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LANGUAGE

in Relation to a Unified Theory of the Structure of Human Behavior

by

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Part III (Chapters 11-17)

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PREFACE

The theoretical phases of the conceptual framework which we set out to provide some years ago for showing the relationship between the structure of verbal and nonverbal behavior is finished, in preliminary form, with Part III of this work. Pedagogical material for teaching tagmemic methodology, not included here, is being prepared by Pickett, Elson, and Longacre.

The total work arose from a struggle to describe empirical data, especially the Mixtec and Mazatec languages of Mexico. Attention to hierarchical structure stems from an article on Taxemes and Immediate Constituents (1943), a theoretical article written after unsuccessful attempts to find in the current literature a satisfactory basis for Mixtec grammatical analysis. Emphasis upon position (slot function) as over against construction reflects a positive attempt to describe some of the resistent problems of Mixtec grammatical analysis (1944). In the last article I first struggled with the extensive disconformities which occur there in reference to borders and units of the phonological versus grammatical hierarchies. The attempt to find internal organization of high-level phonological units was the result of an attempt to describe (with Eunice Pike) the immediate constituents of Mazatec syllables (1947). Constant reference to substitution frames as theoretically relevant was expanded from analytical techniques developed to determine the number of tones in tone languages (1938, 1948), while my study of the interplay of intonation, stress, quantity, and voice quality developed from publications in 1942, 1945.

In 1948, weary of studying phonology, I decided to turn attention to grammar--and to see if some correlate of the phoneme (other than the morpheme) might be found for grammar. I tentatively labelled such a unit 'grameme' (for unit of grammar) and started to search. I reasoned that as the phoneme was reflected in practical orthographical work for milennia before being "found" by the scientists (whose "X-ray eyes" could find cells but not faces), so some unit of grammar might be present in the work and thought of practical language teachers which was not adequately reflected in current theory of linguistic structure. Various kinds of subjects, predicates, and modifiers seemed to meet the specifications. Extensive, deep-seated changes in language theory were necessary before these units could be worked into a conceptual framework which would (a) allow them to fit a place in theory analogous to that of the phoneme, (b) fit the etic-emic requirements of our view, and (c) be subject to treatment in pedagogical materials for analysis of language structures and for preparation of language-learning texts.

In the process, it proved necessary to make certain generalizations which were of such a high level of abstraction that it became clear that--if useful at all in linguistics--they must in theory be applicable also to some phases of nonlanguage behavior. It was at this point that the theoretical view broadened to set up an approach of a scope wider than linguistics. Thus Chapters 3-5 included the structuring of the behavior at church services, football games, and breakfast scenes. Now in Chapter 17 the implications are seen as including the structuring of the acting groups themselves in addition to their behavior.

The essentials of the linguistic tagmemic unit were largely in view by 1949, when I began to write this material. (The term grameme, meanwhile, 1958a, has been replaced with 'tagmeme' for etymological reasons--and see discussion, §11.74.) Extension of the framework to include nonlanguage material and to tidy up the general trimodal framework brought delays until the academic year of 1952-53. During that year, aided by a grant from the Rockefeller Foundation which allowed me to devote time to writing, all three parts were drafted. Revision of the material, however, took several years longer than I had hoped--so that the chapters have appeared in separate volumes rather than as a single unit.

In the meantime, on the basis of the first parts, various studies have been testing the linguistic concepts with field work. Note, in the bibliography, grammatical items by Cox, Shell, Mayers, Hart, Waterhouse, Pickett, Longacre; and phonological items by Pike (1957c) and Crawford. Various other works by Peeke, Wise, Delgaty, Ellis, and others are in manuscript and should appear in due season. The ethnological implications have yet to be tested in field situations.

I am quite aware that our attempt is an ambitious one--to revise the conceptual framework for language study into etic versus emic views (§2) with a grammatical tagmeme unit added to phonological phoneme and lexical morpheme units (§§7, 11), with a trimodal set of interlocking hierarchies (§§3, 15), with approaches via particle, wave, and field overlapping and supplementing one another (§12.1, and 1959). I am also aware of the dangers of leaving one's own discipline and attempting to build a bridge across to another, as I have tried to show analogies between linguistic structure and the structure of society (§17) and of nonverbal behavior (§§1-5).

Nevertheless I have ventured, because some of us need to explore this trail. We should profit if we

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can find in theoretical structure some components which will contribute toward binding us into departmental unity--linguists, archeologists, ethnologists, physical anthropologists, sociologists, and students of personality structure. The fact that we all study man is no longer enough to satisfy all of us--or some of our students.

In principle, the attempt might equally well have been made by someone coming from the opposite direction, building on ethnological theory and seeking analogies in linguistics. In practice, however, the recent formal studies in the linguistic area seem to have provided a base which at the moment is easier to build on.

Of course, serious errors can be made--undoubtedly have been here--in such an endeavor. In my opinion, however, the excitement of the chase is worth it. One may at least aim at avoiding the epitaph written on a recent book by its reviewer (Orlans, 1958): 'His claims are modest, his subject is narrow, and the presentation brief; failure is thereby precluded but success is slight.'

Readers of Part III who have not studied the earlier parts might prefer to by-pass the argument in the early sections of Chapter 11. If so, they may find it possible to read immediately the commentary on Tables 1-3 (pp. 13-22). Chapter 12 on Models and Chapters 16 and 17 on Meaning and on Society are somewhat independent of the others and can in large measure be read without extensive study of earlier sections.

Some of the chapters in Part III have been abbreviated, combined, and renumbered from those announced in Parts I and II. The section on system (there called §16) has been included in Chapter 15. Chapters on meaning and on concepts (older 17 and 18) are combined into new Chapter 16. The chapters on society and on equipment (older 19 and 20) have been combined into new Chapter 17. Forward references in Parts I and II must be reinterpreted accordingly.

I am indebted to Miss Ruth Brend for helping in the many details of preparation and proofing of the manuscript of this third part.

Kenneth L. Pike
Ann Arbor, Michigan
November, 1959

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CHAPTER 11

HIGHER-LAYERED UNITS OF THE DISTRIBUTION MODE OF THE SYNTAGMEME

In Chapter 9 it seemed possible to find criteria by which syllables, rhythm groups, pause groups, and so on, could be treated as units higher than the phoneme in the phonological hierarchy. Essential threshold criteria were chosen which differentiated each kind of higher-level unit from lower ones. The chest pulse, for example, differentiated the syllable from the phoneme, or from a sequence of sounds which was less than a syllable; an abdominal pulse differentiated a rhythm unit from a syllable or from a sequence of syllables less than a rhythm unit.

Once such units were determined, each of them or classes of them could then be further differentiated and described in terms of the trimodal approach.

In Chapter 10, a similar attempt was made to treat morpheme sequences in terms of hierarchically-ordered units, each of which is trimodally structured. The attempt proved fruitful, but the threshold criteria for determination of the level involved seemed to need further amplification before the results were comparably as satisfactory as those for the phonology.

Now, for Chapter 11, we pose the question: Granted that we have a grammatical hierarchy, and that the tagmemes may be set up as the minimum units of that hierarchy, what components of the data could best be treated as units of higher grammatical layers? And what criteria can be used to determine that we have passed over a threshold from a lower grammatical layer to a higher type?

In order to lessen the number of neologisms the term 'tagmeme' replaces the term 'grameme' used in Parts I and II. Likewise, the term 'uttereme' is replaced by a 'sentence type,' which is one kind of 'syntagmeme'--i.e., a sentence syntagmeme. (The term syntagmeme, for sentence type, is taken from Pike, 1958, p. 273; previously used in Europe in a somewhat different sense; extended to other tagmeme-sequence constructions at suggestion of Frank Andersen, private communication.)

11.1 The Term OC-Hypertagmeme Tentatively Applied to Obligatorily-Complex Units

Various kinds of structures may be treated as high-level, non-minimum members of the grammatical hierarchy--i.e., as HYPERTAGMEMES.

Some of these structures can more easily be treated as analogous to high-level phonological units than can others--i.e., are more fully integrated with the total model. There are differences, also, in the degree of difficulty in finding criteria which allow us to identify or differentiate such units.

11.11 Definition of Tentative Obligatorily-Complex Hypertagmeme

In this section we tentatively choose for diagnostic purposes a criterion which proved fruitful in the earlier stages of the development of the model and in the analysis of research materials. A bit later we will show how problems emerged in the process of integrating this criterion with the model as a whole, and implications of steps taken to revise the manner in which it is used.

A unit of grammar will be considered an OC-HYPERTAGMEME, for the purpose of this section, if and only if all the manifestations of it are obligatorily complex (i.e., necessarily composed of two or more morphemes or morpheme sequences).

As a unit of grammar, furthermore, each such unit is required to be emically relevant and is describable in reference to identificational-contrastive components of the feature mode, as well as in reference to free or conditioned, simple or complex variants of the manifestation mode, and in reference to its occurrence in sequences, classes, and systems as part of the distribution mode.

This kind of unit would include the structures illustrated, for example, by the boy, a man, the man; or by John came, Bill sang, John sang; or by beside him, past me, beside me, and so on. In each of these there is a mutual dependence of occurrence which characterizes the structure. (One does not say, for example, The came, nor He sat me.) In these structures the words boy and beside--or substitutes for them--do not occur without their concomitants the, him, or the like.

Concerning the feature mode, we must look (a) for manifesting class and (b) emic meaningful slot, if we wish to parallel for hypertagmeme the treatment of tagmeme (§§ 7.31-32). The manifesting class of such a proposed hypertagmeme is easy to find. It would be precisely the list of hypermorphemes fulfilling the requirements of the

structures already referred to. That is, the boy, a man, the man, the big man, would be members of such a class. This appears to be satisfactory, since for tagmeme, also, the class of morphemes and morpheme sequences manifesting the internal structure of a tagmeme were seen to make up one of these two crucial identificational-contrastive features of the tagmeme (§7.31).

When, however, we try to find the emic slot which would make up the second crucial component of its feature mode, a difficulty sets in. Instead of the one emic slot which is associated with a single tagmeme, and which by its function in the system brings the structural meaning to that tagmeme, we find that our postulated obligatorily-complex hypertagmeme occurs in a variety of structurally-meaningful slots. The sequence the boy, as we saw above, occurs not only in subject slot, but also in object slot, and so on; no one functional slot or meaning is associated with it.

It appears impossible to reconcile this fact with our desire to parallel tagmeme of Chapter 7, and hypertagmeme, in basic structural characteristics. At this point, then, a consistent development of the tagmeme model requires a rejection of the criterion of obligatory complexity as one crucial to the tagmeme-hypertagmeme threshold.

11.12 Disadvantages and Advantages of the Definition of OC-Hypertagmeme as Obligatorily Complex

Once difficulty has been encountered with the usage of the term hypertagmeme as restricted to obligatorily-complex types of units, various problems can be seen which it raises. One has just been discussed--that no emic slot and its functional meaning is uniquely applicable to such a unit.

A second problem was pointed out to me by Longacre on analogical grounds some time before this first one had given us difficulty. He noted that in the phonological hierarchy the theory did not require that every syllable be longer than one phoneme, nor every rhythm unit longer than one syllable, and so on. Why, then, should one require--if the analogy were by chance to hold across the two hierarchies--that higher units in the grammatical hierarchy must be obligatorily complex? There seems to be no way within our model to counter this objection.

A third disadvantage, of a theoretical type, also developed: In principle, the model emphasized unit as primary as over against construction or relationship (see §§ 6.7, 7.85); and unity was determined by over-all function in a higher-level slot. Yet the setting up of obligatory complexity as the principle diagnostic criterion of hypertagmemes would seem to override this view.

A fourth difficulty was that the approach led to a larger number of types of levels than could be easily paralleled with a phoneme, syllable, rhythm-group progression. A single word might have several such layers in it, for example. Thus in a Cashibo word it appears (Shell, 1957) that such complex items sometimes occur inside the core of a word, inside the base, inside the margin, and inside the word as a whole, in a variety of forms. Further layers within layers occur pyramided in the sentence. Yet within this plethora of levels there was no simple way to abstract out, as a special set of levels, the particular ones which like word, phrase, and clause intuitively--or at least traditionally--seemed most important. An obscure complex buried in a series of suffixes had the same theoretical status as a clause type.

It was further disturbing when in field studies it became obvious that a crucial diagnostic test of a clause type occasionally turned out to be an optional tagmeme rather than obligatory one. Compare, for example, the transitive and intransitive clauses in Shell's sixth formula (1957, p. 203) where she has an optional object which, combined with a special class of verbs, differentiates it from the intransitive clause which never has such an object. This brought into question the implied assumption that the diacritica of a grammatical structure must be its minimum, obligatory tagmemes.

A further theoretical problem arises related to the first one mentioned: If we look for an OC-hypertagmemic slot, or even a group of slots, to which the boy can be assigned as filler, we find subject and object slots already assigned to simple tagmemes since single morphemes like John fill the same slots (§§ 7.313[1], 7.44).

This, in turn, is awkward when we compare it with the phonological hierarchy, since no phoneme is there included within the manifestation of a phoneme, but here a determiner tagmeme (manifested by the) would be included within the subject tagmeme (manifested by the boy as a whole).

The collapse of the obligatorily-complex definition of the hypertagmeme leaves us, however, with an interesting question: What was it that made the definition useful in the first place? Fruitful it was, indeed. It opened the way for Shell (1957), for example, to structure her Cashibo data in an elegant, concise fashion which left the data in a form which is easily transferable to pedagogical treatment for language learning. Other studies by Mayers (1957), and Hart (1957) also profited by the approach.

The obligatorily-complex solution had several advantages without which it could not have made this contribution. It is important to review them, to see if they can be salvaged: (1) The solution

was simple. The definition was sharp cut, easy to state, easy to understand, and relatively simple to apply. This of itself was of enormous advantage in the processing of data. (2) It appeared to lead to a relatively-simple discovery procedure: if the two included tagmemes of a construction did not always appear in the construction, it was excluded as a hypertagmeme. (3) It led to hierarchical results. If one constituent of a hypertagmeme were itself obligatorily complex, and so on, this showed up in formulas as successive layers of double-plus structure: +(+[+...+...]+...)+... . (4) It led to crucial, quick recognition of many important minimum (versus expanded) formulas, without which analytical and pedagogical procedures are difficult to make operable. (5) It led to a quick rule-of-thumb separation of exocentric from endocentric constructions. (6) It allowed the analyst to work immediately with substitution frames and matrices without determining or hypothesizing in advance the point of word boundaries.

Especially by those persons who have struggled with the analysis of unwritten languages it will be recognized that this is no mean list of advantages. How--if at all--can they be preserved? Some of the advantages of the obligatorily-complex criterion can undoubtedly be retained by a new approach to delimiting a hypertagmemic set of units. Others, at the moment, seem impossible to preserve in that manner.

11.13 An Obligatorily-Complex Structure Re-Analyzed as a Special Kind of Emic Class of Hypermorphemes

Another possibility, however, lies in checking to see if the obligatorily-complex unit treated under the term OC-hypertagmeme can in fact be re-introduced elsewhere in the over-all system. With this in mind, if we re-examine the expected characteristics of the unit as described in §11.12, we note that only one gap appeared: For trimodal description as a hypertagmeme it lacked only the characteristic of having one particular, structurally-meaningful emic slot. Otherwise, trimodal features can be found for it.

Does this tell us anything? The answer is definitely yes. The characteristics of membership, variants, internal and external distribution are similar to those noted for an emic class of morphemes described earlier (§7.313). The principal difference is the very point in question--namely, that the members of this class are obligatorily complex. Each specific member of the class is a hypermorpheme--i.e., a morpheme sequence--but differs from those optionally-complex hypermorphemes where only one of the morphemes is necessarily present. That is to say, that we now have an OBLIGATORILY-COMPLEX CLASS OF HYPERMORPHEMES--rather than a hypertagmeme--with members defined and described by the very criteria earlier postulated for the hypertagmeme.

The obligatorily-complex units postulated earlier as OC-hypertogmemes are thus retained, but renamed. The classes of these units fit a gap left in an earlier stage in the development of the theory, which would sooner or later have given trouble in any case. Chapter 10 (Pike, 1955) does not show sensitivity to this impending clash. In addition, the classes of optionally- and obligatorily-complex hypermorphemes are made available as identificational-contrastive features of any newly-to-be-defined hypertagmeme, just as classes of morphemes have served in describing tagmemes.

Various difficulties remain, however. For example, at this stage in the discussion it must be noted that in the simple tagmemes of Chapter 7 some of the classes of forms filling a simple tagmemic slot were composites of classes of single morphemes, of optionally-complex hypermorphemes, of obligatorily-complex hypermorphemes, and of the latter expanded, optionally, still further. Any use of a hypermorpheme class in hypertagmeme definition must either be able to account for this state of affairs, or lead in turn to a modification of distribution-class treatment on the simple-tagmeme level.

11.2 The Terms RL-Hypertagmeme and RL-Tagmeme Tentatively Applied Relativistically to Levels of Focus

A sharply different use of the term hypertagmeme has been set forth by Longacre (1958). It, too, has been very fruitful in actual use in field situations (e.g., Elliott, unpublished) and has lent itself to detailed pedagogical development and presentation.

11.21 Definition of Relativistic RL-Tagmeme and RL-Hypertagmeme

The starting point of this approach is quite different from that of our Chapter 7. Instead of treating the tagmeme as a minimum unit of the grammatical hierarchy as a whole, it treats the tagmeme as a constituent unit of a larger unit on some one level of the hierarchy which happens to be under analytical scrutiny at the time. An RL-HYPERTAGMEME (i.e., a relative-level hypertagmeme) would be some one unit type of a general class of types at that particular level; if one is focusing on the clause level, then the equational-

clause type and a transitive-clause type would both be RL-hypertagmemes, whereas the subjects would be tagmemes.

