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A REFERENCE GRAMMAR OF THE NÓYATŮKÀH LANGUAGE

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DIACRITICS & PUNCTUATION

(For Reference)

Phonemic vowel pitches:

◌́ normal high
◌̄ mid
Vowels written with no diacritic above are low pitched

Variants of the high vowel pitch:

◌̌ hanging-low or lowered-high (a pitch between a normal high and a mid)
◌̂ raised-high (a pitch slightly higher than a normal high)

Other:

◌̥ voiceless/whispered

◌̃ nasalized

◌͡◌ diphthongization

A **bold** syllable in a Nóyatů̇kȧ̇h word indicates stress accent on that syllable.

The only punctuation marks used for Nóyatů̇kȧ̇h are the stop (.), which indicates the end of a complete utterance, and the continuation (-), which indicates that a word is split between two lines.

A note on the use of diacritics with isolated morphemes:

Pitch accents are not static; they can change with context. When Nóyatů̇kȧ̇h morphemes are written in isolation, only underlying pitch accent is marked. Furthermore, no devoicing of any kind is shown. These conventions are necessary because underlying vowel pitches must be known in order to apply certain phonological rules to complete words, in particular the rules for pitch-shifting.

INTRODUCTION

It was told among the elders and shamans of the West that when all living men communicated by the Shadow Language, the ancient Language of the Heart and Mind, they were not far removed from their physical surroundings. Their thoughts had yet to be tied down and solidified, to be habitually guided along one path at the expense of all others; and so a man's thinking could easily follow a stream of perceptual phenomena on its own terms, and he had no need to impress his own beliefs upon what he beheld in order to comprehend it. But spoken language changed this, so that words became the principal way by which man experienced and interacted with his brothers, his world and even himself. When the Ozolodaȧkȯ taught men to speak with their mouths and not their hearts, individual spoken languages began to develop, and these languages grew organically from varied possible ways of symbolizing and categorizing the world; and in turn the languages solidified the thought patterns from which they sprouted into distinct worldviews--i.e., habits of thinking about the world, ingrained ways of interpreting and ordering its phenomena. There was room for language to diverge from worldview, and vice versa, but the fit between the two was always tighter than it was loose. And when a language and worldview on the one hand, and physical reality on the other, came into an inevitable multiplicative relationship[1], a separate world-of-words was born, or an imitation of the real world built of words; and it was in these worlds-of-words that men came to live almost to the exclusion of the true one. Man had segmented unitary existence, and though his intellect may have retained knowledge of the segmentation, he forgot in his heart what he had done; thus he was placed at one remove from physical reality.

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Even if one rejects certain particulars of this traditional account of language, it nevertheless underscores a critical fact: every language comes hopelessly entangled with its own worldview and culture, together

[1] A good example of a multiplicative relationship is how the two channels of stereo sound work. Stereo sound is not merely two audio channels in a plus relationship, as 1+1=2; one could have a channel of Bach and another of Beethoven and not have stereo sound. Instead, the relationship is of the form $1x1=1^2=1$, i.e., one times one is one-squared, which equals one, where the new product one is distinct from the previous ones separately.

with which it comprises a dynamic, interpenetrating system whose constituent parts cannot be readily teased apart for individual study. The biggest failure of contemporary linguistics is its placing of an artificial, futile boundary between the formal structure of language and the realization of language in the world, in the minds and mouths of people. We can analytically split language from its real world contexts for teaching purposes only if we remember that the autonomous results do not reflect reality, and that we must re-integrate the sundered pieces later to achieve true understanding; but this has not been the case in the study of language. The stage is set today for a new linguistics founded squarely on the systems thinking of physics and the logic of inclusion: a discipline returned to its roots in Humboldt, Sapir and Whorf, who emphasized the interconnectedness of culture, worldview and language; a discipline that reaches beyond the either/or question of whether language influences worldview and culture or worldview and culture influence language. Informed by the insights of systemic theory, wherein such dichotomies are replaced by multicausal, interdependent relationships, and where the opposite of one profound truth can be a second equally profound truth, we might finally come to realize that language, worldview and culture all reciprocally influence one another. The work of linguistics should lie, then, not in arguing <u>which way</u> the influence runs generally, but in discerning <u>to what degree</u> each of the constituents of the system is influencing the others in a given case.

Under a systems view, one cannot authentically separate American English from the object-oriented, visual worldview and culture in which it is spoken. Few would deny that we, as English speakers, tend to interpret the world as a collection of discrete objects whose existence is known foremost by sight; we constantly <u>look</u> about ourselves for <u>things</u>, and readily place faith in the essential objectness (distinctness, permanence) of what we perceive. And it is likely because of our tendency to objectify that, with overwhelmingly greater than chance frequency, we <u>understand our language visually</u>: English words typically summon up mental pictures of their referents when we hear them. Even simple English sentences like "He runs through the forest" are likely to conjure up images of a man darting between tree-trunks and fighting back obstructing branches. But this objects-in-the-world and pictures-in-the-head mode of understanding does not hold universally; it is but one worldview among several. Nóyatů̇kȧ̇h ('I-habitually-create-sounds-by-mouth'), the elder speech of Western Daszeria, was one of the most ancient recorded examples of a kinesthetic-based language--i.e., a language whose

semantic primes are primarily felt by speakers rather than pictured[2]. To those who spoke Nóyatůkȧh, the world was not foremost a collection of objects, but instead a realm of body-feelings and movements, and by extension therefrom, of dynamic processes and relationships. A Nóyatůkȧh equivalent of the above English sentence (emánloa̱shónan 'he-runs-among-cedar-trees') would have brought no images to a speaker's mind; rather, it would have likely induced in him the sense of speeding through the forest, and of the slap of the overhanging branches upon his face and arms. No pictures; just tactile feelings and the rush of motion: priority is not, as in English, given to the runner--an object--but to his running instead; and his running is nothing so much as felt. This promoted (and reflected), not a subjective idealism or solipsism, but a depth of empathy with the world and a sense of connection to it that English speakers can perhaps only vaguely comprehend. A shaman of ancient Galliyáda, could he be transported bodily to the present, would no doubt bend Wittgenstein's famous picture theory of meaning into a feeling theory: he would claim that our propositions feel the way the world moves, however oddly that notion might strike us. So, when Western men insisted that those Easterners interested in Nóyatůkȧh must learn to feel the language, they were not waxing metaphorical at all; without kinesthetic understanding, Nóyatůkȧh was merely an elaborate cipher for Banaska.

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[2] Of course, English contains some words that tend to be understood kinesthetically, such as cold, hot and pain, but on a continumm with visual at one end and kinesthetic at the other, English falls much nearer to visual. One can speak of English as being understood visually without implying any kind of absolute statement; similarly, one can speak of a language such as Nóyatůkȧh as being understood kinesthetically without implying a complete absence of visual (or auditory) understanding within the language or on the part of speakers. Moreover, Nóyatůkȧh does not structurally or semantically prohibit the primary consequence of the visual understanding, objects; but they were strikingly rare in daily talk, and almost never appear in extant written examples of the language. Objects were most often created at need when the flow of a conversation was stopped to instruct a foreigner unfamiliar with the inner workings of the language; then, once the foreigner was enlightened, they would be dropped and the converstion would flow on. In fact, you could deliberately insult someone by over-objectifying when speaking to him; the effect would have been similar to how an English speaker might use conspicuous stress to imply a lack of intelligence on a listener's part.

A concrete example will perhaps make clearer the importance of the kinesthetic understanding. The objectified English translation of the Nóyatu̇kȧh hóhakȧshan can variously be, depending on context, 'wind' (or 'moving air'), 'cloth shirt' or 'poison oak'. However, if we insert -nágoní- 'with-slight-pain' so that the word becomes hóhakanágonǐshan (with the pitch on the [i] shifting and the [a] following the [k] revoicing--see **PHONOLOGY & WRITING**), the objectified translation morphes into 'mosquito'[3]. Strange, even absurd, this no doubt seems, for none of the combinations of meanings ('wind-with-slight-pain', 'cloth-shirt-with-slight-pain', etc.) accurately portrays a mosquito, and it's doubtful that any even makes linear sense. Perhaps, then, one might conclude, we are dealing with idiom or metaphor; but we are not. Instead, one must realize that the strangeness is a consequence of the objectification. To a Nóyatu̇kȧh speaker, the root element -hohaka- (lacking the high-pitched [o] and devoiced [a]--see **PHONOLOGY & WRITING**) referred not to a thing, such as wind, but to his feeling a foreign presence or irritation on his skin; so, when we combine that kinesthetic meaning with 'slight pain', the expression's transformation into 'mosquito' becomes perfectly transparent: often do we feel that particular insect's touch upon our skin immediately before or as it pricks us. 'Skin-irritating-with-slight-pain' would be a fair rendering of hóhakanágonǐshan (or, even more accurately, 'he-habitually-skin-irritates-and-slight-pains-someone'--see **MORPHOLOGY**).

[3] One can rearrange the morphemes into the construction gónínáhohakȧshan and the meaning remains the same.

THE FOCUS OF THIS GRAMMAR

This grammar focuses on what I call Classical Nóyatu̱ka̱h (Ganágāwólma̱sa̱na Nóyato̱sa̱na 'The-founders, they-habitually-create-sounds-by-mouth'), the most widely-spoken dialect of the language among the men who settled Northwestern Daszeria and established Galliyáda. The Nóyatu̇kȧh dialects grew from two chief historical parents, one major (Lholámelo) and one minor (Qápaqʷónaq); and, according to what knowledge remains of them, both ancestral tongues displayed Nóyatu̇kȧh's inclinations toward polysynthetic grammar and kinesthetic understanding. Vowel pitch was not present in either progenitor language; as explained more fully in **PHONOLOGY & WRITING**, Nóyatu̇kȧh's pitch system likely developed from contraction of the long and mid length vowels common to both Lholámelo and Qápaqʷónaq.

The grammar presents a synchronic descriptive analysis of the language, although where appropriate and enlightening, diachronic information is also included. The description is centered on the language as it was during the early founding period of Galliyáda, when its writing system was standardized and when much classic material was written in it.

PHONOLOGY & WRITING

The first parts of this section detail Nóyatůkȧh's transcription scheme, distinctive and non-distinctive features, phonemes and their constituent allophones, and phonological rules; the final one covers the language's native writing system and the system's history in brief.

