

## The origin and development of the Nganasan indicative aorist perfect

This paper addresses the origin and development of the Nganasan indicative aorist markers. The system of Nganasan aorist marking, with its obligatory marking of lexical aspect through the selection of suffixes, is unique among the Samoyed languages, and the aorist suffixes themselves lack direct cognates in finite verbal paradigms outside Nganasan. The present paper asserts that the Nganasan markers of the indicative aorist have developed from Proto-Samoyed deverbal forms via the process of reinitization, also known as verbalization, a common way of creating new finite paradigms in languages of northern Eurasia. Cognates for the Nganasan aorist suffixes can be found among the derivational forms of other Samoyed languages, and traces pointing towards their deverbal origin prevail in Nganasan as well.

In parallel to the Nganasan imperfective aorist suffixes *-NTU*, *-U*, previously suggested to have originated in imperfective participles, I claim that the perfective aorist suffix *-qe/-qa* has likewise developed from a deverbal form, the modern cognates of which are found in the augmentative suffixes of northern Samoyed languages. The diverse patterns of aorist formation in Samoyed, as well as the largely opaque morphophonological alternations affecting the suffixes in Nganasan, suggest that the tense system of Proto-Samoyed was going through major changes exactly during the breakup of the common proto-language.

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## I. Introduction

One essential property separates the Nganasan tense system from those of the other Samoyed languages, along with the rest of Uralic: the obligatory, overt marking of lexical aspect in the indicative aorist. The marking is achieved by the use of two different sets of tense markers, the choice of which depends on the aspectual class of the verb. Out of these suffixes, *-NTU* and *-U* are used with imperfective verbs, *-qel-qa* with perfective verbs. Both forms are conventionally called “aorist” and regarded as instances of the same grammatical tense (i.e. the indicative aorist, see Wagner-Nagy 2019: 234–235), although they may be glossed separately. However, independent of their synchronic status, it is obvious that they are etymologically of different origin. Mikola (1996) suggests that both of the imperfective suffixes have developed from Proto-Samoyed present participle markers (*\*-ntÅ<sup>1</sup>* > *-NTU*, *\*-rÅ* > *-U*), while Gusev (2013: 72–73) supposes the perfective suffix to have developed from a coaffixal form (i.e. a form combining two originally separate affixes) which should have consisted of the Proto-Samoyed tense markers *\*-j* and *\*-ŋÅ* (> *\*-jŋÅ*).<sup>2</sup> The latter etymology suffers from phonological problems, which leaves occasion for another explanation. In this paper, I offer a new etymology, my proposal

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1. All Proto-Samoyed forms, unless indicated otherwise, are reconstructed by the present author, following the updated reconstruction for vowels (for details, see Helimski 2005; Aikio 2006: 9–10; Kaheinen 2023: 33–41). The difference between the front and back reduced vowels (i.e. *\*ə* and *\*ə̃*) will not be marked on suffixes, as it presumably followed the rules of vowel harmony. On stems, ambiguous forms may be rendered with *\*ə<sup>1</sup>*. Likewise, the conventional *\*t<sup>3</sup>* will be used to mark any PS stop of unknown quality (i.e. *\*t ~ \*c ~ \*p ~ \*k*) and *\*n<sup>1</sup>* either member of the pair *\*n ~ \*ŋ*.
  2. In bound morphemes, capital letters will be used to indicate regular allophonic alternations conditioned by vowel harmony or consonant gradation. Since these variations are extremely abundant especially in Nganasan, which can have up to 12 allomorphs per suffix (Helimski 2000 [1995]: 189), the details concerning each type of variation will not be discussed if they are not directly relevant to the topic of this paper. The same concerns reconstructed forms, although for PU and PS only the low vowels PU *\*A* (= *\*a ~ \*ä*) > PS *\*Å* (*\*å ~ \*ä*) seem to have been harmonically relevant (Janhunen 2020: 367–369; Aikio 2022: 10–11). For more details concerning Nganasan morphophonological variation, see Várnai (2002: 55–67) and Wagner-Nagy (2019: 74–81). On the other hand, irregular or marginal alternations will not be marked with capital letters and will not be further discussed, unless they are directly relevant to the main arguments of this paper.

being that the Nganasan indicative perfective aorist suffixes have developed from a Proto-Samoyed resultative marker, originally used to form verbal nouns denoting the result or consequence (often also the instrument) of the action expressed by the verb. The existence of such a resultative marker in Proto-Samoyed is supported by numerous lexicalized derivatives found in Nganasan as well as the Enets and Nenets<sup>3</sup> languages, even if the exact reconstruction and semantic content of this resultative marker's phonological shape in Proto-Samoyed proves to be difficult.

The development of the Nganasan aorist markers, and to a large extent, the rest of the Nganasan tense-aspect-mood marking system (TAM) as well, seems to have involved the incorporation of various non-finite verbal markers into the finite verbal paradigm. This is achieved through a process which I will call (re)finitization, in which deverbal, nominalized (i.e. prototypically non-finite) forms are reanalyzed by speakers as finite, which leads to them (re)gaining other inflectional properties typical for the finite verb. The process, which has also been called verbalization in previous literature, has been argued to be typical for the languages of northern Eurasia (Malchukov 2013; Gruzdeva & Janhunen 2020; Janhunen 2020: 385–392). In Nganasan, refinitization often arises in the context of nominal predication, a grammatical locus allowing for a high degree of word-class ambiguity through e.g. the usage of finite person-marking suffixes on nouns, which, in turn, makes it easier for the speakers to interpret the nominalized verbal forms as finite. The same process can be demonstrated from other Samoyed languages that allow person marking on nominal predicates, such as Tundra Nenets (see Jalava 2017: 141).

The structure of the paper is as follows: first, I take a look at the previous literature concerning verbalization as a means of forming new finite paradigms, with special focus on the languages of northern Eurasia, in order to demonstrate that the developments I propose to have occurred in Nganasan are, in fact, very common in this particular linguistic area. In Section 3, I present an abridged description of the Nganasan TAM marking (for a more detailed account see Wagner-Nagy 2019: 214–262), especially the marking of the aorist in the indicative and its interaction with lexical aspect. In Section 4, I survey the historical development of various

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3. Due to the genetic proximity of Tundra Nenets to Forest Nenets, as well as Tundra Enets to Forest Enets, they will be referred to jointly when there is no need to differentiate. Despite their closeness, they can be regarded as separate and independent languages, not dialects of the same language.

Nganasan aorist-marking suffixes, presenting my own proposal for the etymology of the perfective aorist marker. Conclusions are given in Section 5.

## **2. The development of finite markers from verbal nouns, with special reference to northern Eurasia**

In recent years, researchers focusing on the languages of northern Eurasia have argued that specific grammatical developments that have taken place in these languages over the course of their history, are not necessarily directly contact-induced but instead have been conditioned by their shared typological profile (Janhunen 2012). One such characteristic is the development of finite verb forms, such as tense markers, out of prototypically non-finite forms, such as participles and verbal nouns (Malchukov 2013; Gruzdeva & Janhunen 2020; Janhunen 2020: 385–392). In the typological literature, processes of this type are divided into two categories: the process of reanalyzing nominal predicates as verbal forms is called verbalization, while the reanalysis of complement clauses as main clauses is called insubordination (Malchukov 2013: 201). In the context of this paper, I will focus only on what Malchukov calls verbalization, since it is relevant from the point of view of the developments that have taken place in Nganasan.

Janhunen (2020: 389–391) criticizes the use of both terms, noting that the formation of new verb stems from nominalized verbs as well as nouns is often synchronically productive in the languages of this typological area, not the kind of one-way process that is often implied by “verbalization” – and, on the other hand, the nominalized verbs used as predicates are in many cases still formally nominals, or at least retain characteristics that set them apart from the original finite forms. As long as both the cyclicity and synchronic productivity of the processes involved is properly acknowledged, the use of the terms “verbalization” and “insubordination” should not be seen as inherently problematic. Verbalization in the context of northern Eurasia should be understood as a kind of continuous, cyclical process where one subsystem of grammar feeds into the other, taking advantage of the fuzziness of word-class boundaries, not as a kind of a sudden, rigid change in the status of any morpheme involved. It is also a long-term tendency in the languages of northern Eurasia to perpetually form new paradigms in this way. Since a pivotal part of the process is the changing of (prototypically) finite forms to non-finites and back again, I argue that it could also be called finitization or refinitization of verbs.

For example, in the Tungusic languages, it is typical for participles, usually regarded as prototypically non-finite forms, to be used as predicates, leading to them (re)gaining finite properties on the syntactic level. Morphologically, however, they remain separate from the typical finite forms in that they take person markers of the possessive type instead of the predicative type. (See e.g. Malchukov 2013: 187–189; Janhunen 2024: 65–68.) In some Tungusic languages, this has led to partial mixing of the two types of suffixes, creating rather complex patterns of alternation (e.g. those found in Udihe, see Nikolaeva & Tolskaya 2001: 212–213) or the marginalization of the original finite forms (e.g. in Nanai, see Kazama 2024: 389–391). In principle, however, the forms can be differentiated historically by the choice of person marker. It has been pointed out by Janhunen (2020: 385) that even the predicative forms, with their respective tense suffixes, show signs of having once been non-finite, thus indicating cyclicity in the emergence of finite verbal paradigms in these languages. This can be seen e.g. in the Proto-Tungusic paradigm, where the aorist marker is reconstructed as *\*-rA*, identical with the (synchronically marginal) aorist participle *\*-rA* (Janhunen 2024: 65–67). These markers can be interpreted as representing different chronological layers of the same process of (re)finitization (ibid. 70–71).

Examples of new finite verbal forms arising from former verbal noun markers can be found in other languages of the Altaic zone as well, with the refinitized forms coexisting alongside the non-finite forms that gave rise to them, such as the Finnish third person markers 3SG *-V < \*-pA* (Aikio 2022: 19), 3PL *-vAt < \*-pA-t* and the active present participle *-vA : PL -vAt* (see also Hakulinen 1941: 220). These kinds of processes of refinitization have apparently been prolific in languages of northern Eurasia for several millennia, since finite verbal paradigms formed on the basis of former non-finite or verbal noun markers can be reconstructed on different chronological stages. As will be shown in the following sections (see especially Section 4), such coexistence of fully integrated finite forms and the non-finite forms they originate in can be observed in Nganasan, too.

The pervasiveness of this pattern in the languages of northern Eurasia is demonstrated by the fact that the oldest traceable paradigms generated via transcategorical operations predate the earliest reconstructable proto-language stages of each respective language family, as is indicated, for example, by the fact that several grammatical categories reconstructed for Proto-Uralic verbs share semantic properties as well as phonological forms of the markers with corresponding nominal categories. Recently,

Janhunen (2020: 371–374) has even argued in support of the hypothesis of the relative indefiniteness of Proto-Uralic word classes, citing the resemblance between denominal and deverbal derivational suffixes (e.g. the PU denominal factive  $^{*}-(t)tA$  and causative  $^{*}-(t)tA$ , as in Fi *lippu* ‘flag’ → DRV.FAC *liputta-* ‘wield a flag’; *istu-* ‘sit’ → DRV.CAUS *istutta-* ‘seat’) as proof, while Aikio (2022: 16) objects to his arguments. Whether the differentiation of verbs and nouns can be said to have been even weaker at some point in the history of (pre-)Proto-Uralic, remains controversial. The hypothesis itself is not new and was originally based mainly on the existence of so-called *nomenverba*, i.e. words that can either function as both nominal and verbal stems without intervening derivational suffixes or, per another interpretation, happen to be instances of homonymy between nominal and verbal stems (e.g. Fi *tuule-* ‘wind[.OBL]; blow (of the wind)’ : *tuuli* ‘wind[.NOM.SG]; the wind blew [blow.PST.3SG]’) (Aikio 2022: 16). In any case, the resemblance between some older deverbal and denominal suffixes in Uralic can hardly be denied.

Another example of the continuous interaction and flux between nominal and verbal categories (as well as that between derivation and inflection) can be found in the various caritive or abessive forms found in Uralic, all going back to, or containing, a suffix with a phonological form of the type  $^{*}ktA-$  (Aikio 2022: 14–15). This suffix can be found, for example, incorporated in such Finnish forms as the abessive case ending *-tta* < PU  $^{*}ktAk$  (*kala-tta* [fish-ABE] ‘without a fish’, used adverbially as in *tuli kotiin kalatta* ‘s/he came home without (any) fish’), the caritive derivational suffix *-tOn* < PU  $^{*}ktAm^4$  (*kala-ton* [fish-CAR] ‘without a fish’, used adnominally as in *kalaton järvi* ‘a lake without fish’), as well as in corresponding non-finite verb forms, the abessive infinitive *-mAttA* (*teke-mättä* ‘without doing’) and the caritive derivation *-mAtOn* (*teke-mätön* ‘that which has not (been) done<sup>5</sup>). (See also Shagal 2018: 77–78.)

At the other geographical periphery of Uralic, the same suffix has become part of the Nganasan abessive mood *-meTUmAqa*, which is used as a finite verb form: *kotu-metumaqa-m<sup>6</sup>* [kill-ABE-1SG] ‘I, not having killed’. The

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4. Reconstructions are from Aikio (2022: 15).

5. Whether the head noun is the agent or the patient of the action in question is not formally distinguished and has to be inferred from context, e.g. *tekemätön työ* [do.PTCP.ABE work] ‘a job not done’; *töitä tekemätön mies* [work.PL.PART do.PTCP.ABE man] ‘a man not working’.

