

RHYTHM IN THAI

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1. Emphasis

Everyone knows the distinction between phonetics and phonemics, and everyone is also aware of the distinction between phonology and the rest of grammar, no matter what particular school of linguistics he happens to follow. So we have a common ground for considering rhythm in Thai. But the trouble is that with prosodic, or suprasegmental features such as rhythm, stress, and intonation, it is often difficult for the investigator to keep these distinctions firmly in mind—more difficult than it is, say, in the case of vowel and consonant features. In Thai, there are further distractions provided by features of tone, and of vowel length within the syllable.

One reason that it is difficult to collect phonetic data on prosodic features is that these features tend to be relative rather than absolute, like segmental features. Take the Thai number 5, for example. In a given utterance by a native speaker of Thai, any trained phonetician can tell you whether the vowel in /hâa/* is nasalized or not. Of course there are degrees of nasalization, too, but if the velic is open so much as a fraction of a centimeter, some part of the air-stream will escape through the nose and the phonetician will hear it. But put /hâa/ in an utterance of several syllables, and then ask the phonetician what the duration of that syllable is in relation to the syllables around it, for example in /sǎɔŋ rǎɔj hâa sip bàat/ and even the crudest machine can do a better job than most phoneticians.

The analysis of rhythm, for any language, is further complicated by the need to classify, before we are ready to classify—and therefore to get into phonemics before we have sufficient phonetic data. Suppose I have a Thai sentence with syllable lengths measured in centiseconds by a machine, as follows:

sǎɔŋ	rǎɔj	hâa	sip	bàat	
.20	.28	.22	.14	.31	(= 1.15)

* For all features of Thai except rhythm and final stops, Haas (1964) phonemic notation is used for the sake of simplicity. The final stops are written /p t k/ to emphasize their normally voiceless character, since this is one of the obstacles to measuring syllable duration.

If I use measurement in centiseconds as a criterion for purposes of collecting data, the distinctions may be fine enough, but I will soon run into trouble of another kind. I may never again find a sentence of five syllables with precisely these syllable lengths, even though I ask my informant to repeat the same sentence over and over again. For example, three repetitions might come out as follows :

sǎɯŋ	rǎɯj	hâa	sìp	bàat	
.20	.28	.22	.14	.31	(= 1.15)
.29	.35	.26	.18	.42	(= 1.50)
.15	.22	.24	.10	.29	(= 1.00)

Thus it will do no good, if we are interested in collecting data, to make an arbitrary classification based on absolute syllable lengths—e.g. to say that anything under .20 centiseconds is “short,” between .20 and .30 is “medium” and anything over .30 is “long.” This kind of decision would force us to interpret /sǎɯŋ/ as sometimes short and sometimes medium, and /rǎɯj/ as sometimes medium and sometimes long. This approach will do us no good, because in fact it is relative syllable length, and not absolute syllable length, that we are interested in.

If we want to collect data on relative syllable length, then we must first define some larger phonetic unit—something larger than a single syllable but smaller than a complete utterance. Abercrombie (1967) has established such a unit for English, which he calls a “foot.” Its definition, however, depends on the previous identification of stress levels, and in this sense it is already in the realm of phonemics rather than phonetics. Here is an example :

/ Which	is	the / train	for / Crewe / please ?
(stress)		(stress)	(stress) (stress)

Noss (1964) tried to define a “phonemic phrase” for Thai, by using rhythmic features as a criterion. This kind of unit will not do either as a phonetic unit for the investigation of phonetic features of rhythm in Thai. Example :

khāw khon māj – dāj – klēɯŋ : rǎk-nā.
 “I’m sure they didn’t mean to.”

It is very difficult, in fact, to find such larger units in any language without depending on other prosodic features such as stress, intonation, terminal junctures, or rhythm itself for this definition. One technique is to bypass the problem by working only with minimal pairs--and this is a technique we have adopted for part of this paper.

But suppose we can identify such a unit in Thai—let's call it a phonetic phrase—and suppose further that our example "250 baht" fits the definition in contexts like /kháw khyyn nən phǒm 250 bàat/. The next step would be to compare all the examples of "250 baht," pronounced at different speeds, or tempos, in various contexts and by itself. The result would be a longer table like the one shown below. Then we could work out the percentages of each syllable's duration in terms of the duration of the entire phrase, and we would get figures like those shown at the bottom of the table.

	sǎw	rǎj	hâa	sip	bàat
Absolute :	.20	.28	.22	.14	.31 (= 1.15)
	.29	.35	.26	.18	.42 (= 1.50)
	.15	.22	.24	.10	.29 (= 1.00)

Percentages :

15–19% 22–25% 17–22% 10–12% 27–29%

By comparing the percentages for all kinds of five-syllable phrases (like 250 baht) we might be able to arrive at typical rhythmic patterns for the five-syllable phrase. Similarly, we could establish patterns for phrases of two syllables, three syllables, and up to ten, or however many syllables might occur in a single phonetic phrase.