That is to say, that if "X" represents a particular type of structure at a particular focus, then "X^{-1}" is a tagmeme. If one focuses on a particular phrase, that phrase type is considered to be an RL-hypertagmeme (as a matrix for the distribution of included words); but that phrase will itself be considered a tagmeme type when the clause is in view as an RL-hypertagmeme with the phrase included within it. A unit which is seen as an RL-hypertagmeme on one level is viewed as a tagmeme as part of a higher level.

By this view, both tagmeme and RL-hypertagmeme are relativistically defined. And choice of a particular matrix level as a starting point for description is arbitrary. One may start with a higher level, or a lower one, focus on it--as an RL-hypertagmemic level--and study the contrasting total units at that level, or the included ones which are its constituents.

11.22 Levels of Structure

The "levels," on the other hand, are quasi-absolutes. They have an absolute character in that, etically, there are criteria which, in general, differentiate clause level from phrase level, phrase from word level, word from morpheme level, and so on. They are still somewhat relative in that the specific details of the available criteria, and the specific numbers of levels which are structurally relevant to any one language are emically determined.

One language may contain more structurally-relevant levels than another, and the levels may have somewhat--but not completely--distinct diagnostic characteristics.

Crucial to the setting up of one level as over against another, however, is the analytical requirement that unit types on one level must in some sense (1) be a matrix for controlling the occurrence and relative (fixed or free) order of included constituents, and (2) be structurally organized in a manner which in some sense is sharply in contrast with the layer next higher or lower in the hierarchy.

Some of the levels which are most likely to be treated in such an approach are word, phrase, clause, sentence. Others might be stem, utterance, conversation.

11.221 Word Level

In setting up the word level as over against a lower or higher one, various general (etic) criteria are available. Not all of these criteria are applicable in any one instance; nor do they always lead to the same results. Border-line instances occur between word and bound forms, and between word and phrase. That is, these are generalized etic criteria which may be used to provide initial starting evidences for discovery of units at various relevant levels, but the preliminary results must be emically reworked before presentation of the system and--even then--there may be indeterminacy between the levels just as we have found indeterminacy of borders between units in sequence.

Etic criteria for possible use in the tentative separation of units on a WORD level from subword units or sequences of subword units include the following (we draw especially on Bloomfield, 1933, pp. 178-83, and Nida, 1949, pp. 102-06): (1) isolatability, as the standard criterion (a word like boys may conceivably be used as a call--Boys! or as a total sentence constituting a response form, whereas -s would normally be bound rather than free in this fashion; note here that, in reference to isolatability, word is analogous to syllable, and morpheme to phoneme); (2) versatility of occurrence (boys may be subject, object, etc., whereas -s 'plural' occurs only as a suffix); (3) rigidity of order (subword units are likely to be rigidly fixed as to the places they occur in a sequence of morphemes, whereas a word may be more loose in reference to the place it comes in a sequence of words--cf. the parts of un-gentle-man-li-ness versus away in Away he ran, He ran away, Away ran he); (4) interruptibility (a word is not easily interrupted by a parenthetical expression as a sequence of words may be--cf. black--that is bluish-black--birds where bluish-black may not be inserted in the middle of the compound blackbird, and compare the expansion potential of green house in greener house versus greenhouse); (5) special relationship (nonsyntactic patterns between morphemes may occur within words which are not found in phrases, cf. the outcast vs. to cast out); (6) potential phonological markers: (a) it is often possible to pause at the end of any word, but seldom after a nonfinal morpheme within a word; (b) in various languages words may constitute a rhythm or pause group, but affixes seldom do (compare the possibility of pause in the phrase a black bird with no such normal possibility in the word blackbird); (c) special junctures or (d) phoneme sequences or (e) allophonic occurrences or (f) morphophonemic rules may also help mark word borders; (7) analogy of doubtful items with items more certain (e.g., the as more or less non-isolatable, analogous to isolatable this, or -m in I'm here analogous to am).

Various word types continue to raise problems of determining word boundaries: non-isolatable words or variants of words (cf. a, or -m in I'm), rigidly-ordered words (to in to go), words joined

into compound single words (bluebird), cited parts of words (isms), words with affix bound to a phrase (the King of England's), and so on. It is precisely these problems which were tentatively by-passed by using tagmemic techniques earlier, but which arise again when one attempts to set up basic levels of structural type.

11.222 Phrase Level and Portmanteau Levels

Having discussed criteria to differentiate word units from subword units, we now turn to those criteria which help differentiate PHRASE level from word. As a first criterion, we use the diagnostic that a unitary sequence wholly made up of two or more words is on a level higher than that of the word--it is a phrase, clause, or sentence, etc. (The boy may by this criterion be a phrase, but not a word.)

Negatively, however, we do not use here the requirement that every phrase must be made up of two or more words. This criterion, as the principle component of the classical definition (cf. Bloomfield, 1933, p. 178), was useful to us so long as we were treating a hypertagmeme as a sequence of two or more obligatory tagmemes. If, however, we wish to apply that term rather to levels somewhat analogous to the syllable and rhythm group, the obligatorily-complex criterion for phrase prevents the parallelism whereby a single vowel phoneme may, under proper conditions, simultaneously constitute a syllable and rhythm unit. Here, then, we allow a single morpheme, under certain conditions, to be treated simultaneously as a word and as a phrase. Readers of Parts I-II should note: The requirement that a hypermorpheme must contain two (or more) morphemes (§10.1) is accordingly withdrawn. (Cf. p. 18a.)

This requires, then, a further diagnostic criterion to apply in such instances: A phrase is a unit, other than a clause or sentence, (a) which fills an emic slot in a clause or sentence structure and (b) which is either comprised of a sequence of two or more words or is one word which is optionally expandable in that same slot into a sequence of two or more words.

The boy would illustrate a multi-word obligatorily-complex phrase; John and big John would illustrate respectively a single-word phrase and its multi-word optionally-complex counterpart. A particular emic phrase type--a particular phrase matrix, a phrase RL-hypertagmeme under focus--would then be made of the sum of all the variant manifestations of it. Both John and big John would be phrases manifesting the same emic personal-noun-phrase type, or hypertagmeme. Both John and big John may fill the slot 'actor-as-subject' in the clause John came home, for example, and it is the boundaries of this emic slot (and others) which give the unitary character to big John as a whole. In terms of formula, a phrase is +(+ word + word) or is +(+ word ± word) but is not +(+ word).

(It is worth mentioning that the treatment of a single word as a phrase, when expandable, is in principle similar to the mathematical treatment of parallel lines as a special instance of an angle. By the latter convention a single generalization is made to cover both types of data. So, here, the convention allows us for certain purposes to cover an expandable filler of a slot by the same statement with the expanded filler. The convention runs counter to "common sense" but is extremely useful. For its application to phrase, see Pickett, 1959; for similar treatment of a word as an unexpanded clause, see Longacre, 1959. Compare, for earlier material related to this view, Wells, for whom 'every expression is a sequence of one or more morphemes,' 1947, p. 82.)

As we earlier had portmanteau phones (§8.446) and syllables (§9.236), so here we must now postulate PORTMANTEAU LEVELS--two or more levels simultaneously manifested by a single morpheme or morpheme sequence. The necessity for postulating portmanteau levels first was brought to mind by problems raised by Ilah Fleming. She pointed out (private communication) that in Chapter 7 there was an inconsistency implied when an item such as John (as subject) symbolized by +(S) was treated as the same unit as John in big John symbolized as ±(big) +(John)--i.e., ±(modifier) +(S) of the sentence Big John came. Inasmuch as I had implied that big John as a whole was subject, it was inconsistent now to treat John in the phrase big John as subject. It was this consideration which forced me to start dealing with simultaneous levels in the structure. Thus John in Big John came is now treated as head of a noun phrase within a phrase-level structure, and so as representing a word-level structure. John in John came, however, is treated as simultaneously (1) a word-level structure, i.e., head of the noun phrase, and (2) as a total phrase-level structure, within the clause. In the sentence John came the word-level and phrase-level structures share the same manifesting unit, which thus serves in double function between levels.

Turning now to the first numbered component above--the slot-filling requirement--we see that the utilization of phrase or sentence-level slots as relevant to the definition of phrase requires definition of these higher structures before the phrase can be more than tentatively identified. To this extent the definition is relative to the system as a whole (or is in part 'circular,' or mutually defining, as are all the terms of any system, in our view). We need, then, to check the criteria for

differentiating clause from phrase.

First, however, it is useful to mention a few other relationships between units at word and phrase levels: Like the word, the phrase is isolatable, is often versatile as to the number of kinds of slots in which it is found, and occasionally has phonological markers. The phrase is more likely to be interruptible by parenthetical forms or by phonological junctures than is the word. Often the order of words within a phrase is as rigid as the order of affixes within a word, but occasionally word order within a phrase varies freely more than does affix order within a word. From language to language there is considerable overlap between the class meanings of tagmeme types within words and within phrases. Either may contain tagmemes of aspect, time, number, person, emphasis, possession, definiteness, location, size, cause, shape, gender, animateness, movement, agreement, and so on. The difference here is in the level of structure within which the particular language handles the data, rather than in the kinds of data treated; a sharp division in allocation of these elements between two levels of a particular language, however, constitutes a supporting criterion for those levels once they are postulated for such a language. Similarly, a sharp discontinuity in any other of the mentioned characteristics--e.g., distributional versatility of parts, phonological markers, interruptibility, rigidity of order of parts, expansion possibilities, etc.--may for a particular language be diagnostic. In English, for example, within the word there is shown--amongst other items--time (walks, walked), process (walking), possession (John's), nominalization (truth), size (brooklet), sex (tigress), and so on. In the phrase may be seen time and process (was walking, a finished product), possession (his book), size (a big brook), sex (a female tiger), and so on. Yet in the phrase a vastly greater set of meanings can be carried by free forms than can the few carried by affixes (cf. a good man, a likely story, etc.). Similarly, the English phrase has a much greater expansion potential than the word (e.g., my very great big and tall John versus Johnny's).

11.223 Clause Level

We turn now to the clause level to seek diagnostic criteria to separate it from the phrase level. Longacre (1958)--who almost alone of current structuralists has faced this problem--suggests that the CLAUSE level though definable separately for each language nevertheless typically (1) has a place in the grammatical hierarchy between phrase and sentence--as the syllable is between phoneme and rhythm group. (2) It is (a) noncoordinate (excluding phrases like John and Bill and sentences like John came and Bill stayed), and (b) nonsubordinate (excluding phrases like big John or sentences like when he comes I will go). (3) It typically has an over-all structural meaning of predication, or equation, or query, or command, or related type (e.g., John came, John is president, Is he there). (4) In addition, for a particular language, the internal organization of clause units may differ sharply from that of phrase-level units in terms of number and type of constituent tagmemes making up a particular clause type versus a particular phrase type.

We note, also, (5) that, when transforms change one clause structure into another clause structure, the structure of included expanded phrases may sometimes be unchanged (cf. My great big John saw Bill and Bill was seen by my great big John). This makes the treatment of phrase structures essential to efficient description of such situations, where during the transform a phrase such as my great big John constitutes a constant, an unchanging block of words within the clauses.

Portmanteau levels involving clauses also occur. A single word may on occasion constitute an entire clause. For many languages, a pronominal subject is indicated in the verb, and clause types may have single-word manifestations. Compare Spanish Voy 'I am going' with Voy yo of the same meaning, but with added independent pronominal subject. In such instances, the total range of possible expansions differs greatly as to the kinds and arrangements of affixual tagmemes within the included obligatory words, and the kinds and arrangements of optional tagmemes which may expand the clause as a whole.

11.224 Sentence Level

For criteria separating levels above the clause, Pickett's work (1959) provides the most extensive treatment, although this is in its beginning stages. (1) The SENTENCE level may be portmanteau with that of clause: John came home is simultaneously clause and sentence. (2) The potential expansion types, however, are different, and force treatment of the two as separate distributional matrices. Whereas the clause expands in terms of satellite tagmemes of time, manner, location, etc., the sentence expands by the addition of further clauses in coordinate, subordinate, or paratactic relation to each other. Furthermore, (3) a sentence is by definition isolatable in its own right--isolatability is a specific characteristic of the sentence itself (Bloomfield, 1933, p. 170). Hence, when isolatability is used as a criterion for word or phrase or clause as over against a

part of a word, we are saying that word--or phrase or clause--may occur as constituting a portmanteau manifestation of a sentence.

In turn, however, (4) isolatability must be defined structurally. Here we treat it as the potential of an item for constituting an entire utterance. A sentence, in this view, would be a minimum utterance. Some, but not all, sentences are clauses; some sentences are made up of two or more clauses, whereas other sentences--especially those filling an utterance-response slot--may be made up of nonclause phrases or words. (Thus tomorrow is a nonclause sentence in the query-response unit When are you coming? Tomorrow.)

11.225 Monologue, Utterance-Response, Conversation, and Intra-Word Levels

The sentence level must be differentiated from monologue level: (1) A sentence is a minimum monologue; that is, a sentence may be simultaneously manifesting the monologue level, in portmanteau relation with it. (2) The monologue, however, may be comprised of two--or many--sentences in sequence. (3) The monologue constitutes the connected discourse of a single speaker--whereas a sentence may be one of several sentences in a single monologue. An extended monologue would be made up of a lecture, soliloquy, or the like.

An UTTERANCE-RESPONSE level may be set up as higher than the monologue. (1) As its crucial component it would contain an exchange between two speakers. (A minimum example: Going? No.) (2) In turn, it would be a minimum conversation, in portmanteau relation with it.

CONVERSATION, with its minimum just defined as an utterance-response unit, would be expandable into a sequence of such interlocking units in a variety of forms.

In between the utterance-response unit and extended conversation, however, we leave room for an intermediate unit--a TOPIC unit, with conversation centered about some area of discussion.

Returning, now, to small units, it must be noticed that within the word there is a possibility of various included distributional matrices. A STEM may contrast with an affixual part of the word, for example. Criteria for stem versus word include (1) the fact that the stem may be followed by non-isolatable morphemes--i.e., affixes, as -s in boys. (2) Yet the same stems may be simultaneously words, in a portmanteau level, as boy is both word and stem. (3) The stem matrix may exclude some of the affixual tagmemes of the word matrix as a whole (cf. blackbirds, where -s is part of the word but not of the stem). (4) Where the stem is not a word it is restricted to distribution in a word matrix, whereas the word may directly enter into phrasal slots.

Within the stem, furthermore, there is the possibility of additional levels as matrices of distribution. When in a particular language such as Cashibo (Shell, 1957) these are set up, they are used to provide a framework for contrastive expansion of included sequences of tagmemes.

The levels, even when analyzed as contrastively distinct by criteria mentioned here, are nevertheless not kept completely separate. Occasionally one finds a unit of a higher level included within a lower one. It is this situation which in part leads to some of the problems of boundary discussion referred to, for words, above. Thus a phrase fed back into a word-structure before a word-final suffix leads to phrase-word types such as the king of England's (hat). Similarly a clause may serve as subject, as in I want to go is always his cry. Further significance of these feedback or loopback structures will be discussed in §15.

11.23 Advantages and Disadvantages of a Relativistic RL-Hypertagmeme

A number of advantages come to us by adopting an RL-hypertagmeme and an RL-tagmeme. (1) When level of structure is under focus, rather than obligatory complexity, the way is open for a unit to simultaneously represent a low level and a higher one--for a word to simultaneously represent the word level and the clause level, for example. This opens the door to see a parallel between the phonological hierarchy and the grammatical hierarchy. As a single phoneme may in some instances constitute an entire syllable or an entire stress group, so a single morpheme may constitute an entire word, a phrase (defined as one or more words expandable into a sequence of two or more words), or a clause, and so on, in portmanteau level with them, as we discussed in the preceding section.

In addition (2) this allows us to put attention upon unity as such, rather than attention upon a construction with two parts, as a primitive starting point. This, too, is in better accord with the theory as a whole (see §§ 7.85, 6.7, 8.32). Thus the second and third disadvantages of the obligatorily-complex OC-hypertagmeme pointed out in §11.12 are avoided by the relativistic one.

In addition, the relativistic-level approach avoids two more difficulties of an obligatorily-complex requirement. (3) The presence of an optional tagmeme as diagnostic to a particular clause type fits into the relativistic RL-hypertagmeme without jar, whereas it was highly awkward to the

obligatorily-complex approach within which an optional diagnostic criterion was an embarrassment.

A further advantage (4) is seen in that some of the end results of the RL-hypertagmemic model approximates our traditional feeling as to relevance of certain components of language structure: Phrase, clause, sentence, and word receive a much more overt recognition than they do in the other approach--even though levels of structure may have earlier been brought implicitly into the description where they were not very prominent.

(5) In sentences it is also easier by this approach through levels to abbreviate complex formulas into simple high-level formulas in a less arbitrary fashion than under the other system. Here, once the analyst decides that phrase level and clause level, for example, are relevant, abbreviation can be made specifically in terms of some symbol indicating these levels as a whole, or their immediate tagmeme constituents, without feeling on the one hand the pressure to include symbolized detail due to the minute included components on these levels, or, on the other hand, without arbitrary crisscrossing of inclusion or exclusion of certain kinds of information. Consistency of abbreviation is accordingly easier to maintain by this approach.

(6) This relativistic approach in the grammar also has the advantage that it is much closer to the kind of advantage which we suggested for tagmemics in general when applied to the nonverbal anthropological materials. Thus, in §7.8, we pointed out that 'By utilizing a theory which builds on a spot-class correlative of a basic occurring unit, however, the analyst can start his analysis in the middle of the hierarchy, without waiting to find maximum and/or minimum units. This makes a spot-class starting point much more useful, for behavior as a whole, than is one which insists upon identifying a threshold to find some kind of minimum before analysis can go further.' This possibility of a relativistic start is exploited in detail by Longacre and Pickett on the grammatical level.

