STRUCTURAL LINGUISTICS IN CHINA

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Scientific linguistic research in China began with Jaw Yuan-renn (Chao Yuen-ren) and Lii Fang-guey (Li Fang-kuei), who were influenced by the American structuralism of Franz Boas, Edward Sapir, and Leonard Bloomfield. The subsequent development of linguistics in China, up to the present, has been guided by Jaw and Lii, in part through their leadership in the linguistic surveys conducted by Academia Sinica, in part through the indirect influence of their lectures and publications.

The history of the past few decades makes it impossible to limit a treatment of structural linguistics in China to work done in any geographical confines. I include here works written outside China and omit other important linguistic works published in China. In the first category are some of the later works of Jaw and Lii published in America. These publications speak to audiences both in America and in China, but they are in dialogue with Chinese linguists, particularly where they deal with Chinese, to an extent that other linguistic works cannot be. In the second category are works which do not play a pioneering role in the application of structuralism to any area of Chinese linguistics.

Jaw Yuan-renn

During the thirties and forties, Jaw Yuan-renn initiated and was in charge of a survey of Chinese dialects sponsored by Academia Sinica's Institute of History and Philology. With the assistance of Yarng Shyr-ferng, Wu Tzong-jih, Ding Sheng-shuh, Doong Torng-her, and Jou Faa-gau, he covered the provinces of Kwang-tung, Kiang-si, Hu-peh, Hu-nan, Yün-nan, and Sze-chuan.

In addition to his prolific writings on phonetics and modern Chinese dialects, Jaw is the author of four noteworthy works embodying the structural approach: "The non-uniqueness of phonemic solutions of phonetic systems" (1934), "Distinctions within Ancient Chinese" (1941), *Language and Symbolic Systems* (1968), and *A Grammar of Spoken Chinese* (1968).

In "The non-uniqueness of phonemic solutions of phonetic systems" Jaw

showed that there is no one, mechanical way of reducing the sounds of a language to a system of phonemes. (In the 1955 reprint of this article Jaw noted that "this was written at a time when the differences between transcription and phonemicization and between phonemes and morphophonemes were not as clear as they are today".) In a phonetic transcription there is one symbol for one sound (i.e. the "smallest static unit of sound analyzable by the trained ear". In a phonemic analysis the linguist may legitimately diverge from this sort of one-to-one correspondence: one sound may be analyzed as two phonemes, two as one, one as none, and none as one. The reasons for such divergence are not capricious; they include the need for a minimum degree of accuracy, simplicity or symmetry of phonetic pattern, parsimony of entities, the feeling of the native speaker, regard for etymology, mutual exclusiveness between phonemes, and symbolic reversibility.

Morphophonemic alternations such as those, common in Chinese, of affricates with stops or of diphthongs with simple vowels provide the basis for under-analyzing two or more sounds as one. This latter type of alternation in Foochow offers, as Jaw says, "the most interesting case of the size-of-unit question". Simple vowels occur in Foochow only in tones with no rising element (55, 53, 22, 5); diphthongs occur in these tones as well as tones with a rising element (12, 242, 23):

	Rising	Level, Falling	Examples
i		55, 53, 22, 5	khi 53 ɑk 23 'air pressure'
ei	12, 242, 23	55, 53, 22, 5	khei 12 'air'; eiŋ 53 ŭiɛ 12 'limit'
ai	12, 242, 23		aiŋ 242 'limit'
u		55, 53, 22, 5	hu 55 iŋ 55 'guards'
ou	12, 242, 23	55, 53, 22, 5	hou 242 'protect', louŋ 55 ŋuŋ 53 'essay, dissertation'
əu	12, 242, 23		ləuŋ 242 'discuss'
y		55, 53, 22, 5	ty 5 ʔaik 23 'bamboo section'
ɐy	12, 242, 23		tɐyk 23 'bamboo'

To analyze these eight vowels as five phonemes (i ~ ei, ei ~ ai, u ~ ou, ou ~ əu, y ~ ɐy), with ei and ou each as members of two phonemes, may appear at first glance to violate the criterion of mutual exclusiveness between phonemes. This violation is, however, only apparent, since the tonal environ-

ments of the ei of /i/, 12, 242, 23, and the ei of /ei/, 55, 53, 22, 5, and of the ou of /u/, 12, 242, 23, and the ou of /ou/, 55, 53, 22, 5, are not the same. In favor of this analysis (which includes the underanalysis of some instances of ei and ou as i and u) are the native speakers' feeling and the historical genesis of these vowels through diphthongization (i → ei, u → ou, y → øy) and the opening of vowels (ei → ai, ou → əu).

Parsimony of entities might motivate the overanalysis of one sound as two. In a system with both voiced and voiceless nasals, for example, one may avoid positing a whole additional series of phonemes for the voiceless nasals by analyzing them as h plus voiced nasal: voiceless m would then be /hm/, a breathed m or labionasalized h; voiceless ŋ would be /hŋ/, a breathed ŋ or velonasalized h; and so forth. A lesser economy is effected by the analysis of one of the stress, intonation, length, or tone phonemes as zero. The analysis of a phonetic zero as a phonemic unit may have wider ramifications, as when the National Phonetic Script of China (officially adopted in 1918) treats [ən], [in] as /ən/, /iən/, thereby producing a more symmetric pattern and at the same time accounting for the rime of [ən] and [in] in the Peking dialect.

In "Distinctions within Ancient Chinese" (1941), Jaw was the first to apply phonemic principles to Karlgren's phonetic reconstruction of Ancient Chinese, On the basis of complementary distribution Jaw established, for example, an /i/ phoneme where Karlgren had i, i̯, and an /u/ phoneme where Karlgren had u, w:

/i/ (1) i as an ending in -ai; this allophone, he said, though it was probably open, need not be determined as being either close or open.
(2) an open i ([i]) before "unmodified" (i.e. long) e
(3) a close i ([i̯]) when alone or followed by vowels other than long e

/u/ (1) u as an ending in -au
(2) u as the vowel in -uŋ, -iu, and -iuŋ
(3) a vocalic glide: not preceded by -i- and before the vowels a, ə, ɐ
(4) a short, consonantal glide w before other vowels

For open and close i, Jaw went on to propose an alternative solution: instead of making the openness and closeness of /i/ depend on the following -e- and -ä- in -ien and -iän, it is possible to treat the difference between i and i̯ as phonemic, subsuming the -e- of -ien and the -ä- of -iän under one phoneme, symbolized either /e/ or /ä/. Jaw also suggested a relationship between ä and ɐ parallel to that of ĕ and ə: just as ĕ is the short correspondent of ä (or e), so

ə is the short correspondent of ɐ.

In Karlgren's system, there are pure and yodized initials, e.g. p, pj; t, tj; k, kj. With two exceptions, the velar consonantal initials occur in pairs; of the yodized initials, only ghj has no pure correspondent; of the pure initials, only ɣ has no yodized correspondent:

k	kh		χ	ɣ	ŋ	ʔ
kj	khj	ghj	χj		ŋj	ʔj

Following the lead of Gee Yih-ching (Ku Ye-ching) (1932), Jaw filled in one of these gaps, by pairing shya (ɣ) with yü (Karlgren's j, Jaw's ɣi̯):

k	kh		χ	ɣ	ŋ	ʔ
ki̯	khi̯	ghi̯	χi̯	ɣi̯	ŋi̯	ʔi̯

There remained now just one gap in patterning; this was eliminated some thirty years later when Lii Rong (1965) reconstructed a plain voiced velar stop initial for Ancient Chinese, the counterpart to Karlgren's *ghj.

Jaw's ***Language and Symbolic Systems*** (1968) is a wide-ranging treatment of the many facets of linguistics and its application, such as phonetics (auditory, articulatory, and acoustic) and phonemics, grammar and semantics, linguistic change, classification of the languages of the world, writing systems, foreign language study, and atranslation. In the discussion of phonemics, grammar, and semantics Jaw advocates structural values. Phonemes may be viewed as a group of different sounds which behave equivalently, or as a set of distinctive features. (Jakobson, Fant, and Halle's work is a development of Bloomfield's insights.) There are three criteria for determining membership in phoneme classes: phonetic similarity, complementary distribution, and symmetrical distribution. In the case of marginal phonemes there may be a conflict in the application of these criteria. The Nanking dialect, for example, has just one contrast of velar with palatal: /khi/ : / hi/. On the basis of complementary distribution, [k] ~ [tš) would be assigned to one phoneme. Application of the symmetry criterion, on the other hand, would require establishment of /k/, /tš/ phonemes to parallel /kh/, /tšh/. In semantics, Jaw hails the structural analysis of meaning, such as that advocated by Sydney Lamb, which sets up a semantic unit, the sememe, parallel to the formal units of phoneme, morpheme, and lexeme.

