

**Quality vs. quantity: Contrast maintenance and tradeoff in Southwestern Tai vowels**

Contrastive vowel length is frequently found in languages in the Tai branch of the Kra-Dai family, and has been reconstructed to Proto-Tai (Pittayaporn 2009b). In many Tai languages, however, only one length contrast remains, between /a/ and /a:/. In this study, we explore the loss of the last standing phonemic length contrast in the Upper Chindwin dialect of Tai Khamti (TK), a member of the Southwestern Tai subgroup, which is spoken in Khamti Township, Sagaing Region, Myanmar. Draw on evidence from both reconstruction and original fieldwork, we show that this quantity contrast is undergoing a compensatory change toward a quality contrast in this dialect.

**Background.** Prototypical Southwestern Tai (SWT) languages have nine phonemic vowel qualities forming a schematic 3x3 grid of height and backness. Pittayaporn (2009a, 2009b) reconstructs 7 quality contrasts and 7 length contrasts in Proto-Tai, which became 9 quality contrasts and 4 length contrasts in its descendant Proto-Southwestern Tai (see **Tables 1a-b**), which can be interpreted as a historical tradeoff whereby a reduction in the number of quantity contrasts went hand-in-hand with an increase in the number of quality contrasts. However, most modern SWT languages preserve at least one length contrast, regardless of how many of the 9 quality contrasts they preserve.

*i, *i:	*u, *u:	*u, *u:
*e, *e:	*ɤ, *ɤ:	*o, *o:
	*a, *a:	

**Table 1a.** PT vowels per Pittayaporn 2009b.

*i, *i:	*u, *u:	*u, *u:
*e:	*ɤ:	*o:
*ɛ:	*a, *a:	*ɔ:

**Table 1b.** PSWT vowels per Pittayaporn 2009a.

In the other direction, Bangkok Thai, the most populous and best studied Tai language, has accrued quantity contrasts apparently without any requisite tradeoff toward fewer vowel qualities. Sukhothai Thai, a closely related historical lect reconstructed from surviving texts, had 7 contrastive length contrasts circa the 13<sup>th</sup>-15<sup>th</sup> centuries (Maspong 2015), and Bangkok Thai expanded length contrasts to all 9 simple vowels by the late 19<sup>th</sup> or early 20<sup>th</sup> century (Author xxxx). However, even within the duration contrasts of Thai, vowel quality may act as a secondary or redundant cue.

**Data.** Recordings of 9 TK speakers ages 24 to 78 were made at 5 locations in 2014-2015. Each speaker recorded a 436-item Southeast Asia wordlist (SIL 2002), with 1-3 repetitions for each lexical item. The lexical material and token counts vary somewhat between speakers, but the total corpus used in this study has approximately 2,000 tokens each of /a/ and /a:/.

All speakers	/a/	/aa/	all V
all contexts	94	175	156
sonorant codas	<b>107</b>	<b>147</b>	130
obstruent codas	96	105	125

LP5 (24F)	/a/	/aa/	all V
all contexts	107	153	144
sonorant codas	<b>108</b>	<b>123</b>	120
obstruent codas	100	95	121

**Table 2a-b.** Vowel duration in milliseconds for all 9 TK speakers vs. speaker LP5.

**Results.** On the dimension of quality, **Figure 1** plots F1 and F2 for the 9 Tai Khamti speakers, and shows varying degrees of divergence between the two vowel means, but with several speakers showing large vowel quality differences. On the dimension of quantity, **Table 2a** shows that across the sample population that the length contrast has been fully neutralized before obstruent codas, but there is on average a 40ms difference before sonorant codas. Further, **Table 2b** shows that for certain speakers, such as LP5, the length contrast is becoming neutralized before sonorant codas, with an average difference of just 15ms between /a/ and /a:/. Both lines of evidence, from duration and formants, suggest that the total loss of contrastive vowel length is complete or nearly so among some members of the Tai Khamti speaker community, which we predict will continue to progress in the coming years. At the same time, this contrast is apparently being maintained via cues from vowel quality. This represents an interesting case of compensatory change, unusual among the Southwestern Tai languages.

