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Notes on Forest Nenets phonology

The basic vowel system

In his phonological analysis of Forest Nenets, Sammallahti (1974: 13) recognizes twelve vowel phonemes: five long vowels /ā ē ī ō ū/; five short vowels /a e i o u/; and two diphthongs /ae aɛ/ (throughout this presentation, I shall follow Sammallahti's practice and quote his phonemic transcriptions in slashes, and contrast them with my current phonemizations in italics). According to Ackerman & Salminen (2006), the Forest Nenets vowel system in stressed syllables comprises ten units: six long vowels *a ä e i o u*; four short vowels *ă ă̈ ĭ ŭ*; and no diphthongs at the phonological level. It can be immediately noticed that the differences are for the major part notational, at least when only stressed vowels are concerned: Sammallahti's /ā ē ī ō ū/ and /a i u/ are identical with *a e i o u* and *ă ĭ ŭ* in the other system. Sammallahti (1974: 14) himself points out that the remaining vowels, the short mid vowels /e o/ and the diphthongs /ae aɛ/, remain problematic. As discussed in more detail below, the current *ä ă̈* by and large correspond to Sammallahti's diphthongs, and while the short mid vowels have meanwhile been analyzed as allophones of *ĭ ŭ*, it may well turn out that they, i.e. *ĕ ŏ*, nevertheless exist as distinct, although marginal phonemes, emphasizing the exactness of Sammallahti's description of vowel contrasts in Forest Nenets.

The interpretation of vowel quantity

The interpretation of phonetically long vowels as unmarked full vowels and phonetically short vowels as marked is understandably a conventional and perhaps controversial decision. Insofar as the number of short vowels in the system is smaller than that of long vowels, there is good ground for such a description, and even if their number is the same, but two of the short vowels are highly marginal, which may well be the case in Forest Nenets, a similar argument can still be made. Furthermore, as far as their token frequency is concerned, long vowels are slightly more common in Forest Nenets, and also in view of the relationship between vowels in stressed and unstressed positions it makes sense to regard long vowels

Sámit, sánit, sátnehámit. Riepmočála Pekka Sammallahtii miessemánu 21. beaivve 2007.
Suomalais-Ugrilaisen Seuran Toimituksia = Mémoires de la Société Finno-Ougrienne 253.
Helsinki 2007. 349–372.

as unmarked. Consequently, Sammallahti's transcriptions more often lose than acquire diacritics when the current interpretation is assumed, typical examples being /kāńd'āna ʔapīm d'atāŋāta/ 'the hunter successfully shot the bear' (Sammallahti 1974: 67), now represented as *kanjana ăpäm jătaŋata*, and /mań tēn ńātam ḿiʔd'āt/ 'I gave lichen to the reindeer' (37) = *măny° ten° nyatam myĭqjat°*.

In the refined version of standard orthography used in the school dictionary (Barmich & Vello 1994, 2002) short vowels have been marked with a breve while long vowels generally remain unmarked in cases of minimal pairs, e.g. ‹пйна(сь)› [more exactly ‹пйнă(сь)›] 'вари́ться' = *pyĭnă-* vs ‹пинă(сь)› 'боя́ться *кого-чего-л.*, тру́сить *перед кем-чем-л.*' = *pyină-* (Barmich & Vello 2002: 110), and this practice is not an imitation of the respective Tundra Nenets lexicographic tradition, as the same pair is given as ‹пинă(сь)› vs ‹пӣнă(сь)› by Tereshchenko (1965: 465), expressing the opposite markedness relations, i.e. *pyinə-* vs *pyínə-*, in Tundra Nenets. Moreover, the macron has a function in Forest Nenets refined orthography, as it marks (bisyllabic) vowel sequences, e.g. ‹нēшаң› [= ‹нē”шаң›] 'не́нец; челове́к' = *nye°qsyaŋ* : nom.pl ‹нēшā”› [= ‹нē”шā”›] = *nye°qsya°q* (Barmich & Vello 2002: 82); the nom.pl form /ńēšaŋʔ/ recorded by Sammallahti (1974: 47) was probably created through a temporary analogy, and neither the extra length of the vowel sequence nor the pre-sibilant glottal is marked in the word /ńēšaŋ/ 'man, Nenets'.

The stress-based allophonic alternations and variations in vowel length are also easier to grasp if long vowels are regarded as unmarked; for instance, the second-syllable alternation interpreted as phonemic in the forms /čōńa/ 'fox' : gen.sg /čōńaŋ/ : dat.sg /čōńān/ : pros.sg /čōńāmana/ by Sammallahti (1974: 42) turns out to be phonetic, and the current phonemizations of the forms are then *tyonya* : *tyonyaŋ* : *tyonyan°* : *tyonyamăna*, with stress regularly on non-final odd and pre-schwa syllables. On the other hand, the fact that length contrast is neutralized in favour of the short vowels in monosyllabics may constitute an argument for regarding them instead of the long vowels as unmarked, and the relationship between *ä* and *ă̈*, discussed below, can be seen as pointing to the same conclusion. In any case, length is a distinctive feature of the vowels, and long vowels cannot be understood as, say, doubled short ones.

The actual contrast between stressed long and short vowels is generally very clear, and, as might be expected, there are only a handful of words for which Sammallahti (1974) may be said to have recorded vowel quantity inexactly. Often it is a case of temporary analogical levelling that must have occurred in the course of the elicitation process. For instance, while /viŋ/ 'tundra' (46) = *wĭŋ* is correct in the nominative singular, the shortness is here a product of monosyllabic shortening, and the polysyllabic word-forms have a long vowel, e.g. abl.sg /viŋkat/ should be /vīŋkat/ = *wiŋkăt°*. The negative verb (80) has a long

vowel in the general finite stem, e.g. subj.1sg /ńīt/ = *nyit°*, but in other forms the vowel is short so that, for example, the modal gerund should be /ńiš/ = *nyĭsy°* instead of /ńīš/, and the subordinative /ńipaˀj/ = *nyĭpăqj°* instead of /ńīpaˀj/ (91). Similarly, the connegative of 'leave' /kajˀ/ (83) which should be /kājˀ/ = *kaj°q* has probably been influenced by finite forms with /kad'a/ = *kăja*. Other forms with unexpected vowel quantity include /tajna/ 'then, after that' (130) = *taj°na*, the future stem of 'come' /tuˀt/- (71) = *tuqt-*, /tūˀš/ 'to burn (intr.)' (131) = *tŭqsy°*, /šaˀkaʟš/ 'to bite' (129) = *syaqkăłsy°*, /d'īńa/ 'glue' (13, 119) = *jĭmya*, /halaku/ 'wild animal, e.g. a bird' (120) = *xalaqku*, /punʟī/ 'knee' (28, 123) = *punłä*, and the postpositional series /ńīŋ/ 'to above, onto' : /ńīńa/ 'on, above' : /ńīt/ 'from above' : /ńīńńa/ 'along above' (94, 126) which more accurately have /i/ in the first syllable, i.e. *nyĭŋ* : *nyĭnya* : *nyĭt°* : *nyĭmnya*. The possibility of sporadic dialect differences is open in a couple of cases such as, perhaps, /tuˀt/-, /halaku/ and /punʟī/. Furthermore, the accusative singular forms of the personal pronouns /šaˀj/ : /šāˀt/ : /šāˀta/ (60) are apparently borrowed from the paradigm of 'face' (56; /šāˀj/ would be the exact phonemization of the phonetic record of the 1sg form) to replace the expected forms *syĭqj°* : *syĭqt°* : *syĭqta*.

The status of diphthongs

Sammallahti (1974: 18) presents sound arguments for not regarding the two diphthongs /ae aɛ/ in his description as vowel plus glide combinations. Argumentation can be taken further by assuming that the diphthongoid character is in itself a non-distinctive property and the diphthongs can be integrated into the vowel system among the other vowels which are not typically realized as diphthongs (although *e* in particular has diphthong-type allophones which have occasionally surfaced in transcriptions as "*ie*"). The current analysis involves two vowels *ä ă̈*, i.e. one longer and one shorter, which often correspond to Sammallahti's diphthongs, but there are also a number of discrepancies.

In most instances, /ae aɛ/ do not refer to separate phonemes but rather represent free variants of *ä*, and suggest therefore over-differentiation, e.g. /kaev/ 'side, edge' = *käw°* and /kaenŋāt/ 'I shall go' = *kän°ŋat°* as well as /haɛm/ 'eye' = *xäm°* and /d'ātaɛʟš/ 'to walk' = *jatäłsy°* (Sammallahti 1974: 14; cf. Janhunen 1975: 263). Sometimes, however, /ae/ is used for *ă̈*, e.g. /ŋaeva/ 'head' = *ŋă̈wa*, but most often *ă̈* is analyzed as the sequence /aj/, e.g. /tajva/ 'tail' = *tă̈wa*, which, contrary to Sammallahti's position (14), does not contrast with *ŋă̈wa* but actually rhymes with it. Furthermore, /aj/ occasionally represents *ä*, e.g. /kajš/ 'to leave, to go' = *käsy°* and /ŋajš/ 'to be' = *ŋäsy°* (Sammallahti 1974: 120, 126; for the inflection of irregular verbs, see Salminen 2001).