The grammatical concepts outlined in ***Language and Symbolic Systems*** are those which we will see applied in the ***Grammar of Spoken Chinese*** (1968), with immediate constituents "the basic conception in horizontal structure". Here

Jaw concedes that immediate constituent analysis cannot produce a generative grammar, "which shall give all those and only those forms which can occur in the language" but must be supplemented by transformations: "the most important function of transformation is that it can carry on where IC analysis stops short of a complete explanation of a structure" (*Language and Symbolic Systems*, pp. 64–5). At the same time, "a complete transformation of generative grammar of any language is still a matter of the future," and Jaw does not include transformations in his *Grammar of Spoken Chinese*.

A Grammar of Spoken Chinese (1968) is the culmination of many years' interaction in the work of Jaw and other Chinese linguists. In response to the publication of Jaw's *A Mandarin Primer* (1948) Lii Rong translated the grammar section of the *Primer* into Chinese (1952), and a study group was set up in the Institute of Linguistics of Academia Sinnica (Peking), under the leadership of Ding Sheng-shuh, to work on the grammatical ideas presented there. This group soon published a grammar, which though less detailed is strikingly similar to the *Grammar of Spoken Chinese* [*Jong-gwo Yeu-wen:* July, 1952, to November, 1953; seventeen installments).

Jaw's *Grammar* is cast in the structural mold of Bloomfield. It is explicitly synchronic, descriptive, and taxonomic. In defense of this method Jaw says here: "Conceivably, if classification were thorough and complete enough, it would contain enough information about the structure of the language to tell what does and what does not occur and would give what has recently been called a generative grammar. In practice, however, the usual classificatory categories found in grammars neither give all the essential facts of structure nor enable one to produce all those and only those forms which are grammatical in the language analyzed."

Jaw accepts Bloomfield's definition of the grammar of a language as composed of four ways of arranging linguistic forms: (1) order, e.g. goou yeau ren 'dog bits man', ren yeau goou 'man bites dog'; (2) modulation, where contrasts in the secondary phonemes of stress, juncture, and intonation signal grammatical differences, e.g. jian biing 'fries cake', a verb-object construction, vs. jian.biing 'fried cake', a subordinate compound; (3) phonetic modification, where the contrasts are those of primary phonemes, e.g. the adjective hao 'good' vs. the verb haw 'finds good, i.e. likes'; and (4) selection, the choice of a form from a class of forms which can occur in a given slot or frame. The selection

of hao or jao in hao-ren 'a good person' vs. jao-ren 'to find a person', for example, signals the difference between modifier-modified and verb-object, since hao belongs to the class of words which may occur in the modifier slot while jao belongs to the class which occupies the verb slot. In a small minority of cases, Chinese parts of speech may be recognized by definite markers (nouns, for example, by nominal suffixes, verbs by verbal suffixes, with only a few cases of class-overlapping, in which verbs take otherwise nominal suffixes). Most words, however, belong to parts of speech by virtue of their positions in functional frames, and classes are determined by selection. maa 'horse' and gongshyh 'formula' are, for instance, identifiable as nouns because they occur in the functional frame Numeral—Auxiliary Noun—X. charng 'long' and yawjiin 'important' are adjectives: that is, they occur in the functional frame Adverb of Degree—X. Jaw classifies verbs by means of ten functional frames and two syntactic criteria. (See his Table 18.) ar and ŋ are interjections: they occur only in zero frames, that is, they do not occur in construction with anything else.

Though modern Chinese utilizes all four garmmatical functions, order and selection, as Jaw says, play much more significant roles than modulation or phonetic modification.

From sentence down to morpheme, Jaw's main approach is that of immediate constituents. In analyzing sentence structure, the immediate-constituent splits of subject and predicate have the meaning topic and comment (not actor and action, except as one type of topic and comment): the subject is the subject matter to be talked about; the predicate is the speaker's comment on this. The topic, like a question, is marked formally by its position, followed first by a pause, potential or actual, or pause particle (e.g. ne) and then by the comment, which is like an answer to the question posed by the topic. This favored model of a sentence, with both subject and predicate, is defined as a "full" sentence. Any other utterance is a "minor" sentence. (Minor sentences include, for example, responses such as Duey 'Correct'.) A complex full sentence is one where both subject and predicate are themselves full sentences and the subject is subordinate to the predicate, e.g. Woo (yawsh) mei sheang.daw ne, nii jiow wanqle 'If I hadn't thought of it, you would have forgotten'.

Jaw also uses the structuralists' endocentric-exocentric classification. An endocentric construction is one which contains the center of which it is an expansion (e.g. i-hwu chi char de shoei 'a kettle of water for making tea', with

the center 'water') as opposed to an exocentric construction (e.g. sheue-lii horng 'turn red in the snow', the name of a vegetable, where the center is not expressed). Jaw confirms for Chinese what Bloomfield said of langnages in general, that there are few exocentric constructions. The case of endocentric constructions used exocentrically in compounds is, however, more common. For example: pao-jie 'run the streets—run errands' (endocentric); paojie 'run the streets—errand boy' (exocentric).

In discussing the co-occurence of morphemes Jaw adopts Bloomfield's 'free' and 'bound' concepts and Emeneau's 'free' (renamed 'versatile' by Jaw) and 'restricted'. The concepts 'free' and 'bound' are absolutes: a 'free' morpheme can occur by itself, though it need not always; a 'bound' morpheme cannot, but must always be preceded or followed, without pause, by another morpheme. 'Restricted' and 'versatile' are extremes on a relative scale: 'restricted' morphemes occur in at most a few narrowly-defined contexts; 'versatile' morphemes occur in many. Both free and bound morphemes may be either versatile or restricted. For example: ren 'person' (free-versatile); mian 'to stop feeding for awhile after feeding for a few days' (free-restricted) occurs only with tsarn 'silkworm'; -tz, a noun-forming affix (bound-versatile); -shyr 'eclipse' (bound-restricted) in ryhshyr 'solar eclipse' and yuehshyr 'lunar eclipse'.

Lii Fang-guey

Lii Fang-guey, a student of Sapir, began his linguistic fieldwork in the area of American Indian linguistics (comparative Athabaskan) in America and Canada. On his return to China Lii specialized in non-Chinese languages of China; one of his earliest publications was on Tibetan linguistics. During the thirties and forties he occupied a position parallel to that of Jaw in Academia Sinica's Institute of History and Philology. Lii was responsible for training young linguists to investigate the non-Chinese languages spoken in China. Under his influence, a group of linguists carried out fieldwork in southwestern China, applying phonemic principles to a number of dialects. The members of this group and the dialects on which they have published reports were Lii himself (Tai dialects of Lorng-jou, Wuu-ming, Jeeng-doong, and Dwu-shan; the Mak dialect of Lih-bo; Sui dialects of Lih-bo and Rorng-jiang; the Yarng-hwang dialect of Huey-shoei), Yuan Jia-hwa (Yi dialects of Luh-nan and Mi-leh), Maa Shyue-

liang (Yi dialects of Luh-chiuann and Luh-nan), Gau Hwa-nian (the Yi dialect of Kun-ming, the Hani dialect of Yarng-wuu, and the Miao dialect of Er-shan), Fuh Maw-jih (the Moso dialect of Wei-shi, the Yi dialect of the Tah-liang Mountains, and the Tai dialect of Yeun-jiing-horng), and Jang Kun (Chang Kun) (the Moso dialect of Lih-jiang, the Jyarong dialect of Lii-fan, and the Miao dialect of Goang-shunn). In his later publications Lii has focussed on Chinese historical phonology and comparative Kam-Sui-Tai linguistics.

In "Certain phonetic infuences of the Tibetan prefixes upon the root initials" (1933), Lii investigated the morphophonemic alternations of root initials in Classical Tibetan, in order to reconstruct the "original" initials for comparative studies. Lii approached the problem in two ways, through the general distribution of prefixes and root initials in relation to one another and through the occurrence of alternant initials in cognate forms.