Transcription

While it is common for linguists to use the symbols of the International Phonetic Alphabet (IPA) to represent the sounds of non-Western languages, I have elected not to follow this path with Nóyatůkȧh. IPA and like symbols appear inscrutable to the non-linguist, and often serve to make pronunciation seem far more difficult than it actually is; and given that I felt Nóyatůkȧh to be quite alien enough by itself, without any help from a strange graphical rendering, I decided to transcribe the language using only Roman letters. Though a difficult task, it is not impossible; and the net result is that the language appears as familiar to English speakers as possible, thus allowing them to more easily approximate its sounds at a glance. By necessity, the values of some Roman letters used in the spelling of Nóyatůkȧh are not exactly the same as in English--though most deviate in only small ways, such as Nóyatůkȧh's /k/ being articulated on the hard palate instead of at the back of the mouth. As well, letters that may represent multiple sounds in English represent only one sound in Nóyatůkȧh (e.g., the Nóyatůkȧh /y/ is always a consonant, never a vowel); one may generally say that the Roman letters used to spell Nóyatůkȧh have more tightly defined sound values than in English.

Of course, within such a transcription scheme, one eventually runs into the inherent limitations of the Roman alphabet. Digraphs and trigraphs are employed to handle the utterly non-Western parts of Nóyatůkȧh phonology (e.g., <tl>) and a sound that is similar to one that is itself a digraph in English (<sh>). In addition, some digraphs and trigraphs indicate aspirated allophones (such as <ph> marking the appearance of an aspirated allophone of /p/), while <xw> and <xy> represent labialized and palatalized /x/, respectively. The <h> characters in aspirated graphs must not be pronounced as separate sounds; they merely indicate aspiration. The ligature <œ> represents an allophone of the vowel /a/. Finally, diacritic marks are perforce used to show pitch accent, vowel devoicing, vowel nasalization and diphthongization.

Ultimately, any transcription is intended to constitute a practical "pronunciation orthography" instead of the "phonemic orthography" of strict transliteration--thus, within this grammar, the appearance of all major allophonic variants of a phoneme are indicated, either by varying characters or by diacritics. All of this is done to make pronunciation easier for the English speaker, once he has learned the rules of the scheme. Perhaps to the disappointment of some, the transcription scheme necessitates that the spellings of Nóyatu̇kȧh words herein do not precisely correspond to their spellings in Nóyatu̇kȧh's native writing system, which were almost entirely phonemic--i.e., one could not transfer a transcribed Nóyatu̇kȧh word to the language's native writing system merely by substituting native characters for English letters on a one-by-one basis. However, since the native orthography was the starting point for the transcription, obtaining a straight transliteration of any transcribed word is not terribly difficult: one need only remove all diacritics from the transcription and then consult the phoneme tables below to discover which phonemic character should replace each allophone (e.g., Galliyáda becomes Kalliyata when the high pitch accent is removed and the allophones [g] and [d] are replaced with their respective phonemes, /k/ and /t/).

Distinctive and Non-Distinctive Features

The major distinctive features of Nóyatu̇kȧh phonology include all the articulatory places, manners and positions found in Tables I and II below, along with vowel pitch accent. The four Nóyatu̇kȧh vowels--represented as /i/, /e/ /a/ and /o/--can have one of three phonemic pitches: high, mid or low. Furthermore, the high pitch consists of three allophonic variants: the normal high, the hanging-low or lowered high, and the raised high. The hanging-low is a pitch between a normal high and a mid, while the raised-high is a pitch slightly higher than a normal high. The historical origin of Nóyatu̇kȧh pitch accent is thought to be associated with an oddity of the vowel system: all of the vowel sounds are--without exception--short[4], while Nóyatu̇kȧh's parent languages, Lholámelo and Qápaqʷónaq, both exhibited three contrastive vowel lengths (long, mid and short). It has been theorized that Nóyatu̇kȧh, too, originally inherited these three vowel lengths, and that its pitch system later developed from

[4] The vowel sounds are short compared to the long and mid-length vowels of Nóyatu̇kȧh's parents.

contraction of the long and mid length vowels[5]. To wit, the long vowels, upon contraction, became high pitched; the mid length vowels became mid pitched; and the short vowels remained more or less unchanged tonally, and, within the developing pitch system, came to assume the low-pitched role. This theory economically explains why low is the most common vowel pitch (short vowels were known to have dominated both progenitor tongues) and why the mid pitch is rare, even negligible (mid length vowels appeared only sporadically in Lholámelo and Qápaqʷónaq--though they were more common in the former than in the latter).

The normal high pitch is marked with the acute accent (◌́), the hanging-low or lowered high with the hachek (◌̌), the raised high with the circumflex (◌̂), the mid pitch with the macron (◌̄), and the low pitch is not marked in any way (thus, vowels with no diacritics above are all low pitched).

Minor distinctive features include length and amplitude in stressed syllables. Stress is constituted by increased length and amplitude, which distinguish a stressed syllable from the surrounding syllables of roughly equal length and amplitude; because stress has a grammatical role, it is discussed in more detail in **MORPHOLOGY**. Neither length nor amplitude are marked independently of stress (and therefore are not marked independently of one another), which is denoted by bold print on a syllable.

Non-distinctive features of the language include certain phonetic contrasts: aspiration of stops, the lateral affricate and of vowels, nasality of vowels, voicing, labialization and palatalization of /x/, and length and amplitude in non-stressed syllables. Nasalized vowels are indicated by a tilde below (◌̰). Length and amplitude changes which are non-stress related are due to idiolect variation (with the exception of a voiceless vowel's automatic decrease in length) and are not marked. Voiceless or whispered vowels (and some consonants) are marked with a dot above (◌̇).

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[5] Vowel contraction was likely an extended, long-term process that was at work in earliest Nóyatůkȧh; but its ultimate fruit, pitch accent, would not come about for some time.

The ubiquitous voiceless vowels likely find their roots in the voiceless preaspirated stops and fricatives of Lholámelo; in Nóyatů̇ká̇h, the preaspiration on these consonants likely developed the power to devoice preceding vowels. The preaspiration itself has faded from Nóyatů̇ká̇h, but its remnant or trace is still present in the vowel devoicing phenomenon.

The Phonemes

Nóyatů̇ká̇h phonology is unique among those languages that survived the First Earth in that it is strongly frontal; there is just one velar consonant and no back vowels or glottal consonants. It is said to have struck listeners as flowing and soft, taking on a slurred quality in the vicinity of whispered vowels.

Tables I-IV show how Nóyatů̇ká̇h's sounds are represented in the Roman alphabet. Table I gives the phonemic consonants; Table II the phonemic vowels; Table III all of the major allophonic variants of the phonemic consonants; and Table IV all of the major allophonic variants of the phonemic vowels. Below the tables are descriptions of each phoneme and its constituent allophones.

Table I: The Phonemic Consonants

	Velar	Palatal	Dental	Bilabial
Semivowel		**y**		**w**
Lateral Liquid			**l**	
Lateral Affricate			**tl**	
Lateral Fricative			**lh**	
Fricative	**x**	**sh**	**s**	**f**
Nasal			**n**	**m**

Stop k t p

Table II: The Phonemic Vowels

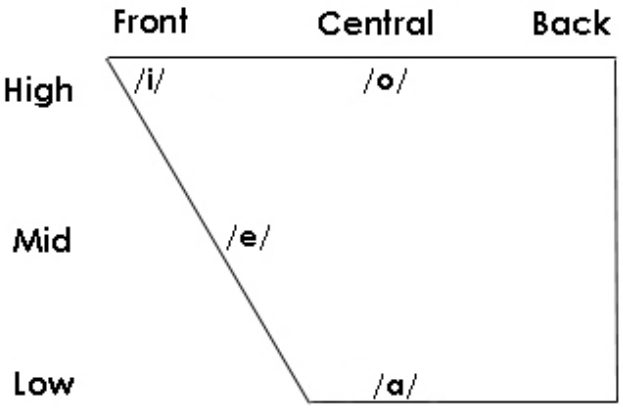

Table III: Allophonic Variants of the Phonemic Consonants

/x/: x, xw, xy, h
/y/: y, ẏ
/sh/: sh, zh
/k/: k, g, kh, gh
/l/: l, l̇
/tl/: tl, dl, tlh, dlh
/lh/: lh
/s/: s, z
/n/: n, ṅ
/t/: t, d, th, dh
/w/: w, ẇ
/f/: f, v
/m/: m, ṁ
/p/: p, b, ph, bh

Table IV: Allophonic Variants of the Phonemic Vowels

High Pitch (voiced)

/í/: í, ı́̃, ı̌, ı̌̃, î, ı̂̃

/é/: é, é͡, ĕ, ĕ͡, ê, ê͡

/á/: á, á͡, ă, ă͡, â, â͡, œ́, œ́͡, œ̆, œ̆͡, œ̂, œ̂͡

/ó/: ó, ó͡, ŏ, ŏ͡, ô, ô͡, ú, ú͡, ŭ, ŭ͡, û, û͡

Mid Pitch (voiced)

/ī/: ī, ī͡

/ē/: ē, ē͡

/ā/: ā, ā͡, œ̄, œ̄͡

/ō/: ō, ō͡, ū, ū͡

Low Pitch (voiced)

/i/: i, i̗͡

/e/: e, e̗͡

/a/: a, a̗͡, œ, œ̗͡

/o/: o, o̗͡, u, u̗͡

Pitchless (voiceless; does not constitute a separate phonemic category)

/i/: i̗, i̗͡

/e/: e̗, e̗͡

/a/: a̗, a̗͡, œ̗, œ̗͡

/o/: o̗, o̗͡, u̗, u̗͡

Note: The "pitchless" allophones can be considered variants of <u>any</u> or <u>all</u> of the "pitched" phonemic categories (i.e., high, mid and low pitches); e.g., [o̗] can be considered an allophone of /ó/, /ō/ or /o/, or of all three. Because voicelessness makes any pitch distinction impossible, it is not fruitful to explicate the matter any further.

The Consonants Described:

/x/ is a phoneme with several allophones. [x] is a voiceless velar fricative. It is produced at the back of the mouth on the velum or soft palate. In practice, it sounds like a raspy English [h][6]; but Nóyatůkȧh [x] tends to be articulated louder (simply because it is produced closer to the front of the mouth than English [h]). The German velar fricative in bach is a good starting point. [xw] is labialized [x]; it is similar to [ẇ] (see below), but involves less lip-rounding and is made with friction. [xy] is palatalized [x]; it sounds somewhat like [ẏ] (see below), but is made with friction. [h] is reduced /x/--i.e., /x/ with its force, friction and duration curtailed, so that it becomes an approximant instead of a fricative.