6. Unless stated otherwise, this paper employs a strictly phonemic transcription

Nganasan form is obviously complex, ultimately built upon a deverbal noun in PS \*-mə- and followed by another nominalizing suffix \*-mÅ (< PU \*-mA, see Aikio 2022: 19), plus what can probably be considered an instance of the augmentative suffix Ng -qA (see below), thus yielding the reconstruction \*-mə-tÅ-mÅ-jtt<sup>3</sup>a-m [VN-ABE-VN-?AUG-1SG]. However, since this form has no exact parallels in other Samoyed languages, the reconstruction should be viewed as hypothetical, only based on the reconstructions of each of its parts separately. The apparent presence of (at least) two verbal noun markers in the chain of suffixes indicates that the form has gone through several cycles of transcategorical operations. Compare also the Meadow Mari privative suffix -de, identical with the negative converb: *kol-de* ‘without (a/the) fish’ [fish-PRIV], *nal-de* ‘without taking’ [take-CONV.NEG] (Janhunen 2020: 372), also suggesting an interaction between nominal and verbal categories.

Despite typological similarities, there are language-specific factors affecting the synchronic productivity as well as the inflectional properties of the forms involved (Malchukov 2013: 202–204). While Tungusic shows a strong tendency towards using participles as predicates while retaining their possessive person marking as a sign of their non-finite origin, such a tendency is rarer in the northern Samoyed languages, where verbal person markers can, in a limited number of sentence types – mainly predication – attach directly to nouns as well as verbs, making it possible for nominalized forms to be essentially indistinguishable (save for the nominalizing marker itself) from finite verb stems, thus allowing for a more “complete” verbalization (Jalava 2017: 141). On the other hand, in Western Uralic (Sami and Finnic, especially), the use of a copula for nominal predicates is often obligatory, which tends to produce periphrastic rather than synthetic forms (Janhunen 2020: 376–378).

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for Nganasan, which differs from the conventional transcription used by e.g. Wagner-Nagy (2019) and the NSL corpus (Brykina et al. 2018) mainly in that it does not mark some of the subphonemic distinctions in consonants ([d̥, j] = <j>; [d, δ] = <d>) and vowels ([e, ə] = <e>; [o] and [ə] after *h, b* and *m* = <o>). The so-called diphthongoids are marked with the monographs <å> and <ä>, while <q> marks the glottal stop, as per the conventions followed in Kaheinen (2023). Tundra Nenets forms are cited according to the transcription employed by Salminen (1998), with only graphic modifications. Forest Nenets forms are likewise cited according to the phonological transcription (see Salminen 2007). Materials from other Samoyed languages are cited as in the sources, with only graphic modifications. Translations from Russian and German original glosses are by the author.

As stated by Janhunen (2020: 391–392), the languages of northern Eurasia tend to continuously replenish their verb paradigms via the incorporation of non-finites into finite conjugation in the form of tense and mood markers, sometimes replacing the old paradigms altogether with new forms. This process is typically achieved through the use of deverbal nouns in syntactical contexts that allow for both noun-like and verb-like forms to be used as predicates, making it possible for the speakers to reinterpret non-finites as finite verb forms (see also Jalava 2017: 141). It has been argued by Malchukov (2013: 183–187) that the border of finiteness and non-finiteness is essentially fuzzy in these languages, allowing for forms to move on a cline rather than being assigned to strict categories. Similarly, it can be claimed that the categories of verb and noun in northern Eurasian languages are both historically and synchronically somewhat flexible, better characterized by the concepts of prototypical “nounness” and “verbness”, with some forms, such as verbal nouns, falling somewhere in between the most prototypical categories, as has been argued by Gruzdeva & Janhunen (2020: 97–98).

This is not to say that nouns and verbs as separate categories do not exist at all in languages of this type, in fact they do (see especially Jalava 2013, focusing on Tundra Nenets). It can also be pointed out that the fluidity of categories, somewhat paradoxically, has to rely on the strict definition of prototypes, which, in turn, allow for the identification of “inbetweenness” – although the actual existence of any one strictly prototypical entity is not a prerequisite for establishing the prototype itself (Moser 2014: 99–103). In a similar vein, recognizing the typical characteristics of nouns and verbs in languages of northern Eurasia allows us to examine the forms deviating from the prototype, and thus better explain their emergence. Thus, although previous authors have often wanted to stress the granularity and fluidity of grammatical categories and concepts such as finiteness (see Malchukov 2013; Shagal 2019; Gruzdeva & Janhunen 2020), there is value in the ability to accurately name such categories even when dealing with phenomena that might fall in between.

The use of verbal nouns as predicates inherently involves a form moving back and forth on the finiteness cline, as well as on the cline between a typical noun and a typical verb. A verb stem which has first been nominalized, a process that would allow for the use of forms more typical for nominal inflection such as case, becomes instead reinterpreted as more akin to a prototypical verb, leading to it regaining some verbal properties, such as the ability to function as the sole predicate of a finite clause. Therefore, it



would be justified to speak of transcategorial or category-changing operations, or categorical shift (Heyvaert et al. 2019; see also Malchukov 2006: 984–991) when describing these processes.

It seems that various types of category-changing operations can be used to generate new finite verbal forms and, in the process, incorporate nominalizing morphology in the verb form. These processes are to some extent dependent on the underlying typological makeup of the language involved, which gives rise to language-specific characteristics in the emerging grammatical construction. When investigating the etymologies of specific suffixes, one cannot, however, forget the importance of regular sound correspondences, which are a prerequisite for a convincing etymology. Due to the nature of the phonological matter involved (i.e. short suffixes of the type -C or -CV, often also containing phonemes with a very high frequency in the language) and the ambiguity in meaning, chance similarity is a very real possibility that should be taken into account when comparing grammatical markers across languages (cf. Janhunen 2012: 24–26; compare also to Section 4.1).

### 3. TAM marking in Nganasan: a brief survey

Nganasan possesses a rich system of morphological markers for the expression of tense, aspect, and mood. These categories are largely intertwined, which is evident from the fact that tense and mood markers occupy the same “slot” in the inflectional template of the verb, i.e. they cannot co-occur but instead a single marker often carries both temporal and modal meanings. (For a more detailed account, see Wagner-Nagy 2019: 214–262.) A distinctive characteristic of the Nganasan TAM marking system lies in its overt expression of lexical aspect in the indicative aorist through the use of specialized tense markers. The Nganasan indicative aorist markers can be divided into two main classes: imperfective and perfective, the choice of which is tied to the aspectual class of the verb stem itself (see Table 1). Thus, the markers are not aspectual markers per se but aspect-dependent markers.

Additionally, the phonological shape of the marker taken by each verb is affected by stem type (for imperfective verbs), as well as regular and irregular morphophonological alternations such as gradation, vowel harmony class alternations, and stem-vowel alternations. On the other hand, the markers themselves cause alternations in the verb stem, triggering

Table 1: Suffix variants for Nganasan aorist classified according to aspectual class and stem type

Aspectual class	Stem type	General suffix	+REFL/PLO <sup>a</sup>
perfective	<i>a</i> -stem	<i>-qa</i> ( <i>-qĀ<sup>b</sup></i> )	<i>-qi</i>
	<i>e</i> -stem	<i>-qe</i>	
imperfective	general	<i>-NTU</i>	<i>-NTA</i>
	<i>r</i> -stem	<i>-U</i>	<i>-A</i>

- Plural object, whereas SGO = singular object. See also the glossing abbreviations.
- The morphophonological transcription used for Nganasan by e.g. Várnai (2002: 58–59) marks the alternation *a* ~ *ā* with *A*, the alternation *a* ~ *i* ~ *i* with *A<sup>l</sup>*, and the non-alternating *a* with *A<sub>o</sub>*. Since there is no need to mark non-alternating phonemes with any special symbol, and since *Ā* is a graphically easier and more memorable symbol for the alternation *a* ~ *ā*, I will use *A* to mark the alternation *a* ~ *i* ~ *i*, and *Ā* to mark the alternation *a* ~ *ā*.

gradation and stem-vowel alternations. This makes the formation of the Nganasan indicative aorist a rather complex process.

In addition to an indicative aorist, there are four other temporal forms, two future and two past, with one member of each pair being the more basic one while the other is complex, e.g. simplex *-SUE* for (general) past and *-SUEjee* for pluperfect (PST *-SUE* + the nominal past marker *-jee*),<sup>7</sup> and simplex (historically complex but synchronically simple) *-qsUTE* for general future and *-qsUTEjee* for “past in the future” (FUT *-qsUTE* + *-jee*) (Wagner-Nagy 2019: 234–239). Additionally, Wagner-Nagy (ibid. 238–239) analyzes the form *-qke* as a tense termed “immediate future,” appearing in the complex form *-qki-qe*. Since the former part of the suffix is actually present on the verb stem in non-finite forms of the verb, e.g. the dictionary forms in INF SNG *bore-qke-sa* ‘wait[-INCH-INF]’, and the latter part is the perfective aorist suffix, the suffix *-qke* is better analyzed as belonging to derivation rather than inflection.

The number of moods in Nganasan is high. Altogether, there are 13 non-indicative moods in Nganasan: imperative, admonitive, optative, interrogative, interrogative-iterative, inferential, reportative (also called renarra-

7. For more on the nominal past marker in Nganasan, see Leisiö (2012: 214). The fact that this is another instance of an original nominal marker being incorporated into the finite paradigm of the verb is a further example in support of the development argued for in this paper (see especially Sections 4.2 and 4.3).

tive), interrogative-reportative, irrealis, dubitative, necessitative, speculative, and abessive. These are used to express e.g. volition, epistemic certainty, and evidentiality, as well as to form questions (Wagner-Nagy 2019: 241). Many Nganasan moods are obviously historically complex and demonstrate the interaction between modal and temporal categories. For example, the future interrogative *-NŦe-ŦU* and the future reportative *-NŦe-HÄNHU* both consist of a futuritive element *-NŦe*, which does not appear on its own in Nganasan, joined by the same suffix that appears in the aorist tense of the respective moods (i.e. interrogative *-ŦU* and the reportative *-HÄNHU*). On the other hand, some moods do not have separate future or past forms (such as the inferential, admonitive, and dubitative, for example), while others have forms that are seemingly unrelated to the aorist, such as the past interrogative *-HU* (cf. the aorist *-ŦU*) (ibid.) (see also Section 4.1).

There are numerous non-finite verb forms, many of which are expressed with markers that greatly resemble finite temporal or modal forms, compare, for example, the necessitative participle *-qsUTE* and the necessitative past participle *-qsUTEjee*, which are phonologically identical to the future and past in the future forms (see above) (Wagner-Nagy 2019: 262–274). These undoubtedly have a common origin, having likely developed through a process similar to that described in Section 2 (see also Section 4.3). The marking of tense is complex in Samoyed in general, and in addition to Nganasan, especially the Nenets languages have developed highly elaborate systems of mood marking (see Nikolaeva 2014: 80–115, for Tundra Nenets). The overt expression of lexicalized aspect is, however, unique to Nganasan.

### 3.1. Aspect in Nganasan

Nganasan verb stems can be divided according to aspect into perfective and imperfective (see also Wagner-Nagy 2019: 222–225). The selection of the aorist marker depends mostly on this division, with perfective verb stems selecting the suffix *-qe/-qa*, and imperfective verb stems either *-NTU* or *-U*. Verbs receiving the perfective suffix in the indicative aorist convey actions completed just now, or momentary changes in state that have just happened, while the verbs selecting an imperfective suffix convey prolonged actions or states of being (see examples below), hence the term “aorist”. The form could also be called e.g. “non-future”, but in this paper I shall adhere to conventional terms in order to avoid confusion.

The perfectness or imperfectness of the verb in Nganasan is a lexical property of the stem that can be changed only through (marked) derivation, the affective *hãŋku-* ‘be drunk; to become drunk’ apparently being a rare exception (Wagner-Nagy 2019: 225). There are underived stems of either class, and derivational suffixes, such as the imperfective <sup>c</sup>*-te* (*-te* ~ *-qte* ~ *-nte*) (e.g. *kotu-* : *koda-qa* ‘kill[-AOR.PRF.3SG]’ → *kodu-te* : *kodu-te-tu* ‘be killing, habitually kill (e.g. practice hunting)’ [kill-DUR-AOR.IPF.3SG]) and perfective(-inchoative) *-qke* (e.g. *bare-* : *bare-tu* ‘wait[-AOR.IPF.3SG]’ → *bare-qke-* : *bare-qki-qe* ‘begin waiting’ [wait-INCH-AOR.PRF.3SG]), are used freely to change the aspectual class of a verb (examples from SNg). (For more on Nganasan deverbal derivation see Wagner-Nagy 2019: 531–536.)