The distribution of Tibetan prefixes and root intials in relation to one another shows a high degree of complementary distribution; that of the stop prefixes b-, g-, d- before the nasal initials is, for example, complete:

Prefix \ Initial	ṅ	ñ	n	m
b	0	0	0	0
g	0	+	+	0
d	+	0	0	+

There is, however, also overlap, in for example the distribution of the stop prefixes before the stop initials:

Prefix \ Initial	k	g	t	d	p	b
b	+	+	+	+	0	0
g	0	0	+	+	0	0
d	+	+	0	0	+	+

Lii considers three types of combinatory changes involving prefixes and initials:

1. Dissimilation: "…prefix *b-* cannot stand before labial initials, prefix *g-* cannot stand before guttural initials, prefix *d-* cannot stand before dental plosives, fricatives, and affricatives, etc." As an example of the absence of prefixes of a given place of articulation before initials of the same place of articulation, Lii cities the loss of the prefix *b-*, which denotes the acting subject, when the initial is a labial; this prefix is present when the initial is a nonlabial, e.g.

s-kum-pa, b-s-kums, b-s-kum, s-kums 'to contract, to draw in (the legs)'

s-poṅ-ba, s-paṅs, s-poṅs, s-poṅs 'to give up, renounce'

2. Changes in initials caused by prefixes. Classical Tibetan has simple fricative initials in absolute initial position; there are no fricatives after the prefix ạ- [the nasal prefix "a-chung"] and forms with fricative initials in absolute initial position show affricate alternants after ạ-, e.g. śi (perfect) 'to die', ạ-tśhi-ba (present). The clear inference is that ạ- has caused the production of an epenthetic stop element, or affrication. A parallel case, with the additional changes of loss of prefix and metathesis, is that of roots with l- initials, e.g. log (perfect) 'to return', l-dog-pa (present) ← *ạ-log-pa; again there is no sequence *ạ-l-. Another change in initials is the deaffrication of voiceless affricates brought about by the s- prefix, e.g. tshad 'measure, the right measure', sad-pa ← *s-tshad-pa 'to test, examine' (cf. phuṅ-po 'a heap', s-puṅ-ba 'to heap, to accumulate'; there is just one instance of s- followed by a voiceless affricate in Classical Tibetan, stsol-ba 'to give'). On the grounds that Classical Tibetan has sequences of s- followed by both voiceless and voiced unaspirated stops, Lii, however, rejects the suggestion that voiceless aspirated stops may have their origin in such sequences. (The best examples of this sort would be in causatives such as phab (perfect) [← *b-s-bab?] 'to cast down', corresponding to bab(s) (perfect) 'to move downward', but cf. s-par (perfect) 'to cause to get increased' to a noncausative ạ-phar-ba 'to be increased' and s-byar (perfect) 'to affix, fasten, stick' to a noncausative ạ-byar-ba 'to stick to, adhere to'.) At the same time, on grounds of insufficient evidence, Lii rejects the suggestion that the voiceless-voiced initials of Tibetan have inherent transitive-intransitive functions.

3. Changes in prefixes caused by initials. Here Lii is very hesitant, admitting only the possible case of the prefixes d- and g-, "whose notorious compensatory behavior has made many people suspect them of a single origin".

Lii proved his case in this paper: Tibetan prefixes do bring about changes in the initials. His observations on the ways in which they do this laid the foundation for any further historical studies of Tibetan phonology. Changes in the opposite direction, i.e. changes in prefixes brought about by initials have, however, another dimension which makes them more resistant to treatment: there are many instances of doublets where the difference is one of prefixes (e.g. 'to meet' is either b-thug-pa or g-thug-pa). This is not the case with initials: 'to die' (present) is only a-tshi-ba, never *a-si-ba.

The structuralist demand for rigor, coupled with the lingering influence of the neogrammarian dictum that sound changes admit of no exception, may have blocked the way to the explanation of these doublets; a phonological theory which encompasses, for example, double developments and incomplete sound changes is needed to derive the stop prefixes of differing places of articulation from one proto-prefix. (A recent work has extended Lii's study in this way to Tibetan phonology as a whole: Betty Shefts Chang, "The Tibetan causative: phonology", *BIHP* 42:4.623–765 [1971].) It is true that prefixes of a given place of articulation cannot stand before initials of the same place of articulation. The loss of the prefix is, however, peculiar to b-; parallel losses of g- and d- would imply that there were three original prefixes, b-, g-, and d-. Where g- is found, however, as it is before dental initials, it is not the case that we find no prefix before velar initials; instead, we find the prefix d-. Examples:

(a) a-gebs-pa, b-tags, g-dags, thogs 'to bind'
a-gebs-pa, b-kab, d-gab, khob 'to cover'

(b) g-tug-pa 'to be able'
d-krug-pa 'to be disturbed'

And where we find d- before velar and labial initials, we find g- before dentals. Moreover, where we find b- before velars and dentals we may find d- before labials, not zero. For example: b-kur-ba 'to honor', b-tod-pa 'to fasten' : d-pog-pa 'to measure'. Finally, with stop prefixes doublets are of b- and g- (e.g. b-tug-pa, g-tug-pa 'to be able') and b- and d- (e.g. b-kri-ba, d-kri-ba 'to wind, wrap'), not g- and d-. That is, *b- had diversified to g- and d-.

"The zero initial and the zero syllabic" (1966) is another example of Lii's pursuit of symmetry and economy in phonemic systems. A zero initial for Mandarin had been recognized, e.g. by Hockett, where phonetically the semivowel fricatives [ɤ] and [ʕ] occur, in ēn ài [ɤə̃ ʕai] 'to love fondly'. The "bright-

colored [ɤ] is found before /e/, the "dark-colored" [ɤ̣] before /a/.) For this zero initial Jaw suggested /ɤ/. Martin extended its allophones to include [ɤ] before e, a, [j] before i, and [w] before u.

Lii proposes a different interpretation of [ɤ] and [ɤ̣]: following the lead of Hartmann and Hockett in the use of zero syllabics (i.e. syllabics all of whose phonetic features derive from a preceding segment), he elevates all syllabics (ɤ and ɤ̣, as well as s, r, j, w) to phonemic status in a system in which there is no separate vowel distinction and in which, for example, ɤ̣ would symbolize [a], as well as [ɤ̣].

The possibility of different phonemic analyses for Mandarin, with a mix of semivowels and vowels in varying proportions, from all to none, Lii attributes to the overlap of distinctive features in a continuum of segments. In a conclusion reminiscent of Jaw's "non-uniqueness", he points out that "the adoption of one analysis over another is often influenced by factors that are not necessarily structural". His only argument in favor of the no-vowel analysis, which he finds „admittedly awkward", is offered half-heartedly: "I can imagine that an orthography with no vowels might readily adopt such an analysis".

In "Hann-yeu yeu-faa shanq de jii-g ji-been guan-niann" (Some fundamental ideas of Chinese grammar, 1956), a lecture delivered at National Taiwan University, Lii affirmed the tents of structuralism: 1. Units. The smallest units of a language are the phonemes, which have no meaning, and the morphemes, which do; complementary distribution is the criterion by which allomorphs of a morpheme are identified; since no satisfactory semantic approach to linguistic structures has been devised, linguistic analysis must work primarily through form. 2. Structures. The approach Lii recommends here is that of immediate constituents. Two important immediate-constituent structures are the subject-predicate relation and the subordinate relation. For Chinese, the method of substitution is used to establish form classes, since, unlike Indo-European languages, Chinese has very few morphological characteristics capable of fulfilling this function.

In his *Shanq-guu-in yan-jiow* (Studies on Archaic Chinese Phonology, 1971), Lii offers a drastic revision of Karlgren's reconstruction of Archaic Chinese, based on investigations of the riming practice in pre-Chyin texts, the analysis of Chinese characters (e.g. phonetic compounds), and comparisons with the "Ancient Chinese" categorizations of the *Chie-yunn*, a rime dictionary completed in 601 A.D. Lii's system is distinguished by its economy (cf. Charts 1

and 2); this derives in large part from the prominent roles Lii assigns to r, j, i, and w. The various combinations into which his Archaic phonemes enter produce the more complex system of Ancient Chinese.

p	ph	b	hm	m		
t	th	d	hn	h	hl	l, r
ts	tsh	dz			s	
k	kh	g	hŋ	ŋ		
ʔ					h	
kw	khw	gw	hŋw	ŋw		
ʔw				hw		

Chart 1. Lii's Archaic Chinese Initials

iŋ	ik	ig				in	it	id			
əŋ	ek	əg	əŋw	əkw	əgw	ən	ət	əd	ər	əm	əp	əb
ɑŋ	ɑk	ɑg		ɑkw	ɑgw	ɑn	ɑt	ɑd	ɑr	ɑm	ɑp	ɑb
uŋ	uk	ug									

Chart 2. Lii's Archaic Chinese Finals

[There are no open syllables in this system.]

