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THE TAI AHOM SOUND SYSTEM AS REFLECTED BY THE TEXTS RECORDED IN THE BARK MANUSCRIPTS

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Abstract
Tai Ahom (Southwestern Tai) mostly survives in manuscripts. (Terwiel 1988; Morey 2015). It has long been held that Ahom retained many archaic features lost in most modern Tai languages. For example, Li (1977: 87-89) reconstructs the cluster *phr- as evidence from Ahom in words like *phra* 'rock' and *phrai* 'walk'. However, Diller (1992), argues that Ahom exhibited the "pan-Tai consonant mergers of the sort in which the sounds of the "low series consonants presumably fell together with certain of the others" and hence is not archaic. In order to uncover the true nature of Ahom, this paper investigates how each of Ahom graph relates to the reconstructed phonemes in Proto-Southwestern Tai (Li 1977; Pittayaporn 2009). Our analysis was based on eight carefully analyzed manuscripts, identified allographic variations, suggesting mergers and retentions of Tai phonemic contrasts are common among the modern Shan varieties and the lack of archaic features claimed by earlier authors.

Keywords: Tai Ahom, allographic variations, manuscripts, mergers, retentions
ISO 639-3 codes: aho

1.1 Introduction and Background

Studying the sound system of a language that has not been spoken for several hundred years as a mother tongue is not an easy task. Tai Ahom was a Southwestern Tai language brought to Assam by a Tai group in the 13th century (Gait 1905). Reported already to be extinct by the early 1800s (Terwiel 1988), it survives mostly in written form with limited usage for religious and cultural practices as well as an active language revival (Terwiel 1996; Morey 2015). Fortunately, a large collection of manuscripts made from the bark of the sasi or agarwood tree (*Aquilera allagocha*) has permitted researchers to study Ahom history (Barua 1930; Wichasin 1996), culture (Terwiel 1980, 1981), and language (Terwiel 1988; Diller 1992; Morey 2005). From the surviving manuscripts, it can be seen that the Ahom language is closely related to the Shan varieties of Myanmar's Shan State, and China's Yunnan Province as well as Northeast India.

Among Tai specialists, there is a widespread perception that Ahom represents an archaic stage of Tai with characteristics not preserved in any modern language. For example, Li (1977:87-89) cites Ahom *phra* 'rock', and *phrai* 'walk' as evidence for his Proto-Tai *pʰr-. Similarly, Jonsson (1991:53-55) also includes data from Ahom in her reconstruction of PSWT, reconstructing clusters such as *pʰr- and *ɣr-. Despite this long-held view of Ahom, Diller (1992) questions whether Ahom is a "ghost" or a "daughter" of the proto-language. Specifically, he brings attention to features that cannot be very old, such as Ahom exhibiting "pan-Tai consonant mergers of the sort in which sounds of the "low series" consonants presumably fell together with certain of the others". This refers to the merger of the original voiced stops, *b-, *d-, *ɟ-, and *g- with their voiceless aspirated counterparts.

Unfortunately, the true nature of Ahom still remains a mystery, as no adequate description of the Ahom sound system is currently available. Most existing studies such as Lertluemsai (2004) and Duangthip (2012) assumes a one-to-one correlation between letters and sounds. This assumption must be reconsidered seriously as Pittayaporn (2009) argues that the medial 𑌰 *-r-* in the orthographic cluster 𑌫𑌰 *phr-* is a mere

marker of aspiration. In addition, most studies on Ahom fail to take into account orthographic variations in the Ahom texts. For example, the graphs 𑜉 *d* and 𑜈 *n* occur in what seems to be free variation in most of the manuscripts so that the word for 'mountain' is spelled both as 𑜉𑜫 *doi* and 𑜈𑜫 *noi*. Note that these two consonants are very similar anyway, with the graph 𑜉 *d* being almost the same as 𑜈 *n* with a small additional hook at the bottom of the consonant. In reading manuscripts, it is often difficult to distinguish these two, and the scribes may not have always distinguished them. Furthermore, Terwiel (1988) warns that the *Ahom-Assamese-English dictionary* (Barua 1920) and the *Ahom Lexicons* (Barua and Phukan 1964), the two dictionaries used as the basis for most linguistic and philological studies on Ahom, are mostly compilations of unreliable and confusing data. These inadequacies all hinder our understanding of Ahom and its position within Southwestern Tai.

To arrive at an adequate description of the Ahom sound system, this article examines Ahom texts recorded in sasi bark manuscripts. In particular, we investigate how each Ahom graph relates to segmental phonemes in Proto-Southwestern Tai (PSWT), building on results from an unpublished thesis by Gogoi (2019)[1]. Based on data from eight texts collected and transcribed as part of the *Documenting, Conserving and Archiving the Tai Ahom Manuscripts of Assam* project[2], and an analysis of the work of Wichasin and Terwiel (1992), we show that many sets of graphs correspond to multiple phonemes in PSWT, indicating that Ahom had likely gone through a number of sound changes before its script came into existence. Not coincidentally, most of these changes are also found in modern Shan varieties. Therefore, we conclude, in terms of Diller (1992), that Ahom is a "daughter" rather than "ghost" of PSWT.

1.2 Ahom script

As is typical of abugidas, vowel graphs in Ahom cannot occur independent of consonants, which are endowed with an inherent vowel. As summarized in, for example, Morey (2005), the Ahom script consists of 19 regular consonant graphs as shown in Table 1[3]. When they occur at the end of the syllable, they are marked by a visible virama (killer) on top. Among the consonant graphs, only *r* and *w* can occur medially as part of an initial consonant cluster. When they do, they are written as subscript 𑜦 and 𑜥 underneath the initial consonant, e.g. 𑜇𑜦𑜃 *phra* and 𑜇𑜥𑜃 *phwa* both for 'cloth'. In Table 1, the consonants are presented in the alphabetical order of Ahom letters found in the *Bar Amra* (Hosken and Morey 2012).

The Romanization used in this paper has been developed based on earlier Romanizations (Wichasin (1986), Morey (2005) and Gogoi (2019) listed in Appendices I to III. It is not a transcription in that we use a single symbol for some double glyphs in Ahom, such as using *-o* for the syllable final vowel that is written with two symbols, to the left and right of the consonant as 𑜀𑜉 . The two Roman letters *w* and *m* are each employed in our Romanization to refer to two different Ahom glyphs. Thus, *m-* in syllable-initial position represents the consonant 𑜇 and *-m* in syllable final position represents the anusvara 𑜣, which are in complementary distribution.

Although the graphs *b* and *w* are very similar and occur in complementary distribution, in at least some manuscripts the initial *b-* is written quite differently from the final *-w*. The final *-w* in many instances is more roundish and smaller than the initial *b-*. For example, in the *Nang Khai* manuscript, folio number 13r, reproduced in Figure 1[4], the two types of *w,* one of which is identical to *b* and the other like a small circle, can be seen. Moreover, the initial *b* and *m* also appear very similar in some manuscripts. The *m* is found in line 1 for the word 𑜇𑜃 *ma* meaning 'come', initial *b* is found in line 2 for 𑜈𑜁 *bung* meaning 'look' the *b-like w*

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[1] This paper is a part of the first author's M.A thesis entitled "Allographic patterns in Tai Ahom manuscripts and their relations to Proto-Southwestern Tai phonemic contrasts". The author is very grateful to the thesis committee Dr. Prof. Pranee Kullavanijaya and Dr. Prof. Nantana Ronakiat for their valuable comments and suggestions. The author would also like to thank Shinnakrit Tangsiriwattanakul, Lyna Malulem, Pimrawee Ruengwatthakee, Watit Pumyoo, Syed Iftiqar Rahman, Mijke Mulder, Kellen Parker Van Dam for their constant support in this research.

[2] This was funded as part of the British Library Endangered Archives Program from a grant, for the project entitled *Documenting, Conserving and Archiving the Tai Ahom Manuscripts of Assam*. The archive of photographs of several hundred manuscripts can be accessed at https://eap.bl.uk/project/EAP373.

[3] The Tai Ahom script also includes consonant glyphs for the voiced velar [g] and a series of voiced aspirate sounds that were likely added later. These will not be discussed in this paper. Further details about those glyphs and some other variations can be found in Hosken and Morey (2012).

[4] Available online at https://eap.bl.uk/archive-file/EAP373-3-3 accessed on 20191108

is found in line 2 for 𑜉𑜦 *niw* meaning 'single', and the small circle *w* is found in 𑜀𑜫𑜦 *'auw* meaning 'take' in line 1. For more clarity, images of the words with the respective graphs are given in Figure 2.

Table 1: *Ahom consonant graphs*

Graphs	Romanizations	Initial position	Final position
𑜁	*k*	𑜁𑜤𑜫 *kin* 'to eat'	𑜇𑜫 *p(a)k* 'mouth'
𑜂	*kh*	𑜂𑜣 *kh(a)m* 'gold'	-
𑜃	*ng*	𑜃𑜤𑜫𑜈 *ngiun* 'silver'	𑜁𑜧𑜫 *kw(a)ng* 'drum'
𑜄	*n*	𑜄𑜣 *n(a)m* 'water'	𑜉𑜧𑜫 *nw(a)n* 'to sleep'
𑜅	*ch*	𑜅𑜧𑜫 *ch(a)ng* 'elephant'	-
𑜆	*t*	𑜆𑜤𑜫 *tin* 'foot'	𑜉𑜪𑜫 *nit* 'sunshine'
𑜇	*p*	𑜇𑜪𑜫 *pit* 'duck'	𑜁𑜫 *k(a)p* 'with'
𑜈	*d*	𑜈𑜤𑜫 *din* 'earth'	-
𑜉	*m*	𑜉𑜤𑜫 *miung* 'country'	𑜂𑜣𑜬 *kh(a)m* 'gold'
𑜊	*ph*	𑜊𑜢 *phā* 'sky'	-
𑜋	*th*	𑜋𑜤𑜫 *thiung* 'to reach'	-
𑜌	*s*	𑜌𑜦 *siuw* 'tiger'	-
𑜍	*r*	𑜍𑜤𑜫 *riun* 'house'	-
𑜎	*j*	𑜎𑜧𑜫 *j(a)ng* 'to be'	-
𑜏	*ny*	𑜏𑜢 *nyā* 'grass'	𑜌𑜤𑜫 *siny* '100,000'
𑜐	*l*	𑜐𑜤𑜫 *ling* 'monkey'	-
𑜑	*b*	𑜑𑜫 *b(a)n* 'village'	-
𑜒	*w*	-	𑜁𑜦 *k(a)w* 'to step'
𑜓	*h*	𑜓𑜪𑜫 *hit* 'to make'	-
𑜔	*'*	𑜔𑜪𑜁 *'ik* 'again/ also'	-

Figure 1: *Nang Khai manuscript 13v (folio number 13, retro side)*

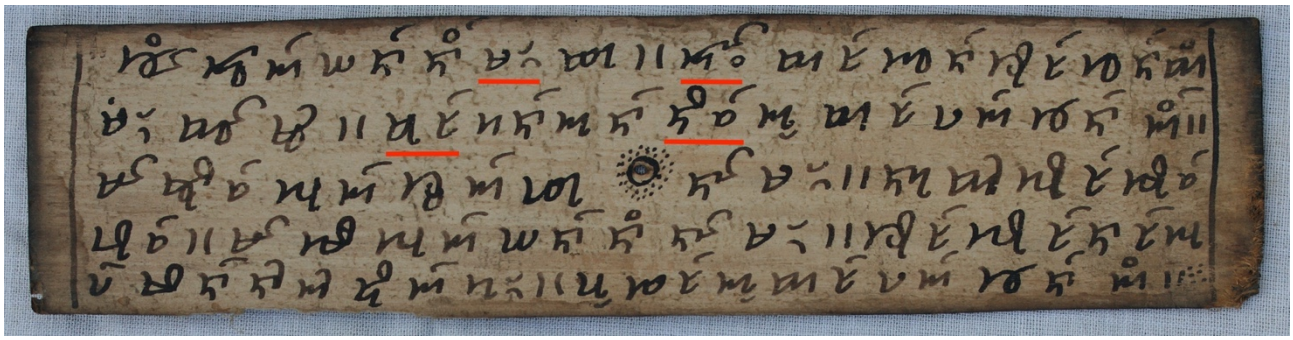
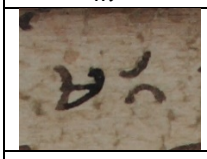
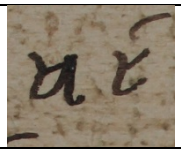
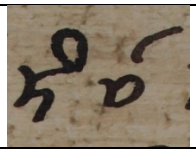
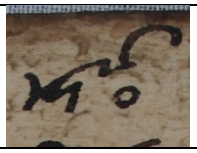


Figure 2: *Comparisons of m-, b-, and the two types of -w (folio number 13, retro side)*

m-	*b-*	*b*-like final *-w*	final small *-w*
			

The vowel graphs in Ahom are those that cannot occur independently, but are placed diacritically either below, above or around the initial consonant. There are 12 vowel graphs, including digraphs, which consist of two graphs that function together as one unit. The vowels in the Ahom script are provided in Table 2. These includes three digraphs (two of which we Romanize with a single symbol), namely 𑜀𑜫 *o*, 𑜀𑜪 *e*, and 𑜉 *iu.* Even though these are complex graphs, they will be treated as single units. Although it alternates with a consonant graph, the anusvara 𑜣 is considered a vowel symbol because it cannot occur independently.