/y/ is a phoneme with two allophones. [y] is a voiced palatal semivowel. It is very like the English [y], but articulated a bit further back in the mouth than in English. [ẏ] is made in the same way as [y], but without voice, and with a whispering quality. Unlike English semivowels, Nóyatůkȧh's do not ever become full-fledged vowel sounds (e.g., as [y] does in English coy).

/sh/ is a phoneme with two allophones. [sh] is a voiceless palatal fricative, akin to the English [sh]. It is made with the center part of the tongue raised toward the hard palate, so that air passes through a space between the tongue and the palate. In practice, it tends to sound slightly lower-pitched than English [sh], which is not made as far back in the mouth. [zh] is the voiced version of [sh].

/k/ is a phoneme with several allophones. [k] is an unaspirated voiceless palatal stop[7]. The [k] of English calm is made at the back of the mouth, on the velum; to make the Nóyatůkȧh [k], the point of airflow stoppage must be moved up to the hard palate, as in keen. This involves having the center of the tongue raised towards the palate. It might feel as if the airflow is "bouncing off" the palate when Nóyatůkȧh [k] is made.

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[6] All English examples refer to Midwestern American English, unless otherwise specified.

[7] This sound is sometimes described as a palatalized velar stop in languages where there is a phonemic contrast between velar /k/ and palatal /k/, such as Lholámelo. But I prefer not to use this term, as Nóyatůkȧh does not possess the velar /k/, only the palatal or sharp /k/.

Nóyatu̇kȧh [k] sounds sharper than velar [k]. Because of the general frontness of Nóyatu̇kȧh vowels, there should be little or no impulse to shift the articulatory position of /k/ from syllable to syllable as in English; but should there arise any such impulse, it must be resisted, and /k/ must be realized in all cases as palatal (though it is true that the precise point of airflow stoppage along the hard palate varies--e.g., /k/ before /i/ is more fronted than /k/ before some other vowels; but /k/ never retracts to the velar position). In addition, /k/ has several more variants: the unaspirated voiced palatal stop [g] (made in the same way as [k], but with voice), the aspirated voiceless palatal stop [kh], and the aspirated voiced palatal stop [gh].

/l/ is phoneme with two allophones. [l] is a voiced dental lateral liquid. English [l] is made with the tongue on the alveolar ridge, while Nóyatu̇kȧh [l] requires that the tip of the tongue be against the upper teeth. The English counterpart of the Nóyatu̇kȧh [l] is the so-called "clear" [l] that begins words like let, not the "dark" [l] found in spill and fill. [l̇] is made in the same way as [l], but without voice, and with a whispering quality that helps distinguish it from the lateral fricative /lh/.

/tl/ is a phoneme with several allophones. [tl] is an unaspirated voiceless dental lateral affricate. To make /tl/, the tip of the tongue is placed against the upper teeth and a [t] sound is attempted. The tongue should not move during articulation, and air should flow freely along both sides of it; and one's cheeks will puff noticably if the sound is made forcefully enough. In addition, /tl/ has several more variants: the unaspirated voiced dental lateral affricate [dl] (made in the same way as [tl], but with voice), the aspirated voiceless dental lateral affricate [tlh], and the aspirated voiced dental lateral affricate [dlh].

/lh/ is a phoneme with a single realization, [lh]: a voiceless dental lateral fricative. It is produced by pressing the tip of the tongue against the upper teeth and attempting to make an [l̇] sound. As with the lateral affricate /tl/, the tongue should not move during articulation and air should escape along both sides of it; and one's cheeks will puff noticably if the sound is made forcefully enough. To English-speaking ears, /lh/ can sound deceptively like [l̇]; however, /lh/ lacks a whispering quality and is produced with more friction. This was one of the rarest sounds in Classical Nóyatu̇kȧh, though it was more common in the Early Old Classical period than later; in the Classical language, it was used primarily in the formation of diminutives (see **Phonological Rules** and **MORPHOLOGY**).

/s/ is a phoneme with two allophones. [s] is a voiceless dental fricative very similar to its English counterpart, but made with the tip of the tongue against the upper teeth. [z] is the voiced version of [s].

/n/ is a phoneme with two allophones. [n] is a voiced dental nasal. English [n] is made with the tongue on the alveolar ridge, while Nóyatů̇kȧh [n] requires that the tip of the tongue be against the upper teeth. [ṅ̥] is made in the same way as [n], but without voice, and with a whispering quality.

/t/ is a phoneme with several allophones. [t] is an unaspirated voiceless dental stop. The tip of the tongue touches the upper teeth when it is pronounced, not the alveolar ridge, as when English [t] is made. In addition, /t/ has several more variants: the unaspirated voiced dental stop [d] (made in the same way as [t], but with voice), the aspirated voiceless dental stop [th], and the aspirated voiced dental stop [dh].

/w/ is phoneme with two allophones. [w] is a voiced bilabial semivowel that is close enough to its English counterpart to need no further explanation. [ẇ] is made in the same way as [w], but without voice, and with a whispering quality.

/f/ is a phoneme with two allophones. [f] is a voiceless bilabial fricative. It is similar to English [f], but made with both lips instead of the upper teeth and lower lip. [v] is the voiced allophone of [f]; it is made in the same way as [f], but with voice, so that a mild vibration is felt in the lips as the sound is produced. (To English-speaking ears, [f] can sound deceptively like [ẇ]; however, [f] lacks a whispering quality and is produced with more friction.)

/m/ is a phoneme with two allophones. [m] is a voiced bilabial nasal, identical to its English counterpart. However, a warning: Nóyatů̇kȧh [m] is <u>always</u> bilabial, never labio-dental; hence, it is pronounced as in English <u>schematic</u> and not as in <u>emphatic</u>. [ṁ] is made in the same way as [m], but without voice, and with a whispering quality.

/p/ is a phoneme with several allophones. [p] is an unaspirated voiceless bilabial stop, identical to its English counterpart in <u>spin</u>. In addition, /p/ has several more variants: the unaspirated voiced bilabial stop [b] (made in the same way as [p], but with voice), the aspirated voiceless bilabial stop [ph], and the aspirated voiced bilabial stop [bh].

The Vowels Described:

/i/ is a front high unrounded vowel sound, and the most recent addition to the Nóyatu̇kȧh vowel system. It become a phoneme long after /a/, /e/, and /o/ already were, and is thought to have developed from an allophonic variant of /e/. It sounds like the [i] in English bit.

/e/ is a front mid unrounded vowel sound, like the [e] in English bet.

/a/ encompasses the variants [a] and [æ]. [a] is a central low unrounded vowel, between the [a] in English alms and the [a] in hat (though closer to the latter than the former). [æ] is a front low unrounded vowel, equivalent to the [a] in English hat.

/o/ encompasses the variants [o] and [u]. [o] is a central high rounded vowel, like the [oo] in English moon. [u] is a front high rounded vowel, approximately as the [u] in French lune.

Phonological Rules

Nóyatu̇kȧh's most common and important phonological processes are here described. The rules as formulated must be applied to complete words in the order given to accurately model the language's phonological behavior.

1. Sound symbolism. Nóyatu̇kȧh words may undergo sound symbolism change, a process which functions morphologically. A symbolically changed word can become either a diminutive or augmentive version of its underlying form. Only a subset of the coronal consonants fall within the domain of symbolism change; they are all the allophones of /s/, /t/ and /l/. Table V shows the phonemic changes involved in sound symbolism:

Table V: Sound Symbolism

Underlying	Alternation 1 (Diminutive)	Alternation 2 (Augmentive)
/s/	[sh]	[y]
/t/	[n]	[n]
/l/	[lh]	[tl]

A shift from the Underlying values to those of Alternation 1 will lend a diminutive sense to the basic meaning of a word; conversely, a shift to the values of Alternation 2 will lend an augmentive sense. Symbolism change can only take place in words containing allophones of /s/, /t/ or /l/; furthermore, it affects all instances of these phonemes in a word (e.g., if a word contains both /s/ and /l/, and a diminutive is to be formed, /s/ will shift universally within the word to [sh] and /l/ to [lh]. If /t/ were also present, it would shift universally to [n].)

Further information on the formation of diminutives and augmentives can be found in **MORPHOLOGY**.

2. Initial change. Like sound symbolism, initial change is a process that fucntions morphologically. It affects the initial syllables of root morphemes[8] in certain conjunct order central words (see **MORPHOLOGY**). The initial change imparts a sense of "when" or "as" to a central word, though the "when" or "as" is restricted to roughly the equivalent of the English past and present (the manifest mood). In other words, the "when" or "as" refers to actions/events that have happened or are happening, as opposed to hypothetical (future) actions/events. Table VI demonstrates the (mostly vowel) changes involved in initial change:

Table VI: Initial Change

Root- or Stem-initial Sequence	**Changed Sequence**
C + /i/	**C + /a/**
C + /e/	**C + /o/**
C + /a/	**C + /o/**

[8] When a stem is present instead of a bare root (a stem being a root preceded by an incorporated initial or initials--see **MORPHOLOGY**), the initial syllable of the entire stem undergoes the change instead the initial syllable of the root. Also, the initial syllables of multiple roots that have been joined by the root conjunction -ná- need not each undergo change; merely the first syllable of the first root (or the first syllable of the stem, if that is present) need change.

C + /o/	C + /a/
/e/ or /i/	/y/ + /e/ or /y/ + /i/
/o/ or /a/	/w/ + /o/ or /w/ + /a/

Vowel pitch is maintained across any change (e.g., high-pitched /e/ would become high-pitched /o/ in a C + /e/ to C + /o/ change). Further information on this topic can be found in **MORPHOLOGY**.

3. Cluster rules. Nóyatů́kǻh's vowel and consonant cluster rules are fairly restrictive. Any single consonant or vowel may begin a word, and any vowel may end one, but only /m/, /n/, /l/, /x/, /lh/ and /tl/ may close a word (though the latter two seldom do). Furthermore, only the following general kinds of clusters are allowed:

Word-initially: VV

Word-medially: VV, CC

Word-finally: VV

Vowel clusters of any form are permitted, as long as there are no more than two vowels in a cluster. There are stricter limitations on consonants, however; not only may there be no cluster of more than two consonants, but many consonants are prohibited from appearing in immediate succession. The following types of consonant clusters--and only these--are allowed word-medially:

Lateral Liquid + Nasal

/l/ + /w/

Lateral Liquid + Lateral Liquid

/n/ + /l/

Nasal + Semivowel (with exceptions of /m/ + /y/ and /n/ + /y/)

Nasal + Nasal (with exception of /m/ + /n/)

Semivowel + Nasal (with exception of /w/ + /n/)

Semivowel + Semivowel (with exception of /w/ + /y/)

Stop + Semivowel (with exceptions of /p/ + /y/ and /t/ + /y/)

Stop + Lateral Liquid[9] (with exception of /p/ + /l/)

Stop + Phonemically Different Stop (with exception of /p/ + /t/)

/x/ + Stop or Affricate

/x/ + Nasal

/x/ + Lateral Liquid

/x/ + Semivowel[10]

The favored or most frequently occurring consonant clusters are [g] + [y], [g]+ [w], [m] + [w], [n] + [w] and [n] + [m].