Notice that we have said nothing here about stress, tone, intonation, or vowel length within the syllable. We have been concerned only with the relative length of entire syllables. The data we have obtained will thus be free of phonemic influence, and we can use it, for example, in studying the relationship of rhythm to stress or vowel length, provided only that we have investigated those things independently as well.

2. Previous Research


Now let's turn to consider what has already been done in the field of rhythm in Thai. Nearly every linguist who has written on Thai phonology has had something to say about stress, and we have a paper by Dr. Udom on this very subject in the present conference. But very few linguists have dealt with rhythm, in the total context of prosodic features. A very good summary of work done in this general field up to 1965 is already available in Panninee (1965), and I need not go into detail here. It would be well, however, to summarize the conclusions of those investigators who have written specifically about rhythm—Panninee, Foongfuang and Sanit among the Thai linguists; Haas and myself among the foreign linguists.

1. Haas (1964), without commenting on the phonemic status of rhythm, recognizes a rhythmic group, consisting of syllables without spacing (juncture) between them and containing at least one stressed syllable. These rhythm groups can be inferred from the transcription used in the Thai-English Students' Dictionary. For example:

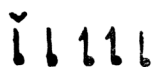
sôm'nii'â? wăan'dii'

"These oranges here are nice and sweet."

2. Foongfuang (1960) agrees in general with the position of Haas. She concludes tentatively (p. 57) that "there is some sort of rhythm or juncture which results in the grouping of syllables into larger units."
3. Panninee (1965, p. 80) concludes that rhythm in Thai is predictable, being determined by stress and terminal contour phonemes; hence rhythm itself is not phonemic.
4. In Noss (1954) and later (1964), I took just the opposite position, claiming that although both stress and rhythm had to be considered phonemic because of certain minimal pairs, a morphophonemic solution could be devised that would write only extra-heavy stress, other stresses being predictable from the rhythmic pattern.
5. Sanit (1955) is the only writer I know of who provides actual phonetic data on Thai rhythm. Sanit uses a musical notation, which is illustrated below, to analyze the rhythmic characteristics of groups of two to five syllables. He also marks stress for each syllable. The crotchet with ictus denotes the syllable with heaviest stress in each stress-group.



 'di : 'caj 'máj
 "Are you pleased?"



 'wîŋ ,sîə ,con 'môt 're : ŋ
 "I ran until I was exhausted."

While Sanit used his own intuition, rather than instruments, to determine relative syllable duration, it is remarkable how closely his examples come to the ideal model for rhythmic analysis described at the beginning of this paper.

As far as the relationship between stress and rhythm is concerned, he concludes that (p. 20) although there is some instrumental evidence of correlation between degree of stress and relative duration of syllables, the deciding factor in determining stress must still be what is "felt" or "heard" by the native speaker of Thai.



What is the consensus, then, among these investigators? I think that all are agreed on the following two points:

- 1) Syllables in Thai have different relative lengths which are discernible to speaker and hearer alike; that is, rhythm is a phonetic feature of Thai.
- 2) There is in Thai some kind of a unit, larger than a syllable and smaller than a whole utterance, which can be determined phonetically. Investigators disagree as to whether this unit is a rhythm-group, a stress-group, or simply a pause-group.

There is no agreement, on the other hand, on the answers to the following questions about Thai phonemics:

- 1) Is rhythm determined by stress?
- 2) Is stress determined by rhythm?
- 3) Are both stress and rhythm phonemic?

Clearly, before we can answer these questions, we have to obtain more data, especially on rhythmic patterns. And equally clearly, the data must be of the type presented by Sanit—i.e. phonetic data, not premature analyses of rhythm in terms of some overall prosodic scheme.

3. Method

In order to collect data for making a further analysis of Thai rhythm as a phonetic feature, we need three things:

- 1) Thai speakers whose utterances are considered acceptable—i.e. meaningful, and standard with regard to both grammar and phonology.
- 2) A unit larger than a syllable but smaller than a whole utterance, the definition of which does not depend on rhythm itself, or on other prosodic features such as intonation, stress, and juncture.
- 3) A way to measure syllable duration that gets around the problems of vowel length and final stops that cut off the voicing.