No detailed research regarding Nganasan aspectual class in relation to lexical semantics has been carried out so far. According to Wagner-Nagy (2019: 224–225), from among the underived verb stems, those that describe static properties and states such as *ij-* ‘be’ AOR.IPF.3SG *i-cü*, *kerbu-* ‘want’ : AOR.IPF.3SG *kerbu-tu*, etc. tend to be imperfective. This includes also adjective-like verbs such as *ceši-ti* [be.cold-AOR.PRS.3SG] ‘it is cold; s/he is cold’ (SNg), i.e. verbs that semantically resemble typical adjectives but grammatically belong to the class of verbs and are inflected accordingly.<sup>8</sup> Some auxiliary verbs also belong to this class by default, such as the negative auxiliary *ni-* : AOR.IPF.3SG *ni-nti* and *eku-* ‘maybe’ : *eku-tu* (Wagner-Nagy 2019: 224–225; 411). Thus, the semantics of the lexical verb do not affect the aspectual class of the auxiliary. There are a few examples of the negative auxiliary taking a perfective suffix (e.g. *ni-qe*), but these are apparently marginal (Gusev 2015: 107). Underived perfective stems are typically those that describe changes in states and momentary actions such as *ŋomte-* ‘sit down’ : AOR.PRF.3SG *ŋomtü-qe* and *kuntu-* ‘fall asleep’ : *kunda-qa* (SNg; Wagner-Nagy 2019: 225). There has been little comparative research into lexical aspect in Samoyed, but parallel patterns in verbal derivation suggest that the lexical semantics regarding aspect in Nganasan may at least partially be inherited from Proto-Samoyed, compare e.g. the cognate durative

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8. The northern Samoyed languages have a small subset of property words that can be classified as verbs in contrast to the majority that are more like nouns in this respect, and thus can be classed as adjectives. The phenomenon goes back to Proto-Samoyed, although the number of words belonging to this class varies between the modern Samoyed languages. For more details from a Tundra Nenets perspective, see Jalava (2013).

suffixes in Nganasan and Tundra Nenets: Ng *kuntu-* ‘fall asleep (PRF)’ → *kundã-* ‘sleep (IPF)’ (SNg) ~ TN *xona-* → *xonyo-* id. (T65) < PS \*kontã- → \*kontã-w- (? \*konta-w).

The aspectual class of each stem seems to depend mainly on the verb’s lexical semantics and the temporal characteristics of the situation it describes, i.e. Aktionsart. Aspect and Aktionsart can be seen as different perspectives on the temporal qualities of a given situation; the main difference between them is that Aktionsart encompasses the “objective” temporal properties of the situation, while aspect involves the experiencer’s subjective judgment of said properties (Moser 2014: 114–116). Moser argues that from the point of view of grammar, aspect and Aktionsart can be seen as a continuum. A detailed study into Nganasan verb semantics and aorist-marker selection could reveal more interesting facts about this continuum and the interaction of aspect with Aktionsart. For the purposes of this study, it suffices to note that the aspectual class of most Nganasan verbs is essentially fixed.

### 3.2. Suffix variants and morphophonological rules

Besides aspectual class, the selection of the aorist marker and its specific allomorph on each individual verb is dependent on the phonological shape of the verb stem and is subject to regular morphophonological alternations, namely gradation and the rules of vowel harmony. Both perfective and imperfective suffixes have several stem type-dependent forms, which are listed in Table 1 above. These, in turn, have their own allomorphs conditioned by regular morphophonological rules, here indicated by capital letters. In addition to alternations affecting the suffixal matter, the verb stem itself may be subject to various morphophonological alternations, most importantly gradation and stem-vowel alternation, the latter affecting only stems joined by the perfective suffix.

Radical gradation is present in all stem types, due to the fact that both of the perfective suffixes, as well as the imperfective *-NTU*, begin with a (historical) cluster, which closes the syllable and thus triggers the appearance of the weak grade, and, on the other hand, the *r*-stem suffix *-U* leads to the opening of the syllable, triggering the appearance of strong-grade consonantism in the stem. Derived stems and original consonant stems also follow their characteristic patterns. A few examples can be found in Table 2.

Table 2: Examples of consonant gradation in Nganasan verb stems in the indicative aorist (from SNg)

Stem	Strong grade	Weak grade	Gradation	Meaning
<i>śínśi-</i>	INF <i>śínśiji</i>	AOR.PRF.3SG <i>śínjije</i>	<i>ńś : ńj</i>	‘freeze’
<i>cebis-</i>	AOR.PRF.3SG <i>cehijije</i>	INF <i>cebiqśi</i>	<i>h : b<sup>a</sup></i>	‘nail’
<i>ņusī-</i>	INF <i>ņusiji</i>	AOR.IPF.3SG <i>ņujiti</i>	<i>s : j</i>	‘work on sth.’
<i>ńegus-</i>	CNG <i>ńekujeq</i>	AOR.IPF.3SG <i>ńegutu</i>	<i>k : g</i>	‘be annoyed, cringe’
<i>jodür-</i>	AOR.IPF.3SG <i>jotürü</i>	INF <i>jodürśa</i>	<i>t : d</i>	‘walk’
<i>lįngar-</i>	AOR.IPF.3SG <i>lįngkaru</i>	INF <i>lįngarsa</i>	<i>ņk : ņg</i>	‘be hidden’

a. Nganasan *h* as the strong grade of *b* goes back to PS \*p.

Besides gradation, the verb stem joined by the perfective aorist markers is affected by a morphophonological process called stem-vowel alternation. Stem-vowel alternation in Nganasan is a complex phenomenon affecting both nouns and verbs. It appears with a select group of suffixes that have in common the fact that they have a consonant cluster with an initial historical \*j (Gusev 2013: 72–73). The historical \*j-cluster triggers both the vowel alternation as well as the weak grade of consonant gradation if consonants subject to gradation are present along the preceding syllable border, thus creating a special alternation stem, or Stem III (Wagner-Nagy 2019: 176–179). The most common suffixes to require Stem III are the genitive plural for nouns and the aorist perfect for verbs.

Typical alternations involve, from a synchronic perspective, either the raising of the low or mid vowels (e.g. *kojke* : *kojkü-* ‘idol’; *hurse-* : *hurśi-* ‘return’) or the lowering of high vowels (e.g. *jali* : *jala-* ‘day’; *kotu-* : *koda-* ‘kill’) (SNg; for more examples see Wagner-Nagy 2019: 179, 220). In the latter case, the basic high vowels of the stem actually represent original PS low vowels that have become raised in Nganasan (PS \*jalä ‘day’; \*kätä ‘kill’). Not all stems alternate, and the alternation is not directly predictable based on harmony class, as demonstrated by the *I*-class stem *koni-* : *kona-* ‘go’ (INF *koniji*) and *U*-class stem *kotu-* : *koda-* ‘kill’ (INF *kotuja*) having similar alternations (SNg).

The imperfective aorist suffix does not involve alternations of the stem vowels, but the vowel alternation appearing in the reflexive and objective plural conjugations of the aorist imperfective (e.g. REFL/PLO *-NTA*, *-A*)

is very similar to the stem-vowel variation discussed above. Historically, these both probably reflect the same phenomenon of a suffix-initial \*j-cluster interacting with the preceding vowel.

Nganasan vowel harmony is a lexicalized system of regular vowel alternations on allomorphs. These alternations were formerly regulated by the quality of the stem vowels, which were all either [+ front] or [+ back] harmonically. Due to subsequent phonological changes, the rules conditioning the selection of harmonic variants have become highly obscured, leading to a system where each stem has to be classed as either *U* (formerly back; representing PS \*ä) or *I* (formerly front, representing PS \*ä), not necessarily inferrable from the actual quality of the vowels in the stem. The system is highly resilient, with most forms still reflecting their original Proto-Samoyed or even Proto-Uralic harmonic class, despite the stem vowels having sometimes changed radically (Helimski 1993 [2000]). On top of this, Nganasan has developed additional assimilation rules, such as the fronting of vowels when there is a front vowel in the adjacent syllable, which are synchronically more transparent but also allow for some free variation. (For details see Wagner-Nagy 2019: 84–85.)

In the context of aorist marking, all three main types of harmonic alternations can be seen: *U* (*u ~ ü ~ i ~ i*), *Ä* (*a ~ ä*) and *A* (*a ~ i ~ i*) (cf. Várnai 2002: 58–59).<sup>9</sup> Out of these, the alternation in *U* (PS \*ä ~ ä) is historically primary, while the one in *Ä* is probably analogous (PS \*a with modern Ng *ä* as a secondary harmonic pair). *A* is a variant of *U* created by the fusion of a \*j-initial cluster with the stem vowel. Thus, both the perfective suffix variant *-qi* as well as the imperfective *-NTA*, *-A*, characteristic of the reflexive conjugation as well as the objective conjugation for plural objects, are conditioned by the historical presence of the reflexive or plural object marker PS \*jə, which has synchronically fused with the tense marker.

As is evident from Table 1 above, there are two primary imperfective aorist suffixes: *-NTU* and *-U*. The selection of the imperfective suffix variant itself is dependent on the type of stem it attaches to, with the variant *-U* appearing on stems ending in *r* (i.e. *r*-stems), and *-NTU* everywhere

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9. Várnai (2002: 58–59) lists other variants as well, although these are either non-alternating vowels or various subtypes of the alternating vowels discussed above. In the notational convention of this paper, these are not marked separately. The marking of the alternations also differs slightly from that used by Várnai, see footnote 9.





The alternation of *-NTU* on general stems and *-U* on *r*-stems is not conditioned by regular phonotactic rules, as the cluster *rt* is completely possible in Nganasan and appears, for example, on *r*-stem nouns when they receive the 3SG.PX suffix *-TU*, e.g. SNg *kadar* ‘light’ : 3SG.PX *kadar-tu*. A similar alternation appears only in the present participles of verbs, where the suffix variants *-NTUe* and *-Ue* are distributed according to criteria identical to those concerning the imperfective aorist suffixes (e.g. *ɲate-tue* ‘waiting’ [wait-PTCP.PRS]; *teir-ie* ‘flying’ (also lexicalized as ‘airplane’) [fly-PTCP.PRS] (SNg)). Moreover, the alternation is not of Proto-Samoyed origin but seems to be restricted to Nganasan, as demonstrated by the Tundra Nenets (lexicalized) participle *tyír-tya* [fly-PTCP.PRS] ‘bird’ (lit. ‘flying’) (T65). This suggests a complex historical origin for the alternation, as well as a historical connection between the imperfective aorist and the present participle forms (see Section 4).

As for the perfective aorist, the variants *-qe* and *-qa* (technically *-qÄ*) appear. The rare form *-qä*, representing the front allomorph of *-qa*, only appears on the irregular stem *bii* ‘leave’ : AOR.PRF.3SG *bii-qä*. (See also Wagner-Nagy 2019: 223.) Otherwise, the alternation between *-qe* and *-qa* cannot be attributed to vowel harmony, since it does not involve any of the regular harmonic pairs (see Várnai 2002: 58–59) and does not strictly follow the usual harmonic class of the stem, although there is some overlap.

For one, the vast majority of stems taking the suffix *-qa*, i.e. the so-called *a*-stems, belong to the *U* class (historically back). Thus, we have INF *kotu-ja* ‘kill’ : AOR.PRF.3SG *koda-qa*; *motu-ja* ‘cut’ : *mota-qa*; *ñiibtü-ša* ‘rest’ : *ñiibtä-qa* (SNg) as typical *a*-stems, all belonging to the *U* class, as indicated by their infinitives in *-SA* selecting the back harmonic variant. The only exceptions to this appearing in the school dictionary (SNg) are INF *koni-ji* : AOR.PRF.3SG *kona-qa* ‘go; become sth.’ and *ñintübtüši-* : *ñintübtä-qa* ‘remind’. At least the first mentioned of these is likely to have been a historical *\*ä*-stem, with the fronting of the original second-syllable *\*ä*<sup>10</sup> (PS *\*kân-* ‘go’ > DRV ? *\*kânä-* > *\*känä-*). Otherwise, all *a*-stems are harmonically

10. The fronting of Pre-Proto-Samoyed *\*ä* to *\*ä* is attested in several stems after *\*l* and *\*r*, but there are no other cases of such fronting after *\*n*. However, since all the other known cases of *i* ~ *a* alternation in Nganasan words of Stem III appear on stems with *\*ä* fronting after a liquid (*\*r* or *\*l*), e.g. Ng *koli* : *kola-* ‘fish’ < PS *\*kälä* < PU *\*kala*, it can be proposed that also the alternation in *koni-* : *kona-* could be ascribed to a similar sound change.

back. The class of *a*-stems also includes derived stems, if the final vowel of the last derivational suffix is a high vowel (*u, ü*) that alternates with Stem III *a*, such as the causative suffix *-btU*.

The picture is more complicated for the stems taking the suffix *-qe* (for the current purposes, the “*e*-stems”). This class of stems may contain both *I* and *U* stems; almost all *I* stems (i.e. historically front) belong to this class, but also all those *U* stems that have a Stem III not ending in *a* (see above). These stems typically have a mid or high unrounded vowel in their Stems I and II. Consonant stems, such as stems ending in *-s* and the transformative forms in *-m* (i.e. ‘become X’) also belong to this class. The mid vowel *e* of *e*-stems will raise and variably become palatalized or rounded and palatalized. Examples include the *I* class as per SNG; INF *śai-ji* : AOR.PRF.3SG *śai-qe* ‘burn, ignite’; *ńimti-ji* : *ńimti-qe* ‘call by a name’ and the *U* class *nome-ja* : *nomü-qe* ‘push’; *tamtüq-sa* : *tamtüjü-qe* ‘climb’ (SNG).

The more minor morphophonological alternations cannot be detailed here. What is important is the fact that the perfective aorist suffix is not congruent with harmonic class, meaning that neither its synchronic realization nor its historical origins can be explained by vowel harmony rules.