In addition, we have emphasized on several occasions that a 'serial expansion' is more useful in some instances than one which requires division into binary immediate constituents, in that our tagmemic approach insists that groupings be made in reference to substitution in slots in the structure--and that any binary structure which is present in the analysis be treated only as the end product of the analysis, rather than as the requirement of an initial decision for binary division at the beginning of the analysis itself. (See §7.56, and see Pike, 1958, p. 278.) Here is a further advantage (7) to the RL-hypertagmeme, in that it builds directly into the procedure of analysis and presentation of results this kind of view. That is to say, that Longacre with string constituents (a term which we adopt to replace our term 'serial expansion') makes this fact of structure more obvious to the beginner, by tying the nature of tagmeme into the idea of a string of constituents on a particular RL-hypertagmemic level.

These advantages, however, are purchased at an expensive price. Numerous disadvantages are the result: (1) The solution is no longer that of a simply-defined absolute, which the obligatorily-complex criterion brought in from the bottom to the top of a hierarchy. (2) The analytical methodology cannot be made as nearly mechanical, since relativistic levels are involved. (3) Although minimum and expanded formulas are involved in the ultimate symbolization, the minimum as such is not as directly seen as in the other approach. (4) Similarly, the relation between exocentric and endocentric constructions is not so immediate or direct. (5) By the relativistic approach, one has to hypothecate, early in his work, units on the various levels--he must, for example, assume certain word boundaries. This leads to some of the difficulties which were avoided by the earlier approach in which delayed word-boundary definition was postponed to a later stage of the procedure. The difficulty is by no means fatal, however, since a temporary "as if" choice of units as matrices for studying distribution allows one to reach tentative conclusions which may be modified in the light of fuller knowledge, so that in the long run this difficulty can be met. (6) By setting up levels as primitive terms, the relativistic approach requires threshold criteria for determining when one has passed from one level to another. This is a very serious requirement and by no means easy to meet--though our attempt to do so has in part been seen in the preceding section.

(7) Another serious difficulty is that if one adopts the RL-hypertagmeme, the tagmeme follows as relativistic also. When the tagmeme is defined as X^{-1}, as a constituent one level lower than the temporary focus of attention on a RL-hypertagmeme, then the tagmeme as the minimum of a hierarchy is lost. This is serious for the total coherence of the theory as it has been developed thus far. In our earlier chapters we used as a primitive notion a minimum phoneme in a phonological hierarchy, a minimum morpheme in a lexical hierarchy, and a minimum tagmeme in a grammatical hierarchy. If, now, tagmeme is tied rather to floating levels of attention, then a tagmeme as a minimum analogous to phoneme and morpheme is lost. The adoption of this point of view, then, would require changes in the earlier development of the foundations of this theory which would be far-reaching.

(8) In connection with this it should be noted that the crucial difficulty that we mentioned for the obligatorily-complex OC-hypertagmeme has not been avoided for the relativistic one. This

difficulty consisted in the fact that no single emic slot with its particular specific slot-meaning was discovered for the OC-hypertagmeme. Here, also, no single emic slot is found in which the RL-hypertagmeme must be distributed, nor is there any one meaning found in all the emic slots in which these RL-hypertagmemes may appear. This becomes very clear if one looks at a particular word type--a noun--and studies the types of slots in which it is found. In fact, it was this very datum in Chapter 7 which was used to separate morpheme class from tagmeme. When we attempt to find a solution for this difficulty such that the RL-hypertagmeme itself can be preserved, rather than being abandoned for the same reason as the OC-hypertagmeme was rejected, we find no specific data which allow us to do so. If, however, we compare this situation with that seen in the phonological hierarchy, we note that the parallelism is closer than it was before. That is to say, that a single phoneme is distributed in slots in various syllable types, and that a particular type of syllable may come in various rhythm-group matrices and the like. Similarly, when a phrase type or a word type comes in particular slots in various clauses, then clause type becomes similar in relationship to its included components as the rhythm-group matrix was to its included syllables, or the syllable was to its included phenome types.

Two further difficulties remain which presently we should like to try to mend. In the first of these (9) we note that there is a considerable disadvantage in having a unit called an RL-hypertagmeme only at the particular moment it is under attention. In this approach, a certain unit--let us say a modification-head-noun-phrase--can be called an RL-hypertagmeme when one is looking at its internal components; but when viewed as a constituent entering into the slot of a clause, for example, this noun phrase is no longer an RL-hypertagmeme but an RL-tagmeme. This we find disconcerting in terms of general discussion of the language structure. One could no longer say meaningfully that a language has 'x number of RL-hypertagmemes' because the number would fluctuate in reference to the particular area under attention at the moment. In some sense, these terms need to be made absolutistic.

In addition, (10) there is the problem that arises when one tries to determine the limits to the number of levels which can be postulated either in the general theoretical framework or for one language at a time. There seems to be no "stopping place" as to the number of levels that can be set up. When one finds phrases within phrases within phrases (compare very big in very big boy), or when one studies the possibility of proliferation of levels within word stem (compare Shell, 1957), it seems difficult to state that any limited number of levels is in theory available. At some point this becomes embarrassing. If some way could be found to limit this number, in principle, it would make the RL-hypertagmeme more palatable.

We turn now to consideration of ways of meeting these last two difficulties.

11.3 The Terms AL-Hypertagmeme and AL-Tagmeme Tentatively Applied in Reference to Levels as Absolute

The first attempt to avoid some of the difficulties in the use of a relativistic type of RL-hypertagmeme involves a slight redefinition of terms. If we define the AL-HYPERTAGMEME (i.e., an absolute-level hypertagmeme) as a matrix of distribution of slot-class correlatives, we give it an absolute status. In this instance a particular phrase type would be referred to as an AL-hypertagmeme throughout the entire discussion of the language--whether it were viewed as the top matrix under discussion, or viewed as an AL-hypertagmeme within a higher-levelled AL-hypertagmeme. Thus a complex word type would be an AL-hypertagmeme, and within a phrase it would be an AL-hypertagmeme within an AL-hypertagmeme, and the phrase within a clause would be a word AL-hypertagmeme within a phrase AL-hypertagmeme within a clause AL-hypertagmeme, and so on. Provided the levels were labelled, reference would be clear.

11.31 Advantages of the AL-Hypertagmeme

This has the advantage that one could then list the kinds of AL-hypertagmemes found in any one language, and discuss their contrastive features in that language, without having them disappear with change of focus. The AL-hypertagmeme utilized in this way would retain the advantages discussed for the RL-hypertagmeme in the preceeding section, insofar as these advantages are due to the avoidance of the obligatorily-complex definition earlier attempted and insofar as they leave the way open for the treatment of high-level matrices as units of particular structural levels--levels which are emically relevant.

11.32 Disadvantages of the AL-Hypertagmeme

A few difficulties would be raised by this change, however. The first: What would then be the AL-tagmeme?

Perhaps this difficulty could be met in a manner which we shall suggest in the next section. It is scarcely relevant to do so here, however, since a

more serious difficulty is present.

Neither the RL-hypertagmeme nor the AL-hypertagmeme meets our basic desire: Neither of them provides a hypertagmeme which itself has a single emic slot, possibly with a specific functional meaning, as an identificational-contrastive characteristic. On the contrary, both of these types of units refer to types of structures at specific levels, and may occur in various slots in distribution. A noun phrase, for example, continues to occur in subject slot, in object slot, and in others. The adoption of either of these views, then, would at this point lead to a discontinuity with the basic thrust of the theory as developed in Chapter 7. Unless we are willing to abandon the point of view developed there, we must decide that neither of these units proposed can usefully be termed hypertagmeme.

We return, then, to an expansion of the conclusion reached in §11.14: The structural units described on these levels, whether optionally or obligatorily complex (with or without portmanteau units involved) fit more neatly into the requirements of a hypermorpheme class than of a slot-class correlative. Each emic phrase type, each emic clause type, each emic word type, each emic sentence type, and the like, would better be treated as an emic class of hypermorphemes rather than as hypertagmemes.

Where, then, can we turn--if anywhere--to find something which might nevertheless fit the requirements to set up a hypertagmemic unit? A solution to this problem requires a reconsideration of some of our basic material. To this we now turn.

11.4 The Term Hypertagmeme (or SC-Hypertagmeme) Applied to Slot-Plus-Class Correlative on Nonminimum Levels of Structure

The goal we have set ourselves in this section, therefore, is to try to find a unit which will meet the requirements (a) of having a single slot relevant to it, and (b) of having a manifesting class of items which may occur not only in this particular slot but also in various others.

11.41 Implications of Reworking the Hypertagmeme into a Slot-Plus-Class Correlative in Reference to Levels

That is to say, that we are looking for slots into which a particular phrase type fits, or a variety of slots into which a particular phrase type fits, such that each of these slots plus its total list of fillers might be termed an SC-HYPER-TAGMEME--or simply a hypertagmeme. Similarly, we look for a slot or series of slots into which a clause type fits, for example, such that the filler type might be a class of hypermorphemes.

This inevitably forces us--once the question is raised--to note that a noun phrase, for example, comes in a subject slot and object (or other) slots. Similarly, a transitive clause of an independent type comes in an independent slot or a coordinate slot in a sentence. Must subject slot-plus-filler, and independent sentence slot-plus-filler be, therefore, treated as hypertagmemes? The implication is strongly affirmative.

This, however, raises serious questions. Chief among them is the fact that a subject-as-actor with its emic slot and its emic class of fillers has already been treated as a tagmeme--not a hypertagmeme--in Chapter 7. If this is now treated as a hypertagmeme, how would the previous analysis be affected? Would a further unit which is a tagmeme be found which would differ from hypertagmemes such as subject-as-actor?

At this point a suggestion from Wise (1959) becomes important. She strongly objected to the fact that a tagmeme could be included within a tagmeme in the treatment of Chapter 7 (as the boy had two included tagmemes in the manifestation of the subject tagmeme in the boy came home). This, she maintained, was non-analogous to the situation with morpheme and phoneme, since no morpheme is included within a morpheme, nor phoneme within a phoneme. Rather, she insisted, what we needed was a minimum tagmeme which would be comparable to a minimum morpheme; this minimum tagmeme would be included in larger units, but would not itself have tagmemes included within it.

The first implication of handling such a suggestion was not too difficult, in the light of the development of portmanteau levels. Thus we might assume that in a phrase like my big Johnny the morpheme John was simultaneously a stem in Johnny, a word in the phrase my John, and a potentially-expandable phrase in John came home. Then, just as a morpheme by our newer treatment could be simultaneously a word and a phrase with three simultaneous functions as morpheme, word, and phrase--or even as a response-sentence--so we could leave room for a portmanteau which included the simultaneous manifestation of a tagmeme and of a hypertagmeme. John in John came would be simultaneously a manifestation of a stem tagmeme and of a subject-as-actor hypertagmeme.

An item such as the -ny in Johnny or the -ish in biggish, would then appear to be clearly a minimum. This was esthetically satisfactory in that these minimum chunks of words would now be represented by a special term, whereas the expandable units would be represented by a

higher-level term.

The application of this approach was more difficult, however, with such an item as to, in the phrase to sing. On the one hand, it was clear that the to seemed to be manifesting a minimum; it appeared impossible to expand that part of the phrase. On the other hand, this left a serious objection in terms of elegance which Longacre's presentation had bypassed. In the relativistic approach, Longacre's treatment guaranteed that, on any particular level, the immediate string constituents of that level were all treated as somehow on a par. This was obtained by calling every string constituent a tagmeme-on-a-level, relative to that particular level. Thus a phrase was split into two, three, four, or more phrase-level tagmemes, regardless of the internal complexity of those relativistic tagmemes.

If we are to retain this advantage of Longacre's treatment, then to--like John above--must be treated as simultaneously manifesting two levels. As a minimum, it manifests a tagmeme. As a member of a string of slot-class units within a phrase, it manifests one of the hypertagmemes making up that string. The tagmeme-hypertagmeme relation, then, would be in part relative to levels in the Longacre sense, and in part relative to size.

Part of the difficulty of having tagmemes included in tagmemes, in Chapter 7, was related to the fact that an emic class of fillers of an emic slot was not always uniform in internal structure: big John, the boy, and he were quite different in spite of being potential subject-as-actors. In dealing with the fillers occurring in slots, Pickett (1959) was disturbed by the implied necessity of treating all the members of a filler class as in some way the same. She frequently found it inadvisable to give a single-unit symbol to represent all the fillers of that class. Often, in fact, it was more convenient to break down the members of the class into subtypes of fillers. She noted that this had in fact been done in Chapter 7 (Pike, 1954), and in some other early tagmemic work where the filler for a subject slot, for example, might be symbolized as a composite of noun, pronoun, noun phrase, clause, etc. But she felt that this breakdown into subclass components was not integrated with the theoretical view; rather it was left as a more-or-less practical handling of materials not coherent with the theory as a whole.

Hart (1957, pp. 151-61) had earlier pointed out such differences in the internal structure or function of parts of a filler class, and had labeled them as DIVISION SUBCLASSES of the larger class. This treatment was useful, since the filler class was obviously subdivided in structural fashion, and at some point this structural difference had to be dealt with. Pickett, on the other hand, set up a subclass of members of the total filler class (a) if the subgroup was found to occur elsewhere as a unit in another slot. Thus a group of nouns in subject slot might elsewhere serve as a special class of members--a division subclass--of words or phrases in a location slot. Her second criterion (b) was the internal structure of the subclass seen as a sequence of tagmemes. Pickett not only adopted this double classificatory criterion, but insisted that in some manner these subdivisions were fully as crucial to the structure of the language as a whole as was the fact that various subclasses together made up a particular filler class for a particular tagmemic slot.

We note, further, that the presence of included tagmemes in a higher-level tagmeme--the problem which troubled Wise--occurred precisely in relation to the internally-structured subclasses of Hart and Pickett. Tagmemes were said to be included within tagmemes (§7.44) only when a filler class contained at least two division subclasses, one simple and one complex.

Now, however, we come to the problem with the aid of conclusions developed earlier in this chapter: The former obligatorily-complex unit--and some optionally-complex ones--instead of being treated as an OC-hypertagmeme is analyzed as an emic class of hypermorphemes (§§11.14, 11.32). From this it follows that certain of the division subclasses of a filler class are also internally structured in this way, and must be analyzed as emic classes of hypermorphemes making up part of an emic filler class of units.

We can see, then, that tagmemes (or hypertagmemes) are in every instance distributed not into a higher slot-class correlative, i.e., not into a hypertagmeme, but rather into a hypermorphemic structural type or class. It is this hypermorphemic type which in turn is distributed into a larger slot.

We now come to a stage in the discussion where various of these components are brought together and a major change is required in the theoretical framework. We must abandon the theoretical requirement that tagmemes are distributed directly into tagmemes of a higher level, and replace it with the following requirement: Tagmemes or hypertagmemes (that is, all slot-plus-class correlatives) are distributed directly into hypermorpheme structures (i.e., into syntagmemes) and these in turn are distributed into higher level slot-plus-class correlatives as the total filler or as a division subclass of that total filler class.

Tagmemes are distributed into hypertagmemes not directly, therefore, but mediated through hypermorphemic classes (i.e., types). Viewed as a structure, a unitary, emic sequence of tagmemes is a SYNTAGMEME. Viewed as manifested by a

set of instances, it is an EMIC CLASS OF HYPERMORPHEMES. Viewed as a typical group of such members of an emic class, it is a HYPERMORPHEME TYPE. A CONSTRUCTION is a syntagmeme.

Illustrated, this crucial theoretical change is the following: The minimum English tagmeme made up of plural slot plus plural filler may first of all be distributed into (a sequence of tagmemes which makes up) that particular hypermorphemic class in English called 'plural count nouns,' e.g., boys. This hypermorpheme type in turn comprises a distribution subclass which may fill--among others--the hypertagmemic slot head-of-noun-phrase, as in the boys. Thus the tagmeme 'plural,' by this view, is not distributed into a unit now called a hypertagmeme, but is distributed into a unit which is a type of hypermorpheme (a word type, here). In turn, then--and only then--the word type is distributed into a hypertagmemic slot in the phrase type. Similarly, the hypertagmeme (as head) is distributed into this particular hypermorpheme type which then is distributed into (the sequence of hypertagmemes which make up) that clause type. This clause type as a whole then is a division subclass of all the potential fillers of a particular slot (of a particular hypertagmeme) which might be called independent-sentence-slot, or the like.

11.42 Advantages and Disadvantages of the Hypertagmeme as Slot-Plus-Class Correlative on Higher Levels

It may be useful to summarize the advantages and disadvantages of this further attempt to define hypertagmeme, in reference to our earlier attempts in previous sections. In general, the SC-hypertagmeme retains the advantages of the RL-hypertagmeme or the AL-hypertagmeme. These can be consulted in §11.23 and §11.31. These advantages, however, are transferred from the RL-hypertagmeme as a whole to the hypermorpheme class.

Specifically, on the other hand, this newer view has as an advantage the positive avoidance of the chief disadvantages of the relativistic or the absolutistic hypertagmemes. Instead of treating a unit abstracted from a slot as a high level of focus separated (i.e., in hypostasis) from the total context, it integrates with the total tagmemic theoretical view in which function in the slot of a higher structure (i.e., external distribution) is always immediately relevant to the nature of a unit. Whenever the relevant specific emic slot under attention has a structural meaning, furthermore, this meaning becomes one of the contrastive features of the SC-hypertagmeme which identify it and separate it from comparable unit types on the same level of structure.