There are minimal pairs that display the contrast between *ă̈* and *ăj*, e.g. *pă̈* ‘stone, glass, bottle’ vs *păj*° ‘crooked, wry, skew’, and although their phonetic realizations are perplexingly similar, as was also witnessed by our colleague Michael Krauss who took part in a session dedicated to such intricacies with Inna Vello in Leningrad in 1990, the phonological structures are fundamentally different. Nevertheless the most common representation of *ă̈* in the orthography is likewise ‹ай›, although Turutina (2003) employs the spelling ‹эй› instead (and I will be using ‹äй› as a refined spelling). The basic reason for regarding the vowel in question as the short counterpart of *ä* rather than any sort of diphthong comes from its regular alternations with long *ä*, which is also often pronounced like a diphthong, but less obviously so than the short vowel. The pattern *pă̈* : poss. 2sg *päł*° is unmistakably parallel to what is found among other vowels, e.g. *jă* ‘place, earth’ : *jał*°, *syĭ* ‘hole’ : *syił*° or *nyŭ* ‘(own) child’ : *nyuł*°. There is a difference, however, in that *ă̈* generally occurs when there is a full vowel in the following syllable, e.g. poss. 2sg *pă̈ta* in contrast with *jata*, *syita* or *nyuta*, and *ä* is largely confined to pre-schwa positions as explained below. The contrast that actually exists between *ă̈* and *ä* is therefore minimal and non-absolute, and comes from the analogical spread of *ä* to positions where the following vowel is *ă*, cf. the analogical dat.sg form *käwăn*° (instead of *kă̈wăn*°) of *käw*° ‘side’ vs the regular forms *tă̈wăsy*° ‘to reach, to arrive’ : refl.3sg *tă̈wăj*°*q*. This state of affairs has apparently come about because the verbal paradigm simply contains fewer forms with the schwa in the second syllable than the nominal paradigm, and while the analogical *täwăsy*° (instead of *tă̈wăsy*°) may also occur, it is decidedly less common.

Despite the minimality of their contrast, *ă̈* and *ä* are, as a rule, kept separate in the orthography, the long *ä* being written as ‹ӛ› (or as ‹ä› by Yuriy Vella consistently and by Mariya Savel’evna Prikhod’ko variably). Vozhakova (1997) in her mini-dictionary, based on the westernmost dialects of Forest Nenets, does not use ‹ӛ› but her work lacks diacritic marks in general, including most cases of ‹ё› for *yo*, and there is no doubt that the contrast between *ä* and *e* is well maintained in all dialects.

The status of short mid vowels

Sammallahti (1974: 14) observes that “the short monophthongs /o/ and /e/ seem to occur exclusively in monosyllabics” and gives as examples /čeŋ/ ‘yesterday’, /kem/ ‘blood’, /heʟ/ ‘salt’ and /d'oʟ/ ‘hundred’ (14–15). In the vocabulary there are also monosyllabic vowel stems, viz /ńe/ ‘woman’ (125), /še/ ‘tongue’ (129), /šo/ ‘throat’ (130) and /to/ ‘lake’ (131), as well as one more monosyllabic consonant stem /d'oʟ/ ‘grease’ (119), a homonym of ‘hundred’. The short mid

vowels always alternate with the respective long vowels in polysyllabic forms, e.g. /kem/ : /kēma^{ʔ}/ ‘our blood’, which means that they are confined to a small number of word-forms in the nominal paradigm and only to the connegative in the verbal paradigm; the adverb /čeŋ/ may be regarded as a petrified genitive and its relationship to the adjective /čēj/ is transparent. For the vowel stems in particular, it is easy to find minimal pairs such as /še/ vs /ši/ ‘hole’ (not attested by Sammallahti) and /to/ vs /tu/ ‘fire’ (131), and for consonant stems, /kem/ vs /ńim/ (15) ‘name’ constitutes an adequate sub-minimal pair.

Nevertheless, in the course of my earlier fieldwork sessions, and also through contrasting Sammallahti’s data with other sources, I came to the conclusion that the contrast between the short mid and high vowels was illusory and merely based on their morphophonological alternations, and started phonemizing them identically, e.g. *tŭ* ‘lake’ : poss. 3sg *tota* vs *tŭ* ‘fire’ : poss. 3sg *tŭta*. In the refined orthography, while there are striking similarities to Sammallahti’s records, e.g. ‹чӗӈ› (Barmich & Vello 2002: 144) = /čeŋ/, there are also signs of merger, for instance the word for ‘price, merchandise’, which would be /ńeʟ/ if recorded by Sammallahti, is spelled both as ‹мӗл› and ‹мил› by Barmich & Vello (2002: 67, 68). Even in Sammallahti (1974), the word for ‘one’ is given as /ŋup/ ~ /ŋōp/, with speculation about a Tundra Nenets origin for the latter (66), but /ŋōp/ = *ŋop*° is rather the accusative and genitive form of the word, which, like secondary vowel stems in general, can analogically replace the consonant stem, which in this case would rather appear as */ŋop/ = *ŋŏp* if there were a contrast between short mid and high vowels. Also, when mid vowels are sporadically and positionally shortened in polysyllabic words, the result seems to be unequivocally a high vowel, e.g. *ŋoqka* ‘many’ > *ŋŭqka*, or *kŭj°qku* ‘birch’ and *wĭj°qku* ‘dog’ which derive from stems with the first-syllable vowels *o and *e, respectively.

There are further indications of the merger of short mid and high vowels in many sources, for instance, Castrén already recorded variants with high vowels for words such as (Castrén & Lehtisalo 1960; here written with the current phonemizations) *ŋŏ* ‘Farbe’ (268), *ŋŏ* ‘Insel’ (268), *jĕ* ‘Ferse’ (271), *mŏ* ‘Ast’ (280), *pŏ* ‘Jahr’ (287), *syĕ* ‘Zunge’ (292) and *syŏ* ‘Kehle’ (293; cf. Salminen 2003: 269). Vozhakova (1997) likewise writes ‹ни› for both ‘female’ and ‘belt’ (3, 6), which in the case of a contrast would be *nyĕ* vs *nyĭ*, as well as ‹щи› for both ‘tongue’ and ‘hole’ (4), which would be *syĕ* vs *syĭ*, and Prikhod’ko (2000) presents a number of similar forms. On the other hand, Kaur Mägi (personal communication) reports on the basis of fieldwork both in Num-To and Agan regions that while the vowels in forms like *nyĕ* and *syĕ* often show high allophones, they nevertheless have the option of being pronounced more openly, while *nyĭ* and *syĭ* would only have high vowels as their exponents, manifesting an extant even if marginal contrast. All in all, I am now, after working recently with three Forest Nenets

speakers from the Pur region, inclined to revise my earlier position, and include the short mid vowels, with appropriate comments on their phonotactic restrictions, in the overall vowel system in stressed syllables, and even if it turned out that in some Forest Nenets dialects there were absolutely no contrast, it would still make sense to incorporate the uncontested morphophonological distinction in the transcription.

The picture is further complicated by an apparently allophonic process concerning the short high vowels. It happens that they are pronounced with a notably lower quality before a schwa in the following syllable, i.e. they appear as mid vowels, with some reduction and centralization, and this is abundantly recorded by Lehtisalo (1956) especially for the speakers from the Pur region. In the school dictionary (Barmich & Vello 1994, 2002) it is common to encounter spellings like ‹дёсна› ‘ring’ = *jŭs°na* and ‹ше’т› ‘you’ acc. = *syĭqt°*. Even more curiously, at least according to Barmich & Vello (2002), the mid vowel can analogically spread to other positions, creating a potential for a phonemic split, e.g. ‹дёлдкаш› ‘get up’ = *jŭłkăsy°* and ‹ше’та› ‘her, him’ = *syĭqta*. On the basis of the variations in the spellings, however, it seems that the phenomenon as a whole remains on a phonetic level and it is better to keep it separate from the question of short mid vowels in monosyllabics. This position gained further support in recent fieldwork sessions.