Table 3: Examples of stems and factors affecting the choice of aorist marker

Lexical stem	(Derivational suffixes)	Aspectual class	Stem type	Vowel harmony	AOR suffix
<i>kotu-</i>		PRF	<i>a</i> -stem	<i>U</i>	<i>-qa</i>
<i>koni-</i>		PRF	<i>a</i> -stem	<i>I</i>	<i>-qa</i>
<i>bii-</i>		PRF	<i>a</i> -stem	<i>I</i>	<i>-qä</i> [irreg.]
<i>tamtüq-</i>		PRF	<i>e</i> -stem ( <i>-s</i> )	<i>U</i>	<i>-qe</i>
<i>ńili-</i>		IPF	general	<i>I</i>	<i>-ti</i>
<i>tej-</i>		IPF	general ( <i>-j</i> )	<i>U</i>	<i>-cü</i>
<i>kundâ<sup>C</sup>-</i>	<i>-â<sup>C</sup>-</i> [DUR]	IPF	general ( <sup>C</sup> )	<i>U</i>	<i>-tu</i>
<i>kodu-te-</i>	<i>-<sup>C</sup>te-</i> [DUR]	IPF	general	<i>U</i>	<i>-tu</i>
<i>ńili-lî-</i>	<i>-lî-</i> [INCH]	PRF	<i>e</i> -stem	<i>I</i>	<i>-qe</i>
<i>teir-</i>	(*-jr- [“AUG”]) <sup>a</sup>	IPF	<i>r</i> -stem	<i>I</i>	<i>-i</i>
<i>tuu-qnar-</i>	<i>-qnÄr-</i> [FREQ]	IPF	<i>r</i> -stem	<i>U</i>	<i>-ü</i>
					<i>-ri</i> (regularly)

a. See Section 4.2.

The formation of other temporal and modal forms is synchronically not as complex as that of the indicative aorist, although they do participate in regular processes of morphophonological alternation where these are applicable (see Wagner-Nagy 2019: 240–262).

To conclude this section, it can be stated that the selection of the aorist marker in Nganasan is a complex operation, involving several areas of grammar, including aspect, the phonotactic properties of the lexical stem, productive patterns of derivation, stem type (with subtypes), and regular morphophonological alternations of the suffixes. Many of these processes are at least partially opaque from the synchronic point of view and seem to reflect different chronological layers. What follows next is an attempt to decipher the diachronic origins of the system.

#### **4. The development of the Nganasan aorist markers in the indicative: an etymological re-examination**

The Nganasan tense system is unique within the Samoyed branch, both in terms of the overt expression of lexical aspect, as well as the material background of forms: the indicative aorist suffixes *-NTU*, *-U*, and *-qe/-qa* have no direct parallels in the finite expression of TAM in any other Samoyed language. That the imperfective markers *-NTU* and *-U* originate in present participles has been noted already by Mikola (1996). For the perfective *-qe/-qa*, a similar proposal can be made based on partially lexicalized suffixes found in Nenets, Enets, and Nganasan that represent a former deverbal intensifying, resultative, or instrumental marker. Drawing examples from dictionary and corpus data, I argue that the Nganasan perfective aorist has developed from such a marker through a process of reinitiation as described in Section 2. While the incorporation of this form into aorist marking is limited to Nganasan, its cognates are found in various lexicalized derivatives in Nenets and Enets, and it seems to have regained productivity as a denominal marker, conventionally termed “augmentative”. Although my data on the productivity and exact semantics of the augmentative is limited, it is sufficient to claim that the class of nouns which formally count as augmentatives in all northern Samoyed languages contains both probably productive derivatives (i.e. augmentatives proper) as well as instances of lexicalized derivatives belonging to an older chronological layer of the form’s development and, as a consequence, reflecting its original resultative or instrumental semantics.

## 4.1. Expression of tense in Proto-Samoyed

Due to the complexity of systems found in the daughter languages of Proto-Samoyed, reconstructing the exact makeup of the original tense system has proven to be a difficult task. The conventional reconstruction relies heavily on the (Tundra) Nenets system, where the finite stem markers *-ŋa* and *-°*, representing the PS aorist markers *\*-ŋǎ* and *\*-ə*, respectively, are distributed according to a complex pattern, where the choice of the appropriate stem formation suffix is dependent upon both the phonotactic properties of the bare stem (e.g. consonant stems taking *-ŋa* and vowel stems *-°* in subjective conjugation) as well as the inflectional categories following it (e.g. *-ŋa* with dual objects, i.e. preceding a suffix with an initial *-x-*, while *-yə/-y°* (< PS *\*-jə*) is used with plural objects and in the reflexive conjugation, etc. (see Salminen 1997: 99–103; 2024: 225; Nikolaeva 2014: 26–27). Cognates of *\*-ŋǎ* and *\*-jə*, the latter of which will not be further discussed here due to limitations of space, can be found in most other Samoyed languages, while *\*-ə* is more problematic in this sense due to its shortness and the lability associated with PS vowel sequences.

In Nganasan, the indisputable cognate of the PS *\*-ŋǎ* is the interrogative aorist mood marker *-ŋU*, with the regular allomorphs *-ŋu* ~ *-ŋü* ~ *-ŋi* ~ *-ŋj* displaying vowel alternations typical for Nganasan vowel harmony (< PS *\*-ŋǎ* ~ *\*-ŋǎ*). The Nganasan interrogative suffix is used to form polar questions, e.g. *tuj-ŋu?* [COME-INT.AOR.3SG] ‘Did s/he arrive?’ and it can be used in other types of interrogative constructions as well. The time reference of the interrogative aorist is the same as that of the indicative aorist, while for the past interrogative Nganasan uses a different suffix, *-HU*, and for the future, a compound form *-NteŋU* (see also Section 3). It is notable that it is the interrogative in particular that uses different markers to distinguish tense, when this is not the case with all moods in Nganasan (see Wagner-Nagy 2019: 241). This could be the result of semantic carry-over of the original temporal meanings of the aorist, another piece of evidence supporting the linking of PS *\*-ŋǎ* to the tense system, as opposed to the view expressed by Gruzdeva & Janhunen (2020: 87–88) that the markers *\*-ŋǎ* and *\*-ə* should rather be reconstructed as markers of finiteness in general, rather than as genuine tense markers on the Proto-Samoyed level. While the latter interpretation is still possible, the markers’ interaction with the marking of tense proper, such as their opposition with the preterite marker *\*-sǎ*, suggests that they cannot be viewed as separate

from the tense system, and handling them separately from tense would be arbitrary. No sign of  $*\text{-}\text{ə}$  can be found in Nganasan, where vowel sequences are usually preserved.

The Enets systems have received various interpretations. According to Siegl (2022: 727) the aorist in Enets is a morphologically unmarked category, while in the analysis of Urmanchieva (2006: 86), there is a tense of “undefined time reference” (*форма неопределенного времени*) with the markers  $-a/\emptyset$  (vowel stems)  $\sim -\eta a$  (stems ending in a voiced consonant)  $\sim \text{-}^{\text{?}}a$  (stems ending in a voiceless consonant). Of these segments, whatever their synchronic status may be, at least the second one corresponds exactly to PS  $*\text{-}\eta\text{Å}$ . The marker  $-a/\emptyset$  could at least technically be connected with PS  $*\text{-}\text{ə}$ , but this is unlikely, since the regular cognate of PS  $*\text{ə}$  would be  $o$  or  $\text{ɔ}$  rather than  $a$ . As for  $\text{-}^{\text{?}}a$ , it could possibly be a variant of  $-\eta a$ , where the glottal stop is the result of the contraction of a consonant cluster at the morpheme boundary, cf. the stem-internal PS clusters  $*\text{t}^3\text{m}$ ,  $*\text{t}^3\text{w}$  which both yield  $\text{ʔ}$  in Enets (Kaheinen 2023: 104), but more research into Enets historical morpho(phono)logy is needed to confirm this.

There are several present tense markers in Kamas as well: a zero marker,  $-GA$ ,  $-mA$ , and  $-LA^{\text{?}}b\text{ə}$ , the selection of which depends on the verb stem, among other factors (for more details see Klumpp 2022: 828–829). The marker  $-GA$  (e.g. *i-ge-m* ‘I am’ [be-PRS-1SG]) is usually mentioned as a cognate of  $*\text{-}\eta\text{Å}$  (ibid.). However, since PS intervocalic  $*\eta$  actually yields  $\eta$  in Kamas, as in PS  $*a\eta o\text{j}$  ‘chin’ > Km  $o\eta o\text{j}$  (KSz 0768);  $*\text{t}\eta\eta\text{ə}$  ‘summer’ >  $ta\eta a$  (KSz 1146), the claim can be placed under doubt. It must also be noted that the Kamas marker is phonologically identical to the participle marker  $-GA$  (Klumpp 2022: 832), in which it quite obviously originates. Meanwhile, the zero marking could be a cognate of PS  $*\text{-}\text{ə}$ , but the comparison is fundamentally fruitless, since a comparison with zero cannot be a convincing argument. According to Klumpp (2022: 828), the Kamas zero marker originates in PS zero, which is a viable possibility. The presence of a suffix cognate to PS  $*\text{-}j\text{ə}$  in Kamas cannot be confirmed. In Mator, there is a similar problem with the zero marker, but the present tense marker  $-\eta$  can be considered a cognate of  $*\text{-}\eta\text{Å}$  with relatively high certainty (Helimski 1997: 153).

The past tense marker  $*\text{-}s\text{Å}$  (< PU  $*\text{-}\acute{s}\text{A}$ ) is present in all Samoyed languages, except for Kamas, apparently (Salminen 2024: 227, for Mator see Helimski 1997: 162–163). In Nenets and (Forest) Enets, the marker has gained non-assertive functions, becoming a mood marker often termed interrogative, very much like  $*\text{-}\eta\text{Å}$  in Nganasan, while a new periphrastic

past tense marker has developed in the indicative (Janhunen 1998: 472–473; Salminen 2024: 227).

It thus seems that overt tense marking was obligatory in Proto-Samoyed, i.e. finite predicates could not be conjugated with person markers without the use of a tense (or mood) marker. This may have been a Samoyed innovation (see Janhunen 1998: 471), although on the basis of Mansi and some traces elsewhere, it is possible that Proto-Uralic had a present tense marker alongside the more widely attested preterite ones (Aikio 2022: 17). In any case, the aorist markers  $*-\eta\check{A}$  and  $*-\text{ə}$  themselves have no known cognates outside Samoyed, while the preterite marker  $*-\text{s}\check{A}$  is of Uralic origin ( $<$  PU  $*-\acute{s}(A)$ , see Aikio 2022: 17). The question as to whether a Proto-Uralic type (?) zero-marking could have been possible in Proto-Samoyed as well, may also be reconsidered. A marginal case of zero-marking is found even in Forest Nenets, where the 1SG suffix  $-m^{\circ}q$  can attach to the bare verb stem without the usual stem-forming suffix (Salminen 2024: 225), though this could very well be an innovation.

As can be seen just from the brief survey above, the history of tense marking in Samoyed involves semantic shifts, replacement of forms, and phonetic contraction and alternation resulting from the interaction of suffixes with stem-final consonants, making up a quite complicated picture. According to Janhunen (1998: 471), tense marking in Proto-Samoyed likely went through a number of changes just before the final breakup of the proto-language. Otherwise, it would be difficult to explain the variation, irregular alternations, and also cognacy we see today in the systems attested in Samoyed languages. In the case of Nganasan, where the PS aorist has been pushed out of the indicative function by new forms, it is perhaps not appropriate to assume a unilateral replacement of an established or uniform PS system, but rather an independent evolution from a state of disarray.

#### 4.2. Imperfective aorist *-NTU* and *-U*

Out of the three Nganasan aorist markers, IPF *-NTU*, *-U*, and PRF *-qe/-qa*, the general stem imperfective aorist marker *-NTU* is etymologically the most transparent, being nearly identical with the present participle marker *-NTUe*, which is fully productive, e.g. *niliti* ‘s/he lives’ [AOR.IPF.3SG] : *nilitie* ‘living’ [PTCP.PRS] (SNg). The marking has most likely developed through the use of the participle as a nominal predicate in sentences of the type

*nili-ti-m* [\*live-PTCP.PRS-1SG] ‘I am (a) living (being)’, where the possibility to attach person markers directly to the nominalized verb precipitated the reanalysis of the form as a finite one, i.e. → [live-AOR.IPF-1SG] ‘I live’. The process has parallels in e.g. the formation of several Tundra Nenets mood markers (Jalava 2017: 141).

While the tense marker *-NTU* has developed from the present participle, PS \**-nt*Å, the original present participle marker itself has been augmented with the adjectivizing suffix \**-jə*, giving Ng PTCP.PRS *-NTUe*. This etymology has been suggested already by Mikola (1996), who, furthermore, proposes that the *r*-stem suffix *-U* would likewise originate in a present participle, only with the suffix being \**-r*Å instead of \**-nt*Å. Mikola notes that, firstly, the *r*-stem verbs not only require the suffix *-U* in the imperfective aorist, but also appear with the suffix variant *-Ue* in the present participle, e.g. *teiri* ‘s/he flies’ [AOR.IPF.3SG] : *teirie* ‘flying’ [PTCP.PRS] (SNg), and, secondly, that the use of the suffix *-U* on *r*-stems is not conditioned by phonotactic rules, as demonstrated by the appearance of the *rt* cluster in *r*-stem nouns, e.g. *kadar-tu* ‘light’ [3SG.PX] (SNg). The cluster was also historically possible in Proto-Samoyed (see the discussion in Kaheinen 2023: 180), and forms such as TN *tyír-tya* ‘flying’ [fly-PTCP.PRS] → ‘bird’ (Salminen 1997: 53), reflecting PS \**təjr-tä*, demonstrate that the present participle \**-nt*Å could attach to stems ending in PS \**r*. The suffix would undergo the regular deletion of the initial consonant due to the rule that forbade clusters of more than two (non-\*) consonants in Proto-Samoyed, but it would leave the \**t* unchanged, consequently leaving us without an easy phonotactic explanation for the complementary distribution of *-NTU* and *-U* in Nganasan.