In addition, it avoids some of the difficulties pointed out by Crawford (1959), it seems to me, in that the internal distribution of a unit type is referred specifically to the internal slot-class construction of a hypermorphemic type rather than to the hypertagmeme directly. When different phrase types, for example, may fill the same subject slot, the varying types of internal tagmemic construction (in phrases such as big John or the boy) are now not embarrassing to the theory since they are attributed to the respective division subclasses rather than to the total SC-hypertagmeme as such. After emphasis has been placed upon external distribution as primary, the internal distributional structure can be referred more readily to the division subclasses of the filler of that hypertagmeme slot without leaving the SC-hypertagmeme itself without identifying features.

Furthermore, by refraining from calling big John a hypertagmeme (as a phrase type), and the boy another hypertagmeme (as a phrase type), we avoid the embarrassment of saying that these two AL-hypertagmemes are somehow the same AL-tagmeme when they are subject. Rather the subject-as-actor would be an SC-hypertagmeme within a clause type, manifested by two or more different internally-structured phrasal subclasses, each of which was comprised of a hypermorpheme type with its own internal SC-tagmemic or SC-hypertagmemic structure.

The advantage of the SC-hypertagmeme approach, in sum, is that the theory as a whole becomes more coherent since in one point of view are included reference to minimum units, to portmanteau levels, to division subclasses, and to hypermorpheme classes. All find a place within a single framework which is analogous to the necessary treatment for tagmeme and filler classes already treated in Chapter 7.

On the other hand, the disadvantages of this newer treatment are relatively few, and where they occur seem to be clearly related to complexities of the data themselves. For example, this new view treats levels--word, phrase, clause, sentence, discourse, etc.--as relevant, emic, preserving Longacre's basic contribution, though at the price of complexity. It requires a careful distinction between hypertagmeme and hypermorpheme types--but this too simply increases the observed differences between the grammatical and lexical hierarchies. It requires room for simultaneous tagmemes or hypertagmemes on various levels at once. Yet portmanteau elements cannot be avoided elsewhere within our approach, so the complexity here adds no new basic principle.

11.43 Illustrations of Hypermorpheme Types (Syntagmemes) and of Slot-Plus-Class Hypertagmemes

Since we have discussed various applications of terms, it seems advisable now to have an interlude in which we illustrate the application of the terms as we intend to use them throughout the rest of Part III. For this purpose we choose a small corpus of some twenty English sentences, for which see Table 1, selected to illustrate many of the problems involved. (See page 15.)

Although the noun phrases in the subject slots have been chosen for more detailed labelling than are the verbs, the same approach is relevant to all parts of the lexico-grammatical structure, including other types of subjects in other clauses.

(For pedagogical purposes, one reduction in complexity of terminology might well be used: If for the term tagmeme one utilizes the phrase 'minimum tagmeme,' then for hypertagmeme one may utilize the phrase 'tagmeme within a particular higher level structure' such as 'tagmeme within phrase.' For technical reasons we shall not adopt this expedient here in our theoretical treatment, but there seems to be little objection to it on practical grounds. The minimum tagmeme is much less frequently in view in grammatical studies, especially in syntax studies, than are slot-plus-class correlatives on higher levels. Thus in some of these discussions the sheer frequency of repetition of hypertagmeme as against tagmeme may become burdensome and avoided by some such expedient as this. If this change were adopted, our use of the term tagmeme, in pedagogical literature, would be very similar to that of Longacre; but his use of hypertagmeme would be more like our use of the term hypermorpheme type or class.)

In the following commentary on Table 1, letter symbols refer to the same symbols in the table:

(a, b as items): John, Bill--separate morphemes.

(c, d as class): John, etc., members of a personal-noun distribution subclass, manifesting two different hypertagmemes within the clause.

(c as slot): subject-as-actor hypertagmemic slot in a transitive independent clause structure, filled here by the personal-noun division subclass of the total filler class of that slot.

(d as slot): object hypertagmemic slot in transitive independent clause structure, filled here by same division subclass of personal nouns.

(e as item): John hit Bill, a particular hypermorpheme; manifesting a particular class--i.e., a type--of hypermorpheme; a specific independent transitive clause.

(f as class in hypostasis): John hit Bill, etc., members of the class of that independent-transitive-clause type. Since the class is abstracted (i.e., in hypostasis) for citation purposes from various slots (e.g., independent slot in a complex sentence) in various contexts, no f-slot can here be identified in which they might have occurred. (Note: this clause type is not of itself a hypertagmeme, in our revised usage, but a particular hypermorpheme type; in §11.1-3, however, it was tentatively given a label as an OC-, RL-, or AL-hypertagmeme.)

(g as item in class, in slot): hit, single-morpheme member of transitive-verb class; here filling hypertagmemic transitive-predicate slot in independent-transitive-clause structure.

(h as class, in slot, hypertagmeme): a large class, containing various division subclasses--especially of noun types, pronouns, and types of substantive expressions--distinguished either by contrastive distribution elsewhere (as John versus milk) or by internal structure within the subclass (as the boy versus big John). The slot in which the class comes here is the subject-as-actor slot in the independent-transitive-clause structure--but the same class occurs in the object slot also. The subject-as-actor slot plus this filler class constitute the total subject-as-actor hypertagmeme (while the meaning of the slot here, as often, provides the name for the total slot-plus-class correlative).

(i as item): Big John is a hypermorpheme, of a type composed of adjective as modifier, with personal noun.

(j, k as class): Items of this structure, such as big John, make up a hypermorpheme subclass of the total filler class which may be in the subject-as-actor slot, in the object slot, etc.

(c plus j as class): The morpheme class of personal noun (c) together with hypermorpheme class (j) enter a larger class of personal-noun phrases. John is treated as a phrase--a single-word phrase--precisely because it is optionally expandable into multiple-word phrases such as big John, filling the same slot in clauses.

(l as class, in slot): big and little are members of a word class of adjectives in a modification slot of the modification-personal-noun phrase type. Since in this slot the items are expandable to very big, etc., the word big--like John above--is not only a word but is simultaneously to be treated as a one-word phrase.

(m as class, in slot, hypertagmeme): John and Bill are members of the personal-noun class, as indicated above in (c), but are here manifesting the personal-head hypertagmeme, as they fill the personal-head slot in the

modification-personal-noun phrase type.

(n as item, in class, in slot, tagmeme): -ny is a morpheme, occurring in the diminutive affixual slot of a variety of the personal-noun word structure. (Other affixual slots sometimes follow it--e.g., the possessive or the plural as in several Johnnys, or Johnny's ball; but these hypermorpheme types do not come in this same phrase slot in this clause slot; the is allowed before the plural word, but not here, whereas Johnny's as a subject is expandable to Johnny's ball, and hence manifests a different underlying structure.) This morpheme constitutes the entire filler class. The class plus the slot constitute a minimum slot-plus-class correlative. The tagememe may be labelled as diminutive (with three-way indeterminacy of meaning between morpheme meaning, class meaning, and tagmeme meaning).

(o as item, in slot, tagmeme): John here is in another slot--the stem (or head) slot within a personal-noun word structure (whereas in [m] it was in the head slot of the personal-noun phrase structure--i.e., in a higher level structure). The item seems to manifest a minimum slot-plus-class correlative, a personal-word-head tagmeme.

(o, i, a as levels): John illustrates simultaneous--i.e., portmanteau--function on various levels. In (o) it manifests only the word-head tagmeme. In (i) it continues to be word-head tagmeme (unexpanded) while also manifesting the phrase head, as a simultaneous slot-plus-class correlative on a higher-than-minimum level, a hypertagmeme. In (a) it continues to manifest word-head tagmeme and simultaneously phrase-head hypertagmeme, while in addition simultaneously constituting the entire single-word phrase and manifesting the hypertagmeme subject-as-actor, within the clause. When totally filling a slot of the word level, John manifests a tagmeme; when totally filling a slot of the phrase level, a hypertagmeme; when totally filling a slot of the clause level, a hypertagmeme of still higher rank (plus simultaneously filling slots of the lower-ranking hypertagmeme and of the tagmeme).

(p, q as class, in slots): the man, etc., are members of a hypermorpheme class, a phrase type different from big John, of determiner-determined structure. They constitute an internal-structure subclass of the larger class (h); here occurring in clause slots subject-as-actor, and object. Note that this class differs from (c) plus (j) in optional versus obligatory tagmemes and in the word-class of the phrase head.

(r as class, in slot, hypertagmeme): man, etc., a further class of words--count-noun class--filling head slot in count-noun phrase structure, and manifesting the count-noun-phrase-head hypertagmeme (simultaneously filling head slot of word, as a portmanteau level).

(s as class, in slot, tagmeme): big, etc., treated here as same class, emic slot, and tagmeme as (l), but occurring in a different hypermorpheme phrase type.

(t as class, in slot, tagmeme, hypertagmeme): the, etc., a class of determiners, in determiner slot, constituting the determiner tagmeme and hypertagmeme in the determiner-determined hypermorpheme class.

(u, v as class, in slot): Milk, a minimum form of a further structural subclass (v) of the subject-as-actor filler class, (u) as a class of mass nouns, (v) as a class of mass-noun phrases.

(w as class, in slot, hypertagmeme): Some manifests a further class and hypertagmeme in the expanded mass-noun phrase.

(x as item with overlapping class membership): the milk is a member of class (p). Therefore milk is a member of both class (u) and class (r).

(y as item, in subclass): He is a morpheme, member of pronoun subclass. Treated here as simultaneously morpheme, word (since isolatable), and minimum phrase (since expandable to he whom I used to know). The negative expansion potential (one does not hear big he as subject) differentiates it from subclass (c) and from the obligatorily-complex (p).

(z as item): him is treated in this approach as a phonemic variant (allomorph) of he, with its phonemic shape modified due to (conditioned by) its occurrence as manifesting the object tagmeme.

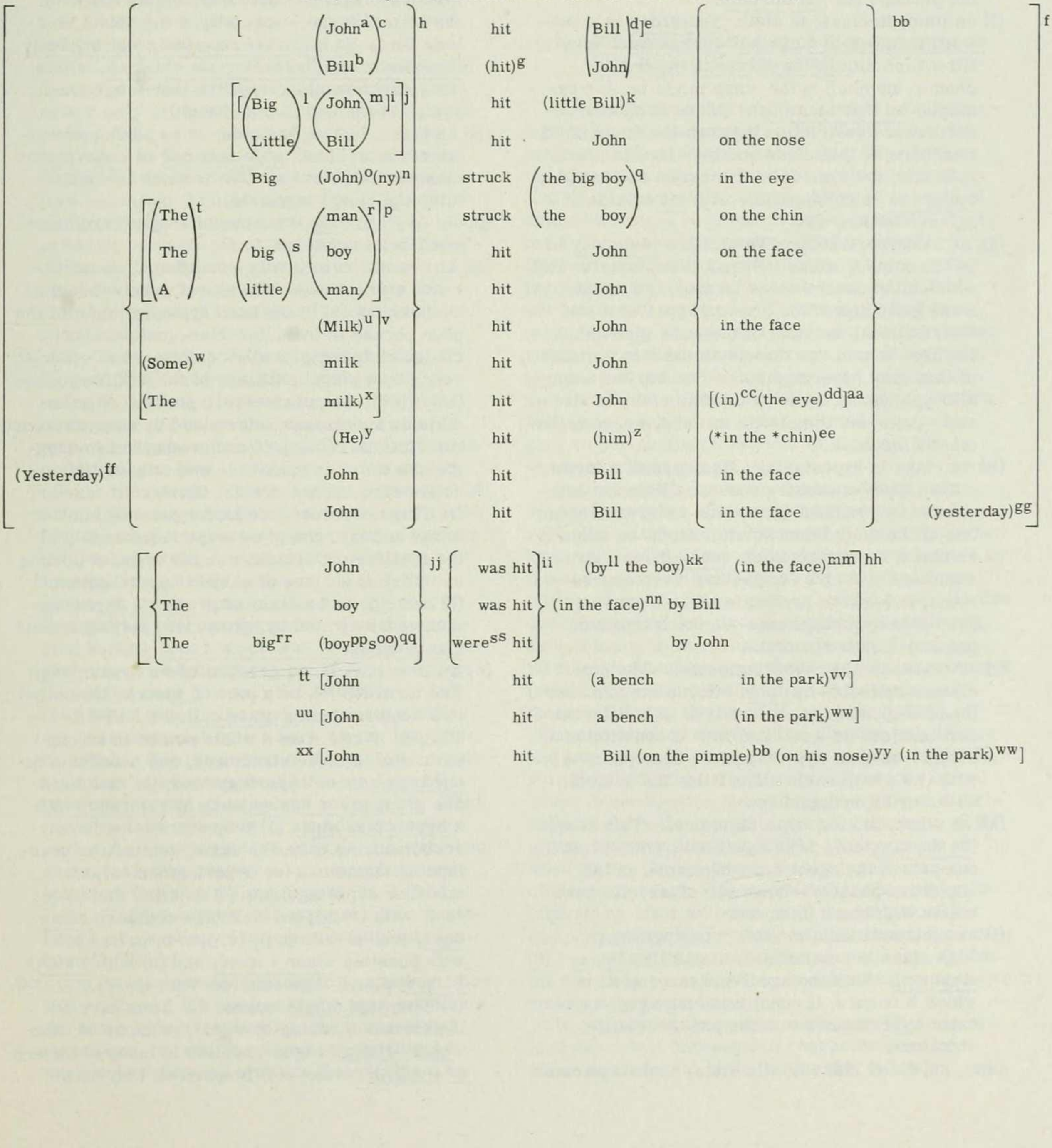
(aa as item): in the eye is a specific hypermorpheme, a phrase of the location-determiner-determined type.

(bb as class, in slot, hypertagmeme): The phrase (aa) is a member of hypermorpheme class (bb), in the (bb) locational slot of the clause. (bb) slot plus (bb) class constitute (bb) location-phrase hypertagmeme in the independent transitive clause.

(cc as item, member of class, in slot, tagmeme): The word in is a morpheme, member of the location subclass of prepositions (a distribution subclass which in this context excludes toward, from). In conjunction with the location slot of the location phrase it makes up the location tagmeme. Since it is minimum in length--a single morpheme--the class plus the location slot makes up a location tagmeme; since it is in the phrase level structure, that level makes it simultaneously a hypertagmeme.

TABLE 1

Sample English Sentences (Bracketed for Illustrative Reference)



(dd as item, in class, in slot, hypertagmeme): Item (dd) the eye is a hypermorpheme, a phrase of determiner-determined type (p), in hypertagmemic head slot of structural type (aa).

(ee as *item): Some specific sequences are unlikely to occur--suggested here by asterisks. Some of these etic co-occurrence restrictions--or lack of them--are arbitrary (collocational, idiomatic, or determined by meaning or universe of discourse). Note in/on the face but perhaps not *in the chin.

(ff as item, in class, in slot): Yesterday is a one-word member of a class of forms which may fill a time slot in the clause (a hypermorphemic member of the class might be, for example, on that occasion). There is an etic co-occurrence restriction between the manifested members of this class and the class in predicate slot; the time of each must be compatible; tomorrow is incompatible with hit outside of science fiction, etc.

(gg as allohypertagma): We assume yesterday to be the same word as (ff), in a different etic slot which must nevertheless be analyzed as the same emic slot. The pre- and post-slot etic distributional variants of the emic slot imply the presence of two distributional etic variants of this time hypertagmeme. One variant--one allohypertagma made up of emic class in etic slot--precedes the clause nucleus, whereas the other follows it.

(hh as class in hypostasis): Members of a further clause type--a passive one--are listed in hypostasis (i.e., without immediate reference to any one of the slots from which it might be taken).

(ii as class, hypertagmeme): was hit, etc., are members of a class of passive-verb expressions, in passive-predicate slot--a passive-predicate hypertagmeme--in the transitive passive-clause structure.

(jj as class, in slot, hypertagmeme): The emic class manifested by John, etc., is the same as (h),(d-k-q), and (dd). Here it is in a different slot (subject-as-goal) and with it constitutes a subject-as-goal hypertagmeme homophonous with (i.e., with same class filler as) subject-as-actor hypertagmeme.

(kk as class, in slot, hypertagmeme): This class (by the boy, etc.) is in agent slot, and with it comprises the agent hypertagmeme, in the transitive passive-clause structure. It contrasts with class (mm, aa).

(ll as emic subclass, in slot, hypertagmeme): This class is restricted to items like by, by means of. With the agent-indicator slot, in which it occurs, it constitutes the agent-indicator hypertagmeme in the passive clause structure.

(mm, nn, bb as class in etic slots, hypertagmeme): Further distributional etic variants of emic slots (with physical position changed but function structurally unaffected) are seen in that the location hypertagmeme may follow the object hypertagmeme in transitive active clause structure (cf. bb) or the agent in the passive structure (cf. mm). In the passive clause, however, the etic position of the location hypertagmeme is frequently before the agent (cf. nn). Less frequently, and not shown in the table, the location hypertagmeme may precede the object in the active clause, especially if the object is long, as in He hit in the face the great big bully that was always bothering the children. (Note the potential ambiguity if the location phrase comes at the end of the clause.)

(oo as class, in slot, tagmeme): -s plural, constitutes a morpheme, sole member of a morpheme class in the plural slot, with which it constitutes the plural tagmeme.

(pp as in slot): boy, member of single-morpheme word-head tagmeme.

(qq and ss as reciprocally-conditioned co-occurrence subclasses): The plural subclass (qq) of count nouns is, in the head hypertagmeme of the noun phrase in the subject-as-goal passive-clause slot, reciprocally conditioned in occurrence by a plural subclass of the auxiliary class (ss) within the passive-verb phrase. Similar division subclasses determined by co-occurrence restrictions of subject and predicate hypertagmemes occur in transitive and intransitive active clauses, but are not illustrated here. (1) This co-occurrence factor plus (2) similar order and (3) related or same membership of the manifesting classes are the criteria leading us to set up a class of subject hypertagmemes (h) and (jj), and a class of predicate hypertagmemes illustrated by (g) and (ii), cutting across clause types.

