# THE LONDON-SCHOOL « SYSTEMIC VALUE » CONCEPT,
# AND HIERARCHICAL VERSUS RELATIONAL ANALYSIS

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The late Prof. Firth's « systemic value » concept has attracted attention recently because of hostile comment by D. T. Langendoen, in his recent book *The London School of Linguistics*: « Sprigg's remark that the number of elements that may substitute for one another solely defines their value is characteristic of the "numerology" of the London School. Compare Firth's definition of "Grammatical meaning" (in 1957a, p. 22): "... grammatical 'meanings' are determined by their inter-relations in the systems set up for that language. 'A nominative in a four case system would in this sense necessarily have a different "meaning" from a nominative in a two case or fourteen case system for example'".

Similarly, R. H. Robins (1963, p. 20: "Each system set up for a particular structural place is peculiar to that place, and the commuting terms in it are not necessarily to be identified with those operative in a system at a different place. Where the number of commuting terms is different, the systems are different, and each term is different from its apparent counterpart elsewhere, because of the different paradigmatic relations necessarily holding between the terms of numerically different systems" » (Langendoen, 1968, 60-1).

The passages cited are all drawn from the last two decades; but Firth had been employing this concept since the early thirties: « the first clear indication of what was later known as the polysystemic approach, the refusal to identify terms in one system with terms in another, is found in Firth 1935 where for the nasals in Marathi he noticed a two-term alternance initially, a three-term alternance finally but, though phonetically there were eight different sounds, one « unique » homorganic nasal before consonants; he comments « I should not identify all these *n* sounds as linguistically and functionally the same unit » (1935, 51) » (Palmer, 1970, x-xi).

More recently, a similar view of the significance and the value of membership in closed systems has appeared in a paper by Calvert Watkins, « Italo-Celtic revisited », of which Hoenigswald writes: « Apropos of the IE word for the number "five", Watkins thinks it naïve that the Latin *qu* and the archaic Celtic *q* are "same" in any simple definable sense, the Latin *qu* being one structure point out of four, the Celtic *q* being one out of three, owing to the absence of a voiceless labial stop in Celtic (*op. cit.*, 29-50). This is, of course, absolutely right, and it is important that the point should have been made at last ». (Hoenigswald, 1966). In fact, as I have shown, the point had been made, by Firth, at least thirty years earlier.

Firth appears to owe something of the concept, though not, of course, its application to linguistic analysis, to A. N. Whitehead, the Cambridge and Harvard philosopher, whose *Adventures of ideas* appeared in 1933, a year before Firth's first application of what Palmer termed « polysystemic analysis » (1970, x-xi). It

to abandon a concept that had hitherto dictated my phonological analyses of various Tibeto-Burman languages over a number of years, or finding a means of disposing of this problem.

On investigation I came to the conclusion that the conflict between the claims made for Ancient Chinese and the « systematic value » concept resulted from the hierarchical type of analysis whereby Downer first analysed Ancient-Chinese syllables into two classes on the basis of syllable-final distinctions, either, as in analysis 1, open versus closed or, as in analysis 2, continuant versus non-continuant, *and only subsequently on the basis of tonal distinctions*. The tonal distinctions, in other words, were subordinated to the syllable-final distinctions in a *hierarchy* of phonological distinctions, resulting, in analysis 1, in a 3-term tone system for open syllables but a 4-term tone system for closed syllables, or, in analysis 2, a 3-term tone system for continuant syllables but no tone system for non-continuant syllables (the typological significance of the alternatives for Ancient Chinese is considerable: by analysis 1 it is a tone language, but by analysis 2 it is only a partial tone language, for there is an area of the language that lies outside tonal statement, i.e. the non-tonal non-continuant syllables).

If, on the contrary, one makes a single *independent* tonal analysis, on an equal footing with either of the alternative analyses based on syllable-final distinctions, and then relates, or cross-references, each of the terms of that single tone system to each of the terms of either, or both, of the systems based on syllable-final features, no such conflict arises, and the « systemic value » concept escapes unchallenged. On lines (a-g) in the following diagram I have related each of the terms of an *independent and unsubordinated* tone system to each of the terms of the alternative systems based on syllable-final distinctions, enclosing in brackets any term of either of the alternative syllable-final systems that is automatically implied by the corresponding term of the other system (e.g. « non-continuant » implies « closed »), and, further, in the right-hand column, distinguishing the vowel-final, nasal-final, and stop-final types of syllable by the letters « V», «N», and « S »:

|   | *tone system* | *open/closed* | *continuant/non-continuant* |   |
|---|---|---|---|---|
| a. | 1 | open | (continuant) | V |
| b. | 1 | closed | continuant | N |
| c. | 2 | open | (continuant) | V |
| d. | 2 | closed | continuant | N |
| e. | 3 | open | (continuant) | V |
| f. | 3 | closed | continuant | N |
| g. | ? | (closed) | non-continuant | S |

The question mark on line (g) symbolizes a choice of alternatives that, in the absence of Ancient Chinese phonetic data, cannot be other than speculative: either the pitch features of this type of syllable were different from the pitch features of tones 1, 2, or 3, in which case a fourth tone (tone 4) would have had to be distinguished, and this fourth term of a 4-term tone system would have been related exclusively to « non-continuant » (and therefore, automatically, to « closed »), or the pitch features of this type of syllable would have been identical with the pitch features of tone 1, tone 2, or tone 3 (just as, for example, non-

was Whitehead's « prehensiveness » that attracted Firth's attention: « ... terms or factors are not merely *seen* in relation to one another. They actively take one another into relation, or mutually "prehend" one another as Whitehead would say. ... It [*sc.* a term in a system] even prehends negatively everything that was not said but might have been said. This "inter-related prehensiveness" must be taken as a fundamental principle even in phonetic and formal grammar ». (Firth, 1937, p. 126).