Table 2: *Ahom vowel graphs*

Graph	Romanizations	Examples
inherent vowel	*(a)*	𑜁𑜫 *ch(a)ng* ‘elephant’
-𑜏	*a*	𑜇𑜏 *ma* ‘horse’
𑜫	*ā*	𑜇𑜫 *mā* ‘to come’
𑜤	*i*	𑜉𑜥 *lin* ‘tongue’
𑜥	*ī*	𑜊𑜥 *pī* ‘year’
𑜧	*u*	𑜉𑜨𑜫 *sung* ‘high’
𑜨	*ū*	𑜍𑜨 *rū* ‘to know’
𑜉	*iu*	𑜇𑜨𑜫 *miung* ‘country’
𑜃	*ai*	𑜃𑜫 *kai* ‘chicken’
𑜪	*au*	𑜊𑜪 *pau* ‘to blow’
𑜀𑜫	*o*	𑜀𑜇𑜫 *mo* ‘cooking pot’
𑜀𑜪	*e*	𑜀𑜇𑜪 *me* ‘mother’
𑜣	*m*	𑜀𑜣 *kh(a)m* ‘gold’

Interestingly, the vowels 𑜤 and 𑜧 , which originate from the Indic short vowels *i* and *u* are found only in words that have final consonants, while the corresponding graphs 𑜥 and 𑜨 which originate from the Indic long vowel graphs 𑜥 *ī* and 𑜨 *ū* are found only in syllable final position. In modern Shan varieties such as Tai Phake, the latter are pronounced longer, even though the languages lack a phonemic vowel length distinction for vowels other than /a/. Each pair can thus be analyzed as positional variants of the same grapheme. Importantly, this pattern resembles closely the distribution of long and short vowel graphs in Old Burmese. According to Nishi (1998:987-990), *ī* and *ū* in Old Burmese only occur in open syllables, while *i* and *u* only occurred in syllables written with a final consonant *-p, -t, -c, -k, -m, -n, -ñ, -ṅ, -h, -a* and *-’*. The distributional pattern was used to encode tonal distinction, rather than contrastive vowel length.

There is no tone marking in Ahom manuscripts, allowing multiple meanings to any written syllable. In the SEAlang Tai Ahom dictionary[5], the spelling 𑜎𑜫 *kw(a)ng* has been recorded with at least 17 different meanings, summarized in Table 3. Thus, the context of the discourse and the knowledge of the translator on the subject of the discourse is crucial to achieving a good translation (see Morey 2015 for more discussion of this).

[5] Available online at http://sealang.net/ahom/. Accessed 20191009

Table 3: *Different meanings of ɽʑ́kw(a)ng recorded in the online Tai Ahom dictionary*

n. 1. hill; 2. echo; 3. gun; 4. over-sunned paddy; 5. drum; 6. courtyard; 7. jaw; *8*. Indian aconite;
n., v. 9. heap;
v. 10. control; 11. prune; 12. prepare for husking; 13. hide; 14. spin; 15. anticipate;
adj. 16. wide; 17. curved.

Although tradition suggests that the Ahom brought their script with them when they crossed the Patkai Mountains into Assam in the 13th century from Mong Mao[6], located on the frontier of what is now Myanmar and China (Phukan 2006); it is unknown how old the script actually is. The oldest surviving Ahom text, the Snake Pillar inscription, only dates back to the time of King Siuw Hum Miung who reigned during 1497-1539 (Hosken and Morey 2012). However, the resemblance between the Ahom script and one of the extant Shan scripts known as *lik hto ngouk,* or "bean-sprout letters", points to a common origin (Cushing 1888; Ferlus 1988; Diller 1992; Wichasin 1986). A recent paper by Daniels (2012) refers to a manuscript published in Yang, Bartholemew and Wang (2000). This has been identified as a Chinese manuscript dated 1407 that includes Tai language very similar in form and structure to the Tai Ahom script, suggesting that a script like Tai Ahom was in use in the Mong Mao kingdom by the end of the 14th century at the latest.

There is a general consensus that the proto-Shan script that developed into the modern Shan and Ahom scripts was adapted from the Burmese script sometime between the late 14th and the 16th century. Ferlus (1988) and Diller (1992) also argue that lack of orthographic contrasts between original voiced and voiceless consonants suggests that the adaptation took place later than the first half of the 13th century. In addition, Pain (2017) adds the use of digraph *ui*, to represent /ɯ/ in Shan and Ahom as further evidence for the Old Burmese origin. Furthermore, Daniel's (2012) analysis of the 1407 manuscript discussed above postulates that the adaptation occurred in the 14th century. The shapes of 14 letters attested in the text as well as the use of diacritical *-y-, -r-,* and *-w-* points to an Old Burmese origin.

1.3 Previous reconstructions

Although we have considerable understanding of the Ahom script, we do not yet have a clear picture of the sound system. The transliteration of the graphs into Roman letters has not been based on the Ahom phonetic values (which were not recorded) but on correspondence to the Shan and Burmese scripts, and has been influenced by the Assamese language. For example, the assumption that the graph *b* was pronounced as [b] in Tai Ahom is based on Barua (1920:146) and Grierson (1928 Vol II: 83). These sources based their findings on Brown (1837b: plate opposite p19) who gave the value of *b* as [b]. He wrote that "the sound of *b*, frequent in the Siamese and Láos, is converted into *m* by all the Shyáns, while the Ahom have preserved the regular *b*." This comment refers to proto SWT *ɓ-, but applies in Barua (1920) and Grierson (1928) to *w- as well. We presume that there was a convention for pronouncing this letter among Tai Ahom priests at the time that Brown wrote his paper. It may have been influenced by the fact that Sanskrit /v/ is realized as [b] in Assamese.

According to Shorto (1965), a script originally developed for one language and then used by another language often fails to systematically represent all the phonological units of the adopting language, and thus results in one of the following types of discrepancies. Allography refers to the use of multiple symbols to represent one sound, e.g. Mon *cip, cap, cup* all for /cøp/. In contrast, homography is the use of one symbol to encode more than one sound, e.g. Mon *cap* for both /cøp/ 'to arrive at' and /cɔp/ 'to adhere to'. Another type of discrepancy is hypergraphy which refers to the notation of features that are subphonological, i.e. Mon *i* for the epenthetic vowel in the minor syllable of *dirdas*. On the other hand, agraphy is the failure to graphically represent a phonological phenomenon, i.e. zero for Mon /ʔ/ after a short vowel. These are major notions that need to be taken into account in the interpretation of an archaic writing system.

Currently, a few studies have proposed a comprehensive reconstruction of the Ahom sound system. Lertluemsai (2004) posits an inventory of Ahom phoneme by simply assigning phonetic values to the Ahom

[6] The name of this polity can be spelled in multiple ways using the Roman script. In this paper we are adopting the spelling *Mong Mao*, also used in the Wikipedia entry https://en.wikipedia.org/wiki/Mong_Mao. Accessed 20200418.

graphs without providing any justification. She draws her data from the *Ahom Lexicons* (1964) and seems to rely heavily on the romanizations of the lexical entries. Unfortunately, Terwiel (1988), Diller (1992), Tabassum and Morey (2009) discuss inconsistencies in the Roman transcriptions in the Ahom dictionaries, casting doubt on the credibility of the reconstruction.

On the other hand, Duangthip (2012: 38-39) arrives at the phoneme inventory by studying recitation of the *Ahom Buranji* manuscript by Ahom priests. However, the recitation may not accurately reflect Ahom pronunciation as it was spoken before its extinction. Lastly, Morey (2005) analyses the transcriptions of Ahom vocabulary in the late 18th century Ahom-Assamese dictionary manuscript *Bar Amra* and compares them with reflexes in other Tai languages of Northeast India including Aiton and Phake. While the *Bar Amra* is an excellent source of data, it was composed when the language was almost lost (Tabassum and Morey 2009). The phonology of when the language was still vibrant may have been quite different.

While these authors use different sets of data, they all assume a one-to-one correlation between letters and sounds. Interestingly, the proposed consonant inventories are identical, but the vowels differ markedly. The Ahom consonant inventory as reconstructed in Morey (2005) is given in Table 4:

Table 4: *Possible consonant phonemes in Ahom (Morey 2005:175)*

	Bilabial	**Dental/Alveolar**	**Palatal**	**Velar**	**Glottal**
Stops	p pʰ b	t tʰ d	c	k kʰ	(ʔ)
Nasals	m	n	ɲ	ŋ	
Fricatives		s			h
Liquid		r l			
Glide			j / ʒ		

As for the vowels, the main difference among the proposals is vowel length. While Morey (2005) and Lertluemsai (2004) do not posit a length contrast, Duangthip (2012) proposes that a contrast between long and short vowels occurred only in open syllables, though it is not made clear how she arrives at the conclusion. It is possible that she solely relies on spellings found in the *Ahom Buranji*. Table 5 and Table 6 give the vowel inventories reconstructed by Morey (2005) and Duangthip (2012) respectively. (See below for the discussion of the phonemic status of the length distinction of the *i* and *u* vowels as suggested by Duangthip).

Table 5: *Ahom vowels as reconstructed by Morey (2005:177)*

	Front	**Central**	**Back**
High	i	ɯ	u
Mid	ɛ		ɔ
Low		a, aː	

Table 6: *Ahom vowels as reconstructed by Duangthip (2012: 59)*

	Front	**Central**	**Back**
High	i, iː	ɯ	u, uː
High-mid	eː		
Low-mid			ɔː
Low		a, aː	

In the literature on Ahom phonological reconstruction, the issue of whether Ahom had initial clusters with medial *-r-* stands out. While most reconstructions of Proto-Tai and Proto-Southwestern Tai, e.g. Jonsson (1991) and Li (1977) assume on the basis of the *Ahom-Assamese-English* (Barua 1920) and *Ahom Lexicons* (Barua and Phukan 1964) that Ahom had clusters with -r- in words like *phra* 'rock' and *phrai* 'go', Pittayaporn (2009) believes that *-r-* was in fact not pronounced but functioned as marker of aspiration. He points out that *-r-* is sometimes absent in words etymologically derived from Li's *phr-, i.e. 𑜉𑜫 *phā* 'cliff' for

Li's *phra^{A}, but present in words lacking *-r- in the proto-language, i.e. 𑜉𑜫 *phra* for Li's *pha:^{B} 'to split' and *va:^{C} 'sky'[7] Interestingly, Tabassum and Morey (2009) examines in the *Bar Amra* spellings of words claimed to have had initial /p^{h}r-/ and suggest that Ahom did have medial *-r-* but the etymological inaccuracies were due to the priests' hyper-correction.

