From Pre-Finnic to Late Proto-Finnic

Studies on the Development of the Consonant System

Introduction.

Between the Pre-Finnic and the Late Proto-Finnic periods a great many important consonant changes took place in the language. These changes profoundly altered the character of its consonant system, making it very different from the original Finno-Ugric system. No other period of like duration in the history of the Finnic languages can show anything even approximating in scope to the Early Proto-Finnic transformation.

Through this transformation, the foundation of the present Finnish consonant system was laid. From the Late Proto-Finnic period onwards — during a period of perhaps 1800 years — only a few minor changes have taken place in the Finnish consonant pattern. In view of these facts, the numerous and radical changes during the immediately preceding — and apparently much shorter — period are all the more conspicuous.

The external facts of these changes, i.e. the sets of sound-correspondences and even the relative chronology of the different phenomena are, on the whole, comparatively well known. Many of the most important changes were already demonstrated in the famous investigations of Vilh. Thomsen and E. N. Setälä, who were the first to apply modern comparative methods to the study of Finnic languages. Of earlier scholars in the field, Arvid Genetz deserves special mention. Since the first works of Setälä, Heikki Paasonen and — during the past few decades — Y. H. Toivonen, have been perhaps the main contributors to the historical phonology of the Pre-Finnic and Proto-Finnic consonants.

But of the *internal* history, if we may term it thus, of these consonant-changes, very little has so far been known. Questions like »What was the reason for this particular change?» and »How are we to explain the fact that so many important changes took place within this relatively short period?» have so far not been discussed at all. Yet it is obvious that we should understand the development much better if we knew the answers to these questions.

In the following chapters an attempt will be made to elucidate the forces behind the changes. The discussion will be limited to the most important of the consonant-changes already established by earlier investigators. New sound correspondences will not be set up, nor will new etymologies be proposed.

1. The Change *š* > *h*.

In initial position.

Fi. *hiiri*, Est. *hiir*[1], Votic *īri*, Kar.-Olon. *hīri*, Veps *hiŕ*, Liv. *īr* 'mouse' | MordE *tšejeŕ*, *tšeŕeŕ*, M *šejə̂r*, Ziry.-Voty. *ši̯r*, Vog. *täŋkər*, *täŋər*, Osty. *teˎŋɢər*, Hung. *egér* id.

Fi. *haapa*, Est. *haab*, Votic *āpa*, Kar. *hoaba*, Olon. *hoabu*, Veps *hab*, LivE *ǭbə̂*, *ǭbə̂z*, W *å̄bə̂z* 'aspen' | LpN *suppe*, Cher. *ša·pi*, *ša·pki*, *šopke·* id.

Fi. *halla* 'frost', Est. *hall*, Votic *aлла* 'hoar-frost', Kar. *haлла*, Olon. *haллu*, Veps M, O *haл̄*, S *haлa* 'frost', LivE *ǭla*, W *å̄la* 'hoar-frost' < Baltic, cf. Lith. *šalnà*, Le. *sal̂na* 'hoar-frost, frost'. From Proto-Finnic, before the change *š* > *h* had occurred, this word was loaned into Lapp: PrF **šalna* > LpN *suolˈdne* 'dew; haze, mist, steam, over water or ground'.

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[1] In the Estonian literary language, initial *h* is usually not pronounced. This pronunciation is based on the northern dialects; in the southern dialects initial *h* is preserved.

Fi. *heinä* 'hay, grass', Est. *hein* (N *eìn*, S *haìn*) 'hay, plant in general', Votic *einä* 'hay', Kar. *heinä*, Olon. *heinü* 'hay, grass, plant', Veps *hein*, *hii̯n* 'hay, grass', LivE *àina*, W *å̀ina* 'Gras, Kraut, Heu; Arznei; Gewürz' < Baltic, cf. Lith. *šiẽnas*, Le. *sìens* 'hay'. LpN *suoiˈdne* 'grass, hay' < PrF **šaina*.

Veps *hähk*, Gen. *hähkän* 'otter' (Russ. 'норка' Setälä), 'tuhkur' (Kettunen), VVV *hähk* 'норка (зверек)'[1] | Cher. KB *šä·škə*, U, T *βüt-šaškə̂* 'Otter', J *šäškə*, M *šaškı̣̂*, B *šaškę* 'Nörz, Sumpfotter'. PrF **šäškä* > Lith. *šẽškas*, Le. *sesks* 'Iltis'. Tat. Kaz. *čäške*, *čäškä* 'ein Wassertierchen', Tat. Mish. *šäške* 'норка', Chuv. *šaškə̂* 'Nörz (Mustela lutreola)' are probably Cheremis loan-words (see Wichmann FUF 11 p. 253, Kalima BL pp. 102—103).

PrF **š*- was, apparently, substituted for Baltic initial *ž*-, because there were no voiced initial sibilants in PrF. This treatment occurs, for instance, in the following words:

Fi. *herne*, Est. *hernes*, EstS *herneh*, Votic *erne*, Kar.-Olon. *herneh*, Veps *h'ernęh*, LivE *ję̄rnaz*, *ję̄rnaz*, W *ìernaz* 'pea' < Baltic, cf. Lith. *žìrnis*, Le. *zir̃nis* 'pea', OPr. *syrne* 'Korn'.

Fi. *hammas*, Gen. *hampaan*, Est. *hammas*, Gen. *hamba*, Votic *ammaz*, Kar. *hammaš*, Olon. *hammas*, Veps *hambaz*, LivE *āmbaz*, W *å̄mbaz* 'tooth' < Baltic, cf. Lith. *žam̃bas* 'Kante, Rand, Balkenkante', *žam̃bis* 'Holzpflug', Le. *zùobs* 'Zahn; Kamm am Schlüssel'.

In medial position.

Fi. *iho* 'skin, complexion', Est. *ihu* 'body', Votic *iho* 'skin', Kar.-Olon. *iho* 'face', Lud. (*rožan*)*ihot* 'face' | LpN *âsse* 'back of skins or furs; the skin as distinct from the hair on it', MordE *jožo*, M *jož*(*ă*) 'die äussere Haut, Oberfläche', Cher. *juž* : *juž-βət* 'Wasser, das sich unter der Schwiele sammelt' (also eig. 'Hautwasser'), Ziry. *ež* 'Hautteil des Felles (nicht

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[1] This word probably occurs in some Finnish place-names, e.g. *Hähkjärvi* in Kärkölä, *Hähkiöniemi* in Parkano.

Haare), die innere (nicht verhaarte) Seite der Haut', Osty. DN *e·ţ* 'Körper (des Menschen)', VK *e·ļ̕* 'Haut', Kaz. *ɛ̜·л* 'Körper, Rumpf (des Menschen); Oberfläche des Körpers: Haut'.

Fi. *jauhaa*, Est. *jahvama*, Votic *javā*, Kar.-Olon. *jauhuo*, Veps *jauhta*, *ďouhta*, *ģouhta*, Liv. *jŏvvə̂* 'to grind' | Mord. *jažams* 'mahlen, zermalmen', Cher. *ja·ŋgə̂žę̆m*, *jòŋə̂žę̆·m* 'kauen, wiederkauen, mahlen'.

Fi. *lohi*, Est. *lõhi*, Votic *лęhi*, Kar.-Olon. *lohi*, Veps *лohi* 'salmon' < Baltic, cf. Lith. *lãšis*, *lašišà*, Le. *lasis*, OPr. *lasasso* 'salmon'. Liv. *laš* is a recent loan-word from Lettish.

Fi. *tarha* 'enclosure, cattle yard, etc.', *puutarha* 'garden', Est. *tara*, S *tahr* 'Hürde, Umzäunung', Votic *tara* 'enclosure, yard' Kar. *tarha*, *tahra* 'yliset (tanhuan päällä)', VepsS *tarh* (Kett.) 'väiksem piirkond, ala', Liv. *tarà* 'Zaun, umzäunter Platz' < Baltic, cf. Lith. *dar̃žas* 'garden', Le. *dàrzs* 'garden, yard, enclosure'. It seems likely that also medially PrF *š* was substituted for Baltic *ž*. It is uncertain whether voiced sibilants could occur medially in Early PrF.

Fi. *lehmä*, Est. *lehm*, Votic *lehmä*, Kar. *lehmä*, Olon. *lehmü*, Veps *ľehm*, Liv. *ňiem*, *ňiemə̂z* 'cow' | MordE *ľišḿe*, *išḿe*, M *ľišḿɛ̆* 'Pferd, Ross'.

In final position.

Fi. *uve*, Gen. *upeen* 'stallion, bull, ram', Kar. *uveh*, Gen. *ubehen* 'stallion', Veps *ubeh* id. | ? Cher. *ò·žə̂* 'stallion', Ziry., Voty. *už* id.

Fi. *vene*, *venhe*, Est. *vene*, Votic *vene*, Part. Sg. *venestä* (< *venehtä*), Kar.-Olon. *veneh*, Veps *v́enęh*, (Liv. *venè*, *venì* < Est. *vene*) 'boat' | LpN *fânâs*, *vânâs* 'boat', MordE *v́entš*, *v́äńtš*, M *v́eńəš* 'Kahn'.

In investigating the cause of the change *š* > *h*, it is important to know the age of the change. During the period of Baltic contacts Proto-Finnic still had *š*. This is proved by the fact that loan-words of Baltic origin, loaned through

Proto-Finnic into Lapp, always show *s* in Lapp in words where Baltic had *š* and Late Proto-Finnic shows *h*. Thus LpN *suolˈdne* 'dew', *suoiˈdne* 'hay', were borrowed from PrF **šalna*, **šaina*, and not from subsequent Late PrF forms with initial *h*-. The possibility of a direct loan from Baltic into Lapp does not seem to have existed (Thomsen BFB pp. 70, 152, Kalima BL p. 190). In addition, there is an indirect proof that *š* was still unchanged during the earliest period of Germanic contacts. In several early loan-words from Germanic, Proto-Finnic *k* was substituted for Germanic *h* (*χ*), e. g. Fi. *kana* 'hen' < Germanic, cf. Goth. *hana* 'Hahn', ON *hani* id. Fi. *kallas*, Gen. *kaltaan* 'declivis' < Germanic **halþaz*, cf. ON *hallr* 'geneigt, schief', AS *heald*, German *Halde*; Fi. *kaura*, *kakra* 'oats' < Germanic, cf. Old Gutnish *hagre*, ON *hafri*; Fi. *kauris*, *kapris* 'he goat' < Germanic, cf. ON *hafr*.[1] One of the main sources of Late PrF *h* was *š*, and the substitution in early loan-words of *k* for Germ. *h* seems to show that there was no *h* yet in the Proto-Finnic consonant system.[2] There are, on the other hand, very old Germanic loan-words in Proto-Finnic which already show *h* corresponding to Germanic *h*, e. g. Fi. *tanhu*, *tanhua*, *tanhut* 'Hürde' < Germ. **tanhu*-, cf. Old Icel. *tó*, *tǫ́*, *tá*, Old Sw. *tā*, *tǣ* 'Hofplatz'; Fi. *marha*- in *marhaminta* 'capistrum, Halfterstrick' < Germanic **marha*, cf. ON *marr*, OHG *marah*, *marh* 'equus'; Fi. *hartio*, *hartia* 'humerus' < Germanic **harðiō*-, cf. ON *herðar* Pl. 'shoulders', MHG *herte*.

This leads us to the conclusion that *š* > *h* must have occurred during the period of early contacts between Proto-Finnic and Germanic.

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[1] It does not seem possible to assume that these words were borrowed before the first sound-shift (Grimm's Law) had taken place; see e. g. Thomsen SA II 256.

[2] In the Baltic languages, likewise, *h* did not occur. In old borrowings *k* was substituted for Germ. *h*. Cf. e. g. Lith. *kliepas*, Le. *klaips* 'bread', Goth. *hlaifs*; Lith. *kvietys*, Pl. *kviečai*, Le. *kvieši* Pl. 'wheat', Goth. *hvaiteis*; OPr. *kelmis* 'hat' < Germ. **helmaz*; OPr. -*staclan* in *panustaclan* 'Feuereisen' < Germ. **stahla*. In more recent loan-words Germ. *h* is dropped: OPr. *ilmis* 'Bark', Goth. **hilms*. See Thomsen BFB p. 79 footnote.

Now it seems possible to assume that the change *š* > *h* had some connection with the Germanic contacts. We know from the great number of Germanic loan-words in all Finnic languages that the Germanic influence must have been a very important and extensive one. To explain this — and the absence of Finnic loanwords in Germanic — it has been assumed that there were Germanic colonies living among the Finnic population, and that these colonies later became wholly Fennicized (Setälä Suomen suku I p. 159, cf. also Setälä JSFOu 23: 1 p. 50). If this is so, it seems probable that the use of *h* instead of *š* is due to a Germanic substitution. The obvious reason for the substitution was that *š* did not exist in the Germanic consonant system. Of the existing consonants in the Germanic system, it was apparently *h* that came closest to Proto-Finnic *š*. Another possibility might have been to substitute *s* for *š*. We find this substitution for instance in the Slavic loan-words of Finnic. A substitution of *h* for Slavic *š* in Proto-Finnic was made inconvenient by the fact that there was also an *h* in the Slavic system which had to be rendered by *h* in Finnic, e. g. Fi. *hurtta* 'canis venaticus' < ORuss. *хъртъ* (the Baltic languages which still had no *h*, show *k* in this Slavic loan-word: Lith. *kùrtas*, Le. *kurts*, OPr. *curtis*; Liv. *kūrta* is borrowed from Baltic, Liv. *ūrt̀a* comes direct from Slavic). Furthermore, the substitution of Germanic *h* instead of *s* for PrF *š* had the advantage of keeping two functionally distinct sounds separate.

It thus seems possible to assume that people of Germanic origin, living in close contact with Proto-Finns and speaking Finnic, substituted *h* for Proto-Finnic *š*. This pronunciation was subsequently adopted by the neighboring Proto-Finns themselves, and gradually spread over the whole area of Proto-Finnic. The reasons leading to the adoption of this new pronunciation were apparently the same that led, in many instances, to the use of unnecessary Germanic loan-words instead of native words.[1]

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[1] One of the reasons for borrowing 'unnecessary' words may often have been the desire to be considered fashionable or refined. Aspects of

Theoretically, of course, it has to be admitted that a regular sound change *š* > *h* would be perfectly possible, and such a change is indeed known in many languages.[1] However, the circumstances connected with the Proto-Finnic change *š* > *h* make it, in my opinion, more likely that this change is due to Germanic influence. I would thus say that *h* for *š* originated as a Germanic superstratum phenomenon on Proto-Finnic ground.

There are two Pre-Finnic clusters containing *š* that require special discussion. They are

*-*šk*- and *-*kš*-.

It is very often impossible to say which was the original order of the consonants in a given case because some languages require *-*šk*-, some *-*kš*-, in individual cases. Examples are:

Fi. *mahi*, Gen. *mahin* (Renv.) 'putridum et fragile quid', *puu on mahi* 'arbor est intus putrida', *mahea*, *mahia* (Lönnr.) 'murken, boken' | MordE *makšo*, M *makšă* 'morsche Stelle in einem Baum'.

Fi. *mehiläinen* 'bee', EstS *mehiläne*, *mehine*, Kar. *mehiäńe*, *meheläińi*, Olon. *mehijäine* id., Lud. *mehi₍aine*, *mehi₍àine*, *mehiäine*, *mehäine* 'bee, bumble-bee' | MordE *ḿekš*, *ḿäkš*, M *ḿeš* 'Biene', Cher. *mükš*, Ziry. *moš*, Voty. *muš*, Hung. *méh* id. (FU **mekš*- < Early Proto-Aryan **mekš*-, cf. Skr. *makṣ̌*, *makṣ̌ā*, *makṣ̌ikā* 'Fliege, Biene', Zend *maχšī* 'Fliege, Mücke'; theoretically FU > Aryan would also be possible, cf. Jacobsohn Arier und Ugrofinnen 161—162; however, since the word for 'honey' [fi. *mesi*, Hung. *méz*, etc.] is borrowed

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this kind of borrowing are discussed for instance by Bloomfield, Language, Chapter 26, and Jespersen, Growth and Structure of the English Language pp. 74—85.

[1] It was the opinion of Setälä, at least during the time he wrote ÄH, that *š* > *h* was a slow, gradual change which took place through many intermediate stages; see ÄH p. 323.

from IE, it is more likely that the word for 'bee', too, is of IE origin.)

Est. *jahe*, Gen. *jaheda* 'abgekühlt, kühl' | LpSw. *juoskos* 'rigidus', Wefs. *ju̯ösḱiεs* 'kühl', MordE *jakšamo*, M *jakšamă* 'kalt, Kälte'.

Fi. *liha* 'flesh, meat', Est. *liha* 'Fleisch, Korpulenz', Votic *liha* 'flesh, meat', Kar.-Olon. *liha*, Veps *liha*, id., Liv. *lejà* 'Leib, Fleisch' (*j* < *h*) | LpN *lii'ke*, Gen. *liike* '(human) skin', I *liške* id., Ko. *lėšk*^{E} '(human) skin, body; flesh (Bibl.)'.

Fi. *laho* 'decayed, moldered, rotted', Kar. *laho*, Lud. *ɹaho*, Veps. *ɹaho* id. | LpKo. *ɹašk*^{A} id.

Fi. *vaha* 'wax', Est. *vaha*, Kar.-Olon. *vaha*, Veps *vaha*, LivE *vǭ̌*, W *vå̌* (< *vaha*) id. < Baltic, cf. Lith. *vãškas*, Le. *vasks* 'Wachs'.

Fi. *pähkinä*; *pähken*, Gen. *pähkenen*; *pähkänä* 'nut', Est. *pähkel*, *pähel*, Gen. *pähkla*, *pähkle*, *pähkli*; *pähen*, G. *pähkne*, *pähkme*; *pähes*, G. *pähke*; *pähknä*, Gen. *pähknä*; *pähn*, Gen. *pähnä* (< **pähknä*), Votic *päh₍tšenä*, *päh₍tšänä*, Liv. *pĕ̌gə̂z* (< **pähki-*) id. | MordE *ṕešťe*, *ṕeštše*, *ṕeštšę*, M *ṕešťε̌* 'Haselnuss' (*šť* < *šḱ*), Cher. *pük*$^{\chi}$*š* id., Voty. *puš* in *puš-moľi* 'Haselnuss'.

Fi. *pohje*, Gen. *pohkeen*; *pohkea*, *pohkio* 'calf (of the leg)', Olon. *pohkei* id., Lud. *pohkied* Pl. id. | LpKo. *pŏăšk̀-(vŭ̩vȉťś*^{E}*)* 'Schenkelfleisch des Renntiers; Wade', MordE *pukšo*, M *pukša* 'das dicke Fleisch überh.; Schenkel, Hinterbacke' (the Mord. word could also be a cognate of Fi. *potka*, see Toivonen FUF 19 p. 128).

Fi. *ahkio* 'Schlitten der Lappen' | Osty. DN *ōγ̮ə̂ḷ*, Kaz. *ǭγ̮ə̂ʌ*, etc. 'Schlitten, Narte'.

Fi. *pihka* 'resina l. gummi, pix', Est. *pihk*, G. *piha* 'klebrige Flüssigkeit (im Euter einer trächtigen Kuh, als Harz oder Gummi aus einem Baume fliessend), trübes Beuchwasser, worin Leinewand gelegen hat', Votic *pihku* 'Kiefer', Kar. *pihka* 'Harz', Olon. *pihku* id., Lud. *pihk* id., VepsS *pihk* 'Kiefer', M, N *pihk* 'grosser, dichter Wald' | Osty. V *pìγḷi·tä·* 'mit Harz zustopfen (Spalten in einem Boot), mit erhitztem Harz dichten', Trj. *p'i·γʌ̂i·ṭ'ā̤γз* 'flicken (einen Einbaum)'. (In this and the preceding word, there is a metathesis in Ostyak.)

It seems to have been a common assumption that *h* in Fi. *vaha* instead of **hk* is due to a generalization of the weak grade of gradation (see for instance Thomsen BFB p. 238, Kalima BL p. 175, Hakulinen SKRK I p. 51). However, it is extremely unlikely that unvoiced clusters ever were subject to gradation in PrF. Therefore it seems very difficult to consider *h* as resulting from a generalization of the weak grade. A better explanation would be to assume a metathesis *šk* > *kš* in PrF.[1] We have seen that Finnic *h* often corresponds to -*kš*- of other languages. Or could *vaha* have been borrowed from an earlier Baltic form **vakša-*? In that case it would not be necessary to assume a metathesis in PrF. This seems indeed to be the best explanation. Lith. *š* in *vãškas* can only be the result of a change *ks* > *kš* (see Endzelin Славяно-балтійскіе этюды p. 57), and the original order of consonants may well have been preserved at the time of the Finno-Baltic contacts.

But how is it to be explained that Late PrF *h* represents Pre-Finnic *kš*? This treatment too seems to be the result of a Germanic substitution. Having no *š* Germanic speakers were unable to pronounce *kš*. In view of the fact that *h* was substituted for PrF *š*, we should perhaps expect that **kh* would have been substituted for *kš*. Since, however, the contacts took place after the first sound-shift, *kh* (or a strongly aspirated stop similar to it) was probably impossible in Germanic. It is therefore likely that Germanic *h* came closest to PrF *kš* and consequently was substituted for it.

A phonetic change *kš* > *š* (> *h*) would be extremely unlikely, since intervocalic *ks* has always been preserved as such, and it would be difficult to account for a different treatment with regard to *kš*.

2. The Treatment of *tš*.

The FU non-palatalized affricate *tš* (often called cacuminal), shows a double treatment in Late Proto-Finnic: in some cases it is represented by *t*, in some cases by *h*.

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[1] This was assumed already by Ojansuu, Suomi IV: 20_1 p. 40.

tš > *h*.

In initial position.

Fi. *häntä*, Est. *händ*, Votic *äntä*, Kar. *händä*, Olon. *händü*, Veps *händ* 'tail', LivW *ā̬nda* 'Stachel von Insekten' | LpWefs. *tsạ̊tskà* 'Fleisch am Hinteren', Vog. *šəš*, *šḭš*, *sis* 'back', Osty. DN *ṭṣ̌əṇṭṣ̌*, V, Vj. *ṭṣ̌ŏ̭n̓ṭṣ̌*, Ni., Kaz. *ṣ̌ă̭ṣ̌* 'Rücken'.

Fi. *hanki*, Est. *hang*, Votic *an₍tši*, Kar. *haŋgi*, Veps *haŋg*, Liv. *aŋ̄ɢ* 'Schneekruste, Schneewehe' | ? LpN *cuoŋo*, *cuomo* 'strong crust on snow'.

Fi. *hapan*, Est. *hapu*, Votic *apō*, Kar. *hapan*, Olon. *hapain*, Veps *hapa-* (in *hapamaid* 'sour milk') 'sour', Liv. *ap̀pə̑n* 'sour' | MordE *tšap̀amo*, M *šap̀amă* 'sauer', Cher. *šà·pə̑* id., ? Vog. *šē̬β-*, *sāβ-* 'sauer machen', Osty. Vj. *ṭṣ̌əγṭ̹à* 'sauer werden, gären (der Teig)', Kaz. *ṣ̌ŏ̭u̯ṭĭ̬* 'sauer werden'.

In medial position.

Fi. *kehä* 'errichtetes Hausgezimmer; Umkreis; Hof um Sonne od. Mond', Est. *keha*, *kiha*, *kihä* 'Körper, Rumpf (auch von Unbelebtem); Gefäss, Geschirr', Liv. *kejà* (< *kehä*) 'Rumpf, Körper; Behälter' | LpSw. *kes*, *kesa* 'gyrus, circus', ? LpN *giessât* : *giesâm* 'wind into a ball, wind in (fishing line), wrap, tie round, pack, roll or wrap up in', MordE *tši*, *tšį̬*, M *ši* 'Sonne; Tag', Cher. *kè·₍tšə* id., Ziry. *kḭṭṣ̌* 'Ohrring, Ring; Mondhof, Sonnenring; Schlinge', Voty. *kḭṭṣ̌* 'Schlinge, Schleife', Vog. *kuš*, *kiš*, *kis* 'Reif (zu Fässern)', Osty. Trj. *k̑ŏ̭ṭṣ̌* 'Reif (der Reuse)'.

Fi. *piha* 'Hofplatz', Est. *pihe*, Gen. *pihte*[1] 'Stange, Hopfenstange', *piht*[1], Gen. *piha* 'Stange, Zaunstange, Pallisade', Kar.-Olon. *piha* 'Hofplatz', Veps *piha* 'varhopatsaiden väliin tehty seinämä tanhuan ja asuinhuoneen välillä' | Cher. *pì·₍tšə* 'Zaun, Einzäunung', *kù:δə̑-βì·₍tšə* 'Hof', Ziry. *poṭṣ̌* 'lange, dünne Stange, Zaunstecken, Zaunpfahl', Voty. *puṭṣ̌*

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[1] Est. *t* in the strong grade is due to analogy.

'Stange, Staken', ? Osty. Ts. *pùṣ̌i̯uχ̭* 'senkrechte Hebestange an der Mündungstange des Trampnetzes'.

Fi. *uuhi, uuho* 'Schafmutter', Est. *uhe* 'Mutterschaf', Olon. *ūhut,* Lud. *ūhivuon* 'Mutterlamm', *ūhut, ūhu* 'Mutterschaf, das nicht gelammt hat', VepsS *uhi* 'einjähriges Lamm', *uhid* Pl. 'die Schafe' | MordM *utša·* 'Schaf', Cher. ^{ə}*žγa·*, *užγa·* 'Schafpelz', Ziry., Voty. *i̯ž̭* 'Schaf', Vog. *òš, oš, ȍʿs,* Osty. Trj. *ʿå·ṭṣ̌,* V, Vj. *a·ṭṣ̌,* DN *o·ṣ̌* id.

In final position.

No examples known.

tš > *t*.

In initial position.

No examples known.

In medial position.

Fi. *odottaa,* Est. *ootama* (< **oδotta-*), Votic *ōtẹлла,* Kar.-Olon. *vuottoa* (< **oδotta-*), LivE *vŏ̮dlə̂,* W *v*^{u}*ŏdlə̂* (< **otele-*) 'to wait' | LpSw. *ådsotet* 'exspectare', MordE *utšoms,* M *utšə̂ms* 'warten, erwarten', Cher. *βə̂·₍tšẹ̭m, βu₍ťšẹ̭·m* 'warten'.

Fi. *otava* 'eine Art Lachsnetz' | LpN *oazes,* Gen. *oaccas* 'barrier (of netting or small birch trees) across a river — used when fishing illegally with drift-nets', Vog. *ūši̯m* 'Zaun', *ūsmä* 'Reuse', *ušmä* 'rúdkerítéses czége', Osty. DN *u̯ō₍ṇž̥ə̂m* 'ein Fischwehr: in den Boden werden Stangen eingetrieben und zwischen diese wie bei der Herstellung eines Rutenzauns lange Birken- u. a. Ruten geflochten', Trj. ^{u}*ṷū₍ṭṣ̌ə̂mʿ* '»Angelnetz»'.

Fi. *potea* : *poden* 'schmerzen; krank od. bettlägrig sein; kränkeln', Est. *põdema, podema* 'kränkeln, siechen, krank darnieder liegen', LivE *pŏ̮ddə̂* : *po̮dùʙ,* W *p*^{u}*ŏddə̂* : *p*^{u}*odùʙ* 'schmerzen, Schmerz fühlen; kränkeln' | LpN *buoccât* : *buoʒâm* 'be ill, have au illness, suffer from an illness'.

In final position.

Fi. *kevät* 'spring', Est. *kevade, kevadi*, S *kevväj* 'Frühjahr, Frühling', Votic *tševäᴅ*, Kar.-Olon. *kevät*, Veps *ḱevaź*, Gen. *ḱevadęn*, Liv. k^{i}*evàᴅ* id. | Cher. *kä·ŋgəž, keŋe·ž* 'Sommer'.

To account for the double treatment of FU **tš* in medial position, it has been assumed that it goes back to an old dichotomy *tš* ~ *š*. According to this assumption PrF *t* goes back to *tš*, and *h* to *š*. The same kind of dichotomy is to be found elsewhere too. Thus for instance Lp. *ss* ~ *s*, Mord. *ž*, Cher. *ž*, Ziry., Voty. *ž* seem to come from *š*, while Lp. *cc* ~ *c*, Mord. *tš, š*, Cher. *tš, š*, Ziry., Voty. *tš, š, dž* perhaps go back to *tš* (see Toivonen FUF 19 pp. 254—255). In some cases there perhaps existed a geminate affricate **ttš*, corresponding to the geminated stops. What the reason for the dichotomy was, is not known so far with any certainty. Consonantal gradation has often been mentioned as a possible explanation, but we cannot rely very much on this possibility until we know something more definite of the age and extent of gradation.