(c, m, o-n, r, u, ff, qq grouped into a hyperclass): The term NOUN, as a part of speech, is applied to a nondistribution class called a HYPERCLASS. While it as a whole comes in no one emic slot in these structures, and manifests no one tagmeme or hypertagmeme, its members are grouped for convenience of reference into a hyperclass since (1) they sometimes have accompanying them the same, related, or overlapping tagmemes (or hypertagmemes); cf. modifier hypertagmeme (l) with (m) and (o-n); (s=l) with (r=m); (w) with (u)--compare some boys; (r=l=s) with (qq); (c, j, o-n, p, qq each with possible whom I liked, and (u) with which I liked; plural tagmeme (oo) with (pp=r). (2) They are single words. (3) They have a hyperclass meaning of object, or name of item which--though vague--applies to many members of the hyperclass. (4) In general, they as a

whole, or the phrases of which they are head, manifest the same hypertagmemes, such as subject-as-actor, subject-as-goal, object, and location. An English noun class, it must be emphasized, can only be arrived at by such a special grouping of distribution classes; it is not a class determined by uniform external distribution in a specific slot or group of slots in these structures. (5) As for internal composition, presence of plural tagmeme (oo) is the most widely used clue to noun identification. Among problems involved in this inconclusive test, however, note that class (c) and class (u) cannot take plural while retaining the meanings which they have in these slots, but rather only when with a different meaning such as they have as members of class (r) in the two Johns or the two milks (and there it must be decided whether different morphemes are involved--John homophonous with John--or whether the same morpheme occurs, with semantic variants which are tagmemically conditioned). In addition, clauses or phrases sometimes occupy subject slot and take the plural, etc.; yet it is awkward to call such items nouns.

(tt, uu): These sentences are included (adapted from §7.322, and from Pike, 1943, p. 79) in order to illustrate further the fact that items made up of the same morphemes in sequence may nevertheless manifest different tagmemes or hypertagmemes (and require different tagmemic formulas). This has been demonstrated for subject versus object, but needs illustration for other hypertagmeme types in order to show that, in principle, this characteristic may be found at any point in language. In (vv) the phrase in the park manifests only one part of the total object hypertagmeme, with the expansion being a bench which was in the park; in the park here is a hypertagmeme of post-modification of the noun phrase. Yet in sentence (uu), the phrase (ww) in the park manifests a different hypertagmeme which here means location-of-action. The expansion of the sentence which tests for this difference (§7.322) is John hit a bench yesterday when he was in the park. Thus the tagmemic structure of hit a bench in the park must be separately symbolized for the two sentences. The sentences are morphemically same but tagmemically different (cf. §§7.43, 7.6). Without appropriate expansions or transforms, the sentences are structurally ambiguous (§7.322).

(xx): One further sentence is added in order to show that neither of the uses of in the park manifests the same hypertagmeme as (bb) in the earlier examples: In (xx), the phrase on the pimple manifests the hypertagmeme (bb); on his nose manifests the hypertagmeme (yy); and in the park manifests the hypertagmeme (ww). If on the pimple (bb) were to be omitted, then on his nose (yy) would probably be reinterpreted by the hearer as (bb); if on his nose, rather, were omitted, then in the park (ww) would become humorous since contiguity implies that it should be interpreted as the hypertagmeme (vv), whereas the lexical meaning makes this interpretation unlikely.

11.44 Trimodal Structuring of Hypertagmeme as Slot-Plus-Class Correlative

We now wish to discuss the trimodal structuring of the hypertagmeme as we intend to use the term throughout the balance of Part III--that is, the hypertagmeme as a slot-plus-class correlative on a non-minimum level. Many of the bits of data which must be accommodated in such a treatment have already been presented in Chapter 7; the reason for this is that our present use of the term hypertagmeme cuts its domain out of the earlier use of tagmeme. If no changes had been made between Parts I and III, therefore, no further treatment of the trimodal structuring of the hypertagmeme would be needed here--the only requirement would be emphasis upon the place of division between the minimum and nonminimum in reference to our earlier treatment of the tagmeme whose territory is now limited.

In Chapter 11, however, we have tentatively adopted a number of changes which must now be reflected in the general trimodal schema of the new hypertagmeme. Many of the details have been treated in earlier sections of the chapter, but a listing of some of them may be useful here: (1) The development of the concept of portmanteau levels, as a solution to the problem raised by Fleming; (2) the introduction of word-phrase-clause-sentence levels, etc., as emic and relevant to tagmemic theory following the work of Longacre (1958); (3) more detailed treatment of division subclasses and sub-assemblies as emphasized by Hart (1957), but (4) with further attention to differences between these division subclasses in terms of distributional definition versus internal-structural definition, following Pickett (1959); (5) treatment of word types, phrase types, clause types, etc., as classes of hypermorphemes (rather than as hypertagmemes, after withdrawal of the obligatorily-complex requirement of my earlier hypertagmeme); (6) rehandling of the definition of minimum, following the suggestion of Wise, in reference to tagmeme versus hypertagmeme.

In addition to these items, we have (7) generalized dependent-independent characteristics of items at all levels of the hierarchy, following

Waterhouse (unpublished). Further (8) we have reassigned internal structure of a hypermorpheme type, in terms of tagmeme sequences, to the feature mode of the type, under the impact of work of Crawford (1959). (This last change is related to the fact that the hypermorpheme type undergoes a change of definition related to that which affected the hypertagmeme. The double-plus requirement for hypermorpheme set down in Chapter 10 is abandoned here, just as it is abandoned for hypertagmeme. See p. 5a.)

We will assume that from the illustrations of the preceding section the reader now is in general familiar with the kind of units to which we apply our terms. In this section, therefore, we are concerned rather with giving, in outline, a framework to show the organizational interrelation of these terms within the trimodal matrix.

We give Table 2 to show the initial broad breakdown of a hypertagmeme into its modal components. This analysis is designed to apply in principle to any hypertagmeme whether highly complex, with intricate internal structure, or simple. It purports to fit any level of structure from the word-head of a phrase (or even smaller in languages where there are complex stems) on up to these special hypertagmemic slot-plus-class correlatives which comprise a conversation type, and so on.

We give cross references from the components of Table 2 to some of the illustrations in Table 1. We do this by adding reference numbers to Table 2 and referring back to the reference letters inserted in Table 1. On occasion we add illustrations not provided in Table 1. The commentary for Table 1 may be consulted in order to see the manner in which the letter symbols may be used to refer simultaneously to a class and/or to the tagmeme and/or hypertagmeme which it manifests.

Commentary on Table 2:

(1): (h, jj, bb) as hypertagmemes. Additional illustrations would include introductory or finalizing hypertagmemes in conversation, etc.
(2): (p) as hypermorpheme class.
(3): (p) with open membership.
(4): The head hypertagmeme of (y) is manifested by a class with closed membership; extensions such as he whom I used to know leave the hypermorpheme class as a whole with open membership.
(5): (p) with large membership.
(6): (y) with small membership.
(7): (h) as a class of classes of hypermorphemes.
(8): (j), (p), (v), (y), as division subclasses of (h).
(9): (h) as subject-as-actor hypertagmemic slot in the transitive-active-clause hypermorpheme structure.
(10): (u), as 'mass' noun, one of a class of hypermorphemes, partakes of a more specific class meaning than does (h), which is a member of a hyperclass of hypermorphemes which has an over-all but inconsistent meaning of 'an object.'
(11): (h), with meaning of subject-as-actor.
(12): (a) as a single-morpheme member of a class.
(13): (i) as a multiple-morpheme member.
(14): (a) or (b) as free variants of the hypertagmeme (h) and of its manifesting class.
(15): illustrations keyed likewise into Table 3.
(16): illustrations of fusion also given in Chapter 14.
(17): (ff) versus (gg) as alternate positions.
(18): (nn) with statistical preference following predicate before a long agent, but without the same statistical preference following a short agent--note commentary on (mm, nn).
(19): (t) and (r) obligatory in (p); (h), (g), and (d) in (f); (cc) and (dd) in (aa).
(20): (s) optional in (p); (ff) in (f); (bb) in (f).
(21): (h) as hypertagmeme, in (f) as higher-level hypermorpheme structure.
(22): (h) as subject-as-actor hypertagmeme, in a distribution class of subject hypertagmemes including (h) plus (jj) and others.
(23): for example, the list of all hypertagmemes in English.
(24): Table 1 as normal style, matter-of-fact; compare, in lively style, On the chin he struck the big bully.
(25): Table 1 as normal universe of discourse, such that *(ee) is unexpected; however, in the chin would be normal if the universe of discourse in a fiction story were about an oriental idol with a hollow chin in which were hidden jewels.

We next present Table 3 in which we suggest the generalized trimodal components of any emic class of hypermorphemes, i.e., of any hypermorpheme type, of any syntagmeme. As for Table 2, so for Table 3 we give numbers in cross reference with the lettered illustrations of Table 1, along with occasional added illustrations to amplify the scope of the application of the tabular material to available data.

Commentary on Table 3:

(1): As illustrations of emic classes of hypermorphemes of the type treated in Table 3, note (c-j, o-n, p, v, bb, hh) from Table 1.

TABLE 2

Modal Components of Hypertagmemes[1]

Modes	Components of Modes
Feature Mode	Hypertagmemic Form: Total emic distribution class (i.e., filler class) plus an emic slot. The Class Form: Either an emic class of hypermorphemes[2] with membership open[3] or closed,[4] large[5] or small[6] (symbolizable with a single hypertagmeme-string formula with trimodal characteristics for the class, for which see Table 3), or an emic class of classes[7] of hypermorphemes (requiring two or more hypertagmeme-string formulas for the respective division subclasses[8] involved). The Slot Form: The emic place[9] of the class in an arrangement of hypertagmemes in a higher-level hypermorpheme structure. (For etic variants of emic slots see manifestation mode.) Hypertagmemic Meaning: The Class Meaning[10]: If the filler class has no structurally-diverse division subclasses, there is often a hypermorphemic class meaning observable; if the filler class has several division subclasses, the composite meaning is likely to be vague or absent. The Slot (Function) Meaning: The meaning of the hypertagmeme as a whole--its functional meaning (especially detected as the meaning of its emic slot).[11]
Manifestation Mode	Variants of Filler Class Viewed as a Whole (leading to allohypertagmas, even when change affects only some members of the whole manifesting class): Simple vs. Complex: A single-[12] vs. a multiple-morpheme member[13] manifesting the hypertagmeme. Free: Any one member of the class[14] manifesting the hypertagmeme in the slot. Conditioned: Any change in the manifesting class is assumed to affect the manifested hypertagmeme, producing an allohypertagma. Therefore, the hypertagmeme may be viewed, as a whole, as being affected in the same manner and under the same circumstances as are the manifesting class and subclasses. (For detail,[15] see Table 3.) A class may be modified in membership, in the phonemic shape of its members, in the meaning of its members; under conditions defined morphemically, phonemically, tagmemically, or systemically. Fused vs. Clearly Segmented: A partially-fused sequence of two higher-level hypertagmemes occurs when a single lower-level hypertagmeme occurs in double function between them. (For discussion of fusions, see §14.)[16] Variants of Slot Occurrence (leading to positionally-different allohypertagmas): Free: Alternate physical positions[17] relative to other hypertagmemes in one or more hypermorpheme structures. Conditioned: Placement of hypertagmeme conditioned by--changed because of--some manifesting subclass of that hypertagmeme or of an accompanying hypertagmeme.[18]
Distribution Mode	Sequence Distribution: Active external distribution obligatory[19] or optional,[20] of the hypertagmeme in one or more higher-level[21] hypermorpheme structures (i.e., in one or more syntagmemes). Class Distribution: Membership of the hypertagmeme in a distribution class of hypertagmemes.[22] Membership of the hypertagmeme in a (nondistribution) hyperclass[23] of classes of hypertagmemes. Membership in the total slot-plus-class grammatical structure of a particular style,[24] or of a universe of discourse,[25] or of the language as a whole.

TABLE 3

Modal Breakdown of Emic Classes of Hypermorphemes[1] (i.e., of Syntagmemes)

Modes	Components of Modes
Feature Mode	Form: An included string of tagmemes[2] or hypertagmemes,[3] obligatory[4] or optional.[5] (Each of these included hypertagmemes, in turn, has modal components, as in Table 2.) Meaning: A class meaning sometimes--not always--observable in the hypermorpheme class. It is a common denominator of meaning[6] of some or many--not necessarily all--of the most typical or frequently occurring members of the class. ("Typical," left undefined.)
Manifestation Mode	Variants (Allo-Units) in Reference to Manifesting Class: Simple vs. Complex (Minimum[7] vs. Expanded[8]): A simple variant of an emic class of hypermorphemes--i.e., of a hypermorphemic structure--occurs when all its obligatory included tagmemes or hypertagmemes, but only these, are manifested. A complex variant occurs when one or more optional tagmemes or hypertagmemes is also manifested. Free: In substitution,[9] when one manifesting member of a class replaces another without stated restriction. Fully Free: Variation may be said to be fully free if no restrictions are known. Locally Free but Externally Conditioned: It is locally free, but not fully free,[10] if nothing in the immediate hypermorpheme class under attention controls its manifestation; but it is externally conditioned if an item in a higher-level hypermorpheme or in the system does restrict its occurrence. Conditioned: Here we present a tentative chart to indicate some types of interplay between kinds of effect and the sources of these modifications. (The list is not exhaustive, and the classification will need revision after further empirical data are available.) The variety of such changes is much greater--and with more extensive consequences--than is ordinarily suspected:

Kinds of Modification (or restriction)	Environmental Sources of Modification of Hypermorpheme Classes			
	Lexical (Morphemic)	Phonological (Phonemic)	Grammatical (Tagmemic)	Stylistic (Systemic)
Lexical: via membership of the alloclass	"semantic" restriction in membership of an alloclass of a construction containing a particular morpheme[11]	rhyming restrictions, etc., on alloclass[13]	subclass of forms restricted by a particular slot[15]	class members which are used only in a particular style[17]
via meaning of the members of alloclass, i.e., semantic	semantic variant of members of an alloclass due to collocation with specific morphemes of another class[12]	heightening of semantic impact contributed by rhyme, etc.[14]	change of lexical meaning due to occurrence in a particular slot[16]	change of lexical meaning due to occurrence in a particular universe of discourse, or style[18]
Phonological: phonemic shape of the members of the alloclass	morphophonemic changes adjacent to an arbitrary list of morphemes[19]	phonological process, regular morphophonemics (choice of allomorph alloclass adjacent to certain sounds)[20]	phonological changes in morphemes (choice of class of allomorphs) due to occurrence in a certain slot[21]	phonological changes or abbreviations due to a specific style of speech[22]
Grammatical: via alloclasses (viewed as types of concord between allotagmas)	correlation of co-occurrence variants of included allohypertagmas by cross reference to particular lexical types of items[23]	correlation of co-occurrence variants of included allotagmas in phonological alliteration or rhyme[25]	correlation of co-occurrence variants of included allohypertagmas, by markers of grammatical agreement or concord[27]	special style as affecting collocational concord of included tagmemes, or hypertagmemes; or resulting in specially included or excluded tagmemes or hypertagmemes[29]
via position	positional variant of hypertagmeme affected by specific hypermorpheme[24]	positional variant of hypertagmeme affected by phonological elements[26]	positional variant of hypertagmeme affected by presence of optional hypertagmemes or by optional allohypertagmas[28]	positional variant of hypertagmeme affected by style[30]

Fused[31] vs. clearly segmented variants: A partially-fused sequence of two hypermorpheme types occurs when they share a hypertagmeme in double function at their joint border.

TABLE 3 (Continued)

Modes	Components of Modes
Distribution Mode	Sequence Distribution: Occurrence in one or more hypertagmemic slots[32] (external distribution); independent[33] (free) or dependent[34] (bound) in its over-all occurrence. Class Distribution: Membership of the hypermorpheme division subclass as part of a larger filler class.[35] Membership of the hypermorpheme class in a (nondistribution) hyperclass of hypermorpheme classes,[36] i.e., the syntagmeme as a member of a nondistributional class of syntagmemes. Membership in the total class of classes of hypermorphemes of a particular style,[37] or of a universe of discourse, or of the language as a whole.

(2): For a string of tagmemes included in a hypermorpheme structure, see tagmemes (pp) and (oo) in hypermorpheme type (qq).

(3): Hypertagmeme types (jj, ii, kk, mm) in the hypermorpheme type (hh).

(4): obligatory tagmeme (pp) in hypermorpheme structure (qq); obligatory tagmeme-hypertagmeme (cc) and obligatory hypertagmeme (dd) in (aa); (t) and (r) in (p).

(5): optional tagmeme (n) in hypermorpheme structure (o-n); optional tagmeme-hypertagmeme (l) in hypermorpheme structure (j); optional hypertagmeme (bb) in (f); (s) in (p).

(6): general meaning of 'person' in (c-j plus o-n; 'passive predication' in (hh).

(7): John, (a), as minimum of class (c-j plus o-n).

(8): (j, o-n) as expanded manifestations of same class.

(9): (a) as free variant of (c-j plus o-n).

(10): 'm/am--locally-free--abbreviation controlled by style.

(11): *in with *chin as local semantic restriction of (ee); big and little of (s) restricted in reference to milk of (u, x).

(12): If one assumes that hit and nose in John hit_1 Bill on the $nose_1$ are the same morphemes as John hit_2 the point on the $nose_2$ (the latter meaning that he delineated precisely the crucial component of the problem) then hit_1 and hit_2, $nose_1$ and $nose_2$ are semantic variants of morphemes conditioned by the morphemic environment. Probably hit in hit oil (i.e., found oil) is best treated as a separate morpheme, however.

(13): in rhyme, selection from classes restricted to members of phonologically-defined subclasses.

