "weak" forms of sounds in relation to one another can be defined in allophonic terms and it is superfluous to distinguish them in reconstructions.

4. It is not quite clear when the relations of so-called stem gradation were shifted in the separate languages to the position after an unstressed syllable (e. g. fi *ymmärtää* — *ymmärrän*). The development of gradation of the stem gradation type in a position after an unstressed syllable did not change the non-phonological character of gradation itself. It would

<sup>59</sup> L. Kettunen, *Vatjan kielen äännehistoria*, pp. 73, 146; L. Kettunen, *Eestin kielen äännehistoria*, pp. 33, 84, 173. (In the reconstructions listed there, however, L. Kettunen gives the 3rd person singular with a vowel ending: *\*näke<sub>pi</sub>* 'sees', *\*anta<sub>pi</sub>* 'gives'.

<sup>60</sup> E. N. Setälä, *Über quantitäswechsel im finnisch-ugrischen*, p. 22.

<sup>61</sup> K. B. Wiklund, *Entwurf einer urlappischen Lautlehre I (= MSFOu X (1))*, Helsingfors 1896, p. 118.

<sup>62</sup> L. Hakulinen, *Suomen kielen rakenne ja kehitys*, p. 60.

<sup>63</sup> P. Ravila, *Astevaihtelun arvoitus*, p. 297.

even have simplified the conditions in which allophones occurred because here analogically with relations after a stressed syllable, the openness or closeness of the next syllable would remain the decisive factor, and now already the sole decisive factor.

Consonant gradation evidently acquired a phonological character when (1) the weak grade allophones of geminates coincided with the original single stops (e. g.  $/*leppä — *leppän/ = [*leppä — *leppän] >$  fi *leppä — lepän* (gen.) 'alder-tree') and (2) when the weak counterparts of single stops were replaced by other phonemes in the language or by zero, the result being the appearance of new phoneme sequences (e. g.  $/*lepättäk — *lepätän/ = [*lepättäk — *lepätän] >$  fi *levätä* '(to) lie' — *lepään* '(I) lie';  $/*joki — *joken/ = [*joki — *joken] >$  fi *joki — joen* (gen.) 'river'). In those cases where gradation has developed into phonological alternation, it has substantially changed the original distribution of phonemes.

### Abbreviations

**est** — Estonian; **estS** — South Estonian; **fi** — Finnish; **ing** — Ingrian (Izhor); **kr** — Karelian; **krAun** — Aunus Karelian; **krN** — North Karelian; **krOl** — Olonets Karelian; **PF** — Proto-Fennic; **vt** — Vote.

МЕРЛЕ ЛЕППИК (Таллин)

### О НЕФОНОЛОГИЧЕСКОМ ХАРАКТЕРЕ ЧЕРЕДОВАНИЯ СТУПЕНЕЙ В ПРИБАЛТИЙСКО-ФИНСКОМ ПРЯЗЫКЕ

В исследованиях о чередовании ступеней в прибалтийско-финском праязыке и в историко-фонетических анализах современных прибалтийско-финских языков и диалектов мало внимания обращено на фонологическую трактовку чередования ступеней в праязыке. С точки зрения некоторых авторов, в прибалтийско-финском праязыке чередование ступеней, охватывавшее по общему мнению смычные и удвоенные смычные, характеризуется чередованием не фонем, а позиционных вариантов одной фонемы (или последовательности фонем), таким образом это явление имеет чисто фонетический характер. Но в транскрипциях реконструкций сильная и слабая ступени в общем отмечаются различными символами.

В статье делается попытка суммировать различные взгляды о распространении и характере чередования ступеней в праязыке и, опираясь на этот материал, в свою очередь обсудить возможность рассмотрения чередования ступеней в праязыке как аллофонического явления. Такая трактовка позволила бы в фонологических исследованиях при реконструкциях применить значительно упрощенную транскрипцию и помочь выяснению некоторых вопросов истории языка.

Представляется, что чередование ступеней приобрело фонологический характер в том случае, если 1) слабые варианты удвоенных смычных совпадали с первоначальными одиночными смычными (например:  $/*leppä — *leppän/ = [*leppä — *leppän] >$  фин. *leppä — lepän*) и 2) вместо слабых ступеней одиночных смычных появились другие фонемы или ноль (0); в результате образовались новые последовательности фонем (например:  $/*lepättäk — *lepätän/ = [*lepättäk — *lepätän] >$  фин. *levätä — lepään*;  $/*joki — *joken/ = [*joki — *joken] >$  фин. *joki — joen*). Превратившись в чередование фонологического характера, чередование ступеней таким образом существенно изменило первоначальную дистрибуцию фонем.