The system of unstressed vowels

The vowel system in unstressed syllables is currently understood to be notably different from the system of stressed vowels. According to Ackerman & Salminen (2006), it only includes three full vowels *a i u* and a specific schwa phoneme ° whose phonetic exponents are mostly suprasegmental, as discussed below. It appears, indeed, that Sammallahti (1974) has occasionally interpreted free variants of the full vowels in unstressed positions as contrastive units, but this is not an implausible conclusion in the light of the data available to him. Most crucially, there is no contrast between unstressed /u/ and /ū/ as far as I can tell, and morphologically defined minimal pairs of the type nom.sg /ŋamiˀku/ ‘product’ vs acc.pl /ŋamiˀkū/ (Sammallahti 1974: 20) are therefore not valid, but both would now be phonemized as *ŋămäqku*, with free variation in the quantity of the final vowel.

It also seems that there is no contrast between unstressed /i/ and /ī/, but here Sammallahti’s (1974) records rather support my recent contention that at least in some (eastern) dialects, there is a fourth contrasting full vowel, i.e. *ä*, in unstressed syllables. Sammallahti only rarely records an unstressed /aɛ/, but his transcription of one example, /ŋaˀšaˀkaɛˀ/ ‘child’ nom.pl on page 14, corresponds

in every detail to its current phonemization *ŋăqsy°qkäq*. The nom.sg of the same word on page 127 is given as /ŋaˀšaˀkī/ but the exact quality of the final vowel is a matter of free variation here, yielding *ŋăqsy°qkä*. The point is that Sammallahti often transcribes /ī/ for *ä*, while /i/ is typically reserved for *i* in relevant cases, e.g. /ŋīd'i/ (misprinted as */ŋīdi/) = *ŋiji* 'another' (14), and his phonetic records, showing diphthongoid exponents of the unstressed *ä*, are even more pertinent (while the reference to Russian influence on pages 16–17 is not relevant).

Lehtisalo's (1956) records from the Forest Nenets from the Pur (P) and to a certain extent from the Sakhalinskaya (S) as well as those by Verbov (1973) from the Agan are, now that recent fieldwork has opened my eyes, actually quite clear about there being a contrast between unstressed *ä* and *i*, although minimal pairs in the strict sense are not present. This is due to the marginal nature of the contrast to start with: since *ä* only occurs in non-palatal syllables (which, besides the obvious morphophonological relationship, is, indeed, an argument for identifying it with the stressed *ä*, which exhibits the same phonotactic restriction) and since unstressed *i* triggers metaphony in the preceding stressed vowel, truly contrastive positions can only be found when there is a high vowel in the preceding syllable or when the vowel is in an odd final syllable and therefore preceded by another unstressed syllable. Nevertheless, since Lehtisalo has a short diphthong very much like the exponents of stressed *ă̈* in (now) predictable places (and the shortness of the vowel accords with the allophonic variation in unstressed positions in general), the contrast must be considered well documented by him, cf., for instance, (142b) *julpä* 'Rost, Schimmel' and (320a) *nyensatä* 'feiste Renntierkuh, die im Jahr vorher nicht getragen hat', and contrast them with wordforms such as (478a) *tiqti* 'jüngere Frau' or (66b) *winsapti* 'er ist rauflustig'.

The addition of an unstressed *ä* to the phonological description obviously simplifies the morphophonology, because there is no longer need to posit an alternation with stressed *ä*, which is found, for example, in the 2sg possessive forms such as *julpäl°* and *nyensatäl°*, cf. above. It also solves the apparent problem that before *x* there often occur markedly low and diphthongoid allophones, which would be difficult to assign to *i*. Also, the palatalization of velars at the onset of unstressed syllables turns out to be a mere phonetic effect of unstressed *ä*, which makes one more morphophonological alternation obsolete. At the same time it must be noted that for most Forest Nenets speakers interviewed by Lehtisalo there is little indication of a contrast between unstressed *ä* and *i*, and Barmich & Vello (1993, 1994, 2002) spell both as ‹ы›, the only exception being the position before *x*. On the other hand, Prikhod'ko (2000) clearly tries to make a distinction between unstessed *ä* and *i* by writing them respectively as ‹ъй› and ‹ы›, but her notation is, unfortunately, not quite consistent. In any case, since the records by Lehtisalo and Sammallahti, as well as those by Verbov (1973), and the

results of recent fieldwork point to a contrast, I shall keep *ä* and *i* separate in unstressed positions, and even if this constitutes etymologizing over-differentiation for some dialects it is nevertheless better than any kind of under-differentiation. For spelling unstressed *ä* in the orthography I shall have to resort to diacritics, viz ‹ӹ› and (after velars) ‹ӥ› rather than ‹ӛ› used for the stressed *ä*, in order to retain the normal spelling system without sacrificing phonological information.

The length of *a* in a word-internal unstressed open syllable varies considerably, both in individual speech and among speakers. Sammallahti's (1974) basic choice for the vowel is /ā/, e.g. /ŋamāta/ (114) 'he ate it' = *ŋămata*, and exceptions are scarce, notably /sālapa/ 'slippery' (129) = *salapa*, which further appears to be a variant, either archaic or influenced by Tundra Nenets, of *xalapa* 'glattes Eis (im Herbst)' (Lehtisalo 1956: 403b), as well as /maʟaka/ 'raw cloudberry' (14, 123) = *măłaka*, but at least some of its phonetic records clearly point to a regular phonemization, which would be /maʟāka/. Before a consonant cluster, an unstressed *a* is normally represented by /a/ in Sammallahti (1974), yielding alternations of the type found in the possessive forms of *nyesya* 'father' on page 52, e.g. gen.sg1pl /ńēšāna^{ʔ}/ = *nyesyanaq* : 2pl /ńēšanta^{ʔ}/ = *nyesyantaq*, which are phonologically unmotivated but make perhaps sense phonetically; exceptions to the normal pattern are few, e.g. /šānāʾkōš/ 'to play' (129) = *syanaqkosy*°. By contrast, neither the phonetic records nor the phonemizations of cases where the second syllable is stressed because of a following schwa, e.g. 2sg /ńēšant/ = *nyesyant*°, /tōŋāmaʾš/ (72) = *toŋamaqsy*° 'come' pret. 1pl, or /ńēd'aŋk/ 'mosquito' (22), seem to correspond to actual pronunciation, as *a* is consistently pronounced long in this context, and /ńēšānt/, /tōŋāmāʾš/ and /ńēd'āŋk/ would have been the more exact phonemizations of the above word-forms; similarly, the personal pronoun forms /ńāŋant/ and /ńānant/ (60–61) do not rhyme, but the latter has a long *a* in the second syllable. Sammallahti occasionally leaves out the glottal after an unstressed vowel, but the presence of a consonant cluster is still reflected in the representation of *a* by /a/, e.g. /halaku/ 'wild animal, e.g. a bird' (120) = *xalaqku* (the short vowel in the first syllable indicated by Sammallahti is possibly found in the dialect in question, cf. above), /hēlaku/ 'light, pale' (120) = *xelaqku*, /ŋōtaku/ 'way' (127) = *ŋotaqku*, /vēd'aku/ 'dog' (131) = *wejaqku*. Genuine confusion arises when the schwa is recorded in exactly the same way, e.g. /paɛšaku/ 'round (adj)' (128) = *päsy°qku*, but Sammallahti's phonetic records actually retain the distinction well, so it is only a matter of phonological interpretation. A short vowel is sometimes recorded in the presence of the glottal not only for *a*, e.g. /kēmčaʾkī/ 'red' (97, 121) = *kemtyaqkä*, but also for unstressed *ä*, discussed above, e.g. /ŋamiʾku/ 'product; burden' (126) = *ŋămäqku*.

The unstressed *u*, now understood to be phonemically uniform, is also subject to length variations, /ū/ appearing in open internal syllables and in final

syllables of bisyllabic words, e.g. /ˀulūŋa/ ‘sucks (of a baby)’ (117) = *ŭluŋa*, /hāŋūpī/ ‘rotten’ (120) = *xaŋupä*, /d'īkū/ ‘is not’ (119) = *jiku*, /hāʟū/ ‘rain’ (120) = *xałyu*, /pitūŋ/ ‘they (pl)’ (128) = *pĭtuŋ*, and /u/ in closed internal syllables and in final syllables of trisyllabic words, e.g. /ʟaŋkuʟta/ ‘Leuciscus idus (a fish)’ (123), which should apparently read /ʟaŋkuʟka/ = *łăŋkułka*, /d'ēˀkuša/ ‘pine’ (119) = *jeqkuqsya*, /tajˀkuša/ ‘birch bark’ (130) = *tăqkuqsya*, /hāʟńu/ ‘egg’ (120) = *xały°qnyu*, /vaɛˀku/ ‘husband’ (131) = *wä°qku*, /taŋīču/ ‘summer’ (130) = *tăngätyu*, where in many cases the syllabic structure is not immediately evident in Sammallahti’s phonemizations, although the length of the vowel is quite consistent. Exceptions are rare, e.g. /hēʟūˀtāš/ ‘to salt’ (120) = *xełuqtasy°*, /kānūnta/ in the compound /tīkānūnta/ ‘wolf’ (130; the meaning is given there as ‘bear’) = *kanunta*, and /pānču/ ‘full’ (27; with a question-mark), which is an anomalous formation for what should be /pānati/ = *pan°ti*, apparently based on the connegative *pan°tyuq* or somehow related to the analogical variants of *pan°ti*, viz *pan°tyo°* and *pan°tyoŋa*, known from other dialects (cf. Salminen 2003: 270).

