

## SIAMESE PHONEMES: A RESTATEMENT

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0. Introduction.
1. The consonants.
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0. Introduction. Yuen-ren Chao, the great linguist, scholar, and human being to whom the present volume is dedicated, has never hesitated to rearrange data and experiment with systems in the attempt to arrive at the most usable statement for the particular purpose. The article here presented for his consideration follows this lead given by him, and sets forth a restatement, based on first hand examination of the material, of the phonemic system of Siamese Thai. It is hoped that the temerity of this attempt will be tempered by the possible useful insights it gives, insights that may ultimately help to clarify problems, descriptive and historical, in the whole Sino-Tibetan field.

0.1. The author's acquaintance with Siamese is small in terms of direct work with the language. He has examined the excellent textbook by Haas and Subhanka<sup>(1)</sup>, and has listened to the records which accompany that book. During the academic year 1954-5 he worked with William J. Gedney on the preparation of a textbook of English for Siamese<sup>(2)</sup>, and had many opportunities to discuss structural problems in the two languages, and to hear Siamese both from Gedney and from Mrs. Gedney, who is a native speaker of the language. During the academic year 1955-6 the author acted as consultant in supervising

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(1) Mary R. Haas and Heng Subhanka. *Spoken Thai*, basic course, units 1-12. Published for the U. S. Armed Forces by the Linguistic Society of America and the Intensive Language Program, American Council of Learned Societies. [Washington, D. C., 1945.] x, 307 p.

(2) William J. Gedney and associates. *English for Speakers of Thai*. Washington, D. C., American Council of Learned Societies, 1956, ix, 342p.

the completion of a thesis for the M. S. in linguistics at the Institute of Languages and Linguistics of Georgetown University by Mary Elizabeth Kroll<sup>(3)</sup>; he listened repeatedly to the recording of the texts that are the basis for this study, and convinced himself of the validity of Miss Kroll's analysis.

The experiences recounted led to the conclusion that the phonemic analyses of Siamese heretofore presented were subject to modification at certain points, in terms of the kind of phonemic theory that the author practises, as applied to phonetic data repeatedly heard and verified.

1. The consonants. There is general agreement that Siamese has the consonant phonemes /p, t, k, f, s, m, n, ŋ, l, r, w, y, h/ as initials. (Haas, Kroll, and others use "j" for /y/.) Of these, /m, n, ŋ, w, y/ also occur final, after 'long' or 'short' vowels, or 'diphthongs'. By most analyses, /p, t, k/ occur final also. Haas, however, considers these finals to be /b, d, g/, the last of these three not occurring elsewhere. The actual sounds are voiceless and unreleased, and the introduction of juncture phonemes (see below, 4) accounts for all internal syllabification problems of unaspirated stops; it is then unnecessary to posit final /b, d, g/, and the analysis of these as /p, t, k/ is accepted here.

1.1. In addition to the initials listed, there is also a sound described as much like English /č/, but unaspirated. This is usually written "c". A phoneme /y/ exists, as indicated, and there are, as will be seen shortly, various initial clusters of stops followed by /l, r, w/. It seems in order therefore to consider "c" as being a cluster, /ty/.

There is a set of aspirated initials, /ph, th, kh/ and "ch". Since /p, t, k/ and /h/ all exist as separate phonemes, and clusters of stops plus other consonants are found, there is no reason to consider these aspirates as unit phonemes. They are then clusters of /p, t, k/ followed by /h/. The aspirate "ch" could then be analyzed as /tyh/, but considerations of pattern congruence with other aspirated clusters (below), lead to the conclusion that it is really /thy/.

Clusters with /r, l, w/ are generally admitted. They are: /pr, tr, kr, pl, kl, kw/, and the aspirated clusters, here considered as consisting of three phonemes, /phr, khr, phl, khl, khw/. The absence of \*/thr/ is to be noted

(3) Mary Elizabeth Kroll. *Suprasegmental phonemes of Thai (Bangkok dialect)*. [Washington, D.C.,] Georgetown University Institute of Languages and Linguistics, 1956. [1], iv, 39 leaves; typescript.



as a gap in symmetry, but our interpretation of "ch" as /thy/ suggests that /thy/ may be the systemic surrogate of the expected \*/thr/.