(1) Postconsonantal r eliminates Karlgren's retroflex series for Archaic; prevocalic r makes for a fewer number of vowels. Consonant + l clusters had been posited for Archaic Chinese before Lii (first by Jakhontov), it was Lii's contribution to see in these examples two subgroups, Cr- and Cl-. Lii's initial r- replaced some of Karlgren's instances of *d- and *g-. Lii's *-l- had no effect on either preceding consonants or following vowels. The *-r- caused dentals to change to retroflex and vowels to centralize (that is, Archaic tr, thr, dr, drj, nr, tsr, tshr, dzr produced Ancient ṭ, ṭh, ḍ, ḍj, ṇ, ṭs, ṭsh, ṣ; i lowered to ɛ or a, ə to ɛ or a, u to ă; ɑ raised to a or ɐ). These changes brought complexity to Ancient Chinese but their realization made it possible to devise a more economical underlying system, which Lii posits as Archaic.

After voiceless labial or velar stops both *r and *l are lost in the Archaic to Ancient transition (Chart 3). After voiced stops and nasals, the *r is also lost when it is not followed by *j; it is, however, the stop/nasal which is lost when *l follows. When such sequences are followed by *j, voiced stops are lost in both cases, and nasals before *-r-, but the *-r- appears to have been retained: that is, as *r- changes to *ji-, so *brj-, *grj-, and *ŋrj- change first to *r- and then to *ji-.

Archaic	Ancient	Archaic	Ancient
pr	p		
kr	k	kl	k
		plji	pj
		phlji	phj
		klj(i)	kj
		khlj	khj
br	b	bl	l
gr	g	gl	l
mr	m		
		ŋl	l
brj	ji	blj	lj
grj	jɨ	glj	lj
		mlji	lj/mj
ŋrj	ji	ŋlji	ŋj

Chart 3

The Development of Lii's Archaic Chinese *-r-, *-l- Clusters

(Lii does not specify the intermediate changes. The inspiration for an *r- to *ji- change he found in comparative Tai. It should be noted that there are no examples of voiceless labials or velars + *-rj, that *brj- is supported by only one example and that Lii himself questions *ŋrj-.)

(2) Postconsonantal j eliminates Karlgren's palatal series for Archaic. (Lii's Archaic tj, thj, dj, nj produce Ancient tšj, tšhj, dž j/ž j, ň ž j). After -j-, Lii's four vowels undergo a great variety of changes from Archaic to Ancient; this follows from the acceptance of all of the *Chie-yunn's* categories. These changes depend not only on the presence of the -j- but also on the nature of the initial and final consonants. There is, for example, some palatalization or fronting, e.g. -jəd → -jĕi, but there is also backing, e.g. -jəŋ remains -jəŋ unless the initial is a labial when it changes to -juŋ.

Full exploitation of the possible contrasts of i and j is another way in which Lii avoids adding to the number of Archaic vowels. i is used both as the main vowel, before velar and dental endings (where it contrasts with -ji-), and as the first member of diphthongs, before ə and ɑ followed by velar, dental,

and labial endings. After labial, velar-laryngeal, and labio-velar-laryngeal initials there are a number of constrasts of -jV- and -jiV-, such as -jəŋ/-jiəŋ. Also, j may be preceded by r, in which case r changes preceding dentals into retroflexives; when j is followed by r, r centralizes the vowels which follow it. To explain certain *Chie-yunn* doublets, Lii also posits -r- : -ri- contrasts (-ran/-rian, -rat/-riat, -rad/-riad, -ram/-riam, -rap/-riap).

(3) Labialized velars, posited for final position as well as initial (cf. Chart 2), do away with rounded vowels in Archaic Chinese. (There are no rounded vowels before dentals or labials in Archaic.)

Lii also posits a wider distribution for *s-, preconsonantal as well as prevocalic (Chart 4). This is one of Lii's contributions which does not affect the economy of his system. Its merits are that it accounts for certain facts in the structure of phonetic compounds and promises to be of value in comparing Chinese with other Sino-Tibetan languages, where the s- prefix is common. Evidence for these reconstructions, as Lii says, may be found in the study of old Chinese loanwords in other Asian languages.

Arch.	Anc.	Arch.	Anc.	Arch.	Anc.	Arch.	Anc.	Arch.	Anc.
sm	s	smr	ṣ						
				snj	sj				
				slj	ṣj				
				sŋj	ʂ ʐ				
st	s			stj	sj				
sth	tsh (?)			sthj	ʂj				
sd	z/dz (?)								
sk	s			skj	t j	skw	sw	skwj	swj
skh	tsh (?)	skhjr	thj	skhj	t hj/ ʂj				
sg	dz			sgj	zj/ dzj; ʐ/ dʐj			sgwj	zwj

Chart 4
Lii's Archaic *sC- Clusters

On tones Lii did not commit himself conclusively: he assumed tentatively the existence of tonal distinctions in Archaic Chinese, but did not exclude the possibility that these distinctions derived from segmental differences. He suggests that words with level tones had no postconsonantal endings, and assigns the symbols -x and -h to words with nonlevel tones: -x for rising tones, -h for falling tones.

Lii's work on the synchronic aspects of the Tai and Kam-Sui language families has been reflected in articles and monographs on a variety of dialects, with phonemic analyses, texts, and songs. (For a bibliography of Lii's publications from 1930 to 1967 see *BIHP* 39.453–7 [1969].) His concurrent interest in the diachronic aspects was manifest as early as 1943, in "The hypothesis of a preglottalized series of consonants in Primitive Tai". The problem Lii confronts in this paper has two facets: (1) There are modern Tai dialects which have a voicing distinction in initial labial and dental stops. Reconstructed Primitive Tai has this same distinction. However, the voiced labial and dental stops of Primitive Tai are unvoiced in the modern dialects. The modern voiced stops must have some other origin. (2) Though these stops are voiced in modern dialects, they function, in their influence on tone, like Primitive Tai voiceless initials.

As a solution to this problem Maspero had suggested a voiceless lenis series: voiceless to account for modern tones, lenis to account for modern voicing. Lii proposes, rather, to reconstruct a preglottalized voiced series, and cites as evidence two facts: (1) These stops are rarely simply voiced: they most often have preglottalization, ranging from weak to strong, according to the dialect; in one group of dialects there are, instead, voiced nasals or laterals. (2) It is regularly the first element in clusters that determines the tone in Tai, and this proposed series of preglottalized voiced stops behaves like glottal-stop initials. In most dialects, this means as voiceless initials; such voicing as there is is restricted to certain tones in a limited number of dialects.

Lii also adduces evidence for a *ʔj- initial. In the absence of a complete series of preglottalized initials (there is, for example, no evidence for a *ʔg-), Lii leaves open the question of whether there was originally a special group of consonants or whether these preglottalized initials resulted from the coalescence of an original prefix plus *b-, *d-, and *j-.

In "Consonant clusters in Tai" (1954) and "Dental clusters in Tai" (1972), Lii continued his investigations into Proto-Tai with the reconstruction of a subsystem of consonant clusters with liquids, l and r, as their second member. (Cf. Chart 5). Underlined clusters are those added in 1972 "on the basis of some curious irregularities in the correspondences of what is generally assumed to be Proto-Tai *r- and on the basis of some special correspondences in Saek and Sui of what is generally assumed to be Proto-Tai *ʔd-".

Lii's correlation of Proto-Tai *r with aspiration in some of the modern dialects is of particular interest for phonology. Apparently, the devoicing of initials which was limited in some dialects to the stops, extended in other dialects, in the converse of rhotacism, to *r-. The end result of this process was h-. So, for Proto-Tai *r- Shan has h-, corresponding to Siamese r-. And in some dialects, voicing in words with stop plus r clusters began not with r but with the vowel, and again the *-r- yielded -h-. So, for Proto-Tai *gl-, Siamese has khl-, Shan has k- (e.g. 'to catch with a rope', Siamese khlɔɔŋ, Shan kɔŋ); for *gr-, Siamese has khr-, Shan has kh- (e.g. 'mortar', Siamese khrok, Shan khok, 1954.377). Lii's own statement of this process is that the *r caused the preceding stop to be aspirated. Proto-Tai *tr-, for example (1972.2–3), yields Proto-Northern Tai *tr- and Proto-Southwestern Tai *t- in Lii's system, but Proto-Central *thr- (e.g. with Proto-Tai *tr-, PSW *t- → Siamese t- in taa 'eye', PN *tr- → Wuu-ming r- in ra, PC *thr- → th- in Tho tha, h- in Lorng-jou haa).

pl- pr-	phl/r-	bl- br-		vl- (?) vr-	ʔbl/r-	ml/r-
tl- tr-	thl- thr-	dl- dr-		zl- (?)	dl/r-	nl/r-
kl- kr-	khl- khr-	gl- gr-	χl- (?) χr-	ɣl- (?) ɣr-		ŋr- (?)