There are a number of inexact phonemizations of non-initial vowels, both stressed and unstressed, for which the phonetic records are actually suggestive of the correct analysis, for instance, there are two types of (at least historical) augmentatives, ending in *-yeqj°* and *-jaqj°*, e.g. *kontyeqj°* ‘ptarmigan’ and *kŭłijaqj°* ‘raven’, and while Sammallahti has generalized a phonemic form that is incorrect for both, e.g. /kōńčaˀj/ (122; should read /kōńčēˀj/) and /kuʟīd'aˀj/ (122; should read /kuʟīd'āˀj/), the phonetic transcriptions of the words are immaculate. Similarly, the paradigm of the reflexive pronoun shows a unified *i* where there is actual stress-based variation between *e* and *i*, e.g. 1sg /kaʟiˀn/ (should read /kaʟēˀn/) : 3sg /kaʟiˀta/ (62) = *kăłyeqn°* : *kăłyiqta*, and again, though only in the 1st person forms, the vowel quality is shown properly in the phonetic records.

After palatal consonants, unstressed *a* is often realized as a mid vowel, and phonemizations such as /tiʟēˀpʹīˀ/ ‘they are beating’ (51) = *tĭłyaqpyiq* or /vāčēˀtam/ ‘I shall tell’ (103) = *watyaqtăm°(q)* are therefore to be anticipated. In stressed positions the vowel is typically pronounced low, and /tiʟēˀš/ ‘to hit, to beat’ (98, 130) = *tĭłyaqsy°* and /vāčēˀš/ ‘to tell, to relate’ (131) = *watyaqsy°* are more surprising and likely due to temporary analogical influence from the above mentioned forms.

Since *e* and *o* only occur in stressed syllables, they alternate with *i* and *u*, which are present in their stead in unstressed positions, e.g. *ŋănu* ‘boat’ : poss. 1sg *ŋănoj°* : 3sg *ŋănuta*, and *wejaqku* ‘dog’ : poss. 1sg *wejaqkoj°* : 3sg *wejaqkota*, with stress regularly on non-final odd and pre-schwa syllables. The phonetic range of unstressed vowels is understandably wide, and Sammallahti (1974) has consequently phonemized mid vowels in unstressed positions in a number of cases, e.g. /ŋamōʟtī/ ‘he will have his meal’ (112) = *ŋămułtĭ°*, and

/manaˀpʹōˀ/ ‘bake’ conneg. (110) = *măn°qpyuq*, undoubtedly influenced by word-forms with stressed *o* such as the modal gerunds *ŋămołsy°* and *măn°qpyosy°*. The opposite phonemization of /šātūˀš/ ‘to be pretty’ (98, 129) = *syatoqsy°* is similar in that its paradigm contains many forms with *u*, e.g. 3sg *syatuqnga* and the imperfective participle *syatuqta*.

The role of the schwa

There is no distinct schwa in Sammallahti’s (1974) system, but he has very consistently recorded the current opposition of *a* : ° as that of /ā/ : /a/ word-internally, which captures the highly marginal contrast and the close phonological relation between *ă* and ° in an illustrative manner, e.g. /d'atapī/ ‘swan’ (119) = *jăt°pä*, /manaˀpʹōš/ (misprinted as /manaˀpʹōs/) ‘to be kneading, baking’ (123) = *măn°qpyosy°* (durative of *mănăqsy°*), /mansaʟāš/ ‘to work’ (124) = *măns°łasy°*. His discussions on the phonetic effects of what is now understood as schwa (19–20, 25) are very instructive and confirm how precisely he heard and recorded its most crucial but often neglected contrast, which is with zero. The schwa in both Nenets languages is essentially a syllabicity marker, so that Forest Nenets *tămna* ‘still’ ~ Tundra Nenets *təmna* id. contain two syllables and Forest Nenets *pom°na* ‘among’ ~ Tundra Nenets *pom°na* id. three syllables. Its phonetic exponents are largely suprasegmental, so that a single pre-schwa consonant is notably longer than a syllable-final consonant, and a single post-schwa consonant is often pronounced longer as well, quite like any intervocalic consonants, which lends support to the idea that the schwa is, indeed, a real (but obviously not full) vowel. The schwa also blocks the spread of palatality to the preceding consonant, while phonemic sequences such as *lpy* or *nsy* are phonetically palatalized throughout. A syllable-final consonant, unlike a consonant followed by a schwa, is in many cases accompanied by glottal closure, which is not usually transcribed by Sammallahti but is quite consistently by Lehtisalo (1956), and further analysed by Marosán (1983). A telling example of a schwa in a context where the surrounding consonants could also form a cluster is /ˀil'apʹi/ ‘bear’ = *ĭly°pyi* which is transcribed twice by Sammallahti (1974), first on page 23 actually with an over-short vowel between *ly* and *py* as well as both of the consonants being marked long, and then on page 117 without any vowel character but with identical length marking. Lehtisalo (1956) records a conspicuous sub-minimal pair between *ĭly°pyi* (32b) and *xĭlpyiqk°* ‘Lassoknochen, der zwei Löcher hat’ (422b) where the lateral in the *ly°py* sequence is marked half-long while glottal friction is recorded between the components of the *lpy* cluster (where the short geminate as the exponent of *py* is characteristic of lateral–stop clusters); in the Pur record

of *ĭly°pyi* the initial vowel is also marked as being reduced, which is a typical effect of a following schwa. One of the salient features of the schwa is that it makes the preceding syllable stressed, which explains why the mid vowels *e o* can occur in positions such as dat.sg /vēd'akōn/ = *wejaqkon°* of /vēd'aku/ = *wejaqku* 'dog' (Sammallahti 1974: 47), and Sammallahti's comment that "closed final syllables receive secondary stress as a rule" (29) refers exactly to this state of affairs, the exception to the rule being, of course, the actual closed final syllables involving no schwa, e.g. gen.sg /vēd'akuŋ/ = *wejaqkuŋ*.

Since the schwa is equivalent to syllabicity, phonological and morphophonological processes dependent on the number of syllables reveal its presence nicely. For instance, the imperfective participle of *pan°tyosy°* 'to be full' is *pan°tyota* because *tyo* is the third syllable of a tetrasyllabic word and therefore stressed; cf. *ŋamtyosy°* 'to sit' : *ŋamtyuta*. The schwa is also reflected in the non-palatality, or even velarization, of the nasal (cf. Sammallahti 1974: 25; Sammallahti's discussion of the underlying representation of *pan°tyo-* on pages 96 and 135 shows substantial insight). The selection of certain suffix allomorphs is sensitive to the number of syllables in the base, for instance the durative suffix is *-mpyo-* after an odd number of syllables and *-pyo-* after an even number, e.g. *ta-* 'bring' ⇒ *tampyo-* vs *kata-* 'kill' ⇒ *katapyo-* vs *kamata-* 'prepare, understand' ⇒ *kamatampyo-* as well as *tonta-* 'cover' ⇒ *tontapyo-* vs *pan°ta-* 'fill' ⇒ *pan°tampyo-*. The same words show the effect of metaphony in stressed syllables in their obj.sg3sg forms, i.e. *katapyita* vs *kamatimpita* as well as *tontapyita* vs *pan°timpita*.

Zero is often, and sensibly, Sammallahti's (1974) phonemization for the schwa between consonants that cannot form a cluster, which also covers all cases where there is a cluster preceding or following a schwa, e.g. /haɛmhana/ 'eye' loc.sg (26) = *xäm°xăna*, /ńāńta/ 'bread' poss.sg2sg (114) = *nyany°ta*, /šēˀmna/ 'heavy' (129) = *syeqm°na*. He also shows variation in the suprasegmental exponents of the schwa, and has consequently, even if from the current perspective unnecessarily, phonemized the phonetic variants differently in the case of the 1pl possessive ablative form of 'father' /ńēšāhatnaˀ/ ~ /ńēšāhatanaˀ/ = *nyesyaxăt°naq* (54). In a few cases, however, /a/ is missing where it should be present to mark the schwa, e.g. /hāʟńu/ 'egg' (120) = *xały°qnyu* (where the glottal is also missing, perhaps because of a recent sound change, but *u* is nevertheless conspicuously short, cf. above), /ŋiʟna/ 'underneath' (26) = *ŋiľ°na*, /tēmna/ 'reindeer' pros.sg (43) = *tem°na*, /ṕāmna/ 'tree' pros.sg (27) = *pyam°na*, /topd'ama/ 'tanned skin' (26) = *top°jăma*, of which the last two, it must be noted, appear with a question-mark.