As can be seen from the etymologies, there is no agreement between the different languages in the distribution of the dichotomy. It is possible, therefore, that there was in Pre-Finnic no sharp division yet between the two ways of treatment. Moreover, there are some words in Finnish in which both treatments seem to be represented. Such cases may be *viti* 'frisch gefallener Schnee' besides *vihi* (Lönnr.) 'nyssfallen fin snö, tunn snö', Kar. *viďi* id., Lud. *viďi* id. | LpN *vâccâ*, Gen. *vâʒâ* 'loose snow (especially new snow on the top of a layer of older snow or on a road with snow on it)', and *uutu* bssides *uuhi* (see Toivonen FUF 19 pp. 58, 97, 208—209). Ae however the roots of the double treatment are obviously older than Early Proto-Finnic, a further discussion of its origin falls outside the scope of the present investigation.

Whatever, then, the origin of the dichotomy *tš* ~ *š* was, we can start from the assumption that it existed already in

Pre-Finnic. We may assume further that Late PrF *h* derives from *š*, and Late PrF *t* ∼ *δ* from *tš*. The change *š* > *h* apparently coincides with the similar change discussed on pp. 4—7, and what was said there seems to apply to this case too. It should be noted that only this treatment of FU *tš* is known to occur in initial position. An initial affricate *tš* (or an initial cluster *t* + *š*) occurred in neither Proto-Baltic nor Proto-Germanic. It would have been only natural if the speakers of Baltic, when speaking Finnic, had simplified the initial affricate by substituting *š* for *tš*. *š* could thus be the outcome of a Baltic superstratum. In any case, initial *š* representing FU *tš* cannot be explained as resulting from gradation, even if it could be proved that gradation had something to do with the treatment in medial position. But on the other hand it is perfectly possible that *tš* > *š* in initial position is a spontaneous sound change, which could have occurred already before the foreign contacts took place.

As to the change *tš* > *t*, it was the opinion of Paasonen that the intermediate stage was *th*: *tš* > *th* > *t* (Beiträge p. 263). Paasonen apparently thought that *tš* > *th* was simultaneous with the change *š* > *h*. But there are some difficulties. We know some examples which show that *t* from *tš* has taken part in the change *ti* > *si*: Fi. *haaksi*, Gen. *haahden* 'boat, ship' | MordE *šakš*, *tšakš* '(irdener) Topf, Kochtopf' (FU **-ktš-*) | | Fi. *kynsi*, stem *kynte-* 'nail, claw' | LpN *gâʒ'ʒâ*, Gen. *gâʒʒâ* 'nail; claw (also fig.); both the parts of a cloven hoof; hoof', Kld. *kęñᴅ*^{t}*s*^{A}, Gen. *kęnᴅza* 'Nagel, Klaue' | MordE *ḱen*^{d}*žę*, *ḱenže*, M *ḱeń*^{d}*žε̆* 'Nagel, Klaue, Huf', Cher. *kətš*, *kütš*, etc., Osty. DN *kǫ̈ṇṭṣ̌* id. | | Fi. *huosia* 'schaben, scharren, scheuern' | Voty. *tšužịnị* 'fegen, kehren, abfegen, abkehren', Osty. V, Vj. *tšàtša*ˋ 'fegen, kehren'. Now *ti* > *si* is obviously older than *š* > *h* (see p. 5), and therefore **tši* > **thi* > *ti* > *si* does not seem possible. We could accept the hypothesis *tš* > *th* only if we could assume that *si* in the words mentioned above is due to analogy. No analogy could however explain *si* in *huosia*, but it is, on the other hand, not absolutely certain that *si* in this word goes back to *ti*.

The medial *s* in *huosia* could be explained as resulting from an early dissimilation *tš—*tš > *tš—*t́ś. *s* would then go back to *t́ś (see p. 18). It should also be noted that we have *ti* unchanged in Fi. *viti* and, in addition, in Fi. *vaadin*, Gen. *vaatimen* 'dreijährige Renntierkuh' | LpN *važâ*, Gen. *vāččâmâ* 'full-grown female reindeer (which already has or has had a calf)', but it must be admitted that we do not know how old *i* is in these words.

Toivonen has pointed out that a development *ṭṣ̌ > ṭ̣ˢ̌ > ṭ, which has taken place in OstyVart., would also be possible in Finnic (FUF 19 p. 255).

If the change *š* > *h* as indicated on pp. 4—7 is due to a Germanic superstratum, it would be natural to assume an influence from the same source in the treatment of *tš* because of the identity of the sibilants. Since the Germanic speakers substituted *h* (*χ*) for *š*, we should expect **th* as a substitution for *tš*. However, *th* does not seem to have been possible in Germanic at that time.

The Germanic contacts must have taken place after the first sound-shift (Grimm's Law), as was already assumed by Thomsen. All attempts to prove the reverse have failed. For a detailed discussion of this controversy, see Björn Collinder Die urgermanischen lehnwörter im finnischen (Skrifter utg. av K. Hum. Vetenskaps-Samfundet i Uppsala 28: 1, 1932). After the first sound-shift, *th* did not exist in the Germanic consonant system. One of the results of the sound-shift had been the change *t* > **th* > *þ*. And it seems obvious that the new unvoiced stops, developed through the sound-shift from IE voiced stops, had not yet developed aspiration (see the detailed discussion by Collinder *op. cit.* pp. 105—114).

What then would have been the most likely way of rendering Proto-Finnic *tš* in the Germanic system if, as we have seen, *th* did not come into the question? It would seem that the closest equivalent was *þ*, which goes back to Pre-Gmc. *th*. Consequently, we may assume that Germanic *þ* was substituted for Proto-Finnic *tš*. When this pronunciation was adopted by the Proto-Finns themselves, most of them were unable to pronounce *þ* and substituted *t*. The same substitution is known to have taken place in words borrowed from

Germanic into Proto-Finnic, e.g. Fi. *kulta* 'gold' < Germanic **gulþa-*, Goth. *gulþ*, Fi. *autio* 'waste, desolate, uninhabited' < Germanic **auþia-*, Goth. *auþs*.

The seemingly divergent treatment of Proto-Finnic *kš* (> *h*) as compared with *tš* (> *t*), seems to become understandable if explained in the way indicated above.

As to the treatment of FU *tš* in consonant clusters, we find either *t* or *h* representing the affricate, i. e. the same dichotomy as we observed in intervocalic position. A few examples of the most important clusters are given here to illustrate the treatment.

**-ktš-*

Fi. *haaksi*, Gen. *haahden*, Ill. *haahteen* 'boat, ship'; see p. 13.

**-ntš-*

Fi. *kynsi*, stem *kynte-* 'nail, claw'; see p. 13.

Fi. *häntä* 'tail', see p. 10.

Fi. *petäjä* 'Kiefer (Pinus sylvestris)', Est. *pedajas*, *pedakas*, *pädajas*, *pädakas*, S *petäj* 'Kiefer, sehr harzige, harte, nicht hochgewachsene Kiefer', Kar. *pedäjä*, Ol. *pedäj*, Veps *ṕedai̯*, Liv. *p*^{i}*edàɢ* 'Kiefer' | LpN *bæcce*, Gen. *bǣʒe* '»Scotch» pine (Pinus sylvestris)', Kld. *pieᴅts*^{E}, Gen. *pieᴅ̆ze* id., MordE *ṕitšẹ*, *ṕitše*, M *ṕitšɛ̆* id., Cher. *püńd́ž̆ə*, etc. id., Ziry. *požẹm* id., Voty. *pužịm* 'Fichte, Tanne, Kiefer'.

**-rtš-*

Fi. *verha* (Renv.) 'Schirm, Decke, Körpersbedeckung, Kleid', (Lönnr.) *verha*, *verho* 'täckelse, hölje, plagg, drägt, klädnad; skygd, skärm, gömställe; skydd, skugga, lä', *verhoa*, *verhota* 'hölja, bekläda, betäcka, skydda, skygga' | MordE *orštams*, *ortšams*, M *ursta·ms*, *štšams* 'kleiden, bekleiden, anziehen, anlegen (ein Kleid); sich ankleiden' (*orštams* and *urštams* are metathetical forms; *štšams* has lost the unstressed initial vowel).

Fi. *karhi* (Renv.) 'Egge, Harke, Rührwerkzeug', (Lönnr.) 'harf (äes), harf af qvistig gran, svedjeharf (hara, astuva); räfsa (harava), harka, kratta, ugnsraka' | mordM *kar'tšă* 'Reis', E *kurtšt kartšt* (Pl.) 'Reisig und allerlei Abfall', Cher. *ka·rša* 'verfaulte Zweige und Ruten im Wasser, Windbruch'.

*-tšk-

Fi. *katketa* 'entzwei gehen, zerrissen l. abgebrochen werden', *katkaista* 'zerreissen, zerbrechen', Est. *katkema*, S *kakkema* 'zerbrechen, zerbröckeln, zerreissen; (intr.) abreissen, entzwei gehen, reissen', Votic *kadgata* : *katkān* 'brechen, abbrechen, abreissen (trans.)', Kar. *kateta* : *katkien* 'brechen (intr.)', Olon. *katketa* : *katkien* id., Veps *katkaita* : *katkaidan*, *katke̮ita* : *katke̮idan* 'brechen (trans.)', Liv. *kat̆kàstə̂* 'reissen, sich verheben' | Cher. *kə̂ške·δäm*, *kuškeδa·m* 'zerreissen, entzwei reissen, abreissen', Voty. *ku̯aṭṣ̌kàni̯*, *ku̯aškàni̯* 'zerbrechen, auseinanderfallen (z. B. Brücke)'.

Fi. *kotka*, *kokko* 'Adler', Est. *kotkas*, Gen. *kotka*, *kokas*, Gen. *kokka* id., Kar. *kokko*, Olon. *kotku*, *kokko* id., Liv. *kᵘotkànə̂z* 'Adler, Falke' | LpN *goas'kem* 'eagle', Kld. *kŭəᵗškem* 'Adler', Mord. *kuťśkan* id., Cher. *kutškə̂ž* id., Ziry. *kuṭṣ̌* 'Adler, ein Raubvogel, mögl. Eule', Voty. *kuṭṣ̌* 'ein Vogel, vom Aussehen des Königsadlers, aber kleiner'.

These examples have *tk*, or *kk* < *tk*, in all Finnic languages. There are, however, some words which show *-tsk-* or *-ťš́k-* in one or more Finnic languages or dialects.

Fi. *katku* 'starker Branddunst', Est. *katk*, S *katsk* 'Seuche, Pest', Kar. *kaťš́ku*, *koaťš́ku* 'Geruch, Brandgeruch', Olon. *kāťš́ku*, *kuaťš́ku*, Lud. *koaťš́ku* 'Kohlendunst', VepsS *katšk* 'Rauch' | MordE *katšamo*, M *katšam* 'Rauch', Ziry. *ko̜ṭṣ̌i̯s* 'Brandgeruch'.

Fi. *kitkeä* 'ausreissen, ausrupfen, ausjäten', Est. *kitkuma*, S *kitskma* 'ausraufen, jäten', Votic *tšitke̮a* id., Kar. *kitkie* 'das Unkraut ausjäten', Olon. *kütkie* 'jäten', Veps *kitkta*, *küťkťa* id., Liv. *kīkə̂* id. | LpN *gâs'ket* 'pluck (obj. bird)', MordE *kotškoms*, M *kotškə̂ms* 'jäten'.

In view of the fact that there are words which show *tšk* > *tk* (> *kk*) in all Finnic languages, it seems apparent that *tsk* or *tšk* must represent a secondary development.[1] That it cannot be considered a direct descendant of Pre-Finnic *tšk* is further corroborated by the development *tst* > *st* (**veitstä* > *veistä*, see p. 70); if *tsk* were old, we should expect the same development to have taken place here: *tsk* > *sk*.

The treatment *tšk* > *tk* shows that *tš* > *t* must be older than the simplification of syllable-final consonant clusters in cases like **veitstä* > *veistä*, **uksta* > *usta*, etc. (see pp. 70—72). Otherwise we should expect *tšk* > *šk* > *hk* in these cases.

In fact, *hk* does occur in some words. Cf. for instance Fi. *nahkea* 'lentus et tenax ut corium, haud durus nec fragilis, inde subhumidus, flaccidus, marcidus, e. c. rapa' | LpN *njuoskâs*, *njuos'kâ* 'wet (sc. not dry or not dried or wiped; of something which is wet outside, on the top, and of something wich is wet or not yet dry inside); raw (not boiled or roasted), not cured, slack-baked', Kld. *ńūᵗskas* 'feucht, nass; frisch; roh, ungekocht', MordE *natško*, M *natškă* 'nass, feucht', Cher. *na·tškə̂* 'nass; regnerisch; Regenwetter', etc. | | Fi. *kehkerä* (Lönnr.) 'kullrig, konvex; omgifven, omsluten; stadig, fast; krans (t. ex. kring tornspiran)', Veps *kehker* 'rund, rundlich' | MordE *ḱitšḱeŕe*, M *ḱitškə̂r* 'krumm, schief', Cher. *kə·škär* 'grosser Zylinder aus Lindenrinde worauf Garn gewickelt wird', etc. | | Fi. *puhkoa*, *puhkaista* 'durchlöchern od. bohren, eröffnen, durchstechen', *puhjeta* : *puhkean* 'durchlöchert werden, bersten, platzen, ausbrechen', Est. *puhkema* 'bersten, aufbrechen, sich öffnen, hervorbrechen', Kar. *puheta* : *puhkie-* = Fi. *puhjeta*, Veps *puhkaita* : *puhkaidan* = Fi. *puhkaista* | ? Cher. *pə̑škam*, *püškä·m* 'stechen (von Insekten)', *pə̑škə̑l*, *püškə̑l* 'Stich in der Stickerei', Ziry. *bịṭṣ̌kịni̯* 'stechen, hineinstossen, bohren, durchstechen (z. B. den Ohrzipfel für den Ring)', Voty. *bịṭṣ̌kaltịni̯* 'durchstechen'.

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[1] Setälä FUF 2 p. 245 footnote 1 says with regard to Kar. *-tš́k-*, EstS *-t́š́k-*: »eine solche vertretung kommt nur in den wörtern mit fi. *tk* < *čk* vor und ist nach meiner auffassung eine direkte fortsetzung der urspr. affricata». Toivonen FUF 19 p. 222 is of a different opinion: »Indessen ist nicht sicher, dass diese *tš́k*, *ṭṣ̌k* usw. die direkten vertreter von **čk* sind. Da wir als vertretung von **č̣* in den ostseefinnischen sprachen sonst nicht *tš́*, *ts* usw. finden, möchte es scheinen, dass sich diese hier vor *k* aus *t* entwickelt haben. In gewissen fällen ist dies auch sicher zu konstatieren: wepsS *petš́keľ* 'mörserkeule' < *petkel*; *retk*, *reťk*, *reťš́k* 'rettich' < russ. рѣдька, *tutškim*, *tutškim*, *tuṭṣ̌kim* 'kartulitampimise nui' ~ vgl. fi. *tutkain* 'spitze' usw. (vgl. Kettunen LVHA I p. 20).»

In these cases *h* seems to descend from *š*; cf. the dichotomy *tš* ∼ *š* discussed above.

For additional clusters, see Toivonen FUF 19: *-*mtš*- p. 221, *-*tšŋ*- p. 224, -*tšn*- p. 225, *-*tšm*- p. 226, *-*tšl*- p. 226. In all these clusters, too, *tš* is represented either by *t* or by *h* in Finnic, so that they add nothing new to what we have already seen.

3. The Treatment of *t́ś* (*t́š*).

In initial position.

In this position, *t́ś* is represented by Late PrF *s*. Examples are:

Fi. *solmu* 'knot', Est. *sõlm* 'Knoten (auch im Halm), Schleife, Schlinge, fig. Schwierigkeit', Votic *sẹʌmu* 'knot', Kar. *šolmi*, Ol. *solmi*, Veps *soľm*, Liv. *sᵘōľm* id. | LpN *čuolˈbmâ* 'knot (also fig., of difficulty)', MordE *śulmams* 'binden, anbinden, zubinden, knüpfen', E *śulmo*, *śulmă*, M *śulmă* 'Knoten, Bündel', Hung. *csomó* 'Knoten'.

Fi. *sonni* 'bull', Est. *sõnn* 'Bull, Stier; Hengstfüllen, Widder' LivSal. *sonn* 'Schafbock' | Cher. *tsama*, *t́śoma*, *t́šoma* 'Füllen' | Ziry. *t́śa̭ń* id., Voty. *t́šuni̯* id.

There are some examples which show an initial affricate in one or more languages of the Finnic group.

Fi. *sirkka* 'Grille, Heuschrecke; ein Kinderspiel draussen auf dem Felde', Kar. Tveŕ *t́širka* 'Grille', N *t́širkka* 'Scheitholz zum Spielen, Spielstab', Ol. *t́š́irkku* 'Grille; ein Kinderspiel, Stäbchen, welches in diesem Spiele geschlagen wird', Lud. *t́š́irk̄*, *t́š́irkkv* id., Dialect of Inkeroiset *t́š́irkka* 'ein Kinderspiel; Stäbchen, welches in diesem Spiele gebraucht wird' VepsO (Tunkelo) *tsi̯rkad* Pl. 'Heuschrecke', VepsM *t́š́irk* id. | Ziry. *t́śirk* 'Grille, Heuschrecke; kurzes Spielstäbchen, dessen beide Enden schräg geschnitten sind' (for the latest treatment of this word, see Toivonen Vir. 1946 pp. 395—397).

VepsO *t́š́apta* 'schneiden, abschneiden', M *tšapta* 'abhauen, schneiden, zerstücken', S *tšapta* 'hauen, hacken' | LpN *čuop'pât* 'chop, cut, cut up; amputate', K *čĭ̄hpi̊-*, *čūhpe-*, *čuohpe-* 'schneiden, hauen, hacken', MordE *t́śapams* 'in die Hände klatschen', Ziry. *t́śapki̯ni̯* 'werfen', Voty. *t́śapkî̭nî̭* 'schlagen, zusagen, mit den Händen klatschen'. (The Veps word could be loaned from, or influenced by, the Lapp language).

Fi. *sukeltaa* 'to dive, to plunge, to duck', Kar. *t́š́ukeldoa*, Ingr. *t́š́uɢelᴅā*, Lud. *t́š́ukelduda*, *t́š́ukeldazetta*, Veps *tšukлostadas*, *t́š́ukлostūdas*, *tšuktazhę* id., EstS *tsuklema* 'baden (im Wasser)' (no cognates are known for this word outside the Finnic group).

It is doubtful whether the initial affricate of any of these or other similar words really derives directly from a Pre-Finnic affricate. Perhaps all the words which at present show an initial affricate can be explained by one of the following possibilities: 1) the word has been loaned from, or influenced by, a neighboring language possessing initial affricates; 2) the affricate is onomatopoeic; 3) the affricate is the result of a sound change; or 4) of some other secondary origin. There are several undoubted examples of secondary affricates in Finnic languages.

A great many examples of words showing initial affricates have been collected by Wichmann FUF 9 pp. 173—289; many of his comparisons seem to be definitely wrong. For initial affricates, especially in Veps, see Tunkelo Vepsän kielen äännehistoria pp. 297—307; on pp. 302—305 he discusses words which were loaned into Veps. For secondary affricates in Finnic, see Toivonen Virittäjä 1930 pp. 91—98.

It seems thus possible to assume that Late Proto-Finnic *s-* is the only regular representative of FU **t́ś-*. This is all the more probable since initial affricates were unknown both in Proto-Baltic and in Proto-Germanic. On the other hand, it is perhaps significant that present-day initial affricates occur only in languages and dialects which are spoken in the neighborhood of foreign idioms having the same initial affricates (Karelian and Olonetsian — Russian; Southern Estonian — Russian and Lettish).

In medial position.

t́ś > *s* (*₍ts*)

Fi. *isä* 'father', Est. *isa*, S *ezä̀* id., Koiva *rišt́e₍dzä* 'godfather', Votic *isä* 'father', Kar. *izä* 'Vater, Männchen (von Tieren)', Olon. *ižä* id., Veps *iža* 'Männchen von Tieren' ¦ LpI *ē₍t́šɪ*, Ko. *ēš́t́š́*^{E}, Gen. *ēi̯je* 'father', MordM *ot́śɛ* 'Vatersbruder, der älter ist als der Vater', Cher. KB *ə·zä*, U *iza̯·*, M *iźa·* 'älterer Bruder; jüngerer Bruder des Vaters', Hung. *ős* 'uralt; Ahn, Vorfahr', HB *isemucut* 'patrem nostrum'.

Fi. *kasa* 'etwas Vorragendes, Ecke', *kirveen kasa* 'das untere Ende der Schneide der Axt', EstS *kadza*, *kirve kadza* 'das untere Ende an der Schneide des Beiles, wie *nõna* das obere', KarTver *ka₍d́ža*, Olon. *kaza*, Lud. *kaza* id. (Lud. Td. auch 'das obere Ende an der Schneide des Beiles') | LpN *gœčč́e*, Gen. *gǣǯe* 'end, point; out-of-the-way place, outskirts; top (the actual pointed top)'; etc., LpSw. *ketje* 'finis, extremum', L *kēɔče-* 'Ende', Kld. *kiėᴅt́š́*^{E}, Gen. *kiėᴅ́že* 'Ende, Schluss', Hung. *hegy* 'Berg; Spitze', *késhegy* 'Messerspitze'.

Fi. *keso* (Renv.) 'Cyprinus biœrkna', (Lönnr.) 'panka, björkna (Cyprinus l. Blicca bjoerkna)', *kalakeso* 'björkna, björkfisk, bjerka', *kesämä* 'en art braxenpanka (Cyprinus blicca)' | LpL *kǣčūk* 'Coregonus lavaretus mittlerer Grösse', Ziry. *gi̯t́ś* 'Karausche (Cyprinus carassius)', Vog. T (Munk.) *kā̆sėñ*, etc. 'Leuciscus rutilus', Osty. DN *kǫ̆sɛ* 'Plötze, Barbe', Kr. *kǫ̆·sз* 'Plötze, Barbe; kleiner junger Fisch', Kr. *kǫ̆·sīmз* 'Plötze', Hung. *keszeg* 'Weissfisch'.

ťťś > tts.

Fi. *kutsua* (Renv.) 'nennen, benennen, zu sich rufen, einladen', Est. *kutsuma* 'rufen, einladen, auffordern, anrufen; nennen', Votic *kuttsua* : *ku₍tsun* id., Kar.-Olon. *kuťťš́uo* : *ku₍ťš́un* id., Veps *kutsta* : *ku₍tsun* id., Liv. *kut̄sə̂* : *kut̆sùʙ* 'rufen, einladen' ¦ LpN *gọč'čot* 'call (name, describe as); call someone; order, bid, ask to; have something done (= order something to be done)', etc.

Fi. *katsoa* (Renv.) 'schauen, anschauen, ansehen, nachsehen (hüten), betrachten', Est. *katsuma* 'versuchen, prüfen, betasten, befühlen, kosten, besehen, anschauen, sehen; besuchen, aufsuchen', Kar. *kaťťš́uo* : *ka₍ťš́on* 'besehen, nach etw. sehen, wählen, halten für, sorgen für, für gut befinden, wollen', Olon. *kaťťš́uo* : *ka₍ťš́on* 'besehen; sorgen für; für gut befinden; versuchen', Veps *katsta* : *ka₍tsun* 'to look (at), to watch; to nurse (a child)' ¦ LpN *gæč'čât* 'look (= gaze in a particular direction), look at; look for, see whether; regard (also fig.), notice, observe; take care (lest); look after, tend. herd', Ziry. *kaźalni̯* 'bemerken, erkennen'.

It seems probable that there were medially two series of the FU palatalized affricate: 1) **-₍ťś-* corresponding to the series of single stops, and 2) *-ťťś-* corresponding to the series of double (geminate) stops (cf. Toivonen FUF 19 pp. 256—257).

In Late Proto-Finnic the shorter affricate was represented by *s*, dialectally in some cases also by **-₍ts-*; Est. Koiva *riš́ťe₍dzä*, EstS *kadza*, KarTver *ka₍ďž́a* go back to **-₍ts*. The longer affricate was represented in Late Proto-Finnic by **tts* ~ **t̆ts* (Toivonen Virittäjä 1932 pp. 145—150). The quantitative gradation is still preserved e. g. in Votic (*tts* ~ *₍ts*) and in Kar.-Olon. (*ťťš́* ~ *ťš́*; for the present palatalization see Posti Virittäjä 1951 pp. 415—416).

There is a discrepancy between the cognates of some words; e. g. Fi. *itse* 'selbst', Kar.-Olon. *i₍ťš́e*, Veps *i₍tšẹ*, *i₍ťš́e* id. ~ Est. *ise*, EstS *ezi*', Votic *ize* (*izze*), Liv. *ī̆ž* (< **isik*) id. Words of the former group go back to forms with *-*tts*-, forms of the latter group derive from Late Proto-Finnic -*s*-, *s* being perhaps due to frequent use of the word in unstressed position.

ťś in consonant clusters.

*-*ŋ́ťś*-

Fi. *seisoa* 'to stand', Est. *seisma*, Pr. *seisan*, EstS *saìzma* : Pr. *saizà*, Votic *sẹ̆isa*, Pr. *sẹ̆izon*, Kar. *šeizuo*, Olon. *seizuo*, Veps *sīšta*, Pr. *sīžun*, *seišta*, Pr. *seižun* id. | LpN *čuoǯˈǯot* 'stand, stand unused', Mord. *śťams* 'aufstehen', Cher. KB *sı̣·nzę̭m*, U *šińďž̭ę̭·m* 'sitzen, stehen', Ziry. *sìďźnı̯* 'sich niederlassen', Vog. *tǫ̆̄ńɒ́ś-*, *tuńś-* 'stehen', Osty. *ťǫ·ńť-*, *ʌ̭u·ńť-* etc. 'zum Stehen bringen, aufstellen'.

In the above word we find only representatives of Late PrF *s* in Finnic. In the following suffix there are two categories: 1) forms going back to Late PrF -*s*-, and 2) forms going back to Late PrF -*ts*-.

1) Fi. *puiset* Pl. 'wooden', *punaiset* Pl. 'red', *nälkäiset* Pl. 'hungry', Est. *puised*, *punased*, *näljased*, Votic *naizẹd* Pl. 'women', *rautẹ̆zẹ̆ᴅ* Adj. Pl. 'iron', Kar. *puizet*, *naizet*, *nälgähizet*, Olon. *naizet*, *ńälgähizet*, Veps *puižẹd*, *pı̯ižed*, *kūdaižẹd* Pl. 'golden', Liv. *naìst* Pl., *naìz* Gen. Sg., *roùdist* Pl., *roùdiz* Gen. Sg.

2) Fi. *suitset* 'Zaum, Zügel' (derived from *suu* 'mouth'), *päitset* 'Kopfriemen' (from *pää* 'head'), Agricola *nelkeitzet* Pl. 'hungry' (< **nälkähĭttset*), *iocahitzelle* 'to everyone', Fi. dial. *semmoϑϑi*, *semmotti*, *semmottia* Part. Pl. 'such', Est. *päitsed* 'Halfter, Halfterstrick (von Leder)', EstS *suittsȩ̣ˀ* 'Pferdezaum (aus Leder)', EstN dial. *karjatsed* Pl. 'Hirt, Viehhüter', *punatsed* Pl. 'rot', EstS Lutsi (*puĭnȩ̣* :) *puittsȩ̣ˀ* Pl. 'wooden', *vahà₍dzȩ̣ˀ* Pl. : *vahaĭtsiì* Part. Pl. 'yellow', *suguʌa₍dzȩ̣ˀ* 'relatives', *vaźì₍dzȩ̣ˀ* Adj. Pl. 'copper', Votic *sïämetseᴅ* 'lungs', *aʌẹ̆tsẹ̆* 'mitten', *tühjetse* 'waist', Kar. *päi₍ťśet*, Ol. *sui₍ťšet*, Veps *sui₍tšȩ̣d*, *sı̯iťťśed*, *sı̯i₍ťśed*; *kūśťśed* (from *kūź* 'spruce'); *ehtkẹ̆ittšȩ̣ʌ*, *ehtkẹ̆i₍tšȩ̣ʌ* 'in the evening'; *eźmai₍tšȩ̣d* Pl. 'first', *jälgmā̆₍tšī̭ď* Part. Pl. 'last'.

The cognates of this suffix in other languages show that the Pre-Finnic form of the suffix probably was **-ŋ́t́ś-* (for the treatment of *ŋ́* in PrF see pp. 29—32).