Forbidden vowel and consonant clusters sometimes occur during word-formation as a result of the conjunction of morphemes or of infixing. When this happens, the cluster can be resolved in several ways, depending on its particulars. All but the most common words tend to be constructed on the fly from the language's lexicon of morphemes, so there are no rules that predict absolutely how many illegal clusters will be resolved; there are, however, common methods of resolution that the language tends to

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[9] This particular kind of cluster is quite rare (indeed, even rarer than the atypical clusters /t/ + /k/ and /p/ + /k/). It is present most famously in the ominous name Mazoglol. While its being legal may seemingly promote confusion between [t] + [l] and [d] + [l] and the lateral affricate digraphs <tl> and <dl>, it appears seldom enough that this is not a practical concern. If there is any uncertainty, one can refer to a word's constituent morphemes to determine whether, e.g., [dl] or [d] + [l] is intended; [t] + [l] and [d] + [l] clusters only ever occur as a result of the conjunction of morphemes or infixing, and [t] + [l] will always show the /l/ as devoiced.

[10] Any confusion between instances of these clusters and the labialized and palatalized digraphs of /x/ (<xw> and <xy>) can be cleared away by referring to a word's constituent morphemes (since these clusters only occur across morpheme boundaries). As well, in many cases, the /x/ in these clusters will devoice the preceding vowel and then be reduced to [h].

use, and--especially where illegal clusters of two consonants are concerned--these methods fall into a distinct hierarchy. The methods arose historically to deal with varying instances of changing phonology—e.g., practices like phonemic consonant assimilation and consonant deletion were no doubt spurred by the steady prohibitions placed on consonant clusters; as consonant clusters eroded within morphemes, these same clusters became prohibited across morpheme boundaries, and methods of ridding words of them arose. However, a warning: how the same illegal cluster in the same word is resolved can even vary at times by idiolect—e.g., one person may delete [m] in an [m] + [p] cluster in a given word, while another inserts /a/ between [m] and [p] in the same word. In essence, some speakers may seemingly "skip" one or more steps in the hierarchy, or prefer to change the second vowel of a three-vowel cluster to a semivowel rather than delete anything--but, when they do this, they tend to do so consistently across words. This phenomenon is extremely rare for common words, whose forms have been more or less determined historically; but for on-the-fly words, it is not uncommon at all, and leads to the creation of several variant forms of a single word.

Morphemes never begin or end with consonant clusters, so most forbidden consonant clusters will involve two consonants that are prohibited from appearing in immediate succession. The following hierarchy is used for dealing with these kinds of clusters; one begins with attempting to resolve an illegal cluster via the first method, and, failing that, moves on to the second method, then the third, and so forth.
In applying the methods, one may never phonemically change or delete any consonant that has previously been changed by sound symbolism or added by initial change; if any method necessitates doing either of these, one moves on to the next.

(1) Phonemic consonant assimilation. If a forbidden consonant cluster can be resolved by assimilating the first consonant to the value of the second, thereby creating a double consonant, this will usually occur; but this will not occur in cases where the phonemic change results in the transformation of one morpheme into another. (The few doubled consonants allowed in the language are always pronounced separately, as the [n]s in English penny; and such doubles only occur across morpheme boundaries.)

(2) Phonemic fricative dissimilation. If the second consonant in the cluster is a fricative and can resolve the cluster by becoming /l/ or /t/, it generally will; but this will not occur in cases where the phonemic change results in the transformation of one morpheme into another. If the two consonants

in the cluster are identical, this also will not occur; instead, one must proceed to (3).

(3) Consonant deletion. If the first two methods fail, one of the consonants in the illegal cluster will usually drop out; when both consonants are identical, this is what almost always happens. If one of the consonants has been changed by sound symbolism or added by initial change, the other will automatically be deleted; if both consonants are unchangeable because of sound symbolism or initial change, one of course moves on to (4) and inserts a vowel. Otherwise, deletion generally occurs by this hierarchy, where the lower the consonant's number, the higher its preference for deletion (e.g., /x/ will be deleted over any other consonant, and /l/ will be deleted over /m/): (1) /x/; (2) /p/; (3)/f/; (4) /w/; (5) /y/; (6) /l/; (7) /lh/; (8) /sh/; (9) /s/; (10) /n/; (11) /m/; (12) /t/; (13) /tl/; and (14) /k/.

If /x/ is deleted and is the second consonant in the cluster, and the first consonant is a stop or affricate, the stop or affricate will become aspirated.

(4) Vowel insertion. In certain cases none of the first three resolution methods are used, and, instead, a vowel is inserted between the two consonants of the illegal cluster; it is usually /a/, but sometimes /o/, and rarely /i/ or /e/. It is generally a low-pitched vowel, and never a mid-pitched one; but high-pitched vowels appear from time to time in this position. Vowel insertion is a somewhat rare phenomenon, and is known to never occur with clusters of which /x/ is a member.

Very rarely, and always due to infixing, a cluster of three consonants may form. How these are resolved is highly predictable: two of the three consonants will always be able to form a permitted cluster, so the leftover consonant is deleted. The only exception in these cases is when the consonant to be deleted has undergone sound symbolism change or been added by initial change; then, it will remain and vowel insertion will occur between it and the permitted cluster by (4) above. If two permitted clusters are possible (e.g., with [lmw], where either [lm] or [mw] could be formed), the first consonant of the three is dropped. But if two permitted clusters are possible and the first consonant has undergone symbolism change or been added by initial change, the third will be deleted instead of the first; but if both the first and third consonants have undergone such change or been added by initial change, vowel insertion will occur between the first and second consonants by (4) above. (Also, infixing can cause a word to <u>end</u> with a cluster of two consonants, which is not allowed; in these cases, the final consonant is usually dropped,

though it will always be the case that either the penultimate or ultimate consonant could legally close a word; but if the penultimate consonant is /x/, it will be dropped instead of the final one. In cases involving symbolism change and word-final clusters, a consonant that has not undergone symbolism change will always be preferred for deletion over one that has; if both have undergone such change, vowel insertion will occur between them by (4) above.) As above, deletion of an /x/ will make aspirated any stop or affricate that immediately precedes the /x/.

The only forbidden vowel clusters are those in which three or four vowels are present. Three-vowel clusters are usually resolved by deleting one of the vowels—though determining which vowel can be tricky. These generalizations cover a majority of known cases: (1) A vowel that has been changed by initial change will never be deleted, and, instead, one of the other two vowels will drop out; when initial change is not involved, or when deciding which of the other two non-initial-changed vowels will be deleted in an initial change case, generalizations (2)-(4) apply; (2) A mid-pitched vowel will be deleted over any high or low-pitched ones; and a high-pitched vowel will be deleted over any low-pitched ones; (3) When pitch is not a factor, /i/ will be preferred for deletion over any other vowel, /e/ will be preferred for deletion over /a/ or /o/, and /o/ will be preferred for deletion over /a/; (4) If the cluster includes two like vowels in immediate succession (they may have the same pitch or differing pitches), one of them will always be deleted; if they are of differing pitches, then the deletion will occur by generalization (2) above--unless one has been changed by initial change, in which case, the one that has not been so changed will be deleted. (If a vowel is not deleted to resolve the cluster, the second of the three vowels will change to a semivowel, either /w/ or /y/, whichever provides a more natural transition between the first and third vowels.)

Four-vowel clusters are always resolved by inserting a consonant between the second and third vowels, effectively creating two separate clusters of two vowels each. The interpolated consonant is nearly always a semivowel, either /w/ or /y/, whichever provides a more natural transition between the second and third vowels.

(These cluster-related phenomena are described from the assumption that the alterations--changes, additions, deletions--occur to whole words. Of course, another way to view it is that the <u>morphemes themselves</u> shift form depending on what other morphemes they combine with—i.e., each morpheme would have a large number of allomorphs. Such a description is perhaps even preferable from a purely linguistic standpoint. However, in the grammar of a language where the morpheme and not

the word is paramount, it is much less of a burden to present morphemes as having single, easily-identifiable forms, rather than having to show a multitude of variant forms for each—as would be required if one assumed that the change occurred to morphemes as opposed to words. "Base" forms of morphemes--i.e., how they appear irrespective of any cluster-related changes--can be recovered from word analysis; it is these forms that are used throughout this grammar when morphemes are presented in isolation, and in the lexicon.

In cases of vowel or semivowel insertion to resolve forbidden clusters, it is assumed under the morphemic change view that a vowel or semivowel is always added to the end of the first morpheme, not to the beginning of the second.)

4. Word-final nasal and /x/ deletion. Some word-final nasals and word-final /x/s drop out; which ones are not generally predictable. But even if a word-final nasal is deleted, the vowel preceding it still nasalizes (see below).

5. /x/-metathesis. The sequence V+/x/+V followed by a word-final /tl/+ V or /t/+ V will result in the /x/ and the second vowel switching positions.

6. /x/-loss. An /x/ which is preceded by a vowel and followed by a word-final vowel drops out. Further, an /x/ that is both preceded and followed by a vowel of the same articulatory position anywhere in a word (e.g., both preceded and followed by /o/) drops out.

7. Stress accent. Stress accent will apply to the initial syllable of the root (or the initial syllable of the stem, should one be present) of a central word in a multi-word expression (see **MORPHOLOGY**).

8. Stop and affricate voicing. Though normally voiceless, the stops and the lateral affricate will become voiced when they fall between two vowels within a word (at this point in the application of the phonological rules, all vowels will be voiced). The stops and the lateral affricate will also become voiced when they fall between a vowel and a lateral liquid or semivowel within a word. E.g., [t] will become [d] and [tl] will become [dl]. The key exception to this rule involves these sounds voicing in non-intervocalic environments, such as at the beginning of certain common words when they are followed by /a/ or /o/ plus a voiced lateral liquid or semivowel. Note that a stop or affricate that is voiced by this rule may again become voiceless by the consonant devoicing rule (see below). The phonetic contrast between voiced and voiceless stops and affrricates

in Nóyatu̇kȧh is not as pronounced as the distinction heard between similar voiced and voiceless minimal pairs in English.

