Three-Dimensional Phonology : A Historical Implication

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Introduction

The traditional two-dimensional phonology of any language posits a finite set of significant sounds or phonemes and a set of rules governing the admissible sequences of these sound units in the language. Theoretically a 2D phonologist can say whether a construction of sound sequences or a syllable structure of the language understudied is grammatical or ungrammatical. For example, /*gnat/ is ungrammatical but /nat/ is grammatical in English, /*pej0/[1] is ungrammatical but /pem0/ is grammatical in Thai. However, /nat/ never occurs as an English word, neither nor does /pem0/ occur as a Thai word. It has been discussed in the literature that not all the grammatical sound constructions can occur as words (Chomsky 1965, Postal 1968, Fudge 1969,1970, Peng 1972). Those constructions which do not occur as words of the present day language form the *accidental gaps* in the grammar of sound patterns of that language. It has also been observed by scholars who are interested in the phenomenon of accidental gaps that loanwords of foreign origins, expressives, onomatopoeia, and archaic words seem to fill in the accidental gaps of the phonological system nicely (Fudge 1969,1970, Peng 1972, Diffloth 1979, Luksaneeyanawin 1982).

A tripartie distinction of grammaticality has been proposed in earlier literature (Chomsky 1965, Postal 1968). However, considering Peng's proposal of the bipartie distinction of grammaticality in phonology, I would like to suggest that it is theoretically tenable to distinguish constructions of sounds at two different levels :

(1) The phonological level where there are 2 different categories i.e. grammatical and ungrammatical

(2) The phono-lexical level where the grammatical constructions fall into 2 groups i.e. the occurring and the non-occurring

The theory is illustrated in the following schema :

or archaic, and in the same manner any non-occurring admissible syllable may become *occurring* i.e. a word part or a word of the present day language. For example, /fan3/ (to massage, to squeeze), which can be found in the Dictionary of the Royal Thai Academy, is now dated in Thai, and /niŋ3/ (very good) which is a slang word in the year of this writing, is not listed as a word in the dictionary.[2]

(3) It can be explicitly stated what the phonological accidental gaps of the language are like, and how wide the accidental gaps are.

(4) The study of *the distribution of the phonological units in the occurring and non-occuring admissible phonological constructions of the language as the third dimension of phonology* can provide solid evidence from the synchronics which will contribute to the diachronic study of the language.

Three-Dimensional Phonology

The three dimensions of a 3D phonology are :

(1) The systems of the significant sound units in the language.

(2) The rules governing all grammatically admissible sound constructions or syllables of the language, of which the number is finite.

(3) The statistical distribution of the significant sound units in all the occurring admissible syllables and in all the potential non-occurring syllables.

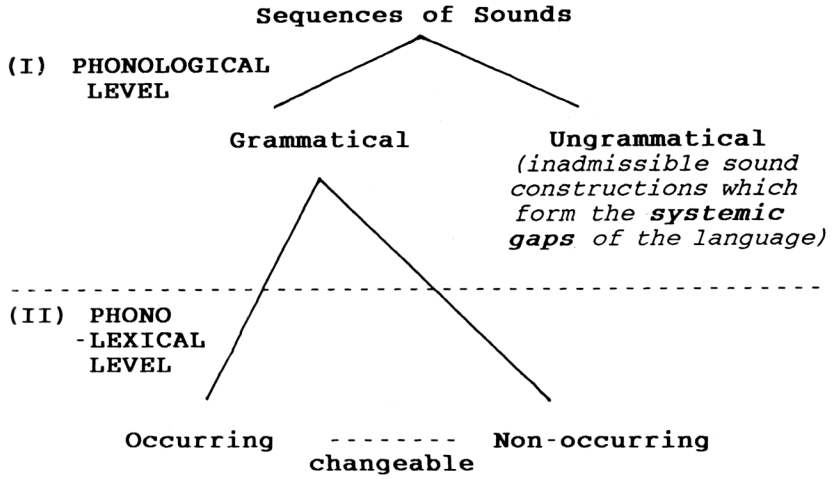
The Bangkok Thai,refered here as Thai, will be used to exemplify the 3D Phonological Theory.

The first dimension : the Thai sound systems.

Thai syllables are composed of 3 different sound systems :

(a) The system of consonants consists of 33 consonantal units, they are 21 consonants and 12 consonant clusters as follows :

p*	t*	c	k*	ʔ*
ph	th	ch	kh	
b	d			
m*	n*		ŋ*	
f	s			h
w*	r, l	j*		



*(Those grammatical sound constructions which **actually** occur as words or word parts of the present day language.)*

*(Those grammatical sound constructions which **potentially** occur as words or word parts of the language but do not occur as words or word parts of the present day language. They form the **accidental gaps** of the language.)*

Peng (1972,82) stated, "The so called accidental gaps and systemic gaps do not a priori belong to two genetically distinct and self-contained stocks of sequences of sounds; rather they form a field of sequences of sounds, *The number of which is probably infinite*." (My italics.)

It is argued here that :

(1) The number of admissible syllables or phonological constructions of a language is *finite*,[2] because these admissible sound constructions are generated from a finite set of phonemes in the language, and a finite set of rules governing the construction of them.

(2) The number of the occurring syllables (those actually occurring as words or word parts in the language) and the non-occurring (those potentially occurring as words or word parts but do not actually occur in the present day language) are *changeable*. Any occurring admissible syllable may become *non-occurring*

Only 9 consonants (those with asterisks) can occur at syllable final positions .

The consonant clusters can occur only at syllable initial positions. They are as follows :

pr	tr	kr
phr	thr	khr
pl		kl
phl		khl

kw & khw

(b) The system of vowels consists of 18 monophthongs and 6 diphthongs. The monophthongs are qualitatively 9 different vowels, each of which has 2 members, short and long. Qualitatively, there are 3 different diphthongs, each of which has 2 quantitatively different members. They are as follows :

i, i:	ɯ, ɯ:	u, u:
e, e:	ɤ, ɤ:	o, o:
æ, æ:	a, a:	ɔ, ɔ:

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ia, i:a	ɯa, ɯ:a	ua, u:a

(c) The system of tones consists of 5 tones There are 3 kinetic or relatively level tones, the high the mid, and the low, and 2 dynamic or contour tones the fall and the rise. Traditionally, they are ordere as follows :

0	1	2	3	4
mid	low	fall	high	rise

0 = the common tone /sa:4 man0/
1 = the primary tone /ʔe:k1/
2 = the secondary tone /tho:0/
3 = the tertiary tone /tri:0/
4 = the tetrad tone /cat1 taʔ1 wa:0/

The second dimension : Rules governing th constructions of the sound units

The smallest constructions of sounds c syllables in Thai composed of one vowel unit or on