LpN *jǫgâš* : *jǫgâžâ*, P *jogā̆š jògâŏž́â* 'small river, stream', Kld. (T. I. Itkonen) *олмŏ̂n̄́*^{d}*'t́š́* 'Mensch, Mann', *jòγań*^{d}*'t́š́* dim. 'Fluss', K *àχšŏ̂n̄́*^{d}*'t́š́* dim. 'Axt' | MordE *vež́ińt́śe* 'jüngster', (M. E. Evsevjev) веженьць, вежиньце 'младший, меньший'.

To explain the double forms in present Finnic languages, it has been assumed that *ts* originally occurred after a stressed syllable, and *s* after an unstressed syllable (Setälä ÄH p. 185). It seems likely that this was indeed the case.

There are some interesting forms in Livonian which deserve special discussion. LivSal. has *suiksud* 'Zaum' corresponding to Fi. *suitset*. There is another group of forms in which Liv. *-ks-* corresponds to Fi. *-ts-* : Liv. *kōp̀ikšə̂ʙ* Pr. 3. Sg. 'dingen, handeln, Handel treiben' ~ Fi. *kaupitsee*, Liv. *kerìkšə̂ʙ* Pr. 3. Sg. 'scheren' ~ Fi. *keritsee*. These verbal suffixes seem to be of the same origin. Liv. *-ks-* could derive from **-ŋ́kś-* < **-ŋ́ś-* (*k* would be a secondary development between *ŋ́* and *ś*; cf. a similar development assumed by Ravila [FUF 23 p. 57] in the conditional mood of Estonian and Livonian), while Fi. *-ts-* could go back to **-ŋ́t́ś-*. Likewise we may consider LivSal. *suiksud* as having the same suffix as Fi. *suitset* (cf. Posti MSFOu 85 p. 169). As to the development of a secondary *k*, it would perhaps be more natural to assume that *k* developed in **-ŋ́ś-* rather than in **ŋ́t́ś*. In that case the disappearance of the stop element would, at least under certain conditions be a rather old phenomenon. It should also be noted that there is a difference in the treatment of *ŋ́* in Liv. *suiksud* and in the Liv. conditional, e. g. *sǭ̬ks*, *sā̈ks* < **sāksin*. Ravila assumed that the development *ŋ́ḱś* > *ks* in the conditional was comparable to the well known change *ntt* > *tt* (e. g. **tunttu* > *tuttu*), and this seems indeed perfectly natural. In Liv. *suiksud*, however, *ŋ́* seems to have changed into *i*, instead of disappearing entirely. It seems difficult to account for the difference in treatment.

In the cluster **-ŋ́t́ś-* the quantity of *t́ś* was perhaps the same as in the shorter series, i.e. the syllable boundary was between *ŋ́* and *t́ś*. Thus the change *ŋ́* > *i* would be easier to understand. (In the cluster *-*ŋ́t́t́ś*- we should expect *ŋ́* to have disappeared.)

*-*ŋ́ḱt́ś*-

This cluster has been assumed by Toivonen to account for the sound correspondences in the cognates of the following word:

Fi. *suitsu* 'Rauch, Dampf', Est. *suits* 'Rauch', Votic Ahlqv. *suisutan* 'röka, elda', Kar. *šuit́t́š́a* 'Nebel' | LpI *soh̄t̀š́*^{A}, Gen. *sōut́š́a* 'Glut, dichter Rauch', Cher. *šəkᵡš*, M *śikś* 'Rauch'. (In Finnic -*its*- < *-*ŋ́t́ś*-, in Lapp *-*ŋ́ḱt́ś*- > -*kt́ś*-; Toivonen FUF 19 pp. 235—236).

t́ś + resonant consonant.

*-*t́śn*-

Fi. *hähnä*, *häähnä* 'Buntspecht', EstS *ähn*, *hähn*, id., Liv. *ę̄̆ń*, *ę̄̆ńəz* 'Holzhacker, Buntspecht' | LpKld. *t́š́ạ̄š̄n*^{e}, Gen. *t́š́ạ̀š̆ǹe* 'Specht', Cher. *ši·štə*, Ziry. *śiź* id., Voty. *śiź* 'Buntspecht, Specht'.

Fi. *vehnä* 'wheat', Kar. *vehnä* id. | MordE *v́iš*, M *v́iš*, *v́išä* 'Spelt', Cher. KB *βištə* 'Spelzweizen, Spelzgrütze', U *βi·stə̑*, M *βi·śtə* 'Spelt, Dinkel', P (Genetz) *wiśte* id., Voty. *vad́ź*, *vaź* id.

*-*t́śl*-

Fi. *pihlaja* 'Eberesche', Est. *pihlakas*, *pihlak*, *pihlik*, *pihl* id., Votic *pihʌapū* id., Kar. *pihlaja*, Olon. *pihľu*, Veps *pihľ*, Liv. *pī̆lə̂ɢ*, *pī̆lgə̂z* (< **pihla*-) id. | MordE *ṕiźol*, M *ṕiźə̂l* 'Vogelbeere, Vogelbeerbaum', Cher. *pəzə·lmə*, *pi·zlə̑* id., Ziry. *pelį̑ś*, *pelid́ź* 'Vogelbeere', Voty. *paleś*, *paleź*, *paled́ź* id., etc.

We should expect Late PrF *sn*, *sl* from *-*t́śn*-, *-*t́śl*-. It would be possible to assume that *hn*, *hl* go back to earlier *sn*, *sl*, see pp. 64—65. Cf. however Mord. *š* (in *v́iš*), which may go back to a non-palatalized affricate (Toivonen FUF 19 p. 244).

To sum up, we may state that during the Proto-Finnic period *t́ś* lost its palatalization; see pp. 26—29 for this development. In most cases, the shorter series in intervocalic position seems to have lost the stop element: *-₍ts-* > *-s-*. There are, however, several examples of *-₍ts-* being preserved. The tendency to drop the stop element could perhaps be ascribed to foreign influence. An intervocalic *-₍t́ś-* or *-₍ts-* (with the syllable boundary before the affricate) was unknown both in Baltic and in Germanic. We may assume that these foreign speakers substituted a single sibilant for the affricate. But it seems that this substitution could not entirely displace the short affricate, the reason for this probably being that the component parts of this affricate both continued to survive in the consonant system. (In this respect, the affricate *tš* was in an entirely different position.) The longer series lost only its palatalization, but in other respects seems to have been preserved. Although *tts* (or *t* + *s* with the syllable boundary between them) does not seem to have occurred either in Baltic or in Germanic, its survival was made possible by the fact that both of its component elements did occur in these neighboring languages. Thus it may have been possible for speakers of Baltic and Germanic to pronounce an intervocalic *t* + *s* without too much difficulty.

To account for the treatment in some cases, e. g. in the suffix *-ise-* ~ *-itse-*, we may assume that under certain conditions a shift from one series into another was possible.

It seems possible that, besides *tš*, *ttš* and *t́ś*, *t́t́ś*, there was in Pre-Finnic also an affricate *ts*, *tts*; see Toivonen FUF 19 pp. 245—248. The three types of affricates would thus correspond to the three Pre-Finnic types of sibilants, viz. *š*, *ś*, and *s*. What has been said above on the treatment of *t́ś*, *t́t́ś*, would, *mutatis mutandis* of course, apply to *ts*, *tts* too.

4. The Treatment of Palatalized Consonants.

There were many palatalized consonants in Pre-Finnic. In Late Proto-Finnic they all occurred as non-palatalized sounds. Since the palatalization in most cases still appears in Lapp and in Mordvin, it is obvious that at least the major part of the process of depalatalization must have fallen within the Proto-Finnic period.

ś > *s*.

Fi., Votic *sata* 'hundred', Est., Olon., Veps *sada*, Kar. *šada*, Liv. *sadà* id. | LpN *čuotte*, MordE *śado*, M *śada*, Ziry. *śo*, Voty. *śu* id., etc. (The word is a FU borrowing from an Aryan source.)

Fi. *suoli* 'Darm', Est. *sool*, Gen. *soole*, Kar. *šuoľi*, Olon. *suoľi*, Veps *soľ*, Liv. *sùoľ* id. | LpN *čoalle*, MordE *śulo*, M *śulă*, Ziry., Voty. *śul* id., etc.

Fi. *vasara* 'hammer', Est. *vasar*, Votic *vasara*, KarN *vasara*, Olon. *vazaru*, Liv. *vazàr* id. | LpN *væččer* id., MordE *uźeŕ*, *viźiŕ*, M *uźəŕ* 'Axt' (of Aryan origin, see e.g. Setälä FUF 2 p. 270).

Fi. *asua* 'wohnen', *asema* 'Lage, Platz, Stelle, Position, etc.', Est. *asuma* 'sich ansiedeln, sich niederlassen, sich etablieren, Platz nehmen, etc.', *ase*, Gen. *aseme* 'Stelle, Stätte, Statt; Lager, Schlafstelle', Kar. *ažen*, Gen. *ažemen* 'Lage', Olon. *azemetťši* 'instead of (Fi. *asemesta*)', Veps. *azotada* 'stellen, legen; anhalten', Liv. *azùm*, Pl. *ăzmə̂ᴅ* 'Lager, Platz, Stelle' | MordE *eźem*, *iźim*, M *eźəm*, *εźəm*, *jεźəḿ* 'Platz, Stelle; wandfeste Bank in der mordwinischen Stube', etc.

ń > *n*.

Fi. *nuoli* 'arrow', Est. *nool*, Gen. *noole*, Olon. *nuoli* id. | LpN *njuollâ*, Mord. *nal*, Ziry. *ńe̮l*, Voty. *ńe̮l*, *ńil* id., Vog. *ńę̄ʌ*, *ńāl* 'Pfeil, Kugel', Osty. *ńoˑḷ*, *ńaˑḷ́*, *ńoˑʌ* id., Hung. *nyíl* 'Pfeil'.

Fi. *niellä* 'to swallow', Est. *neelama*, KarN *ńiele-*, Liv.

ǹielə̂ id. | LpN *njiellât*, MordE *ńiĺems*, M *ńiĺəms*, Ziry. *ńịlnị*, *ńịlalnị*, Voty. *ńịlịnị*, Vog. *ńεlt-*, *ńalt-*, Osty. *ńe·ḽ-*, *ńặʌ̂-*, Hung. *nyel* id.

Fi. *kyynel* 'Träne', Votic *tšǖnel*, Kar. *kǖnel*, Olon. *kǖńel*, *kǖńäl*, Veps *ḱünaл*, *ḱüńaл*, *kündẹл*, *kündǟ* (with *d* from *-nл-* > *-ndл-*, Pl. *kündлẹd*), Liv. *kīńd́əl*, W (old) *kǖndĺə̂z* | LpKo. *kẹ̄ńaл*, Gen. *kẹ̄ᵈ'ńńaл* id., etc. (Finnic *ń* in some languages before Late PrF front vowels is a secondary development: *n* > *ń*.)

Fi. *kyyny* Lönnr. 'ögats halföppna tillstånd [= der halb offene Zustand des Auges]', *silmät oli kyynyssä* | Mord. *końams* 'die Augen schliessen', Cher. *kumem*, Ziry. *kuńnị*, Voty. *kịńịnị*, Vog. *χȯ·ńi*, Osty. *χ̮ŏ̭ń-*, *χ̮ṷ̆ń-*, Hung. *húny* id.

Fi. *kyynär* 'ell, elbow', etc. | MordE *ḱeńeŕ*, M *ḱeńəŕ* 'Vorderarm, Elle', Cher. *kə·ńer*, *kə̂ńe·r* 'Elle', Hung. *könyök* 'Ellbogen, (alt) Elle'.

ĺ > *l*.

Fi. *lykätä* 'stossen, schieben', Est. *lükkama* 'stossen, schieben, sich bewegen, fahren, eilen, rennen, sich umhertreiben', Votic *lü₍tšätä* 'durchziehen', Kar. *lükkeä-* 'schieben, stossen'; werfen, wegschmeissen, verwerfen; rasiren (den Bart)', Olon. *lükkeä-* 'werfen, schleudern', Veps *ĺükaita*, *lükǟt́ä* id., Liv. *lik̀kə*, W (old) *lük̀kə̂* 'stossen, schieben' | OstyDN *t́ăkṭȧ·* 'schiessen', Kr. *ṭ́ăktȧ* 'schiessen; treten, stossen (mit den Füssen); ausspucken', V *ḽ́äχḷä`* 'schiessen', Ni. *ṭ́ăkṭä`* 'werfen, schmeissen; mit der Flinte schiessen; speien', Hung. *lök* 'stossen, werfen, schleudern'.

Fi. *kulma* 'angulus, margo', *silmä-* l. *otsakulma* 'tempus capitis', Est. *kulm*, S *kolm* 'Augenhügel, Stirn', Votic *kuлmo* 'Schläfe', Kar. *kulman-raja* id., Olon. *kulmu* 'Augenwinkel', VepsS *kuĺm*, Gen. *kuĺmun* id. (*ĺ* is of secondary origin), Liv. *gūlma* : *sīlma-gūlma* 'Augenbraue' | LpN *gul'bme* 'the parts round the eyebrow; the eyebrow itself', Osty. DN *χ̮ūɒ́əm* : *semχ̮.*, Trj. *ḱṷ̄ʌ́əm`* : *sặmḱ.* 'Augenlid, Augenwinkel'.

t́ś > *s* (*ts*), *t́t́ś* > *tts*; see pp. 18—25.

The treatment of FU *δ′*.

It is generally assumed that in Proto-FU **δ′*- occurred as the initial consonant in, for instance, the following words.

Fi. *tuomi* 'Prunus padus', Est. *toom*, *toomingas*, Votic *tōmippū*, Kar. *tuomi*, Veps *tom̀*, Liv. *tùoimk̀i*, Sal. *tüömki* id. | LpN *duobmâ*, LpSw. *fuom*, MordE *ľom*, M *lajḿε*, Cher. *lo·mbə̂*, Ziry., Voty. *ľe̮m-pu* id., Vog. *ľēm*, *ľām* 'Ahlkirsche', Osty. *i̮u·m*, *i̮o·mʻ* id.

Fi. *tymä* 'gluten', Est. *tüma* 'Pech' | LpN Friis *dabme* 'gluten', LpSw. *tabme*, dial. *hibme* id., Cher. *lụ̀·mə̂* 'Leim', Ziry., Voty. *ľem* id.

In for instance the following words Proto-FU medial *δ′* is assumed to have occurred.

Fi. *kadota* : *katoan* 'verschwinden, abhanden kommen', Est. *kaduma* : *kaon*, Kar.-Olon. *kado-*, Veps *kadoda*, Liv. *kăddə̂* : *kadùʙ* id. | LpN *guođđet* : *guođam* 'let remain, leave behind, leave, desert, etc.', MordE *kadoms*, M *kadə̂ms* 'lassen, ver-, zurücklassen, übrig lassen', Cher. *ko·δe̮m*, *koδê̮·m* 'lassen, zurücklassen, verlassen', *ko·δam*, *koδa·m* 'bleiben, nachbleiben, übrigbleiben', Ziry. *koľni̮* 'zurück-, übrigbleiben; zurücklassen', Voty. *ki̮ľi̮ni̮* 'bleiben, übrigbleiben', Vog. *k̬ō̮ľ-*, *k̬ūľ-*, *χ̬ū̮ľ-* 'verlassen', Osty. *χ̬ă̮i̮-*, *k̀ɒi̮-* 'zurücklassen', Hung. *hagy* 'lassen'.

Fi. *uusi* : *uute-* 'new', Est. *uus* : *uude*, Votic *ūsi* : *ūte̮-*, Kar.-Olon. *ūde-*, Veps *uź* : *ude̮n*, Liv. *ūž* : *ūᴅ* | LpN *ọđđâ*, *ọđâs* 'new, something new, in plur.: news', Mord. *od* 'neu, jung', Cher. *u*, *uụ̂* 'neu', Ziry, *vi̮ľ* 'neu, frisch', Voty. *vî̮ľ*, *viľ* id., Hung. *új* id.

Fi. *kutea* 'laichen', Est. *kudema* : *koen*, Kar. *kude-* id., Veps *kudo* 'Laich', Liv. *kŭddə̂* : *kudùʙ* 'laichen' | LpN *gọđđât* 'spawn *v.*; milt *v.*', Ziry. *kuľmi̮ni̮* 'laichen', etc.

The treatment of *ή*; see pp. 29—32.

With regard to *ś* we have seen from the examples that the palatalization is still preserved in Lapp and in Mordvin. The palatalization of both initial and medial *ń* is still retained in Lapp, the palatalization of medial *ń* in Mordvin. Thus it seems that at least with regard to *ś* and *ń* the palatalization disappeared only during the Proto-Finnic period. The same also applies to *t́ś* and *t́t́ś*. As far as *ľ* and *δ'* are concerned, it is possible that the depalatalization took place already before the Proto-Finnic period, since there is no trace of palatalization in Lapp and Mordvin.

As to the date of the Proto-Finnic depalatalization, it seems apparent that it is later than the development *ήt́ś* > *i̯ts*. Since a non-palatalized *η* is represented by *u̯* in syllable-final position (**jaηša-* > *jauha-*, see p. 32), it can only be the palatalization that could account for the different treatment in the former case. As there may have been palatalized consonants in Proto-Baltic (see pp. 54—55), it would seem natural to assume that the palatalization of Early Proto-Finnic consonants was lost only during the period of the Germanic contacts. In the Germanic consonant system, there were no palatalized consonants, and the loss of these in Proto-Finnic could well be ascribed to Germanic influence.

5. The Disappearance of *η* (*ή*) as an Independent Consonant.

In Proto-FU, *η* occurred medially in intervocalic position and in certain consonant clusters. In some cases *η* apparently was palatalized, but this *ή* may have been only a combinatory variant, due to the influence of neighboring sounds.

In Late Proto-Finnic, *η* occurred only before *k* and *g*, and may therefore be considered a combinatory variant of *n* (which never occurred in this position). In all other positions *η* was replaced by *v* (*u̯*), *j* (*i̯*), or *Ø* (zero). Since *η* in many cases still occurs in Lapp, in Mordvin, and in Cheremis, it is apparent that the changes must have taken place during the Proto-Finnic period.

To illustrate the changes, a few examples are here given.

In intervocalic position.

Fi. *kaari*, Gen. *kaaren* 'Bogen, Spant', Est. *kaar*, Gen. *kaare* 'Bogen und allerlei Bogenförmiges, Kreis', Votic *kạ̄ri* 'Spant', Kar. *koaŕi* 'Bogen, Spant', Veps *karęg* 'Spant', Liv. *kō̬r*, *kō̬ŕ*, W *kå̄r* 'Rippe, Wrange des Bootes od. Schiffes; krumme Querhölzer auf dem Schlitten; Regenbogen' | LpI *kuoŋa̭r*, Gen. *kuoŋŋa̭r* 'Spant'.

Fi. *pää* 'Kopf, Haupt; Ende', Est. *pää*, *pea* 'Kopf, Haupt', Votic *pǟ* id., Kar.-Olon. *peä* 'Kopf, Haupt; Ende', Veps *pä*, *ṕä* 'Kopf, Haupt', Liv. *pǟ* 'Kopf, Haupt; Ähre' | ? LpN *bagŋe* 'the thickest part of the reindeer antler, by the head', Mord. *ṕe*, M stem *ṕej-* 'Ende', Ziry. *pom*, *pon* 'Anfang, Ende', Voty. *puŋ*, *pum* 'Ende, Spitze', Vog. *pε̮ŋ*, *päŋɢ*, *puŋk* 'Kopf, Anfang', Hung. *fő*, *fej-* 'Kopf, Haupt'.

Fi. *jää* 'ice', Est. *jää*, dial. *jähi*, Gen. *jähi*, S *ägjä*, Gen. *äjä*, Votic *jǟ*, Kar.-Olon. *jeä*, Veps *jä*, *ja*, *ǵa*, *ďä*, *ďa*, Liv. *jeì* id. | LpN *jiegŋâ*, Gen. *jieŋâ*, MordE *ej*, *ev*, *eŋ́*, *ij*, M *jεi*, *εj*, Cher. *ì*, *ii̯*, Ziry. *ji*, *ji̯*, Voty. *je̮*, Osty. *i̯e`ŋk*, *i̯o̭`ŋ‘ḱ*, Vog. *i̯āŋk*, Hung. *jég* id.

Fi. *kuu* 'moon, month', Est. *kuu*, Votic *kū*, Kar.-Olon. *kū* id., Veps *ku* 'month', Liv. *kū* 'Mond, Monat' | MordE *kov*, *koŋ*, M *kov* id., Osty. Kond. *χă̭u̯* 'Monat', Hung. *hó*, *hava-* id.

Fi. *pyy* 'hazel-grouse (Tetrastes bonasia)', Est. *püü*, S *püvi* 'Feldhuhn, Rebhuhn', Votic *pęлto-pǖ* 'Rebhuhn', Kar.-Olon. *pǖ* 'Haselhuhn', Veps *ṕü* id., Liv. *pīk̀i*, *pĭuk̀i*, W (old) *pǖ̆k̀i* 'Feldhuhn, Rebhuhn, Haselhuhn' | LpL *pakkūj*, I *paɢòi̯‘* (<< **püŋ-goi*, E. Itkonen) 'Haselhuhn', MordE *pov*, *povo*, M *povńε* id., Osty. *pəŋ‘ḱ* id., Hung. *fog-oly*, *fogu-madár* 'Rebhuhn'.

Fi. *pii* 'Zinke (im Rechen, in der Egge usw.)', Est. *pii*, dial. *pihi* 'Zacke, Zahn, Zinke', Kar. *pī* 'Zinke', Veps *pi* id., Liv. *pī̆gə̂z*, Pl. *pī̆gə̂ᴅ* 'Zacke, Zinke, Zahn' | MordE *ṕej*, *ṕev*, *ṕeŋ́*, M *ṕej* 'tooth', Cher. *pü*, *püi* id., Ziry.-Voty. *piń*, Vog. *pε̮ŋ*, *päŋk*, Osty. *pe`ŋk*, *pöŋk*, Hung. *fog* id.

Fi. *povi* : *poven* 'Busen', Est. *põu* : *põue*, dial. *pō*, *pōh*, *puhu* 'Busen, Schoss', Votic *pęvvi* : *pęvvę̄* 'Busen', Kar. *povi* :

nuotan povi 'Sack des Zugnetzes', Olon. *povi* : *poven* 'Busen', Veps *povi* : *poven* id., Liv. *pǫ̆i* : Part. Sg. *pǫ̆ijə̂*, W *p*^{u}*ŏi* : *p*^{u}*ŏijə̂* 'Busen; der Sack des Zugnetzes im Wasser' | LpN *buogŋâ* : *buoŋâ* 'breast of a bird', MordE *poŋgo*, M *pov*, *povă* 'Busen', Cher. *po·ŋgə̂š*, *pò·ŋə̂š*, *pò·mə̂š* id., etc.

Fi. *vävy* : *vävyn* 'Schwiegersohn', Est. *väi*, S *väü* id., Votic *vävü*, Kar.-Olon. *vävü*, *väü*, Veps *v́ävu*, LivSal. *väu mies* 'Schwiegersohn' | LpN *vivvâ* : *vivâ* 'son-in-law' (? < Fi.), Mord. *ov*, Cher. *βi·ŋgə̂*, *βè·ŋə̂*, Osty. *u̯e·ŋ*, Hung. *vő* id.

Fi. *kevät* 'spring', etc. | Cher. *kä·ŋgəž́*, *keŋe·ž́* 'Sommer' (see p. 12).

In consonant clusters.

Fi. *jauhaa* 'to grind' | Cher. *ja·ŋgə̂ž́ę̌m*, *jòŋə̂ž́ę̌·m* 'kauen, wiederkauen, mahlen' (see p. 4). *jauha-* < **jaŋša-*.

Fi. *jousi*, *joutsi*, *jouhti*, *joutti* 'Schiessbogen', Kar. *jouži*, Olon. *jouzi* | LpL *juəksa-* 'Bogen', Mord. *joŋks*, *joŋs* 'Bogen, Pfeilbogen', Cher. *ja·ŋgež́*, *joŋe·ž́* 'Bogen (zum Schiessen); Wollschläger', etc.

Fi. *seisoa* 'to stand' | LpN *čuoǯ'ǯot* 'stand, stand unused', Kld. *t́š́uən̄ńɒ*^{t}*š́ɒ*^{δ} 'stehen', Cher. *šińďž́ę̌·m* 'sitzen, stehen' (see p. 22).

Fi. suffix *-itse-*, *-ise-* | LpKld. suffix *-ń*^{d}*'t́š́*, Mord. suffix *-ńt́ś e*, see pp. 22—23.

When investigating the cause of the disappearance of *ŋ* as an independent consonant, it is important to notice that an independent *ŋ* occurred neither in the Baltic, nor in the Germanic consonant system.

It is therefore likely that the disappearance of *ŋ* in Proto-Finnic is due to foreign influence. In view of the absence of independent *ŋ* in Baltic it is likely that the development took place already during the period of the Baltic contacts. Baltic speakers were unable to pronounce *-ŋ-* in intervocalic position and in most consonant-clusters. It seems apparent that they had to substitute a sound familiar to them for *ŋ*.

We may assume that this habit of pronunciation was adopted by some of the Proto-Finns themselves, and finally spread over the whole area of Proto-Finnic.

The most likely substitutes for *ŋ* may have been *v* (*u̯*) and *j* (*i̯*), depending on the neighboring sounds.

That the substitution took place already during the Baltic contacts, seems to be confirmed by the fact that palatalization of consonants must have been preserved at the time of the substitutions. This is shown by comparisons like Fi. *jauha-* < **jaŋša-* ∼ Fi. *seisoa* < **saŋ́śa-*; Fi. *suitset* (p. 22) ∼ Fi. *jousi*, *joutsi*.

Under certain conditions *v* and *j* later disappeared in Proto-Finnic, and this led to the present zero representation of *-*ŋ*-. We may assume a loss of the semivowel in certain intervocalic positions, e. g. **kuvu* > *kuu* 'moon', **pije* > **piji* > *pii* 'Zinke', or a development of vowel + semivowel into a long vowel in certain consonant stems, e. g. **kuv-* > **kuu̯* > *kuu*, **pij-* > **pii̯* > *pii*; see for these developments the excellent article by Erkki Itkonen in FUF 30 pp. 1—54.

For a loss of Pre-Finnic *v*, *j* under similar conditions, see pp. 72—74.

In some cases Livonian has preserved a trace of a Late Proto-Finnic consonant representing *ŋ* in words where other Finnic languages show a total loss of *ŋ*, cf. for instance Liv. *pĭgə̂z* ∼ Fi. *pii* (p. 30); see Posti MSFOu 85 p. 324. It is possible that Southern Estonian too has sometimes preserved *v* or *j* from *ŋ* (*ŋ́*) in words where other languages show zero; cf. for instance EstS *püvi* ∼ Fi. *pyy*, EstS *ägjä*, Gen. *äjä* (Liv. *jeì*) ∼ Fi. *jää*. Could Est. *h* in dialectal forms like *pihi* (∼*pii*), *puhu* (∼ *põu*) have developed in hiatus?

6. The Change -*m* > -*n*.

Final -*m* changed into -*n* during the Proto-Finnic period. As a result of this change many paradigms now show an alternation *m* ∼ *n* where *n* occurs (or has disappeared) in final position.

Fi. *sydän* : *sydämen* 'heart', Est. *süda* : *südame*, Votic *süä* : *süämē*, Kar. *šeän* : *šeämen*, N *šüön* : *šüömen*, id., Olon. *süväin* : *südämen* 'das Innere', Veps *śüdai* : Iness. *śüdaḿes* id.

Fi. *ydin* : *ytimen* 'marrow' (cf. LpN *âđâ* : *âđđâmâ*, Mord. *uďime*, Cher. *βim*, *βem* id., etc.).

Fi. *nimetön* : *nimettömän* 'nameless', Est. *nimetu* : Pl. dial. *nimetumad* id., Votic *ęnnętō* : Pl. *ęnnęttomaᴅ* 'unlucky, unhappy', Kar. *kieletöin* : *kielettömän* 'dumb, mute (»tongueless»)', Olon. *kieletöi* : *kielettömän* id., VepsO *vigatęin* : Pl. *vigatomad* 'faultless', M *ńimetoi* : Pl. *ńimetomad* 'nameless', S *ńimetō* : Pl. *ńimetomad* id. (Liv. *nĭmt̀imi* < **nimettömäinen* : Pl. *nĭmt̀imist* id.) (cf. LpN *guolĕtæbmĕ* 'fishless', Mord. *śeľḿerŕeḿe* 'blind, eyeless', Cher. *kì·təmə*, *ki·ttə̆mə̆* 'handless, without hands', etc.).