To resolve this issue, Mikola (1996) proposes that there could have been another present participle marker of the type PS \**-r*Å, which would have subsequently been limited to (pre-)Nganasan *r*-stems, and, through the automatic simplification of the phonologically non-distinctive geminate \**rr*, led to the development \**-r-r*Å > \**-r*Å on these stems. Possible cognates of \**-r*Å, unmentioned by Mikola, could be the Forest Nenets frequentative marker *-rV* (see Siegl 2013: 272) or the Mator deverbal derivational suffix *-rə* (Helimski 1997: 184). The assumption of phonological indistinctiveness and automatic simplification of the geminate already at the Proto-Samoyed level is supported by the fact that Nganasan *r*-stem verbs appear in the strong grade in their aorist imperfect, meaning that the syllable was open at the time radical gradation became phonologized (be

it Proto-Nganasan or earlier, cf. Helimski [1995] 2000: 175–178): e.g. *tagur* ‘gather’: AOR.IPF.3SG *takuru* (SNG). What is more difficult to explain with regards to this etymology, however, is the complementary distribution of the suffixes in the first place, since there is no apparent reason as to why the \*jr-stem verbs should select a different participle marker in the first place – and why *only* the \*jr-stems would select for it. Mikola (1996) seems to assume this is just the result of lexicalization.

In searching for a further explanation for the strange distributional details of the suffixes *-NTU* and *-U*, one may note that the Nganasan *r*-stems themselves are all historically derivatives. The Nganasan suffix forming *r*-stems goes back to the Proto-Samoyed deverbal derivational suffix \*jr, conventionally termed “augmentative” (see e.g. Janhunen 1977), which has cognates in all Samoyed languages, albeit with varying levels of productivity. The semantics of the Proto-Samoyed suffix have not been studied in detail, a task left to be taken up by future research, but based on its modern cognates, it seems likely that it was used to form verbs with durative, multiplicative, or habitual semantics, which are typical for verbs belonging to the imperfective aspectual class in Nganasan. In fact, nearly all – if not all – Nganasan *r*-stem verbs are imperfective. The assumption of PS \*jr as an imperfective (durative, habitative, etc.) derivational suffix is supported also by its cognates, in e.g. Tundra Nenets frequentative-iterative-multiplicative *-or, -ur, -er*: *xayo-* ‘stay’ → *xayur-* ‘stay many times’ (Nikolaeva 2014: 45); Forest Enets unproductive frequentative *-r/-l*: *dōrid* ‘speak’: CNG *dōrir* (Siegl 2013: 270); Mator frequentative *-r* (Helimski 1997: 185), etc.

It seems very likely that the Proto-Samoyed suffixes \*jr and \*rÅ are ultimately historically connected to each other. In fact, one could suggest that they might originally represent the descendants of one and the same deverbal suffix, which has given rise to a wide array of forms and the morphosyntactic behavior of which lies somewhere in between inflection and derivation. This would explain why the Nganasan *r*-stems (and only the *r*-stems) take the suffix \*rÅ, because there was no PS participle \*rÅ existing separately from the PS \*jr, but instead \*jr and \*rÅ (actually \*jrÅ) descend from the same form. I acknowledge that this suggestion is not entirely without problems (for example, the presence vs. absence of the vowel \*Å is left unexplained), but since no better explanation is immediately available, it is worth mentioning. I will tentatively suggest that a (deverbal) noun-forming suffix \*jr could also be of the same origin, cf. Ng *kadar* ‘light’ (noun) ~ *kategee* ‘light, clear’ (adj.) < PS \*kâtâ- (? \*kât3-) ‘shine’ >



Slk *kuâti*-id. (SkWb 1907) etc., although the matter of word formation and aspectual derivation in Proto-Samoyed would require more research to confirm this.

Interestingly, in the paradigm of the Forest Enets unproductive frequentative marker *-r* (< PS *\*-jr*) – separate from, but historically probably related to, the productive frequentative *-rV* – there is a complementary distribution of the markers *-r* and *-ŋa* (< PS *\*-ŋǻ*), the aforementioned appearing in e.g. the connegative and the former in the present tense (Siegl 2013: 270–272). Synchronically they can be technically analyzed as allomorphs, although historically they are of separate origin (*ibid.*). This fact could be cited in support of the idea that perhaps both forms originally functioned as derivational suffixes, which allowed them to develop complex patterns of (stylistic, semantic, etc.) alternations that subsequently became lexicalized and fossilized within paradigms. More research into Proto-Samoyed derivational suffixes is still needed to explain these complex phenomena.

It is technically possible, and thus worth mentioning, that the *r*-stem suffix *-U* could also have originated in PS *\*-ǻ* (see Section 3), but this would require the irregular sound change (presumably by analogy) *\*ǻ > U*, and yet it would leave the complementary distribution of suffixes according to stem types unexplained. Even if it would be tempting in its simplicity to assume that Ng *-U* has developed from the same PS *\*-ǻ* as e.g. Nenets *-°*, jumping to conclusions should be avoided. Again, we are faced with the fact that segments consisting of a single vowel are deceptively easy to compare to just about anything, which is why etymologizing them requires especial caution.

### 4.3. Perfective aorist *-qe/-qa*

The Nganasan perfective aorist suffix *-qe/-qa* is without obvious cognates in the tense paradigms of other Samoyed languages, which may also be part of the reason why the Nganasan tense system has been regarded as aberrant (see Janhunen 1991). Gusev (2013: 72–73) suggests that the Nganasan suffix could have originated in a compound of two Proto-Samoyed suffixes, the *REFL/PLO* marker *\*-j* and the regular “aorist” *\*-ŋǻ*, comparing them to the Selkup present tense (or finite) markers *-j*, *-ŋ*. Based on this comparison, Gusev reconstructs the form *\*-jŋǻ* for the Nganasan perfective aorist. However, from the point of view of historical phonology, the reconstruction is clearly problematic. First of all, there is little evidence to

indicate that the PS cluster \*jŋ would produce a glottal stop in Nganasan, since there are no other cases of glottal stops developing from nasals.<sup>11</sup> Secondly, the vowel \*ə of Gusev's (ibid.) reconstruction does not match the vowel required by the cognates in other Samoyed languages, which is undeniably PS \*Ä. This etymology also leaves unaddressed the non-harmonic vowel alternation *e ~ a* (~ *ä*) (see Section 3), which does not regularly reflect PS \*ə, either.

In my opinion, a better etymological match for the perfective aorist marker is available. The northern Samoyed languages, an areal rather than genealogical grouping within the Samoyed branch (see Salminen 2002; 2024: 181–184; Kaheinen 2023: 132–133), all show traces of a Proto-Samoyed deverbal derivative suffix which seems to have carried resultative and instrumental meanings (see examples below). The original deverbal derivational process has become unproductive, but traces of it remain in lexicalized derivatives, which can be found in dictionaries. Notably, all of the languages in which the suffix appears display similar internal variations in the suffix vowel, which cannot be ascribed to regular morphophonological alternations caused by the PS vowel harmony. A further complicating factor related to these suffixes is that they are phonologically identical with the augmentative, a productive or semi-productive denominal, or, in the case of Nenets, omnibased (i.e. joining both verbs and nouns) derivational suffix, which is used to convey the meanings of the largeness or intensity of an entity (i.e. 'large [noun]', '[verb] intensely, greatly'). There is no reason to assume that these are not etymologically the same form. However, there seem to be both synchronically productive and unproductive uses of the form, which are oftentimes semantically distinct.

In Nganasan, the suffix appears with the variants *-qÄ*, *-qe(e)*, *-que*, resembling greatly the perfective aorist suffix *-qe/-qa* (cf. Section 3.2), while, admittedly, not being identical to it (Wagner-Nagy 2019: 509–511, examples drawn from SNg and Brykina et al. 2018). In Tundra Enets (EnSl), the suffix appears as *-ʔo*, *-ʔe*, and *-ʔa*, all going back to different PS vowels, while in

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11. Synchronically, a stem-final glottal stop does alternate with a nasal in the oblique stem in the word *hebtiq* : *hebtine-* 'lip' (< PS \*päptänʔ?) (SNg) (see also Várnai 2010: 612), but this is not a regular alternation in Nganasan, and based on cognates found in other Samoyed languages, there may have been alternation in the stem-final consonant already at the Proto-Samoyed level, cf. Slk *peptäl'* 'chin' (SkWb 400) (< PS \*päptäjʔ?) ~ Mt *höbten* ~ *hibten* ~ *höbten* (~ *höbteʔn*) 'lip' (MS 307) (< PS \*päptän<sup>1</sup> ~ \*piptän<sup>1</sup> ~ \*päptät<sup>1</sup> ~ \*piptät<sup>1</sup>).

Forest Enets (LES) we find no less than five different vowels -ʔo, -ʔɔ, -ʔe, -ʔε, and -ʔa, reflecting likewise a historical disarray in vocalism.<sup>12</sup> Both Nenets languages, in their turn, display two different-vowel variants of the suffix: Tundra Nenets -qj̄a<sup>o</sup> (with the contracted form -qj̄a) and -yeq<sup>o</sup>, Forest Nenets -jaqj<sup>o</sup> and -yeqj<sup>o3</sup>.

The productive use of the Nganasan suffix as an augmentative occurs with substantives, adjectives, as well as participles. According to Wagner-Nagy (2019: 509–511), there are several different augmentative suffixes in Nganasan: -qĀ,<sup>14</sup> -qee, -que (with the variant -qūe, fronted through assimilation), and -rbAqĀ (with the variant -rbAqe). Not mentioned separately but appearing among the examples is also -qā, best analyzed as a variant of -qĀ on stems ending in ā, where metathesis of the stem-final vowel is sometimes attested (cf. Table 4). There is apparently little to no semantic difference between the different vowel variants, and they are also phonologically very similar to each other, indicating that they are etymologically connected, even if their distribution cannot be explained by regular morphophonological alternations. The extended form in -rbAqĀ is obviously a compound containing the short form -qĀ and another suffix which does not appear independently. Additionally, the augmentative suffix appears on the compound pejorative suffix -jAqĀ (ibid., p. 511). Wagner-Nagy gives the following distributional criteria for the simple<sup>15</sup> augmentative suffixes: -qĀ joins common nouns, -qe(e) mostly kinship terms, where it has pejorative connotations, while -que joins proper names. Based on the forms

12. The Forest Nenets vowel ε (< PS \*ä in certain contexts) is not found in Tundra Enets, where Proto-Enets \*e and \*ε have merged. The situation of ɔ (< PS \*ə<sup>1</sup>), which is found in both Enets languages, is more complex. (See Khanina 2018: 433.) The difference between EnSl o and LES ɔ is orthographic; both represent a back rounded half-open vowel < PS \*ə<sup>1</sup>, while EnSl ô and LES o represent its slightly raised counterpart (< PS \*o). Thus, the TE suffix variant -ʔo is actually, in terms of the Enets phonological systems, most equivalent to FE -ʔ, while no forms of the suffix with TE ô (= FE o) are recorded in EnSl.

13. I thank Tapani Salminen (p.c. July 2023) for valuable information on the Nenets suffixes, especially the details concerning their phonological shape.

14. The alternation a ~ ä is not marked on the archiphonemic form of the suffix by Wagner-Nagy (2019: 509), but it is present in the NSL corpus (Brykina et al. 2018).

15. The final vowel -e of these suffixes is probably historically the adjectivizing suffix \*-jə, but the complex origin of -qe(e) and -que is still arguably less transparent than that of -rbAqĀ and -jAqĀ.

found in the NSL corpus (Brykina et al. 2018), which contains altogether 3,546 instances glossed as augmentative, including both productive and lexicalized instances, and the school dictionary (SNG), the picture is a little more complicated, as demonstrated by the following table:

Table 4: Some examples of different augmentative suffix variants in productive use in Nganasan

Suffix variant	Allo-morphs	Class	Examples
-qÄ	-qa	U	<i>kolaqa</i> (← <i>koli</i> ) ‘fish’; <i>ñüaraqa</i> (← <i>ñüar</i> ) ‘hill’; <i>taaqa</i> (← <i>taa</i> ) ‘reindeer’
	-qä	I	<i>seriqä</i> (← <i>seree</i> ) ‘path’; <i>cebitiqä</i> (← <i>cebitie</i> [nail.VBLZ-PTCP.PRS]) ‘nailing’; <i>bitidiqä</i> (← <i>bidiq</i> ) ‘arrow’
	-qå	U	<i>kobtuqå</i> (~ <i>kobtaqa</i> ) (← <i>kobtä</i> ) ‘girl’; <i>jündüqå</i> (← <i>jündä</i> ) ‘horse’
-qe(e)	-qe	U; I	<i>cajbeqe</i> (← <i>cajbe</i> ) ‘stomach’ (I); <i>banüqe</i> (← <i>ban</i> ) ‘dog’ (U)
	-qee	U; I	<i>madeqee</i> (← <i>maq</i> : OBL <i>made-</i> ) ‘tent’ (U); <i>ñedeqee</i> (← <i>ñeq</i> : OBL <i>ñede-</i> ) ‘shaman’ (I); <i>jejiqee</i> (← <i>jesi</i> ) ‘father’ (I)
-que	-que	U	<i>Ukuque</i> (← <i>Uku</i> ); <i>susuque</i> (← <i>susu</i> ) ‘hill’; <i>ñomuque</i> (← <i>ñomu</i> ) ‘hare’; <i>ñojbukuque</i> ‘shaman’s headdress’ (← <i>ñojbu-kue</i> [head-DRV])

As is evident from Table 4 above, it cannot be claimed that the suffix variants *-qe*, *-qee*, and *-que* would be restricted to kinship terms and proper names in the texts of the corpus. In fact, many regular nouns seem to consistently take the suffix *-qe(e)*, with no obvious semantic explanation. The distributional criteria of these forms are not entirely clear, as both *-qÄ* and *-qe* are apparently productive despite the high number of lexicalized forms for both. The variant *-qee* with a vowel sequence is actually rarer than *-qe*, with only 12 appearances in the NSL corpus (Brykina et al. 2018) vs. 215 of *-qe*, and it may in fact be considered a subvariant of *-qe* (diachronically likely derived with the PS adjectivizing suffix *\*-jə*), since the stems appearing with it may also appear with *-qe*. The suffix *-que*, contrary to the view of Wagner-Nagy (2019: 509–511), seems to appear on some appellatives along with proper names, e.g. *?susuque* ‘hill’; *?ñomuque* ‘hare’, but

these may be erroneous renderings of *-qe*.<sup>16</sup> The variant *-qÄ* seems to be the most common in the NSL corpus, with 2,282 instances<sup>17</sup> of *-qa*, though this number is inflated due to a few highly frequent lexicalized augmentatives belonging to this class (e.g. *bojkaqa* ‘old man, husband’ with 240 instances and *anikaqa* ‘big’ with 95 instances), 154 instances of *-qā*, and 854 instances of *-qä*. Furthermore, there are 29 (apparent) instances of *-que*, confusingly rendered as *ʔuä* or *ʔüä* in the transcription. In any case, no clear relation between semantic groupings and the choice of particular suffix can be found in the data, but instead the choice of suffix variant depends on the stem, with certain (most) stems taking the variant *-qÄ*, a smaller but nonetheless significant number taking *-qe*, and very few appearing with *-que*.