In sum, while a number of studies have examined the sound system of Ahom, there is still no consensus with respect to both the consonants and the vowels. Moreover, all previous studies draw upon data from Ahom lexicons compiled when Ahom was dying or was already dead. None has proposed a reconstruction of Ahom based on texts composed by native Ahom speakers when Ahom was still vibrant.

2. Data and methodology

This study aims to describe the Ahom sound system as reflected by Ahom texts recorded in sasi bark manuscripts. The data is based on eight different manuscripts collected and transcribed as part of the *Documenting, Conserving and Archiving the Tai Ahom Manuscripts of Assam* project (texts 1 and 5-8 below)[8] and an analysis of the work of Wichasin and Terwiel (1992) (texts 2-4 below).

1) Ming Mvng Lung Phai[9] (MM)
2) Tai Ahom and the Stars Text A (TAS (A))
3) Tai Ahom and the Stars Text B (TAS (B))
4) Tai Ahom and the Stars Text C (TAS(C))
5) Nemi Mang (NM)
6) Nang Khai (NK)
7) Lak Ni (LN)
8) Pvn Ko Mvng (PKM)

The content in all of these manuscripts relate to various subjects. Specifically, the *Ming Mvng Lung Phai* manuscript contains mantras or recitals to call spirits. The *Tai Ahom and the Stars* texts are fortune telling manuscripts based on the position of the stars. The *Nang Khai* and the *Nemi Mang* manuscripts are Buddhist story manuscripts. The *Lak Ni* manuscript is a calendrical manuscript. Last but not least, the *Pvn Ko Mvng* contains a text about the creation of the universe.

The first step is to compare Ahom graphs with the reconstructed PSWT phonemes to discover correspondence patterns between the two. For each PSWT correspondence, all Ahom words are recorded with the number of their occurrences and their exact locations, i.e., manuscript name, page and line numbers. The PSWT reconstruction adopted in this study is that of Li (1977), because it is the basis for previous proposals on Ahom sound system. The reconstructed PSWT consonant and vowel inventories are given in Table 7, Table 8 and Table 9. In addition, phonemes reconstructed by Pittayaporn (2009) but not in Li's reconstruction are given in parentheses. PSWT tones are left out because the Ahom orthography does not indicate tones and thus does not allow us to study what tones Ahom might have had.

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[7] Pittayaporn (2009: 125) states that "This graphic cluster is sometimes absent in words etymologically derived from *p^{h}r-, i.e. Ahom has <p^{h}ra> for PT *p^{h}ra:^{A} 'cliff', *p^{h}a:^{C} 'to split', and *va:^{C} 'sky'," but this is an error. The correct statement should be "Ahom has <p^{h}a> for PT *p^{h}ra:^{A} 'cliff'."

[8] The translations of these manuscripts can be searched at http://sealang.net/assam. We faithfully adopt the titles of the manuscripts as they appear in the online archive, which unfortunately uses a different transliteration system. The letter *v* corresponds to *ui* in this paper.

[9] Note that the spelling of the name of the manuscript does not follow the Romanization conventions adopted in this paper, but rather uses a simplified orthography to represent a suggested pronunciation, using Roman script without diacritics for the sake of easier interpretation by members of the Ahom community. The symbol <v>, representing *iu* in the Ahom script, refers to a back unrounded vowel, /ɯ/~/ɤ/.

Table 7: *PSWT consonant inventory according to Li (1977) with additions from Pittayaporn (2009)*[10]

	Labial	Alveolar	Palatal	Velar	Uvular	Glottal
Stops	*pʰ- *p- *ɓ- *b-	*tʰ- *t- *ɗ- *d-	*cʰ- *c- *ɟ-	*kʰ- *k- *ɡ-	(q)	 *ʔ-
Fricatives	*f- *v-	*s- *z-			(χ)	*h-
Nasals	*ʰm- *m-	*ʰn- *n-		*ʰŋ- *ŋ-		
Liquids		*ʰr- *r- *ʰl-				
Glides	*ʰw- *w-					

Table 8: *PSWT cluster inventory according to Li (1977) with additions from Pittayaporn (2009)*

	Labial	Alveolar	Palatal	Velar	Uvular	Glottal
C+l	*pʰl/r- *bl-			*kl- *ɡl- *kʰl-		
C+r	*br- *ɓl/r- *ml/r-			*kʰr- *kr- *ɡr-		
C+w				*kw- *ɡw- *ɣw- *ŋw-	(*qw)	

Table 9: *PSWT vowel inventory according to Li (1977) with additions from Pittayaporn (2009)*

	Front	Central	Back
High	i, iː	ɯ, ɯː	u, uː
Mid	e	(ɤ)	o
Low	ɛ, ɛː	a, aː	ɔː

Once the correspondences have been identified, it is important to interpret whether they represent phonemic changes, or simply imperfections in the orthographic representation of sounds. For example, Ahom *t-* corresponds to both *t- and *d- in PSWT. At face value, this pattern can be explained as either evidence for merger between the two proto-phonemes into *t-,* or a case of homography, i.e. representing both /t-/ and /d-/ using the same graph. On the other hand, Ahom *d-* and *n-* corresponding to PSWT *ɗ- could potentially be attributed to a merger between *ɗ- and *n-, a conditioned split of *ɗ-, or a simple allography between *d-* and *n-*. To decide among the possible options, many factors need to be taken into account such as 1) whether the pattern in question involves some kind of graphic variation, 2) whether it make references to etymological classes, and 3) how it fits into the big picture of how the Ahom language and script evolve.

3.1 Ahom consonants

The inventory of Ahom consonants proposed in this paper consists of six major series of consonants including 1) plain voiceless stops, 2) aspirated voiceless stops, 3) voiceless fricatives, 4) voiced (implosive)

[10] Li's reconstructed forms are re-transcribed according to current IPA guidelines for ease of comparison among sources and proposals. Pittayaporn's additions are in parentheses.

stops, 5) nasals, 6) liquids and glides. These are further divided into five places of articulation including 1) labial 2) alveolar 3) palatal, 4) velar, and 5) glottal.

3.1.1 Plain voiceless stops

For the most part, reconstructions of the unaspirated stops are straight-forward. Pairs of PSWT voiced and plain voiceless stops are represented by the same symbols. More specifically, *p-* corresponds to both PSWT *p- and *b-, *t-* to PSWT *t- and *d-, *ch-* to PSWT *c- and *ɟ, and *k-* to PSWT *k-, *g-, *kl-, and *kw-. Another important pattern that goes back to PSWT voiceless stops is *ʻ-* corresponding to PSWT *ʔ-. These correspondences are illustrated in Table 10.

Table 10: *Ahom letter correspondences to PSWT plain voiceless stops*

Ahom	PSWT	Glosses	Examples	Manuscripts[11]							
				1	2	3	4	5	6	7	8
p	*p-	‘duck’	𑜉𑜫𑜤 *pit*	--	✓	✓	--	--	✓	--	--
		‘year’	𑜉𑜤 *pī*	✓	✓	✓	✓	✓	✓	✓	✓
		‘wing’	𑜉𑜧𑜤 *pik*	✓	--	--	--	--	--	--	✓
	*b-	‘elder’	𑜉𑜤 *pī*	✓	--	--	--	✓	✓	✓	✓
		‘father’	𑜉𑜇𑜢 *po*	✓	--	--	--	✓	✓	✓	✓
		‘to carry’	𑜉𑜢 *pā*	✓	--	--	--	--	--	--	--
t	*t-	‘under’	𑜏𑜪 *tau*	✓	✓	✓	✓	✓	✓	--	✓
		‘to fall’	𑜏𑜧𑜤 *tuk*	✓	✓	✓	--	✓	✓	✓	✓
		‘foot’	𑜏𑜫𑜣 *tin*	✓	--	--	--	✓	✓	--	--
	*d-	‘way, road’	𑜏𑜥 *t(a)ng*	✓	--	✓	--	✓	✓	--	✓
		‘place’	𑜏𑜤 *tī*	✓	--	✓	✓	✓	✓	--	✓
		‘stomach’	𑜏𑜩𑜥 *tw(a)ng*	--	--	✓	--	✓	✓	--	--
ch	*c-	‘breath’	𑜌𑜪 *chau*	--	--	--	--	--	✓	--	--
		‘seven’	𑜌𑜫𑜤 *chit*	✓	--	✓	--	--	✓	✓	✓
		‘to split’	𑜌𑜧𑜤 *ch(a)k*	✓	--	--	--	--	--	--	--
	*ɟ-	‘elephant’	𑜌𑜥 *ch(a)ng*	✓	--	✓	✓	✓	✓	✓	✓
		‘morning’	𑜌𑜪 *chau*	--	--	--	--	--	✓	--	--
			𑜌𑜬 *ch(a)w*	✓	--	--	--	✓	✓	--	✓
			𑜌𑜪𑜬 *chauw*	--	--	--	--	--	✓	--	--
		‘rope’	𑜌𑜩𑜤 *chiuk*	--	--	--	--	✓	✓	--	--
k	*k-	‘to eat’	𑜐𑜫𑜣 *kin*	✓	--	✓	--	✓	✓	✓	✓
		‘chicken’	𑜐𑜃 *kai*	✓	✓	✓	--	✓	--	✓	✓
		‘I’	𑜐𑜬 *k(a)w*	✓	--	--	--	✓	✓	--	✓
			𑜐𑜪𑜬 *kauw*	✓	--	--	--	✓	--	--	✓
			𑜐𑜩𑜬 *kw(a)w*	--	--	--	--	--	--	--	✓
	*g-	‘pair’	𑜐𑜢 *kū*	-	✓	✓	--	--	✓	--	--
		‘to chew’	𑜐𑜫𑜬 *kiw*	✓	--	--	--	✓	--	--	✓
		‘handle’	𑜐𑜥 *k(a)n*	--	--	--	--	--	✓	--	--

[11] Numbers 1-8 refers to the manuscripts listed in section 2.

Ahom	PSWT	Glosses	Examples	Manuscripts							
				1	2	3	4	5	6	7	8
	*kl-	‘middle’	𑜉𑜫 *k(a)ng*	✓	✓	✓	✓	✓	✓	--	✓
			𑜈𑜫 *kr(a)ng*	--	--	✓	--	--	--	--	--
		‘far’	𑜀 *kai*	--	--	--	--	✓	✓	✓	--
	*kw-	‘wide’	𑜉𑜫 *k(a)ng*	--	--	--	--	✓	--	--	✓
			𑜊𑜫 *kw(a)ng*	--	--	--	--	--	--	--	✓
			𑜊𑜫 *kwung*	✓	--	--	--	✓	--	--	✓
		‘deer’	𑜉𑜫 *k(a)ng*	--	--	--	--	--	--	--	--
‘	*ʔ-	‘again’	𑜁𑜀𑜧 *‘ik*	✓	--	--	--	✓	✓	--	--
		‘to take’	𑜁𑜃 *‘au*	✓	✓	✓	--	✓	✓		✓
			𑜁𑜃𑜪 *‘auw*	--	--	--	--	✓	--	--	--
			𑜁𑜭 *‘wau*	--	--	--	--	--	✓	--	--
		‘to hold in one’s arms’	𑜁𑜰 *‘um*	✓	--	--	--	--	--	--	--

In agreement with Diller (1988), Ferlus (1988), Morey (2005), we interpret this as evidence for devoicing of voiced stops and their mergers with the plain voiceless, rather than a case of homography. This certainly suggests that the Tai Ahom script was created after the merger of consonants. Since the Burmese script still retains two distinct series of letters for representing voiced and voiceless stops, Burmese *g, j, d,* and *b* must have represented voiced obstruents at the time of the creation of the Tai Ahom script. The abandonment of the distinction in the Ahom script can only mean that the original voiced and voiceless stops had become identical. Therefore, we propose /p/, /t/, /k/ and /ʔ/ for Ahom.