## References

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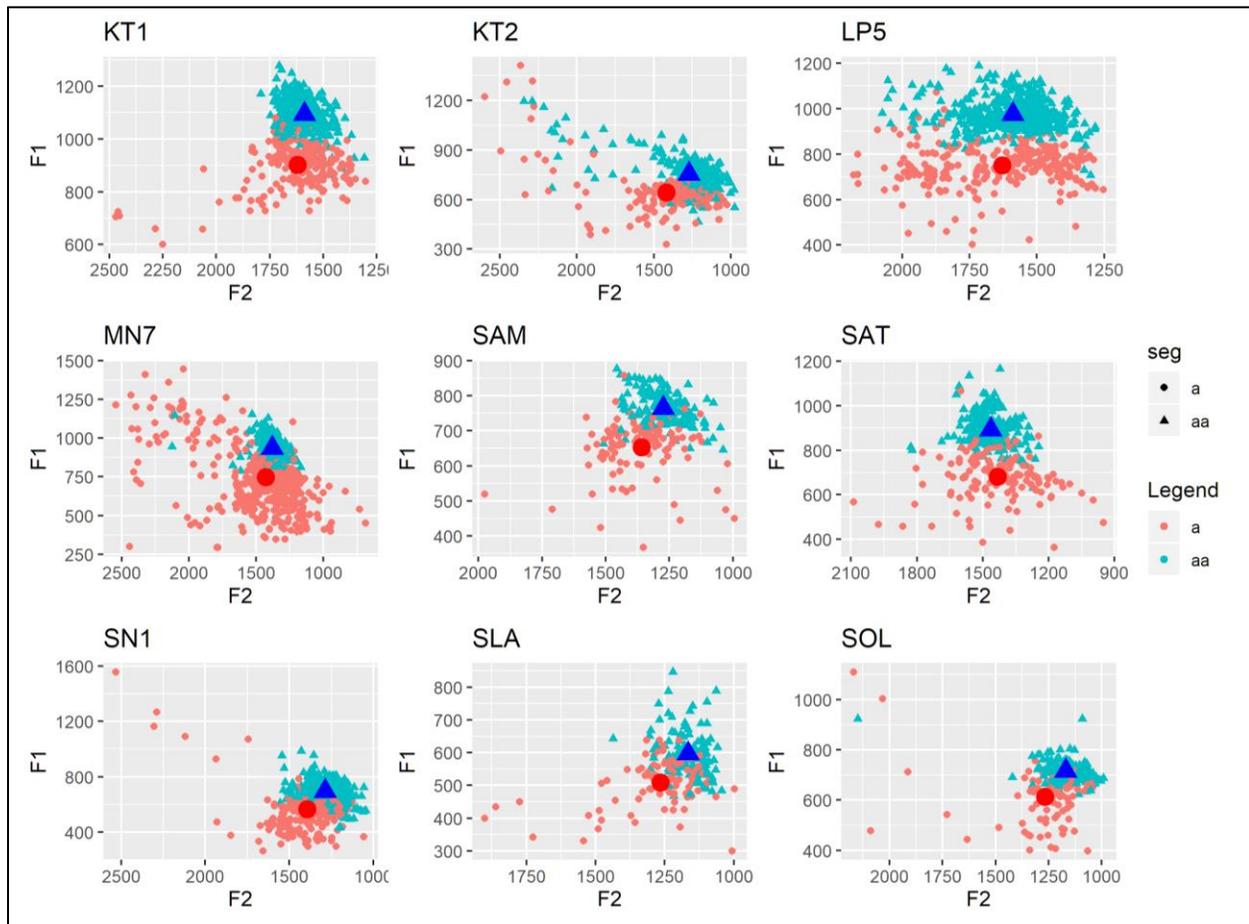
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**Figure 1.** Comparison of F1 and F2 formants, with means, of /a/ and /a:/ in 9 Tai Khamti speakers.