In a small number of cases, Sammallahti (1974) shows a hypercorrect /a/ for a schwa where there actually is a consonant cluster, viz /hapašamš/ 'to spit' (120) which is an otherwise unknown and perhaps temporary derivative of *xăpsyă-*

‘spit’, /kupatī/ ‘old’ (122; cf. also page 19) = *kŭptä*, a derivative of the adverbal stem /kuptā/- = *kŭpta*-, recorded by Sammallahti on the same pages, /panaša^{ʔ}j/ ‘louse’ (128; should read /pańšē^{ʔ}j/) = *pănsyeqj*°, which is given as /panša^{ʔ}j/ on page 26, but the lack of palatality on /n/ would nevertheless indicate the presence of a schwa, and, on several pages starting from 107, /mānaštu/ ‘he said’ = *mansy*°*qtu*, a habitive form of *man*- ‘say’. Furthermore, in the forms /ńēʟt/ ‘from in front of’ (125) = *nyełăt*° and /ŋiʟt/ ‘from under’ (127) = *ŋĭłăt*° some kind of a morphological levelling factor has caused the deletion of the stem-final vowel, cf. *ŋił*°*na* above.

In the final syllable, *a* is usually marked as /a/ and the schwa as zero by Sammallahti (1974). This practice, also followed in the orthography, is close to the phonetic representation, but it eliminates the contrast between zero and the schwa, e.g. /taʟ/ ‘hair, feather’ (130) = ‹тал› = *tăł* vs /kaʟ/ ‘knife’ (120) = ‹кал› = *kăł*°, where the final consonant is accompanied by glottal closure while the pre-schwa consonant is pronounced longer, although the phonetic difference is not as forceful as in similar cases in Tundra Nenets (cf. Salminen 1997: 31–32). Final *a* appears as /ā/ only exceptionally, as an analogy to related forms, e.g. /kuptāŋ/ ‘to the distance’ (123) = *kŭptaŋ*, but on page 19 we find the expected /kuptaŋ/ accompanied by a different phonetic record, and /čahāŋ/ ‘to there’ (94, 117), on the other hand, is created by phonetic metathesis, discussed below.

Phonetic vowel harmony and metathesis

Both *a* and *ă* as well as the schwa are subject to qualitative assimilation to the preceding stressed vowel when the intervocalic consonant is *x* (or more rarely *q*), and this effect is occasionally reflected in Sammallahti (1974), e.g. 1sg adhortative of the negative verb /ńīhīt/ (85) = *nyĭxăt*°, the same form of ‘come’ /tōhāt/ ~ /tōhōt/ (84) = *toxăt*°, and /šēhēʟī/ ‘path’ (129) = *syexałä*. There are contrasting cases with identical vowels around *x*, e.g. *toxo*- ‘learn’ and its derivative /tōhōʟkōš/ ‘to learn’ (131), which would now be phonemized as *toxułkosy*°. There is, further, a tendency to swap around the vowel qualities across of *x*, and although the effects may seem dramatic, e.g. /kahaɛńa^{ʔ}/ 1pl adhortative of ‘leave’ (85) = *käx*°*myaq*, and /kahaɛ/ ‘idol (made of wood)’ (120) = *käx*°, it is a question of a shallow phonetic effect, as witnessed by the variation commonly found in such cases, e.g. /ŋamīhana/ ~ /ŋamahaɛna/ ‘what’ loc.sg (64; cf. also page 19) = *ŋămäxăna* or /kuʾkīhaʟt/ ~ /kuʾkahaɛʟt/ ‘nobody’ (122) = *kŭqkäxăłt*°. For most instances of *ă* and the schwa following *x* Sammallahti has insightfully phonemized /a/, e.g. on page 43 loc.sg and abl.sg of ‘reindeer’ are given as /tēhana/ = *tex*°*na* and /tēhat/ = *texăt*°, both accompanied by two phonetic tran-

scriptions, one without and the other with harmony. Vowel harmony is usually represented in the standard orthography, e.g. *syexałä* is spelled ‹шехеӆы›, *noxa* ‘Arctic fox’ ‹нохо›, and *tox°na* ‘lake’ loc.sg ‹тохона› (Barmich & Vello 1994, 2002), but this practice has apparently been copied from the Tundra Nenets literary tradition (in which the phonological status of vowel harmony is similar, cf. Salminen 1997: 33–34), and the Forest Nenets I have worked with automatically spell ‹нохa› etc., and in slow speech the effects of the vowel harmony are typically weaker.

The basic consonant system

Sammallahti (1974: 21) describes a consonant system consisting of thirty units, although /x/ is missing from the table because of an apparent misprint and /ʾp ʾs/ are unattested by him, which is, as he correctly suggests (24), a random consequence of limited data. Ackerman & Salminen (2006) recognize twenty-four consonant phonemes in Forest Nenets, which is also my current and rather firm view, and there is no essential change from Salminen (1990: 349). Again, the differences between the systems are largely transparent, and only in a very small number of instances can it be said that Sammallahti has under- or over-differentiated phonological contrasts. The five nasals /m ḿ n ń ŋ/ are the same in both systems but, with palatality (which is suprasegmental, in the sense that the frontness–backness of the following vowel depends on it, and it can also spread to the first member of a consonant cluster) marked with an upsilon and the velar nasal with a letter eng rather than an eta, they are now written as *m my n ny ŋ*; the glottal stop /ʔ/ is rendered as *q* (and eliminated as non-contrastive from initial positions); of the two series of seven (non-glottal) obstruents, the plain /p ṕ t č k s š/ and the preaspirated /ʾp ʾṕ ʾt ʾč ʾk ʾs ʾš/, the members of the latter are now understood as bi-phonemic, so that the current analysis is content with a single series *p py t ty k s sy*; of the five liquids /ʟ Ĺ l l' r/ the tremulant occurs only marginally in recent loanwords, so the core liquid system includes fricolaterals and laterals, and can be given as *ł ły l ly*; among the remaining phonemes described by Sammallahti, viz /v v́ j d' x/, the relationship between the palatal glide /j/ and the voiced palatal stop /d'/ is, as already indicated by him (and confirmed by Csepregi 1976: 182 and Janhunen 1975: 263), allophonic, yielding four glides or spirants *w wy j x* in the current system; and, finally, a series of palatalized velars *ŋy ky xy*, which is now known to be contrastive, is strictly speaking absent from Sammallahti’s description although his discussion of the phonetic realizations of velars (16–17) clearly anticipates the current view, even if his tentative historical explanation cannot be regarded as valid (Janhunen 1975: 264).

It is true that the most typical realizations of *ty sy* are not only palatal but also "hushing" and, in the case of *ty*, affricated, which makes it understandable why Sammallahti chose to write them as /č š/. Their orthographic representations are likewise ‹ч ш›, although some writers use ‹щ› for /š/ to avoid the non-palatal connotation of Russian ‹ш›. Their most salient feature is in any case palatality, and this is also implied by morphophonological alternations such as *wyǐq* 'water' : acc.sg *wyǐt*° : acc.pl *wyǐtyi*.

Glottal sounds and preaspiration

In Forest Nenets, there is one glottal phoneme, in phonological transcription *q*, which is quite clearly segmental, e.g. *myǎq* 'tent' : *myaqmaq* 'our tent' : *myaqtuŋ* 'their tent'. There are two allophones that occur in complementary distribution: the realization is a glottal stop in all other contexts except before an obstruent, where it appears as a glottal fricative; before sibilants, e.g. *myaqsamä* 'having a tent', free variation between the allophones can be observed. Sammallahti's argument for treating glottal–obstruent clusters such as *qt* as preaspirated obstruents is that "the quantity proportions of the phonetic segments in the realization of e.g. /ʔt/ do not resemble the quantity proportions of clusters in general" (Sammallahti 1974: 24–25; cf. Janhunen 1975: 263). There is, however, no single pattern of quantity proportions typical of clusters, which means that the quantity of consonants in clusters cannot be uniformly described even when glottal–obstruent clusters are excluded, and even if such a generalization could be made, there would be no absolute reason not to provide an exception for them. Phonetic data from Lehtisalo (1956) and to some extent from Sammallahti himself shows that the quantitative exponents under scrutiny are variable, and often not indistinguishable from (other) clusters. Furthermore, the description of morphophonology is obviously simplified and the discussion on sandhi (Sammallahti 1974: 31–32) becomes a moot point insofar as preaspiration is recognized as segmental.