(14): Heightened semantic attention or impact under alliteration is hard to prove; but cf. Kelly's jingle in §6.45.

(15): (v) as here including milk, but excluding boy.

(16): terribly, awfully, etc., semantically changed in hypertagmemic slot before pretty (or before ly) in awfully pretty (and see §7.323).

(17): class (y) with special members Thee, Thou, in elevated poetry or in prayer.

(18): Morphology, in a linguistic universe of discourse, refers to internal structure of words; in anatomical discussion it may refer to the form and structure of plants and animals; articulation in linguistics refers to vocal movements or arrangements leading to production of vocal sounds, whereas in anatomy it may refer to joints between bones or cartilages of a skeleton.

(19): plural -en after ox.

(20): voiced variant of plural, (oo), expected after voiced stops, etc.

(21): him, allomorph of morpheme (y), elicited by occurrence in object hypertagmemic slot (z).

(22): cf. (10), 'm/am.

(23): concord of allotagmas: co-occurrence lexical subclasses via cross reference of he (y) versus she versus it to lexical subclasses of (c, o-n, r, u, y, qq, etc.): John, Johnny, man, he; versus Jane, Susie, woman, she; versus dog, milk, it, etc. An allotagma of (h) may be manifested wholly or in part by such a co-occurrence subclass, in cross reference with an allotagma of subject, object, location-head, etc., of an immediately- or remotely-preceding clause.

(24): For positional allotagmas affected by specific adjacent hypermorphemes, see discussion of (mm), §11.43, with commentary there on in the face with reference to long or short agent forms. For a positional allotagma affected by its own manifesting hypermorpheme subclass,

rather than by the alloclass of an adjacent hypertagmeme, note the position of to him versus him in I gave the book to him versus I gave him the book; and compare positions of object in Did you see John? and Whom did you see?

(25): membership of allohypertagmas: class membership chosen both to maintain rhyme or alliteration and to preserve grammatical concord.

(26): positional allohypertagmas conditioned by phonology: as when grammatical order is changed in verse to allow words to fall where they will rhyme.

(27): with predicate (ss): co-occurrence subclasses of plural subjects (h) and (jj) with plural predicates (g) and (ss), i.e., plural concord from subject to predicate allohypertagmas.

(28): positional allohypertagmas conditioned by other hypertagmas: A hypertagmeme may occupy one physical position in the minimum form of the hypermorpheme structure, but a different position when a particular optional hypertagmeme happens also to occur. (In Zapotec [Pickett, 1959, §231212] for example, several third person dependent pronouns occur, and one of them must immediately follow the verb in an independent transitive declarative clause. If the [optional] independent subject precedes the verb, then any one of the third person dependent pronouns may fill the obligatory spot after the verb. When, however, the optional independent subject comes after the verb and the obligatory dependent subject pronoun, only a certain one of the dependent pronouns--the 'third person singular identified'--can be chosen.)

(29): style concord of allohypertagmas: co-occurrence lexical sets of words lead to appropriateness of vocabulary in reference to uniform types--e.g., consistent collocational uses of levels of learned vocabulary--cf. segmental material rather than segmental stuff. Note, also, the specially included hypertagmeme beginning the clause Oh that I might!

(30): positional allohypertagmas conditioned by or permitted within special styles: Away ran John for John ran away; and syntax distortion within some verse.

(31): See §14.

(32): Hypermorpheme type (j) occurs in subject slots (h) and (jj), object slot (g), location-phrase slot (dd), etc.

(33): In general, words are independent if they can fill totally either the utterance or the response slot in an utterance-response unit (i.e., must potentially be word-sentence portmanteaus). Clauses, to be independent, must be able to fill the utterance slot of an utterance-response unit. Sentences to be independent are in turn potentially portmanteaus of sentence and total discourse. Hypermorpheme class (hh) is independent.

(34): Both a morpheme class and a hypermorpheme class may be grammatically dependent. Dependent forms may be found on any level of structure. Note the dependent morpheme classes (n) diminutive, and (oo) plural. Some items which are part of a grammatically-independent class occur sometimes or always in phonological variants which are dependent: 'm of am. As for items on a higher level, a dependent sentence or clause may fill a response slot, as part of a higher level, but not the entire discourse slot.

(35): hypermorpheme class (p) as member of total filler class (h).

(36): distribution class (g) plus distribution class (ii) as members of nondistribution hyperclass 'verb expression.'

(37): appropriate congruent vocabulary of words and expressions in a lexical set (§7.313[4]) of a particular style.

11.5 Etics and Emics of Hypertagmemes and of Hypermorpheme Types

In Parts I-II, §§5.5, 6.8, 7.8, 8.7, we discussed, in reference to the units treated, (1) problems of segmentation. Then we listed briefly (2) etic criteria for the classification of types of units and (3) distribution classes of these units. We next (4) summarized problems which were analogous, for all of the unit types, in passing from etic to emic units. Similar kinds of material are relevant here. Since, however, our revised (SC-) hypertagmeme is cut out of the area covered by the older tagmeme, there is considerable overlap between the new material and §7 (where for grameme one now reads tagmeme or hypertagmeme; for gram read tagma or hypertagma).

11.51 Segmentation of Hypertagmemes and of Hypermorpheme Structures

Segmentation of tagmas or hypertagmas is treated in §7.71. This material must now be supplemented, for relevance of levels, by §§11.2-4. Tests for homologousness (§§7.71, 7.322) via expandability can in part be restated in terms of

transform grammar (see §11.76).

Borders of hypermorphemes and hypermorpheme types continue to be related to the borders of hypertagmemes (see gram vs. morph, §§7.71, 6.66, 7.56, 7.44, 7.54). As in the earlier materials, internal constituents (of the items now called hypermorpheme types or structures) are not required to be binary; they may occur in serial expansion (§7.56), i.e., as string constituents (§11.24). This, too, affects the determination of borders of hypermorphemes included in higher-layer hypermorpheme structures. Defined borders of hypermorpheme types change, also, with the withdrawal of the requirement of two morphemes per hypermorpheme (§§11.22; 10.1). For some purposes this leaves us weaker in ability to segment our materials. Hence there is the tentative suggestion, here, of the possibility of using the wave character of a hypermorpheme (§11.32) as a possible supplementary criterion:

In attempting to restrict the number of hypertagmemic levels postulated to a useful small number, Pickett (1959) ran into a particular difficulty: Within a Zapotec clause or a phrase it is exceedingly useful often to group together for reference certain included string constituents which are especially relevant for identifying that hypertagmemic type or for contrasting it with others. In comparing a transitive with an intransitive clause, for example, a subject of some type, a predicate of some type, and an object were much more relevant than constituents giving manner, degree, location, time, and the like. Not only were these items diagnostic in separating the types, but they seemed to function as a unit string. This unity was especially evident in that they frequently constituted--or usually constituted--the minimum form for such a type. A minimum intransitive clause in Zapotec has a subject and an intransitive verb. A minimum transitive clause has a subject, a transitive verb, and the presence of an object as optional (an option which was not present with the intransitive clause). It was convenient to refer to such a constituent complex as a clause nucleus in contrast to the margin or satellite groups of tagmemes.

But a question arose: If the nucleus may function in some way as a unit, was it not, itself, a matrix of tagmeme distribution--a hypermorpheme type--as over against a different included hypermorpheme type made up of the margin? And if this should apply to the clause, would there not also be nuclear hypermorpheme types in phrase, in word stems, and the like? And if it were true in these, would not the number of levels of analysis which were treated as emically relevant become so great that the very concept of level as a useful term would itself disappear? And would not hypermorpheme and hypertagmeme segmentation become highly indeterminate?

Within the considerations so far developed in setting up contrasting levels, there seems to be no way of meeting this objection fully. It seemed wise, therefore, to try to find an overriding criterion which would be necessary to apply before a separate level should be set up as emically in contrast with another level of analysis in the grammatical hierarchy. That is, one needs a criterion in grammar analogous to the physical difference of levels which were used in Chapter 9 to separate syllable from phoneme and from rhythm unit. A syllable was there assumed to have some kind of physical characteristic--a chest pulse--which differentiated it from the phoneme, even when the levels were in portmanteau relationship such that a single phoneme simultaneously constituted a total syllable and a total rhythm unit. If in the phonological sphere a criterion was used to distinguish such levels, what might we find to perform a related task in the grammatical hierarchy?

The suggestion which Pickett and I have been using is that in order to be considered an emic level in the grammatical hierarchy, a level must in some sense be a grammatical 'wave.' The nucleus would be analyzed as the peak, or center, of that wave. The margins would in some sense be composed of constituents which are at the borders of the grammatical wave. The constituents which serve simultaneously as part of two adjacent hypertagmemes would be a constituent analogous to a syllable in double function between rhythm units which have an indeterminate border.

This criterion is beautifully simple in principle, and elegant in its relating to the general outlook treating the phonological hierarchy. The possibility of having a total theory of language structure which is on the one hand a particle view--dealing with specific units--and on the other hand a wave view--dealing with the manner in which these have their required components and by which they fuse one into another in sequence--is highly attractive. (See Pike, 1959, and §12.)

If this view is adopted, constituent clusters constituting nuclei of hypermorpheme structures would then not necessarily receive the status of emic hypermorpheme structures themselves. They would be analogous to a vowel cluster, in the nucleus of a syllable, which would not itself be a syllable. A marginal cluster of hypertagmemes would be analogous to a consonant cluster in the syllable.

The extent which this approach will help solve the problem of segmentation of hypermorphemes and hypertagmemes is not yet clear. Pickett has used it in setting up Zapotec material. Until it is tested more widely, however, we cannot be sure whether it will run into indeterminacies in application which will force its heavy modification or

even its abandonment. Meanwhile, however, we hold to it tentatively as part of the definition of any hypertagmeme which we set up.

In practice, however, we have difficulty in applying the criterion. For example, in a phrase such as a very big boy whom I used to know, the nucleus of the phrase would be the obligatory sequence a boy. The margins would include, however, not only the post modifier whom I used to know, but the included very big. Thus neither the marginal string nor the nuclear string is completely continuous. This makes the figure of speech less attractive than it would be otherwise. In addition, there is the problem that it can be argued that very big itself has a wave-like form such that big would be the nucleus, and very the margin. Such situations would frequently arise whenever modifications of modifications occur nested within larger structures. The question: Should very big then be considered as a separate hypermorphemic wave within the total phrase a very big boy, or should this be treated in some fashion as part of the total phrase type, but an elaboration of it internally? At the moment we lack clear criteria for answering this question.

Perhaps some solution can be found whenever the total phrase can serve as an isolatable entity (as a response utterance) in contrast to the included phrase which would not so serve excepting in reference to the implied fuller phrase. Pickett has reference to dependent phrases such as two identified as coming only in response utterances as manifesting a direct or implied antecedent such as two men.

11.52 Etics of Hypertagmemes and of Hypermorpheme Types

The listing of etic criteria for slot-plus-class correlatives, and classes thereof, in §7.72 continues to be useful (so we shall not repeat it here) with the following modifications: (1) Criteria for tagmas and hypertagmas may be broken down into the many criteria (a) which are relevant to all structural levels of hypermorpheme types, and (b) those few which are useful only to one level. Certain of the possible meanings--such as subject-as-actor, in §7.72(o), for example--may be restricted to a single level. (2) A criterion must be added for minimum tagma and nonminimum hypertagma (§11.41). (3) Further structural types and meanings of hypertagmas must be added to the list, noted by the semantic criterion, in §7.72(o). Recent morphological work by Shell (1957), Cox (1957), and Delgaty (to appear) make it evident that this list will have to be expanded--Delgaty shows very great intricacy of detail in such structures--but the list already contains many of the general kinds of things to be expected. Similarly, Pickett shows very intricate detail of slot-plus-class correlation on the phrase level--where it has scarcely been expected--but the general types found are within the framework implied in §7.72(o). When more tagmemic studies are in print, the whole range of tagmatic types and contrastive criteria around the world will need treatment in a separate monograph; it would still be premature to attempt it here.

Similarly, separate monographs are needed to study the etics of the tagmemic structure of word types, of phrase types, of clause types, of sentence types, and of higher-level discourse structures. The suggested criteria in §7.72(a-g) are still largely relevant. They must be modified somewhat, however, in order to be applied to problems of the re-defined (§§11.22, 10.1) hypermorpheme where level becomes relevant to it, and where single words, for example, may be variants of a phrase type.

As a consequence of the change in definition of hypertagmeme (§11.41), furthermore, the nature of the hypermorpheme type--or class, or structure--is clarified in relation to sentence types, etc. The application of the term is extended to include phrase types, word types, clause types, sentence types and the like. Previously, it was noted that separate hypermorphemes manifested a sentence type (§10.1, there called an uttereme), and that these made up a hypermorpheme class. The implication, however, was not clearly seen that a sentence type and the corresponding hypermorpheme type should be equated. Under the new definition of hypertagmeme this implication becomes evident. As a result, we can now call on the criteria of §7.52 as criteria for hypermorpheme types on the sentence level and higher. Likewise, from §5.53 we can utilize the etic list of sentence types and of higher-level units.

The lists will need supplementation for further varieties of types, however, as soon as enough empirical studies are available to justify separate treatment. As one sample set of sentence types note Waterhouse (1958, for Oaxacan Chontal, where contrastive internal tagmemic composition and intonation patterns are given for each). There one finds a class of nine sentence types of affirmation: of action, of action toward goal, or toward recipient, of process, of state or quality, of reflexive action, of relation, of identity, of location; a class of three sentence types of negation: non-intensive, intensive, negation of question or of command; two types of interrogation: for information, for corroboration; five types of exclamation or sequence (a miscellany possibly needing further analysis): vocative, imperative, hortatory, response, sequence. Pickett (1959, §§242-43), also giving tagmemic breakdown, lists 21 sentence

types--the number, however, may vary considerably in accordance with one's judgment as to grouping allo-types into single units.)

For application of the lists in §§5.52-53 to hypermorphemic types on levels below the sentence--and for better fit on higher levels as well--the following modifications are needed: (1) Criteria must be added to determine the level of structure--e.g., clause, phrase, word (cf. §11.22, for suggestions). (2) The criterion of independence versus dependence must be extended to all levels of structure (cf. §11.44, commentary on items 33 and 34 of Table 3). (3) More extensive treatment is needed, on all levels, of included tagmeme or hypertagmeme sequence, pointing up the suggestions of §5.52(o-p). (4) Etic listing of clause types, phrase types, etc., must be expanded (since only sentence types, and higher levels, are included in §5.53).

An intricate example of phrase types is seen in Pickett (1959, §223) who gives nine major and fifty-three minor phrase types, each with formula showing contrastive tagmemic components. Phrases are first grouped according to the specific clause slots, phrase slots, and sentence slots which they fill. Within independent object and subject slots, for example, a different list of phrase types is found from that occurring in dependent subject slot; or in location, or time, or manner, or purpose slot; or in the various predicate slots. The range of their meanings (sometimes identical with the meaning of the slot in which they occur) includes possession, modification, apposition, nominalization, addition, compounding, personal, demonstrative, quantity, location, time, manner, purpose, augmentation, negation, query, aspect, speed, intransitive, transitive, imperative, equational, exclamatory, vocative, and so on.

11.53 Summary of Relation of Hypertagmas to Hypertagmemes and of Etic to Emic Classes of Hypermorphemes

The relations between the hypertagma (an etically viewed slot-plus-class correlative) and hypertagmeme are those stated in §7.741: A hypertagma may be (a) free or (b) a conditioned variant of a hypertagmeme; or (c) part of an etically-complex hypertagmeme; or (d) a sequence of hypertagmemes nonfused or (e) fused; or (f) erroneously set up as a hypertagma in the initial stages of the analysis.

Similar relations exist between a particular sentence and the sentence type--i.e., the emic hypermorpheme type--as indicated in §5.55. Likewise, phrases and emic phrase types, clauses and emic clause types, must be similarly viewed.

The development of the procedural application of these principles, analogous to those used by us for the phoneme (Pike 1947c), was scheduled for treatment in a later chapter (see §7.741). Meanwhile, the procedural implications are being tested by Pickett (1956), Elson (1958), and Longacre (1958). For extensive treatment, therefore, we refer the reader to these materials.

Perhaps the single most important procedural addition to the etic criteria in §§5.52, 7.72, and to the principles involved in passing here from etic to emic units, is a suggestion of Longacre's (1958) about contrastive types. He points out a danger that--unless there are adequate safeguards--a single structure such as (+A ±B) might be restated, by a simple juggling of symbols, as the two structures (+A) versus (+A+B). In this latter instance the optional minimum would be treated as one total unit, and the optional expansion defined as a distinct unit with two obligatory parts. This difficulty had, in fact, plagued us in classroom usage of the practice problems in §§7.313(4), 7.74, 7.75. Up to this point our only solution had been, on occasion, to grant alternate answers as theoretically correct even when one of the two was empirically undesirable. Longacre overcame much of this difficulty by insisting that a single contrastive difference in a pair of phrase (or clause, or sentence) formulas is insufficient to show that they are emically distinct structures; always there must be at least two correlated formal differences. The differences may be of various types--based on order of included tagmemes, included manifesting classes, nature of included tagmemes, etc., of which the following formulas may suggest samples: (1) (+A+B) versus (+A+C+D); (2) (+A+B versus (+A ±C); (3) (±D±E+A) versus (+A+B); (4) (+A+B) which may expand to (+B±C+A) versus (+A+B) which may never so expand; (5) (+A+B_1[=+a+b+c]) versus (±A+B_2[=+c±d]); (6) (+B_1[=+a+b]+A [with A in cross reference with a]) versus (+B_2[=+b±c]+A [with A in cross reference to b]); etc.