The first two things are no problem if the investigator is himself a native speaker of the educated dialect of Bangkok Thai. He can elicit plenty of examples from himself, and merely has to check these with a few other such native speakers to make sure he is not analyzing an individual peculiarity of speech. Also, he can establish the desired kind of unit (2, above) simply by asking himself exactly where, during an utterance, it is permissible to pause—i.e. not where pauses must occur, accidentally occurred, but where they could logically occur. Thus, in our sentence /kháw khyyn ɲən phǒm sǎɔŋ róɔj háa

sìp bàat/, most speakers would not normally pause at all, but if a speaker did pause, it might very well be before /sǎŋ rǎj hâa sìp bàat/. If so, that portion of the utterance could be called a phrase of some kind. The fact that the portion also occurs alone, as a complete utterance, would tend to substantiate this analysis. On the other hand, if Thai sentences cannot be broken up in this way, the investigator will simply have to resign himself to handling very long rhythmic units.

As to the third problem, how to measure syllable duration without getting embroiled in questions of vowel length and final stops which cut the audible airstream off altogether, I think there is a rather simple answer to that, too. Sanit (1955) in measuring syllable length, took the interval between the "peak of prominence" of each syllable and that of the next syllable as his measure of length. This was because he was working in terms of a stress-group. For his purposes it was a satisfactory method except for the last syllable before pause, where he had to use his intuition alone. But if we are going to try to disregard stress, we can still measure syllable duration in much the same way—simply by measuring the elapsed time between the beginning of one syllable to the beginning of the next. Fortunately, Thai syllable onsets are nearly always clearly marked, and there is no problem with this kind of measurement until we get to the last syllable before pause. Here we run into the same difficulty that Sanit faced. Take our example :

/sǎŋ rǎj hâa sìp bàat/

The last two words end in stops, which means that the possibility of extending the length of these syllables is limited by the cut-off of the airstream. In the case of /sìp/ this is no longer a problem: we say that the duration of /sìp/ is the elapsed time between the onset of /s/ and the onset of the /b/ in /bàat/. But we can't measure the length of /bàat/ in the same way, because there is no word following it in the phrase. That is, if the last word were /rǎn/ instead of /bàat/, we might get a longer syllable, since the final /n/ in /rǎn/ allows the voicing to go on.

For the native speaker, this need not be a problem, however. He simply adds another word to the phrase—say a polite particle or one of the sentence particles. An investigator who is not a native speaker can also get his informant to do this. This has been done in the examples which follow below (and recorded on a tape, which was played when the paper was read). In the examples, the number beneath each syllable indicates the relative duration of the syllable within the phrase—the number 1 being the longest, down to number 5 for the shortest. Two syllables heard as being of the same length will of course have the same number beneath them.

In Example #1, note that each syllable which occurs at the end of the phrase just before the polite particle /khâ/ has approximately the same relative duration, 1, regardless of the internal structure of the syllable. Whether the vowel is long or short, whether there is a final stop or not, this syllable occupies about the same amount of time in each phrase.

1.	hâa 2	sip 2	bâat 1	(khâ)	50 baht
	hâa 2	sip 2	rĭan 1	(khâ)	50 dollars or riel
	hâa 2	sip 1		(khâ)	50
	hâa 2	sip 2	èt 1	(khâ)	51
	hâa 2	sip 2	pèet 1	(khâ)	58
	hâa 2	sip 2	hâa 1	(khâ)	55

Example #2 illustrates how we can use the same technique if we want to determine the relative length of small words like the sentence particles and the polite particles themselves. We simply add another word to the phrase, but don't count it.

2.	mâj 2	dâj 2	paj 1		Didn't go.
	mâj 2	dâj 2	paj 1	(rĕh)	Didn't go ?
	mâj 3	dâj 3	paj 1	rĕ 2	(há) Didn't go, eh ?
	mâj 3	dâj 3	paj 1	rĕ 3	há (phii) Didn't go, eh, Sis ?

Examples #3 onward are minimal pairs which show how rhythmic contrasts occur in Thai. Notice that we are still not concerned with stress here. It may be that *every single one* of these minimal pairs can be resolved phonemically (or *morphophonemically*, or *phonologically*) by writing stress and terminal junctures, etc. I merely present them as evidence that rhythm contrasts are rather prevalent in Thai as a phonetic feature.

(Examples #3, #8, and #9 below I owe to Miss Suchada Vidhayasai and Miss Pusadee Sinsuebpol, who wrote papers on the subject "Rhythm in Thai" for Mr. Jimmy G. Harris's course in Phonetics at the English Language Center in March, 1971.)