Whitehead illustrates « prehension » most sharply in *Modes of thought* (1938): « The parts form an ordered aggregate, in the sense that each part is something from the standpoint of every other part, and also from the same standpoint every other part is something in relation to it. Thus if $A$ and $B$ and $C$ are volumes of space, $B$ has an aspect from the standpoint of $A$, and so has $C$, and so has the relationship of $B$ and $C$. This aspect of $B$ from $A$ is of the essence of $A$. The volumes of space have no independent existence. They are only entities as within the totality; you cannot extract them from their environment without destruction of their very essence. Accordingly I will say that the aspect of $B$ from $A$ is the *mode* in which $B$ enters into the composition of $A$. This is the modal characteristic of space, that the prehensive unity of $A$ is the prehension into unity of the aspects of all other volumes from the standpoint of $A$ » (p. 81).

The origin of « systemic value », then, seems to lie, to some considerable extent, in the philosophic distinctions of Whitehead. Diligent inquiry has not led me to a corresponding mathematical requirement that the value of terms in systems (or sets) should be exclusively a function of the number of terms in the system (or set); mathematicians in the 1930s were, presumably, as willing to work with sets comprising terms drawn from different systems as they are today. It should not be surprising that mathematicians should be freer, in this respect, than linguists: membership, in linguistic systems, is narrowly determined by the data of the language concerned; and Firth's and, later, Watkins's insistence that each term of a system carries along with it, like a shadow, an implication of the remaining terms in its system, the two, fourteen, or however many *terms that it is not*, seems to me to be both useful and reasonable, certainly not a mere « numerology ».

Being anxious to try and « kill two birds with one stone » I come now to the second part of my paper. I was forced to test my estimate of the validity of the « systemic value » concept when my former colleague G. B. Downer proposed alternative analyses of Ancient Chinese material that, a first sight, seemed to demand the identification of terms in different systems: « The tonal system of A(ncient) C(hinese), as it appears in the dictionaries, may be symbolized as follows:

$$1 \ 2 \ 3 \ // \ 4.$$

Open syllables have a three-tone system; closed syllables have four tones, the first three ending in nasals, the fourth in the corresponding stop consonant. Put another way, syllables with continuant finals have a three-tone system, those with final stops have no tonal distinctions » (Downer 1963, 133-4). Downer further insisted that it was essential, in the first of his alternative analyses, to identify tones 1, 2, and 3 of the 4-term (closed-syllable) system with tones 1, 2, and 3 respectively of the 3-term (open-syllable) system, on the grounds that such an identification was indispensable to Ancient Chinese; but the « systemic value » concept, of course, prevents any of Firth's adherents, in the London School, from following Downer in making this identification: the systemic value of each of the members of the former tone system is 1: 3, while for each member of the latter tone system it is 1: 4. I was therefore faced with the prospect of either being forced

continuant syllables in modern Cantonese have the same pitch features as tone 3; Downer 1963, 134), in which case the stop-final type of syllable (line g) would be assigned to that tone, and the « non-continuant » term of the continuant/non-continuant system would be related exclusively to whichever of the three tones the type of syllable in line (g) had been assigned to.

A relational statement such as I have illustrated, in which each of the terms of an independent system is related to the appropriate term or terms of the other systems, avoids the difficulties that seem to me to be inherent in the hierarchical form of statement, in that the hierarchical form of statement gives rise to the possibility of alternative, or multiple, hierarchies of phonological systems, and to a collision with the « systemic value » concept when any attempt is made to reconcile those hierarchies by identifying with each other terms in the different systems of which each hierarchy is composed. Consequently, I find myself wondering whether the relational type of analysis may not enjoy an advantage over the hierarchical type in general, and not merely for the more limited purpose of testing the efficacy of Firth's « systemic value » concept on at first sight intractable material.

*Addendum* (from Allen 1957, 75-6).

« Within words of the various prosodic types, the following C systems are established:

> h words:
> Focal: k c ţ t p #  (6 term) ...
> h̃ words:
> Focal: k c ţ t p    (5 terms) ...

In stating the exponents of the various C units a considerable economy can be effected. ... identically symbolized units have identically statable exponents.

Whilst it would be perversely wasteful not to utilize this economy, it cannot be too strongly emphasized that no phonological identification of the identically symbolized terms is thereby made ».

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## DISCUSSION

DINNEEN - questions the suggestion, made in the second part of the paper, that a hierarchical type of statement might be inherently inferior to a relational type of statement.

SPRIGG - That this suggestion certainly seemed to be justified by the solution to the problem in Chinese in the second part of the paper (and in Burmese and other languages in other publications), as analysed in accordance with the London School's theory, but would now have to be re-considered in the light of the discussion that had taken place earlier, in the 'Tagmemics' section of the Congress, in which it was clear that the participants attached great importance to a hierarchical type of statement in tagmemics.

N. SMITH - questions Firth's refusal to identify terms in different case systems, taking as his example a hypothetical case '3' of a two-term case system 'A'-'B' and a hypothetical case 'A' of a three-term case system 'A'-'B'-'C' in two otherwise identical languages when the *function* of the case 'A' in each language was identical.

SPRIGG - That the philosophical basis for Firth's attitude towards the term *function* seemed well illustrated by the passage from Whitehead quoted in the first part of the paper, in the light of which the use of the names (or labels) 'A', 'B', and 'C' for terms in different systems, with different systemic values, could only be a matter of convenience, and did not thereby identify, in distinctive function, terms carrying an identical label, in the same language or in different languages.