In the nascent Forest Nenets literary language, there was an initial tendency to record the glottal phoneme as ‹'› before an obstruent and ‹"› in other contexts, thus following the allophonic pattern and imitating the functionally unrelated orthographic dichotomy in Tundra Nenets. This was especially the case in the school dictionary (Barmich & Vello 1994), which shared many features with its Tundra Nenets predecessors, while both the school primer (Barmich & Vello 1993) and the second edition of the school dictionary (Barmich & Vello 2002) as well as the texts by other authors are largely content with the single letter ‹"› for the glottal phoneme regardless of its phonetic manifestations. The glottal phoneme, irrespective of the allophone in question, is not quite consistently

written in the orthography, which must be due to its phonetic characteristics as well as its alien status with regard to the Russian alphabet. Sammallahti (1974), by contrast, records the glottal after a stressed syllables very exactly, with an occasional exception such as /ŕēk/ ‘the front part of the neck’ (131) = *wyeqk°*; examples of the glottal being reflected in the length of unstressed vowels have been presented above.

Helgason (2002: 24, 27, 32–33) discusses preaspiration in Forest Nenets, mainly on the basis of Gunnar Ólafur Hansson’s M.A. thesis “Aldur og útbreiðsla aðblásturs í tungumálum Norðvestur-Evrópu” (University of Iceland 1997), and comes to the conclusion that it is a (suprasegmental) feature rather than a segment, akin to what is found in western Scandinavian. Marosán (1983) is referred to as one of their sources, and while Marosán talks about preaspiration, his analysis is essentially correct and unambiguous when it comes to the allophonic relationship between the glottal fricative and the glottal stop, which is, however, not incorporated in Helgason’s analysis. Helgason (2002: 27) further paraphrases Hansson, who argues that since authors like Lehtisalo, competent in Finnish, “would have analysed the pre-occlusive aspiration as /h/, like they would in Finnish” if Finnish and Forest Nenets were in this respect similar. Such a claim is, however, anachronistic: Lehtisalo never attempted a phonological analysis of Forest Nenets, and if he had written Finnish phonetically according to the same principles he employed for Nenets, the transcriptions might well have looked the same in this respect. The obvious difference between Finnish and Forest Nenets is in the distribution of the glottal fricative, which is of paramount importance to Hansson and Helgason, but since they have missed the point of Marosán’s analysis and have not quoted Sammallahti (1974) at all, they end up with a misleading interpretation of the phonological status of preaspiration in Forest Nenets.

Phonetic obstruent contraction

Two obstruents, although separated by a schwa, may contract to a sequence with initial glottal friction, so that *-t°t-* is pronounced quite like *-qt-*. For example, Sammallahti (1974: 27) records /ńāmʾta/ ‘its edge’ for what I phonemize as *nyamt°ta* (poss. 3sg of *nyamt°*, which originally meant only ‘horn, antler’ but has in some dialects replaced *nyant°* ‘blade, edge’). Lehtisalo (1956: 307a) shows the same contraction, and there are many other similar forms in his dictionary. Further, Barmich & Vello (2002: 88) have ‹нямʼта› ‘о́стрый, остроконе́чный’ and also ‹мы”та› ‘нали́м’ = *mĭt°ta*, for which Lehtisalo (1956: 261b–262a), however, records no contraction. Sammallahti (1974: 54) shows variation in the possessive

ablative forms of ‘father’, e.g. 3sg /ńēšāhaˀta/ ~ /ńēšāhatata/ = *nyesyaxăt°ta*. The contraction is, indeed, basically optional and less typical of slow speech, and it does not seem to lead to any neutralizations. In particular, the number of syllables remains intact, so the phenomenon, interesting as it is, can be dealt with within the allophony of the initial obstruent in relevant sequences.

An excursion into morphology

According to Sammallahti (1974: 69), the aorist and future personal suffixes are not identical in three instances. First, he gives the 1sg subjective suffix as /t/ in the aorist and /t/ ~ /m/ in the future. The suffix with *m* (originally, it seems, *-m°q* but because of a recent sound change now mostly *-m°*) does, however, also occur in non-future forms, so that there are always two variants, e.g. *mănäq-* ‘see’ : *mănäqŋat°* ~ *mănäqm°*(*q*) : fut. *mănäqtăŋat°* ~ *mănäqtăm°*(*q*), although it happens that there are none of the type *mănäqm°*(*q*) in Sammallahti’s corpus. As a sidenote, the forms /manid'ēm/ = *mănäjem°*(*q*) and /manid'ēmaš/ = *mănäjemăqsy°* appear on page 77 misplaced in the objective conjugation. The *-m°*(*q*) ending is anomalous among personal suffixes because it is attached directly to the stem and not to a morphological substem such as *mănäqŋa-*, and, although quite common, it can hardly be understood as anything other than an unusual historical relic. Second, Sammallahti lists the 3sg and 3pl subjective suffixes as /ī/ and /ī^{ʔ}/ for the future tense, but, since the vowel in question is part of the morphological substem rather than the suffix (because of a contraction after loss of *ŋ leading to *-ĭ°*, see below), the markers are actually zero and /^{ʔ}/, i.e. the same as in the aorist. Consequently, since all the other subjective and all objective suffixes are identical to start with, there remain no differences between the aorist and the future columns. This is, indeed, expected, because the future in Forest Nenets does not truly belong to the category of inflectional tense with the aorist and the preterite; rather it is better understood in terms of derivational morphology, as evident from its absence in the paradigm of the negative verb and its combinability with the preterite, e.g. *tuqt°ŋasy°* ‘was going to come’ (for Tundra Nenets data, see Salminen 1997: 54–55).

Sammallahti (1974) seems to have recorded only one reflexive verb, /ŋāmtaš/ ‘to sit down’ = *ŋamtăsy°*, but the alleged forms given in its paradigm on page 79 (1sg /ŋāmtīt/ : 2sg /ŋāmtīn/ : 3sg /ŋāmtī/) actually represent unusual variants of the respective forms of the intransitive verb /ŋāmčōš/ ‘to sit’ = *ŋamtyosy°*. These forms normally show regular metaphony, i.e. *ŋimtit°* : *ŋimtin°* : *ŋimti*, and, while the possibility of genuine analogy cannot be excluded offhand, it is more likely that the non-metaphonic forms were due to problems in the elicitation process. The proper reflexive forms of the verb ‘sit down’ would be 1sg *ŋamt°jăm°*(*q*)

: 2sg *ŋamt°jăn°* : 3sg *ŋamtăj°q* ~ *ŋamt°jăt°*; no actual reflexive forms were recorded by Sammallahti, however. The reference on page 62 to the verb /ŋičīḿš/ = *ŋĭtyimsy°* 'to appear' as a reflexive verb is misleading because reflexivity is a strictly grammatical concept in Forest Nenets, and despite its potential semantic characteristics, *ŋĭtyimsy°* is an intransitive verb.

As a related note, Sammallahti (1974) has not recorded many instances of morphophonological alternations caused by metaphony, such as *ŋamtyo-* : *ŋimti* referred to above, but on page 85 the conjunctive (in Sammallahti's terminology, desiderative) 3sg /tūd'ī/ = *tuji* of *to-* 'come' is a genuine example, and the phonetic record of the same form of *ŋä-* 'be' also shows the metaphony as well, even though the phonemization has been influenced by other forms in the paradigm, viz /ŋajd'ī/ (should be /ŋīd'ī/) = *ŋyiji*.

Some of the accusative plural stems in Sammallahti (1974) may have been created through a temporary analogy, notably /čōńa/ 'fox' = *tyonya* : acc.pl /čōńī/ (42) and /tajva/ 'tail' = *tă̆wa* : acc.pl /tajvī/ (48), whose accusative plurals would normally be *tyony°* and *täw°*, respectively. The prosecutive plural of 'fox' on page 43 actually shows the expected variant, i.e. /čōńaˀmana/ *tyony°qmăna*.

A summary of synchronic systems

The Forest Nenets consonant system consists of 24 phonemes, viz six nasals, six stops, one glottal (listed with stops below), four fricatives, four laterals (including two fricolaterals), and three glides:

m	*my*	*n*	*ny*	*ŋ*	*ŋy*	
p	*py*	*t*	*ty*	*k*	*ky*	*q*
		s	*sy*	*x*	*xy*	
		ł	*ły*			
		l	*ly*			
w	*wy*		*j*			

Their contrasts, even if phonotactically restricted in a number of cases, are well established. The velar fricatives can perhaps be understood as part of the glide system instead, and *r* constitutes an additional phoneme employed by a number of speakers in recent loanwords.

At the level of transcription, the symbols for the velar stop *ŋ* and the fricolateral *ł* can easily be represented by the digraphs *ng* and *lh* when necessary. On the other hand, the system can be straight-forwardly traditionalized by replacing *ŋ* with ‹ŋ›, *q* with ‹ʾ› or ‹ˀ›, *x* with ‹χ› and *ł* with ‹ʌ› as well as expressing palatality through diacritics, e.g. ‹ś› or ‹l'›.