- | | | | | | | |
|----|-----------|-----------|----------|-----------|-----------------|--|
| 3. | jàa
1 | kan
3 | dii
3 | kwàa
2 | | Better get a divorce. |
| | jàa
3 | kan
1 | dii
3 | kwàa
2 | | Better not block the way. |
| 4. | kháw
5 | jók
1 | tua
3 | jàaŋ
4 | mâak
2 | He exaggerates his own importance. |
| | kháw
4 | jók
3 | tua
3 | jàaŋ
1 | mâak
2 | He gives a lot of examples. |
| 5. | mýa
4 | khâa
3 | sýk
2 | paj
3 | léew
1 | When the enemy had gone. |
| | mýa
4 | khâa
1 | sýk
3 | paj
4 | léew
2 | When I left the monastery. |
| 6. | tham
3 | maj
3 | maa
2 | aw
4 | sii moon
3 1 | Why do you choose to come at 4 o'clock ? |
| | tham
4 | maj
4 | maa
4 | aw
2 | sii moon
3 1 | Why come to get it at 4 o'clock ? |

All of the above examples involve only a two-way contrast of rhythm. The next one, #7, is actually a four-way contrast. There are five phrases represented, but in two of them, the second and the third, I recorded no difference in rhythm, only in intonation and perhaps stress.

- | | | | | | | |
|----|----------|----------|-----------|-----------|-----------|--|
| 7. | faj
2 | mâj
4 | thýŋ
2 | myaŋ
1 | ləjh
3 | The electricity doesn't reach the town at all. |
| | faj
3 | mâj
4 | thýŋ
3 | myaŋ
2 | ləj!
1 | The electricity doesn't reach the town, though ! |
| | faj
3 | mâj
4 | thýŋ
3 | myaŋ
2 | ləj
1 | The electricity doesn't reach the town of Loei. |
| | faj
3 | mâj
2 | thýŋ
4 | myaŋ
1 | ləjh
3 | The fire burned right up to the town. |
| | faj
3 | mâj
2 | thýŋ
4 | myaŋ
3 | ləj
1 | The fire burned as far as Loei. |

In the next two examples (also provided by Miss Pusadee and Miss Suchada), #9 appears to be a three-way contrast, but is actually only a two-way contrast. The slanting bar in the first line of #9 shows that there are two phrases involved, since we can logically pause after the word /phii/ here. In the next two lines of the example, we cannot pause after /phii/; they are single phrases.

8. nǎŋ rýaŋ ní man dih *This movie is quite exciting.*
 3 3 2 1 4

 nǎŋ rýaŋ ní man dii *This movie's good.*
 3 4 2 4 1

9. phii / nǔu ca paj ta 'làat *Sis, I'm going to the market.*
 1 / 3 4 2 4 1

 phii nǔu ca paj ta 'làat *My sister's going to the market.*
 2 2 4 3 4 1

 phii nǔu ca paj ta 'làat *(My sister) Noo's going to the*
 4 2 5 3 5 1 *market.*

The last two examples are from Panninee (1965). The rhythm distinction in #10 is extremely subtle, but can be heard; the final sentence particle /'é/ is not counted in measuring syllable duration. Example #11 clearly involves different stresses on the syllable /chán/, and possibly even different tones on the same word, but a rhythm difference shows up in two places.

10. kaa fɛɛ jen môt (lé) *The coffee's all cold.*
 3 2 1 2

 kaa fɛɛ jen môt (lé) *The cold coffee's all gone.*
 3 3 2 1

11. thâa chán sǔuŋ iik nít nyŋ *If I were just a little taller,*
 4 4 2 3 1 3

 thâa chán sǔuŋ iik nít nyŋ *If the shelf were just a little higher,*
 4 2 3 4 1 3

 (kó khon cháj dáj) *(it would be easily done)*

4. Conclusion

I have presented these rhythmic contrasts as evidence that rhythm in Thai, if not phonemic, is at least interesting. But to pursue the investigation of phonetic rhythm further, it is of course not necessary to collect more minimal pairs or multiple sets with minimal contrast. Once we have defined a phrase without reference to stress, intonation, or rhythm itself, we can proceed as Sanit has done. If we have access to electronic instruments and equipment, so much the better: we can use the percentage method for our investigation of rhythmic types in phrases of two or more syllables. A very simple method for measuring relative syllable duration with fair accuracy requires only an ordinary tape recorder which plays at different speeds. If we record at the highest speed

—say 15—and play back at the lowest, $1\frac{7}{8}$, we will get a slowdown factor of eight, which means that we can easily hear the difference between 20 and 25 centiseconds on the original recording. Even between speeds of $7\frac{1}{2}$ and $3\frac{3}{4}$ we will get more accurate results than with the ear alone.

But even if we have no equipment at all, we can simply rank the duration of syllables by ear, as I have done in this paper, and as every speaker and hearer of Thai must do if rhythm is a significant feature of Thai. In any case, the results will be of great benefit to the overall analysis of the phonology of Thai.

In conclusion, let me emphasize that the investigation of rhythm in most languages, including English and other well-studied languages, is a wide-open field. I still am not sure whether rhythm is phonemic in Thai, whether stress is phonemic, or whether both are phonemic. The point I have tried to make is that stress and rhythm must be investigated separately, as phonetic features, before anyone can decide this question for sure. At any rate more work needs to be done on this subject, not only in Standard Thai but in the major dialects of Thai as well.