Chart 5
Proto-Tai Liquid Clusters (Lii 1954, 1972)
[Note: *dl- (1972) replaces *l/r/ (?) (1954).]

Lii brings together the various strands of his work on Tai and Kam-Sui in a publication which clarifies the relationship between these two groups of languages and also demonstrates that there is a Northern Tai subgroup on a par with the Southwestern and Central subgroups ("The Tai and Kam-Sui languages", 1965. Of the several hundred examples which Lii offers in evidence, 269 are of assumed Sui-Tai cognates.) Earlier attempts to reconstruct Proto-Sui-Tai Lii rejects as "ad hoc modifications of a system reconstructed chiefly on the basis of the Southwestern subgroup of the Tai languages". Among the difficulties which must be resolved before Proto-Sui-Tai can be adequately reconstructed are those involving the specification of initials. For example: though Sui has plain voiced and preglottalized voiced initials, Tai has no single correspondence for the plain voiced type, and Proto-Sui has several correspondences for Proto-Tai *ʔd-; in addition to the voiced and voiceless nasals of Proto-Tai, Proto-Sui has a preglottalized series; and there is a frequent absence of agreement in the aspiration of Sui and Tai stops. An approach Lii offers to the solution of problems in the reconstruction of vowels is one he has used in his treatment of Archaic Chinese —posit a more widespread occurence of *-w- and *-j- semivowels in the proto-language than is attested in the modern languages.

Wang Lih

Wang Lih received his doctorate in France. His exposure to American structuralism was indirect; he had done his early graduate work under Jaw at Tsinghua College; his close friendship with Lii Fang-guey also had its effect. After his return to China from France, Wang taught linguistics at National Tsinghua University in Peiping, where he translated de Saussure's *Cours de linguistique gênérale* into Chinese for his students. (This translation was never published.) During the Second World War, he taught at the National Southwestern Associated Universities in Kun-ming; after the War, he taught at the National Sun Yat-sen University in Canton. He is now a professor of Chinese linguistics at Peking University. Wang's interests are in Chinese historical phonology, Chinese poetic prosody, the history of the Chinese language, and Chinese grammar.

Of Wang's prolific writings, his *Jong-gwo yeu-faa lii-lunn* (Principles of Chinese grammar; 2 vol., 1944–45) is of the most theoretical significance, provid-

ing, as it does, the foundation for the grammatical system Wang designed for modern Peking Mrndarin; this system Wang presented in ***Jong-gwo shiann-day yeu-faa*** (Modern Chinese grammar; 2 vols.: prepublication version, 1939, 1942; formal publication, 1943–44). In true structural spirit, Wang explicitly sets as his goal the description and analysis of the dialect of one place and one time; his purpose is to discover the special characteristics of this dialect.

Wang accepts Bloomfield's binary analysis of Chinese as composed of full words and particles, but disagrees with his particular assignment of elements of the language to these two classes. He finds Bloomfield's definition of word too narrow even for English, where it disqualifies as words the articles "the" and "a"; the definition of particle, which equates this for Chinese with marker, he finds too broad, prefering to classify as full words sentence-final particles such as ma, ne, or le, i.e. particles which are in immediate-constituency with the rest of the sentence. He defines markers as grammatical elements attached to words, phrases, or clauses, which they may either precede or follow, to express their nature or quality. Although in his ***Principles*** (p. iii) Wang says that in grammatical analysis formal criteria are more important than semantic criteria, he relies heavily on the latter throughout his work. In a basically meaning-oriented discussion, he gives examples of seven types of markers:

1. r-, e.g. hua-r 'flower'; -tz, e.g. juo-tz 'table', -me, e.g. tzem-me 'this way'
2. Lao-, e.g. Lao-wang 'Old Wang', A-, e.g. A-san 'the third (name for a person)'
3. -tour, e.g. guanq-tour 'interesting spots for sightseeing', chy-tour 'interesting food to eat'
4. -men, e.g. woo-men 'we', ren-men 'people'
5. -le, e.g. chy-le fann 'having eaten'; -j, e.g. tzoou-j luh 'walking'
6. -de, e.g. tzoou-de tay kuay 'walk too fast'
7. -de, e.g. horng-de huar 'red flower', ta-de dong-shi 'his belongings'

While Wang recognized the validity of Bloomfield's full word—particle distinction, he did not agree that these were the sum total of Chinese parts of speech. In this he was influenced more strongly by Jespersen and his concepts of notional categories as on a par with syntactic categories. In the 1944–45 edition of ***Principles*** Wang recognized nine parts of speech, i.e. nine basic notional categories, for Chinese: (1) nouns, (2) numerals, (3) adjectives, (4) verbs, (5) adverbs, (6) substitutes, (7) copulas, (8) connectives, and (9) emotional particles. As parts of speech stand in relation to notional categories, so

ranks stand in relation to syntactic categories. That is, words in combination are not of equal importance or rank. Jespersen, in his *Philosophy of grammar*, distinguishes three degrees or ranks: the most important word in any construction is said to have primary rank; a word which modifies a word of primary rank has secondary rank; and a word which modifies a word of secondary rank has tertiary rank. Jespersen's examples:

Junction			Nexus		
Subjunct +	Adjunct +	Primary Word	Primary Word +	Adnex +	Subnex
a furiously	barking	dog	the dog	barks	furiously
(tertiary)	(secondary)	(primary)	(primary)	(secondary)	(tertiary)
a dog	barking	furiously			
(primary)	(secondary)	(tertiary)			

In his recognition of an inner identity in 'The dog barks' and 'a barking dog' ('a dog which barks') or 'The rose is red' and 'a red rose' ('a rose which is red') Jespersen is closer to the recent developments of generative grammar, in which nominal phrases are derived from their corresponding sentences, than Bloomfield is in his syntactic concepts of the endocentric construction, which belongs to the same form class as one or more of its constituents, and the exocentric construction, which does not. There are two kinds of endocentric constructions, coordinative (or serial) and subordinative (or attributive); the latter belongs to the same form class as its head constituent. The subordinative construction breaks down into two further subtypes: (1) attribute—head, e.g. hao ren 'good man', mann tzoou 'slowly go'; (2) head—attribute, as in the action—goal constructions guan men 'shut the door', tzay Jong-gwo 'in China'. In Jespersen's system, the second members of all these four sequences (ren, tzoou, men, Jong-gwo) would be alike in having primary rank in their constructions. Wang adopted the concept of endocentric constructions, which he called phrases, but rejected the idea of exocentric constructions. Words of primary rank, he said, could occupy several different positions in a phrase: the subjective position, the objective position (either near or remote), and the relative position (of time, place, or manner).

Jespersen's theory of the three ranks was the backbone of Wang's analysis of constructions; this approach was also adopted by Leu Shu-shiang (1942–44)

and Her Rong (1942).

Criticism by his colleagues and political pressure put on him for his advocacy of a Western-based, "capitalistic" approach led Wang to abandon his double classification of words into parts of speech and ranks. In the preface to the new edition of his *Principles* (1955), Wang proposed a system in which there would be just one classification, e.g. into nouns, adjectives, verbs, and adverbs. Nouns could be used as adjectives in modifying other nouns. Adjectives could be used as nouns, serving as either subjects or objects, and as adverbs modifying verbs. Verbs could be used as nouns, serving as subjects, or objects as adjectives modifying nouns, and as adverbs modifying verbs.

Jou Faa-gau

As a result of his close association with Jaw Yuan-renn and Lii Fang-guey at the Institute of History and Philology and his several visits to the United States, Jou Faa-gau has been influenced by the American structural linguists. He is currently Professor of Chinese at the Chinese University of Hong Kong. In addition to his interest in theoretical linguistics, Jou has a profound knowledge of the Chinese classics.

In his partially finished work *Jong-gwo gun-day yeu-faa* (A historical grammar of Ancient Chinese; 1959–62), Jou makes frequent reference to Bloomfield, Hockett, Bloch, Jaw, and Lii. He acknowledges here and in an article on Chinese parts of speech (1950) that he had adopted Bloomfield's treatment of substitutes and his concept of endocentric and exocentric constructions, Bloch's definition of the word, Jaw's and Hockett's analysis of a sentence into topic and comment, and Lii's definition of nouns and verbs.