1.2. There remain the initials generally stated as "b", "d", and the initial glottal stop, which Haas holds to be a phoneme, but which Gedney, Noss<sup>(4)</sup>, and Kroll consider to be simply the non-phonemic onset of an initial vowel. There are stated to be instances of internal "b" and "d" which result from syllable-final /p/ and /t/ with following "initial vowel", and Haas also has instances of "g" resulting from /k/ and a following "initial vowel". If we assume the basic finals to be /p, t, k/, as is done here, and if we consider syllable-initial glottal stop to be a phoneme, /ʔ/, then the resulting "b", "d", and "g" can be considered as the phonetic manifestations of the phonemic sequences /p', t', k'/; that is, the stops, followed by the initial onset of voicing which is /ʔ/, themselves assume partial voicing by assimilation in normal transition ("close juncture"). This analysis also eliminates, as already stated, the need for Haas's "b", "d", "g" in final position, since she postulated them precisely because of internal contrasts with /p, t, k/; these latter are either simply instances of /p, t, k/ in syllable-initial position, or of final /p, t, k/ before internal open juncture, /+/, and a following initial /ʔ/. We have, by these procedures, eliminated the supposed initials "b" and "d", since they too must be /p'/ and /t'/.

Final glottal stop occurs only after short vowels, and is held by all the authors mentioned except Haas to be non-phonemic, simply the way of release of a vowel before open juncture. This necessitates accepting a few short-vowel finals which have compound tones (see below, 3); all other compound tones occur with 'long vowels' and 'diphthongs' or in sequences of vowel followed by final consonant; that is, there are at least two segments for the tone to be distributed over. This leads to the conclusion here that final glottal stop is indeed a phoneme, and that there are neither initial nor final vowels in Siamese.

1.3. The consonant system of Siamese is then held to be as follows, in terms of single phonemes and clusters:

(4) Richard B. Noss. *An outline of Siamese grammar*. [Ph. D. thesis, Yale University, 1954. Unpublished.]

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|             |     |     |   |   |   |   |    |
|-------------|-----|-----|---|---|---|---|----|
| Initials—/p | t   | k   | f | s | m | n | ŋ  |
| p'          | t'  |     |   |   |   |   |    |
| pl          |     | kl  |   |   |   |   | l  |
| pr          | tr  | kr  |   |   |   |   | r  |
|             |     | kw  |   |   |   |   | w  |
|             | ty  |     |   |   |   |   | y  |
| ph          | th  | kh  |   |   |   |   | h/ |
| phl         |     | khl |   |   |   |   |    |
| phr         |     | khr |   |   |   |   |    |
|             |     | khw |   |   |   |   |    |
|             | thy |     |   |   |   |   |    |

Finals—/p t k m n ŋ ' w y/.

As will be shown below in the discussion of vowels, we also accept Noss's and Kroll's final /h/, and in fact extend its positions of occurrence. This gives final clusters of /h/ followed by any other possible final.

2. The vowels. The short vowels of Siamese are agreed to be nine in number: /i, e, æ, ɪ, ə, a, u, o, ɔ/. (For /æ/ some writers use "e"; Haas writes "y" and Gedney uses "ʌ" for /ɪ/.) Then it is usually held that each vowel occurs also long; except for Haas, the authors cited here analyze the longs as double vowels; it is indicated that phonetically high and mid longs are higher, and low longs lower than the corresponding shorts. There are also stated to be diphthongs ending in high-front glides and high-back-rounded glides, with "short" or "long" first elements; these are analyzed by all the authors cited as "short" or "long" vowels followed by the semivowels /y/ and /w/ respectively; this analysis is accepted here. Then there are also centering and lowering glides following the high vowels /i, ɪ, u/; these are usually written "ia", "ɪa" (or the like), "ua"; Gedney holds these to be unit vowel phonemes which occur "short" or "long"; Noss and Kroll have analyzed the centering glides as a semivowel /h/, giving /ih, ɪh, uh/, with the "longs" "iih" etc., also possible, and with /ihw, ɪhy, uhy/ existing. Not all the possible "diphthongs" occur with these centering glides.

2.1. The Haas analysis gives short vowels, long vowels, /y/ and /w/ after each class, and vowel clusters, apparently of one length only, "ia", etc., with /y/ and /w/ after them. Gedney has twelve vowels, three written with two symbols each ("ia, ʌa, ua"); each vowel occurs also "long" or "doubled" ("ii, ee, iia", etc.), and some are followed by /y/ or /w/. Noss and Kroll



have short vowels, "double" vowels, with either class followed by /y/ or /w/, and the high vowels followed by /h/, with some /hy/ and /hw/ terminals.