In Livonian and in Veps *m* has sometimes been generalized in final position so that the alternation has disappeared, e g. Liv. *sidàm*, W (old) *südàm* (but Sal. *šuda*) 'heart', Veps *avaďim* : *avaďiman*, *avaďimen* 'key' (Fi. *avain* : *avaimen*), *parahim* 'best' (Fi. *parhain* < *parahin*).

There are further two categories in which Pre-Finnic *m* occurred only in final position: the accusative case and the 1st person singular.

After the change *-m* > *-n* had taken place the accusative coincided with the genitive ending in *-n*. The present Finnic languages, of course, show only accusatives in *-n* (or loss of *-n*).

Fi. *pojan*, Est. *poja*, Votic *poigā*, Kar. *pojan*, Olon. *pojjan*, Veps *poigan*, Liv. *pùoga* (< Late PrF **poiγan*) Acc. Sg. 'boy, son'; cf. LpN *dâm* Acc. Sg. from *dât* 'that, this', LpWefs. *ʙie`ŋ̯`ɛm* Acc. Sg. from *ʙie`ŋ̯`ɛ* 'dog', Cher. *kì·δ̦əm* Akk. Sg. from *kit* 'hand', etc.

The so-called accusative of Mordvin, ending in *-ń*, is apparently not of the same origin as the Finnic, Lapp, and Cheremis accusatives.

Likewise in the 1st person sg. all Finnic languages show forms ending in *-n* (or loss of *-n*).

Fi. *annan*, Est. *annan*, Votic *annā*, Kar.-Olon. *annan*, Veps *andan* (< Late PrF **andan*) 'I give', Liv. *ma jᵘòi*

(< *join*) 'I drank', *ma jùoks* (< **jōksin*) 'I would drink' (in the present tense Livonian uses 3rd person sg. forms for 1st person sg.: *ma āndaʙ*, W *ā̊ndaʙ* 'I give'; only a few regular forms have occasionally survived, mostly in LivW, e. g. *ma jùo* 'I drink', *ma sā̊* 'I get'). Cf. LpN *gulâm* 'I hear', Cher. *ko·le͓m, kole͓·m* 'I die', etc.

Since both Cheremis and Proto-Lapp have retained final *-m*, it seems safe to conclude that the change *-m* > *-n* took place during the Proto-Finnic period. As regards the cause of the change, it is to be noted that a similar change is known to have occurred in many languages. There seems to be a general tendency to change final *m* into *n*. It is thus possible that *-m* > *-n* in Proto-Finnic is an additional example of the same tendency, in other words that it was a spontaneous change.[1] Taking into consideration, however, that neither Baltic nor Germanic had final labial nasals at the time of the Proto-Finnic contacts [2], it seems more likely that these foreign contacts are the primary cause of the change. It should be borne in mind that the change was cotemporaneous with Baltic and Germanic contacts, and that only such languages as came into direct contact with the foreign languages in question were affected by the change.

The situation in Mordvin is not quite clear. When discussing the accusative (see above) we held that the Mordvin »accusative» ending *-ń* apparently does not go back to the FU accusative ending **-m*. A change like *-m* > *-ń* would be rather improbable. In the first person sg. there are forms ending in -*n* (present tense) or -*ń* (past tense), e. g. *palan* 'I kiss', E *pali̯ń*, M *palań* 'I kissed'. Here *ń* is due to *-*i̯*-, which is the morpheme of the past tense. As regards *n*, it was the opinion of Setälä that it goes back to *m* (see Tietosanakirja 9, col. 364 [printed 1916]). It seems indeed possible that this might be the case. What, then, could account for the change in Mordvin? There are two possibilities: (a) -*m* > -*n* occurred independently in Mordvin after the Proto-Finns had separated, or (b) -*m* > -*n* is due to Baltic influence, either directly, or through Proto-Finnic mediation, or both. Of these two alternatives I would, on the whole, prefer the latter (b). We must assume, on the grounds of the many similarities between Mordvin and Finnic that the final separation of these two groups occurred a little later than the separation of the Finnic group from the ancestors of the Cheremis. Thomsen already assumed that some kind of contact between Mordvins and Proto-Finns still existed at the time of the Baltic contacts, and that there were also direct contacts between Baltic speakers and Mordvins (see BFB pp. 153—155 = SA IV pp. 260—265). Cf. however Ravila FUF 23 p. 41.

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[1] Such a spontaneous change is well known for instance in the southwestern dialects of Finnish: *mū̆tan* < **mū̆tam* < *mū̆tama*, *ettän* < *että mä*. (In most paradigms, however, *-m* does occur: *kuàlem*, Gen. *kuàlema* 'death', *liằm*, Gen. *liằme* 'broth, soup'. Here *-m* has been generalized from medial position.) No outside influence in South-West Finland can be considered responsible for the change.

[2] See for instance Endzelin LeGr. p. 117: »Das Urbaltische hatte ausserdem auch *-n*, teils aus altem *-n* (so in pr. *semen* 'Samen'), teils aus altem *-m* . . .», and Hans Krahe Germ. Sprachwissenschaft I p. 115: »Auslautendes idg. *-m* wurde im Germ. (wie in vielen anderen Sprachen, z. B. im Griech.) schon in frühester Zeit zu *-n*.»

It seems thus most likely that the change of final -*m* into -*n* in Proto-Finnic is due to the fact that final -*m* was unknown in Proto-Baltic (and in Proto-Germanic).

7. The Change *mt* > *nt*.

As a result of this combinative change, an alternation *m* ∼ *n* occurs in several paradigms.

Fi. *lumi* : Part. Sg. *lunta*, Est. *lumi* : *lund*, Votic *лumi* : *лunta*, Kar. *lumi* : *lunda*, Olon. *lumi* : *lundu*, Veps *лumi* : *лund*, Liv. *lŭm*, *lŭim* : *lūnda* < Late PrF *lumi* : *lunta* 'snow'.

Similarly Fi. *niemi* : *nientä* 'cape, point, promontory, peninsula', *liemi* : *lientä* 'broth, soup', *loimi* : *lointa* 'warp-thread, blanket', *satimen* (Gen. Sg.): *sadinta* 'trap', *ytimen* (Gen. Sg.): *ydinten* (Gen. Pl.) 'marrow', etc.

In such forms as Veps *лumt* Part. Sg. 'snow', *avad'imt* Part. sg. 'key', Liv. *l̀iemdə̂, l̀iemt̀* Part. Sg. 'broth, soup', *sidàmt̀, südàmt̀* Part. Sg. 'heart' the *m* is due to a generalization from the vocalic stem.

If *-mt-* occurred in all forms of the paradigm, only *-nt-* now occurs in Finnic. In these cases only Lapp and Cheremis have kept original **-mt-* and **-nt-* separate.

Fi. *kansi* : *kante-*, (Est. *kaas* : *kaane-* 'Deckel, Buchumschlag Einband, Verdeck', Votic *kāsi* : *kānẹ̄* 'Deckel',) Kar. *kanži* : *kande-* 'large birch(-bark) cup', Olon. *kanzi* : *kande-* 'cover, lid, Liv. *kǭńtš*: Pl. *kǭndəᴅ*, W *kā̆ńᴅž* : Pl. *kā̆nduᴅ* id. | LpK Genetz *kītt-kiͦɵmte* 'äussere Handfläche', MordE *kundo*, M *kundă* 'Deckel' | Cher. *ko·mδə̂š* id.

Fi. *tuntea* 'to know, to feel, to recognize' Est. *tundma* id., Votic *tuntẹa* 'to know, to be able (e. g. to speak)', Kar.-Olon. *tundie* 'to feel, to know, to recognize', Veps *tuntta* : Pr. *tundẹn* id., Liv. *tun̄də̂* : Pr. *tūndəʙ, tūnduʙ* id. | LpN *dọw'dât* 'know; perceive, sense; notice, feel; experience, etc.' (*wd* < **mt*), K (Genetz) *tomtɵ-*, Kld. (T. I. Itk.) *tom̄ᴅ*^{t}*ᴅ*$^{\delta}$: *tomᴅ̀a*^{m} 'verstehen', etc.

Fi. *antaa* 'to give', Est. *andma*, Votic *antā*, Kar.-Olon. *andoa*, Veps *antta* : *andan*, Liv. *an̄də̂* : *āndaʙ* id. | LpN *vuow'det* 'sell', MordE *andoms*, M *andə̂ms* 'nähren, ernähren, füttern', etc.

Fi. *onsi* : *onte-*, (Est. *õõs* : *õõne*, *oos* : *oone* 'Höhlung, Höhle', Votic *ẹ̄si* : *ẹ̄nẹ̄* 'Höhlung, hohl',) Kar. *onži* : *onde-* 'Höhlung, hohl', Olon. *onzi* : *onde-*, Veps *ońź* : *onde-* id. | LpN *vuow'dâ* 'the cavity inside an animal's body, abdominal cavity of human body', MordE *undo*, M *undă* 'Höhlung (in einem Baumstamm)', etc.

Fi. *kinnas* : *kintaan* 'mitten', Est. *kinnas* : *kinda*, Votic *tšinnaz* : *tšintā*, Kar. *kinnaš* : *kindahan*, Olon. *kinnas* : *kindahan*, Veps *kindaz* : *kindhad*, Liv. *kīndaz* : *kin̄də̂ᴅ* id. It is obvious that Lettish *cimds* (< **kimdas*), dial. *cimda* 'Handschuh' is connected with this word. We do not know with certainty whether this word is of Finnic or Baltic origin (cf. Thomsen BFB p. 187 = SA IV p. 321—323, Kalima BL p. 118). If the word is of Baltic origin, the Swedish Lapp form *kamtes, kamts* 'chiroteca e pelle rangiferina confecta, lapphandske', which in that case must be borrowed through Proto-Finnic, shows that **-mt-* at that time was still retained in Proto-Finnic. If again the word is of Finnic origin, the Baltic form shows that the original form had *-mt-* in Proto-Finnic.

It is thus possible to conclude that the change *mt* > *nt* took place after the Baltic contacts. This is exactly what we would expect on the ground that *-mt-* did, and still does, occur in Baltic (cf. Lith. *šim̃tas*, Le. *sìmts* < IE **k̂m̥tó-* 'hundred'). In Germanic, however, *-mt-* and *-md-* did not occur, old **-mt-*, **-md-* having been changed into *nt, nd* (cf. Goth., AS, OS *hund*, OHG *hunt* 'hundred'; Goth. *skanda*, AS *scand*, OHG *scanta* 'shame' ~ Goth. *skaman*, AS *scamian*, OAG *scamōn* 'be ashamed'; see e. g. Krahe Germ. Sprw. I p. 103.) It seems apparent that the change *mt* > *nt* in Proto-Finnic is due to Germanic influence. Bilingual speakers of Germanic origin, being unable to pronounce *-mt-* substituted *-nt-* for it.

From the examples mentioned above it can be seen that Mordvin too has *nd* for old *-mt-* (Mord. *kundo, kundă*; *andoms, andəms*; *undo, undă*). Because of this fact Setälä seems to have been of the opinion that the change might be very old (see Tietosanakirja 9, col. 364). It is obvious, however, that the Proto-Finnic change *mt* > *nt* is younger than the period of the Baltic contacts. Therefore, it seems to me, the Mordvin change is to be kept separate from the Proto-Finnic one.

The change **-mťś-* > *-ms-* appears to be older than *mt* > *nt*. This can be concluded from the following word:

Fi. (Lönnr.) *lämsi*, Gen. *lämsen* 'kastsnara, slängsnara (= Wurfschlinge, Lasso)' *lämsä* 'rimsa, flik, blocksträng; dragsnöre, draglina; kastsnara, slängsnara, lasso; ögla i snaran' | LpN *lawˈǯe*, Gen. *lawǯe* 'rein', T Genetz *lamča* 'Zügel, Zaum (aus einem Seile)', Cher. *la·p*$^{\varphi}$*šem* 'Halfterriemen', Ziry. *leťś* 'Schlinge, Dohne (für Vögel und Hasen)', etc.

If *mt* > *nt* were earlier than *mťś* > *ms*, we should expect *-ns-* in the above word in Finnish.

8. The Treatment of *kt*.

The treatment of Pre-Finnic *kt* in Finnic is not quite uniform. The majority of languages underwent a change *kt* > *ht* after the first syllable, i.e. after the main stress. The Southern dialect of Estonian, however, shows *tt* in this position, and this *tt* cannot be considered as having been developed from *ht*. After non-initial syllables there is everywhere only *tt* for Pre-Finnic *kt*.

Fi. *ahtaa* : *ahdan* l. *ahdata* : *ahtaan* 'expono l. suspendo segetem torrendam in nubilario', *ahtaan verkkoa* 'rete expono l. suspendo torrendum', Est. *ahtma* : *ahan*, *ahtima* : *ahin* 'aufstecken (Getreide zum Darren)', Votic *ahtā* : *ahan* id., Kar. *ahtoa* : *ahan* 'ahtaa (kauroja haasiaan)', Veps *ahtta* : *ahtan* id. ~ EstS *at̄ma* : *at̆tà* id. | LpSw. *wuoktinje* 'palus in quo retia piscaria siccanda penduntur', Wefs. *wŭọkχtàjɛ* 'in die Erde eingeschlagener Pfahl zum Aufhängen und Trocknen der Netze'; MordM *aftan* 'ausspannen', (Jevsevjev) *aftə̂ma*, E *avtuma* 'сеть (рыболовная)', Cher. *optem* 'stellen, aufladen, laden (z.B. Mehl in eine Kiste, Heu od. Holz auf die Fuhre', *optəš*, *oktə̂š* 'Vogelschlinge aus Rosshaar, befestigt an einem bogenförmig in den Erdboden getriebenen Stock, dient zum Entenfang im Frühling', Ziry. *oktịnị* '(eine Falle od. ein Fangeisen) aufstellen'; Voty. *oktı̊nı̊* : *juäz o.* 'in die Tenne führen (das Getreide)'.

Fi. *huhta*, G. *huhdan* 'ager silvestris l. silva cæsa et usta, in qua secale disseminari solet', Est. *uht*, Gen. *uha* 'Haufe, aufgethürmter Haufe (von Heu, Reisig u. dgl.)', *uhta põletama* 'Rödung machen, Land brennen', Kar. *huuhta* 'huhta, halme', Olon. *huuhtu* 'huhta', Ludic *hūht*, *hūhtę* 'huhta (ruista kasvava)' | MordE *tšuvto*, *tšufto*, M *tšuftă* 'Baum'.

Fi. *tohtaja* l. *tohtava* 'Anas glacialis l. hiemalis' (Renv.), 'Colymbus arcticus l. Fuligula glacialis' (Lönnr.) | LpN *dọrtâ*, Gen. *dọkˈtâgâ* 'Colymbus arcticus (black-throuted diver)', Kld. *tort*, Gen. *toχteγ* 'Tauchervogel'; Cher. *toktə̂* : *toktə̂-lꭒδꭒ* 'Colymbus'; Osty. *ṭa·χḷə̂ŋ* id.; Vog. *taχt*, *tẹ̄χt* 'Colymbus arcticus'.

Fi. *ehtoo* 'evening', Est. *õhtu*, Votic *ẹhtago*, Veps. *eht*, G. *ehtan*, Liv. *ẹ̄̆də̂ɢ*, W *ī̆də̂ɢ*, old *ü̆də̂ɢ* id. ~ EstS Wied. *õtak* (ɔ: *ẹĭtàk̀*), G. *õdagu*[1] id. | LpN *ikˈtĕ* ~ *jikˈtĕ* 'yesterday', L *ektu*, K *jiekta*, *jekta* id.; etc.

Fi. *nähdä*, Past Partic. *nähty* (< **näktü*, vowel stem **näke-*) 'to see', Est. *näha*, *nähtud*, Votic *nähä*, *nähtü*, Kar. *nähä*, *nähtü*, Olon. *nähtä*, *nähtü*, Veps *ńähta*, *ńähtud*, Liv. *nä̆də̂*, *nä̆də̂t̀*, *nä̆də̂ᴅ* id. ~ EstS *näĭtäˀ*, *näī* (< **näktü*) id., Votic dial. *nätä*, *nättü* id. (Votic dialect forms showing *-*kt*- > *-*tt*- are probably due to influence from such Estonian dialects as have undergone the same change, cf. also *lätä* sub *lähteä*; the regular Votic treatment is *-*kt*- > -*ht*-.)

Fi. *yhdeksän* 'nine', Est. *üheksa*, Votic *ühesǟ*, Kar. *ühekšän*, Olon. *üheksä*, VepsS *ühtsan*, M *üh́esa*, O *ühtsa*, Liv. *ī̆də̂ks*, W (old) *ǖ̆dəks* id. ~ EstS *üĭteššä* id. | LpN *ǫkˈce* id., Sw. *åktse*, W *ạkχciɛ*, T *akce* id.

Some paradigms show a Late PrF alternation *ht* ~ *ks*, EstS *tt* ~ *ks*, which is due to the fact that the change *kti* > *ksi* (see p. 53) is earlier than *kt* > *ht* (or *kt* > *tt* in EstS).

Fi. *kaksi*, Ess. *kahtena*, Gen. *kahden* 'two', Est. *kaks*, Gen. *kahe*, Votic *kahsi* (*hs* < *ks*), Gen. *kahē̬*, Kar. *kakši*, Gen. *kahen*, Olon. *kaksi*, Gen. *kahten*, Veps *kakś*, Gen. *kahtẹn*, Liv. *kak̄š*, Gen. *kǫ̬̆ᴅ*, W *kǟ̆ᴅ* id. ~ EstS *kat̄ś*, Gen. *kaĭtẹ̀* id. | LpN *guokˈtĕ*, Gen. *guovte* 'two', MordE *karto*, M *kaftă* id., Cher. *kok* (as attribute), *koktə̂t*; Ziry. *ki̬k*; Voty. *ki̬k*, *ki̬kt*- id., etc.

Fi. *lähteä* : Impf. *läksin* (or *lähdin*) 'viam l. iter ingredior, loco decedo l. abeo l. exeo', Est. (Inf. *minema* :) Pr. *lähen*, Impf. *läksin* 'gehen, fig. dahinscheiden, umkommen', Votic *lähte-*, Pr. *lähen*, Impf. *lähsin*, *lähzin* 'sich begeben, gehen', Kar. *lähte-*, Pr. *lähen*, Impf. *läksin*, *läkšin* id., Olon. *lähte-*, Pr. *lähten* id., Veps *ľähtẹ-*, Pr. *ľähtẹn*, Impf. *läksiń*, *läksīń* id., Liv. *lä̆də̂*, Impf. *lek̄š* 'gehen; werden; müssen' ~ EstS Pr. Sg. 3. *läī*, Impf. Sg. 3. *läīś* 'gehen', Votic dial. Inf. *lätä*, Pass. Impf. *lättī* 'sich begeben, gehen' | LpKld. *līχte-*, T *līkte-* 'sich begeben'; Cher. *lä·ktäm*, *lekta·m* 'hinausgehen, weggehen, sich auf den Weg machen; hervorkommen, aufgehen, etc.'; Ziry.

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[1] The *d* in the Gen. seems to be analogical and perhaps due to such models as *maĭtàl*, Gen. *madàla* 'low', *oĭtàv*, Gen. *odàva* 'cheap'.

loknį, loknįs, Pr. *me lokta* 'kommen, ankommen, anlangen, gehen, (nach Hause) ziehen'; Voty. *li̯kti̯ni̯* 'kommen'; Osty. *tīu̯ət-* etc. 'hinausgehen (aus dem Haus), aussteigen (aus einem Fuhrwerk); irgendwohin (für immer) umziehen, übersiedeln'.

In the following word only Liv. shows Late PrF *-ks-*:

Fi. *ohto*, Gen. *ohdon* 'bear', Liv. *ok̄š*, Part. *ok̄šə̂*, Pl. *ok̆š̆ìᴅ*[1] id. ~ EstS Wied. *ott*, Gen. *ota*, *ote*; *ot́t́*, Gen. *oti* id. | MordE *ovto*, *ofto*, M *oftă* id.

As regards the age of the change *kt* > *ht*, we have already seen that **-kti-* developed into *-ksi-*. Thus *ti* > *si* (for this change, see p. 53—) must be earlier than *kt* > *ht*. We know that *ti* > *si* occurred in loan-words of Baltic origin (see p. 48—), and this seems to prove that this change took place after the Baltic contacts. It follows that during these contacts *kt* was kept unchanged. This is what we should expect, because *kt* did and still does occur in the Baltic consonant-system, e. g. Lith. *naktìs*, Le. *nakts*, OPr. *nacktin* Acc. 'night', cf. Skr. *nákti-ṣ*, Lat. *nox*, Gen. *noctis* | Lith. *lìktas*, Le. *likts* (from Lith. *lìkti*, Le. *likt* 'lassen'), cf. Lat. *relictus* 'zurückgelassen' | Lith. *peñktas*, Le. *pìektais*, OPr. *penckts* 'fifth', cf. OChSlav. *pętъ*, Greek *πέμπτος*.

In contrast to the Baltic languages, the cluster *kt* did not occur in the Proto-Germanic consonant system. Instead of *kt* Germanic had *ht*, e. g. Goth. *nahts*, OHG, AS *naht* 'night' | Goth. *ahtáu*, OHG, AS *ahto*, cf. Lat. *octo*, Greek *ὀκτώ* (see, for instance, Streitberg Urgerm. Gr. p. 113; Hirt Handbuch des Urgermanischen I p. 124; Krahe Germ. Sprachwissenschaft I p. 77). It is obvious that Proto-Germans trying to speak Proto-Finnic had to substitute *ht* for *kt*. And we may assume that this pronunciation was adopted by surrounding Finnic speakers. The pronunciation of *ht* by Finnic speakers was made possible by the simultaneous or perhaps somewhat earlier change *ś* > *h* which had brought *h* into the Finnic consonant system.

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[1] We should expect the Late PrF alternation *ks* ~ *ht* here too. *ks* has, hovever, been generalized throughout the paradigm.

But how can we explain EstS *kt* > *tt*? It is impossible to assume that *kt* first developed to *ht* and subsequently *ht* into *tt*.[1] If that were the case, we should, of course, have *ht* > *tt* also in those cases where *ht* derives from *št*. Actually, EstS always shows *ht* here, e.g. *täh̄t* 'star', cf. Mord. *ťešťe* id. | *leh̄t* 'leaf', cf. LpN *lâsˈtâ*, Cher. *lə·štäš*, *lišta̭·š* id. The theory of Setälä that EstS *tt* went back to the strong grade, and the *ht* of other languages to the weak grade, of the gradation **kt* ~ **γt* cannot be accepted. It is difficult to imagine how e. g. in Fi. *tohtaja* the generalization of the weak grade could have been possible in spite of the fact that the weak grade did not occur in any form of the word. There is a similar difficulty in explaining EstS *kaĭtęšsa* 'eight' and *üĭtešsä* 'nine'. According to Setälä's theory, we should derive *tt* from the strong grade. No form of these words, however, could show the strong grade since the second syllable was always closed. Because of these difficulties it is now generally recognized that it is not possible to account for *tt* and *ht* by assuming generalization from the different grades of gradation.

When trying to find an explanation for the divergent treatment of *kt* in Southern Estonian the geographical location of this area should, in my opinion, be taken into consideration. This dialect has always been a close neighbor of the Baltic area and has even to-day a long common boundary with Lettish. It seems therefore possible to assume that the tendency to substitute *ht* for *kt* could not gain ground in this area because of the fact that in the immediate neighborhood of this small area there was spoken a language in whose consonant system *kt* was a very frequent cluster.[1] There probably was no immediate Germanic influence in this inland area, while on the other hand a considerable number of Finnic speakers there were in close contact with Baltic. In addition, there were, of course, also bilingual individuals of Baltic origin. Thus it happened that while everywhere else *ht* was substituted, as a Germanic superstratum phenomenon, for *kt*, in this small corner *kt* was preserved because it was present in the immediate neighborhood.[2] In this way the different treatment in EstS becomes easily understandable. Further, it is not necessary to assume an early division of Proto-Finnic into two areas. There is nothing else to speak for such an early partition, which would, indeed, seem most unnatural in view of the many common features especially between the Northern and Southern dialects of Estonian.

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[1] When writing his ÄH in 1890, Setälä, however, thought such an assumption possible. P. 205 he says: »Etelävirossa täytyy meidän olettaa xt:n assimileerauneen pitkäksi t:ksi, sillä katsoen kaikkien muiden kielten yhtäpitäväisyyteen meidän täytyy katsoa *kt*:n muuttumista yhteissuomalaiseksi, joten siis ei saata etelävirossa ajatella suoraa assimilatsioonia *kt*:sta *tt*:ksi.» To explain why *ht* (< *št*) has been preserved, Setälä assumed that the *ht* which developed from *kt* was different from *ht* < *št* (see ibid. p. 205). Such a difference does not seem very probable, and in his subsequent publications Setälä soon rejected this assumption (see e.g. JSFOu 14_3 p. 14).

Present-day *tt* from *kt* is, of course, the result of later assimilation. It is not altogether impossible that this assimilation was furthered by later contacts with Slavic, in this case Old Russian. Old Russian had no *kt*, IE *kt* having been developed into *t* or, when palatalized, into *ćt́* (> Old Church Slav. *št*, Russ. *č*, etc.) during the Proto-Slavic period, e.g. OChSl. *pętъ* 'fifth' (cf. Lith. *peñktas*, Greek *πέμπτος*), OChSl. *pletǫ* 'I braid' (cf. Lat. *plecto*, OHG *flehtan*); OChSl. *noštь*, Russ.

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[1] Note for instance the many infinitives (and other verb forms) having *kt*. e.g. Le. *nākt* 'kommen', *sākt* 'anfangen', *līkt* 'sich biegen', *pirkt* 'kaufen', *vilkt* 'ziehen, schleppen', *rakt* 'graben', *tikt* 'gelangen, geraten, werden', *braukt* 'fahren', *lēkt* 'springen, hüpfen', *saukt* 'rufen, nennen', *teikt* 'sagen', *vākt* 'sammeln, ernten', etc., some of which belong to the most frequently used words of the language.

[2] It is to be noted that the shift *š* > *h*, which in my opinion is due to Germanic influence, did occur even in the area where *kt* was preserved because of Baltic influence. Perhaps we could assume that at the time of the spreading of this shift the Lettish change *š* > *s* had already taken place. In that case there was no longer any Baltic *š* in the neighborhood to support the preservation of *š*. (The present Lettish *š*, which is due to palatalization, is perhaps of more recent origin.) But since there is no evidence to prove this assumption, the possibility still remains that the shift *š* > *h* spread over the area in question in spite of the presence of *š* in the neighborhood.

ночь 'night' (cf. Lith. *naktìs*, Lat. *noctem*); see, for instance, Mikkola Urslav. Gr. p. 161—162, Vaillant Grammaire comparée des langues slaves I pp. 65—66, 83. Thus *kt* was unknown to the Russians and they probably had to substitute their *t* (which Finnic speakers rendered by *tt* in borrowings from Old Russian.). On the other hand, the possibility still remains that *kt* > *tt* could be a spontaneous sound change.

After non-initial syllables, as already indicated, there occurred a change *kt* > *tt* everywhere in the Proto-Finnic area. Some examples are given here:

The ending of the 2nd. person pl. in the present tense, e. g. Fi. *annatte*, dial. *annatta* 'you give (pl.)', Est. *annate*, Votic *annatta*, Kar. *annatta*, Olon. *annatto*, Veps *andatā*, *andatȩi*, *andaī*, Liv. *ā̆ndat̀*, *ā̆ndat̀ə̂*, W *å̄ndat̀* id. (< **andaktз*; *k* in this form is the morpheme of the present tense, cf. such past tense forms as Fi. dial. *antoja*, Kar. *andoja* < **antoiδa*, where *i* represents the past tense morpheme; for *k*, see Setälä JSFOu. 2 pp. 50—54), etc. In most Finnic languages this personal ending has now been generalized in the past tense too. After initial syllables, we should expect *ht* in this personal ending, but it is understandable that this difference has been levelled out in favor of the *tt*-forms.

The partitive sg. and genitive pl. of nouns ending in **-ek* (consonant stem) ∼ **-eγe-* (vocalic stem), e. g. Fi. *kastetta* Part. Sg., *kastetten* Gen. Pl. 'dew', Est. *kastet*, *kastete*, Votic *kasȩtta*, Kar. *kaššetta*, Olon. *kastettu*, Veps *kastȩt* id. (< **kastȩkta*). Liv. *kaštùkt* ∼ *kaštùktə̂* is an innovation based on forms like the genitive *kaštùɢ*; that *kaštùkt* cannot be an old form is shown by the form *ā̆ndat̀*, and further by such forms as *pìersta* (PrF **persektä*) Part. Sg. 'Arsch', *vȩ̀ita*, W *vùita* (PrF **vȩiδȩkta*) 'butter'.