9. Stop and affricate aspiration. Though normally unaspirated, the stops and the lateral affricate will become aspirated when (1) They begin or end a two-syllable word (there are no single-syllable content words in Nóyatu̇kȧh; see **MORPHOLOGY**); or (2) They are the initial consonant in a complex syllable (see below). E.g., [k] will become [kh] and [tl] will become [tlh]. (Some consonants may already have become aspirated prior to this rule via the deletion of /x/ during cluster resolution.)

10. /s/, /f/ and /sh/ voicing. Though normally voiceless, the fricatives /s/, /f/ and /sh/ will become voiced when they fall between two vowels within a word. [s] will become [z], [f] will become [v] and [sh] will become [zh]. These sounds only very rarely fail to voice when this rule states they should. Note that an /s/, /f/ or /sh/ that is voiced by this rule may again become voiceless by the consonant devoicing rule (see below). The phonetic contrast between voiced and voiceless /s/, /f/ and /sh/ in Nóyatu̇kȧh is not as pronounced as the distinction heard between [s] and [z] , [f] and [v] and [sh] and [zh] in English.

11. Vowel nasalization. Though normally unnasalized, a vowel will nasalize if it precedes or follows a nasal consonant, without exception.

12. Simple syllabification. Nóyatu̇kȧh words divide into syllables, with the beginning of each word usually marking the beginning of a new syllable. Words are syllabified from left to right, as they are written in the Roman alphabet. The rules for simple syllables--i.e., those of the forms CV, V, VC or CVC--are as follows: (1) A syllable must always have a single vowel sound as its peak; thus, the number of syllables per word is equal to the number of discrete vowel sounds in the word; (2) Syllables are created according to this hierarchy: CV, V, VC, CVC, where CV syllables are preferred over all others, V syllables are preferred over VC and CVC, and VC syllables are prefered over CVC; (3) When a vowel is followed by a cluster of two consonants, the syllabic division comes between the consonants.

13. Vowel devoicing. Though vowels are inherently voiced, vowel devoicing is one of the most common phonological processes in Nóyatu̇kȧh. In addition to the obvious loss of voice, devoicing also shortens the length of a vowel slightly. Whether or not a vowel devoices depends on the vowel's pitch, the consonant that follows the vowel, and

where in the word the syllable containing the vowel falls (and, for ultimate devoicing, the form of the syllable):

(1) Pre-penultimate devoicing. A low-pitched vowel of any pre-penultimate[11] syllable will devoice if followed by a voiceless fricative (/x/, [sh], /lh/, [s] or [f]) and not preceded by /x/.

(2) Penultimate devoicing. A vowel of any pitch in a penultimate syllable will devoice if followed by a voiceless fricative (/x/, [sh], /lh/, [s] or [f]) or a voiceless stop or affricate ([k], [kh], [tl], [tlh], [t], [th], [p] or [ph]).

(3) Ultimate devoicing. If a vowel of any pitch closes an ultimate (form CV) syllable or is itself an ultimate syllable (form V) and that syllable ends a complete utterance (see **MORPHOLOGY**), the vowel will devoice. If a vowel of any pitch is part of an ultimate syllable of the form VC or CVC, it will devoice by the penultimate devoicing rule (i.e., if it is followed by a voiceless fricative or a voiceless stop or affricate).

(4) A vowel present in a syallable that is stress-accented will never devoice under any circumstances.

When Nóyatů́kȧ̊h is sung or delivered in rare shouted form, voiceless vowels will revoice.

14. Consonant devoicing. Any voiced consonant (including the inherently voiced nasals, semivowels and lateral liquid) preceding a voiceless segment (vowel or consonant) devoices, without exception. Furthermore, a voiced consonant that immediately follows a complex syllable (see below) will devoice, without exception, if it was given voice by a previous phonological rule.

Following the consonant devoicing rule, one will need to go back and reapply the vowel devoicing rules, taking into account the consonants that have become devoiced; and following the reapplication of those rules, this rule must then be reapplied. This cycle will continue until the structural descriptions of both the vowel and consonant devoicing rules cease to be met.

15. /x/-reduction. /x/ is reduced or weakened to an approximant (having its force, friction and duration curtailed) by a preceding or

[11] Not to be confused with antepenultimate—the term "pre-penultimate" covers all syllables prior to the penultimate one.

following voiceless vowel. It is not totally absorbed, however, and is not eliminated orthographically; instead, it changes to [h]. Normally, [h] is still reasonably audible, if diminished from [x]; but in a complex syllable (see below), it becomes a subtler aspiration woven into the diphthong of a complex syllable. (This vowel aspiration phenomenon seems to result from co-articulation of the [h] with the diphthong. /x/ is a known source of aspiration in another context, viz., that which occurs to a stop or affricate when a following /x/ drops out. However, vowel aspiration only occurs with diphthongs, since the loss of an /x/ between two separate vowels does not ever result in either vowel aspirating. Vowel aspiration is not orthographically indicated by itself, but it may be assumed that the tie-bar below an [h] in a complex syllable indicates it, since all diphthongs are aspirated; see below.)

16. Complex syllabification. Strange for the English speaker, Nóyatů̇kȧ̇h exhibits what are called complex syllables. A complex syllable is formed when a consonant is followed by a voiceless vowel, /x/, and then another voiced or voiceless vowel. The phonetic quality of the initial consonant is changed in this process: if voiced, it becomes voiceless (by the consonant devoicing rule above); if it is an unaspirated stop or affricate, it becomes aspirated (this aspiration represents assimilation of the stop or affricate by the aspirated diphthong that follows); if it is a fricative, it is pronounced with greater friction; if it is /n/, /m/, /l/, /w/ or /y/ it receives its own distinctive pronunciation (in addition to being devoiced). Moreover, the /x/ goes through a transformation of its own in this environment (see the /x/-reduction rule above). All four of the sounds in a complex syllable are pronounced as a single syllable, with the two vowels forming a diphthong. The diphthong will be pronounced differently depending upon what the initial consonant is, and, naturally, what the two vowels are; but the English speaker can approximate the diphthongs by simply running the present vowel sounds together. This is the only environment in which diphthongs occur in the language, and the two vowel sounds that constitute the diphthong are always separated by an [h]. Vowels that are written side by side never represent diphthongs--they are always pronounced separately (this is even true of doubled vowels, which can only occur across morpheme boundaries[12]).

Because of the combining of the sounds in a complex syllable, the second vowel sound of the diphthong (whatever its pitch) will devoice, so

[12] As with like vowels, /e/ and /i/ never appear contiguously within morphemes, and, indeed, only rarely do both appear non-contiguously in the same morpheme.

that the entire diphthong becomes voiceless (and, similarly, if either of the vowel sounds is nasalized, the entire diphthong will become nasal). Diphthongs always act as single, unified vowel sounds, and the syllable of a complex syllable always includes (besides the two vowels) the initial consonant and the medial [h]. For purposes of pitch-shifting (see below), all syllables must be assumed to be voiced and have pitch; a complex syllable will, for pitch-shifting purposes, exhibit the overall pitch of its second vowel--i.e., the first vowel will essentially assimilate to the pitch value of the second (if the vowels are of differing pitches), so that the entire diphthong takes on the pitch of the second vowel. (Note of exception: a complex syllable will not form if the second vowel is already part of a syllable that is stress-accented, due to prohibitions placed on the devoicing of such vowels.)

A voiced consonant that immediately follows a complex syllable will devoice, without exception, if it was given voice by a previous phonological rule. In addition to its ability to form across morpheme boundaries, a complex syllable can also form across word boundaries in connected speech. When a complex syllable forms across a word boundary, it takes on the dual role of both the closing syllable of the first word and the opening syllable of the second.

Diphthongization in a complex syllable is indicated orthographically via a tie-bar diacritic below the [h] that separates the two vowels (e.g., ȯ͡hȧ). (Note that both the vowels in a diphthong are always marked as voiceless--and, where appropriate, both are marked as nasalized.)

17. Pitch-shifting. There are a number of rules that adjust the level of the vowel pitches in Nóyatůkȧh words as the pitches interact with one another. Nóyatůkȧh pitch accent behaves as stress in multiple stress languages—i.e., there can be multiple accents in a word, especially longer words. The language's pitch system is wholly unlike those found in most modern pitch-accent languages.

It is likely that Nóyatůkȧh once exhibited the vowel disharmony phenomenon present in Lholámelo: i.e., disharmonization keyed to constrastive vowel length[13]. But this feature, if it existed, would have been upset by the development of vowel pitch accent; still, it is tempting to see

[13] In this feature, certain similar vowels (to wit, long and mid length) were discouraged from appearing in adjoining syllables.

a connection between it and the rules for pitch-shifting, in how the rules encourage certain melodies and discourage others.

As in vowel devoicing, there are different pitch-shifting rules for different classes of syllables: penultimate and ultimate syllables are generally not treated the same as pre-penultimate ones. Herein, any vowel devoicing that has previously taken place must be ignored for purposes of applying the rules. (This does not mean that devoiced vowels will revoice by these rules: they will remain devoiced in the words as actually spoken; but for purposes of pitch-shifting, it must be assumed that they are voiced and exhibit the pitches that they did before devoicing.) In addition, the application of each rule must take into account any pitch-shifts that have occurred via previous rules.

(1) High-lowering I. (This rule requires that one begin at the leftmost syllable of a word and then proceed right until its conditions are no longer met.) A pre-penultimate high-pitched syllable that is both preceded and followed by a high-pitched syllable is dropped to a low pitch.

(2) High-lowering II. A pre-penultimate high-pitched syllable followed by another high-pitched syllable becomes low-pitched.

(3) Mid-to-low bump. A pre-penultimate or penultimate mid-pitched syllable followed by another mid-pitched syllable becomes low-pitched.

(4) Low-raising. (This rule, like (1), requires that one begin at the leftmost syllable of a word and then proceed right until its conditions are no longer met.) A pre-penultimate low-pitched syllable that is both preceded and followed by a low-pitched syllable is raised to a high pitch. However, this will not occur if the syllable to be raised to high contains the only non-high-pitched vowel in a root morpheme or stem (should a stem be present). In these cases, either the low-pitched syllable to the immediate left or right will be raised to high instead. If the left syllable is not preceded by a high pitch, it becomes high; if it is preceded by a high, then the right syllable will become high (if it is not followed by a high pitch and is pre-penultimate). In rare cases, the left low syllable will be ineligible for the shift and the right low syllable will be penultimate and/or followed by a high pitch (and thus also ineligible); if so, then no syllable is raised to high and the next rule applies instead.