Of particular interest is the correspondence between Ahom *k-* to PSWT *kl- and *kw-. Examples like 𑜉𑜫 *kang* for both ‘middle’ and ‘wide’ suggests that the two PSWT clusters had simplified to /k-/. Even though these two words are also attested as 𑜊𑜫 *kw(a)ng* and 𑜊𑜫 *kwung* (see section 3.1.7), the fact that both *kl- and *kw- can both be spelled with *-w-* in Ahom suggests that they had both become /k-/.

3.1.2 Aspirated voiceless stops

The main generalization is that Ahom *ph-, th-,* and *kh-* correspond to Li’s aspirated stops as well as their corresponding fricatives regardless of voicing. In other words, *ph-* corresponds to PSWT *p^h- *f-, *v-, *p^hl/r-, and *br-, *th-* to PSWT *t^h - and *kh-* to PSWT *k^h -, *x-, *ɣ-, *k^hl-, *k^hr-, *gr-, and *ɣw-. Note that Pittayaporn (2009) posits finer distinctions among the dorsal obstruents but these most likely merged into *x very early on. The patterns of correspondence are given in Table 11.

Table 11: *Ahom letter correspondences to PSWT aspirated voiceless stops*

Ahom	PSWT	Glosses	Examples	Manuscripts							
				1	2	3	4	5	6	7	8
ph	*p^h-	'cloth'	𑜉𑜫 *pha*	✓	--	--	--	--	--	--	--
			𑜉𑜧 *phā*	--	✓	✓	✓	✓	✓	--	✓
			𑜉𑜴𑜫 *phwa*	✓	--	✓	--	✓	--	✓	--
		'person'	𑜉𑜨 *phū*	✓	✓	✓	✓	✓	✓	✓	✓
		'wrong'	𑜉𑜣𑜪 *phit*	--	--	--	--	--	--	--	✓
	*f-	'to bury'	𑜉𑜭𑜫𑜀 *phr(a)ng*	✓	--	--	--	--	--	--	--
		'rain'	𑜉𑜩𑜉 *phun*	✓	--	--	--	✓	✓	✓	✓
		'to dream'	𑜉𑜉 *ph(a)n*	--	--	--	--	✓	--	--	--
			𑜉𑜭𑜉 *phr(a)n*	--	--	--	--	--	✓	--	--
	*v-	'sky'	𑜉𑜫 *pha*	✓	--	--	--	✓	✓	--	--
			𑜉𑜧 *phā*	✓	✓	✓	--	--	--	✓	✓
			𑜉𑜬 *phūa*	✓	--	--	--	--	--	--	--
			𑜉𑜴𑜫 *phwa*	--	--	--	--	✓	--	--	--
		'wave'	𑜉𑜴𑜀 *phw(a)ng*	✓	--	--	--	✓	✓	--	✓
		'fire'	𑜉𑜯 *phai*	--	--	--	--	--	✓	✓	✓
th	*t^h	'cave'	𑜊𑜉 *th(a)m*	✓	--	--	✓	✓	✓		✓
		'old'	𑜊𑜰𑜵 *thauw*	✓	--	--	--	--	--	--	✓
			𑜊𑜰 *thau*	--	--	--	--	--	✓	✓	--
		'to reach, arrive'	𑜊𑜦𑜀 *thiung*	✓	--	✓	✓	✓	✓	✓	✓
			𑜊𑜦𑜉 *thiun*	✓	--	--	--	--	--	--	--
kh	*k^h	'log'	𑜇𑜴𑜉 *khw(a)n*	✓	--	--	--	--	✓	--	--
		'to ride'	𑜇𑜯 *khī*	✓	--	--	--	✓	✓	--	✓
		'horn'	𑜇𑜰 *khau*	--	✓	--	--	✓	--	--	✓
			𑜇𑜴𑜰 *khwau*	✓	--	--	--	--	--	--	--
kh	*x	'green'	𑜇𑜦𑜵 *khiw*	✓	--	✓	--	--	✓	--	--
		'white'	𑜇𑜰 *khau*	--	--	✓	--	✓	✓	--	✓
			𑜇𑜰𑜵 *khauw*	--	--	--	--	--	✓	--	--
	*ɣ	'gold'	𑜇𑜊 *kh(a)m*	✓	✓	✓	--	✓	✓	✓	✓
			𑜇𑜴𑜊 *khw(a)m*	✓	--	--	--	--	--	--	--
			𑜇𑜭𑜊 *khr(a)m*	--	--	--	--	--	✓	--	--
		'night'	𑜇𑜦𑜉 *khiun*	✓	✓	--	--	✓	✓	✓	✓
		'neck'	𑜇𑜭𑜧 *kho*	--	--	--	--	✓	--	--	--
			𑜇𑜭𑜴𑜧 *khro*	--	--	--	--	--	✓	--	--

In parallel with the case of unaspirated stops in section 3.1.1, the one-to-many correspondences can also be interpreted as results of phonemic mergers, rather than homography. In particular, the PSWT voiced fricatives had become devoiced and merged with their voiceless counterparts. However, whether the

correspondence between *ph-* and *kh-* to PSWT aspirated stops as well as fricatives is a case of homography needs further consideration.

As pointed out by Wichasin (1986), and Ferlus (1988), the graphs *d-,* and *b-* were invented just for Ahom as they were not taken from the Burmese or Mon scripts. They are also absent from the 15th century Chinese scroll, which predates any surviving Ahom writing. If Ahom had had /f-/ and /x-/, they would also have invented new symbols to encode these two sounds. Moreover, the Shan script used in the Chinese scroll also has an *f-*, which is clearly a modified *ph-* (see Table 1 in Daniels 2012: 157). If Ahom had /f/ in their sound system, it is not clear why they would have ignored this Shan-innovated letter.

The most likely explanation is that the fricatives /f/ and /x/ were absent from Ahom because they had already merged with *pʰ- and *kʰ-, respectively, prior to the development of the script. In other words, Ahom letters *ph-*, *th-*, and *kh-* each represents one single phoneme. Therefore, we propose only /pʰ-/, /tʰ-/, and /kʰ-/ for Ahom based on these correspondence sets.

3.1.3 Voiceless fricatives

Apart from *ph-* and *kh-*, only two graphs in Ahom correspond to fricatives in PSWT. While *h-* corresponds straight-forwardly to *h-, and exceptionally *ʰr-, *s-* corresponds to *s-, *z- and *cʰ-. Note that Pittayaporn (2009) does not reconstruct *cʰ-. Table 12 gives the correspondences involving PSWT fricatives.

Table 12: *Ahom letter correspondences to PSWT voiceless fricatives*

Ahom	PSWT	Glosses	Examples	Manuscripts							
				1	2	3	4	5	6	7	8
s	*s-	‘three’	𑜉𑜫 *s(a)m*	✓	✓	✓	✓	✓	✓	✓	✓
		‘high’	𑜊𑜨 *sung*	✓	--	--	--	✓	✓	--	✓
		‘garden’	𑜊𑜩 *sun*	✓	--	✓	--	--	✓	--	--
	*z-	‘left’	𑜌 *sai*	✓	--	--	--	--	✓	--	✓
		‘to buy’	𑜋𑜰 *siuw*	--	--	--	--	--	✓	--	--
		‘straight, honest’	𑜋𑜰 *siuw*	--	--	--	--	✓	✓	--	✓
	*cʰ-	‘to tear’	𑜉𑜧 *sik*	✓	--	--	--	✓	✓	--	--
h	*h-	‘five’	𑜉𑜀 *hā*	✓	✓	✓	✓	✓	✓	✓	✓
		‘to give’	𑜉𑜵 *hau*	✓	✓	✓	✓	✓	✓	✓	✓
		‘to cover up’	𑜉𑜪 *hum*	--	--	✓	--	--	✓	--	✓
			𑜉𑜬 *rum*	--	--	--	--	--	✓	--	--
	*ʰr-	‘to see’	𑜉𑜡 *h(a)n*	✓	✓	✓	✓	✓	✓	✓	✓

Again, there is no distinction for PSWT *s- and *z- in Ahom, conforming to the pattern identified for the stops. As for PSWT *cʰ-, the most likely explanation is that it had merged with *s-. If Ahom had had /ch-/, it could have adopted Burmese *chh-* (ဆ, now pronounced in Standard Burmese as /sʰ/) to write the aspirated sound. This means that it is also not a case of homography, but a simple one-to-one mapping between *s-* and /s/ in Ahom. As for *h,* it is interesting that the only case of *h* corresponding to PSWT *ʰr- is the word for ‘to see’ which is consistently written as *h(a)n*. It is possible that this word is the only word that went through an irregular sound change from *ʰr- to /h-/. All other *ʰr- words are written with *r* and may have been pronounced as /r/. Therefore, only /h-/ and /s-/ can be reconstructed on the basis of these correspondence patterns. Unfortunately, no instances of *ʰŋ- is found in our manuscripts. Given its modern reflex in Shan varieties, it might have become /h-/ in Ahom as well.

3.1.4 Voiced (implosive) stops

As discussed by Wichasin (1986), Terwiel (1988), Morey (2005), the Ahom script include *b-* and *d-* that seems to be in free variation with *n-* and *m-* respectively. In our data, these two graphs correspond to PSWT *ɓ-, *w-, and *^{h}w, and PSWT *ɗ-, respectively, as illustrated in Table 13.

***Table 13:** Ahom letter correspondences to PSWT voiceless fricatives*

Ahom	PSWT	Glosses	Examples	Manuscripts							
				1	2	3	4	5	6	7	8
b	*w-	'to say'	𑜉 *bā*	✓	--	✓	✓	✓	--	✓	✓
			𑜀 *ba*	✓	--	--	--	--	--	--	--
		'to keep'	𑜈 *bai*	✓	--	--	--	✓	✓	--	✓
			𑜈 *mai*	✓	--	--	--	--	--	--	--
		'fan, to fan'	𑜊 *bī*	✓	--	✓	✓	--	✓	--	--
			𑜊 *mī*	--	--	--	--	✓	--	--	--
	*hw-	'to swim'	𑜈 *bai*	--	--	--	--	--	✓	--	--
		'sweet'	𑜆 *b(a)n*	✓		✓	--	--	✓	✓	--
	*ɓ-	'village'	𑜆 *b(a)n*	✓	✓	✓	--	✓	✓	✓	✓
			𑜇 *m(a)n*	✓	--	--	--	--	--	✓	--
		'NEG'	𑜋 *bau*	✓	--	✓	--	✓	✓	✓	✓
			𑜌 *bwau*	--	--	--	--	--	--	✓	--
			𑜍 *b(a)w*	--	✓	--	✓	--	--	✓	--
			𑜋 *mau*	--	--	--	--	--	✓	--	--
		'fly'	𑜎 *bin*	--	--	✓	--	--	--	--	✓
			𑜎 *min*	✓	--	--	--	--	✓	✓	✓
	*ŋw-	'day'	𑜆 *b(a)n*	✓	--	✓	✓	✓	✓	✓	✓
d	*ɗ-	'star'	𑜏 *dau*	--	--	--	--	✓	--	--	--
			𑜏𑜍 *dauw*	✓	--	--	--	✓	--	--	--
			𑜐𑜍 *nauw*	--	✓	--	✓	--	--	--	✓
			𑜑𑜍 *nwauw*	--	--	--	--	--	--	--	✓
			𑜐𑜍 *n(a)w*	--	--	--	--	--	--		✓
		'good'	𑜒 *dī*	✓	--	--	--	✓	✓	✓	✓
			𑜒 *nī*	✓	✓	✓	✓	--	✓	✓	✓
		'hill'	𑜓 *dwai*	--	--	--	--	✓	--	--	✓
			𑜓 *nwai*	✓	--	--	--	--	✓	--	✓

In every case where initial *d-*is used in Ahom, it is with a word that has initial*ɗ-, although initial *n-* is also used in some manuscripts for these words. We believe that this indicates that *d-* encoded the Ahom reflex of PSWT implosive *ɗ-, perhaps /d-/. As for *b-,* we believe that it represents /b/ rather than /w/, although this is difficult to prove. The convention of transliterating this symbol with /b/ goes back at least to Brown (1837). This at least suggests that in the late 18th century this graph was already pronounced as /b/ not /w/. Since in Burmese this letter is pronounced as /w/, the fact that Ahom appears to have pronounced the reflexes of *w- and *ɓ- as /b/ may suggest that there was a merger of *ɓ- and *w- in Ahom before the 18th century. Phonemically speaking, it is not crucial to choose between the two options, because [b] and [w]

would have been allophones of the same phoneme anyway. Note that the medial *-w-* in 'hill' does not form part of an initial cluster but encodes the mid vowel /o/ (see section 3.2.1).