In my own view, we must retain the provision (from §7.745) that a structural contrast can meet the Longacre requirement of a double difference if one of the two major differences consists in a sharply different external distribution--often carrying with it a different structural meaning--of the item as a whole in a higher-layered hypertagmemic slot. Compare, for example, (+A+B) occurring only in one type (or slot) of utterance-response sequence, versus (+A+B+C) occurring in a different type (or slot) of utterance-response sequence. (For Pickett's use of this criterion to separate a dependent from an independent time clause, note 1959, §2322.)

Problems remain--as when we wish to treat a double difference in class membership (e.g., singular to singular and plural to plural internal relations) as representing co-occurrent

hypertagmatic restrictions (§11.44, Table 3, manifestation mode, conditioned variants of grammatical form) rather than separate clause types. It is here that our last suggestion, about external distribution, aids us by implying that if external function and expansions or transforms--are not different, and if the manifesting classes are overlapping or members of larger distribution classes, the units may sometimes be treated as etic variants of one another in spite of the double difference. (For extensive examples in Zapotec, many of them resulting from phrasal loans, see Pickett, 1959, §223 Contrastiveness of types must not be determined, in my view, by formal considerations alone, but by the relationships of the data to a total form-meaning composite, whether in morphemics §§6.46, 6.91) or tagmemics.

11.6 Tagmemic System in Reference to Kernel and Transforms

In previous sections we have utilized the concept of wave with nucleus and margin to help express in analogical form a number of relationships within our data. In §8.42 we refer to waves of motion in reference to the articulatory motions which lead to segmentation of a continuum of speech into phonemes or phones. Higher-level waves were referred to in reference to syllables (§§8.51, 9.223, 9.241). Earlier in the present chapter (§11.51) we utilized the concept to help in understanding the relationship of the nucleus of a phrase or word to its margin. We now ask the question whether or not the same concept might help us in treating a further problem:

Harris discusses 'elementary sentences' which 'will be called sentences of the kernal of the grammar' (1957, p. 334). The grammar as a whole consists of a kernal made up of a 'set of elementary sentences and combiners, such that all the sentences of the language are obtained from one or more kernal sentences (with combiners) by means of one or more transformations'--and these kernal constructions seem to be very few (for English he lists seven principal sentence constructions, all of which are active ones, plus a few minor ones, p. 335). In addition, there are other sentence types arrived at by transformations of the underlying sentence structures. Thus a passive may be derived from an active, and question types may be derived from the simple transitive statements. Earlier treatment of kernal and transform sentences are found in Harris (1952, p. 4; 1954, p. 260) in which it is suggested that the kernal sentences of the language might be the best way to get at machine translation from one language to another. John was hit by Bill, therefore, would be a transform sentence of the underlying sentence Bill hit John.

In tagmemic terms it might be possible to treat as the 'kernal' of the grammar those structures which make up the 'nucleus' of the grammar system as a whole. Items which could be derived from these by simple rules would then be treated as marginal sentence types.

Such an approach would ease one problem which has faced people writing monographs on tagmemics: Hart, for example, after setting up sentence types of affirmation of activity, of description of item, and of identification of an item, then treated emphatic and query types as separate sentence types on a par with the first three. To do this, however, the full structures of the first three types had to appear in the emphatic and query formulas with additional descriptions which were in fact made in transform terms. For example, in a commentary on the emphatic utterance type she states that the symbolized but included affirmation sentence has one or two of its included tagmemes (there labelled grammemes) 'selected for special attention and moved to the emphasis spot' (1957, p. 143). Since, in fact, for these marginal sentence types a transform rule was included as a commentary to the added sentence type, it would seem more elegant if these two kinds of sentence types--nuclear and marginal, basic and derived--could be given systematic status as nuclear and marginal respectively. The precise effect of this suggestion must await further study, but it seems a promising lead at least.

11.7 Bibliographical Comments on Chapter 11

Much of the bibliographical material relevant to Chapter 7 is also relevant to Chapter 11. The reader should consult §7.8, therefore, as well as the comments here.

11.71 On Hierarchical versus Combinatorial Grammar

Types of grammatical presentation may be compared with one another as to the proportion of emphasis they give to 'vertical' relations--relations of an item to higher-levelled structures--on the one hand, or, on the other hand, the emphasis which they give to 'lateral' relations--relationship of one item to another in sequence with it. Where emphasis is heavily vertical, with emphasis upon inter-level relations, the grammar may be called HIERARCHICAL. Where emphasis is upon sequential or combinatorial relations a grammar may be called COMBINATORIAL (or CONSTITUENT). Among approaches of a hierarchical type are tagmemics and transform grammar (see §§ 11.75-76 for the latter). Among approaches of combinatorial grammar, note emphasis upon early

application of immediate constituents, or of grammar as composed of classes of morphemes in a row. No one approach can be exclusively dedicated to either of these matters; over-all approach is a matter of emphasis.

11.711 On Item-in-Slot versus Construction

In §7.85 of Part I we emphasized the fact that, in our view, the relationship of an item to a slot which it fills in a higher-layered structure should be given priority in theory and analysis over the relationship between one item and another on the same level, or in the same structure with it. (Our earliest presentation of this view is in 1944, pp. 114, 127 fn. 7.) Priority, however, does not mean exclusive domain--both characteristics of language remain important to any grammatical approach. (Bloomfield, for example, though emphasizing constructions and the order of arrangement of items in them (e.g., 1933, pp. 168-69), includes statements such as 'The regular analogies of a language are habits of substitution' (p. 276); this sentence can be reinterpreted as implying the necessity of an item-in-slot view.) It is our crucial assumption of item-in-slot theoretical priority, however, which seems to be the point at which, above all, the approach to hierarchical grammar differs from the approach to combinatorial (or constituent) grammar.

Perhaps the difference can be pointed up by contrasting a summary statement by Harris with one of ours: 'Each element is defined by the relations among elements at the next lower level' (Harris, 1951, p. 369, italics ours). We would say, rather, that each unit is classified primarily by its occurrence--its external distribution--in one or more slots of one or more higher-layered structures, and secondarily by its internal organization; both criteria are crucial, but in any clash of analysis the first gets priority. Since the publication of our Part I (1954), testing of the theory in field work has heavily supported the fruitfulness of our assumption. Change has affected the view by extending the area of coverage of the assumption rather than by nullifying it.

Firth (1957, p. 17, and p. 5) treats both of these components of analysis but seems to assign priority to them in a reverse order: 'The first principle of phonological and grammatical analysis is to distinguish between structure and system. We have already mentioned the interior phonological relations connected with the text itself: firstly the syntagmatic relations between elements of structure prosodic and phonematic, secondly the paradigmatic relations of the terms or units which commute within systems set up to give values to the elements of structure.'

11.712 On Immediate Constituents as End Products of Analysis Rather than as Starting Points

'Immediate constituents of constructions appear within our theory, but in a sharply different role from that of current linguistics or of Bloomfield. Instead of being the point of initial attack on grammatical analysis, they appear as an end product of analysis' (Pike, 1958a, p. 277). The question arises as to why it is that there seems intuitively to be such great validity to immediate constituent analysis, whereas it has proved so extremely difficult to handle empirically. Our judgment is that binary immediate constituents are a special instance of the end product of a much more inclusive analytical principle. The analytical principle necessary is to treat items in slots in a higher level. When, as a matter of fact, it turns out that all items in a particular sequence can be conveniently treated as occurring in two successive slots of a higher-level structure, then the end product of this decision is a pair of binary immediate constituents. When the end product of this item-in-slot analysis leaves us with more than two, the end product is a series of serial (§7.56) or string constituents (Longacre, 1958).

The source of the difficulty is in part an underlying assumption in the traditional approach that items go together to make up constructions, and that this combinatorial start is the essence of grammar. This starting assumption forces one to begin analysis by looking for "cuts" in the string of materials. If, on the other hand, one starts with unity as a basic assumption (Pike, 1944, pp. 114, 127), and units are in turn assumed to occur in higher-level slots and to be analytically identifiable in reference to the slots which they completely fill as units, then the approach is to first look for unitized items or groups of items in reference to such high-level slots.

For earlier treatment of immediate constituents in these chapters, note §§7.56, 7.83, 7.85, 7.87. Although immediate constituents have been implied for centuries in grammatical analysis, the starting point for attention to this view in American linguistics is generally Bloomfield (1933, p. 161). The first attempt to deal with the problem on a theoretical front is Pike (1943b). Note there an early attempt to show hierarchical structuring in grammar; note especially the chart on p. 70, followed (with modifications) by numerous recent writers such as Nida (1949, p. 87) and Hockett, (1958, p. 152). Wells made a major advance in interpreting immediate constituents in reference to expansions and substitutions (1947). Though Pike had suggested the use of frames for class analysis and the study of immediate constituents (1943b, p. 81), and Harris (1946) had contributed

extensively to the study of progressively-inclusive constructions, it was Wells who brought forcibly to attention the immediate-constituent implications of expansions. Pittman, in turn, made a further advance, in pointing out criteria for nuclear versus satellitic relations (1948). Protest has occasionally been made against treating immediate constituents as binary (Bazell, 1953, p. 5). In spite of attempt to set up rules for determining immediate-constituent breaks (Pike, 1943b, pp. 74-81; Nida, 1949, pp. 91-99), wide divergence continues to occur in applying the principle to--let us say--English (Sledd, 1957, p. 270, in reference to work of Roberts, Whitehall, and Lloyd-Warfel). Hockett has recently improved charting of immediate-constituent relations (1958, pp. 188-89).

11.72 On Emic Levels of Grammatical Structure

It may be a bit difficult for the reader to appreciate the sense in which the treatment of levels in this chapter differs from that which I have used elsewhere, including earlier chapters of Part I. The difference seems to be an etic and emic one. In previous instances I had dealt with levels on an etic basis; here I am treating them emically.

In 1943b I pointed out that Bloomfield's work needed to be revised in order to bring to the fore of our thinking pyramiding structures in terms of layers, or levels (p. 70). At that time it seemed quite clear to me that a hierarchical approach was certainly necessary, and that this would affect grammar. In Part I layerings of structure are involved in many of the formulas: Whenever parentheses occur within parentheses, and further parentheses within these former, layering is implied. I indicated that on occasion morphological layering must be treated as differing from syntactic layering, and so on. (Note, for example, the setting up of a layer of words for Languagette C, §7.74, last paragraph of the description, p. 142.) On the other hand, I had equally strongly insisted that there were times when the setting up of layer distinctions--such as between morphology and syntax--could be highly misleading. In fact, tagmemics in part developed as a specific attempt to be able to analyze grammar for languages such as Mixtec where the boundary between word and phrase is not necessarily a sharp one.

In this current chapter, however, levels are re-established, under the influence of Longacre (1958), as primary working tools. The difference, however, is considerable. For the first time, so far as I know, it has been suggested to us that levels themselves may be set up by contrastive techniques--techniques similar to those which we have already used for differentiating morphemes or phonemes. It is this emic nature of the levels, rather than the sheer etic view, which is the advance Longacre has given us. To be sure, this emic view has been foreshadowed in many earlier publications--as one can see once one looks for it--but this, also, is to be expected. When phonemes were first treated explicitly, there seemed to be little difference between a phonemic description and the older treatments of the phonetic description of a language and its orthographical representation. The difference between phonemic statements and the older orthographical works lay in the precision of the techniques and in the clarity of the conceptual framework--and here the same is true for treatment of emic levels of grammatical structure.

Starting from Longacre's contribution, it seems possible to treat a level not only as contrastive, but as trimodally structured--with its identificational-contrastive features, its variants and manifestations, and its distributional relations to other levels. This allows the integration of the emic character of a level with other emic units of the tagmemic approach.

The term 'level,' however, is being used in an entirely different manner by Chomsky: 'A linguistic level is a method of representing utterances' (1957, p. 109, also p. 59), rather than--as for us--an attempt to represent some phase of structuring assumed to be in the material examined. Phonemic, morphemic and phrase-structure levels are referred to by Chomsky (pp. 86-87, 109), with a still "higher" level of transformational analysis added (p. 87). Lees considers that one of the two most far-reaching results 'of Chomsky's study is then his discovery of a new level of linguistic structure'--the transformations (Lees, 1957, p. 387), with a basic idea 'obviously derived from those manipulations characteristic of Harris' discourse analysis.'

11.721 On Words and Morphology versus Syntax

Must a morphology-syntax border be treated as basic for every language, and as an initial start of analytical attack? We previously answered in the negative. We did this on the basis of the fact that in some languages such as Mixtec it was difficult to find a sharp morphology-syntax boundary (1944, pp. 113-14, 126, 128; 1949), which appeared to be structurally relevant to the language, since (1) in general theory, a prime component of word definition was isolatability, yet (2) in this particular language many items which grammatically functioned as words were phonologically dependent, and (3) higher layerings in increasingly inclusive units seemed to have equal priority as over

against a single dichotomy between an arbitrarily-imposed morphology-syntax boundary. Note a similar discussion in Hart (1957, pp. 142, 161-64).

Firth, recently, suggests also that the distinction between morphology and syntax is perhaps no longer useful in descriptive linguistics (1957, p. 14). See also, Harris (1951, p. 262) Allen (1951, p. 126). Hjelmslev (1953, p. 16). Compare Hockett: 'This does not mean that every morpheme should be taken to be a word in its own right; the real implication is that THERE ARE NO WORDS IN CHINESE. The whole tradition of "words" as worked out with western languages is useless in Chinese' (1945, p. 255).

If, now, we bring a word level back into the structural purview, how is this to be related to our previous statements? The answer is in some respects now quite clear: (1) The word level is only one level which may be set up in reference to several other levels which can be equally relevant, such as phrase, clause, utterance-response, conversation, etc. Hence, no single dichotomy of morphology-syntax necessarily makes sense. (2) The setting up of any level must now be an emic matter, not an ad hoc or etic one. Thus, we can now state that a word level should be postulated for any language whenever it can be demonstrated that it is structurally relevant and useful to do so--that is on emic criteria. This parallels our treatment of phonemics, in that we set up a phonemic system for one language at a time. We now set up word level for a single language at a time, provided that that particular language requires it. (Longacre has recently been consulting with some students of languages of the Mayan family, where word level was not useful, but in which a single over-all level called word-phrase was more relevant and easier to handle--(material, unpublished, by Elliott); Delgaty has recently adopted this point of view for his treatment of a related language, Tsotsil (to appear). (3) Some of the problems which led to indeterminacy of the morphology-syntax levels, included the feedback of higher-level structures within lower-level structures. This continues to cause difficulty, but will be treated in §15 as important to the theory. At this point it is only relevant to state that just as there are indeterminacies at the junction of morphemes or of phonemes, so items with this kind of feedback of higher into lower structures may lead to an indeterminacy as regards levels. Just as, however, we did not completely abandon the relevance of phonemic segmentation just because of built-in indeterminacies in the system, so here we would now indicate that there are times when a word level is emically relevant even though there may be indeterminacies in the application of the emic criteria in some particular instances in analyzing such a language.

Other views of the word: The sentence is 'the unit of language, not the word' Sweet (1900b, p. 98); and Cassirer, after Humbolt (1953, pp. 303-04); but for Whitney 'the whole structure of our science rests upon the study of individual words' (1867, p. 238). The word is 'an ultimate, or indecomposible sentence,' for Sweet (1913, p. 5). It is not, however, a phonetic unit (1900b, p. 98), and the sentence-test does not work well on words like the (1913, p. 6). Various problems in word delineation are discussed in Vendryes (1925, p. 89), Projet (1931, p. 321), Bloomfield (1933, pp. 178-82), Pike (1945, pp. 79-82), Hockett (1947b, pp. 275-80; 1948, pp. 2, 6-7; 1958, pp. 167, 178), Guthrie (1948), Bazell (1948b, pp. 284-85; 1949, p. 86), Nida (1949, pp. 102-06), Harris (1951, pp. 327-28), Milewski (1951, pp. 249-50, 252), Pittman (1954b, p. 239), Osgood and Sebeok (1954, p. 66), Palmer (1956, pp. 574-75), and others.

11.722 On Portmanteau Levels

In §11.22 we pointed out that levels may be simultaneous--i.e., portmanteau. Some illustrations are given in §11.43(o-i-a). The integration of portmanteau levels into the theory had to wait for the treatment of levels as themselves emically contrastive. This allowed the criterion of obligatory complexity to be withdrawn, for hyper-tagmemes, and this in turn allowed for a simple unit to simultaneously manifest two levels of units.

Here, also, details as such are not new; it is the emic treatment within a hierarchical framework which represents the advance. Note, for example, that single words as constituting entire sentences have long been under attention (Sapir, 1921, p. 118), Bloomfield (1933, p. 172), Nida (1949, p. 103). Compare also Harris (1946, pp. 165-66, sequences as single).

Recent psychological studies have been treating the same problem from a different point of view. Note, especially, Carroll's discussion, and comments on Skinner (1959, p. 42): 'Skinner takes pains to insist that a mand is not the same as a tact, even when it is of the same phonetic shape. Water! learned as a mand, he thinks, does not automatically transfer to water learned as a tact,' and 'Specific morphemes or morpheme-groups such as water and the ball are then merely "subroutines" called by these constructions, and no longer have the behavioral status of mands or tacts--they are simply general-purpose responses which may be fitted in to either type of response pattern.'

11.723 On Sentences and Higher-Level Units

For bibliography on sentences and units higher than sentences note also §§5.63-64.

Bloomfield set the pace for American linguistics when he said that 'When a linguistic form occurs as part of a larger form, it is said to be in included position; otherwise it is said to be in absolute position and constitute a sentence' (p. 170). Hockett follows up this view by saying that 'A sentence is a grammatical form which is not in construction with any other grammatical form; a constitute which is not a constituent' (1958, p. 199). By insisting that units have first relevance in reference to occurrence in a higher-layered slot, we reject this definition of sentence. It is precisely for this reason, furthermore, that we are forced to insist that linguistic analysis must take as part of its essential domain the treatment of units larger than the sentence. Without these higher-level units there are not available adequate matrices for determining sentences themselves. A sentence is first of all a unit which occurs in a slot in a higher-level structure--as part of a monologue, or as a total utterance, or as response in an utterance-response structure, etc.