(5) Low-to-mid bump. When none of the low-pitched syllables in a cluster of three low pitches may be raised to high in rule (4), the second of the three low syllables will become mid-pitched.

At this point, special high-pitch accents (marking habituality/generality or questions--see **MORPHOLOGY**) are added. These may overrule vowel devoicing--i.e., revoice a vowel as actually spoken--and any pitch-shifts that have occurred so far (e.g., if a syllable has shifted from mid to low, a special high-pitch accent will then shift that low syllable to high). If any consonant was made voiceless via the devoicing of a vowel that now gains special high pitch, then the consonant will revoice.

(6) High push-over. (This rule applies only when a special high-pitch accent has been added to a word.) If the syllable both preceding and following a special high accent is high-pitched, the syllable preceding the special high accent will become low-pitched (if it is not preceded by two low-pitched syllables). If it is preceded by two low-pitches, it will become mid-pitched instead.

(7) High hanging low. A high-pitched penultimate syllable preceding a word-final low-pitched syllable is realized as a hanging-low or lowered high (instead of a normal high).

(8) High-raising. A high-pitched penultimate syllable preceding a word-final high-pitched syllable is realized as a raised high (instead of a normal high).

Giving proper pitch to syllables when speaking is critical, as there are numerous Nóyatů̇kȧ̇h words that are distinguished only by vowel pitch. (Note: Although pitch is distinctive for both words and isolated morphemes, it must not be assumed that pitch-shifting according to these rules changes the meaning of any morpheme which is part of a word and whose pitch or pitches undergo shift; this is not the case.)

18. /a/ and /o/ allophone shifting. /a/ will be realized as [æ] (instead of [a]) and /o/ as [u] (instead of [o]) when /a/ or /o/ falls between two stops or affiricates within a word and the first stop or affricate is either dental or bilabial. Also, when /a/ ends a word and also begins the next, the word-final /a/ will be realized as [æ]; and when /o/ ends a word and also begins the next, the word-final /o/ will be realized as [u] (however, if the word-final /a/ or /o/ is part of a diphthong, an allophonic shift will not occur).

19. /e/ to /i/ phonemic shifting. /e/ will shift phonemically to /i/ when /e/ falls between two stops or affiricates within a word and the first stop or affricate is either dental or bilabial. Also, when /e/ ends a word and also

begins the next, the word-final /e/ will shift to /i/ (but not if the word-final /e/ is part of a diphthong).

20. /i/ to /e/ phonemic shifting. When /i/ ends a word and also begins the next, the word-final /i/ will shift phonemically to /e/ (but not if the word-final /i/ is part of a diphthong).

21. Vowel assimilation. /i/ and /e/ assimilate to take on the phonetic value of an immediately preceding non-/i/ or non-/e/ vowel. This assimilation is not total, and it manifests generally as a subtle "coloring" of /i/ or /e/ by the preceding vowel. E.g., one can produce an assimilated /i/ that follows an /o/ by holding one's tongue and mouth in the position for /o/ while trying to produce /i/. These assimilated vowels are considered minor allophones and are not indicated in transcription.

22. /x/ labialization and palatalization. /x/ (when not reduced to [h] by the /x/-reduction rule) will labialize and become [xw] if it is preceded by a voiced /o/ and followed by /i/, /e/ or /a/. /x/ (also when not reduced by the /x/-reduction rule) will palatalize and become [xy] if it is preceded by a voiced /i/ or /e/ and followed by /a/ or /o/.

23. Natural glides. Physiologically-natural semivowel glides are usually heard between adjacent vowels within words. The semivowel /w/ is heard between adjacent /o/ and /o/, /a/ and /a/, /o/ and /i/, /o/ and /e/, /o/ and /a/, and /a/ and /o/; /y/ is heard between adjacent /e/ and /e/, /i/ and /i/, /i/ and /o/, /i/ and /e/, /i/ and /a/, /e/ and /o/, /e/ and /i/, /e/ and /a/, /a/ and /i/ and /a/ and /e/. These natural glides are not generally written in the transciption orthography for several reasons, chief among them the fact that they were not represented when words were written in the native syllabary; thus, it is clear that speakers did not consider them (in many cases at least) to be discrete sounds intervening between the vowels. (This is not to say that combinations such as [o] + [w] + [i] never appear orthographically in Nóyatu̇kȧh words; but when they do appear, they meet one of two criteria: (1) They are the result of morphemic conjunction or infixing where the semivowel and one of the vowels belong to different morphemes, and where the semivowel sound is heard is all cases, and not just when two certain vowels are brought together; or (2) They are the result of illegal vowel cluster resolution, where a semivowel has been used to break up an illegal vowel cluster; such semivowels are written in the transcription orthography, just as they were in the native syllabary.)

The Kayȧsátan Characters (Nóyatu̇kȧh Syllabics)

The Kayȧsátan Characters (or Nóyatu̇kȧh syllabics) are the native writing system of Classical Nóyatu̇kȧh. Although they were primarily spoken, and their vocal dimension was important above all, the Nóyatu̇kȧh dialects had a long and distinguished written tradition flowing from both their parent languages. A brief history of that tradition, and the coming of the Kayȧsátan Characters, is given in this part, followed by a description of the Kayȧsátan Characters and how they were used.

Lholámelo and Qápaqʷónaq had been written languages for countless generations before they gave birth to the Nóyatu̇kȧh dialects; and the speakers of Lholámelo's ancestral tongue were, at least in legend, credited with the invention of one of the first inchoate writing systems, back in the vanished past after the Ozolodaȧkȯ taught men to speak with their mouths. Qápaqʷónaq, written with logographs, was the language of tomb-carving: though its speakers did not intern their dead, they were frequently called upon by those who did, for their glyphs and the mastery with which they were executed were famous and prized as high art. It was thus fashion in many places to have one's name translated into Qápaqʷónaq and chiseled upon one's tomb--sometimes even in advance of death, so that the carving might be admired by the future tomb occupant. (It it said also that a Qápaqʷónaq speaking stone-carver was present at the burial of Ayaaloama by the Ozolodaȧkȯ in the Furthest South, and that he chiseled the inscription upon the cover stone in both the language of the Ozolodaȧkȯ and in Qápaqʷónaq.)

The Nóyatu̇kȧh dialects inherited the tradition of the syllabary from Lholámelo, which had been a language of purely CV syllables (save for the occasional word-final consonant, which was never indicated in writing). The infusion of consonant clusters and syllabic vowels that the dialects received from Qápaqʷónaq made them unsuited to a pure CV syllabary; thus, from the very first, written Nóyatu̇kȧh perforce used a mixed syllabic and alphabetic system. Over time, a number of the consonant clusters within Nóyatu̇kȧh morphemes eroded and also became illegal across morpheme boundaries, but some lingered, which made a Lholámelo-like syllabary impossible.

It is said that by Kayȧsáta's time, Nóyatu̇kȧh writing was in a terrible state. There had long been a gap (sometimes wider, sometimes narrower) between speech and written words, going back to the parent languages, but the closer that the speakers of the Nóyatu̇kȧh dialects became, the

deeper that tribal scribes began to regret this; but more they regretted the lack of uniformity in writing, and the great pains necessary to learn the writing systems of neighboring tribes. Books written by the scribes of one tribe were essentially in a foreign language to the scribes of another: such was the disparity between written tongues. Late in first century of Kayȧsáta's rule, the scribes of many brotherhoods called assemblies among themselves and from these petitioned Kayȧsáta to combat their woes of the brush and stylus; they called for nothing less than a standard syllabary that would unite them. Kayȧsáta alone, they believed, possessed the popularity and deftness of mind to inspire trust in the endeavor. Kayȧsáta, as was his custom, listened thoughtfully to them--but he did not make their quest his own until after he attempted to read the various accounts of the Starlit War that had been sumbitted to him for inclusion in the Konayaedlolashona. He despaired of the linguistic troubles he found therein: he had long known that the various tribes used different modes of writing, and could read in a handful of them, but he had never anticipated the degree of chaos he uncovered when he embarked upon the Konayaedlolashona. According to his own account, he found among the dialects six different sets of characters for the /t/-initial syllables and eight different sets for the /k/-initial syllables (two sets in a single dialect); a distinction maintained in some dialects between /x/ and /h/ syllables, when the latter had long ago merged with the former in speech; a preponderance of dialects whose writing failed to distinguish /i/ from /e/; except in the Classical and related dialects, a total lack of individual characters for the non-/m/ labial syllables--these were sometimes (but not always) indicated via digraphs of free-standing /m/ consonants plus a syllabic, e.g., <m>+<sa> standing for <fa> and <m>+<ta> for <pa>, (and several dialects indicated the /w/-initial syllables with /m/ syllabics plus free-standing vowels, usually <o> or <a>, such as <me>+<o> for <we>); a baffling army of punctuation and diacritical marks (for indicating digraphs, word boundaries, pauses, etc.), many of which had divergent meanings in different dialects; and other boobytraps besides. With the weight of these troubles upon him, Kayȧsáta put aside his editorial work on the Konayaedlolashona and set about to do what the scribes had asked of him--for them, and for himself: for he desired some degree of uniformity in the presentation of Konayaedlolashona, and he came to admit that a new writing system would naturally underlie any and all of his own scribal labors. The acts of writing and reading had long been considered sacred activities among those Nóyatůkȧh speakers involved in them, and so Kayȧsáta took his work on forging a standard written language more seriously than any other single project at the time. He approached his new syllabary with no small amount of trepidation.

The work of the syllabary would stretch over four years, even with the help of some of the brightest and most eager scribes of the age, whom Kayȧ sáta brought to live with him in Doyanmoata.

From the start, the chief objectives of Kayȧsáta's project were to forge a one-to-one correspondence between the main writing symbols and the CV syllables of the language (while also including ways of representing other syllable types), and further to make these symbols standard. Later, he came to include an orthography or standard spelling system under the purview of his project; and his spellings were drawn from his own Classical dialect's system, though where Classical speech diverged from traditional spellings (which was often), he opted to update the spellings to reflect the spoken language (but not without exception--see below). Essentially, he brought the standard written language into line with his own spoken dialect; and though it was necessary that some dialect or another be used in this way, the unfairness of it did not go uncommented upon.[14] Indeed, Kayȧsáta's promotion of a common written language was not uncontroversial, and his syllabary and accompanying orthography were only slowly accepted by the elders and chiefs of some tribes. Kayȧsáta would have been quite unable to enforce any kind of written language uniformity on his people; he lacked the resources to do so, and force would not have been tolerated. Instead, he relied upon the immense bonds of respect and trust that he shared with the tribes under him. He needed only to convince a relatively small number of people, for much of the West was illiterate then, as throughout its history; writing was restricted to rulers, their advisors, elders, tribal chiefs, shamans and the secretive scribe brotherhoods--ordinary people, because of their occupations and because of the West's reliance on healthy oral traditions, had no need of or desire for written language[15]. The scribes, who had been the original

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[14] Classical Nóyatů́kȧh was the most widely-spoken dialect of the language and had the most speakers of any single dialect in the Northwest. Approximately one of every three tribes spoke it or a close relative. Kayȧsáta abhorred the idea of trying to erase dialectical differences (a futile endeavor, as he himself said) and desired more than anything to preserve the integrity of the spoken dialects. His project never pretended to claim any power over speech; had he been arrogant enough to assert such authority, he would likely have ended his days on a spear centuries before he fell in battle.