The vowel system in stressed syllables consists of six long vowels and maximally six short vowels:

ĭ	*ŭ*	*i*	*u*
ĕ	*ŏ*	*e*	*o*
ă̆	*ă*	*ä*	*a*

As already explained, *ĕ ŏ* have a marginal status at best.

In unstressed syllables, there are only four full vowels and a nearly suprasegmental but strictly contrastive schwa:

	i	*u*
°	*ä*	*a*

The dialectal distribution of *ä* is probably restricted; see the discussion on unstressed vowels above.

In a graphically simplified transcription, the short vowels may be replaced with *î ê ã â ô û*, which are obviously conventional symbols having no relation with overlength or nasality. The symbol for the schwa is the degree sign, as in °C for "degrees Celsius"; it might be alternatively written as a superscript *ə*, even if such a symbol would appear to refer to a segmental, and therefore untypical, realization of the schwa.

A summary of historical phonology

The Proto-Nenets vowel system appears to have been very similar to that found in modern Tundra Nenets. Proto-Nenets would have had a single short vowel *ə, five plain vowels *i *e *a *o *u, a diphthongoid *æ, and two long high vowels *í *ú, of which the last two were only found in initial syllables because of a Pre-Nenets sound change. Differences from the synchronic Tundra Nenets system are small, notably the status of the schwa as an allophone of *ə, but reconstructable as such because of its subsequent phonemization in both Nenets languages, and the presence of *æ in palatal as well as in non-initial syllables.

The current Forest Nenets vowel system, with six long vowels *i e ä a o u* and at least four short vowels *ĭ ă̆ ă ŭ* in stressed syllables, is, by contrast, markedly different from the Proto-Nenets paradigm, to the extent that there is good reason to talk of major restructuring, involving *æ > *ä*, *ə > *ă* irrespective of syllabic position, e.g. *sæmə > *xäm*° 'eye', *ŋənno > *ŋănu* 'boat', and *i > *ĭ*, *u > *ŭ*, *í > *i*, *ú > *u* in initial syllables, e.g. *pyínə- > *pyină-* 'be afraid', *pyinə- > *pyĭnă-* 'boil (intr.)', *púna > *puna* 'after', *kuna > *kŭna* 'where', *i and *u re-

maining intact in non-initial syllables, e.g. *pyiryepyita > *pyĭłyipyita* ‘boil (tr.)’ durative obj.sg3sg (cf. Tundra Nenets *pyiryebyida*). The Proto-Nenets system of seven unstressed vowels has further narrowed down to a maximum of five units in Forest Nenets, the four full vowels *i ä a u* plus the schwa. The stress placement in Proto-Nenets was straight-forward, with every non-final odd syllable or, in other words, every initial syllable in a bisyllabic sequence, being stressed. The stress remains predictable in both Nenets languages as long as the schwa is fully incorporated in the description, see below.

Other innovations concerning Forest Nenets vowels include: (i) the shortening of *ä* in syllables not preceding a schwa in the following syllable, e.g. *ŋæwa > *ŋăwa* ‘head’, a marginal contrast having been created through analogy as discussed above; (ii) the merger *æ > *e* in palatal syllables, e.g. *wyæqk° > *wyeqk°* ‘neck’, *ŋutyætə > *ŋŭtyet°* ‘hand’ poss. nom.pl2sg (cf. Tundra Nenets *yík°* and *ŋudyid°* with a parallel but different sound change); (iii) the metaphony of stressed *ə > *ĭ*, *a > *i*, *æ > *i*, *e > *i*, *o > *u* before *i and *u in the following syllable, e.g. *ŋənnu > *ŋĭnu* ‘boat’ acc.pl, *nyaŋu > *nyiŋu* ‘chin’; (iv) the merger *e > *i*, *o > *u* in unstressed positions, e.g. *sənnyeq > *xănyiq* ‘tail (of a bird)’, *ŋənno > *ŋănu* ‘boat’ nom.sg (and probably in many dialects also *æ > *i*, e.g. *tyamtæq > *tyamtiq* instead of *tyamtäq* ‘frog’); (v) the monosyllabic shortening of vowels, which either creates short mid vowels or leads to their merger with the respective high vowels as discussed above, e.g. *myaq > *myăq* ‘tent’, *pæ > *pă̆* ‘stone, glass, bottle’, *syí > *syi > *syĭ* ‘hole’, *sye > *syĕ* or *syĭ* ‘tongue’, *to > *tŏ* or *tŭ* ‘lake’; at least in some dialects, contrasting long vowels have re-emerged analogically, e.g. *ti* ‘reindeer’ acc.pl on the basis of *tita* poss. acc.pl3sg etc. (cf. Sammallahti 1974: 20, 35, 43); (vi) the phonemization of the schwa, which has taken place in the same manner as in Tundra Nenets, namely through having a fixed schwa in certain suffixes irrespective of the syllabic position, but since the suffixes are different, in Forest Nenets notably the habitive suffix *-sy°qtu*, the phonemization processes have occurred in parallel in the Nenets languages; furthermore, syllables having a schwa in the following or, if non-final, in the preceding syllable bear the stress in both languages, so that, for instance, in Forest Nenets *mătasy°qtuta* ‘usually cuts it’ and Tundra Nenets *yirkad°tawa* ‘snap’ the first, second and fourth syllables are stressed, while their cognates, Tundra Nenets *mədasyətida* and Forest Nenets *jĭłkatăptama*, have preserved the Proto-Nenets pattern with stress on the first and third syllables; (vii) the change *ə > *ĭ* non-initially before (*x*)°, e.g. *karwətə[x]əna > *kał*(*w*)°*tĭx*°*na* ‘village’ loc.sg, *túqtəŋa > *túqtə° > *tuqtĭ°* ‘come’ fut. subj.3sg. Furthermore, in some dialects high vowels seem to lower in monosyllabic words ending in a lateral, so that *jŭł* ‘grease’ > *jŏł* and *myĭł* ‘price, merchandise’ > *myĕł*; Barmich & Vello (2002), for instance, have ‹мĕлʼ› (67) as well as ‹милʼ› (68) for the latter, and only ‹дёлʼ› (27) for the former.

The question concerning why the Forest Nenets vowels have changed so drastically and in a particular direction can be plausibly answered by focusing on the main contact language of Forest Nenets. It happens that at least three of the main characteristics of the Forest Nenets vowel system, namely the nature of the quantity opposition, the smaller number of contrasts in non-initial or unstressed syllables, as well as the presence of metaphony leading to morphological vowel alternations, bear striking similarities to what is found in Eastern Khanty, which is also known to have provided Forest Nenets with the bulk of its loanwords. A look at Honti's (1984: 20) description of the vowel system in the Tromagan dialect of Eastern Khanty shows that when the three peripheral vowels, which could not possibly be reflected in Forest Nenets where the frontness of the vowel depends on the palatality of the preceding consonant and the syllable as a whole, are eliminated, the remaining system of cardinal vowels consists of exactly six long vowels and four short vowels, and even the phonetic match is very close, especially if recent sound changes in Eastern Khanty dialects are taken into account. A claim can therefore be put forward that the Forest Nenets vowel system was reorganized following a specifically Eastern Khanty model.

One apparently regular sound correspondence between first-syllable vowels in Forest Nenets and Tundra Nenets remains unaccounted for, namely *o* ~ *ú* in at least three words, viz Forest Nenets *josyita-* ~ Tundra Nenets *yúsyeda-* 'lie (position)', *jo-* ~ *yú-* 'close with a fish-weir', and *xoju* ~ *súyu* 'calf' (cf. also the possessive and plural objective dual marker, Forest Nenets *-xăjo-* ~ Tundra Nenets *-xəyu-*, with a similar vowel correspondence). Since the reflexes are parallel to those of *æ in palatal syllables, it may be tentatively suggested that there was another, albeit rare, diphthongoid vowel in Proto-Nenets, which was perhaps the labial counterpart of *æ (and which might be assigned the symbol *œ).

Further, there are a number of infrequent sound correspondences among vowels that seem sporadic but may in the end show some degree of regularity. For instance, there are several words which have metaphonic *e > *i* even when the Proto-Nenets second syllable vowel appears to have been *o, e.g. *kiqnyu* 'calm (of weather)' ~ Tundra Nenets *xeqnyo* < *keqnyo and *myiłyu* ~ *myeryo* 'wound' < *myeryo, but in other words of similar phonotactic structure there is no vowel change, e.g. *wyetyu* ~ *yedyo* 'bowel' < *wyetyo. A more regular change is apparently the heightening of a second-syllable mid vowel if there is a high vowel in the first syllable, e.g. *munuq-* 'make sounds; speak' ~ Tundra Nenets *múnoq-* 'make sounds' < *múnoq- and *kĭnuq-* ~ *xinoq-* 'sing' < *kinoq-, but the change is only valid in closed syllables, cf. *jĭłye-* ~ *yilye-* 'live' < *yilye-.