All of these analyses are on the surface inelegant and suspect. There seem to be too many different kinds of vowel nuclei, and phonetic rather than phonemic criteria determine the analytical conclusions. It is therefore suggested that a revision of thinking is needed in respect to the so-called "long" vowels and "diphthongs".

2.2. Taking account of the phonetic fact already mentioned that the high and mid "long" vowels are "higher" than the shorts, while low "longs" are "lower" (does this really mean "more central"? ) than the low shorts, we set up the following scheme:

| <u>"Short"</u> | <u>Corresponding "long"</u> |
|----------------|-----------------------------|
| /i/            | /iy/                        |
| /e/            | /ey/                        |
| /æ/            | /æh/                        |
| /i/            | /iy/                        |
| /ə/            | /əh/                        |
| /a/            | /ah/                        |
| /u/            | /uw/                        |
| /o/            | /ow/                        |
| /ɔ/            | /ɔh/                        |

This divides the vowels into three categories: 'back outer', 'non-back outer', and 'inner'; the back outer have /w/ as the lengthening element—/uw, ow/; the non-back outer have /y/—/iy, iy, ey/; the inner have /h/—/əh, æh, ah, ɔh/.

The assignment of "ia, ia, ua" to /ih, ih, uh/ now becomes not *ad hoc* but part of a system. With the high outer vowels, /h/ is centering rather than lengthening. With low vowels and the "mid central" (phonetically low) /ə/, it is also centering, but with acoustic effect of length. With the outer vowels, /y/ and /w/ are raising and lengthening.

2.3. The three semivowels /w, y, h/ may be designated, by analogy with the three groups of vowels we have set up, as back outer, non-back outer, and inner, respectively; they are homoorganic with the vowels in their respective classes. With the analysis of the "long" vowels just proposed, all phonetically long or diphthongal vowel nuclei become /VS/ sequences. Any

combination occurs except that (1) back outer /w/ is not found after non-back /ɨ/ and inner /ə/ and /ɔ/; (2) non-back outer /y/ is not found after inner /æ/; and (3) inner /h/ is not found after outer /e/ and /o/. The "long" vowels followed by /y/, /w/, or /h/ are now /VS<sub>1</sub>S<sub>2</sub>/; these are limited in occurrence as follows (4): /S<sub>1</sub>S<sub>2</sub>/ occurs only after a vowel homorganic with /S<sub>1</sub>/, with the further limitation that the exclusions noted for a single semivowel carry over to a sequence of two containing the excluded possibility; however, there are three exceptions (5) to the homorganic stipulation, /uhy, ihy, ihw/. The possibilities and exclusions are shown in the table, the numbers (1), (2), (3), (4) referring to the stated limitations, and (5) marking the exceptions.

| Semivowels<br>Vowels | Back<br>outer | Non-back<br>outer | Inner | Two semivowels |       |       |       |        |         |
|----------------------|---------------|-------------------|-------|----------------|-------|-------|-------|--------|---------|
|                      |               |                   |       | -wy            | -wh   | -yw   | -yh   | -hw    | -hy     |
| Outer, back: u       | uw            | uy                | uh    | uwy            | uwh   | (4)   | (4)   | (4)    | uhy (5) |
| o                    | ow            | oy                | (3)   | owy            | (3)   | (4)   | (3,4) | (3,4)  | (3,4)   |
| non-back: i          | (1)           | iy                | ih    | (1,4)          | (1,4) | (1)   | iyh   | (1,4)  | ihy (5) |
| i                    | iw            | iy                | ih    | (4)            | (4)   | iyw   | iyh   | ihw(5) | (4)     |
| e                    | ew            | ey                | (3)   | (4)            | (3,4) | eyw   | (3)   | (3,4)  | (3,4)   |
| Inner: ə             | (1)           | əy                | əh    | (1,4)          | (1,4) | (1,4) | (4)   | (1)    | əhy     |
| æ                    | æw            | (2)               | æh    | (2,4)          | (4)   | (2,4) | (4)   | æhw    | (2)     |
| a                    | aw            | ay                | ah    | (4)            | (4)   | (4)   | (4)   | ahw    | ahy     |
| ɔ                    | (1)           | ɔy                | ɔh    | (1,4)          | (1,4) | (1,4) | (4)   | (1)    | ɔhy     |

3. The tones. The usual statement about Siamese tones is that there are five. Kroll lists them (p. 14) as high tone, low tone, rising tone, falling tone, mid tone. It is also stated that a sixth tone does not occur in monosyllables.