So far, only three volumes of Jou's *Historical grammar* have appeared: *Cheng-day-pian* (Substitutes; 1959), *Tzaw-jiuh-pian* (Syntax, Chapters 1–4; 1961), and *Gow-tsyr-pian* (Morphology; 1962). To be published are the second volume on syntax, dealing with word order, time words, place words, interrogatives, negatives, intonations, and prosody, and another volume on function words, such as adverbs, connectives, prepositions, interjections, and particles. Jou also promises that after the completion of this ambitious project there will be an extensive index to the whole set of five volumes and an abridged edition in both Chinese and English. Jou's work is a treasure of information on Ancient Chi-

nese grammar. Unfortunately, readers are sometimes so overwhelmed by the great number of quotations from other linguists and by the massive accumulation of examples that they fail to see clearly Jou's grammatical system.

Jou agrees with George Kennedy that a grammatical analysis of Ancient Chinese should begin with one text, e.g. Mencius. Benefitted by Kennedy's example (1956), Jou has demonstrated, with statistics, the possibility of distinguishing nouns, verb/adjectives, and function words in Mencius: nouns are used more often as subjects; verb/adjectives are used more often as predicates. There are words which can never be used either as subject or predicate; these are the function words, such as adverbs, prepositions, connectives, interjections, and particles. Jou has further subdivided the verb/adjectives into four categories (Chart 6).

Criteria / Categories	(1)	(2)	(3)
(1) juh 'to help'	yes	no	no
(2) ay 'to love'	yes	yes	no
(3) lai 'to come"	no	no	no
(4) suh 'quick'	no	yes	yes

Chart 6

Verb/Adjectives Categories in Mencius

Criteria: (1) may take an object; (2) may be modified by yiuh 'more' tzuey 'most'; (3) may modify a noun

The sentence in Ancient Chinese, Jou assumes, was marked by an intonation and bound by pauses at both ends. A full sentence consisted of two parts, topic and comment; the topic could be either an absolute or the subject. There were two types of sentences, determinative and narrative. Constructions belonged to one of eight types:

A. Endocentric constructions

1. Coordination. 2. Subordination: a. narrative + object; b. narrative + complement; c. modifier + narrative; d. modifier + noun

B. Exocentric constructions

1. Preposition + object. (2) Connective + subordinative clause.
3. Subject + predicate.

An absolute is an expression which occurs at the beginning of a sentence and which does not enter into any of the above-listed constructions with the rest of the sentence.

Jou distinguishes two types of expressions: substantive and narrative. A substantive is an expression which may be used as the subject or object in a narrative sentence or as the determinator in a determinative sentence. (The determinator is, in Bloomfield's definition, the second nominal element in an equational sentence.) A narrative is the kernel or head of the predicate in a narrative sentence. Nouns, adjectives, verbs, numerals (+ units), localizers, and descriptives occur both as substantives and narratives. Substitutes occur only as substantives, auxiliary predicatives only as narratives. It should, however, be noted that though nouns can be used as both substantives and narratives, they are more commonly used as substantives; conversely, adjectives and verbs are normally used as narratives. Unfortunately, Jou provides no statistics on the relative frequency of occurrences.

Jou used the term modification loosely, to refer to the relation between the modifier, a subordinate element, and the head which it modifies in an endocentric construction. Modifiers which precede sustantives are "adjuncts"; those which follow substantives are "postposed adjuncts". Modifiers which precede narratives are "adverbial modifiers"; those which follow narratives are "complements". The parts of speech which enter into such constructions when the head is a noun or verb are summarized in Chart 7.

Heads / Modifiers	Nouns		Verbs	
	Preposed	Postposed	Preposed	Postposed
Nouns	yes		yes	yes
Adjectives	yes		yes	yes
Verbs	yes		yes	yes
Substitutes	yes		no	
Numerals (+ units)	yes	yes	yes	
Localizers	yes		yes	
Descriptives	yes		yes	
Adverbs			yes	yes
Connectives			yes	
Prepositional phrases			yes	yes

Chart 7
Modifiers in Ancient Chinese

In addition to the missing information on the frequency of occurrence of these constructions, further investigation is needed in two areas: (1) The conditions under which modifiers may be added to the heads of substantive and narrative expressions which are nouns or verbs; and (2) The sequence of modifiers which may occur before and after the heads of substantive and narrative expressions. Jou has only briefly commented on the possible sequences of adjuncts; it is to be hoped that he will discuss the order of narrative modifiers in the forthcoming volume on function words.

Leu Shu-shiang

Formerly a Professor of Chinese in the Southwest Associated Universities and Central University, Leu Shu-shiang is now a member of the Institute of Linguistics, Academia Sinica, in Peking. In addition to his many books and

articles on Chinese grammar and rhetoric, an area in which he is an authority, he has published two articles of general theoretical significance.

In "Shuo tzyh-you hann nian-jwo" (On free and bound; January, 1962) he treats the concepts of free and bound and their application to Chinese. Bloomfield had defined words and phrases as free forms: phrases were free forms which consisted of two or more lesser free forms; all other free forms were words. The thrust of Leu's discussion is that words and phrases need not be free, though the ultimate criterion by which words and phrases are identified depends on the utilization of this concept. That is, whatever fits in a slot in which a free-form would fits is a word; whatever fits in a slot in which a free-form phrase fits is a phrase. For example (bound forms are italicized):

(1) her 'river', a word in Bloomfield's definition
chi, 'deadline', a word by analogy to her
e.g. guoh.le her 'go beyond a river'
guoh.le *chi* 'go beyond a deadline'

(2) tzay.jell 'to he here', a phrase in Bloomfield's definition
tsorng.jel 'from here', a phrase by analogy to tzay.jell
e.g. tzay.jell chy 'eat here'
tsorng.jell chy 'eat from here'

A bound form may be bound to another bound form, to a word, compound, or phrase, or even to a clause or sentence. Leu observes that there is a greater restriction in modern Chinese than in either Ancient Chinese or modern English on the use of one-morpheme forms (which happen to be generally monosyllabic) as complete utterances. In most cases, where the morpheme is a free form it is an answer to a question. The answer to the question jeh.sh sherm.me 'What is this?' may, for example, be bii 'writing instrument'; the answer to hao bu hao 'Is this good?' may be hao 'good'. This is not true, however, of all answers to questions: the affirmative answer to shiing.le mei shiing 'Did he wake up?' is shiing.le 'Yes, he woke up'. Even the common verb shinq 'to have the surname of' is always bound.

Leu notes six conditions under which in Chinese the same one-morpheme form may occur either by itself or bound to another form. [Note that in 4 and 5 below neither the one-morpheme form nor the two-morpheme form is free.]

(1) Dialect variations. shye 'shoe' is, for example, free in Peking Mandarin but bound to -tz in many other dialects.

(2) Stylistic differences: literary versus colloquial. dann 'but, however, nevertheless' is free in writing, but is bound to -sh in speaking.

(3) Stylistic differences: technical versus ordinary. As technical terms jin 'gold' and yaang 'oxygen' are free forms; in ordinary conversation 'gold' is jintz, 'oxygen' yaang-chih.

(4) Stylistic differences: in set phrases versus not in set phrases. In ordinary speech, 'to know' is jydaw; 'to feel, to find that' is jyue.de. The corresponding one-morpheme forms jy and jyue are found in the set phrase bu-jy-bu-jyue.de 'without realizing'.

(5) Structural differences. The bound form chi 'deadine' is used in guoh.le chi 'go beyond the deadline'; the free from chi-shiann is used in chi-shiann daw.le 'The deadline is approaching'.

(6) Semantic differences. In answer to the question shiah che bu shiah? 'Shall we get off the bus (train)?' you may say shiah 'yes'; in answer to the question shiah keh bu shiah 'Shall we dismiss the class?' the corresponding affirmative answer is shia keh.le.

The free—bound dichotomy also serves as a rough criterion by which to distinguish content words from function words: content words are forms with concrete meanings which can be used as complete utterances; function words are words with grammatical meanings which cannot be used as complete utterances. (There are, of course, exceptions to this general statement. The function word bu 'negative' can be used alone, while many content words, such as classifiers and monosyllabic localizers, cannot.) In this connection Leu points out further defining features of content words and function words. Content words may occupy the major slots in a sentence - (subject, predicate, object, complement); function words may not. Content words form 'open' classes with large numbers of members; function words form 'closed' classes with a limited number of members. The meanings and functions of content words are distinguishable; the meanings of function words are their functions. We can discuss content words in groups; the functions of each function word must be described individually.