The Proto-Nenets consonant system can be straight-forwardly reconstructed as consisting of 20 phonemes, viz five nasals *m *my *n *ny *ŋ, five stops *p *py

*t *ty *k, one glottal *q, two fricatives *s *sy, two laterals *l *ly, two vibrants *r *ry, and three glides *w *wy *y (= *j). The differences compared with modern Forest Nenets are not especially numerous: (i) *x* was already an allophone of *k in intervocalic positions in Proto-Nenets and it was later phonologized in both Nenets languages by the emergence of intervocalic *k*, in Tundra Nenets through *qk > *k*, and in Forest Nenets through sporadic and positional *ŋk > *k*, e.g. *yaŋku > *jiku* 'there is not', *nyat[°]ŋkæ > *nyat°kä* 'inhabitant of the Nadym region'; (ii) the laterals and vibrants merged into a single series of vibrants, but laterals re-emerged in the system on the basis of originally combinatorial allophones which later phonemized, presumably because of the arrival of loanwords with laterals (Sammallahti 1974: 32–34), but the details of this process are not yet resolved, cf., for instance, *sərmyiqkə > *xĭlmyiqk°* 'sable', *seraqko > *xelaqku* 'white', *səqla > *xăqla* 'stupid', *luqkə > *lŭqk°* 'capercaillie'; the vibrants then changed into fricolaterals only very recently; (iii) the Forest Nenets palatalized velars (cf. Sammallahti 1974: 16–17), i.e. *ŋy ky xy*, started as allophones of the velars found before *í as well as *æ when subject to metaphony, but their palatality became distinctive when the velars before *a and *e remained non-palatal after the vowels changed into high vowels because of metaphony, in other words, a phonemic contrast emerged between, for instance, original *kí- > *kyi-* and metaphonic *ka- > *ki-* sequences, e.g. *ŋællyi > *ŋyinłyI* 'alien', *kímya > *kyimya* 'who', *sínta- > *xyinta-* 'store', in contrast with *ŋesi > *ŋisi* 'camp', *kasuyə > *kisuj°* 'dry', *saryum- > *xiłyum-* 'start raining'; the palatalized velars occur therefore only before *i* and, because of monosyllabic shortening, before *ĭ*, e.g. *kyĭ* 'grey hair'.

Further changes affecting consonants and their phonotactics are few, namely (iv) *s > *x* word-initially, e.g. *saryo > *xałyu* 'rain'; (v) *ny > *j* intervocalically, e.g. *tyenye- > *tyeje-* 'remember'; (vi) the degemination of geminate nasals such as *nny > *ny*, e.g. *myinnye- > *myĭnye-* 'transport'; (vii) *ll > *nł*, e.g. *səllə > *xănł°* 'stump', *pyillyo > *pyĭnłyu* 'gadfly'; (viii) the loss of certain final consonants and members of consonant clusters when adjacent to the schwa, e.g. *pyisy[°]ŋ > *pyĭsy°* 'laughter' : loc.sg *pyisy[°]ŋkəna > *pyĭsy°kăna*, *yann[°]ŋ > *jan°* 'place, earth' dat.sg, *səqŋat[°]m > *xăqŋat°* 'want' 1sg, *ləqk[°]mpoy[°]ŋ > *łăqk°poj°* 'in a while', *karwətə[x]əna > *kaľ°tĭx°na* 'village' loc.sg, but the process is often not implemented, especially Lehtisalo (1956), based on fieldwork carried out in 1914, contains many words with a preserved consonant, e.g. *ŋoqk°mta-* 'zu vielem machen, vervielfältigen' (36b), which can therefore be viewed as archaisms, cf. ‹ңо'кта-› 'увели́чить (*в количестве*)' (Barmich & Vello 2002: 99) = *ŋoqk°ta-* < Proto-Nenets *ŋoqk[°]mta-, or it may rather be reversed by analogy with other forms in the paradigm, e.g. *kałw°tĭx°na* : nom.sg *kałwăt°*; a dental consonant is phonemically palatalized when a following palatal glide is lost through this process, e.g. *yerÿə (= *jerjə) > *jeły°* 'middle'; it seems that the glottal *q* was

subject to loss word-finally after the schwa like other consonants, e.g. /maˀt/ ‘six’ (Sammallahti 1974: 66) < *məqt[°]q, but since the glottal is present in forms such as /maˀtaˀš/ ‘there were six of them’ (58) = *măqtăqsy°*, the possibility of restoring the consonant to final position is open, and such word-forms may therefore be presented as *măqt°*(*q*), which also serves a morphophonological purpose.

Returning to vowels for a moment, a positional neutralization of *a* and the schwa seems to occur before a syllable-final consonant, notably *ł*, which can be seen as a measure against the loss of consonants according to (viii) above, for instance, *patər ‘paper, document’ does not develop into **pat°ł* > **pat°* (cf. Tundra Nenets *pad°r*), but rather *patał* instead. The original vowel is, however, preserved in the paradigm when the lateral is syllable-initial, e.g. gen.sg *patərəŋ > *patăł°* or poss. nom.pl3sg *patərota > *pat°łota*, so that the neutralization is not lexicalized. On the other hand, the neutralized *a* may spread to a syllable-final position when the sequence *-łŋa* in the general finite stem goes through optional assimilation (and palatalization) to become *-łya*, e.g. *matăłsy°* ‘to bark’ : 3sg *matałŋa ~ matałya* (rather than **mat°łya*). In a transcription system that allows the incorporation of morphophonological information, it may prove useful either to devise a special symbol for the neutralized *a*, or to employ *ă* in that function, e.g. *patăł* and *matăłya*, keeping in mind that the positions in question are always recognizably unstressed, so that confusion with the real stressed *ă* does not occur.

The positional loss of intervocalic *ŋ is largely shared by both Nenets languages, for example, the plurals of Forest Nenets *wĭŋ* and Tundra Nenets *wíh* ‘tundra’ are *wi°q* and *wí°q*, respectively, from *wíəq < Pre-Nenets *wíŋəq. Similarly, *nya°ła ~ nya°ra* ‘мездра́’ derives from *nyaəra < *nyaŋəra; cf. Nganasan *няңəру* id. (Zhdanova & Kosterkina & Momde 2001: 127). There is a difference, however, in the loss of *ŋ in the general finite stem marker *-ŋa: in Tundra Nenets, *ŋ is only preserved when the following suffix begins with *x*, e.g. *túqtəŋaxəŋ > *tút°ŋax°h* ‘come’ fut. subj.3du vs 2sg *túqtəŋannə > *tút°ən°* : 3sg *túqtəŋa > *túta°*, but in Forest Nenets *ŋ is only lost when it occurs in the last syllable of the word-form, i.e. 3sg and 3pl, and even then only optionally, e.g. 3sg *túqtəŋa > *tuqtĭ° ~ tuqt°ŋa* : 2sg *túqtəŋannə > *tuqt°ŋan°*. The form *tuqt°ŋa* is perhaps analogical rather than archaic, but otherwise it would seem that Forest Nenets has simply preserved the Proto-Nenets state of affairs, whereas Tundra Nenets has innovated further losses of *ŋ.

In a couple of cases Sammallahti (1974) records forms where the expected syllable-final nasal is missing, while compensatory lengthening may occur, viz /ṕišāš/ ‘to laugh’ (129) = *pyĭsyănsy°* and several forms of /ńēša/ ‘father’ such as poss.2sg /ńēšāt/ as a variant of /ńēšant/ (72) = *nyesyant°* (cf. above). In the western dialects of Forest Nenets there is actually a regular process of denasalization after

non-initial syllables (cf. Salminen 2003: 270), but compensatory lengthening is not known in these dialects and the status of the above forms remains questionable.

Concluding remarks and acknowledgements

Sammallahti (1974) represents both the point of departure for modern fieldwork on Forest Nenets and an early culmination in the description of the language. In particular, the other phonological analyses of the eastern dialects of Forest Nenets that soon followed Sammallahti's work, notably Popova (1978a, 1978b) and Pusztay (1984), did not reach the same level of rigour, consistency and creativity, and Sammallahti (1974) compares favourably even with Verbov (1973), based on much more extensive fieldwork (cf. Csepregi 1976). It is hoped that this state-of-the art report, which by necessity also constitutes a review article of the relevant sections of Sammallahti's book, has shown that many phonological issues are reasonably well understood not least because of Sammallahti's contribution; nevertheless, several intriguing problems remain.

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