Along with the irregular variation discussed above, the augmentative suffixes display alternation that conforms to the usual morphophonological rules of the historical vowel harmony, namely the alternation *a ~ ä* on *U/I* class stems, respectively. While *qä* appears on *I* class stems, i.e. historically front, and *-qa* mostly<sup>18</sup> on *U* class stems, i.e. historically back, *-qe(e)* may appear with both. Historically, the vowel *e* in non-first syllables reflects Proto-Samoyed *\*ə*<sup>1</sup> (*\*ə ~ \*ə*), while *Ä* probably reflects an originally non-alternating *\*a*, which later acquired the front variant *ä* through analogy. The variation *-qe/-qÄ* not only defies the usual rules of vowel harmony in Nganasan, according to which *e* is a neutral vowel, but it is also nearly identical to the pattern of variation attested in the perfective aorist marker (see Section 3.2). The distributional criteria of the different vowel variants are not identical for the two forms, since *-qä* is the usual *I* stem variant in the augmentative, while in the perfective aorist this variant only appears with the irregular stem *bii-* ‘leave’ (cf. Table 3). The augmentative suffix *-qÄ* joins a stem highly resembling the Stem III, but its stem formation is not entirely normal. The most striking deviation from regular stem formation

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16. In the corpus, they are transcribed as *üe*, which is not an independent phoneme in Nganasan, and it is at times unclear whether it is intended to represent an allophone of *e* or *ä*.

17. Including forms displaying regular stem-vowel alternations in *-qi*; these have been grouped according to their Stem I form.

18. A salient exception is *kolaqa* from *koli* ‘fish’, which belongs to the *I* class. However, *koli* is otherwise historically exceptional as well, belonging to the small class of PS words which fronted their second-syllable *\*ä* after a liquid (> *\*ä*) while retaining a back-vowel stem variant which resurfaces in certain contexts. Thus, the *I* class membership of Ng *koli* is secondary.

is that *-qa* alters the final vowel of the stem it joins, forming a kind of “pseudo *a*-stem” for even those nouns that do not belong to this stem type, such as consonant stems. The front variant *-qä* appears with either *i* or *ï* as the stem vowel, which is phonologically identical to the Stem III of *I* class (historically front) verbs. The variant *-qe*, on the other hand, joins Stem II, causing no vowel alternations.

Although the Nganasan augmentative is productive, the difference in meaning between the augmentative and the underived form seems in some cases to be vague at best. In the case of lexicalized augmentatives, lacking an underived counterpart, there is obviously no point of comparison, but the lexicalized augmentatives do not appear to bear any connotation of particular grandiosity of size. Sometimes there is no underived stem, but instead only forms which look like parallel derivations of the same stem, one of which is (formally) an augmentative. Parallel forms are especially typical of adjectives, sometimes apparently without a pronounced semantic difference, cf. AUG *tusajkaqa* ‘black’ ~ DRV.ADJ *tusajkue* id. (SNg)<sup>19</sup> – the expected underived stem *\*\*tusajku* does not exist independently. It should be noted that, apart from the rare forms in *-qee*, the adjectivizing suffix *-e* and the augmentative are mutually exclusive, and the usage of one on any given stem implies the absence of the other. The mutual exclusivity of the augmentative and the adjectivizer applies not only to regular adjectives but historically complex deverbal forms as well, such as participles in *-qmUe* and *NTUe*, where the final *-e* is historically the adjectivizing suffix *\*-jə*; see e.g. *kondüqmaqa* ‘sacrifice’ ← *kondü-qmue* [sacrifice.VBLZ-PTCP.PRF] (SNg). The presumable underived stem *\*\*kondüqmu* is not attested independently.

There is still little research on the exact functions and productiveness of these suffixes in the Enets languages, but examples of them do appear in dictionary data, with both patterns of obvious derivation as well as apparently lexicalized examples: TE *ebe’o* ‘(very thick) long needle, large needle’ ← *ee* ‘needle’; *kori’o* ‘pole for steering reindeer (Ru хопей)’; *pire’e* ‘back of the head’; *maga’a* ‘a baby’s sleeping bag’, etc. (EnSI); FE *bato’o* ~ *bto’o* ‘tail’; *ezo’o* ~ *eze’o* ‘runner of a sledge’; *kazi’e* ‘sterile female reindeer’; *de’ni’a* ‘patch’; *səri’ε* ‘tree stump’ (LES).

19. One would expect the augmentative form to mean something like ‘very black’, but this is not indicated in the dictionary, where both words are given the Russian translation ‘чёрный’, i.e. ‘black’. Whether such connotations are nonetheless present is a matter that should be looked into in future research.

The Nenets augmentative markers, which can, according to Salminen (p.c. July 2023), be reconstructed as Proto-Nenets *\*-jaqjə* and *\*-yeqjə*, are actually cognate with the Nganasan pejorative augmentative in *-jAqal/-jAqe* (see Wagner-Nagy 2019: 509–511) ~ FE (AUG.)PEJ *-jeʔe*. Moreover, a cognate of the Proto-Nenets segment *\*-ja/-jə* appears independently in Enets, as in TE *pedá* ‘large tree’ (← *pe* ‘tree’), *seodá* ‘large heart’ (← *seo* ‘heart’) (EnSl), suggesting that the Nenets forms, too, were originally compound and contain the same segment that appears as an independent augmentative suffix in Nganasan and Enets. The original phonological shape of the suffixes has become somewhat obscured in Tundra Nenets especially, likely through a process of metathesis *\*-jäq° > -qjä°*.<sup>20</sup>

Examples of both vowel variants from both Nenets languages can be readily found in dictionaries: TN *ɲarkaqaqjä* ‘huge, very large’ ← *ɲarka* ‘big, large, adult’; *seryeq°* ‘very white’ ← *ser* ‘white’ (T65; see also Nikolaeva 2014: 139); FN *ɲalkajaqj°* ‘adult male of wild reindeer’ (JrWb 17a ‘heisst der Bulle des wilden Renntiers im Sommer, falls er von grossem Wuchs ist’) ← *ɲalka* ‘big’ (JrWb 16b); *xeryeqj°* ‘large white reindeer bull’ (JrWb 410a) ← *xər* ‘white’ (JrWb 410a). Especially in the Forest Nenets examples, a tendency towards lexicalization and semantic specialization of the augmentatives can be seen, although this may be at least partially a feature of dictionary data, which probably contains proportionally more examples of lexicalized forms than productive ones, and thus it cannot be taken as an indicator of the general productivity of augmentative formation in Forest Nenets.

A peculiar property of the Tundra Nenets augmentative is that it is omnibased, meaning it can appear on verbs as well as nouns. It does not change the word class of the stem it attaches to. On finite verbs, it has a pejorative meaning, implying disdain or disapproval towards the action portrayed on the part of the speaker (Nikolaeva 2014: 139). Apparently, the deverbal use of the augmentative is quite rare. No information on the productivity of augmentative derivation in Forest Nenets verbs is available.

Although the augmentative suffix is without cognates elsewhere in Samoyed, it could be claimed that both the suffix and the vowel alternations go back to Proto-Samoyed. From among the other Samoyed languages, at least Selkup has functional equivalents of the augmentative suffix, separate for nouns and verbs (North Selkup *-lra* and *-ka*, respectively, see Kazakevič 2022: 806), but these are obviously not direct cognates of the northern Samoyed augmentative.

20. Tapani Salminen (p.c. July 2023).

The Nganasan augmentative, as it has been previously described (e.g. Wagner-Nagy 2019: 509–511), is a productive process of denominal derivation, in which the augmentative suffix denotes the large size or other kind of significance of the entity, e.g. *taa* ‘reindeer’ → *taa-qa* ‘large reindeer’. However, upon a closer inspection the list of Nganasan words that might be formally considered augmentatives (collected from SNg, NgSl and Ng2o) seems to contain also quite a few instances of fossilized forms, for which no underived stem is attested. It is likely that the lexicalization has in many cases led to the loss of the augmentative’s semantic specificity of denoting the large size of the referent. Many lexicalized forms are found among terms denoting animals, body parts, household items, kinship terms, or geographical entities: *bataqa* ‘untrained reindeer’; *kirkaqa* (~ *kirkaqa*) ‘short-haired dog’; *hingaqa* ‘pillow’; *ηueraqa* ‘season of impassable roads (Ru распутица)’; *iniqä* ‘old woman, wife’, but there are also a few adjectives where the augmentative form is the most common one attested. Predictably, the adjectives of this type have meanings such as ‘big, large’: *anikaqa* ‘big’, *ñenacaqa* ‘huge’, etc. A few of these have cognates in Nenets or Enets, some of which are fossilized augmentatives as well, while others are either underived or appear with another derivational suffix.

Further examples of lexicalized augmentatives include the following: *bäguqe* ‘male grouse’ ~ TE *bexu’o* ‘a grouse species (with a black neck)’ – no further cognates; possibly PS \*wäkz-, but unlikely given the narrow distribution and specialized meaning; *batüqe* ‘tailbone, sacrum’ ~ TE *batu’o* ‘tail; hindside’ ~ FE *bato’o* ~ *boto’o* ‘tail’ – likely parallel loans from an unknown source; *bodiqe* ‘left-handed person’ ~ TE *bađi’o* ‘left; left-handed person’ – cf. parallel derivatives TN *wadyisyey*<sup>o</sup> ‘left; left-handed person’; FN *watyişyat*<sup>o</sup> id. < PS \*wâti(-); *hiriqä* ‘back of the head’ ~ TE *pire’e* id. – possibly from PS \*pirə ‘height’; compare TN *pyir’bya* ‘hump (of animal); withers’ ~ FE *pyil’mya* ‘withers (of animal)’ (JrWb 358b); *kendiqe* ‘owl’ ~ TE *kode’o* ~ FE *kəde’o* id. – cognate stem derived with a different suffix attested in Nenets: TN *xənyebcyo* ~ FN *kinyipsyu* (JrWb 157b); no other cognates but plausibly from PS \*kəntä-; *lan̄kuebtiqe* ‘snow bunting’ ← *lan̄kue* ‘gill cover; craw (of bird)’ (NgSl) ~ TE *leguo* ‘gills’; *ñemiqe* ‘female reindeer’ – formally a derivative of Ng *ñemi* ‘mother’ < PS \*ämä, but lexicalized in meaning. There are also examples without known cognates: *honiqe* ‘underwear’; *jehiqe* ‘old (of reindeer)’; *kaŋgüqe*<sup>21</sup> ‘lesser white-front-

21. Anikin & Helimski (2007: 144) suggest a loan etymology from Tungusic, but



ed goose'; *šerjibtidiqä* 'late February, early March'; *šerbiqe* 'large beautiful sleigh reindeer'.

As can be seen from the examples, many Nganasan lexicalized augmentatives are entirely without cognates, and in the cases where there are cognates, which also happen to be lexicalized augmentatives, they are most often found in Tundra Enets – whereas the lexicalized augmentatives of the Nenets languages seem to be stems of separate origin. This is likely the result of contacts between Nganasan and Enets, causing parallel areal developments in the formation of their lexicon.

A number of the examples presented above indeed look like denominal derivations in the augmentative that have simply become lexicalized. However, there are also cases where it would be possible to suggest a deverbal origin for a noun that synchronically looks like a lexicalized augmentative. This is especially the case with nouns where an underived nominal stem is not attested at all, but instead a semantically close verbal stem is attested in the same language or can be reconstructed for Proto-Samoyed. Conspicuous examples from Nganasan include e.g. *kentiqe* 'frost', cf. *kenti-* : *kendiqe* (I) 'freeze [AOR.PRF.3SG]' (SNG) < PS \*kəntä- id.; *holiqa* 'top of the head; roof of the mouth; uvula' (NgSI) < PS \*pälä- 'swallow'; *hiŋgaqa* 'pillow', cf. the verb *hiŋgabu-* : *hiŋgabtaqa* 'make a bed [AOR.PRF.3SG]' (Ng20); *keriqa* 'a pole for steering reindeer' (SNG), cf. *keri-* : *keriqa* 'steer reindeer' (Ng20); *mieduqa* 'artifact, product' (SNG), cf. *mej-* : *miiqa* : CNG *mieq* 'make' (Ng20); and *jeceqa* 'a pole for pulling up tent covers' (Ng20), cf. *jeci-* : *jeciqa* 'pull up the tent cover' (SNG). The most striking example is perhaps found in the school dictionary (SNG): *honuqa* 'plait', which is phonologically identical to the 3rd person perfective aorist of the verb *hon-* 'plait': *honuqa*. I argue that these forms represent cases of lexicalized deverbal derivatives.