[15] Everyone, scribes included, was well aware that, if relied upon too much, the written word could serve to sever people from the Earth, their

Note continued at the bottom of the next page

impetus for the new system, eagerly accepted it; elders, shamans and chiefs tended to be more reluctant, but most eventually relented and adopted the new ways, replacing their old modes of writing with it.

The overall design of the Kayȧsátan Characters is a syllabary intended for cursive, connected writing. Cursive writing was an innovation of Kayȧsáta, though the curved line forms of his syllabics were not entirely a priori; Kayȧsáta drew heavy inspiration--if not the exact shapes of the letters--from several sources, most obviously from the syllabary of the Ozolokenalwam scribes. Their stories of sailing and the sea are said to have enchanted Kayȧsáta in his youth, and he forever after maintained a love of them and their writings. It is, like the systems it replaced, actually a mixed syllabic and alphabetic affair: because of the language's tight phonology and many CV syllables, an old-style CV syllabary works well as the foundation of the writing system, but because of V, VC and CVC syllable forms, methods of indicating free-standing consonants and free-standing vowels are also included. The characters are written and read in vertical columns from the top of a page to the bottom, and from left to right. Unlike with older syllabaries, there is not a completely different letter for each syllable with the same initial consonant--e.g., the symbols for <ka> and <ke> are not unrelated graphical forms; instead, the letters of the syllabary rotate in any of four directions to indicate attached vowels, while the initial consonants remain unchanged[16]. When formally presented (or presented in series, as they generally were for learning purposes), only fourteen of the total fifty-six letters were shown, and these were the letters in the consonant+/a/ orientation, which was linked to the westward direction (these letters were said to "point west"); /a/ was the

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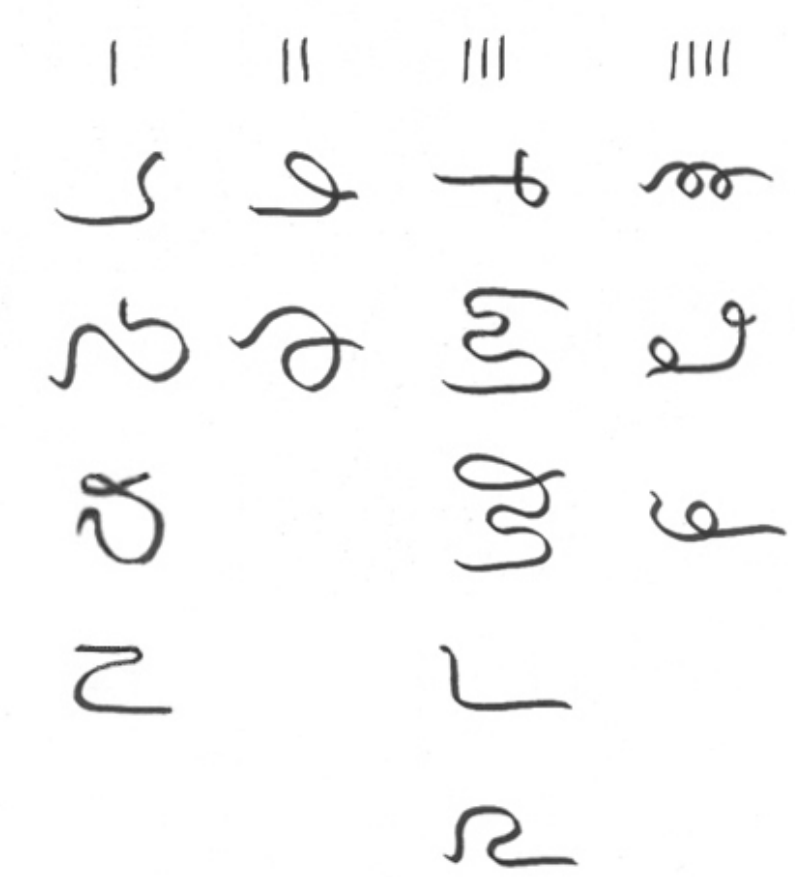
primordial source of sustenance; and precautions were taken to avoid that. But some held more radical ideas about writing, believing that any amount of it corrupted the oral traditions; and this belief was not entirely unknown among elders and shamans.

[16] In a subtler way, the Ozolokenalwam syllabary likely had further influence on Kayȧsáta here: the Ozolokenalwam scribes used horizontal, vertical and left and right-leaning diagonal lines through their syllabic characters to indicate free-standing vowels that followed the syllabics (a horizontal line denoting /a/, vertical denoting /o/, left-diagonal /e/ and right-diagonal /i/). This association of vowels with certain directions is a dry run for Kayȧsáta's trigangular vowel signs (see below), which was the inspiration for his rotating characters, according to Kayȧsáta himself.

most common Nóyatůkȧh vowel, and its position was considered normal, and all rotations occurred relative to it. To change the attached vowel to /e/, a letter was rotated 90 degrees counterclockwise from west (or to the south); to change the vowel to /o/, the letter rotated 180 degrees counterclockwise from west (or to the east); and to change the vowel to /i/, the letter rotated 270 degrees counterclockwise from west (or to the north). This was said to have been Kayȧsáta's way of sacredly honoring the Four Directions. Kayȧsáta grouped the fourteen C+/a/ characters (called the primary forms or primals) into four series (lawebanaki) based on the likeness of their initial consonants. Thus, Series I contained the syllabics whose initial sounds were the stops and the lateral affricate; Series II, the syllabics whose initial sounds were the nasals; Series III, the syllabics whose initial sounds were the fricatives (including the lateral fricative); and Series IV, the syllabics whose initial sounds were the semivowels and the lateral liquid. Within each series, the characters were ordered according to the position of their initial consonants within the mouth--with those syllabics whose consonants were furthest back coming first and those whose consonants were closer to the lips coming last. Table VII below shows the cursive characters as Kayȧsáta ordered them in series:

Table VII: The Cursive Syllabics in Series



As can be seen, Kayȧsáta made a special effort to use conceptually similar letters for those C+/a/ syllables with similar initial consonants (this is most evident in Series II, the nasal syllabics). He was careful, however, to ensure that such similarities were not great enough to cause confusion during fast reading.

The series were named after the first syllabic in each of them:

Series I: kashenan or <ka>-series
Series II: natoseyakewatla or <na>-series
Series III: xawaweganan or <xa>-series
Series IV: yaxoamashe or <ya>-series

The Kayȧsátan cursive letterforms are exclusively simple lines, curves and loops; to simplify and make easier the laborous task of writing, Kayȧsáta's constraints when designing the letterforms were three: (1) Each syllabic was to consist of a single unbroken line that avoided hard angles; (2) When writing, the brush or stylus could intersect part of a line already made but not retrace part of a line for any length; and (3) In connected writing, one must be able to naturally flow from one character into another without lifting the brush or stylus. Kayȧsáta gave the name Manwaesheamewaanosho to his flowing letters, 'Ribbon-snakes-crawl-down-writing-wood'. Casually, they were often called merely by the shorter name for ribbon snakes, emanwagasanosho 'they-flee-into-water'[17]. The senuous movements of the snake were considered high beauty in the West, and Kayȧsáta desired to capture them in his syllabics.

As said above, the letters in series are known as the primals; other orientations are called rotated forms or ratationals. Table VIII shows all fifty-six forms of the letters:

[17] The aquatic ribbon snake (probably thamnophis proximus or a close relative) after which the cursive letters were named was common in the Northwest early in Kayȧsáta's rule; but it had vanished completely by the time of his death. Its disappearance was sadly noted by scribes.

Table VIII: Full Table of the Cursive Syllabics

Besides the main Manwaesheamewaanosho letters, a number of other signs and marks were used to write the Nóyatù̇kà̇h syllabics. Critically important were the triangular free-standing vowel signs (yolekamokolanosho 'their-walls-meet', the word for triangles) and the "ink blot" dots (tamosayeko 'they-stain-accidentally'). The free-standing vowel signs worked on the very same rotation principles as the syllabic characters: a westward-pointing triangle stood for /a/; a southward-

pointing triangle, /e/; an eastward-pointing triangle, /o/; and a northward-pointing triangle, /i/. Astute observers may notice the visual encoding inherent in the vowel signs: in /i/ and /e/, the horizontal bases of the triangles represent a flat tongue body, while the up-pointing and down-pointing apexs represent the tip of the tongue going up or down; assuming the speaker is facing right, the vertical base in /a/ shows open (unrounded) lips, while the left-pointing apex shows a narrowed oral cavity; and again assuming a right-facing speaker, the vertical base in /o/ represents an enlarged oral cavity, while the right-pointing apex represents closed (rounded) lips. An "ink blot" dot, when applied to a normal C+/a/ syllabic, muted the inherent vowel, and essentially made the syllabic into a free-standing consonant. Where exactly these dots were applied on each character is shown in the table immediately above. Due to the phonological structure and constraints of the language, some consonants never appeared in free-standing form; those that could not end a word or begin a consonant cluster were never written as free-standing characters. These were <sh>, <s> and <f>; their free-standing slots are blank in the table.

Two punctuation marks were also utilized: the stop (latlonan 'he-pauses') and the continuation (lametlonan 'he-does-not-pause'). The stop, rendered in the Roman transcription as a period (.), represented the pauses between complete utterances, or self-contained units of talk bounded by a speaker's silence; in practice, usage of the stop differed from our period mainly in that it did not appear at the end of the final utterance of a text. The continuation, Romanized as a hyphen (-), was used at the end of a line or column when a single word was split between two lines or columns. No other puncuation marks were used.