Leu's "Guan-yu yeu-yan dan-wey de torng-i-shinq deeng-deeng" (On the identification of linguistic units, and other problems; November and December, 1962) is a critical review of the methodology exemplified in two articles on the particle de by Ju Der-shi (December, 1961) and Hwang Jiing-shin (August-September, 1962). Before getting down to the specifics of phonemic and mor-

phemic analysis, Leu considers some general questions: How can linguistic units, once identified, be judged the same or different? Is there any objective way to determine similarity? Zellig Harris (*Methods in structural linguistics* 20) had said that similar meant "not physically identical, but substitutable without obtaining a change in response from native speakers who hear the utterance before and after the substitution". The choices of frame and original item which the substitute is to replace render this criterion subjective. Given similar, but not identical units, what are the criteria for determining norm and variant? (Leu carefully distinguishes norm and variant from Chomskyan base and transformation, in which he sees potential for solving some Chinese grammatical problems.) Are the methods for identifying units on one level the same as those on another? Should function and distribution be distinguished? Bloomfield's "function" and Harris's "distribution" appear to be the same.

Leu recognizes three steps in phonemic analysis: (1) the segmentation of sound into phones; (2) the identification by the substitution test of allophones in free variation, allophones in complementary distribution, and contrasting phonemes; and (3) the classification of phonemes (by place and manner of articulation, distribution, or any other criteria). He also sees several basic differences in the identification and classification of phonemes: (1) Two sounds may have the same distribution and yet be identified as the same phoneme; or again, they may be two separate phonemes. If a class is based on distribution, these two sounds would belong to the same class whether they were members of one phoneme or two. (2) In identifying phonemes, all environments must be considered; if there is one environment in which two sounds contrast, there are two phonemes. In classifying phonemes, the linguist may select the environments relevant to his classification. (3) Phonemic systems of different linguists are mutually convertible; since the bases of classification are not mandated by the phonemic material, classifications are not so convertible.

The nature of morphemes, Leu points out, lends morphemic analysis complexities beyond those of phonemic analysis: morphemes have both phonological shape and semantic content, and are not only the smallest lexical units but also the smallest syntactic units. In addition to free variation (shwei ~ sheir 'who?'), variations may be conditioned either phonologically (~ ia ~ ua ~ na ~ nga 'final particle') or syntactically (bau 'to peel' ~ bo, shiau 'to peel' ~ shiueh in boshiueh 'to exploit'). To identify morphs as members of the same

morpheme requires both phonological and semantic similarity. The latter is sometimes particularly elusive. Is, for example, the classifier ke in ike shuh 'a tree' the same morpheme as the ke in ike jen-ju 'a pearl'? Judgment on the identity of morphemes must be based on distributional comparisons. We can only know that morph a and morph b are in complementary distribution and therefore members of the same morpheme if there is a morph c whose distribution is that of both a and b. Since there is no morph whose distribution is comparable to that of the particle de we cannot say whether de is one particle or two or five homonymous particles.

Function, according to Leu, is the prime criterion to be used in classifying morphemes in Chinese. No precise way to handle meaning has been developed, and morphology, in the Indo-European sense, doesn't exist in Chinese. Though selection and word order in Chinese are considered morphology by some linguists, they are in reality aspects of function, which may be defined as the privilege of occurrence in certain slots in a sentence. More than one slot is usually used to classify morphemes, and the class of forms which may fill one slot generally overlaps another class. The number of categories will, then, always be larger than the number of slots used as defining criteria. Two criteria (A, B) would produce three categories (A, B, AB), three criteria (A, B, C) would produce seven categories (A, B, C, AB, AC, BC, ABC). Leu does not consider the possibility of categories which fit in none of the slots in question. Some slots are more crucial in defining a class than others; Leu evaluates this relative significance statistically. If a form occurs in three different slots with a frequency A 90 : B 9 : C 1, then slot A is obviously the selectional characteristic for this form. A hundred forms might conceivably fill two different slots in three ways:

1.	A, 45%	B, 45%	AB, 10%
2.	A, 10%	B, 5%	AB, 85%
3.	A, 30%	B, 35%	AB, 35%

Ratio 1 implies two classes of words, with some overlap; ratio 2 implies just one class, with marginal or inconclusive cases in A and B; ratio 3 implies three classes.

Leu finds the identification of certain morphemes problematical; can functionally different forms, e.g. jy 'to know', and with just a difference in tone jyh 'wise; wisdom' or tzuoh 'to sit' tzuoh 'seat' be members of the same morpheme?

Leu does not consider the possibility that the members of such pairs share a morpheme in common but that one member is made up of more than one morpheme.

While recognizing the circularity in the general practice of identifying form classes and describing constructions—verbs are, for example, identified as forms which govern objects; government is defined as a verb-object construction—Leu accepts as the best available method of dealing with constructions one which incorporates the concept of immediate constituents and the distinction of endocentric vs. exocentric or co-ordination vs. subordination, the latter with the subtypes modification and government. In this method three features are essential: (1) the category to which the construction as a whole belongs; (2) the categories to which the immediate constituents of the construction belong; and (3) the relation of the immediate constituents to each other. Leu offers ten examples (AN= auxiliary noun [classifier]):

		(1)	(2)	(3)
A	juan-tou / waa-piann 'bricks and tiles'	nominal	N/N	co-ordination
B	juan-tou / chyang 'a brick wall'	nominal	N/N	modification
C	gau / chyang 'a high wall'	nominal	Adj/N	modification
D	shin / shu 'a new book'	nominal	Adj/N	modification
E	ibeen / shinshu 'a new book'	nominal	NumAN/N	modification
F	shin / mae 'newly bought'	verbal	Adj/V	modification
G	jeu / shoou 'to raise ones hand'	verbal	V/N	government
H	swei / shoou 'to do without additional effort' ['to follow' + 'hand']	adverbial	V/N	government
I	(kway) juu / jeautz '(to hasten) to boil ravioli'	verbal	V/N	government
J	(chy) juu / jeautz '(to eat) boiled ravioli'	nominal	V/N	modification

The differences between these examples—only C and D have the same constructions—can then be tabulated as follows:

	(1)	(2)	(3)
A : B	same	same	different
B : C	same	different	same
A : C	same	different	different
C : D	same	same	same
D : E	same	different	same
D : F	different	different	same
G : H	different	same	same
I : J	different	same	different

CRITICISM OF STRUCTURALISM

In 1965 *Jong-gwo Yeu-wen* published three articles criticizing structural linguistics in the name of Marx, Lenin, Stalin, and Mau Tser-dong. (This is our last volume of *Jong-gwo Yeu-wen*. With the Cultural Revolution, publication of this leading linguistic journal ceased.)

Hwa Yan-jiun (January-February, 1965) criticizes structuralism first for its view of language as a system of interdependent elements which have no positive quality of their own. The value of these elements, according to de Saussure, depends solely on their being different from other elements; their meanings are not determined by their relations with the nonlinguistic elements that they signify but are completely determined by their interrelationships. Though de Saussure is here the primary target, further documentation of the structuralist doctrine that the nature of linguistic units is determined by their relations to all the other units in the system is offered in quotations from Harris and Haugen.

Meaning, Hwa holds, does have an existence independent of form; it is therefore not secondary to form, and lexical meaning is not less important than linguistic meaning. He discusses Harris's analysis of 'write a poem' and 'wire a house': from the distributional point of view, 'write' and 'wire' may belong to one class, 'poem' and 'house' to another; in terms of lexical meaning, 'write' and 'poem' belong together, as do 'wire' and 'house'.

Moreover, in ignoring the history of a language structural linguistic analysis becomes subjective and arbitrary. Hwa here mentions the many possible ways of analying the word 'children' suggested by Harris and Hockett and the treatment of i/s, w/as, w/ere or go/wen- as allomorphs.

Structural linguists treat morphemes as the basic unit of grammatical analysis; larger linguistic units are merely combinations of morphemes which are not qualitatively different from morphemes. Following Stalin, Hwa argues that words, as the only independently meaningful linguistic units, are qualitatively different from either smaller or larger units, such as affixes or stems, phrases or clauses, and are of primary importance in linguistics.