It is possible that *-tt-* in Finnic causative verbs like Fi. *kuolettaa* 'to kill, to deaden' (*kuole-* 'to die'), Est. Wied. *kooletama* 'auf's Sterbelager legen, auf Sterbende Acht geben, ihren Tod abwarten; tödten', Ludic *kuoлettada*, *kuoletada* 'to kill, to cause death (by negligence)', VepsS *koлętada* 'suretada

(= 'sterben lassen, töten; pflegen (Sterbende, bis zum Tode)', O *koľetoitta* id., Liv. *kùolt̀ə̂* 'töten, sterben lassen' (cf. MordE *kuloftoms* 'töten', *kuloms* 'sterben'); Cher. *punə̂ktem* 'flechten lassen' (*punem* 'zwirnen, flechten'); Voty. *valektịnị* 'belehren, erklären usw. etc.) goes back to *-kt-* (see for instance Uotila MSFOu 65 p. 287 with bibliographical references). Finnic *-tt-* here could also be from **-pt-*, which occurs in Ugric (Vog., Osty.) and Samoyed (see for instance Paasonen Beiträge p. 68, Hakulinen SKRK I p. 249).

A similar case is the ending of the abessive case and the cognate suffix of the caritive adjectives, e.g. Fi. *kalatta* 'without fish', *kalaton*, Gen. *kalattoman* 'fishless'. Mordvin is the only FU language to show that the ending does not contain an original geminate stop[1], e. g. MordE *katšamo* 'Rauch', *katšamortomo* 'rauchlos, ohne Rauch', MordM *ava* 'Weib', *avaftə̂ma* 'ohne Weib', MordE Kal. *ḱeď* 'Hand', *keťχťiḿe*' ohne Hand'. It is difficult to decide whether Late PrF *tt* in this case is from **-pt-* or **-kt-*. See for instance Uotila MSFOu 65 p. 91 (with bibliographical references).

We have no means of determining the exact age of the change *kt* > *tt* after non-initial syllables. Since, however, there is no assimilation in the causative suffix in the Volgaic group, it is probable that it did not occur prior to the Proto-Finnic period; in any case it must be earlier than *kt* > *ht* after initial syllables. The assimilation seems to have been a spontaneous sound change, which cannot be ascribed to any foreign influence.

There are a few words which show *-tt-* after an initial syllable in Finnic and *-kt-* in some other languages.

Fi. *mätäs*, Gen. *mättään* 'Rasenhügel, Erdhügel, Höcker, Mooshöcker', Est. *mätas*, Gen. *mätta* id., Votic *mätäz*, Gen. *mättā̈* 'Anhöhe, Hügel', Kar. *mätäš*, Gen. *mättähän* 'Rasenhügel, Mooshöcker', Olon. *mätäs*, Gen. *mättähän* id., Veps *ḿätaz*, Gen. *ḿäthan* 'Anhöhe, Hügel, Rasenhügel', Liv. *mät̀àl*,

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[1] Some Lapp dialects, however, show *pt* in the ending of the abessive case, see Toivonen FUF 28 Anz. pp. 208—209. Cf. Ravila FUF 23 p. 35.

Gen. *mätàl* 'Rasenhügel, Hümpel' | LpN *miek'tâ*, Gen. *mievtâ* 'a species of Carex which forms tussocks and grows on bogs' || SamO *mäkte*, *mäkt* 'Haufen', SamK *bäkte* 'kleiner Erdhügel'.

Fi. *jotta* 'damit, auf dass' | lpSw. *jukte*, *juktie* 'weil, da; als; dass, so dass, damit'.

Fi. *kutta* : Renv. *kutta suurempi sitä parempi* 'quo major eo melior', *sano kutta kuulen* 'dic ita ut audiam', *kutta tulisit* 'quod si l. o si venires', Est. *kut* 'wie, als', *mis muud kut* 'was sonst als', Veps. *kut* 'wie' | LpS *kukχtiɛ*, *kukχtɛ̧*, *ɢukχtiɛ* 'wie; so dass'.

Fi. *tytär*, Gen. *tyttären* 'daughter', Ingrian *tüär*, Est. *tütar*, Gen. *tütre*, Votic *tütär*, Gen. *tüttärẹ̄*, Kar.-Olon. *tütär*, Gen. *tüttären*, Veps *t́ütar*, Gen. *t́ütrẹn*, Liv. *tidàr*, W (old) *tüdàr* id. < Baltic, cf. Lith. *duktẽ*, Gen. *dukteř̃s*, OldPr. *duckti* id. LpSw. *taktara*, Wefs. *ᴅàkχtàrɛ̧* 'Tochter' has usually been considered as having been borrowed from Proto-Finnic. In that case it would indicate that the word had the cluster *kt* in Proto-Finnic. We should then have to assume a change *kt* > *tt* in PrF after an initial syllable. But another explanation of the Lapp word is, in my opinion, more likely. Qvigstad already assumed that *taktara* was borrowed from Scandinavian (see his Nordische Lehnwörter im Lappischen p. 125), and this is also held by Lagercrantz (see his Lappischer Wortschatz p. 893). We have to assume that the word was borrowed before the assimilation *ht* > *tt* (Sw. *dotter*, Norw. *dotter*, Dan. *datter*) had taken place in Scandinavian, and that in Lapp *kt* was substituted for *ht*.[1] We have other examples of such a substitution in Lapp: LpN *livtes*, Gen. *lik'tasa* 'smooth, quite even' ~ OIcel. *sléttr*; LpN *divtes*, Gen. *dik'tasa* 'tight, watertight (without holes)' ~ OIcel. *þéttr*, Sw. *tät*. If *taktara*, then, is of Scand. origin, the word cannot be used as evidence that there once was *kt* in the Proto-Finnic form of *tytär*. It would seem possible to assume that *tt* was substituted for Baltic *-kt-* in this word, and the reason for the substitution was that in Baltic the main stress, in most forms at least, came after *kt*. Thus the impact on the Proto-Finnic ear was probably *-tt-* because at that time *kt* could no longer occur after an unstressed syllable in their own language. The stress on the second syllable in Baltic would also offer an explanation why the word has front vowels in Finnic (and in the Volgaic languages). The vowel of the second syllable, *e*, had a dominating position and, therefore, in the first syllable *ü* was substituted for Baltic *u*.

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[1] Professor Erkki Itkonen has kindly informed me that there is nothing in the vocalism of the Lapp word to speak against Scandinavian origin.

As for *jotta*, *kutta* we could assume that they were often used in unstressed position which would account for the assimilation *kt* ~ *tt*. According to Toivonen, Fi. *jotta*, Lp. *jukte* could be old abessive forms, see FUF 28 Anz. p. 209. Concerning Fi. *mätäs* I have been unable to find any plausible explanation. The word seems to remain an exception.

The following word shows both *-ht-* and *-tt-* for **-kt-* in Finnic languages.

Fi. *pyöhtää* 'buttern, Butter machen' ~ *pettää* id., Est. *pett*, *petipiim* 'Buttermilch', Votic *pettüpīmä* id., Kar.-Olon. *püöhteä* 'buttern', *puöhimmaito* 'Buttermilch', Veps *pehťimaid* id., Liv. *p*^{i}*eīk*, Pl. *p*^{i}*eīkəᴅ* (< **petteɣet*) id. | LpN *bætˈtet* 'stir with a stirring stick' (< Finnic), MordE *ṕiv́ťems*, *ṕif'ťims*, M *ṕiš́ťəms*, *ṕiχťəms* 'buttern, (Ton) treten, klopfen, schlagen'. For more details, see Ruoppila Virittäjä 1945 pp. 378—384. The *-tt-* forms remain an exception here too.

9. The Treatment of *pt*.

The treatment of *pt* in Proto-Finnic seems to be, in many respects, similar to that of *kt*. The regular development appears to be that Pre-Finnic *pt* is reflected by Late Proto-Finnic *ht*, *-pti-* by *-psi-*. There is, however, only one certain example of this cluster.

Fi. *vyyhti*, Gen. *vyyhden*, l. *vyyhdin*, *vihti*, Gen. *vihdin*, 'skein', *vyyhdetä*, Pr. *vyyhteän* 'to reel' ~ *viipsiä*, Pr. *viipsin* id.; Est. *viht*, Gen. *vihi* 'Garnsträhne, Stück Garn (gewöhnlich zehn Fitzen enthaltend)' ~ *viips*, Gen. *viipsi* 'Faden, welcher beim Haspeln abspringt; ein Stück auf die Hand gewickeltes Garn', *viipsik*, Gen. *viipsiku* 'Haspel', *viipsipuu* 'Haspel, Weife', *viipsima* 'haspeln, weifen'; Votic *vehsiä* 'haspeln', *vehsi* (< **vepsi*) ~ Gen. *vehē* (< **vehδen*) 'Strähne'; Kar. *viühti*, Gen. *viühen* 'Strähne', *viühteä* 'haspeln'; Veps *bipšťa*, Pr. *bipšin̹* 'haspeln', *vipšihang*, *bipšihang* 'Haspel', *bipšimpud* id.; Liv. *vep̄šə̂*, Pr. *vep̆šùʙ* 'haspeln, weifen', *vep̄š-pūᴅ* 'Haspel, Weife'.

As far as I am aware, this word is not known in Southern Estonian.

Since -*pti*- developed into -*psi*-, *pt* > *ht* must be of later origin. This again leads us to the conclusion that *pt* was preserved during the period of Baltic contacts (which were earlier than *ti* > *si*). This is natural, because -*pt*- did at that time and still does occur in Baltic, e. g. Lith. *septynì*, Le. *septiņi* 'seven', cf. Lat. *septem*, Greek *ἑπτά*; Old Lith. *neptė* 'Enkelin', cf. Lat. *neptis* 'Enkelin, Nichte'; Old Pr. *dalptan* 'Durchschlag', cf. Russ. долото (derived from **dilbō* 'höhle aus, meissle'); cf. further numerous infinitive forms like Lith. *kèpti*, Le. *cept* 'backen, braten'; Lith. *kir̃pti*, Le. *cirpt* 'scheren', Lith. *til̃pti*, Le. *tilpt* 'eingehen, Raum haben, einräumen', Lith. *lìpti*, Le. *lipt* 'kleben', etc.

In the Germanic languages, however, there was no -*pt*-, IE -*pt*- having changed into -*ft*-, e. g. Goth. *hafts* 'behaftet', AS *hæft*, OS, OHG *haft* 'gefangen', cf. Lat. *captus*; AS, OHG *nift* 'Enkelin, Nichte, Stieftochter', cf. Lat. *neptis* (see for instance Hirt Handbuch des Urgerm. p. 124, Krahe Germ. Sprachwiss. I p. 77). It is, therefore, most likely that bilingual individuals of Germanic origin substituted *ft* for *pt* when speaking Proto-Finnic. But native Proto-Finnic speakers did not have *ft* in their phonetic system. It would then seem natural that they substituted *ht* for it, when the new Germanic pronunciation began to spread among monolingual speakers.

Theoretically, it would be possible that the area of what is now Southern Estonian could have preserved -*pt*-, because of the neighboring Baltic influence, and later changed it into *tt* (cf. *kt* > *tt*). But this, of course, remains purely hypothetical as long as no examples are known from this dialect.

There are some cases in which the treatment is exceptional (*pt* > *tt* after an initial syllable).

Fi. *sättä* (Lönnr.) 'krokbete, agn; metmask [= bait, angleworm]', Ludic *šäī* id., *šätkała* 'baitfish' | LpN *sæk'te*, Gen. *særte* 'bait s.; salmon-tinbait; poisoned bait', L *sekte-*, *septe-* 'Lockspeise, Köder'. We do not know for certain whether *-kt-* or *-pt-* is original in this word. As for Finnic *tt*, one of the possible explanations might be to assume influence from the synonymous Fi. *syötti*, Veps *śo̜t*, Gen. *śo̜tun*, Ludic *šüöttömaim* 'baitfish'.

Liv. *ut̀tə*, Pr. *ut̀àʙ* 'bellen' | Cher. *optem* id., Ziry. *urtni̯*, *utni̯* id., Voty. *utı̑nı̑* id., Vog. *ūti*. A word with descriptive coloring? Cf. Liv. *nut̀tə̂* 'rufen, nennen; bellen', Veps *nutta* 'bellen' Est. *nutma* 'weinen, winseln'.

After non-initial syllables the regular treatment would no doubt be *pt* > *tt*, cf. *kt* > *tt* in the same position. For examples in which *tt* after a non-initial syllable could alternatively derive from *pt*, see pp. 43—44.

10. The Change *ti* > *si*.

This change is known to have taken place in the Proto-Finnic period both in initial and in medial position. A few examples are given here to illustrate the change.

In initial position.

Fi. *sinä* 'thou', Est. *sina*, Votic *siä*, Kar. *šie*, *sie*, *siä*, Olon. *sinä*, Veps *sińä*, *sina*, Liv. *sinà* id. | LpN *don*, Mord. *ton*, Cher. *təń*, *tiń*, *təj* id., etc.

Fi. *sika* 'swine', Est. *siga*, Votic *sika*, Kar. *šiga*, Olon. *siga*, Veps *siga*, Liv. *sigà* | MordE *tuvo*, M *tuvă* id.

Fi. *silta* 'Brücke, Steg, Landungsbrücke; Diele', Est. *sild* 'Brücke, Knütteldamm, unterhaltener Weg', Kar. *šilda*

'Brücke', Olon. *sildu* id., Veps *siɹd, siud, śüud* id., Liv. *sīlda* 'Brücke' < Baltic, cf. Lith. *tìltas*, Le. *til̃ts* id. LpN (Friis) *šaldde, sildde* are borrowed from Finnic after the change *ti* > *si*.

In medial position.

Fi. *käsi* (Pl. *kädet*) 'hand', Est. *käsi* (Pl. *käed* < **käδet*, Illat. *kätte*), Votic *tšäsi* (Pl. *tšäeᴅ*, Illat. *tšätē*), Kar.-Olon. *käzi* (Illat. *kädeh*), Veps *ḱäźi* (Pl. *ḱädęd*), Liv. *kĕ*$^{\check{z}}$*ž, kĕiž* (Pl. *kädùᴅ*) id. | LpN *giettâ*, Gen. *gieđâ*; mordE *ḱeď*, M *ḱɛď*; Cher. *kit*, Acc. *kì·δəm*; etc.

Fi. *vesi* (Gen. *veden*, Illat. *veteen*) 'water', Est. *vesi* (Gen. *vee*, Illat. *vette*), Votic *vesi* (Gen. *vē*, Illat. *vetē*), Kar.-Olon. *vezi* (Gen. *vien*, Illat. *vedeh*), Veps *veźi* (Gen. *v́edęn*, Illat. *v́edęhe*), Liv. *vĕ*$^{\check{z}}$*ž, vĕiž* (Gen. *v*^{i}*ĕ*^{d}*ᴅ*, Illat. *v*^{i}*ĕddə̂*) id. | Mord. *v́eď* id., Cher. *βət, βüt*, Acc. *βə·δəm, βù·δə̆m* 'Wasser, Fluss'; etc.

Fi. *lähteä*, Impf. *läksin* 'viam l. iter ingredior, loco decedo l. abeo l. exeo'; etc., see pp. 39—40.

Fi. *kärsiä*, Pr. *kärsin* 'leiden, erleiden, dulden, erdulden, ertragen, ausstehen, vertragen', Est. *kärsima*, Pr. *kärsin* (c. negat.) ungeduldig sein, bewegt sein, geschäftig sein, sich zu tun machen', Votic *tšärsiä*, Pr. *tšärzin* 'leiden, erdulden', Kar. *käržie* 'beruhigt od. gestillt werden', *käržitteä* 'beruhigen besänftigen, stillen' | LpN *gierˈdât*, Pr. *gierdâm* 'bear, endure; hold (intr.); stand, put up with'; mordE *ḱiŕďems*, M *ḱiŕďəms* 'halten; halten, fest sein; leiden, ertragen; beherrschen'.

Fi. *morsian* 'Braut', Est. *mõrs*, Gen. *mõrsi, mõrsi*, Gen. *mõrsi, mõrsja*, Gen. *mõrsja* 'erwachsenes Mädchen, Braut', Kar. *moršien, moržein* 'junge Frau', Veps *moŕźǟ, muŕźäiń, muŕźei* 'junge Frau' < Baltic, cf. Lith. *martì* 'Braut (bis zu der Geburt ihres ersten Kindes); Schwiegertochter, Sohnesfrau, wenn dieselbe im Hause der Schwiegereltern wohnt', Le. *mārša* (< **martįā-*), OPr. *martin, marton* Acc. 'Braut'. LpN *moarˈse* 'bride, (man's) sweetheart' < Finnic after the completion of the change *ti* > *si*.

Fi. *karsina* 'kleine Umzäunung; unter dem Fussboden befindlicher Keller; Herdseite der Rauchstube'; etc., Votic Mustonen *karsina*, Tsvetkov *karsin*, Pl. *karsinęᴅ* 'Schaf-hürde', Kar. *karšina, karžina* 'Raum unter dem Fussboden (wo die Handmühle sich befindet)', Olon. *karzin* 'Raum unter dem Fussboden', Veps *kaŕźin* id. < Baltic, cf. Lith. *gardinỹs*, Gen. *gardinio* 'отгородка (в хлеве для мелких животных), огороженное место (на поле)', cf. also Lith. *gar̃das* id., *gardis* 'Bucht in welcher ein Pferd oder eine Kuh im Stalle steht'. (Russ. dial. ка́ржина 'Vorratskammer unter dem Fussboden', ка́рзина 'Eingang in die Kellerräume, etc.', карзин 'Kellergewölbe' < Finnic; see Kalima JSFOu 44 p. 106).

Ordinal numbers, e. g. Fi. *kolmas* (< *kolmansi*), *kolmansia* Part. Pl., stem. *kolmante-* 'third', Est. *kolmas*, stem *kolmanda-*, Votic *kẹлmāz*, Kar. *kolmaš, kolmaŋ̬žie* Part. Pl., stem *kolmande-*, Olon. *kolmas* or *kolmaiz, kolmanzie* Part. Pl., Veps *koumańź, kūmańź*, stem *koumandẹ-, kūmandẹ-*, Liv. k^{u}*ol̄mə̂z*, k^{u}*ol̄miz*, Gen. *kùolmanì* 'third', cf. LpN *goalmad*, K *koalmant*, Vog. *χūrmit*, stem *χūrmint-* id.; etc.

Possessive suffix of the 2nd person sg., e. g. Fi. *-si*: *kätesi* 'thy hand', Kar. *-š* (*-s*) : *nahkaš* 'deine Haut', Olon. *-s*: *poigas* 'dein Sohn', Veps *-iž*: *tataiž* 'thy father'; cf. LpN *-d*: *oabbad* 'thy sister', K *-t*: *kīᴅtat* 'thy hand'; Mord. *-t*: *t́śorat* 'dein Sohn', Cher. *-t*: *kì·δet* 'thy hand'; etc.

Past tense forms of the so-called contracted verbs; *s* corresponds to a dental consonant in the stem, e. g. Fi. *makasin* Impf. 1st sg., consonant stem *maat-*: *maatkoon* Imperat. 3rd sg. 'to lie, to sleep', Est. *magasin* Impf. 1st sg. id., Votic *makazin* id., Kar. *magazin* id., Veps *magaźiń, magaźīń* (Pr. *magadan*) id., Liv. (*ma*) *magìz* id.

Attribute-nouns, e. g. Fi. *korkeus* < Late PrF **korkeδusi* (Gen. *korkeuden*, Illat. *korkeuteen*) 'height', Est. *kõrgus*, Votic *kẹrkẹuz* (Part. *kẹrkẹutta*), Kar. *korgevuš* (Gen. *korgevuon*), Olon. *korgevus*, Veps *korktuź, korttuź* id. (Liv. forms like *làiskə̂z*, W *lå̀iskə̂z* 'laziness' are perhaps borrowed from Estonian). For these nouns, see for instance Setälä ÄH pp. 70—72, Rapola MSFOu 52 pp. 216—237.

There are two clusters, viz. *-st-* and **-št-*, in which *t* before *i* did not change into *s*. Thus we have *-sti-* and *-hti-* in all Finnic languages.

Fi. *ehtiä* 'in genere propero ut in locum destinatum tempestive perveniam, inde a) propero, accelero, b) tempestive pervenio in locum intentum, mature contingo metam l. finem, c) tempus vacat mihi', Est. *ehtima*, Pr. *ehin* 'sich schmücken, sich putzen', Votic *ehtiä*, Pr. *ehin* = Fi. + 'schmücken', *ehteütä* 'sich schmücken', Olon. *ehťie*, Pr. *ehťin* = Fi., Veps *ehtťa*, Pr. *ehťin* 'успеть, созреть', Liv. *ē̆ďə̂*, Pr. *ē̆ďə̂в*, *ē̆ďuв* 'sich kleiden' | lpN *âsˈtât*, Pr. *âstâm* 'have time, leisure (to do something); be available, not be required; arrive in time for something', Cher. *ɜštę͓·m*, *ᵊštę͓·m* 'machen, tun; kosten', Ziry. *ešti̯ni̯* '(mit etw.) fertig werden, fertig od. vollendet werden (Arbeit); (zu etw.) Zeit haben; rechtzeitig hinkommen; reifen, reif werden' (see Toivonen Virittäjä 1932 pp. 55—56).

Fi. *tähti* 'stella; signum', Est. *täht* 'Zeichen, Stern', Votic *tähti* 'Stern', Kar. *tähťi* 'Stern, Zeichen', Veps *ťähťiž* 'Stern', Liv. *tē̆ᴅ́* 'Stern; Zeichen; Merkmal; Spur' | LpK *tā$_i$ste* 'Stern', MordE *ťešťe*, *ťeštšę*, M *ťešťɛ* 'Stern; Zeichen, Merkmal', etc.

For preserved *t* in *-sti-* there are examples in forms of certain paradigms, for instance in past tense forms of several verbs, e. g. Fi. *estin* : Inf. *estää* 'to hinder, to prevent', *veistin* : Inf. *veistää* 'to whittle', *muistin* : *muistaa* 'to remember, to recall', *puhdistin* : *puhdistaa* 'to clean'; EstS *puhastin* : *puhastama* id.; Kar. *puhaššin* : *puhaštoa* id. (a secondary generalization of gradation, hence *št* ~ *šš*); Olon. *puhtastin* : *puhtastoa* id.; Veps *veśťin* : *vestta* 'to whittle', *mušťin* : *muštta* 'to remember', *puhtasťin* : *puhtastada* 'to clean'.

The cluster *tt*, likewise, was not affected by the change *ti* > *si*. Thus we have for instance Fi. *otin* (< **ottin*): Inf. *ottaa* 'to take', *petin* : *pettää* 'to deceive, to cheat', Votic *vẹtin* : *vẹttä*, Veps *oťiń*, *oťīń* : *otta*, etc. Likewise Fi. *pirtti* 'Rauchstube, Badestube, Stube des Gesindes', Kar. *perťi*, Olon. *perťťi*, Veps *peŕť* 'peasant's house, log cabin' < Baltic, cf. Lith. *pirtìs* 'Badestube', Le. *pìrts* 'Badestube, Bad, Schwitzbad'.

In the present Finnic languages *t* has often been generalized before *i* from other forms of the same paradigm or of the same morphological category. Thus we always find *ti* in the past tense of the passive voice, e. g. Fi. *tuotiin* : Inf. *tuoda* 'to bring', Est. *toodi* : *tooma*, Votic *tōtī* : *tuvva*, Kar.-Olon. *tuoďih* : *tūva*, *tuvva*, Veps *toďhe* : *toda*. *t* is regular in such past tense forms as *pestiin* : *pestä* 'to wash', *maattiin* : *maata* 'to lie, to sleep'. The generalization of *t* everywhere before *i* in the past tense made the passive paradigm more uniform: instead of **tuosiin* : *tuotava*, etc. we have *tuotiin* : *tuotava*.

There are some other cases in which a generalization of *t* (or the weak grade corresponding to it) before *i* has taken place in all Finnic languages. This is the case in adjectives ending in **-eδa*, **-eδä*. Before the plural suffix *i* we should expect *s*, but there is nowhere any trace of it.[1] We have e. g. Fi. *pimeitä* Part. Pl.: *pimeä* (< **pimeδä*) 'dark', EstS *jämeн̆нil̀* Part. Pl.: *jäm̆mè* 'thick', Votic *kẹrkẹita* : *kèrkẹa* 'high', Kar. *korgeida* : *korgie*, Olon. *korgeidu* : *korgie* id., Veps *korktįď*, *korktįď* : *korged* id., Liv. *pĭmdidi* : *pĭmdə̂* 'dark'.

In standard Finnish, there is no trace of *s* in forms like *lyhyitä* Part. Pl.: *lyhyt* 'short', *keväitä* Part. Pl.: *kevät* 'spring', *kytkyitä* : *kytkyt* 'leash, collar'. But dialectally there are forms having *s*, e. g. South-Ostrobothnia Part. Pl. *kytkysiä*; likewise in Veps e. g. Part. Pl. *kevaźiď*, *lühüźiď* etc. For more details, see Setälä ÄH pp. 129—130. — The only remnant in standard Finnish of the regular development seems to be the form *terveisiä* Part. Pl. 'greetings, regards' < **terveüsiä* < **tervehüti-*, cf. Veps *ťervhuźiď* id.

In some cases in standard Finnish both regular and analogical forms may occur, e. g. *sousi* ~ *souti* : *soutaa* 'to row', *vuosi* ~ *vuoti* : *vuotaa* 'to leak'. Some verbs now have only the analogical form, e. g. *veti* : *vetää* 'to pull, to draw', *kuti* : *kutea* 'to spawn', *piti* : *pitää* 'to keep, to hold'.

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[1] In FUF 26 Anz. p. 15 I assumed such EstS (dialect of Koiva) forms as *valk̀šit̀ sⁱẹlḳ̀šit̀* (Nom. *val̄ge*, *šⁱel̄ge*) to be representatives of Proto-Finnic **valkẹsita*, **selkesitä*. As V. Niilus has shown in Eesti Keel ja Kirjandus 1941 pp. 225—230, it is more likely that these forms are analogical, due to the generalization of *žit̀-*, *-šit̀*; cf. Koiva (Ojansuu) *kehà* : *kehàžit̀* and standard Estonian *keha* : *kehasid*.

As to the age of *ti* > *si*, we have seen that Baltic loanwords did take part in the change (cf. *silta*, *morsian*, etc., above). But there is no evidence of this change in the Germanic borrowings; cf. for instance Fi. *tila* 'facultas, opportunitas; locus, spatium; status rei, conditio; commoditas vecturæ hiemalis', Est. *tila* 'Zeit des schlechten Weges, kothiger Weg vor und nach der Winterbahn', *magamise-tila* 'Lagerstelle, Platz zum Schlafen', Votic *tiлa* 'space', Ahlqv. 'före', Kar. *t́ila*, Olon. *t́ila* 'space, place' < Germanic, cf. Goth. *til* 'opportunitas', ON *tili*, OHG *zil* | Fi. *tauti* 'disease, sickness', Est. *taud*, Gen. *taui* 'schwere Krankheit, Seuche', Votic *tauti* id. < Germanic, cf. OIcel. *dauði*, OSw. *döþe*, etc. Thus it seems safe to conclude that this change occurred during or after the Baltic contacts, and further, that during the period of Germanic contacts *ti* > *si* had already advanced so far that words borrowed from Germanic could no longer be affected by it.

The relative chronology of *ti* > *si* can be established by considering some other sound changes.

The following changes for instance are earlier than *ti* > *si*:

1) change of final -*e* into -*i*: Fi. *vesi* : *vete-* 'water';

2) development of certain Early Proto-Finnic diphthongs (*ei*, *äi*, under certain conditions *ai*), into *i* or *i̯i̯* : Fi. *vesi-ä* Part. Pl. < **vetei-*; *käsiä* Part. Pl. < **kätei-*, Veps *käźid́*, *käźīd́* Part. Pl. 'hand', Fi. *kielsi* Impf. < **kēltäi* : Inf. *kieltää* 'to forbid, to deny', Veps *kel'ź*; Fi. *makasi* Impf.: Pr. *makaan*, Veps *magaz* ∼ *magazi* : *magadan* 'to lie, to sleep' (for more details, see e. g. Tunkelo Suomi V, 20: 2 pp. 137—141).

Among the changes which occurred later than *ti* > *si*, we may mention the following:

1) *kt* > *ht* : Fi. *läksi* : *lähden*, see pp. 39—40;

2) *pt* > *ht* : Fi. *viipsiä* ∼ *vyyhdetä*, see pp. 46—47;

3) development of *i* or *i̯i̯* from vowel + syllable-final *ŋ́*: Fi. *entiset* Pl. < **enteiset* < **enteŋ́(t́)śet* 'pristinus, prior, antecedens', Veps *eńt́šed*, *eńtšed*; *tuntisi* Cond.: Inf. *tuntea* (cf. Impf. *tunsi* < **tumtei*) 'to know, to recognize'; see pp. 23, 57.