Unfortunately, it is not clear if phonetically speaking the two proto-phonemes had become plain [d-] and [b-] or not. However, phonologically speaking, the difference between plain [d] and [b] on one hand, and implosive [ɗ] and [ɓ-] on the other is not significant because there is only one series of voiced stops. For convenience, we thus reconstruct this phoneme as /d-/ and /b-/, noting that their actual pronunciation may have ranged from plain voiced to implosives.

3.1.5 Nasals

The letters *m-, n-, ny-* and *ng-* all correspond mainly to voiced and voiceless nasals in PSWT. In particular, *m-* corresponds to PSWT *m- and *ʰm-, *n-* to PSWT *n- and *ʰn-, *ny-* to PSWT *ɲ- and*ʰɲ- (these also correspond to *y* in Ahom, see section 3.1.6), and lastly *ng-* to PSWT *ŋ-. No instance of *ʰŋ- is attested in our data. In parallel with the obstruents, these correspondence sets should be interpreted as results of the mergers of voiced sonorants with their voiceless counterparts. However, reconstructing /m-/ and /n-/ needs special consideration because the correspondence patterns for *b-* and *d-* overlap with those for *m-* and *n-* (see the section for voiced (implosive) stops, Table 13). Table 14 gives all correspondences involving *m-, n-, ny-* and *ng-*. Note that Lertluemsai (2004) also includes cases of l- from PSWT *ɗ-, similar to that seen in Southern Shan (Hudak 2008) and Dehong (Luo 1999) but we do not find this correspondence in our data.

Table 14: *Ahom letter correspondences to PSWT nasals.*

Ahom	PSWT (Li)	Glosses	Examples	Manuscripts							
				1	2	3	4	5	6	7	8
m	*m-	'mother'	𑜉𑜫 *me*	✓	✓	✓	✓	✓	✓	✓	✓
		'time'	𑜦𑜧 *miuw*	✓	✓	✓	--	✓	✓	✓	✓
	*ʰm-	'knife'	𑜦𑜵𑜀 *mit*	--	✓	✓	--	✓	✓	--	✓
		'to burn'	𑜨 *mai*	✓	--	✓	✓	✓	✓	--	--
			𑜩 *bai*	--	--	--	--	✓	✓	--	--
		'new'	𑜫 *mau*	✓	--	✓	--	--	✓	--	✓
		'cooking pot'	𑜉𑜬 *mo*	✓	✓	✓	--	--	✓	--	--
			𑜉𑜬 *bo*	--	--	--	--	--	✓	--	--
	*ɓ-	'above, top'	𑜥𑜤 *bun*	✓	✓	--	✓	✓	✓	--	--
			𑜥𑜤 *mun*	✓	--	--	--	--	✓	--	--
		'village'	𑜦𑜤 *b(a)n*	✓	✓	✓	✓	✓	✓	✓	✓
			𑜦𑜤 *m(a)n*	✓	--	--	--	--	--	✓	--
		'NEG'	𑜫 *bau*	✓	✓	✓	✓	✓	✓	✓	✓
			𑜫 *mau*	--	--	--	--	--	✓	--	--
			𑜧𑜫 *bwau*	--	--	--	--	--	--	✓	--
n	*n-	'to sit'	𑜤 *n(a)ng*	✓	--	✓	--	✓	✓	✓	✓
		'small, little'	𑜧𑜪 *nywa*i	✓	✓	✓	✓	--	✓	--	--
			𑜧𑜪 *dwai*	--	--	--	--	✓	--	--	--
	*ʰn-	'face, front'	𑜣 *nā*	✓	✓	✓	--	✓	✓	✓	✓
		'heavy'	𑜣𑜰 *n(a)k*	--	--	--	--	✓	✓	--	--
		'cold'	𑜣𑜫 *nau*	--	--	--	--	--	--	--	✓
			𑜣𑜧𑜫 *nwau*	--	--	--	--	✓	--	--	--

Ahom	PSWT (Li)	Glosses	Examples	Manuscripts							
				1	2	3	4	5	6	7	8
	*ɗ-	'star'	𑜉𑜧𑜦 *dauw*	✓	--	--	✓	✓	--	--	--
			𑜉𑜧 *dau*	--	--	--	--	✓	--	--	--
			𑜈𑜧𑜦 *nauw*	--	--	✓	--	--	--	--	✓
			𑜇𑜧𑜦 *nwauw*	--	--	--	--	--	--	--	✓
			𑜈𑜦 *n(a)w*	--	--	--	--	--	--	--	✓
		'good'	𑜉𑜫 *dī*	✓	--	--	--	✓	✓	✓	✓
			𑜈𑜫 *nī*	✓	✓	✓	✓	--	✓	✓	✓
		'hill'	𑜇𑜨 *nwai*	✓	--	--	--	--	✓	--	✓
			𑜉𑜨 *dwai*	--	--	--	--	✓	--	--	✓
ny	*ɲ-	'still, yet'	𑜌𑜩 *j(a)ng*	--	--		--	--	✓	--	✓
		'tip, top'	𑜇𑜪𑜁 *nyw(a)t*	✓	--	✓	--	--	✓	--	✓
			𑜋𑜪𑜁 *jw(a)t*	--	--	--	--	--	✓	--	--
		'smile'	𑜇𑜭 *nyum*	--	--	--	--	✓	✓	--	--
	*ʰɲ-	'grass'	𑜇𑜫 *nyā*	--	--	--	--	✓	✓	--	--
			𑜇𑜲 *nya*	✓	✓	✓	--	--	--	✓	✓
		'big/ large'	𑜇𑜩 *nyau*	✓	--	✓	✓	✓	✓	✓	✓
			𑜇𑜩𑜦 *nyauw*	--	--	✓	--	--	--	--	--
			𑜋𑜩 *jwau*	✓	--	--	--	--	--	--	--
			𑜌𑜩 *jau*	--	--	--	--	--	--	--	--
ng	*ŋ-	'tusk, ivory'	𑜎𑜫 *ngā*	✓	--	--	--	✓	✓	--	--
		'silver'	𑜏𑜭𑜃 *ngiun*	✓	✓	✓	--	✓	--	--	✓
		'snake'	𑜎𑜬 *ngū*	--	--	--	--	✓	--	--	--

At first glance, *m-* and *n-* appear to be interchangeable with *b-* and *d-*. Note that in at least some manuscripts it can be difficult to distinguish the graph *m* from *b*, and to distinguish the graph *n* from *d*. If they were indeed interchangeable, the unconditioned allography would indicate mergers between PSWT implosives and their corresponding nasals. However, the variation seems to be limited to etyma that had initial *ɓ- and *ɗ-. In particular, the variation between *b-* and *m-* are found only in words that go back to PSWT *ɓ and *ʰm e.g. *bai/ mai* 'burn' and *bun/mun* 'above'. Similarly, *d-* and *n-* are interchangeable only in words that had initial *ɗ in PSWT, e.g. *n(a)au/d(a)au* 'star' and *nw(a)y/dw(a)y* 'hill'. Etyma that had initial *m- and *n- are never spelled with *b* and *d*. This "lexically-conditioned" allography, therefore, points to four nasal consonants /m/, /n/, /ɲ/ and /ŋ/ for Ahom.

There are three possible explanations for the curious graphic variation between *b/d* and *m/n*. First, Ahom /b/ and /d/ might have been realized variably as voiced stops [b] and [d], or nasal [m] and [n], showing an on-going merger with /m/ and /n/ (Wichasin 1986: 81, 91). Because this variation would apply only to Ahom /b/ and /d/, words that begin with phonemic /m/ and /n/ would not be realized as stops and would thus never be spelled with *b and d*. This variation is plausible as it has been reported in Aiton (Morey 2005:176). Second, the variation might reflect contact with a Shan variety that had completely lost the distinction. If the manuscripts were copied by speakers of an innovative dialect, we might expect to find some use of the conservative forms, with mixture of the merged forms. The last but perhaps most plausible explanation is that the variation points to differences between a conservative and an innovative orthographic norm. Given Wichasin (1986: 81)'s observations that *d* looks very similar to *n* and that it is not attested in older inscriptions (Wichasin 1986), it can be thought of as a new symbol that was added relatively recently to

encode a phonological distinction in Ahom that was underrepresented in the older stage of the script. If this is correct, manuscripts that have *b* and *d* are relatively new.

3.1.6 Liquid and glides

There are two letters for the liquids and one for the glides in Ahom. The *l-* corresponds to *l- and *^{h}l- and the *r-* corresponds only to *r- and *^{h}r-. The glide *j-* corresponds to *j-, *^{ʔ}j-*ɲ and *^{h}ɲ. Table 15 below shows the correspondences of *l-, r-* and *j-*.

***Table 15:** Ahom letter correspondences to PSWT glides*

Ahom	PSWT (Li)	Glosses	Examples	Manuscripts							
				1	2	3	4	5	6	7	8
l	*l-	‘to run’	𑜉𑜧 *lin*	✓	--	--	--	✓	--	--	--
			𑜉𑜨 *liny*	--	--	--	--	--	✓	--	--
		‘child, son’	𑜊𑜫 *luk*	✓	✓	✓	--	✓	✓	✓	✓
	*^{h}l-	‘many’	𑜉 *lai*	✓	✓	✓	✓	✓	✓	--	✓
		‘iron’	𑜉𑜫 *lik*	✓	✓	✓	✓	✓	✓	--	✓
		‘back’	𑜉𑜨 *l(a)ng*	✓	--	✓	--	--	✓	--	✓
r	*r-	‘to call’	𑜑𑜫 *rik*	✓	--	--	--	✓	✓	--	--
		‘to know’	𑜊𑜭 *rū*	--	--	✓	--	✓	✓	✓	✓
		‘we’	𑜊 *rau*	✓	--	--	--	✓	✓	--	✓
			𑜊𑜉 *rwau*	--	--	--	--	✓	--	--	--
			𑜊𑜃 *r(a)w*	✓	--	--	--	--	--	--	--
			𑜉 *hau*	--	--	--	--	--	✓	--	--
	*^{h}r-	‘stone’	𑜑𑜧 *rin*	✓	--	--	--	--	✓	--	--
		‘head’	𑜊𑜭 *rū*	--	✓	✓	--	✓	✓	✓	✓
			𑜑𑜃 *riuw*	--	--	--	--	✓	--	--	--
			𑜊𑜃 *ruw*	--	--	--	--	--	--	✓	✓
			𑜊𑜭 *hū*	--	--	--	--	✓	--	--	--
		‘to cook’	𑜊𑜨 *rung*	--	--	--	--	--	--	--	--
j	*j-	‘difficult’	𑜌𑜫 *j(a)k*	✓	--	✓	--	✓	✓	✓	✓
	*^{ʔ}j-	‘medicine’	𑜌 *ja*	✓	--	--	--	--	✓	--	✓
		‘to take a step’	𑜌𑜨 *j(a)ng*	✓	--	--	--	✓	--	--	--
		‘to stay, be’	𑜋𑜭 *jū*	✓	--	✓	✓	✓	✓	✓	✓
	*ɲ-	‘still, yet’	𑜌𑜨 *j(a)ng*	--	--	--	--	--	✓	--	✓
			𑜌𑜩𑜨 *jaung*	--	--	--	--	--	--	--	✓
			𑜎𑜨 *ny(a)ng*	--	--	--	--	--	--	--	✓
	*^{h}ɲ-	‘big’	𑜎 *nyau*	✓	--	--	✓	✓	✓	✓	✓
			𑜎𑜃 *nyauw*	--	--	✓	--	--	--	--	--
			𑜌 *jau*	--	--	--	--	--	✓	--	--
			𑜌𑜉 *jwau*	✓	--	--	--	--	--	--	--