The tones are analyzed by Kroll as involving three components of pitch height, combined as two-part contours, with four of the nine possibilities not occurring (symbols mine):

|      | high | mid  | low  | tones: |     |         |
|------|------|------|------|--------|-----|---------|
| high | ^^   | [^~] | ^^   | high   | ——  | falling |
| mid  | [~^] | ^^   | [~^] | ——     | mid | ——      |
| low  | ^^   | [~^] | ^^   | rising | ——  | low     |

The five occurring contours are considered phonemes by Kroll and by the others cited previously. High-high and low-low are said to occur, without final glides, on short vowel syllables with "no final consonant" (i. e., with final /ʔ/) or with final stop.

Certain short weak syllables occur in Siamese which have only a pitch level, but no contour. The pitch level varies with the tone of the following syllables and with juncture, but is generally more like a short mid tone than anything else. Kroll considers this a sixth tone, "lack of tone" (p. 18).

There are also some tone-sandhi phenomena in polysyllabic items that lead to replacement of falling tone by a high-mid contour, and rising tone by low-mid.

3.1. The facts presented seem to point to the following restatement. There are three pitch phonemes, high, mid, low—marked /<sup>h</sup>/, /<sup>m</sup>/, /<sup>l</sup>/. These occur singly on the short weak syllables mentioned; and on short "final vowels" (i.e., vowels with final /<sup>h</sup>/). In all other situations the pitches occur in sets of two. The combinations mid-high and mid-low either do not occur or have not yet been described. The usual analysis corresponds to that proposed here in the following way:

|                |   |   |
|----------------|---|---|
| <u>"tones"</u> | : | <u>pitch phonemes</u>   |
| "high"         | : | high, / <sup>h</sup> /, on short vowels with final stop, and in weak syllables when so heard;<br>high-high, / <sup>h</sup> <sup>h</sup> /, elsewhere. |
| "falling"      | : | high-low, / <sup>h</sup> <sup>l</sup> /.  |
| "mid"          | : | mid-mid, / <sup>m</sup> <sup>m</sup> /.   |
| "rising"       | : | low-high, / <sup>l</sup> <sup>h</sup> /.  |
| "low"          | : | low, / <sup>l</sup> /, on short vowels with final stop, and in weak syllables when so heard;<br>low-low, / <sup>l</sup> <sup>l</sup> /, elsewhere.    |
| "lack of tone" | : | mid, / <sup>m</sup> /, in weak syllables.   |
| "mid falling"  | : | high-mid, / <sup>h</sup> <sup>m</sup> /, when "falling" is so heard as result of sandhi.  |
| "mid rising"   | : | low-mid, / <sup>l</sup> <sup>m</sup> /, when "rising" is so heard as result of sandhi.  |

Treating the tones in this way not only opens the possibility of accounting for reported dialect differences in one overall system, but also simplifies the statements of morphophonemic tone adjustments. It is suggested that it also gives a systematic validity to the "weak syllables" that they do not have by other analyses.

4. The junctures and loudnesses. Kroll's statements about the internal juncture phenomena (p. 14-17), and about the pitch register and loudness



situation (p. 21-32, this being the bulk of her study) have been checked directly by the present writer and are considered accurate. They will be briefly summarized, for completeness, but are not restatements or new contributions here.

4.1. Two phonemes in sequence within a syllable are in normal transition. This kind of transition also occurs between syllables in polysyllabic utterances, such as /wānnīy/ 'today', /thāmḡāhn/ 'to work', /'ārāy/ 'what'.

4.2. A different transition is found in other items, the syllable final of the first part exhibiting added length. This is internal open transition, which is taken to be a phoneme, and is called plus juncture, /+/. Examples are: /dūw+nǎŋ/ 'to see a movie', /rōwḡ-rīhn/ 'school', /thīy-nīy/ 'here' (contrasted with its variant /thinīy/).

4.3. Utterances that are said as isolated sentences, of any length from one syllable up, are found to exhibit features of pitch-register and loudness-contour, with terminal sustention or diminution of loudness. Kroll has found five degrees of loudness, the two terminal types, and three ranges of pitch-register, with three accompanying loudness-volumes.