Though listed on Table VIII, the pitch diacritics (okokato 'they-enlighten-me') were optional and used almost exclusively in learning environments, as a written form of training wheels, so to speak. They were not created as an original part of the Nóyatu̇kȧh syllabary, but instead came into use long after the syllabary was standard in the Northwest. Kayȧsáta did not include vowel pitch markings two reasons: (1) Nóyatu̇kȧh had not traditionally indicated pitch in any of its varied scripts; (2) Native speakers did not require pitch to be indicated to properly read their language. The chief reason the pitch diacritics were later (and unofficially) added was to aid non and semi-fluent foreigners, so that those learning the written language could properly pronounce words when they were written out. Native speakers, who usually learned the written language in adolesence

(if they learned it at all), did not have similar reading troubles. Only the high and mid pitches have marks; unmarked syllables were low-pitched[18]. A diacritic was placed to the direct right of a syllabic character to indicate its pitch, when the syllabic character represented a CV syllable; when the syllabic character was part of a CVC syllable, however, the diacritic went to the right of and between the syllabic and the free-standing consonant that followed it. A free-standing vowel was marked as high-pitched with a fixed interior altitude line (horizontal on the /a/ and /o/ vowel signs, vertical on /i/ and /e/) and marked as mid-pitched when completely filled in. The pitches of V and VC syllables were always marked on free-standing vowel signs; complex syllables, though they were written as two syllabics in immediate succession, were not marked for pitch at all. Lack of pitch marking in everyday writing was one of the few ways that Kayȧsáta's syllabary and orthography failed to be fully phonemic[19]. (Kayȧsáta also neglected to include a way of indicating stress to mark central words, for the same reasons that he did not indicate pitch; but, unlike pitch, a mark for stress never came about.)

Kayȧsáta made certain that there was a discernable correspondence between the spoken syllables of words and the written symbols used to spell them--thus, he prescribed that each type of syllable be written in a certain way; he avoided the practice--present in the old syllabaries of

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[18] Though all the surviving Nóyatůkȧh dialects possessed pitch accent, a tri-pitch system was not universal (though it was the most common system); some dialects--such as that of the Ozolokenalwam--had only high and low pitches, and in some a version of the raised-high had become phonemic, giving these dialects a total of four distinct pitches. Pitch quality likewise varied. Because the Nóyatůkȧh syllabary's orthography was rooted in Classical dialect spellings, the pitch markings (when used) reflected Classical pitch patterns; but in a few places, for obscure reasons, dialects that possessed the phonemic raised-high indicated it in writing by doubling the high pitch diacritic (and using doubled altitude lines on free-standing vowel signs). Why exactly this was done, given the acknowledged separation between spoken and written language, is unknown.

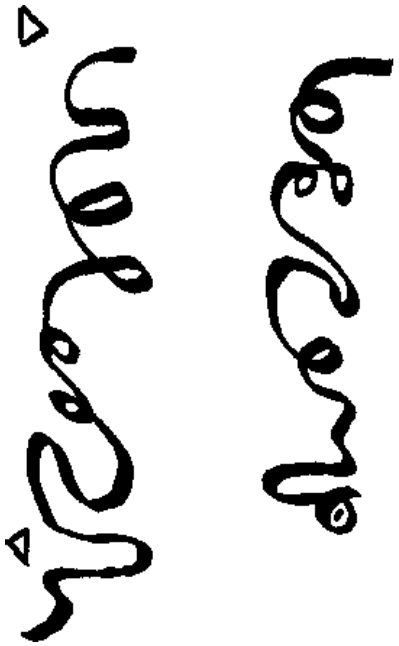
[19] Another departure from fully phonemic spelling is Kayȧsáta's writing of the word-final nasals and /x/s that drop out via Rule 4 of the phonological rules. The Kayȧsátan orthography insisted on the writing of these, whereas the transcription used in this grammar omits them. Readers desiring straight transliterations of Nóyatůkȧh words should always include them.

some dialects--of conjoining free-standing consonants to represent a consonant cluster and using a free-standing sign for the following vowel. The old Classical syllabary had not done this, and he considered it confusing. The various syllable types were conistently represented so:

CV: Syllabic character;
V: Free-standing vowel sign;
CVC: Syllabic + free-standing consonant;
CVCV (complex syllable): Two syllabics;
VC: Free-standing vowel sign + free-standing consonant.

In the West, cursive brush or stylus writing was done by applying paint or ink to long, somewhat narrow and thin slats of wood; such a slat of writing wood was called a kamemawawina 'red-alder-tree-smooths'. Both sides of a kamemawawina were written upon, and the wood was smoothed to provide a very fine writing surface. Typical dimensions for an kamemawawina in Kayȧsáta's time were (approximately) 18"x7"x1/2" in customary measure, though many variations of size were known. E.g., Kayȧsáta's original copy of the Konayaedlolashona is said to have deliberately used a different size of kamemawawina for each story. The number of columns written per typical 18"x7"x1/2" page varied with the size of the handwriting, but was usually five or six. Smooth hardwoods exclusively were used in writing, with red alder being the most common writing wood, followed closely by bigleaf maple. Cedar trees grew in abundance in the Northwest, but were considered specially sacred and were never cut for any reason. Paper or similar material was never used.

Ideally, a column of cursive Nóyatůkȧh writing on a kamemawawina consisted of one long, unbroken line down the page, its form contorted into the shapes of the syllabics and free-standing consonants. When used, the triangular free-standing vowels were written in the positions where they naturally fell in a word, between the syllabics or free-standing consonant characters and to the left of them. Below is an example of connected writing, with Ozolodaako on the left and Nóyatụ̊kȩ̣h on the right (without pitch markings):



When necessary to clarify intent, a careful writer left enough space between his syllabics or free-standing consonants (via lengthening of the characters' tails[20]) to accomodate free-standing vowel signs. If a vowel opened a word, the line for the syllabic characters began just below and to the right of the initial free-standing vowel sign (as seen above); and if a vowel cluster began a word, the two free-standing vowel signs were "stacked" one on top of the other, and the line for the syllabic characters began below and to the right of them both. When writing, one generally went a column at a time, first drawing the line for the syllabics and free-standing consonants, and then going back and placing the free-standing vowel signs and the tamosayeko within free-standing consonants; punctuation marks came last. (In practice, due to the custom of leaving a small space between words to mark word boundaries, a single column of writing was sometimes composed of two or more broken lines.)

Being a people with a great love of motion, an understanding of the

[20] The length and shape of a letter's upper and lower tails could also vary in order to flow naturally from the previous character and into the next; and the shape of a letter itself could vary subtely according to the letters that surrounded it. The letterforms in Tables VII and VIII are the formal or ideal shapes from which virtually everyone's handwriting departed in some manner. As well, many stylistic variations of the syllabics came into use and faded over the centuries in the West.

properties of physical space came naturally to those in the West; this is not to say that an average Western man could recite Euclid's proofs on demand, but he had no trouble at all with the spatial manipulation involved in rotating the syllabic characters. As a rule, no one learned all fifty-six forms as shown above; instead, one learned just the fourteen primal forms and the rotation rules, which governed the manipulation of the basic fourteen. The Kayȧsátan Characters represent one the best examples of the West's infallible spatial sense. And though mentally rotating the fourteen primal syllabics and then drawing the rotated characters was no challenge, it was common among those learning how to write to begin by drawing the individual syllabics in isolation; then the writer would go back and join the upper and lower tails of the syllabics with connecting lines. This method would persist until the writer had become comfortable enough with the letters that he could move freely from one character into another without lifting his writing instrument. Achieving an overall seamless and fluid writing style was a lifelong task, and a style where the tails were as senuous as the letters themselves was respected and highly prized. (Prized just as highly were those whose columns were straight--the more tightly aligned the letters in the syllabic lines and the more vertically aligned the free-standing vowel signs, the better.)

As a supplement to his cursive syllabary, and with the advice and guidance of mason and stonecutting brotherhoods, Kayȧsáta also created at the same time a set of angular syllabics, called the Asonolapexenosho 'They-mark-alabaster', intended for carving or etching on stone and wood. The angular letters resembled their cursive counterparts in general style, but departed from the cursvive forms often in order to minimize the number of lines necessary to create them or to make them manifestly distinct from one another. The Asonolapexenosho worked much the same as the Manwaesheamewaanosho, with some notable exceptions: the letters were not connected, and a small space was left between each of them (as well as a larger space between words); and pitch was never indicated in any way when writing them. Tables IX and X below show the Asonolapexenosho in series and all their fifty-six forms:

Table IX: The Angular Syllabics in Series

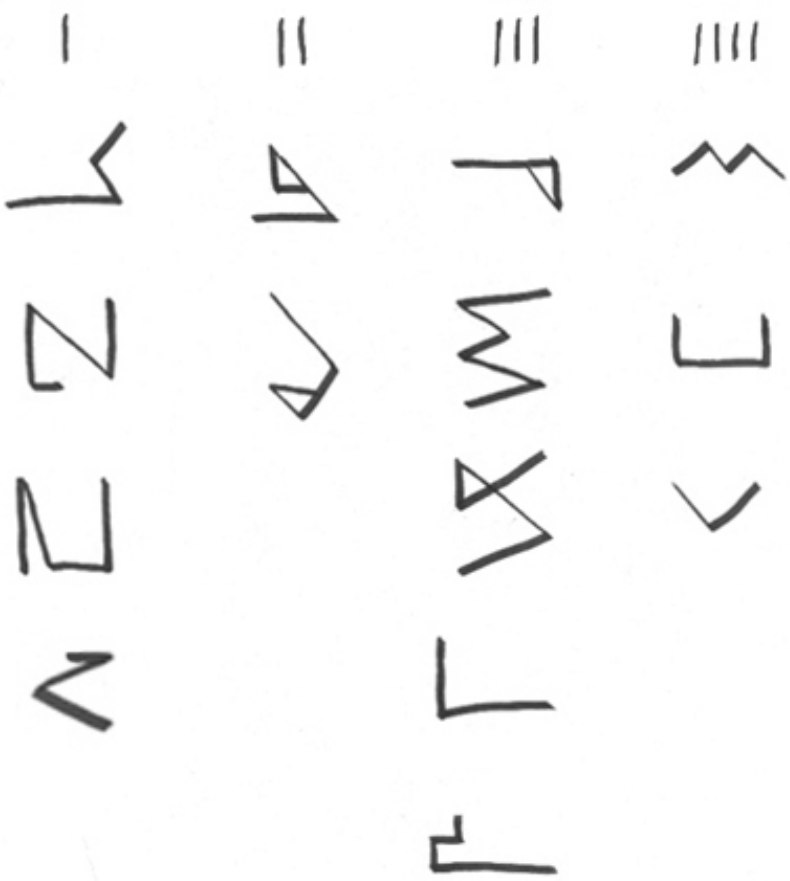


Table X: Full Table of the Angular Syllabics