As can be seen, *y* and *ny* occur interchangeably, with the former as default. This unconditioned allography might be an indication of a merger between the PSWT palatal glide with the corresponding nasals. Occasional hypercorrections such as *nyā* or *ʔja:^{A} 'medicine' strongly suggests that the scribe did not have the phonemic distinction, reflecting a complete merger of all palatal sonorants. Furthermore, the fact that *ny* is often used in etymologically correct words suggests that this merger had not occurred when the script was first adopted. This interchangeable use of *y* and *ny* is also noted in the early 15th century Chinese scroll and occurs in some of the post eighteenth century *lik tho ngouk* texts (Daniels 2012).

An interesting case is the word for 'we', which goes back to *raw^{A}. It is typically transcribed with *r* but in the Buddhist text *Nemi Mang* it is also spelled with *h-*. It is possible that the word is the first one to have gone through a later change from /r-/ to /h-/, perhaps reflecting influence from another Shan variety, from whose speakers the Ahom received this Buddhist text. In line with the analysis of the voicing merger for obstruents discussed in 3.1.1, only two liquids /r/ and /l/ and one glide /j/ can be reconstructed for Ahom.

3.1.7 Clusters

One issue in the study of Ahom phonology is whether it had consonant clusters. Although graphic clusters such as *phr-, khr-, kr-, phw-, khw-,* and *kw-* are not rare, they often correspond to simple onsets in PSWT as shown in Table 16. Specifically, *phr-*, and *phw-* correspond to *p^{h}-, *f-, *v-, and *p^{h}r/l-; *khr-* and *khw-* to *k^{h}, *k^{h}r-, *k^{h}w-, *x-, *ɣ-; and *kr-* and *kw-* to *k-, *kw-, and *kl-.

Table 16: *Ahom letter correspondences to PSWT clusters*

Ahom	PSWT (Li)	Glosses	Examples	Manuscripts							
				1	2	3	4	5	6	7	8
phr	*p^{h}-	'cloth'	𑜉𑜫 *pha*	✓	--	--	--	--	--	--	--
			𑜉𑜪 *phā*		✓	✓	--	✓	✓	--	✓
			𑜉𑜪𑜧 *phwā*	✓	✓	✓	--	✓	--	✓	--
			𑜉𑜩𑜫 *phra*	--	--	✓	--	--	--	--	--
	*f-	'to bury'	𑜉𑜩𑜴 *phr(a)ng*	✓	--	--	--	--	--	--	--
		'bank'	𑜉𑜩𑜴 *phr(a)ng*	--	--	--	--	--	✓	--	--
		'dream'	𑜉𑜩𑜵 *phr(a)n*	--	--	--	--	--	--	--	--
	*v-	'seed'	𑜉𑜵 *ph(a)n*	--	--	--	--	--	--	--	✓
			𑜉𑜩𑜵 *phr(a)n*	--	--	--	--	--	--	--	✓
	*p^{h}r/l-	'rock'	𑜉𑜪𑜧 *phwā*	✓	--	--	--	--	✓	--	--
			𑜉𑜩𑜫 *phra*	✓	--		--	--	--	--	--
			𑜉𑜫 *phā*	--	--	✓	--	--	--	--	✓
kr	*kl-	'middle'	𑜎𑜩𑜴 *kr(a)ng*	--	--	✓	--	--	--	--	--
			𑜀𑜴 *k(a)ng*	✓	✓	✓	✓	✓	✓	--	✓
khr	*k^{h}r-	'egg'	𑜃 *khai*	✓	✓	✓	--	--	✓	--	✓
	*k^{h}rw-	'spider'	𑜃𑜧 *khwau*	--	--	--	--	--	✓	--	--
	*x-	'metal'	𑜃𑜩𑜴 *khr(a)ng*	--	--	--	--	--	✓	--	--
			𑜃𑜴 *kh(a)ng*	--	--	--	--	--	--	--	✓
	*ɣ-	'gold'	𑜃𑜵 *kh(a)m*	✓	✓	✓	--	✓	✓	✓	✓
			𑜃𑜩𑜵 *khr(a)m*	--	--	--	--	--	✓	--	--
			𑜃𑜧𑜵 *khw(a)m*	--	--	--	--	--	--	--	✓
			𑜁𑜵 *g(a)m*	--	--	--	--	--	✓	--	--

Ahom	PSWT (Li)	Glosses	Examples	Manuscripts							
				1	2	3	4	5	6	7	8
		'night'	𑜉𑜫𑜧 *khiun*	✓	✓	--	--	✓	✓	✓	✓
			𑜎𑜫𑜧 *giun*	--	--	--	--	--	✓	--	--
		'to enter'	𑜉𑜤 *khau*	✓	✓	✓	✓	✓	✓	✓	✓
			𑜉𑜥𑜤 *khwau*	✓	--	--	--	✓	--	--	✓
			𑜉𑜣𑜤 *khrau*	--	--	--	✓	--	✓	--	--
			𑜉𑜥𑜣𑜤 *khrwau*	--	--	--	✓	--	--	--	--
kw	*kw-	'wide'	𑜇𑜩𑜨 *kwung*	✓	--	--	--	✓	✓	--	✓
			𑜇𑜪𑜨 *kw(a)ng*	--	--	--	--	--	--	--	✓
	*kl-	'drum'	𑜇𑜪𑜨 *kw(a)ng*	✓	--	--	--	✓	✓	--	✓
			𑜇𑜩𑜨 *kwung*	✓	--	--	--	--	--	--	--
		'far'	𑜇𑜠 *kai*	--	--	--	--	✓	✓	--	✓
			𑜇𑜥 *kwai*	--	--	--	--	✓	--	--	--
phw	*p^{h}-	'cloth'	𑜋𑜥𑜫 *phwā*	✓	✓	✓	--	✓	--	✓	--
	*phr/l-	'to split'	𑜋𑜥𑜲 *phwa*	✓	--	--	--	--	--	--	--
			𑜋𑜫 *phā*	--	--	--	--	--	✓	--	✓
khw	*x-	'to enter'	𑜉𑜥𑜤 *khwau*	✓	--	--	--	✓	--	--	✓
	*ɣ-	'gold'	𑜉𑜥𑜭 *khw(a)m*	--	--	--	--	--	--	--	✓
	*ɣw-	'buffalo'	𑜉𑜥𑜤 *khwau*	✓	✓	✓	✓	--	--	✓	✓
			𑜉𑜠 *khai*	--	--	--	--	✓	--	--	--

As has been mentioned previously, Ahom data has been used as evidence for clusters like *p^{h}ra- in the PSWT reconstructions by Li (1977), and Jonsson (1991). However, the present data reveals that Ahom *ph-* and *kh-* correspond to Li's clusters, and there is a tendency for Ahom *phr-* and *khr-* to correspond Li's simple aspirated stops and fricatives. Conversely, the words which etymologically belong to *p^{h}r- and *k^{h}r- in Li's reconstruction do not have the *-r-* graphic marker except for in one instance for the word 'rock' as *phra* in the *Ming Mvng* manuscript. The analysis of this limited data is thus in agreement with Pittayawat (2009) that the graphic *-r-* did not represent /-r-/. However, rather than a marker of aspiration, it was most likely a silent letter, an inheritance from the Old Burmese script that did not represent a segment in Ahom.

Similar to *phr-* and *khr-*, *phw-* and *khw-* also correspond to words belonging to simple consonants *p^{h}- and *ɣ- in PSWT, respectively. This suggests that *-w-* may not have been pronounced. This interpretation is further support by the fact that PSWT *kl- could be written either as *k-*, *kw-* or *kl-*. The interchangeability between these three suggests that the medial *-w-* and *-l-* does not represent contrastive segments. The most obvious interpretation is that medial **-l-* had already been deleted before the manuscripts were written. Like *-r-,* the medial *-w-* in this case was most likely an optional silent letter. It is interesting to see that medial *-uo-* is consistently used to spell words that go back to PSWT cluster *kw-. This might be an indication that Ahom had a cluster /kw-/, represented with the graphic combination *kuo-*.

3.2 Ahom vowels

The proposed inventory of Ahom vowels is relatively small, consisting of only six simple vowels and one true diphthong. The simple vowels show a two-way contrast between high and non-high vowels but lack a length distinction. In a number of Shan languages, there is underrepresentation of vowel contrasts in their scripts. Cushing (1888: 2) notices that the mid high and mid low vowels in Shan are written identically but pronounced differently. Similarly, in Phake and Khamyang, there are nine contrastive vowels but only six of them are written in open syllables (Morey 2005:176). Based on correspondences to PSWT vowels, the Ahom script also seem to show a similar type of underrepresentation.

3.2.1 Non-high vowels

Non-high vowels in Ahom are clear cases of underrepresentation. The graphs *o* and *e* correspond to PSWT *ɔː and *ɛː, respectively, but only occur in open syllables. In contrast, there is no specific symbols for the vowels in closed syllables, but crucially the combination *-wa-* is used to write closed syllables that had *ɔː in PSWT. Furthermore, when *i* occurs with *-ny* as the final consonant, it also corresponds to PSWT *ɛː. In addition, *a, ā,* and the inherent vowel *a* all correspond to both PSWT *a and *aː, as seen in Table 17:

The correspondence sets points clearly to three non-high vowels in Ahom. The first phoneme is /o/ represented by *-o* and *-w-* (the former in final position). The second one is /e/ represented by *e* in open syllables and *i* in the combination *-iny,* e.g. *siny* '100,000'. The case of *-iny* appears to be an indication of an underrepresentation of vowel contrasts in closed syllables. If this interpretation is true, it is possible that all cases of all closed-syllable *i* corresponding to PSWT *ɛː encoded /e/ rather than /i/, e.g. *ding* for /deŋ/ 'red' and *tik* for /tek/ 'to break' from PSWT *ɗɛ̀ːŋ^{A}. and *tɛːk^{D}.

Last but not least, the third vowel phoneme is the low /a/. The many-to-many correspondence for PSWT *a, and *aː is hard to interpret. One hypothesis that this is a case of allography in Shorto's terminology, in which *a, ā,* and the inherent vowel all represent one identical sound. An alternative hypothesis is to view this as an instance of homography, in which the vowel length distinction is underrepresented. Since there is no epigraphic argument in favor of one or the other, we have to resort to comparative data. Specifically, the retention of the contrast between PSWT *a, and *aː in all modern Shan varieties suggest that Ahom might have distinguished between /a/ and /aː/ but only in closed syllables. Without Ahom-internal argument, the length contrast remains speculative.