Jaw and Lii (March-April, 1965) criticize structural linguists on four points: (1) The emphasis on form over meaning. Linguistic analysis is completely formalized; meaning is purposely de-emphasized. Bloomfield uses stimulus-response as the definition of meaning. Bloch and Trager in their *Outline of linguistic analysis* say that linguistic classification must be based exclusively on form; there must be no appeal to meaning, to abstract logic, or to philosophy. The inquiry into the distributional relations of features of speech is structural linguistics' major approach. The hypothesis formulated by Sapir and Whorf that the 'real world' is to a large extent constructed unconsciously on the language habits of the speech community is absurd: there is a real world, and it is not true that since there is no universal language there is no universal way of thinking, no universal concept of this real world. (2) The emphasis on induction over deduction. Hjelmslev's attempt to establish an axiomatic system which will describe all natural languages is contrary to Stalin's doctrine that a language is closely related to the society in which this language has been developed. (3) The emphasis on synchronic studies. Structural linguistics has exaggerated the dichotomy of synchronic studies and diachronic studies which originated with de Saussure. Investigations of a language should never be divorced from the study of the historical and cultural traditions of the people who use the language. (4) The emphasis on quantitative formulations. Structural linguistics over-emphasizes the quantitative aspect of linguistic regularities, and neglects its qualitative aspects. Yehoshua Bar Hillel's "A quasi-arithmetical notation for syntactic description" [*Language* 29.47–58 (1953)] is a mathematical game. Linguists in many cases misuse statistics, mathematical logic, and the theory of probability in their investigations of natural languages. Mathematical formulae cannot ex-

plain fully the real linguistic phenomena which are related to the history and culture of the particular society in which this language is used.

Shyu (March-April, 1965) deals exclusively with the principles of distribution in structural linguistics. He finds the application of the distribution criterion to morphemic analysis wanting in its failure to pay attention to both phonology and semantics, lexical/morphological and functional/positional. Morphs cannot be identified as belonging to one morpheme unless they share both a common phonological structure and a common semantic content: [naif] / [naiv] 'knife' are legitimately viewed as variants of one morpheme, as are [s] / [z] / [ɪz] 'plural suffix'; I/me, my/mine, go/wen- are not, since as a consequence of their different historical origins, they do not share common phonological properties. Morover, a purely distributional approach to semantic studies cannot produce satisfactory results because most forms derive meaning not only from distribution but also from the nonlinguistic world which these forms represent.

Shyu also criticizes the circularity in the application of the principle of distribution: if there are three structural units, A, B, and C, A is identified by the frame ___BC, B is identified by the frame A___C, and C is identified by the frame AB___. Only criteria external to distribution can prevent such a procedure from being subjective and arbitrary. One such criterion in phonemic analysis is economy, on which Shyu quotes Keith Percival [*Language* 36.386 (1960)]; to this Shyu adds historical considerations. This criticism is of course relevant to a certain sort of narrowly rigid structural analysis, but from the beginning Jaw Yuan-renn had shown that many factors, such as economy and linguistic history, should be taken into consideration in making structural analyses. And so, as Jaw had the first word, we may let him have the last, here on the circularity of defining by means of frames:

> "If A is defined in terms of B, B in terms of C, and C in terms of A, were still do not know what A, B, and C are. But this problem is not as serious as it seems. All science is circular. All mathematics is defining in one big circle. It will not matter if the circle is made big enough and if the resulting system reflects well, or makes a good ***model*** of, the object of study." (*Language and symbolic systems* 55)

BIBLIOGRAPHY

Abbreviations. *BIHP: Bulletin of the Institute of History and Philology, Academia Sinica.*
JGYW: Jong-gwo yeu-wen.

Ding Sheng-shuh et al. 1952–3, 1961. *Shiann-day hann-yeu yeu-faa jeang-huah* (Discussions on modern Chinese grammar). *JGYW*, July, 1952, to November, 1953 [17 installments]. Published, with revisions, as a monograph: Peking, 1961.

Gee Yih-ching (Ku Ye-ching) 1932, "On the consonantal value of yiuh-class words", *T'oung Pao* 29.100–3.

Her Rong. 1942. *Jong-gwo yeu-faa luenn* (On Chinese grammar). Chungking.

Hwa Yan-jiun. January-February, 1965. "Pi-pann miau-shiee yeu-yan-shyue yeu-faa yan-jiow jong de shyng-shyh juu-yih" (Criticism of formalism in descriptive linguistics)). *JGYW* 7–13.

Hwang Jiing-shin. August-September, 1962. "Dur shuo 'de' binq luenn shiann-day hann-yeu yeu-faa yan-jiow de jiig fang-faa wenn-tʌi" (Review of Shuo 'de' and discussion of methods of studying modern Chinese grammar). *JGYW* 316–73, 411.

Jaw Shyun and Lii Shyi-yinn. March-April, 1965. "Pi-pann jie-gow juu-yih yeu-yan shyue de jii-tyau fang-faa-luenn yuan-tzer" (Criticism of the methodology of structural linguistics). *JGYW* 85–92.

Jaw Yuan-renn (Y. R. Chao). 1934. "The non-uniqueness of phonemic solutions of phonetic systems". *BIHP* 4.363–98. Reprinted in *Readings in lingustics* (ed. by Martin Joos) 38–54: Washington, American Council of Learned Societies, 1957.

_____. 1941. "Distinctions within Ancient Chinese". *Harvard journal of Asiatic studies* 5.203–33.

_____. 1948. *A Mandarin primer.* Harvard University Press.

_____. 1968. *Language and symbolic systems.* Cambridge University Press.

_____. 1968. *A grammar of spoken Chinese.* University of California

Press.

Jou Faa-gau. 1950. "Jong-gwo-yeu de tsyr-ley" (Chinese word classes). *BIHP* 22.303–22.

_____. 1959–62. *Jong-gwo guu-day yeu-faa* (Historical grammar of Ancient Chinese): *Cheng-day-pian* (Substitutes), 1959; *Tzaw-jiuh-pian* (Syntax, Chapters 1–4), 1961; *Gow-tsyr-pian* (Morphology), 1962. Taipei.

Ju Der-shi. December, 1961. "Shuo 'de' " (Discussions on 'de'). *JGYW* 110.1–15.

Kennedy, George A. April, 1956. "Word-classes in Classical Chinese". *Wennti*, No. 9. (Reprinted, with additions from Kennedy's unfinished ms., in *Collected works of George A. Kennedy* [ed. by Tien-yi Li] 323–433. New Haven: Far Eastern Publications, 1964.)

Leu Shuu-shiang. 1942–44. *Jong-gwo wen-faa yao-liueh* (Outline of Chinese grammar). Chungking.

_____. January, 1962. "Shuo tzyh-you hann nian-jwo" (On free and bound). *JGYW* 1–6.

_____. November and December, 1962. "Guan-yu yeu-yan dan-wey de torng-i-shinq deeng-deeng" (On the identification of linguistic units and other problems). *JGYW* 483–95, 582.

Lii Fang-guey (Fang-kuei Li). 1933. "Certain influences of the Tibetan prefixes upon the root initials". *BIHP* 4.135–57.

_____. 1943. "The hypothesis of a pre-glottalized series of consonants in Primitive Tai". *BIHP* 11.177–88.

_____. 1954. "Consonant clusters in Tai". *Language* 30.368–79.

_____. 1956. "Hann-yeu yeu-faa shanq de jiig ji-been guan-niann" (Some fundamental ideas of Chinese grammar). *Memoir of National Taiwan University: Public lectures and symposia for the commemoration of the tenth anniversary* 38–41.

_____. 1965. "The Tai and the Kam-Sui languages". *Indo-Pacific linguistic studies. Part I. Historical linguistics* (ed. by G. B. Milner and Eugenie J. A. Henderson) 148–79. Amsterdam: North Holland Publishing Co. [Reprinted from *Lingua* 14.148–79 (1965)]

_____. 1966. "The zero initial and the zero syllabic". *Language* 42.300–2.

_____. 1971. "Shanq-guu-in yan-jiow" (Studies on Archaic Chinese phonology). *The Tsinghua journal of Chinese studies*. New Series 9.1–61.

_____. 1972. "Dental clusters in Tai". Paper presented to the Fifth International Conference on Sino-Tibetan Languages and Linguistic Studies, University of Michigan, Ann Arbor.

Lii Rong. 1952. *Beei-jing koou-yeu yeu-faa* (A grammar of spoken Peking Chinese). Peking.

_____. 1965. "Tsorng shiann-day fang-yan luenn guu-chyun-muu yeou i-ell-syh-deeng" (On the evidence in modern dialects for the reconstruction of a g- initial for Ancient Chinese). *JGYW* 337–42, 355.

Shyu Tong-chiang. March-April, 1965. "Duey jie-gow yeu-yan-shyue fen-buh yuan-tzer de jii-dean pi-pann" (Criticism of the principles of distribution in structural linguistics). *JGYW* 93–102.

Wang Li. 1939, 1942, and 1943, 1944. *Jong-gwo shiann-day yeu-faa* (Modern Chinese grammar). Kun-ming, 1939, 1942; Shanghai, 1943, 1944.

_____. 1944–45 and 1955. *Jong-gwo yeu-faa lii-luenn* (Principles of Chinese grammar). 2 vol. Shanghai, 1944–45; Peking, 1955.