We assumed that *kt* > *ht*, *pt* > *ht* was caused by Germanic influence. It is therefore to be expected that *ti* > *si*, by which

Germanic loan-words were not affected, is earlier than *kt* > *ht*, *pt* > *ht*.

The important question now is: what was the cause of the change *ti* > *si* and through what stages did it happen?

The shift at first sight seems rather enigmatic, if we try to explain it by assuming foreign influence. *-ti-* did and still does occur in the Baltic system. Germanic influence does not seem to come into the question, since the beginning of *ti* > *si* must be older than the contacts with Germanic.

Nevertheless, I think that we may reckon with Baltic influence, if we take into account the quality of Baltic *t* before *i*. According to André Vaillant (Grammaire comparée des langues slaves I pp. 45—46), a general palatalization of consonants before front vowels was present already in the period of Balto-Slavic unity. Vaillant thinks that this feature could even be much older; he points to the Indo-Iranian development **ke*, **ki* > *ča*, *či* and some other phenomena, and concludes: »Il est donc possible que le balto-slave conserve une mouillure primitive qui ailleurs a généralement disparu, comme elle disparaît a l'époque historique dans une partie des parlers baltes et slaves.» (See also Mikkola Urslavische Grammatik p. 153.) There does not seem to be anything to speak against the assumption of a common Balto-Slavic palatalization of consonants.

Thus it is likely that the Baltic consonants were at least slightly palatalized before *i* and *e*. To assume that the Proto-Finnic language adopted this kind of palatalization through the influence of its neighbors, would not be surprising. Phonetically the palatalization was most likely stronger before *i* than before *e*. Ordinarily, this borrowed palatalization did not effect any changes in the Proto-Finnic consonants, and it disappeared entirely during the subsequent period of Germanic influence. The only consonant to undergo a change was, I am inclined to assume, *t* followed by *i*. In this position *t* was palatalized so strongly that it was attracted by, and finally coincided with, the affricate *t́ś*, which of old existed in the system. The development *ti* > *t́śi* was, however, prevented by a preceding *s* or *ś*. This is easily understandable: the preceding non-palatalized dental consonant prevented *t* from becoming strongly palatalized, or, at least, from developing a palatalized *ś* after it. The same also applies to *tt*, which, as we have seen, was not affected by the change.

Subsequently, old **t́ś*-, *-₍*t́ś*- and the new **t́ś*-, *-₍*t́ś*- from **ti* both developed into *s* (cf. p. 25). It now becomes clear why *s* resulting from the change *ti* > *si* did not take part in the change *s* > *h*, although *ti* > *si* began before the Germanic influence and although *h* did not exist in the consonant system until after the beginning of the Germanic contacts. *ti* > *si* was not yet completed, we probably had the intermediate stage *t́ś* when *s* > *h* occurred; cf. the treatment of *t́ś* in the conditional mood and in the nouns now ending in *-*ise*-, pp. 22, 57.

Thus, in my opinion, the cause and the restrictions of the change *ti* > *si* receive a satisfactory explanation. The cause was palatalization, due to the influence of the Baltic phonetic system. The development *t́i* > *t́śi* was no doubt furthered by the existence in the consonant-system of an old *t́ś* with which the result of the new development could coincide. As regards other consonants, there were no such possibilities. Consequently, all the other consonants were left unchanged when, at a subsequent period, the palatalization was lost.

Apparently for the same reason *ti*, in spite of its palatalization, did not undergo any further change in Baltic. There was no *t́ś* in Baltic with which the new development could have coincided.

The question has often been raised whether we have to assume developments like *-*δi*- > -*si*-, *-*di*- > *si* in cases like *makasi*, *käänsin*, etc. Kettunen has on several occasions expressed the opinion that such changes would be phonetically rather unlikely. There is some justification for Kettunen's doubts. I am inclined to the opinion that gradation is a younger phenomenon than *ti* > *si* (see pp. 76—82). Consequently, I would prefer to start from an unvoiced *t* in all cases: **makati* > *makasi*, etc.

11. The Treatment of Nasal + Stop in Syllable-Final Position.

In all Finnic languages there are forms which presuppose an alternation *nt* ~ *t* in Late Proto-Finnic. *nt* (or *nd*) occurs intervocalically, and *t* (instead of *nt*) in syllable-final position. This leads us to the conclusion that at some time prior to the Late-Proto Finnic period there must have occurred a change *nt* > *t* in syllable-final position.

Examples of the alternation are: Fi. *kanteen* Illat. Sg. 'cover', Est. *kaande*, id., Kar. *kandeh* 'large birch(-bark) cup', Olon. *kandeh* 'cover', Liv. *kǫ̬ndə̂*, W *kå̆ndə̂* id. (all Illat. Sg.) ~ Fi. *kattaa* : Pr. *katan* 'to cover', Est. *katta* : Pr. *katan*, Votic *kattā̆* : *katan*, Kar.-Olon. *kattoa* : *katan*, Veps *katta* : *katan*, Liv. *kat̀tə̂* : *kat̀àʙ* | Fi. *tuntee* Pr. 3rd Sg. 'to know, to recognize', Est. *tunneb* : Inf. *tundma*, Votic *tunnẹʙ*, Kar.-Olon. *tundou*, Veps *tundẹb*, Liv. *tūndə̂ʙ*, *tūnduʙ* ~ Fi. *tuttava* s. 'acquaintance, friend', *tuttu* a. 'familiar l. acquainted (with), known', s. = *tuttava*, Est. *tuttav* 'bekannt', Votic *tuttava*, Kar. *tuttava*, Olon. *tuttav*, Veps *tutab*, Gen. *tutpan* id.; Inf. Fi. (old) *tuta* (< **tuĭtak*), EstS Wied. *tutas*, *tutti* Pass. (for additional Estonian forms, see Mägiste Virittäjä 1951 pp. 429—439), Olon. Inf. *tuta*, Veps Inf. *tuta* | Fi. *kolmante-* : *kolmatta* Part. Sg. 'third', Est. *kolmat*, Votic *kẹʌmatta*, Kar. *kolmatta*, Olon. *kolmattu* (Veps *koumant*, *kūmant*, Liv. *kùolmant̀* have been influenced by other forms of the paradigm) | Fi. *rakenta-* : (old) *rakettu* II Partic. Pass. 'to build', *paranta-* 'to better, to improve, to cure': *Jumala paratkoon* 'God help [you, him etc.]', Est. *paranda-* 'bessern, ausbessern, heilen': (*parata* Inf. in) *pole parata* 'es hilft nichts', (*Jumal*) *paraku küll* 'leider Gottes'.

In some words *n* disappeared before a geminated affricate: **ntts* > *tts* and **ńt́t́ś* > **t́t́ś* (see Toivonen FUF 19 p. 236, 247).

Examples are:

Fi. *kitsas* 'geizig, knauserig, knickerig, filzig, knapp, karg, kärglich', Est. *kitsas* 'eng, schmal, knapp, kümmerlich', Liv. *kit̀sàz* 'eng' | ? LpT, Kld. *kĭeñᴅsᴱ*, *kiendzes* 'schmal, eng, knapp', L *keʒ̍c-*, *kečēs* 'schmal, eng', etc.

Fi. *patsas* 'Säule, Stütze, Pfeiler; Schornsteinsstütze; Feuerherd', Est. *patsas* 'Feuerherd', Kar. *pa₍t́š́aš*, Olon. *pa₍t́š́as*, *pat́t́š́aha-* 'Pfeiler, Pfosten', Veps *pa₍tsaz*, *pattsaz* id. | LpN *baʒˈʒe* 'obelisk, monument, (upright) gravestone'.

Fi. *otsa* Renv. 'frons capitis', *takan otsa* 'pars anterior camini prominens', Est. *ots*, Gen. *otsa* 'Ende, Spitze, Gipfel, Stirn, Ausgang, Übriggebliebenes, Stückchen', Votic *ęttsa*, Gen. *ę₍tsā* 'Ende, Schluss', Kar. *ot́t́š́a* 'Stirn, Raum vor etw.', Olon. *ot́t́š́u* id., Veps *ots̄*, *ots* 'Stirn' (the Liv. form shows an *n* : *vǭntsa* : Part. *vǭn̄tsə̂*, W *vùontsa* : Part. *vᵘōn̄tsə̂*) | Cher. *anᵈzal*, *a·nzə̂l*, *o·ńd́ž́ə̂l* 'das vorn Gelegene, das Vordere, vorder-', etc.

There is thus plenty of evidence for a change *nt* > *t*. We should, of course, expect a similar change in *ŋk* and *mp* in the same position. Examples for these changes are, however, remarkably rare.

In the following word *ŋkk* > *kk* seems to have occurred.

Fi. *maakko* 'tribula' | Vog. *mān̄χw*, *šąurėp-mɵn̄khw* 'Axthelm', *šagịrap-miṅkua* 'Rücken der Axt', Osty. Ni. *muŋ'ḳ*, O *mọŋ'ḳ* 'Axtrücken' (see Toivonen FUF 16 pp. 213—214).

It is further very likely that we have to assume *ŋk* > *k* in the Estonian and Livonian suffix of the conditional mood. As has been explained by Ravila, we may consider the Estonian and Livonian conditional on the one hand and the Finnish, Karelian, Veps, etc. on the other, as deriving from a common source: Fi., etc. *-is-* < **-ŋ́(t́)ś-* > **-ŋ́ḱś-* > Est. *ks*; see Ravila FUF 23 p. 57.

Est. *annaksin*, Liv. *āndaks*, *ǟndaks* 'I would give' ~ Fi. *antaisin*, Veps. *andaiž̮in* id. | Est. *saaksin*, Liv. *sǭks*, *sǟks* 'I would get, receive' ~ Fi. *saisin*, Veps *saiž̮in* id.

For possible examples of *mp* > *p* and possible additional examples for *ŋk* > *k*, see Setälä FUF 12 Anz. pp. 8—9, Toivonen FUF 19 p. 234, Mägiste Eesti Keel 1934 pp. 176—181.

As regards the cause and the age of the changes treated here, it is difficult to find a definite solution. Moreover, there are some cases with an unexpected *n*, for instance Fi. *kontti*, Gen. *kontin* 'saccus humeris portandus, max. e cortice betulæ contextus, mantica', cf. Osty. *ḳĭ·ṇ'ṭ'* 'Ranzen aus

Birkenrinde, Rindenkorb' || Liv. *vǭntsa, vuontsa* (p. 57). On the other hand there is sometimes loss of *n* before Pre-Finnic affricates even when it does not seem necessary to assume a loss in syllable-final position, *n* + stop; cf. e. g. Fi. *petäjä* 'Pinus sylvestris', Mord. *pitšę* ~ Cher. *pü·ń₍d́ž́ə* id. | Fi. *kusi* 'urina' ~ LpKld. *koń*$^{d'}$*t́š́*^{A} id. For this treatment of nasal, see Toivonen FUF 19 pp. 218, 236. Setälä assumed a gradation *kontti* : **koǹtin* which developed into **kotti* : *kontin*; Fi. *kontti*, he thought, went back to a generalization of the weak grade, whereas in Est. *kott*, Gen. *koti* 'Sack, Beutel' we had a generalization of the strong grade (FUF 12 Anz. p. 9). The same kind of explanation would, according to Setälä, also apply to Fi. *otsa* ~ Liv. *vǭntsa, vùontsa*. If we accepted this explanation, then we should have to consider forms like Fi. *tuta* (**tun̆tak*) to be analogical.

Nevertheless, whatever possible exceptions and restrictions there may have been, the examples of the disappearance of a nasal are so clear and unambiguous that we have to consider it as the result of a regular sound change. In itself a change *ntt* > *tt*, *ŋkk* > *kk*, etc. is quite natural phonetically. The nasal passage was first closed prematurely before a homorganic tautosyllabic stop, and in the final stage the velum was not opened at all to allow the flow of air through the nasal passage.

It may well be that the change took place during the Proto-Finnic period. It must be admitted, however, that it could perhaps have occurred even somewhat earlier. There does not seem to be any binding proof against this possibility. If the change was older than Proto-Finnic, it might be possible to connect it with *nt* > *tt* in Mordvin, e. g. Mord. *lomań* 'Mensch': Pl. *lomat̄′*, *lomat́* < **lomań-t*, *vanan* 'ich sehe': MordM *vattada* 'ihr sehet' < **van-tada*, *vatt* 'sieh' < **van-t*; for the Mordvin change, see Paasonen MSFOu 22 p. 40; for loss of nasal in **ŋkk* in Mordvin, see Ravila Virittäjä 1931 pp. 309—310.

If the change was Proto-Finnic, it probably took place spontaneously, i. e. without any foreign influence. The Baltic consonant system included clusters like -**nkt-* : **ankta-* 'Butter', OPr. *anctan*; **-nkst-* : **ankstei* 'früh' : Lith. *ankstì*, dial. *ankstiẽ* (Trautmann Baltisch-Slavisches Wb. p. 9); **-ntr-* : **antra-* 'ander', Lith. *añtras*. Le. *ùotrs* 'ander, zweiter' (ibid. p. 10). It is true that we do not know with certainty where the syllable boundary was, but as it seems to be a general rule in most languages that only such clusters as can occur initially are permitted at the beginning of a syllable, we may assume that in *nkt* for instance the boundary was between *k* and *t*. Consequently, *nk* occurred in syllable-final position in Baltic. It therefore seems clear that the loss of nasals in this position in Proto-Finnic cannot be ascribed to Baltic influence.

As for Germanic, there were clusters like *nt*, *ŋk*, *mp* in Proto-Germanic. For these Proto-Finnic *ntt*, *ŋkk*, *mpp* were substituted in the majority of Germanic loanwords, e.g. Fi. *vantus*, Pl. *vanttuut*, *vanttu* 'mitten' < Germ. **vantu-*, etc. It thus seems obvious that the Germanic contacts can not be considered responsible for the change. It is true that there was a similar change in Old Scandinavian, cf. for instance OIcel. *kapp* 'Kampf' (Sw. *i kapp*), *vǫttr* 'Handschuh', *þakka* 'danken' (Sw. *tacka*), etc. (for this change, see for instance Noreen Altisländische Gr.^{4} pp. 192—194, Brøndum-Nielsen Gammeldansk Gr. II pp. 29—38). This change, however, seems to be too late to have caused the Proto-Finnic treatment. According to Noreen, the Scandinavian change took place in the 8th century A.D. So late a phenomenon could not have influenced all the Finnic languages so thoroughly.

12. The Alternation *s* ~ *h*.

In Late Proto-Finnic, there were many paradigms where an intervocalic *h* corresponded to an *s* in other positions, and certain endings showing the same alternation, or *h* for the *s* of related languages.

Among the paradigms showing an alternation *s* ~ *h*, the most frequent were words ending in *-s* in the nominative singular, e.g.

Fi. *kirves* : Gen. *kirveen* 'axe', Est. *kirves* : Gen. *kirve*, Votic *tširvez* : *tširvē*, Kar. *kirveš* : *kirvehen*, Olon. *kirves* : *kirvehen*, Veps *kirvez* : *kirvhen*. Liv. *kīraz* : *kiṙrə̂* id. (Late PrF *kirves* : *kirvehen*) [< Baltic, cf. Lith. *kir̃vis*, Le. *cìrvis* id.].

Fi. *hammas* : Gen. *hampaan* 'tooth', Est. *hammas* : Gen. *hamba*, Votic *ammaz* : *ampā*, Kar. *hammaš* : *hambahan*, Olon. *hammas* : *hambahan*, Veps *hambaz* : *hambhan*, Liv. *āmbaz* : *am̃bə̂* id. (Late PrF **hambas* : *hampahan* < **hampahęn*) [< Baltic, cf. Lith. *žam̃bas* 'Kante, Rand, Balkenkante', Le. *zùobs* 'tooth'].

Fi. *paljas* : Gen. *paljaan* 'glaber, nudus, calvus, merus', Est. *paljas* : *palja* 'kahl, nackt, bloss', Votic *paľľaz* : *paľľā*, Kar. *paľľaš* : *paľľahan*, Olon. *paľľas* : *paľľahan*, Veps *paľľaz*, *paľaz* : *paľhan*, Liv. *pǭľaz*, W *pā̊ľaz* : *paľ̀ľə̂* id. (Late PrF *paljas* : *paljahan* < **paljahęn*).

Among the endings showing *s* > *h* we find

1) the ending of the illative case, e. g.

Fi. *veteen*, dial. *vetehen* 'water', Est. *vette*, Votic *vetē*, Kar.-Olon. *vedeh*, Veps *ŕedęhę*, Liv. *v*^{i}*ĕddə̂* (Late PrF *vetehen*, stem *vete-*); cf. LpN *vīssusâd* 'into thy house' (*-sâ-* illative ending, *-d* possessive suffix), Mord. *kozoń* 'wohin', stem *ko-*.

2) the ending of the past tense form of the passive voice, e. g.

Fi. *saatiin*, dial. *saathin* (Inf. *saada* 'to get'), Est. *saadi*, Votic *sātī*, Kar. *šoaďih*, Olon. *soaďih*, Veps *saďľe* (Late PrF **sātihen*); cf. the ending of the present tense form, where a non-intervocalic *s* has been preserved: Est. *saadakse*, Votic *tuллasę̄*, *tuллassa*, *tuллaz* (from *tuллa* 'to come'), Veps *sadas* (Late PrF **sāδaksęn*, **tulδaksęn*); in Finnish, Karelian, and Olonetsian, the ending *-hen* of the past tense form was generalized (Fi. *saadaan*, Kar. *šoahah*, Olon. *soahah*).

3) the ending of the reflexive past tense third person form, e. g. Fi. dial. *pesihen* 'washed oneself' (non-reflexive *pesi* 'washed'), Kar. *pezih*, Veps *peźihe* (Late PrF **pesihen*); cf. the corresponding, present tense forms where a non-intervocalic *s* has been preserved: Fi. *peseksen*, Kar. *pežekš*, Veps *ṕezęsę*, *ṕezęksę* (Late PrF *peseksen*).

4) the possessive suffix of the third person in cases like Fi. *suustaan*, dial. *suustah* (< **sūstahen*) 'from his (her) mouth', Kar. *polvizillah* 'auf seinen knien', Olon. *lapseh* 'sein Kind'; cf. Fi. *suunsa* 'his (her) mouth', Kar. *kädeheñže* 'in seine Hand', etc. in which *s* in the cluster *-ns-* has been preserved, and further LpN *oab'bas* 'his (her) sister', MordE *t́śorazo* 'sein Sohn', *t́śoranzo* 'seine Söhne', etc.

Normally the alternation *s* ∼ *h* now occurs only after non-initial syllables. There are, however, some examples of *h* (from *s*) occurring also after an initial syllable. In illatives from monosyllabic stems (e. g. Fi. *suuhun*, Est. *suhu*, Votic *suhẹ̄*, Kar. *šūhu*, *šūh*, Olon. *sūh*, Veps *suhu*, Liv. *sŭ̌zə̂* [*sŭ̌-* < **suhu-*] 'into the mouth') and in reflexive forms from monosyllabic stems (e. g. Fi. *loihen*, Veps *ʟoiľe*) *h* for *s* could be due to analogy from the longer forms (Setälä ÄH pp. 250—251).

But there are instances after an initial syllable that cannot be explained as being of analogical origin.

Fi. *lähellä* 'in loco vicino; prope, juxta' ∼ *läsnä* : *on läsnä* 'est præsens', (old) *lästä* 'ex loco vicino' | Est. *lähedal* 'in der Nähe' ∼ dial. Hiiumaa (Dago) *lizìɢoɪ̃ᴅᴅ̣z* = *lähedal* | Kar. *lähillä*, etc. ∼ *läššä*, *läštä*; Olon. *lähil*, etc. ∼ *läs* = Fi. *läsnä*; Veps *lähen* = Fi. *lähellä* ∼ *ľäzn* id.; Liv. *lĕž́gə̂l*, *lĕižgə̂l* (< **läsi* ∔ **kẹrδalla*) 'nahe'; cf. Cher. *liš-* : *li·šnə* 'nahe, in der Nähe'.

Fi. *mies*, Part. *miestä*, Gen. Pl. *miesten* : Gen. *miehen*, Part. Pl. *michiä*; Est. *mees*, *meest*, Gen. Pl. *meeste* : Gen. *mehe*, Part. Pl. *mehi*; Votic *mēz*, Part. *mēssä* : Gen. *mehē*, Part. Pl. *mehītä*; Kar. *mieš*, Part. *mieštä* : Gen. *miehen*; Olon. *mies* : Gen. *miehen*; Veps *ḿez* : Gen. *ḿehen*; Liv. *mìez* : Gen. *mĭe*, Part. Pl. *mĕďi* ('Mann', in Veps 'Mensch'); for further cognates, see Toivonen Suomi 5_{10} pp. 389—392.

There are further some loan-words in which Late Proto-Finnic *h* corresponds to a foreign sibilant other than *š*.

Fi. *keihäs*, Kar. *keihäš*, Olon. *keihäs*, Veps *kījaz* : Gen. *kīhan*, *kejaz* : Gen. *keihan* 'Spiess' < Germanic, cf. OIcel. *geirr*, OHG *gêr*, AS *gár* < **gaizaz*.

Fi. *laiha*, Est. *lahi*, G. *lahja*, Votic *ʟaha*, Kar. *laiha*, Olon.

лaihu, Veps *лaih*, G. *лaihan*, Liv. *lajà* 'mager' < Baltic, cf. Lith. *ĺiesas*, Le. *liẽss* id.

In view of cases like these it does not seem possible to assume that a change $s > h$ occurred only after an unstressed syllable.

I think that we have to accept the opinion of Setälä (accepted also by several other scholars), according to which there was in Early Proto-Finnic a gradation $s \sim {}^*z$ corresponding to the well known instances of gradation $t \sim {}^*\delta$, $k \sim {}^*\gamma$, $p \sim {}^*\beta$. Thus we may assume that z occurred intervocalically at the beginning of a closed syllable, and after an unstressed vowel everywhere (i. e., even at the beginning of an open syllable). Before the end of the Late Proto-Finnic period a change $z > h$ took place.

Would it not be possible to consider a direct change $s > h$ under certain prosodic conditions? No doubt there are well known instances of such a change e. g. in Finnish (see Setälä ÄH pp. 225—227). A similar change has also taken place in some dialects of Spanish (see for instance Bertil Malmberg Études sur la phonétique de l'espagnol parlé en Argentine pp. 156—172). On the other hand the treatment of s is very often similar to that of unvoiced stops (or unvoiced spirants e. g. in Germanic). Since we had $t \sim {}^*\delta$, $k \sim {}^*\gamma$, $p \sim {}^*\beta$ in Proto-Finnic, it would be rather natural to assume that we also had an alternation $s \sim {}^*z$ along similar lines.[1] By assuming $s \sim {}^*z > h$ it seems easier to understand the occurrence of h after an initial syllable. If h for s were found only in unstressed positions, it would be much easier to assume a direct change $s > h$.

After the change $z > h$ we had an alternation $s \sim h$. At this stage there was no longer a clear relationship between the representatives of the two grades. Therefore we may assume that the radical alternation was soon levelled out in most paradigms. Only a few remnants like *lähellä* ~ *läsnä* were able to survive.

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[1] Cf. for instance the existence of a secondary gradation $s \sim z$ in Votic, e. g. *pesä* : Pl. *pezäᴅ* 'nest', *makazi* (Late PrF *makasi*) 'slept'.

There is one word in which Pre-Finnic initial *s* is represented by Late Proto-Finnic *h*, viz. the pronoun Fi. *hän* 'he, she', etc. | LpN *son*, Mord. *son*, etc. This treatment is no doubt due to frequent use of the pronoun in unstressed position, where initial *s* underwent the same development as medial *s* after an unstressed vowel; see Setälä ÄH pp. 258—259.

A well-known peculiarity in the treatment of *s* still remains to be discussed. In all Finnic languages there are traces of *s* occurring instead of *h* where the immediately preceding syllable in Late PrF began with *h*. Examples are:

Illatives like Fi. *taivaaseen* 'into heaven', Est. *taevasse*, Votic *taivāsẹ̄*, id., Kar. *šugahaže* from *šuaš*, *šuvaš* 'bristle', Olon. *taivahaze* 'into heaven', Veps *v́enẹhẹzẹ* 'into the boat', Liv. *am̄bə̂z* 'into the tooth' (Late Proto-Finnic **taivahẹsẹn*, **sukahẹsẹn*, **venehesen*, **hampahẹsẹn*).

Forms with the possessive suffix of the third person, e. g. Kar. *omahaže moaha* 'in sein Land', *purteheše* 'in sein Boot'.

Reflexive verb forms (Late PrF *-sen* instead of *-hen* as reflexive ending), e. g. Kar. *peškähäže* 'may he wash himself, let him wash himself', Veps *peskahaz* id.

Julius Mark assumed (see MSFOu 54 p. 101) that e. g. Olon. *taivahaze* could be explained by dissimilation: **taivazẹzẹn* > **taivazẹsẹn* > **taivahẹsẹn*. This seems indeed to be the best explanation. In Veps illatives like *pahazẹ*, *ľihazẹ* he assumes assimilation: **pašazẹn* > **pašasẹn* > *pahazẹ*. It seems, however, that Tunkelo is right in assuming that forms of this type are analogical. In them, *-zẹ* from the type *taivhazẹ* seems to have been generalized (see Tunkelo Vepsän kielen äännehistoria p. 288).

The dissimilation **taivazẹzẹn* > **taivazẹsẹn* could perhaps be compared with the Gothic law of dissimilation, according to which we find a voiced spirant if the preceding syllable begins with an unvoiced consonant, and, conversely, an unvoiced spirant if the preceding syllable begins with a voiced consonant. Examples are: Goth. *fastubni* 'das Fasten' ~ *waldufni* 'Herrschaft', *mildiþa* 'Milde' ~ *auþida* 'Wüste', *agisis* Gen. 'Schrecken' ~ *hatizis* Gen. 'Hass'. For this Gothic phenomenon, see for instance Hirt Handbuch des Urgerm. I p. 95, Krahe Hist. Laut- u. Formenlehre des Got. p. 59.

As to the age of the change *z* > *h* it seems most likely that this change must have taken place after the development of an *h* in the Proto-Finnic consonant system, i. e. after the change *š* > *h*. Setälä came to the same conclusion in 1906, see JSFOu 23_1 pp. 38—39. If this is so, then it is possible that there never was a gradation *š* ~ *ž* in Proto-Finnic.

If there was an alternation *s* ~ *z*, it may have originated simultaneously with the development of the gradation of unvoiced stops. This question and the cause of the alternation will be discussed on pp. 76—81.

As to the relative chronology of *z* > *h*, it is obvious that *s* going back to *t* in *-ti-* always appears as *s*, e. g. Fi. *makasi*, *kätesi* (see p. 50). How does that fit into the general chronology? It is obvious that the Germanic loan-words did not take part in the change *ti* > *si*. *h* on the other hand did not develop in the language until some time after the beginning of the Germanic contacts, as a result of the change *š* > *h*. Should we not, under these circumstances, rather expect the *s* resulting from *ti* > *si* to have participated in the alternation *s* ~ *z* and, subsequently, to appear in some cases as *h*? It was apparently in order to avoid this difficulty that Setälä, in ÄH p. 261, assumed that *s* developed into *h* at the beginning of, or even prior to, the period of Germanic contacts. This discrepancy can be explained by assuming that at the time when the change *s* ~ *z* originated, there was still an affricate like *-t́śi-* or *-tsi-* in these cases. The same assumption would explain the retention of *s* in forms like Fi. *punaiset*, *nälkäiset* (see pp. 22—23).

It seems that the change *z* > *h* cannot be ascribed to foreign influence, *z* having been preserved in Germanic during this period. Thus the change appears to be an internal Proto-Finnic development.

h for *s* occurs further in some cases in syllable-final position before a resonant consonant. Examples are:

Fi. *kihla* : *kihlat* 'Braut-, Verlobungsgeschenk', *olla kihloissa* 'verlobt sein', *kihlasormus* 'Verlobungsring', *kihla-*

kunta 'quondam complexus pagorum consociatorum, hodie territorium minus judiciale', Est. *kihl*, Gen. *kihla* 'Pfand, Wette; Mahlschatz, Brautgeschenk, Freite, Verlobung, Verlobungsschmaus', *kihlama* 'sich verloben, freien; mieten (eine Person)', *kihelkond* 'Kirchspiel', Votic *tšihлa-* in *tšihлago* 'Fastnacht', Kar. *kihla* 'Wette', Olon. *kihlu* id., Veps *kihл*, *ḱehл* id., Liv. *kī̆l* 'Pfand' < Germanic, cf. ON *gísl*, OSw. *gīsl*, OHG *gîsal* 'Geisel'. (Concerning the meaning of Fi. *kihlakunta*, Est. *kihelkond*, see Paul Johansen Verhandlungen der Gel. Estn. Gesellschaft 23 pp. 3—4; *idem*, Festschrift Karl Haff zum siebzigsten Geburtstag dargebracht [Innsbruck, 1950] p. 109; Vilkuna Virittäjä 1951 pp. 259—274 [also concerning Votic *tšihлago*].)