3.2.2 High vowels

There are five vowel graphs corresponding to the PSWT high vowels. Only occurring in closed-syllables, the *i* corresponds to PSWT front monophthongs *i-, *iː-, and *e-, and to diphthong *iə, which is realized in other Shan varieties like Tai Phake as /e/. On the other hand, the *ī* corresponds to PSWT *iː and is found only in open syllables. In parallel fashion, the *u* corresponds to PSWT back vowels *u, *uː, *o as well to the diphthong *uə, while the *ū* corresponds to *uː, and only found in open syllables. Lastly, the back unrounded vowel (written as *-iu*) corresponds to *ɯ-, *ɯː-, as well as the diphthong *ɯə**.** These correspondences are summarized in Table 18.

Table 17: *Ahom letter correspondences to PSWT Non-high vowels.*

Ahom	PSWT (Li)	Glosses	Examples	Manuscripts							
				1	2	3	4	5	6	7	8
e	*ɛ:	‘mother’	𑜀𑜉 *me*	✓	✓	✓	✓	--	✓	--	✓
i	*ɛ:	‘red’	𑜁𑜫 *ding*	✓	--	✓	--	✓	--	--	--
			𑜁𑜫 *ning*	✓	✓	✓	✓	--	✓	✓	✓
		‘to feed’	𑜇𑜫 *ling*	✓	✓	--	--	✓	✓	--	--
		‘to break’	𑜋𑜪𑜂 *tik*	✓	✓	--	--	✓	✓	--	✓
i + ny	*ɛ:	‘hundred thousand’	𑜇𑜫 *sin*	✓	✓	--	--	✓	✓	--	✓
		‘hard, firm’	𑜁𑜫 *kiny*	--	✓	✓	--	--	✓	--	--
		‘to be’	𑜉𑜫 *pin*	✓	✓	✓	✓	✓	--	✓	✓
			𑜉𑜫 *piny*	--	✓	--	--	--	✓	--	--
a/ā	*a:	‘to come’	𑜇 *ma*	✓	✓	✓	✓	--	✓	--	✓
			𑜇𑜉 *mā*	✓	--	--	--	--	✓	✓	✓
		‘eye’	𑜋 *ta*	✓	--	--	--	✓	✓	--	✓
			𑜋𑜉 *tā*	--	--	--	--	--	--	--	✓
		‘grandmother’	𑜈 *nya*	✓	--	--	--	--	--	--	--
			𑜊 *ja*	--	--	--	--	✓	--	--	--
			𑜊𑜉 *jā*	--	--	--	--	✓	--	--	--
Inherent vowel	*a	‘back’	𑜇𑜫 *l(a)ng*	✓	--	✓	--	--	✓	--	✓
		‘to sit’	𑜁𑜫 *n(a)ng*	✓	--	✓	--	✓	✓	✓	✓
		‘heavy’	𑜁𑜪𑜂 *n(a)k*	--	--	--	--	✓	✓	--	--
	*a:	‘sweet’	𑜆𑜫 *b(a)n*	✓	--	✓	--		✓	--	--
		‘middle’	𑜃𑜫 *k(a)ng*	✓	✓	✓	✓	✓	✓	--	✓
			𑜄𑜫 *kr(a)ng*	--	--	✓	--	--	--	--	--
		‘to expose to sun’	𑜋𑜪𑜂 *t(a)k*	✓	--	--	--	--	--	--	--
o	*ɔ: -	‘father’	𑜀𑜉 *po*	✓	--	--	--	✓	✓	--	✓
		‘sorcerer, doctor’	𑜀𑜉 *mo*	✓	✓	--	--	--	--	--	--
			𑜀𑜊𑜉 *mwo*	✓	--	--	--	--	--	--	--
		‘cooking pot’	𑜀𑜉 *mo*	--	--	✓	--	--	✓	--	--
			𑜀𑜊𑜉 *mwo*	✓	--	--	--	--	--	--	--
w	*ɔ:	‘drum’	𑜃𑜫 *kw(a)ng*	✓	--	--	--	✓	✓	--	✓
			𑜃𑜫 *kwung*	✓	--	--	--	--	--	--	--
		‘fog’	𑜃𑜪𑜂 *mwak*	✓	--	✓	--	✓	✓	✓	✓
		‘younger sibling’	𑜅𑜫 *nw(a)ng*	✓	--	--	--	✓	--	--	✓
		‘to sleep’	𑜅𑜫 *nw(a)n*	✓	--	--	--	✓	✓	--	✓

Table 18: *Ahom letter correspondences to PSWT high vowels*

Ahom	PSWT (Li)	Glosses	Examples	Manuscripts							
				1	2	3	4	5	6	7	8
i	*i	‘ten’	*sip*	✓	✓	✓	--	--	--	--	--
		‘to fly’	*bin*	--	--	✓	--	--	--	--	✓
			min	--	--	--	--	--	✓	✓	✓
		‘tongue’	*lin*	--	--	--	--	--	✓	--	--
	*i:	‘foot’	*tin*	✓	--	--	--	✓	✓	✓	--
			tiun	--	--	--	--	✓	--	--	--
		‘wing’	*pik*	✓	--	--	--	--	--	--	✓
		‘knife’	*mit*		✓	✓	--	✓	✓	--	✓
	*e	‘seven’	*chit*	✓	✓	✓	--	--	--	✓	✓
		‘duck’	*pit*	✓	✓	✓	--	--	--	--	--
		‘nail’	*lip*	✓	--	--	--	--	--	--	--
	*iə~ia	‘to change’	*pin*		--	--	--	--	✓	--	--
		‘wife’	*mī*	✓	--	--	--	--	✓	--	--
ī	*i:	‘elder’	*pī*	✓	--	--	--	✓	✓	✓	✓
		‘year’	*pī*	--	✓	--	✓	✓	✓	✓	✓
		‘to have’	*mī*	--	--	✓	--	✓	✓	✓	✓
iu	*ɯ	‘to arrive, reach’	*thiung*	✓	--	✓	✓	✓	✓	✓	✓
			thiun	✓	--	--	--	--	--	--	✓
		‘deep’	*liuk*	✓	--	--	--	--	--	--	--
		‘young animal (male)’	*thiuk*	✓	✓	--	--	--	--	--	✓
	*ɯ:	‘night’	*khiun*	✓	✓	--	--	✓	✓	✓	✓
			giun	--	--	--	--	--	✓	--	--
		‘hand’	*miuw*	✓	--	--	--	✓	✓	--	✓
	*ɯə~ *ɯa	‘time’	*miuw*	--	✓	✓	--	✓	✓	--	✓
		‘month	*niun*	✓	--	✓	--	✓	✓	--	✓
		‘blood’	*liut*	--	✓	✓	--	--	--	--	--
u	*u	‘to wear’	*nung*	--	✓	✓	--	✓	✓	--	--
		‘to hold in arms’	*hum*	✓	--	--	--	--	--	--	--
		‘to cook’	*rung*	--	--	✓	--	--	--	--	--
	*o	‘to descend’	*lung*	--	--	--	✓	--	--	--	--
		‘rain’	*phun*	--	--	--	✓	✓	--	--	✓
		‘wind’	*lum*	✓	--	--	--	✓	✓	--	✓
	*u:	‘child’	*luk*	✓	✓	✓	✓	✓	✓	✓	✓
	*uə	‘garden’	*sun*	✓	--	✓	✓	--	✓	--	--
		‘classifier for animals’	*tū*	✓	✓	✓	✓	✓	--	--	--
ū	*u:	‘pig’	*mū*	--	✓	✓	✓	--	--	--	--

Ahom	PSWT (Li)	Glosses	Examples	Manuscripts							
				1	2	3	4	5	6	7	8
		'male'	𑜉𑜫𑜢 *phū*	✓	--	✓	✓	--	--	--	--
		'stay'	𑜊𑜫𑜢 *jū*	✓	--	✓	✓	✓	✓	✓	✓
		'edible fern'	𑜇𑜪𑜁 *kut*	✓	--	--	--	--	--	--	--

First of all, these correspondence sets do not clearly show whether Ahom had a vowel length contrast. As mentioned earlier, the graphs *i* and *u* on one hand, and *ī* and *ū* are on the other hand are in complementary distribution. While the former occurs only in closed syllables, the latter only occurred in open syllables. Because this distribution resembles the pattern in Old Burmese (Nishi 1998: 987-990), it is possible that vowel length existed in Ahom but was not adequately represented by the Burmese-based orthography. However, it is also equally possible to view the correspondence as evidence for lack of vowel length contrast. In absence of other evidence, the lack of length contrast among high vowels in modern Shan varieties suggests that Ahom possibly did not distinguish *i* and *u* on one hand, and *ī* and *ū* are on the other.

However, the biggest question is whether the multiple PSWT sources of Ahom vowel graphs point to homography. The first hypothesis is that *i/ī* and *u/ū,* represented single phonemes /i/ and /u/, which are results of mergers of PSWT *i, *iː, *e, and *iə, and PSWT *u, *uː, *o, and *uə. An alternative hypothesis is that each of them encodes multiple phonemes, i.e. *i/ī* representing /i/, /e/, and /iə/ and *u/ū* representing /u/, /o/ and /uə/. The fact that Burmese, Shan, as well as the Old Shan script of the 15th-century Chinese scroll all use different symbols for high and mid vowels strongly suggest that the first hypothesis is more likely. If Ahom did have both high and mid high vowel phonemes, the absence in Ahom of graphs derived from Old Shan symbols specifically for PSWT *e, and *o would be unexplainable. It is more plausible that PSWT *i, *iː, *e, and *iə had merged into /i/ and *u, *uː, *o and *uə into /u/ by the time the Ahom started to be written down. Therefore, we reconstruct three high vowels /i/, /u/ and / ɯ/ for Ahom.

Table 19: *Ahom letter correspondences to PSWT diphthongs*

Ahom	PSWT (Li)	Gloss	Examples	Manuscripts							
				1	2	3	4	5	6	7	8
ai	*aj	'to go'	𑜑 *pai*	✓	--	✓	--	✓	✓	--	✓
aw / au / wau / auwu	*aw	'rice'	𑜃𑜩 *khau*	✓	--	✓	✓	✓	--	✓	--
			𑜃𑜪 *kh(a)w*	--	--	--	--	--	--	✓	--
			𑜃𑜩𑜥 *khauw*	✓	--	✓	--	--	✓	--	✓
			𑜃𑜩𑜥𑜦 *khauwu*	--	--	--	--	--	✓	--	--
		'old'	𑜃𑜩𑜥 *khauw*	✓	--	--	--	--	✓	--	--
		'horn'	𑜃𑜩 *kh(a)u*	--	--	--	--	✓	--	--	✓
			𑜃𑜩𑜥 *khauw*	✓	--	--	--	--	--	--	--
			𑜃𑜭𑜩 *khwau*	--	--	--	--	--	--	--	✓
		'to enter'	𑜃𑜩 *khau*	✓	✓	✓	✓	✓	✓	✓	✓
			𑜃𑜩𑜥 *khauaw*	--	--	--	--	--	✓	--	--
			𑜃𑜭𑜩 *khwau*	✓	--	--	✓	✓	✓	--	✓
			𑜃𑜭𑜫𑜩 *khrwau*	--	--	--	--	--	✓	--	--

Ahom	PSWT (Li)	Gloss	Examples	Manuscripts							
				1	2	3	4	5	6	7	8
		'we'	𑜉 *rau*	✓	--	--	--	--	--	--	--
			𑜊 *r(a)w*	✓	--	--	--	✓	✓	--	✓
			𑜋 *rwau*	--	--	--	--	✓	--	--	--
			𑜌 *h(a)u*	--	--	--	--	--	✓	--	--
		'to take'	𑜍 *'au*	✓	✓	✓	--	--	--	✓	✓
			𑜍𑜦 *'auw*	✓	--	--	--	--	✓	--	--
			𑜍𑜋 *'wau*		--	--	--	--	✓	--	--
		'liquor'	𑜎 *lau*	✓	--	✓	--	--	--	--	--
	*a:w	'young girl'	𑜏 *sau*	--	--	--	--	✓	--	--	--
		'star'	𑜐 *d(a)w*	✓	--	--	--	--	--	--	--
			𑜐𑜦 *dauw*	✓	--	--	--	--	--	--	--
			𑜑 *n(a)w*	--	--	--	--	✓	--	--	✓
			𑜑𑜦 *nauw*	--	--	✓	✓	--	--	--	✓
			𑜑𑜋 *nwau*	--	--	--	--	✓	--	--	--
			𑜑𑜋𑜦 *nwauw*	--	--	--	--	✓	--	--	--
		'white'	𑜒 *khau*	--	--	--	--	--	--	--	--
au / au	*aɰ	'under'	𑜓 *tau*	✓	--	✓	✓	✓	✓	--	✓
		'new'	𑜔 *mau*	✓	--	--	--	--	✓	--	✓
		'to put in'	𑜕 *sau*	✓	--	--	--	--	✓	--	✓
		'to give'	𑜖 *hau*	✓	✓	✓	--	✓	✓	✓	✓
		'inside'	𑜗 *nau*	--		✓	--	✓	✓	--	✓
wai	*oi	'small / little'	𑜘 *nwai*	✓	✓	✓	--	--	✓	--	--

3.2.3 Diphthongs:

The Ahom sound system seems to have had one true diphthong at most, although there are two graphs that correspond to combinations of *a/*a: plus glide. These are the single symbol 𑜁 transcribed as *ai*, and the symbol 𑜍, transcribed as *au*. While the former corresponds to PSWT *aj, and *a:j, the latter are found in words that go back to *aw, *a:w, and also *aɰ, as summarized in Table 19.