A couple of lexemes from Nenets and Enets that contain the cognate suffix, and likewise look like lexicalized deverbal forms, can also be cited: TN *nəqjä°* 'a hide for processing', cf. *nəq-* 'process an animal hide' (T65); TE *nodu'e* 'the one which is heard', cf. *nodo-* 'hear' (EnSI); FE *tidoʔ* 'washing (process)', cf. *tidoʔ* 'wash (verb) [AOR]' (LES). These would still warrant more research to uncover their full history and possible further cognates. There are too few examples of the Tundra Nenets deverbal augmentative

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since the proposed cognates (at least the phonologically plausible ones) are all from Southern Tungusic, it is better to consider it a chance resemblance motivated by onomatopoeia.

to determine whether it could convey some kind of immediacy, i.e. perfectiveness, associated with the action. The evidence is inconclusive, as can be seen from the two examples (taken from Salminen 2013) below, where (3) would seem to allow for such an interpretation but (4) would not.

## Tundra Nenets

- (3) *Нумда хоба ханзеркава” малңо”яңа, ңамгэхэрт ни ңадю”.*

*num-ta*                      *xoba xənsyer-k<sup>o</sup>wa-q*    *mal<sup>o</sup>ηo-qjja<sup>o</sup>-ηa,*  
sky-GEN.3SG.PX.SG skin how-AFF-LAT get.covered-AUG-AOR.3SG

*ηəmtke-xərt<sup>o</sup>*    *nyí*                      *ηədyu-q*  
what-CONC NEG.AUX.3SG show-CNG

‘The sky got covered with clouds, nothing can be seen.’  
(TN Corpus, p. 506 [223 35])

- (4) *Некоця”я” еи” маңгат хурина тарина худыкаръяңа”.*

*nye-kosya-qjja<sup>o</sup>-q*                      *yeyi-q*                      *tañk<sup>o</sup>-kət<sup>o</sup>*  
woman-DIM.PEJ-AUG-PL tent.cover-GEN.PL rope-ABL.PL

*xuryina*                      *təryina*                      *xúdikər<sup>o</sup>-qjja<sup>o</sup>-ηa-q*  
everywhere everywhere flail-AUG-AOR-3PL

‘The women are keeping busy with the tent covers’ ropes here and there.’ (TN Corpus, p. 534 [234 49])

An interesting case of this is the mythologically significant term Ng *śigiqe* ‘monster; a type of evil spirit (in folklore)’ (Ng20) ~ TE *sixi<sup>o</sup>* id. (EnSl), cf. the Tundra Nenets *syix<sup>o</sup>rtya* ‘(mythological) entity living underground; (mythological) people; Finnic-speaking people (чуди)’ ~ FN *syix<sup>o</sup>ltya* id. (JrWb 445b ‘(myth.) glücklicher, unter der Erde wohnender Mensch, an der Wohnplätzen solcher, in sandigen Uferwänden hat man Gegenstände aus Silber, Kupfer und Stein, Tonscherben und Münzen gefunden; mit dem russischen Namen werden sie Tschuden (чуди) genannt’). The Nenets lexemes are at least formally present participles of the verb TN *syixər-* ‘acquire an earth-like complexion’ (T65) (also apparently ‘hide oneself’ (Laptander 2020: 187) ~ FN *syixil-* ‘acquire a strange appearance, acquire a dark complexion (of the face of a shaman or a person who has long been wandering and sleeping under the open sky)’ (JrWb 445b ‘ein schwarzes, fremdartiges, altes Aussehen annehmen (das Gesicht des Zauberers oder jemandes, der lange auf der Wanderung sein und unter freiem Himmel schlafen muss)’). This word family is of especial interest from an ethno-historical point of view, because it has been connected to the pre-Samoyed

populations of northern Siberia and the Arctic coast. In addition to referring to probable historical groups of people, the word has become heavily mythologized (Laptander 2020: 187–189). It has no known cognates outside Nganasan, Enets, and Nenets, and no further etymology for it exists. The current account does not offer much of an etymology, either, but what it does suggest is that the nouns belonging to this word family are of deverbal origin, a fact that may later prove to be etymologically or ethnohistorically significant.

Drawing together the facts, namely the parallel irregularities in suffix vowels displayed by both the perfective aorist as well as the augmentative, the latter having likewise irregular cognates in Nenets and Enets, and the appearance of otherwise etymologically inexplicable nouns formally in the augmentative, with close cognates in verbal stems, it can be proposed that the Nganasan indicative perfective aorist *-qe/-qa* has developed from a Proto-Samoyed deverbal derivational suffix. I claim that there was a Proto-Samoyed suffix used to form verbal nouns, which, through the process of refinitization described in Section 2, came to be used with predicates in Nganasan, and was subsequently integrated into the finite paradigm, eventually becoming obligatory in the indicative aorist with stems of the perfective aspectual class. The same suffix has also become productive in denominal use, giving rise to the productive augmentative derivation, fossilized examples of the previous deverbal use undoubtedly existing in parallel.

Judging by the fact that there is a tendency for the augmentative forms to become lexicalized in all of the languages surveyed, the Tundra Nenets productive deverbal augmentative could also be of secondary origin. Thus, it is not necessary to assume that the Nganasan perfective aorist originated directly in the augmentative, but that the common history of the two forms lies somewhere, likely very far back, in the past. In cases where there is both a synchronically attested (perfective) verb stem as well as a cognate fossilized augmentative in Nganasan, it is notable that the 3rd person indicative aorist of the verb is very similar to the augmentative noun, though only rarely a complete homophone (e.g. in the case of *honuqe* ‘s/he plaited it [AOR.PRF.3SG]; plait (noun)’). This further indicates that the process of lexicalization that created the nouns is quite old.

The nouns most clearly indicative of the kind of Proto-Samoyed derivational relationship proposed here tend to reflect either resultative or instrumental semantics of the noun in relation to the verb stem, e.g. a plait as the result of the action of plaiting, or a staff for steering reindeer as the

instrument of the action of steering. In either case, the immediacy of the action was likely implicated, at least relative to the present participle, but it may have been partially conditioned by the lexical aspect of the verb stem as well, cf., for example, the aforementioned Ng *šigiqe* ~ TE *sixi'o*, which seem to reflect an underived (presumably aspectually perfective) stem, whereas TN *syix<sup>o</sup>rtya* ~ FN *syix<sup>o</sup>ltya*, which formally are present participles in PS \*-ntÅ, look like they are derived from a durative form of the verb in PS \*-jr. Further research into the role of aspect in Samoyed verbal semantics could clarify the issue. As for the process of reinitiation itself, considering that both underived perfective and imperfective class stems are attested in Nganasan, the original selection of either perfective or imperfective deverbal forms for lexicalization is likely to have been dependent upon Aktionsart, eventually becoming fossilized and giving rise to a system with lexicalized aspect marking.

Although the demarcation between the productive and unproductive uses of the augmentative suffix is not clear in all cases, it is important for the historical analysis of these forms and their connection to the Nganasan indicative aorist. It can be argued that the more lexicalized instances of the suffix on nouns that look like deverbal derivations reflect the original deverbal use of the form as a deverbal resultative or instrumental marker, whereas the more productive augmentative use is a later development. An intermediary type is seen in the lexicalized augmentative forms denoting mostly animals, body parts, and geographical entities, which seem to be neither deverbal nor productive (since there is no underived form). This suggests that even at the Proto-Samoyed level, the suffix was likely semantically complex.

Finally, one may attempt to reconstruct a Proto-Samoyed form for the suffix. This is a difficult task, since not only does one have to take into account the vowel alternations, essentially requiring the reconstruction of several forms in PS already, but also since the history of the intervocalic glottal stop in Nenets, Enets, and Nganasan is particularly difficult to reconstruct. Based on the stem vowels in Nganasan, we might postulate a \*j-initial suffix of the type \*-jtt<sup>3</sup>V, where the reconstruction of a geminate stop of unspecified quality is the best explanation, even if a slightly ad hoc one, for the synchronically encountered glottal stop. Nevertheless, considering the absence of alternations with the suffix *-qe*, even this interpretation remains uncertain. What is clear is that phonological variation was present at the Proto-Samoyed level, since the irregularities in vocalism do

not allow for the reconstruction of a uniform suffix in PS. A Selkup cognate could clarify the reconstruction of the consonantism, but so far no convincing cognates have come up.

## 5. Conclusion

The Nganasan tense system has sometimes been thought of as especially innovative (e.g. Janhunen 1991), and it does possess some qualities that are unique within the Samoyed branch, namely the obligatory overt expression of lexical aspect in the indicative aorist. However, it can also be said that the development of the system has followed a path very typical for the languages of northern Eurasia: the incorporation of deverbal suffixes into the finite paradigm of the verb through the refinitization of nominalized verb forms. As I argue in this paper, both of the Nganasan imperfective aorist markers *-NTU* and *-U* have indeed developed from the imperfective participle markers PS *\*-ntÅ* and *\*-jrÅ*, respectively, as originally suggested by Mikola (1996). The perfective aorist markers *-qe/-qa* likewise, as per my novel suggestion, originate in a Proto-Samoyed deverbal marker carrying resultative or instrumental meanings which appear in lexicalized derivatives. This marker is further etymologically connected to the synchronically productive augmentative suffixes of Nganasan, Nenets, and Enets. It is clear that the material background of the Nganasan suffixes is shared with the other Samoyed languages, even if their morphosyntactic functions are specific to Nganasan, as is the case for several other temporal and modal markers as well.

Since the developments in the Nganasan tense system clearly took place after the linguistic dispersal of Proto-Samoyed, they do not bear great taxonomic significance with regard to the position of Nganasan among the Samoyed languages. To determine the taxonomic weight of the development of TAM expression in Samoyed, more research into the history of each individual Samoyed language would be needed. Until now, much emphasis has been given to the Tundra Nenets system, which is among the most well documented.

Scholars of historical linguistics have long since established that the passage of time tends to erase variation that once existed. The Proto-Samoyed tense system looks like an example of the reverse phenomenon, where language change, brought on by the use of language in time, has obscured a system that may once have been quite regular. The marking of

tense was probably changing rapidly during the period leading up to the breakup of Proto-Samoyed, which explains why the tense systems found in Samoyed languages today contain a great deal of common substance that is, however, arranged in diverse ways, giving an impression of structural disunity going far back in time. This points to an earlier state where free variation was possible, or the existing variation was conditioned quite transparently, by rules that were subsequently lost due to phonological or morphosyntactic changes in the system. It is unlikely that the exact nature of that previous state can be retrieved based on the available data, even if advances can be made with further research into e.g. the role of aspect in Proto-Samoyed.

### Language abbreviations

FE	Forest Enets	PS	Proto-Samoyed
Fi	Finnish	PU	Proto-Uralic
FN	Forest Nenets	Ru	Russian
Km	Kamas	Slk	Selkup
Mt	Mator	TE	Tundra Enets
Ng	Nganasan	TN	Tundra Nenets

### Glossing abbreviations

1	first person	LAT	lative
3	third person	LOC	locative
ABE	abessive	NEG	negative
ABL	ablative	NOM	nominative
AOR	aorist	OBL	oblique
AUG	augmentative	PART	partitive
CAR	caritive	PEJ	pejorative
CAUS	causative	PL	plural
CNG	connegative	PLO	plural object
CONC	concessive	PRF	perfect
DIM	diminutive	PRIV	privative
DRV	derivative suffix	PRS	present
DUR	durative	PST	past
FAC	factive	PTCP	participle
FREQ	frequentative	PX	possessive
INCH	inchoative	SG	singular
INT	interrogative	SGO	singular object
IPF	imperfect	TR	transformative
ITER	iterative	VN	verbal noun

## References

- AIKIO, ANTE. 2006. New and old Samoyed etymologies (part 2). *Finnisch-Ugrische Forschungen* 59. 9–34.
- AIKIO, ANTE [LUOBVAL SÁMMOL SÁMMOL ÁNTE]. 2022. Proto-Uralic. In Bakró-Nagy, Marianne & Laakso, Johanna & Skribnik, Elena (eds.), *The Oxford guide to the Uralic languages*, 3–27. Oxford University Press.  
<https://doi.org/10.1093/oso/9780198767664.003.0001>
- ANIKIN & HELIMSKI 2007 = Аникин, А. Е. & Хелимский, Е. А. 2007. *Самодийско-тунгусо-манджурские лексические связи*. Москва: Языки славянской культуры.
- BRYKINA, MARIA & GUSEV, VALENTIN & SZEVERÉNYI, SÁNDOR & WAGNER-NAGY, BEÁTA. 2018. *Nganasan Spoken Language Corpus (NSLC)*. (Version 0.2.) Hamburger Zentrum für Sprachkorpora.  
<http://hdl.handle.net/11022/0000-0007-C6F2-8> (Accessed 8/2022.)
- ENSl = HELIMSKI, EUGENE. *Энецкий соварь*. Unpublished manuscript.
- GRUZDEVA & JANHUNEN 2020 = Груздева, Е. & Янхунен, Ю. 2020. К проблеме финитности в примере языков трансъевразийской зоны. In Горко, Е. В. & Певнов, А. М. & Пупынина, М. Ю. & Сюрюн, А. А. & Урманчева, А. Ю. (eds.), *Лингвистика и другие важные вещи: Памяти Александра Павловича Володина (1935–2017)*, 83–100. Санкт Петербург: Институт лингвистических исследований РАН.
- GUSEV 2006 = Гусев, В. Ю. 2006. О сохранении архаичных форм в неассертивных контекстах: Материал самодийских языков. *Проблемы типологии и общей лингвистики: Международная конференция, посвященная 100-летию со дня рождения А. А. Холодовича. Материалы*, 41–45. Санкт-Петербург.
- GUSEV 2013 = Гусев, В. Ю. 2013. Селькупско-нгансанские параллели в области глагольной морфологии. *Лингвистический беспредел-2: Сборник научных трудов к юбилею А. И. Кузнецовой*, 67–73. Москва.
- GUSEV, VALENTIN. 2015. Negation in Nganasan. In Miestamo, Matti & Tamm, Anne & Wagner-Nagy, Beáta (eds.), *Negation in Uralic languages*, 103–132. Amsterdam/Philadelphia: John Benjamins.
- NAKULINEN, LAURI. 1941. *Suomen kielen rakenne ja kehitys, Ensimmäinen osa: Äänne- ja muoto-oppia*. Helsinki: Otava.
- HELIMSKI [1993] 2000 = Хелимский, Е. А. [1993] 2000. Прасамодийские \*ʒ и \*ʒ̣: Прауральские источники и нгансанские рефлексy. In Хелимский, Е. А., *Компаративистика, уралистика: Лекции и статьи*, 196–201. Москва: Языки русской культуры.
- HELIMSKI, EUGENE. [1995] 2000. Proto-Uralic gradation: Continuation and traces. In Хелимский, Е. А., *Компаративистика, уралистика: Лекции и статьи*, 167–190. Москва: Языки русской культуры.
- HELIMSKI, EUGENE. 2005. The 13th Proto-Samoyedic vowel. In Beáta Wagner-Nagy (ed.), *Mikola-konferencia 2004*, 27–39. Szeged: SZTE Department of Finno-ugristics.