Fi. *pahla*, *pahlain* 'Rute, Gerte', Est. *pahl pahlas* 'Spiess, zugespitzter Stab (zum Durchstechen)' ? < Baltic, cf. Lith. *baslỹs*, Gen. *bãslio* 'Pfahl'.

There is at least one native word in which the same treatment seems to have occurred: Fi. *pihlaja* 'Eberesche' | MordE *ṕiźol*, M *ṕiźə̂l* 'Vogelbeere, Vogelbeerbaum', Cher. *pəzə·lmə*, *pi·zlə̂* id.; see pp. 24—25.

For additional examples (also of *sj* > *hj*), see Setälä ÄH pp. 253—254, JSFOu. 23: 1 p. 38. Setälä assumed a gradation *sl* ~ **zl* and **zl* > *hl* simultaneously with the intervocalic change *z* > *h*.

It is possible, however, that the earlier opinion of Setälä that this change could be explained without gradation, is quite as acceptable, perhaps even more probable. The question is, of course, closely connected with the general problem of whether we have to assume gradation in syllable-final position (see p. 81). Naturally, what has been said with regard to *sl* > *hl* will also apply to *sn* > *hn* (see p. 68), with the possible reservation that while *sl* > *hl* took place in all positions, *sn* > *hn* may have had some restrictions.

13. The Assimilation *ln* > *ll*.

This change occurred in Proto-Finnic as can be seen for instance from the following examples.

Fi. *villa* 'wool', Est. *vill*, Gen. *villa*, Votic *viлла*, Kar. *villa*, Olon. *villu*, Gen. *villan*, Veps *viл̄*, Gen. *viллан*, *viл*, Gen. *viлан*, Liv. *vīla*, Part. *vil̀lə* id. < Baltic, cf. Lith. (*vìlna* :) *vìlnos* Pl. id., Le. *vil̃na* id., OPr. *wilna* 'Rock'.

Fi. *halla* 'frost', etc. (see p. 2) < Baltic, cf. Lith. *šalnà*, Le. *sal̂na* 'hoar-frost, frost'. The LpN word *suol'dne* 'dew; haze, mist, steam over water or ground', which was borrowed from Proto-Finnic, is important because it shows that the word had *-ln-* in Proto-Finnic at the time of the borrowing.

Fi. *alla* 'under; beneath, below', Est. *all*, Votic *алла*, Kar. *alla*, Olon. *al*, Veps *ал̄*, *ал*, Liv. *al̄*, *al̀lə* id. Early Proto-Finnic **alna*, cf. Cher. *ülnö* 'unten'.

The ending *-lla*, *-llä* of the adessive case, e. g. Fi. *kivellä* 'on a stone, on the stone', Est. *põllul* 'on the field', Votic *лаvvалла* 'on the table', Kar. *päivällä* 'in day-time', Olon. *lattiel* 'on the floor', Veps *järveл*, *järvō* 'on the lake', Liv. *lovàl* 'on the bed', cf. Cher. *küδəlnö*, *küδülnö* 'neben, an'; see for instance Setälä ÄH pp. 407—408.

The regular development is further seen in past participles like Fi. *ollut*, Votic *ęллu*, Kar. *ollun*, Olon. *olluh* (< **olnu-*) 'been', Forms like Est. *olnud*, Veps *олпu*, *ounu*, Liv. *vǫn̄ᴅ*, *vᵘon̄ᴅ* are analogical innovations.

The change *ln* > *ll* took place after the borrowing by Proto-Finnic of Baltic loan-words as is shown by LpN *suol'dne* (v. supra) compared with Fi. *halla*.

As regards the cause of the change, it seems obvious that Germanic influence must be responsible. It is to be noted that the cluster **-ln-* did not occur in the Germanic consonant-system, IE *-ln-* having been assimilated to *-ll-*; e. g. Goth. *fulls*, ON *fullr*, AS *full*, etc. ~ Lith. *pìlnas*, Skr. *pūrṇá-*, Lat. *plēnus* 'voll'; Goth. *wulla*, ON *ull*, AS *wulle*, OHG *wolla*, etc. ~ Lith. *vìlna*, Skr. *ū́rṇā-*, Lat. *lāna* 'Wolle'; OHG *wella* 'Welle' ~ Lith. *vilnìs*, OChSl. *vlŭná*, Russ. волна id. (see for instance Hirt Handbuch des Urgerm. I p. 121, Krahe Germ. Sprachwissenschaft I p. 104).

It is interesting to note that in contrast to *ln*, *rn* was preserved in Proto-Finnic. This can be seen from the following examples.

Fi. _kaarne_ 'Rabe', Est. _kaarnes_, _kaarne_, _kaarna_, _kaarnas_, Liv. _kārnaz_ id. | LpN _gārânâs_, K _kārnas_, MordM _krandə̂š_, Cher. _ku·rnə̂ž_, Ziry. _ki̯rni̯š_, Voty. _ki̯rni̯ž_ id.

Fi. _saarna_ 'sermon', Kar. _šoarna_ 'Märchen', Olon. _soarnu_, Veps. _sarn_ id. | Ziry. _śorńi_ 'Rede, Gespräch', Osty. _sa̭rnạ̈̀yəm_ 'hervorzaubern, durch Zaubersprüche herbeirufen'.

Fi. _terni_, _ternimaito_ 'beestings', _terni-varsa_ 'young foal', Est. _ternes_ l. _terne-piim_ 'Biestmilch', Liv. Setälä _tiεran-zēmd́a_ id. ? < Early Proto-Aryan *_tern-_, cf. Skr. _tarṇas_ 'calf', _táruṇas_ 'young', Greek _τέρην_ 'zart' (Setälä Ungarische Jahrbücher 8 p. 304).

Fi. _herne_ 'Erbse', Est. _hernes_, Votic _erne_, Kar.-Olon. _herneh_, Veps _h'ernȩh_, LivE _jȩ̄rnaz_ : Pl. _jȩr̃nə̂ᴅ_, W _ìernaz_ : Pl. _jer̃nə̂ᴅ_ id. < Baltic, cf. Lith. _žìrnis_, Le. _zir̃nis_ id.

In view of these examples, _rr_ for _rn_ in past participles in Finnish, Karelian, Olonetsian, and Votic must be analogical; for instance Fi. _purrut_ 'gebissen', Kar. _purrut_, Olon. _purruh_, Votic _surru_ 'gestorben'. Forms like Est. _surnud_ id. represent the regular development.

_rn_ was preserved in Germanic too, e. g. Goth. _þaúrnus_, ON, AS _þorn_, OHG _dorn_ 'thorn', Skr. _tŕ̥na-_ 'Grashalm', OChSl _trŭnŭ_ 'thorn' | Goth. _kaúrn_, ON, OHG _korn_, AS _corn_, cf. Lat. _grānum_, Lith. _žìrnis_, OChSl _zrĭno_; etc. In view of this fact it seems quite natural that _rn_ was likewise kept unassimilated in Proto-Finnic.

14. The Treatment of *-sn-.

A Proto-Finnic assimilation _-sn-_ > _-ss-_ took place, at least under certain conditions, in the inessive case-ending. Cf. for instance Fi. _kylässä_, Est. _külas_, Votic _tšüläzä_, Kar. _küläššä_, Olon. _küläs_, _küläz_, Veps _kül'as_, Liv. _kilàṡə̂_, _kilàṡ_, W (old) _külàṡ_ 'in the village' ~ LpWefs. _t́šȩlmεsnε_ 'in the eye', LpN _joqâst_ (_st_ < *_sn_) 'in the river', Cher. _kì·δəštə_, _kì·δə̂stə̂_ (_št_, _st_ < *_sn_) 'in the hand'.

On the other hand there are in two Finnic dialects inessive endings which cannot derive from an assimilated *ss*. Such endings occur in the Finnish dialect of South-Ostrobothnia (Etelä-Pohjanmaa) and in Southern Estonian, e. g. South-Ostrobothnia *mihnä* ~ *mih*^{i}*nä* (= Fi. *missä*) 'where', *kuhna* ~ *kuh*^{u}*na* (= Fi. *kussa*) id., *johna* ~ *joh*^{o}*na* (= Fi. *jossa*) 'in which, where', *kärehnäni* (= *kädessäni*) 'in my hand', *pāhnäni* 'in my head', *voihnan̬sa* 'in his butter', *jalōhnan̬sa* 'in his feet', *en elāhnäni* 'never in my life' | EstS *külä̀ʜɴ* 'in the village' ~ dial. *külä̀ʜ* ~ dial. *külä̀n* id., *tulẹ̀n* 'in the fire', *pāǵäʜ* 'in the place'.

In South-Ostrobothnia the ending *-hna, -hnä* occurs only in monosyllabic pronouns, and in all stems before a possessive suffix. In Southern Estonian *-hn* (from which dialectally *-h* and *-n* developed) occurs in all inessives.

The *-hn-* forms can be explained by assuming that *sn* > *ss* took place only under certain conditions. *hn* seems to derive from positions where the assimilation did not occur. Setälä and Paasonen explained the divergent endings as going back to different grades of gradation: *ss* < *sn* ~ **zn* > *hn*. They assumed that the weak grade occurred before certain possessive suffixes, and was then generalized in all positions in Southern Estonian. But there are also other possibilities. We may assume that *sn* > *ss* took place only in unstressed positions. In other positions *sn* was not assimilated, and was in Southern Estonian generalized in all positions. In unstressed positions a change *sn* > *hn* later occurred, and subsequently *hn* was generalized everywhere. To account for the fact that *-hn*$^{(ä)}$ in South Ostrobothnia occurs chiefly before a possessive suffix, we may advance a hypothesis that *sn* was, at least in some areas, not assimilated before a possessive suffix, not even in unstressed positions. Before a possessive suffix the vowel of the inessive ending was in a non-final syllable, and it is possible to assume that it had a secondary stress. This secondary stress prevented *n* from being assimilated. We could thus assume the following alternation: **kä·δessä* ~ **kä·δesnäːsi*.

There is some additional evidence that *sn* was preserved under certain conditions.

Fi. *käsnä* 'Baumschwamm; Leichdorn', Est. *käsn* 'Schwamm; Schwiele, Callus, Warze, Leichdorn, Drüse, Baumkrebs', Votic *tšäznä* 'Baumschwamm', Kar. *käznä* id., Veps *käzn* id. This word shows, as has already been pointed out by Kettunen and Rapola, that *sn* cannot have been assimilated in all positions. It is true that we also have the form *känsä* in Finnish, but *sn* must be the original cluster in this word. There are no certain examples of *ns* having been replaced by *sn*.

Judging from *käsnä*, it seems obvious that *sn* was preserved at least after a short vowel of the first syllable. It is thus possible that essives like Fi. *lasna*, *läsnä*, Veps *läzn*, and participles like Fi. dial. *pesnü*, Est. *pesnud*, Votic *aznu* (Pr. *asę̄ʙ*), etc., represent the regular development, in which case Fi. *lassa*, *lässä pessyt*, etc. contain an analogical *ss*.

sn > *ss* in unstressed positions seems to be an internal development in Proto-Finnic. The preservation of *sn* in stressed positions is well in accordance with the fact that -*sn*- occurred both in Baltic and in Germanic (for Baltic -*sn*-, cf. e. g. **asn*- 'Blut', Proto-Lettish **asni*-, Trautmann Baltisch-Slavisches Wb. p. 14; for Germanic -*sn*-, cf. e. g. Goth. *asneis* 'Tagelöhner', OHG *asni* id.).

It is possible that *ss* in the inessive ending was shortened to *s* in certain dialects of Proto-Finnic. The inessive ending of the Votic language and of most West Finnish dialects seems to go back to a Proto-Finnic -*sa*, -*sä* (cf. also Est. *kusagil*): Votic *tšüläzä*, *jaлgaza*, *лauttaza*, etc.; Fi. dial. *küläsä*, *jalasa* l. *jallāsa*, *kattomasa*, etc. If the shortening is of Proto-Finnic origin, it could perhaps be compared with the Germanic shortening of *ss* to *s* after a long syllable, e.g. AS *ǽs*, OHG *âs*, German *Aas* < **êsa* < **êssa*-, see Kluge Urgermanisch p. 79. In Proto-Finnic, the shortening could have taken place in unstressed positions.

Tunkelo has assumed that there were of old two endings in the inessive case: -*sa*, -*sä* and -*s* + *na*, -*s* + *nä* (see Rapola SKH I p. 192, Suomen kielen äännehistorian luentojen pääkohdat p. 118; Hakulinen SKRK I p. 127 footnote 2).

15. The Treatment of Stop + Sibilant in Syllable-Final Position.

In the Proto-Finnic period the syllable-final clusters stop + sibilant were simplified so that now only the sibilant is found in Finnic languages.

ks > *s*.

Fi. *usta* (Part. Sg.) : *uksi* 'door', Est. *ust* : *uks* id., Votic *ussa* : *uhsi* id., Kar. *šušta* : *šukši* 'ski', Olon. *ustu* : *uksi* 'door', Veps *ust* : *ukś* id. (Liv. *ukstà* : Pl. *ukst* id. is an innovation). Late PrF *usta* < **uksta*.

Fi. *juosta* 'to run', *juoskaa* : *juoksen*, Est. *joosta, joosku* : *jooksen* id., Kar. *juošša* : *juokšen* id., Olon. *juosta* : *juoksen* id., Veps *josta* : *joksęn*, *ǵosta* : *ǵoksęn* id. (In Livonian forms, the vowel stem has been generalized.). Late PrF **jōstak* < **jōkstak*, **jōska-* <**jōkska-*.

Fi. *sormus* : *sormuksen* 'ring', Est. *sõrmus* : *sõrmuse*, Votic *sĕrmuz* : *sĕrmuhsē̆*, Kar. *šormuš* : *šormukšen*, Veps *sormuz* : *sormusęn* id. (Liv. *sùormə̂ks*, *sùormuks* is an innovation). Late PrF *sormus* < **sormuks*, cf. Mord. *surks* 'Fingerring'.

ts > *s*

Fi. *veistä* : *veitsi* 'knife', *veistää*, *vestää* 'to whittle', EstS *väìst* : *väìts*, Est. *vestma*, *vestam̀a*, Votic *vessǟ*, Kar. *veistä* : *veiťťš*, *vesťeä*, Olon. *vesteä*, Veps *vešt*, *vešťš́* : *veitš*, *veiťš́*, *vīťš́*, *vestta*, Pr. *vestan*. Late PrF *veistä* < **veitstä*.

Thus it seems obvious that *-*tst*- after an initial syllable became -*st*- in Proto-Finnic. As regards the treatment of *-*tst*- in unstressed position, there seems to be a difference. Cf. for instance Fi. *tarita* : *taritsen* 'to offer', EstS *valida* : *valitse* 'wählen', Kar.-Olon. *tarita* : *tari₍ťšen* 'to offer', Veps *homa̭ita̭* : *homai₍tšęn* 'to notice, to see'. If the treatment were similar to that in stressed position, we should expect infinitives like Fi. **tarista* etc. And if one assumed that such forms really did occur, it would not be easy to explain why they had been replaced by analogical forms. It seems therefore probable that in unstressed positions the cluster **-tst-* had already developed into *-tt-* when the change **-tst-* > **-st-* took place in stressed positions. For a more detailed treatment of this problem, see Posti Virittäjä 1947 pp. 248—252.

ps > s.

Fi. *lasta* (Part. Sg.) : *lapsi* 'child', Est. *last* : *laps*, Votic *лassa* (< *lasta*) : *лahsi*, Kar. *lašta* : *lapši*, Olon. *lastu* : *lapsi*, Veps *лast* : *лapś* id. (The Liv. partitive *lap̆stà* [: *läp̄š*] is an innovation.) Late PrF *lasta* < **lapsta*.

Fi. *kystä* (Part. Sg.) : *kypsi* 'ripe, mellow', Votic *tšüssä* (< *küstä*) : *tšühsi*, Kar. *küštä* : *küpši* id. Late PrF *küstä* < **küpstä*.

Syllable-final clusters stop + sibilant still occur in Mordvin: MordE *ukštor(o)* 'maple' (Fi. *vaahtera*), MordE *ekšťeŕ*, *jakšťeŕ* 'farrow, barren (of cows)' (Fi. *ahtera*), Mord. *surks* 'Finger-ring' (Fi. *sormus*), etc. It is thus obvious that the loss of stop in these cases did not occur prior to the Proto-Finnic period.

In Baltic, syllable-final clusters of this kind (or intervocalic clusters stop + sibilant + consonant, to avoid committing ourselves as to the syllable boundary in Baltic) did and still do occur, e. g. **ankstei* 'früh', Lith. *ankstì* id. (Trautmann Baltisch-Slav. Wb. p. 9), **āukṣta-* 'hoch', Lith. *áukštas*, Le. *aûksts* (ibid. p. 17), **kōukšta-* 'Busch', Lith. *kúokštas* id. (ibid. p. 139). In contrast to Baltic, such clusters did not occur in Germanic. This results from the fact that stops had disappeared in the position immediately before *s* + consonant. For instance, **leskan* < **lek-skan* : OHG *lescan* 'löschen' (Kluge-Götze Et. Wb. d. deutschen Sprache^{14} p. 364), **wat-ska-* from *wat-* 'Wasser' : OHG, AS *wascan*, ON *vaska* 'to wash' (ibid. p. 673), OHG *rost*, AS *rúst* 'Rost' (IE **roudh-sto-*), cf. Goth. *rauþs*, ON *rauþr*, AS *ród* 'rot';

see Streitberg Urgerm. Grammatik p. 143, Krahe Germ. Sprachwiss. I p. 107.

Thus it seems likely that the loss of stops in the syllable-final clusters stop + sibilant in Proto-Finnic is a result of the influence of Germanic speech habits.

16. The Loss of *v*, *j* under Certain Conditions.

In initial position.

FU initial *v*- seems to have disappeared before certain short vowels.

*vo- > o- : Fi., Est. *olla* : *olen* 'to be', Votic *e̮лла* : *e̮лe̮n*, Kar.-Olon. olla, Veps *oлda, ouda, ūda*, Liv. *vô̠lda*, W *vùolda* (Liv. *v* is of late origin, *o*- > *vo*-), Sal. *old, olda* id. | MordE *uľems*, M *uľəms* 'sein; werden', Cher. *ə̂·lam, ula·m* 'sein', Ziry. *ve̮lni̮*, Voty. *vi̮li̮ni̮* id., Hung. *val-, volt* id.

Fi. *odottaa* | Cher. *βə̂·(tše̮m, βu(ďše̮·m* 'warten' (see pp. 11)

*vu- > u- : Fi *udar, utare* 'Euter', Est. *udar*, Votic *utare̮-*, Kar. *uvar*, Pl. *udaret*, Olon. *udareh*, Veps *udar*, Liv. *udàr* id. | Mord. *odar*, Cher. *βà·δar, βoδa·r* id.

*vü- > ü : Fi. *ydin* : *ytimen* 'Beinmark, Kern', Est. *üdi* 'Mark' | LpN *âđâ* : *âđđâm*- 'marrow', Mord. *uďime, uďeḿe* id., Cher. *βim, βem* id., Ziry. *vem* 'Gehirn, Mark', Voty. *vim, viji̮m* id., Vog. *βεləm*, Osty. *u̯ēl̮əm*, Hung. *velő* id.

Fi. *yli* 'über', *yllä* 'oben' (Late PrF *ül-) | LpN *âlâ* 'on, on to, upon, over, near', Mord. *v́eľks* 'das oben Gelegene, Oberes, Deckel', Cher. *βə·lnə* 'auf (wo?)', Ziry. *vi̮l* 'Oberraum, das Obere', Voty. *vi̮l* 'Oberteil, Oberfläche', etc.

It appears that initial *v*- was lost before short labial vowels (perhaps also before long *ū*, cf. Fi. *uusi* : *uuden* 'new' | LpN *ǫđđâ, ǫđâs* 'new, something new, in plur.: news', Mord. *od* 'neu, jung', Cher. *ù, uu̯* 'neu', Ziry, *vi̮ľ* 'neu, frisch', Voty. *vi̮ľ* id.). Before *oi v* was preserved, cf. Fi. *voi* 'butter' | LpN *vuoggjâ* '(fluid or semi-fluid) fat; butter, margarine', MordE *oj*, M *vaj* 'Fett, Butter, Öl', etc.

An illuminating case is the following verb which shows forms both with and without an initial *v*-.

Fi. *ottaa* 'to take', Kar.-Olon. *ottoa*, Veps *otta* ~ Est. *võtma*, Votic *vẹttā*, Liv. *vẹ̭̀ttə*, W *vùttə*, *ùttə* (with a late loss of *v*) id. | Ziry. *votni̯* 'pflücken, sammeln', Vog. *βāt-* 'pflücken'. Apparently there was an old dichotomy *o* ~ *ẹ* with regard to the vowel in Early PrF, and subsequently **vo-* > *o-*, **vẹ-* (the Finnic forms have been explained in this way by Y. H. Toivonen in his lectures).

In many of the above-mentioned examples initial *v*- has been lost in Lapp and Mordvin also, in some cases even in Cheremis. We may have to take into consideration the possibility of a Pre-Finnic change.

Before a long *ō* a secondary *v* developed in Proto-Finnic, cf. for instance Fi. *vuohi* 'goat', Votic *voho* id. < Baltic, cf. Lith. *ožỹs*, Le. *âzis*; Fi. *vuota* 'eine geschundene rohe Haut vom Rindvieh oder Pferde' < Baltic, cf. Lith. *óda*, Le. *âda*; Fi. *vuosi* 'year' ~ Osty. *oʌ* etc. id.; see Toivonen Virittäjä 1928 pp. 184—185. A similar development seems to have taken place in Old Prussian, cf. for instance Lith. *óbuolas*, Le. *âbuõls* 'Apfel' ~ OPr. *woble* id., *wobalne* 'Apfelbaum'.

FU *j*- seems to have disappeared before *i* and *e*.

Fi. *ehtoo* 'evening', etc. ~ LpKld. *ieχta*, Nrt. *joχta* 'yesterday', ? Cher. *jə̂t*, *d́üt* 'evening'; see pp. 38—39.

Fi. *iho* 'skin, complexion', etc. ~ MordE *jožo*, M *jož(ă)* 'die äussere Haut', Oberfläche', etc.; see pp. 3—4.

As to the age of this change, it is difficult to say anything definite. See for the treatment of initial *j* a forthcoming article by Toivonen in the journal Ural-Altaische Jahrbücher.

In medial position.

A Pre-Finnic medial *v* is in some cases represented by zero in Finnic. Examples are:

Fi. *suu* 'Mund, Öffnung', Est. *suu* 'Mund, Mündung, Öffnung', Votic *sū* Kar. *šū*, Olon. *sū*, Veps *sū*, *su*, Liv. *sū* id. | LpS *čuwwẹ* 'Kehle, Speiseröhre', etc.

Fi. *syödä* 'essen, fressen', Est. *sööma*, Votic. *süvvä* : *sȫn*, Kar. *šǖvä* : *šüön*, Olon. *süvvä* : *süön*, Veps *śōda* : *śōn*, Liv. *sìedə̂* : *sìeʙ*, W (old) *sù̈ödə̂* : *sù̈öʙ* id. | MordE *śęv́ems*, *sä̧v́ems*, *sävims*, M *śevəms*, *śivəms* 'verzehren, aufessen, -fressen', etc.

A *υ which we may assume to have reflected Pre-Finnic η is also represented by zero in several cases (see pp. 30—32).

v seems in some cases to have disappeared immediately before or after labial vowels. In some words, a development vowel + *v* > diphthong ending in *u̯* > long vowel (e. g. **sev-* > **seü-* > *sȫ-*) seems to have taken place in monosyllabic consonant stems. See the detailed treatment by Erkki Itkonen in FUF 30 pp. 1—54.

A Pre-Finnic *j* too is often represented by zero in Finnic. Examples are:

Fi. *kyy* 'Otter', Est. *küü* : *küü-uss* 'Blindschleiche (Anguis fragilis L.) Olon. *kǖ-keärme* 'Otter' | MordE *kuj*, *guj*, *ḱju ḱijov*, M *kuj* 'Schlange', Voty. *ki̯i̯*, Hung. *kigyó*, *kígyó* id.

Fi. *yö* 'night', Est. *öö*, Votic *ȫ*, Kar.-Olon. *üö*, Veps *ö*, Liv. *ìe*, W (old) *ù̈ö* id. | LpN *iggjâ* : *ijâ*, Mord. *v́e*, *v́ä*, *v́ej*, Ziry. *voi̯*, *oi̯*, Voty. *ui̯*, *ɯi̯*, Osty. *əi̯*, Vog. *ī*, *i̯ī*, Hung. *éj* id.

Fi. *tie* 'way, road', Est. *tee*, Votic *tē*, Kar.-Olon. *tie*, Veps *t́e* id. | Ziry. *tui̯* 'Weg'.

j seems to have disappeared before or after a high front vowel, or to have merged with the preceding vowel, forming a long vowel, in monosyllabic consonant stems, e. g. **üje* > **üe* > *ȫ* > Fi. *yö*, **küj-* > **küi̯* > *kǖ*. The same also applies to *j* from Pre-Finnic *η (*$\acute{\eta}$) (p. 32). See Erkki Itkonen FUF 30 pp. 1—54.

In other contexts *v* and *j* (original or from η, $\acute{\eta}$) have regularly been preserved. Their disappearance in certain vocalic surroundings may well be one of the indigenous combinative changes of Proto-Finnic.

17. The Origin of Gradation.

The assumption that consonantal gradation is not of earlier than Proto-Finnic age, is — as far as our present knowledge goes — to be considered a legitimate hypothesis. Given this assumption, a discussion of the origin of gradation falls within the scope of the present investigation.

Much has already been written on the possible phonetic causes of gradation. A good survey of the various explanations is given by V. Tauli in Virittäjä 1947 pp. 174—181, where he also sets forth his own views.

Since the appearance of this survey two noteworthy hypotheses concerning the origin of gradation have been put forward. Toivonen in an important paper entitled »Zum Problem des Protolappischen» (Proceedings of the Finnish Academy of Science and Letters 1949, pp. 161—189) pointed out the possibility that Pre-Finnic consonantal gradation could be ascribed to an early influence of Lapp (l. c. p. 187). In Virittäjä 1951, Ravila presented an interesting theory, the principal features of which are the following (I quote the author's summary): »The basic idea is that there must be a close correlation between the sets of the geminate stops and the single stops. The origin of the gradation is primarily due to the general weakening of the geminate stops. The only position where the geminate stops have remained unchanged is the boundary between a stressed and an unstressed open syllable. In all the positions where the geminate stops have weakened we can ascertain also a weakening of the single stops. As far as the age of the gradation is concerned the new theory is not able to give a distinct answer. Yet everything indicates that it can not originate in an earlier period than the Proto-Baltic-Finnish.»

The theory of Ravila has many attractive qualities. A uniform and simple reason is given for all gradation phenomena and illustrating phonetic parallels from other languages are presented. As a whole, the article is a valuable contribution to the discussion on the origin of gradation.

Certain details, however, do not appear quite convincing. For instance, it does not seem necessary to assume that the starting point was a weakening of the geminate stops. Even if the geminate stops had been weakened first, it does not necessarily follow that they came so close to the single stops as to cause a weakening of these in order to keep the two series separate. Throughout the Proto-Finnic period there was a clear difference between the weak grade of the longer series and the strong grade of the shorter one. Several languages still preserve the difference. Further, it does not seem certain that the absence of gradation in the type *isäntä* : **isäntän* can be explained by assuming that geminate stops did not occur in this position and that, consequently, there was no risk of a falling together here. Verbal forms like **uskaltten* (Fi. Agr. *vskalten*), **ümpärttäpä* (Agr. *ymmertepä*), **muserttut* (Agr. *musertut*), **rakkenttak* (Fi. *raketa*) could perhaps be older than the origin of gradation.

It has often been noted that the gradation is phonetically rather similar to what in Germanic languages is known as Verner's Law. The Englishman C. N. E. Eliot[1] and the Swede K. B. Wiklund[2] were perhaps the first to mention this similarity. A few years later E. N. Setälä based his explanation of the origin of the Finno-Ugric gradation upon this similarity.