Note that in this table, the realizations of *aw are particularly complex and diverse in Ahom. They can consist of either a single -𑜍 (written as *au*), a single -𑜦 (written as *aw*), or combination of characters like -𑜋𑜦 (written as *wau*), or even more complex such as -𑜍𑜧 (written as *auwu*),-

At first glance, the correspondence of PSWT *aw, *a:w and *aɰ to *au* suggests a merger (Morey 2005:177). If that is the case, the *au* must have consistently represented Ahom /aw/. Alternatively, this many-to-one correspondence may indicate homography, i.e. *au* had two pronunciations. However, a closer look reveals a more complicated pattern that seems to support the homography explanation. Intriguingly, *aɰ is mostly spelled with a single *-au*, in contrast to *aw and *a:w, which are variously represented as *-aw, -au, -wau, or -auwu.* When considering each manuscript individually, the distinction becomes even clearer. For example, in *Pvn Ko Mvng*, 'inside' from PSWT *naɰ^{A} is written as 𑜗 *nau*, but 'star' from *d̰a:w^{A} are written as 𑜐 *naw* and 𑜐𑜦 *nwauw*. This distinction suggests that *aɰ was still kept distinct from*aw and *a:w. The only exceptions are *Nemi Mang* and *Lak Ni*, in which combinations such as *au, aw, auw, wau,* and *wauw* can be used interchangeably to spell words that go back to *aw, *a:w and *aɰ. This shared pattern of spelling variation possibly suggests that the *Nemi Mang* and *Lak Ni* manuscripts were written later when

Ahom was no longer spoken as first language. Therefore, we reconstruct /auɥ/ as the only true diphthong in Ahom.

4 Ahom as a Shan variety

By interpreting correspondences between Ahom graphs and PSWT phonemes based on data from hand-written manuscripts, we propose a phoneme inventory of Ahom when it was still a living spoken language. Surprisingly, the sets of Ahom consonants and vowels are more restricted than any of the known modern-Shan variety including Phake, Aiton, and Khamyang (Morey 2005, 2008) as shown in Table 20, and Table 21, respectively. In contrast to Li (1977) and Jonsson (2012), the reconstructed Ahom sound system does not show archaic features not preserved in other SWT languages. In this sense, Ahom is clearly a "daughter" of PSWT.

Table 20: *Reconstructed Ahom consonant inventory*

	Bilabial	**Dental/Alveolar**	**Palatal**	**Velar**	**Glottal**
Stops	p pʰ b	t tʰ d	c	k kʰ	(ʔ)
Nasals	m	n		ŋ	
Fricatives		s			h
Liquid		r l			
Glide			j		

The inventory is almost identical to Morey (2005: 175) and Duangthip (2012: 46.). The only difference is the absence of /ɲ/. Although Ahom still retains *ny*, it uses the letter interchangeably with *y.* As argued above, PSWT *ɲ must have been lost by the time the Ahom manuscripts were written down. Another crucial difference is the paucity of clusters. While Morey (2005: 176), following Li (1977: 88.), reconstructs a few clusters with medial /-r-/, the present proposal only has /kw-/, in agreement with Pittayaporn (2012: 11).

Table 21: *Reconstructed Ahom vowel inventory*

	Front	**Central**	**Back**
High	i	ɯ	u
Mid	e		o
Low		a, aː	

The proposed inventory of Ahom resembles very closely that proposed by Morey (2005: 177) but differs markedly from Duangthip (2012: 46). It is worth noting that this reconstruction opts to write the mid vowels as /e/ and /o/ in contrast to Morey's /ɛ/ and /ɔ/. This discrepancy is rather trivial as both reconstructions lack phonemic contrast between high mid and low mid vowels. Interestingly, the proposed vowel inventory is very similar to Aiton[12].

From a historical point of view, the Ahom sound system as reconstructed here is a result of a number of consonantal and vocalic mergers that PSWT had gone through. Crucially, it does not show evidence for retention of archaic clusters such as *pʰr- and *mr- as Li (1977) and Jonsson (1991) claim. On the contrary, it displays clear traces of sound changes that have occurred in other Shan varieties. Table 22 lists significant innovations from PSWT (as outlined in Pittayawat 2009) to Ahom in comparison with Aiton (Morey 2005), Khamti (Harris 1976), Phake (Morey 2005), Southern Shan (Hudak 2008), Tai Nüa (Harris 1975), Tai Lüa (Harris 1975), and Dehong (Luo 1999). A few selected changes that are common in Shan varieties but absent in Ahom are also included (Edmondson 2008).

[12] Note that Morey (2005, p144) writes /ɛ/ and /ɔ/ respectively for the Aiton mid vowels.

***Table 22: Innovations from PSWT to Ahom in comparison to the other Shan varieties (AT = Aiton, KT = Khamti**, PK = Phake, SS = Southern Shan, TN = Tai Nüa, TL = Tai Lüa, DH = Dehong)*

Changes	Ahom	AT	KT	PK	SS	TN	TL	DH
Devoicing of voiced obstruents	x	x	x	x	x	x	x	x
Voicing of voiceless sonorants	x	x	x	x	x	x	x	x
Merger of *x- and *kʰ-	x	x	x	x	x	x	x	x
Merger of *f- and *pʰ-	x	x	x	x	x	x	x	
Deplosivization of *ɓ- and *ɗ-	(x)	(x)	x	x	x	x	x	x
Merger of *ɲ- and *j-	x	x	x	x	x	x	x	x
Merger of *n- and *l-							x	x
Monophthongization of *iə, *ɯə, and *uə	x	x	x	x	x	x	x	x
Merger of high and mid high vowels	x	x						
Diphthongization of *ɛː and*ɔː				x				
Change from *r- and *ʰr- to h-		x	x	x	x	x	x	x

From the comparison, Ahom and Aiton share an almost identical set of innovations. Most revealingly is the merger between high vowels, and mid high vowels. After PSWT *iə, *ɯə, and *uə had been monophthongized, the resulting vowels merged with original mid high *e, *ɤ, and *o before finally merging with PSWT high vowels *i, *iː, *ɯ, *ɯː, *u, and *uː in Ahom and Aiton. Within Shan, this change is only found in these two varieties. Perhaps less compelling is the lack of deplosivization. Although our data is not conclusive enough to decide whether PSWT *ɓ and *ɗ were merging with /m/ and /n-/ or not, it is clear that the distinction was still retained in Ahom. As for Aiton, reflexes *ɓ and *ɗ may be pronounced as [b] and [d], or [m] and [n], showing an incomplete, on-going deplosivization. That Ahom and Aiton both show the merger of high and mid vowels and both have not undergone a complete deplosivization points to a very close genealogical connection in agreement with Morey (2005: 178). The only innovation that the two varieties do not share is the change from *r- to *h-, which is not found in Ahom. Therefore, Ahom is a Shan variety that is distinct from but closely related to Aiton.

5 Conclusion

Based on data from Ahom texts recorded in sasi bark manuscripts, our study of correspondence between Ahom graphs and PSWT phonemes allows us to reconstruct the phoneme inventory of Ahom when it was still spoken. Our results show that Ahom went through a number of changes that reduced the number of its consonants and vowels considerably. Furthermore, the reconstructed system shows no archaic feature that previous proposals claimed to have been retentions from the proto-language. On the contrary, Ahom share many phonological innovations that are common among modern Shan varieties. Therefore, we conclude that Ahom is a "daughter" rather than "ghost" of PSWT.

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Appendix

Table A: *Romanization of the Ahom consonant graphs by Ranoo (1986), Morey (2012), Gogoi (2019) and this paper.*

Graphs	Ranoo (1986)	Morey (2012)	Gogoi (2019)	This paper
𑜀	*k*	*k*	*k*	*k*
𑜁	*kh*	*kh*	*kh*	*kh*
𑜂	*ng*	*ng*	*ng*	*ng*
𑜃	*n*	*n*	*n*	*n*
𑜄	*ch*	*ch*	*ch*	*ch*
𑜅	*t*	*t*	*t*	*t*
𑜆	*p*	*p*	*p*	*p*
𑜇	*d*	*d*	*d*	*d*
𑜈	*m*	*m*	*m*	*m*
𑜉	*ph*	*ph*	*ph*	*ph*
𑜊	*th*	*th*	*th*	*th*
𑜋	*s*	*s*	*s*	*s*
𑜌	*r*	*r*	*r*	*r*
𑜍	*j*	*j*	*j*	*j*
𑜎	*ñ*	*ny*	*ny*	*ny*
𑜏	*l*	*l*	*l*	*l*
𑜐	*w*	*b*	*b*	*b*
𑜑	-	*w*	*w*	*w*
𑜒	*h*	*h*	*h*	*h*
𑜓	*a*	*?*	*a*	‘

Table B: *Romanization of the Ahom vowel graphs by Ranoo (1986), Morey (2012), and this paper.*

Graphs	Ranoo (1986)	Morey (2012)	Gogoi (2019)	This paper
inherent vowel	--	*(a)*	*(a)*	*(a)*
-𑜀	*a*	*a*	*a*	*a*
-𑜁	*ā*	*A*	*aa*	*ā*
-𑜂	*i*	*i*	*i*	*i*
-𑜃	*ī*	*I*	*ii*	*ī*
-𑜄	*u*	*u*	*u*	*u*
-𑜅	*ū*	*U*	*uu*	*ū*
-𑜆	*ü*	*iu*	*iu*	*iu*
-𑜇	*āi*	*ai*	y	*ai*
-𑜈	*eu*	*au*	v	*au*
𑜀-𑜁	*å*	*O*	*eaa*	*o*
𑜀-𑜈	*e*	*E*	*ev*	*e*
-𑜫	*ām*	*M*	*m*	*m*
-𑜉	*å*	*o*	*o*	*w*

Table C: *Romanization of the Ahom consonant cluster graphs by Ranoo (1986), Morey (2012), and this paper.*

Graphs	Ranoo (1986)	Morey (2012)	Gogoi (2019)	This paper
𑜦	*phr*	*phr*	*phr*	*phr*
𑜧	*khr*	*khr*	*khr*	*khr*
𑜩	*kr*	*kr*	*kr*	*kr*