- HEYVAERT, LIESBET & HARTMANN, STEFAN & CUYCKENS, HUBERT. 2019. Categorical shift: From description to theory and back again. *Language Sciences* 73. 1–9. <https://doi.org/10.1016/j.langsci.2018.11.001>
- JALAVA, LOTTA. 2013. “Adjectives” in Tundra Nenets: Properties of property words. *Journal de la Société Finno-Ougrienne* 94. 37–67. <https://doi.org/10.33340/susa.82512>
- JALAVA, LOTTA. 2017. Grammaticalization of modality and evidentiality in Tundra Nenets. In Hengeveld, Kees & Narrog, Heiko & Olbertz, Hella (eds.), *The grammaticalization of tense, aspect, modality and evidentiality: A functional perspective*, 133–162. Berlin: Mouton de Gruyter.
- JANHUNEN, JUHA. 1982. On the structure of Proto-Uralic. *Finnisch-Ugrische Forschungen* 44. 23–42.
- JANHUNEN 1991 = Янхунен, Юха. 1991. Нганасаны и распад прасамодийской языковой общности. *Семинар “Происхождения народов уральской языковой семьи”*: Тезисы докладов, 16–19. Ижевск.
- JANHUNEN, JUHA. 1998. Samoyedic. In Daniel Abondolo (ed.), *The Uralic languages*, 457–479. London & New York: Routledge.
- JANHUNEN, JUHA. 2012. Non-borrowed non-cognate parallels in bound morphology: Aspects of the phenomenon of shared drift with Eurasian examples. In Johanson, Lars & Martine Robbeets (eds.), *Cognates versus copies in bound morphology*, 23–46. Leiden: Brill.
- JANHUNEN, JUHA. 2020. Grammaticalization in Uralic as viewed from a general Eurasian perspective. In Bisang, Walter & Malchukov, Andrej (eds.), *Grammaticalization scenarios: Cross-linguistic variation and universal tendencies*, 361–397. Berlin & Boston: De Gruyter Mouton. <https://doi.org/10.1515/9783110563146-007>
- JANHUNEN, JUHA. 2024. Proto-Tungusic. In Vovin, Alexander & de la Fuente, José Andrés Alonso & Janhunen, Juha (eds.), *The Tungusic languages*, 35–75. New York: Routledge. <https://doi.org/10.4324/9781315728391-4>
- JfWb = LEHTISALO, TOIVO 1956. *Juraksamojedisches Wörterbuch* (Lexica Societatis Fenno-Ugricae XIII). Helsinki: Société Finno-Ougrienne.
- KAHEINEN, KAISLA. 2023. *Etymologia ex silentio: Nganasanin äännehistoria ja kielikontaktit* (Dissertationes Universitas Helsinkiensis 111). (Doctoral dissertation.) University of Helsinki. <http://hdl.handle.net/10138/567682>
- KAZAKEVIČ, OLGA. 2022. Selkup. In Bakró-Nagy, Marianne & Laakso, Johanna & Skribnik, Elena (eds.), *The Oxford guide to the Uralic languages*, 777–816. Oxford: Oxford University Press. <https://doi.org/10.1093/oso/9780198767664.003.0038>
- KAZAMA, SHINJIRO. 2024. Nanai. In Vovin, Alexander & de la Fuente, José Andrés Alonso & Janhunen, Juha (eds.), *The Tungusic languages*, 364–406. New York: Routledge. <https://doi.org/10.4324/9781315728391-4>
- KHANINA, OLESYA. 2018. Documenting a language with phonemic and phonetic variation: the case of Enets. *Language Documentation & Conservation* 12 (2018). 430–460. <http://hdl.handle.net/10125/24772>
- KLUMPP, GERSON. 2005. Aspect markers grammaticalized from verbs in Kamas. *Acta Linguistica Hungarica* 52 (4). 397–409.



- KLUMPP, GERSON. 2022. Kamas. In Bakró-Nagy, Marianne & Laakso, Johanna & Skribnik, Elena (eds.), *The Oxford guide to the Uralic languages*, 817–842. Oxford: Oxford University Press. <https://doi.org/10.1093/oso/9780198767664.003.0039>
- KSz = JANURIK, TAMÁS. 2021. *Kamassz szótár: A publikált szójegyzékek egyesített szótára*. Székesfehérvár: Budenz Alkotóház.
- Laptander 2020 = Лаптандер, Р. И. 2020. Водные, подземные и небесные олени сихиртя. In Горко, Е. В. & Певнов, А. М. & Пупынина, М. Ю. & Сюрюн, А. А. & Урманчнева, А. Ю. (eds.), *Лингвистика и другие важные вещи: Памяти Александра Павловича Володина (1935–2017)*, 184–227. Санкт Петербург: Институт лингвистических исследований РАН.
- LEISIÖ, LARISA. 2012. Tempuksen ja moduksen merkintä nganasaanin nomi-neissa. In Hyttiäinen, Tiina & Jalava, Lotta & Saarikivi, Janne & Sandman, Erika (eds.), *Per Urales ad Orientem: Iter polyphonicum multilingue. Festschrift tillägnad Juha Janhunen på hans sextioårsdag den 12 februari 2012* (Mémoires de la Société Finno-Ougrienne 264), 209–218. Helsinki: Société Finno-Ougrienne.
- LES = KHANINA, OLESYA & SHLUINSKY, ANDREI. *Лэсной энецкий словарь*. Unpublished manuscript.
- MALCHUKOV, ANDREJ L. 2006. Constraining nominalization: function/form competition. *Linguistics* 44(5). 973–1009.
- MALCHUKOV, ANDREI. 2013. Verbalization and insubordination in Siberian languages. In Robbeets, Martine & Cuyckens, Hubert (eds.), *Shared grammaticalization: With special focus on the Transeurasian languages*, 177–208. Amsterdam: John Benjamins. <https://doi.org/10.1075/slcs.132.14mal>
- MIKOLA, TIBOR. 1996. Beiträge zur Morphologie des Nganasanischen. In Leskinen, Heikki & Maticzák, Sándor & Seilenthal, Tõnu (eds.), *Congressus Octavus Internationalis Fenno-Ugristarum Jyväskylä 10.–15.8.1995, Pars III: Sectionis sectionum Phonologia & Morphologia*, 162–165. Jyväskylä.
- MIKOLA, TIBOR. 2004. *Studien zur Geschichte der samojedischen Sprachen*. (Aus dem Nachlass hrsg. Beáta Wagner-Nagy.) Szeged: SzTE Finnugor Tanszék.
- MOSER, AMALIA. 2014. Aspect and Aktionsart: A study on the nature of grammatical categories. In Lavidas, Nikolaos & Alexiou, Thomai & Sougari, Areti Maria (eds.), *Major trends in theoretical and applied linguistics 1: Selected papers from the 20th ISTAL*, 99–120. Warsaw: De Gruyter Open Poland.
- MS = HELIMSKI, EUGENE. 1997. *Die Matorische Sprache: Wörterverzeichnis – Grundzüge der Grammatik – Sprachgeschichte*. Unter Mitarbeit von Beáta Nagy (Studia Uralo-Altaica 41). Szeged: JATE Finnugor Tanszék.
- Ng20 = KAHEINEN, KAISLA. *Nganasanin korpussanalista*. Unpublished manuscript.
- NgSl = HELIMSKI, EUGENE. *Нганасанский словарь*. Unpublished manuscript.
- NIKOLAËVA, IRINA. 2014. *A grammar of Tundra Nenets*. Berlin & Boston: Walter de Gruyter GmbH.
- NIKOLAËVA, IRINA & TOLSKAYA, MARIA. 2001. *A grammar of Udihe*. Berlin & New York: Mouton de Gruyter.
- SALMINEN, TAPANI. 1997. *Tundra Nenets inflection* (Mémoires de la Société Finno-Ougrienne 227). Helsinki: Société Finno-Ougrienne.

- SALMINEN, TAPANI. 1998. *A morphological dictionary of Tundra Nenets* (Lexica Societatis Fenno-Ugricae XXVI). Helsinki: Société Finno-Ougrienne.
- SALMINEN, TAPANI. 2002. Problems in the taxonomy of the Uralic languages in the light of modern comparative studies. *Лингвистический беспредел: Сборник статей к 70-летию А. И. Кузнецовой*, 44–55. Москва: Изд-во МГУ.
- SALMINEN, TAPANI. 2007. Notes on Forest Nenets phonology. In Ylikoski, Jussi & Aikio, Ante (eds.), *Sámit, sánit, sátnehámit: Riepmočála Pekka Sammallahtii miessemánu 21. beaivve 2007* (Mémoires de la Société Finno-Ougrienne 253), 349–372. Helsinki: Société Finno-Ougrienne.
- SALMINEN, TAPANI. 2013. *Tundra Nenets sample sentence corpus*. Electronic publication. Helsinki: University of Helsinki, Finno-Ugrian languages and cultures. [https://web.archive.org/web/20161116112159/http://www.helsinki.fi/~tasalmin/tn\\_corpus.html](https://web.archive.org/web/20161116112159/http://www.helsinki.fi/~tasalmin/tn_corpus.html) (Accessed 9/2023.)
- SALMINEN, TAPANI. 2024. The Samoyed languages. In Vajda, Edward (ed.), *The languages and linguistics of Northern Asia, Volume 1: Language families* (WOL 10.1), 167–252. Berlin & Boston: Walter de Gruyter GmbH. <https://doi.org/10.1515/9783110556216-004>
- SHAGAL, KSENIJA. 2018. Participial systems in Uralic languages: an overview. *Journal of Estonian and Finno-Ugric Linguistics* 9(1). 55–84.
- SIEGL, FLORIAN. 2013. *Materials on Forest Enets, an indigenous language of Northern Siberia* (Mémoires de la Société Finno-Ougrienne 267). Helsinki: Société Finno-Ougrienne.
- SIEGL, FLORIAN. 2022. The Enets languages. In Bakró-Nagy, Marianne & Laakso, Johanna & Skribnik, Elena (eds.), *The Oxford guide to the Uralic languages*, 707–753. Oxford: Oxford University Press. <https://doi.org/10.1093/oso/9780198767664.003.0036>
- SKWb = ALATALO, JARMO. 2004. *Sölkupisches Wörterbuch*. Aus Aufzeichnungen von Kai Donner, U. T. Sirelius und Jarmo Alatalo. Zusammengestellt von Jarmo Alatalo (Lexica Societatis Fenno-Ugricae XXX). Helsinki: Société Finno-Ougrienne.
- SNg = Костеркина, Н. Т. & Момде, А. Ч. & Жданова, Т. Ю. 2001. *Словарь: Нганасанско-русский и русско-нганасанский* (под. ред. В. Ю. Гусев). Санкт-Петербург: Филиал издательства Просвещение.
- T65 = Терещенко, Н. М. 1965. *Ненецко-русский словарь*. Москва: Советская энциклопедия.
- URMANSHIEVA 2006 = Урманчиева, А. Ю. 2006. Время, вид или модальность? Глагольная система энецкого языка. *Вопросы языкознания* 4/2006. 84–100.
- VÁRNAI, ZSUZSA. 2002. Hangtan. In Wagner-Nagy, Beáta (ed.), *Chrestomathia nganasanica* (Studia Uralo-Altaica Supplementum 10), 33–70. Szeged & Budapest: SZTE Finnugor Tanszék & MTA Nyelvtudományi Intézet.
- VÁRNAI, ZSUZSA. 2010. Quasi-consonantal stems in Nganasan – a possible analysis (based on a *somlói galuska* with Eugene). *Finnisch-Ugrische Mitteilungen* 32/33. 607–618.
- WAGNER-NAGY, BEÁTA. 2019. *A grammar of Nganasan*. Leiden: Brill.