But is it necessary to consider the effects of Verner's Law merely as illustrating parallel phonetic development? Could there not be a historical connection between this law and the consonantal gradation? It does indeed not seem impossible to answer this question in the affirmative. We have seen in the preceding chapters that many of the most important Proto-Finnic sound changes can be ascribed to Germanic influence. In view of this, it would not be at all surprising if consonantal gradation was caused by the same influence or, to be more specific, by the influence of Verner's Law.

According to this law, the unvoiced spirants *χ*, *f*, *þ*, *s* of Proto-Germanic became voiced between voiced sounds, except when immediately preceded by a syllable carrying the main stress. Thus we can say that the main stress prevented them from becoming voiced. Consequently, between voiced sounds the distribution of unvoiced spirants in Germanic was determined by the stress.

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[1] See C. N. E. Eliot A Finnish Grammar (Oxford, 1890), p. xvi.

[2] See K. B. Wiklund Laut- und formenlehre der Lule-Lappischen dialekte (Göteborgs Kongl. Vetenskaps och Vitterhets Samhälles Handlingar. Ny Tidsföljd. 25. Stockholm, 1891), p. 22.

Could a phenomenon of this kind have caused the Proto-Finnic gradation? At first sight it might seem rather improbable. The early Gmc. stress was free, i. e. the main stress could fall on any syllable. But in Proto-Finnic — as far as we are able to ascertain — the main stress lay invariably on the first syllable of the word. However, this is not necessarily an unsurmountable obstacle. The significant condition for the preservation of the unvoiced spirant in Germanic was perhaps only a position between two syllables of which the the first had a considerably heavier stress than the second. Theoretically, it is not necessary to assume that the stress on the first of these two syllables was the principal stress of the word. It was perhaps enough if it was a very heavy stress compared with the stress of the following syllable. It is also conceivable that even the main stress would not have been able to prevent voicing if the stress on the immediately following syllable had been almost as heavy as the main stress.

Such conditions, however, apparently did not exist in Germanic. But there may well have existed such relative stress-differences in Proto-Finnic, although — as already stated — the main stress always lay on the first syllable. It seems likely that in *pata* for instance the difference between the relative stresses of the two syllables was greater than in the form **patan*.

We may well assume that the free stress of Germanic was at least to some extent still preserved when the earliest Finno-Germanic contacts began.[1] At the time of the free stress Germanic speakers must have developed a subtle, automatic feeling for the dependence of unvoiced spirants on a relatively heavy stress. How would this feeling have reacted if a person with Germanic speech-habits tried to speak Proto-Finnic? During the initial period of the contacts the closest counterpart to the unvoiced _χ_, _f_, _þ_ of Germanic were the unvoiced stops _k_, _p_, _t_ of Proto-Finnic. This is also shown by the rendering of the Germanic spirants in the oldest loan-words. The Proto-Finnic stops were probably weakly articulated, rather lenis-like in quality. Apparently therefore Germanic speakers did not identify them with the strongly articulated stops of their own language. Bilingual speakers with Germanic speech-habits may have substituted unvoiced spirants for Proto-Finnic stops between voiced sounds. But they very likely pronounced the spirants unvoiced only in a position between a relatively strong and a relatively weak stress. Between all other types of stress they probably pronounced them voiced.

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[1] For the date of the stress shift, see Hirt Handbuch des Urgerm. I pp. 154—155, Karstien Historische deutsche Grammatik pp. 49, 112—113, Krahe Germ. Sprachw. I pp. 39—40.

We may indicate the different degrees of stress by the numbers 1—6, 1 being the weakest and 6 the strongest. For convenience, we shall henceforward call a relatively strong stress a dominating stress (viz. with respect to the following syllable). Further, we shall assume that a dominating stress must be at least two degrees stronger than the stress of the immediately following syllable.

The probable stresses of the forms _pata_ and *_patan_ could now be indicated as follows:

5 2	5 4
pata	*_patan_

The pronunciation of bilingual speakers with Germanic speech-habits may have been

*_paþa_ *_paδan_.

Further examples are:

	5 2	5 4	5 4 1
PrF	_rinta_	*_rintan_	*_rintasta_
Gmc	*_rinþa_	*_rinδan_ (or *_rindan_)	*_rinδasta_ (or *_rindasta_)

	5 2	5 4	5 4 1
PrF	*jalka*	**jalkat*	**jalkasta*
Gmc	**jalχa*	**jalγat*	**jalγasta*

Examples of stops after non-initial syllables:

a) in intervocalic position

	5 2	5 2 1	5 2 4 1
PrF	*māta*	**patata*	**korketata*
Gmc	**māþa*	**paþaδa*	**korχeδaþa*

b) after voiced consonants

	5 4 1	5 4 1	5 4 2 1
PrF	**avanto*	**avanton*	**avantosta*
Gmc	**avanþo*	**avanþon*	**avanþosta*

When the monolingual Proto-Finnic speakers adopted the Germanic habit of letting the distribution of medial unvoiced spirants be automatically determined by the dominating stress, they apparently retained the unvoiced stops of their own consonant pattern for the Germanic unvoiced spirants. But in order to preserve the automatic alternation they had observed in the foreign pronunciation, they may have soon learned to pronounce voiced spirants. For the possible loss in Early Proto-Finnic of FU voiced spirants see pp. 83—86.

If the Proto-Finnic distribution of relative stress could be assumed to have been as indicated in the above examples, then it would be possible to consider the gradation of single stops as resulting from Germanic influence.[1]

The most important factor in the stress system we have postulated is the relatively strong stress of a second closed syllable.[1] Because of this stress the preceding main stress could not be a dominating stress when the second syllable was closed. Thus the occurrence of voiced spirants after the main stress was made possible. With respect to the third syllable, a closed second syllable always carried a dominating stress, even if the third syllable was closed. This explains the absence of gradation in the type *avanto* : **avanton*.

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[1] The question might arise whether we should not expect Proto-Finnic *h* to have been treated like Germanic *h* (*χ*), i. e. showing an alternation *h* ∼ *γ* according to the position of the dominating stress. To this we might answer that the quality of *h* in Proto-Finnic may have been different, perhaps with a rather weak cavity friction and therefore more like a voiceless vowel than a strong spirant.

Thus far we have only been concerned with the gradation of the single stop series. The gradation of the geminated stops also requires explanation. It seems that this can not be ascribed to Germanic influence. It is possible that the development occurred independently in Proto-Finnic. At first there may have been minimal combinatory differences in the quantity of the geminate stops, according to the different stress-positions. When the gradation system of the single stops had developed, the quantitative differences in the longer series were perhaps linked with this system. As a result of this, the differences may have become more marked. The final result was the alternation *kk* ~ *k̆k*, *tt* ~ *t̆t*, *pp* ~ *p̆p*, the weak grade of which occurred under exactly the same conditions as the weak grade of single stops. Thus we for instance assume absence of gradation in the type *harakka* : **harakkan*.

Since in Germanic *s* too was subject to Verner's Law, we should expect it also to have been affected by the Proto-Finnic gradation. This seems indeed to have been the case, as was assumed already by Setälä. Certain features in the treatment of *s* seem to be best explained by the assumption of such a gradation; see p. 62. There may thus have been forms like

pesä	**pezän*	**pezästä*	**pesäzen*
kirves	**kirvezen*	**kirvezestä*	**kirvezezen*

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[1] Cf. Wiklund UL p. 119, 123; *idem* Le Monde Oriental 9 p. 181: »Die schwächung des stammkonsonanten in der schwachen stufe beruht bekanntlich auf dem durch die geschlossenheit der zweiten silbe hervorgerufenen starken nebenakzent.»

etc., in Proto-Finnic at the time the gradation originated. It deserves to be noted that the dissimilation **kirvezezen* > **kirvezesen*, assumed by Mark to account for Veps *kirvhęzę*, Fi. *kirveeseen*, etc., is remarkably similar to the Gothic dissimilation of spirants (see pp. 63—64), and could perhaps also be due to Germanic influence.

The fact that *s* stands outside regular gradation to-day can be easily explained. After the change *z* > *h* (p. 62), the alternation was *s* ~ *h*. At this stage the two grades had lost the usual opposition *unvoiced / voiced*. The feeling that they belonged to the gradation system may finally have been lost altogether. Thus very often *s* was generalized throughout the paradigm. See also p. 62.

Finally, there remains the question of whether single stops and *s* in syllable-final position before voiced consonants were subject to gradation or not. As is well known, Setälä assumed gradation to have occurred in this position too. In Proto-Germanic there were alternations like *χw* ~ *γw*, *þw* ~ *δw*, *sn* ~ *zn* according to Verner's Law. Should we not then expect a similar alternation in Proto-Finnic? I do not think that it is necessary to assume gradation here, even if we hold that gradation as a whole is due to Germanic influence. Proto-Finnic clusters like *kl*, *kr*, *tv*, *sn* apparently differed from their Germanic counterparts in one important respect. In Proto-Finnic the syllable boundary was between the consonants, while in Proto-Germanic both consonants seem to have belonged to the same syllable, with the syllable boundary before the cluster. In Proto-Germanic then, for instance *χ* in *χl* was for all practical purposes in an intervocalic position, and was also accordingly treated. In Proto-Finnic the situation was different. This could very well account for a divergent treatment.

If gradation is due to an early influence from Germanic, it is easy to understand that the strong grade occurs in forms like Fi. *antaisin*, *keltaiset*, etc. We have assumed that syllable-final *ή* disappeared here during the period of the Baltic contacts (see pp. 31—32). Consequently the second syllable was open when gradation originated.

Further, we can assume that only a change *ti* > *si* (and not *δi* > *si*) took place in Proto-Finnic. *ti* > *si* originated before the period of the Germanic contacts, and consequently before the development of gradation (see p. 55).

The inessive case of Votic shows an interesting treatment with regard to gradation. The ending of the case is *-za*, *-zä* before which single stops show the weak grade but geminated stops occur in the strong grade, e. g. *pagoza* (from *pako*) as against *pakkoza* (from *pakko*). This could perhaps be explained by assuming with Kettunen (see VKÄH^2 pp. 77, 81—82) that the gradation of single stops is older than the (? dialectal) shortening of *ss* in unstressed positions (see p. 69), and further that the geminated stops developed gradation only after *ss* had already been shortened.

If our hypothesis according to which gradation is due to Germanic influence, is accepted, then we shall have to assume that the Lapp gradation in turn was caused through Proto-Finnic influence. Since the gradation at that time was a living, automatic alternation, we may assume that the Proto-Finnic system of gradation was not adopted unchanged by the Lapps but with such modifications as the differences in the Proto-Lapp stress system may have made necessary.

If for some reason or other we could not accept the influence of Verner's Law in Germanic as the cause of gradation, then we should have to consider this phenomenon as an indigenous phonetic development which could be stated as follows:

All unvoiced syllable-initial single stops, and the unvoiced spirant *s*, became voiced spirants in voiced environment except when immediately preceded by a dominating stress. All unvoiced geminate stops (*xx*) were shortened (to *x̆x*), except when immediately preceded by a dominating stress.

Cf. the statement of Ravila, Virittäjä 1951 p. 298.

Before we leave the chapter on gradation, a brief survey of the treatment of FU voiced spirants must be given.

*δ.

Fi. *ydin* : *ytimen* 'Mark, Kern', Est. *üdi*, Gen. *üdi* 'Mark' | LpN *âđâ*, Gen. *âđđâmâ* 'marrow, marrow bone', Mord. *uďiḿe*, *uďeḿe* 'Mark', Cher. *βim*, *βem* id., Ziry. *vem* 'Gehirn, Mark', Voty. *vim*, *viji̯m* id., Vog. *βεləm*, Osty. *u̯ēɒ̭əm*, *u̯ēl̜əmʿ* etc., Hung. *velő* id.

Fi. *pato* : *padon* 'Damm, Wehr', Veps *pado* 'Fischwehr' | LpN *buođđo*, Gen. *buođo* 'dam, enclosure for netting salmon', Osty. *pă̭ḷ*, *pɒl̜ʿ* etc. id., Hung. *fal* 'Wand, Mauer'.

Fi. *kutoa* : *kudon* 'weben', Est. *kuduma* : *koon*, Votic *kutoa* : *kuon*, Kar. *kuduo* : *kuon* id., Olon. *kuduo* : *kuon* 'weben; mauern', Veps *kudoda* : *kudon* 'weben', Liv. *kŭddə* : *kudàʙ* id. | LpN *gǫđđet* : *gǫđam* 'weave', Mord. *kodams* 'weben', Cher. *ko·em*, *kue·m* id., Ziry. *ki̯ini̯*, *ki̯ni̯* 'weben, flechten', Voty. *kui̯ni̯* 'weben'.

Fi. *sydän* : *sydämen* 'Herz', Est. *süda* : *südame*, S *söä* : *söäme*, Votic *süä* : *süämē*, Kar. *šeän* : *šeämen*, N *šüön* : *šüömen* id., Olon. *süväin-* : *süväin-kerä* 'Niere', *süväin-üö* 'Mitternacht', Veps *śüdȩi-kera* 'Herz', *śüdȩi-muna* 'Niere', *śüdȩi* 'das Innere', Liv. *sidàm*, W (old) *südàm* 'Herz, Mitte, das Innere' | LpN *câđâ* (postp., prepos., adv.) 'through, etc.', MordE *śeďej*, *śeďeń*, M *śeďi* 'Herz', Cher. *šüm*, Ziry. *śẹ̄lẹ̄m*, Voty. *śulem*, Vog. *šəm*, *səm*, *sim*, Osty. *səm*, *sɒ̣m*, Hung. *szív* id.

It is possible that in the following words *δ* occurred as first component in a consonant cluster.

Fi. *päläs*, Gen. *pälkään* 'the place for the foot on a ski' | LpN *bæđŋes*, Gen. *bæđ'gŋa* id.

Fi. *hylätä* : *hylkään* 'verwerfen, verlassen' | ? LpI *seδ̄ŋ̀iδ̄* id.

*-δ'-

Fi. *kesi* : *kete-* 'cuticula corporis exterior, epidermis', Est. *kesi* : *kee* : Part. *kett* 'leere Hülse, Schote; abgeworfene Schlangenhaut', Veps *kezi* : *kedẹn* 'Fell' | Mord. *ked́*, *käd́* 'Haut, Fell, Balg, Leder; Schale', Ziry. *kil̀* 'Kopfkleie, Schinn; oberstes dünnes Häutchen der Birkenrinde, dünne Schale der Zwiebel, feine Hülle des Getreidekörnchens, dünne Achel', Voty. *kil̀* 'die dünnen, gelben, sich abschälenden Schuppen an der Rinde der Tannenbäume'.

Fi. *sysi* : *syte-* 'Kohle', Est. *süsi* : *söe* : Part. *sütt*, Votic *süsi* : *süẽ* : Part. *süttä*, Liv. *si*^{ž}*ž* : Pl. *sidùᴅ*, W (old) *sü̆*^{ž}*ž* : Pl. *südùᴅ* id. | LpN *čâđđâ* 'charcoal', Mord. *śed́* 'Kohle', Cher. *šü*, *šüi* Vog. *sül̀ì·*, Osty. *sŏ̭i̯*ʿ id.

Fi. *uusi* : *uute-* 'new' | Ziry. *vi̮l̀* 'neu, frisch' (p. 28).

Fi. *kadota* : *katoan* 'verschwinden' | Ziry. *kol̀ni̮* (p. 28).

Fi. *kutea* 'laichen' | Ziry. *kul̀mi̮ni̮* id. (p. 28).

In the following words *δ'* may have occurred in anteconsonantal position.

Fi. *tutkain* 'Spitze', dial. *tutkamet* 'filamenta staminis textorii residua, amputari solita', Est. *tutk*, Gen. *tutka*, *tukk*, Gen. *tuka*, *tutkem* 'Ende, Winkel', Votic *tutkamẹᴅ* = Fi. *tutkamet*, Veps *tutkmeᴅ* id., Liv. *tutkàm* 'Ende' | LpN Friis *dudgom* 'gemma betulae', LpWefs. *ᴅur*^{u}*k·ǫmɛ̮* 'Knospe, Kätzchen an Bäumen', Voty. *tul̀i̮m* 'die oberen zarten Sprösslinge des Baumes', Vog. *tal̀ėχ* 'Spitze, Ende', Osty. *ṭ'ŏ̭i̯*ʿ 'Spitze, Gipfel'.

Fi. *sotka* 'Fuligula clangula', Est. *sõtkas*, Gen. *sõtka* 'Schellente (Glaucion clangula)', Kar. *šotka* 'Fuligula clangula', Olon. *sotku* id. | LpN *čoađ'ge* 'Glaucion clangula', MordE *śulgo*, M *śulga*, *t́śulga* 'irgend ein Wasservogel der gut taucht, Fuligula clangula resp. Colymbus arcticus', Cher. *šoè* in *ala-šoè* 'пестрая утка', Ziry. *śuv* : *śuv-ṭšež* 'Taucher', *śulka* 'eine Ente', Vog. *sǝ̄l̀* 'Anas cricca', Osty. *soi̯* 'Anas clangula'.

As can be seen, Pre-Finnic intervocalic *δ* and *δ'* seem to have coincided with Pre-Finnic *t*. The only exception seems to be Fi. *sydän*, Est. *söä* : *söäme*, Votic *süǟ* : *süämē*, etc. Ravila has assumed that Fi. *d*, Est., Votic etc. zero instead of Fi. *t* ~ *d*, Est. *d* ~ zero is due to an early gemination of *m*; see FUF 24 p. 47. This seems to be the best explanation. It would indeed, as Ravila has pointed out, be rather strange that only this one word should have preserved the original spirant.

As to the date when Pre-Finnic *t* fell together with Pre-Finnic intervocalic *δ*, *δ'*, the development may have occurred within the Proto-Finnic period. *t* and *δ*, *δ'* are still kept separate in Lapp, but have fallen together in Mordvin and perhaps also in Cheremis. If we may reckon with a Proto-Finnic shift, it could be ascribed to Baltic influence. In the Proto-Baltic consonant pattern, *z* and *ž* were the only representatives of the voiced spirants. It is therefore likely that bilingual speakers of Baltic origin substituted stops for *δ*, *δ'*. They probably used a voiced stop for these, but Finnic speakers in turn may have substituted unvoiced stops.

Anteconsonantal *δ* seems to show a different treatment in *pälkää-*, *hylkää-*. In *tutkain*, *sotka*, however, we find *t* for anteconsonantal *δ'*. With regard to *l*, there are several possibilities: a) *l* is due to a Pre-Finnic development, b) *l* developed in Early Proto-Finnic through an indigenous change, c) in certain consonant clusters Baltic speakers may have substituted *l* for *δ*.

*-γ-.

Fi. *juoda* : *juon* 'to drink', Est. *juua* : *joon*, Votic *juvva*: *jōn*, Kar. *jūa* : *juon*, Olon. *juvva* : *juon*, Veps *joda* : *jon*, *ǵoda* : *ǵon*, *ďoda* : *ďon*, Liv. *jùodə̂* : *jùoʙ* id. | LpN *juk'kât*: *jugâm*, Cher. *jü·äm*, *d̯üa̭·m*, Ziry. *ju*, Voty. *jui̯*, Osty. *i̭à·ńt-*, Vog. *ā̄i-*, Hung. *iv-* id.

Fi. *viedä* : *vien* 'führen', Est. *viima* : *viin*, Votic *viďďä*: *vēn*, Kar. *vīä* : *vien*, Olon. *vijjä* : *vien*, Veps *veda* : *ven*, *v́öda*: *v́ön*, Liv. *vīdə̂* : *vīʙ* id. | LpKld. *vi̯ɢ̄kɒ*$^{\delta}$: *vi̯γa*^{m} id., MordE *v́ijems*, M *vijəms* 'wohin bringen, führen, fahren (tr.)', Ziry. *vai̭ni̯* 'tragen, bringen, führen, herbeiführen', Voty. *vai̭ni̯* 'bringen, zubringen, führen, hineinführen', Hung. *viv-* 'wohin bringen, wegtragen, führen, fahren'.

For additional examples see Erkki Itkonen FUF 30 pp. 3—4.

According to Setälä words of this type had a FU *-γ-*. Erkki Itkonen has assumed that after a long vowel a FU *k* developed into *γ*, and subsequently, within the Proto-Finnic period, *γ* was lost or vocalized in the *e*-stems. The loss or vocalization took place in consonant clusters in forms where a suffix was added to the consonant stem. Fi. *soutaa* 'to row' ~ LpN *sukkât* : *sugâm* is an example of the vocalization of *γ* in Finnic (*-ta-* is a derivative suffix which does not occur in the Lapp verb). In the *a-*, *ä-* stems *γ* was preserved, and subsequently an analogical strong grade developed in these words. In this way also the conspicuous absence of Pre-Finnic stems of the type *long vowel* + *k* + *e-* receives a satisfactory explanation. See FUF 30 pp. 3—14 for more details.

This theory seems to be acceptable.

From the viewpoint of the explanation given above for the treatment of FU *δ* and *δ'*, it could be assumed that 1) Early Proto-Finnic *γ* disappeared under certain conditions through an indigenous development; 2) for a preserved *γ* the corresponding voiced stop was substituted by Baltic speakers; by Finnic speakers again this pronunciation was imitated, but with the stop devoiced.

Thus it seems possible to assume that there was a period in Early Proto-Finnic during which there were no voiced spirants in the consonant system. When in a subsequent period consonantal gradation originated, then of course both *t* from *δ* and *δ'*, and *k* from *γ*, were affected by it as were all the unvoiced stops of that period whatever their origin.

Conclusion.

As far as we can ascertain, the Pre-Finnic consonant system consisted of the following 21 consonants:

the unvoiced stops	*p*, *t*, *k*;
the voiced spirants	*δ*, *δ'*, *γ*;
the unvoiced affricates	*t͜s*, *t͜š*, *t͜ś*;
the unvoiced sibilants	*s*, *š*, *ś*;

the nasals	*m*, *ŋ*, *n*, *ń*;
the liquids	*l*, *ľ*, *r*;
the semivowels	*v*, *j*.

During the Proto-Finnic period the following 10 consonants disappeared:

δ, *δ'*, *γ*	(pp. 83–86);
š	(pp. 4– 7);
ś	(pp. 26–29);
ń	(pp. 26–29);
ľ	(pp. 27–29);
(tš	(pp. 9–18);
(t́ś	(pp. 18–25).

In the preceding chapters we assumed that all these consonant losses could be ascribed to foreign, i. e. Baltic or Germanic, influence. To illustrate the development, parallel lists of the relevant consonant systems are given on page 88.

A comparison of these lists reveals that all the lost consonants were such as were lacking either in the Baltic list or in the Germanic one. Since it is impossible to assume that this remarkable fact could be due to mere chance, it is obvious that we really have to consider foreign influence as the cause of the changes which resulted in the disappearance of these consonants.

The history of *š* is an especially illuminating case. Since *š* occurred in the Baltic consonant pattern, we should expect *š* to have remained unchanged during the period of the Baltic contacts. In fact this was so; cf. for instance LpN *suol'dne* < PrF **šalna* < Baltic *šalna* (p. 2). The treatment of initial *h-* in the oldest Germanic loan-words shows that there was no *h* yet, since PrF *k-* was substituted for Germanic *h-* (p. 5). Thus it was only during the period of the Germanic contacts that the change *š* > *h* took place. This is to be expected because of the lack of *š* in Germanic.

Pre-F	Baltic	Germanic	Late PrF
p	*p*	*p*	*p* (∼ *β* ∼ *b*)
t	*t*	*t*	*t* (∼ *δ* ∼ *d*)
k	*k*	*k*	*k* (∼ *γ* ∼ *g*)
	b		
	d		
	g		
		β (*b*)	
δ		*δ* (*d*)	
δ'			
γ		*γ* (*g*)	
		f	
		þ	
		h (*χ*)	*h*
š	*š*		
s	*s* (*z*)	*s*	*s*
ś			
		z	
	ž		
m	*m*	*m*	*m*
n	*n* (*η*)	*n* (*η*)	*n* (*η*)
ń			
η (? *ή*)			
l	*l*	*l*	*l*
ĺ			
r	*r*	*r*	*r*
v	*v*	*v*	*v*
j	*j*	*j*	*j*
₍ts			*₍ts*
₍tš			
₍t́ś			

Note. Combinatory variants are given in brackets. — Of the Pre-Finnic consonants at least *p*, *t*, *k*, *m*, *n*, *ń*, *₍ts*, *₍tš*, *₍t́ś* seem to have occurred also as geminate (double) consonants. In Late Proto-Finnic, all consonants except *h*, *r* and the semivowels also occurred geminate.

Further, some combinative changes which occurred in certain clusters are also able to offer illustrative evidence. The following may be mentioned:

kt > *ht* (pp. 38–46),
pt > *ht* (pp. 46–48),
mt > *nt* (pp. 35–37),
ln > *ll* (pp. 65–67).

If we prepare parallel lists of the facts of the four relevant consonant systems we get the following chart:

Pre-F	Baltic	Germanic	Late PrF
kt	*kt*		
		ht	*ht*
pt	*pt*		
		ft	
mt	*mt*		
nt	*nt*	*nt*	*nt*
ln	*ln*		
		ll	*ll*

In each case the Pre-Finnic cluster occurs in Baltic too. And in each case we can prove that the Proto-Finnic clusters were retained unchanged during the period of the Baltic contacts. Thus the Proto-Finnic changes are to be ascribed to Germanic influence. The final results are well in accordance with the facts of Germanic. The only exception is *pt* > *ht*. Here Germanic *ft* would no doubt come closest to *pt*. Since however *ft* was impossible in Proto-Finnic, *ht* may have been substituted for it.

The change *ti* > *si* (pp. 48–55) is probably ultimately due to Baltic influence. With André Vaillant we have assumed that the Proto-Baltic consonants were palatalized before front vowels. Through Baltic influence Proto-Finnic *t* before *i* may have become palatalized. In this position, the palatalization was stronger than elsewhere. Therefore *t* before *i* was attracted by *₍t́ś*, with which it subsequently coincided and developed into *s*.

Since the most important consonant changes are due to foreign influence, it would not be impossible to assume that the Proto-Finnic consonantal gradation was caused by Verner's Law in Germanic (see pp. 76—81).

However, not all the changes discussed in the preceding chapters seem to be due to foreign influence. Thus it appears that the change *z* > *h* (pp. 62—65) may be an indigenous Proto-Finnic change. The loss of nasal in *nasal + stop + consonant* may, likewise, be an indigenous change (and perhaps even older than the Proto-Finnic period; see pp. 56—59). The assimilation *sn* > *ss* (pp. 67—69) which took place in certain positions may be a spontaneous Proto-Finnic development, as well as the disappearance of *v* and *j* in certain vocalic environments (pp. 72—74). From the viewpoint of the consonant-system as a whole, however, these indigenous changes are only of minor importance.

Foreign influence, then, is to be considered the ultimate cause of the most important changes. The first foreign influence on Proto-Finnic came from Proto-Baltic, or at least from a form of Baltic which in all essential features seems to have represented the Proto-Baltic stage. The subsequent source of influence was Germanic; here too we may assume that the language was essentially Proto-Germanic.

From both these sources a great number of loan-words were adopted. It has been assumed already on the evidence of the loanwords that the contacts must have been both of long duration and close. There may have been areas with a mixed population and with a considerable number of bilingual speakers. Under such circumstances it seems quite natural that not only the vocabulary but also the sound system of Proto-Finnic was affected by the foreign influence.[1]

When bilingual speakers of Baltic or Germanic origin spoke Finnic, they pronounced it according to their own speech habits. If there were consonants or consonant-groups in Finnic which did not occur in their own sound-system, they substituted the closest equivalents of their own language. These pronunciation habits were adopted by the neighboring Finnic population — often perhaps because of the higher social prestige of the foreigners. Gradually the new pronunciation, with such minor modifications as the Finnic sound-system may have made necessary,[1] spread over the whole Proto-Finnic area. Thus we can say that the majority of the Proto-Finnic consonant changes are due to a Baltic or Germanic superstratum. It should be noted, however, that the changes caused by Germanic influence are by far more numerous than the changes due to the Baltic contacts.

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[1] In an interesting article, Kustaa Vilkuna has recently drawn attention to the old custom of taking hostages, which may have been an additional source of foreign influence. Returning hostages were of course bilingual, and being of the leading families may have had excellent opportunities of spreading foreign (Germanic) speech habits. See Vilkuna *Kihlakunta* in Virittäjä 1951 pp. 259—274.

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[1] Cf. *ht* instead of *ft* (from *pt*) above. Cf. also the preservation of Finnic *ks* and *ps*, which did not occur in Germanic. Germanic speakers may have substituted *hs* and *fs*, but Finnic speakers apparently were unable to pronounce such groups. Therefore *ks* and *ps* were preserved.