Middle pitch-register is always "very loud", high pitch-register is "loud", low pitch-register is "soft". The registers are found to be determined by the loudness quality of their terminals. Thus three phonemes of volume contour are established: /<sup>1</sup>/ soft (and low), /<sup>2</sup>/ loud (and high), /<sup>3</sup>/ very loud (and medium).

4.4. The three volumes, /<sup>1</sup>, <sup>2</sup>, <sup>3</sup>/ occur with both terminal sustention and terminal diminution. These two terminals are thus phonemically distinct; they are the terminal junctures of sustention, /|/ ('single bar'), and diminution, /#/ ('double cross').

4.5. Within each volume contour ending in a terminal juncture, there is one peak of loudness, its position determined by the tones and internal junctures, and all other loudnesses are determined by this position. All tone allophones are determined by the register of the loudness. Lengths are determined by the nature of the vocalic nucleus and following consonant, if any, and by the internal and terminal junctures.

5. Summary. The present statement of the 32 phonemes of Siamese presents them as summarized below. Comparisons with other systems are stated, but not separately labeled, since identification was made in the discussion above.



5.1. Consonants—14: /p t k f s m n ŋ ' l r w y h/, occurring initially alone and in the clusters /p' t' pl kl pr tr kr kw ty ph th kh phl khl phr khr khw thy/; and the finals /p t k m n ŋ ' w y h/.

Of these, /'/ initial and final is not admitted by all investigators; /y/ is often written "j"; /p'/ and /t'/ are usually called "b" and "d"; /ty/ and /thy/ are usually called "č" ("c") and "čh"; /ph th kh/ and "čh" are usually considered unit phonemes; final /p t k/ are sometimes considered to be "b d g". Final /h/ is not admitted by most investigators, who class the phenomenon with vowels.

5.2. Vowels—9: back outer /u o/; non-back outer /i i e/, inner /ə ə a ɔ/; /i/ is sometimes written "y" or "ɹ", and /æ/ is sometimes written "ε". "Long vowels" and "diphthongs" are: /uw ow iw ew æw aw/; /uy oy iy ey əy ay ɔy/; /uh ih ih əh əh ah ɔh/; /uwy owy uwh/; /iyw eyw iyh iyh/; /uhy ihw ihy əhw əhw əhy əhy ɔhy/.

The equivalents in other systems of the "long vowels" and "diphthongs" are: /uw/—"uu", "u"; /ow/—"oo", "o"; /iw ew æw aw/—the same or as "iu", etc.; /uy oy əy ay ɔy/—the same or as "ui", etc.; /iy/—"ii" or "i"; /ey/—"ee" or "e"; /uh ih ih/—the same or as "ua", "ia", "ia" (and also "uua", "iia", "iia"—also analyzed as "uuh", "iuh", "iuh"); /əh əh ah ɔh/—"əə", "ææ", "aa", "ɔɔ", or "ə", "æ", "a", "ɔ"; /uwy owy/—"uuy", "ooy"; /uwh/—"uua" or "uuh"; /iyw eyw/—"iiw", "eew"; /iyh iyh/—"iia", "iia", or "iuh", "iuh"; /uhy ihw ihy/—the same or "uay", "iaw", "iay"; /əhw əhw əhy əhy ɔhy/—"əæw", "aaw", "əəy", "aay", "ɔy", or "æw", etc.

5.3. Tones—3: high /˥/, mid /˨/, low /˩/, occurring alone and as high-high /˥˥/, high-low /˥˨/, mid-mid /˨˨/, low-high /˩˥/, low-low /˩˩/, high-mid /˥˨˨/, low-mid /˨˩˨/. In the usual systems these are: /˥/—"high" on "short final", and "allophonic high" on "weak" syllable; /˨/—"lack of tone" on "weak"; /˩/—"low" on "short final" and "allophonic low" on "weak"; /˥˥/—"high"; /˥˨/—"falling"; /˨˨/—"mid", usually unmarked; /˩˥/—"rising"; /˩˩/—"low"; /˥˨˨/—"allophone" of "falling"; /˨˩˨/—"allophone" of "rising".

5.4. Vowels—3: /<sup>1</sup> <sup>2</sup> <sup>3</sup>/; junctures—3: /+ |#/ . These phenomena have not been adequately described or analyzed in most analyses.