Hierarchical structure does not stop with the sentence, nor begin with it. Rather it must begin with the total language event in a total cultural matrix--which, in turn, is in a total physical matrix. It is precisely this interlocking on higher and higher levels of integration that forces us to treat language as merely one phase of human behavior, and structurally integrated with it.

On the other hand, since one cannot in fact describe the entire universe in a single sentence, nor analyse it in a short article, it is essential that we slice out from all phenomena available to us some section to treat. For such purposes, the abstracting out of sentences for study is a legitimate and useful procedure. It should be pointed out, however, that this is treating sentences in hypostasis. It is a deliberate distortion introduced in order to handle the data. The distortion is not to be regretted, provided it is recognized and allowances are made for its ultimate effect upon the description. An "as if" procedure is a useful one, provided one does not forget that it is an abstraction which one is dealing with.

Firth has repeatedly emphasized the abstract nature of isolates in analysis (see, recently, 1957, pp. 7-8, p. 23). In addition, he has emphasized treatment of the abstraction in terms of levels. The 'basic assumption of the theory of analysis by levels is that any text can be regarded as a constituent of a context of situation' (1957, p. 7) and congruent levels of various grammatical and phonological types (cf. pp. 22, 27, and 'Modes of Meaning', pp. 126-28). He suggests a brief listing of etic characteristics of linguistic units higher than a sentence (1957, pp. 9-10--which adds some items beyond the list which we gave in §§5.52-53).

11.724 On Clause versus Phrase

Once one has decided to treat the phrase level as an emically-distinct level from that of clause, and then begins to search the literature to see what earlier treatments or anticipations of this approach are present, he may be astonished at the lack of relevant data in places where he would expect it. In American studies this is undoubtedly due to the great influence of Bloomfield, and his treatment of this matter (1933). For him, the word 'clause' remains undefined. In searching his volume I find only scattered usages of the term in reference to particular illustrations, and never as an integral part of his description of units or structure, as such (1933, pp. 192, 197, 204, 251, 263, 273, 407, 437). The clause crept into his description unaware, without relevant treatment. It seems to me that this points up as clearly as anything could do the fact that clause was utilized merely as a traditional etic category, rather than a structural emic level.

The phrase, in Bloomfield, is utterly different in treatment from that which we have here, and likewise has affected the American scene heavily. He defines it as a 'free form which consists entirely of two or more lesser free forms, as, for instance, poor John or John ran away, or yes, sir' (1933, p. 178). Note two major differences between his usage and ours: (1) He utilizes the criterion of multiple words, rather than allowing for a phrase consisting of a single word. (It was precisely this starting point which we utilized in Part I and Part II for hypermorpheme, which we could withdraw here in Part III, now that emic levels have been postulated.) (2) Although he treats a multi-word sentence as a phrase, and a multi-word clause as a phrase, a single-word sentence or a single-word clause would not, in his view, be a phrase. Here the obligatory-complexity of the phrase definition makes phrase units cut across clause and sentence, but never lets them be in portmanteau function with a single word. For the phrase as multi-morphemic, see also Jesperson: 'A phrase is a combination of words which together form a sense unit, though they need not always come into juxtaposition' (1936, vol. 2, sec. 1.87).

It is the setting up of phrase and clause and sentence as emic levels which allows us in appropriate contexts to treat a single word as simultaneously a phrase, clause, and sentence.

Bloomfield had single-word clauses. Longacre

did likewise (1958), but in his early material reintroduced obligatory complexity in defining a sentence as comprised necessarily of two clauses. It was in working and collaborating on some class problems with Pickett that I saw that by utilizing Longacre's contribution of emic levels we could extend to stem, word, phrase, sentence, conversation and other units the possibility of portmanteaus where single units manifested two or more levels simultaneously.

Hockett (1958, pp. 194-95, 203-07) surveys different clause types for English, giving the observation that a clause is 'usually, though not always, a composite form built by a predicative construction.' Potter has both subject and predicate in clause definition, and lack of predication in a phrase word-group (1957, p. 105).

11.73 On Parts of Speech

The history of the study of parts of speech is a long one. Aristotle talks about the problem in Chapter 20 of his Poetics. Robins has an extensive discussion of the history of the problem (1950, pp. 17, 20, 40, 72, 79; see also 1952, pp. 291-95). For the semantic view that a 'Noun is the name of a person, place, or thing' see Barrett (1860, p. 87). Compare, more recently, House (1950, p. 20), or Blake (1931, p. 53), and de Groat (1948, pp. 479-80). For a philosopher's view, note Urban (1939, pp. 85-6, 150-58), and Sinclair (1951, pp. 121, 129-30), both of whom attempted to retain some contact with modern linguistics. For the possibility of classes being set up with a calculus of probability in which each item is 'an instance to some degree or other of a class' with probability rankings in membership, note Kaplan and Schott (1951, p. 168); see also Brown, in Bruner, and others, 1956, pp. 266-67). For formal class definition note Bloomfield (1933, pp. 264-72), Harris, (1951, pp. 243-61; 1952b, p. 212), Nida, (1949, pp. 107-10), Hockett (1939, pp. 235-48; 1958, 215-17, 221, 227, 264). Difficulties in determining membership in parts of speech have long been known: Paul (1889, pp. 403, 406-07), Jesperson (1940, p. 2). The problem of the universality of parts of speech has come in for considerable discussion: Sapir (1921, p. 126), Whitfield, quoting Magnusson (1955, p. 245), Meredith (1956, pp. 11-12), Bull (1949), Sheffield (1912, p. 90).

Fries attempted to avoid the problems raised both by functional definition (1952, pp. 204-05) and by meaning definition. He did this by avoiding traditional labels and using definition of new terms (numbers) by their occurrence in frames. Note that near the end of §11.43 we treat this difficulty in definition as being due to the fact that the noun--if it be set up at all as a part of speech--is a non-distribution class (a hyperclass of an elaborate type, requiring criteria, similar in complexity to the kind which Fries called on to delimit a strike in baseball, 1952, pp. 60-61).

The need for setting up hyperclasses occurs in other areas also if we wish to preserve some of the groupings of traditional grammar. One of these, especially, is the PARADIGM, in which nouns of different cases do not occur in the same functional slot; the pulling together of these non-distribution classes of nouns into comparable paradigms is not by distribution of the total word, but rather by a complex of criteria including identity of stem across the paradigm, comparability of kinds of relations between stem and affix, mutual exclusiveness of the stem in this hyperclass with stems in a verb hyperclass, etc. For a different attack on the problem of retaining paradigms, note Voegelin (1959, p. 23, in which a paradigm is a group of items which makes an isosemantic set). For a view otherwise, in which a paradigm of this nondistributional type seems to be disparaged, since 'These inter-relations are not between words as such nor are they properly stated by inter-relating the exponents,' Firth (1957, p. 20).

In reference to co-occurrence classes of government, concord, agreement, or other tie, much work has been done. Note Bloomfield (1933, pp. 165, 190-94), and Fries (1952, pp. 144-48, 176, 214). Hockett attempts to treat the relevance of such co-occurrence classes as due to 'deep-level relationships,' in contrast with 'surface grammar' which deals with obvious class relations (1958, pp. 250-51). By us these relationships are treated in a single total matrix, in which the major distribution classes are related as manifesting hypertagmemes in a hypermorphemic matrix, while the reciprocally-conditioned alloclasses constitute the units of agreement.

11.74 On Tagmemes née Grammemes

In our earlier material we utilized the term grameme--or grammeme (1954, 1955, and others). The term grew up as a neologism intended to imply 'unit of grammar.' The term was abandoned and replaced by Bloomfield's term 'tagmeme' because of objections raised, on etymological grounds, by other linguists. The theory as such is unaffected by the change. The principle difficulty is the danger of confusion with Bloomfield's use of the term tagmeme which we borrow. For discussion of the difference see Pike (1958); note also discussion in §7.87.

Bloomfield lacked a clear concept of a slot-plus-class correlation as an essential characteristic of tagmemic form. Rather, for him, the tagmeme was a label applied to any grammatical

characteristic provided it were meaningful. For him the tagmeme was a component of grammar rather than the kind of segmental unit which we set forth here. Thus the term duchess! for Bloomfield contained the three tagmemes (as well as taxemes) of selection, order or arrangement, and exclamatory final pitch (for summary and page references, see Pike, 1943, pp. 68-69). For us, however, the 'selection' of a form would be rephrased as the manifestation of a tagmeme by an emic class of forms which in turn is manifested by one particular manifesting morpheme or morpheme sequence; order would be found as a distributional characteristic of one or more tagmemes (or hypertagmemes) within the slots of a hypermorpheme structure; exclamatory final pitch might be a contrastive feature of a hypermorpheme class or of some tagmeme associated with it. No one of these grammatical components by itself would be a tagmeme in our usage.

Another source of confusion in reading tagmemic material of our type must be watched carefully. For us, a detailed tagmemic formula usually symbolizes and always implies both the emic slot and the emic class at each point in the structure. Occasionally, however, a person may utilize the meaning of a slot as the source of an abbreviated symbol for the tagmeme as a whole; or one may use the symbol of the manifesting class as the symbol for the tagmeme as a whole. When either of these choices is made, a tagmemic formula may look more like a traditional formula than the analysis itself warrants.

Thus in schematic form an extremely simple tagmemic formula might be $S^N P^V O^N$ which is to be read as: a structure containing three tagmemes of which the first and third contain Nouns as a manifesting class, with the second manifested by the Verb class, while the functional tagmemic slots are respectively Subject, Predicate, and Object.

Occasionally, for simplicity's sake, the fillers may be lowered to the line following a colon, as S:N P:V O:N (following Waterhouse, 1958, based on a suggestion by Paper). Or the formula may even be abbreviated to SPO. In the latter instance, however, if it is intended as a tagmemic formula the fillers are always indirectly implied. Longacre is encouraging this type of symbolization in his formulas for ready perception of the total structure. Yet this abbreviated symbolization should not be confused with an essentially-semantic analysis, without formal content, which could be shown also as subject, predicate, object, but in which the rigid formal requirements of the manifesting classes in an emic structure are not in view.

A tagmemic formula continues to imply classes, inter-relationships, and total formal system, even though semantic labels may be used for convenience. It should be seen that the first slot-plus-class formula above could be replaced by a formula such as $I^A\ II^B\ III^A$, and the second by I II III. The semantic nature of the labels is a mnemonic device, not essential in any respect to the presentation of the system as a formal structure.

The semantic labels are, however, of high value when one is presenting the system as a part of a pedagogical device to teach people to speak the language. Just as a lexicon must be provided the learner in order that he may have the meanings of the words which he wishes to use, if he is to use them at all, so the meanings of the tagmemes must be presented to the learner if he wishes to use them for communication. This pedagogical or communication requirement, however, does not as such affect the presentation of the materials as a quasi-mathematical structure when one so desires.

Yet the tagmemic formula with slot-plus-class requirement must be kept distinct from a structural formula of the type used by Harris (see, for example, 1946, p. 180) where the basic structural content is principally that of classes in sequence--symbolized as N V N, for example. Similarly, the advance in Fries' grammar in English was built by exploiting the view that 'An English sentence then is not a group of words as words but rather a structure made up of form-classes of parts of speech. . . . Our description . . . will . . . be in terms of the selection of these large form classes or parts of speech and the formal arrangements in which they occur' (1952, p. 64).

It is here, also, that there is one of the crucial differences between the hierarchical grammar of a tagmemic type and the hierarchical grammar proposed by way of the transforms of Harris and Chomsky. The tagmemic approach insists on grammatical structures as made up of formal segmental units which are other than and beyond mere classes of words or sequences of classes. Tagmemics insists upon a formal segmental unit which is a grammatical one, a unit of which the manifesting class is just one component whereas function is another. We shall turn to transform grammar in a moment, §11.66, and see other likenesses and differences between the two approaches.

11.75 On Discovery versus Presentation

Much of the linguistic literature of the past has concentrated on discovery procedures, or has treated linguistic theory as if techniques for discovery of units within a language were somehow immediately relevant to the techniques for presenting this data in a systematic fashion--or else

the difference between discovery and presentation has not been kept in focus. It has only been on rare occasions that this approach has been seen to cause difficulty. (See, for example, my suggestion 1952a, p. 118, that some of the differences in approach between Bloch and me were due to lack of sharp delineation here.)

Recently, however, Chomsky and Lees have forced into sharper focus the necessity of keeping the two apart in our thinking. Chomsky, for example, has 'disclaimed any intention of finding a practical discovery procedure for grammars' (1957, p. 56, and p. 59 where 'we renounce this goal') and would treat earlier methodology as the much more trivial matter of providing 'a manual of suggestive and helpful procedures' or of arriving 'at a grammar by intuition, guess-work, all sorts of practical methodological hints, reliance on past experience, etc.' (1957, p. 56). The emphasis on rejection here is specifically rejection of the possibility of mechanical ways to arrive at units (p. 57). Lees strongly emphasizes this view (1957, pp. 378-79). And, Lees points out, Chomsky is seeking rather for an evaluation procedure, 'a mechanical way to evaluate two proposed grammars on the basis of explicit criteria of excellence and reject one as inferior to the other' (p. 380), so that 'It would then no longer be the responsibility of the grammarian to state rigorously HOW he managed to find the particular grammar proposed. Any manipulatory or heuristic principles or devices which he may have found useful or stimulating play no role within the theory itself, once it is constructed' (p. 380). Lees points out a number of ways in which this view affects previous work in linguistics--affecting the concept of grammatical levels, for example, (p. 381).

It should be noted that this view differs from the underlying approach of Bloomfield stated explicitly for historical matters and, therefore, implied for his descriptive approach: 'The following assumptions and definitions for historical linguistics are added for the sake of completeness. Insofar as they are correctly formulated, they will merely restate the working method of the great majority of linguists' (1926, p. 162). That is, basic postulates are closely correlated with working procedures. I have assimilated as part of my own working assumptions Bloomfield's view.

I feel that theory of language structure should not lose sight of the fact, furthermore, that we are interested in language as communication--not as design, only. Our presentation formulas, therefore, should be considered elegant not solely when they meet the test of efficient description of design, but also when they best lead to a structural presentation efficient for learning to speak. I shall attempt, however, to keep investigation and analysis, versus presentation, labelled as such throughout the succeeding chapters.

I continue to retain strong interest in the methodology of grammatical analysis. The tagmemic approach, growing out of the desire to develop analytical techniques, has indeed proved fruitful in this regard. It is now easier to see, however, why certain of the characteristics of tagmemics were presented as they were in Part I. The recognition of proportion, reference to structural meaning, and recognition of lexical meaning or purpose, were all referred to in §7.322 as 'activities of the analyst' which were 'INTUITIVE STEPS (or ANALYTICAL LEAPS)' such that by them 'the analyst sets up his ETIC HYPOTHESES for testing, and in relation to them any emic analysis of human behavior must ultimately be in part initiated.' It turns out that there is no clash here with Lees and Chomsky. They deny the possibility of a mechanical discovery procedure. I affirm the necessity of certain intuitive components in an analytical procedure. I now merely add that it is the necessity of these--or other--intuitive components which make a mechanical discovery procedure impossible.

I indicated in §11.74 that in presentation of a grammatical structure, tagmemes do not have to be represented by semantic symbols. Numbers, letters, or algebraic formulas can replace every contrastive feature of a tagmeme, such as emic slot and emic filler class, or may symbolize directly the tagmeme as a whole. Once this is done, it is then clear that in the presentation of the system as a whole no semantic component need obtrude itself. The tagmemic grammar would then be available for evaluation in terms of its formal characteristics, alongside of any other type of grammar description available. Tagmemic analytical methodology requires reference to meaning, and requires certain intuitive judgments and hypotheses. Tagmemic presentation, on the other hand, requires none of this.

This is not to say, however, that we ourselves prefer a tagmemic symbolism which is devoid of all reference to structural meaning or the like. The burden on the memory imposed by a symbolism which has no reference to tagmemic function such as subject, object, head of a construction, modifier, or time relation, etc., is exceedingly great. Any one who has read morphologies prepared with a morphological index of the Voegelin type, labelled by numbers (see Wonderly, 1951-52, Cox, 1957) knows quite well that from the mechanical numbering he gets the big advantage of succinctness of reference, but a very heavy memory burden indeed. (Even the author himself of one such monograph told me that after a couple of years he could not recall his own symbol references, but had to check them.) How much greater would be this difficulty if extended to the entire

grammar. Thus it seems unlikely that for pedagogical grammars, or for grammars designed to be read by other linguists, we can afford to dispense with semantic labels in favor of purely algebraic symbols. For machine translation, or the like, on the other hand, formal symbolization of tagmemic units would seem to be called for.

We now turn to further characteristics of grammatical study in which tagmemics is related to transform grammar.

11.76 On Transform Grammar

Recent developments of transform grammar by Harris (1952, 1957, 1959) and Chomsky (1957) lead to many fruitful points of contact with the tagmemic approach. Both of them are in some sense hierarchical (see above, §11.71). The outworking of these hierarchical views, however, is at present very different. In the tagmemic view three separate hierarchices of lexicon, phonology, and grammar pyramid and interlock at various heights of these pyramiding structures (see for development of this view, especially, §15 below). In transform grammar one has successively inclusive class symbols (carried over from Harris, 1946), and some feeling that the hierarchical structure is from the 'lowest level' of 'morphophonemic and phonemic rules,' to the '"intermediate" transformation level,' to 'a "highest" level, the level of phrase structure' (Lees, 1957, pp. 388-89, and Chomsky, 1957, p. 46).

Both tagmemic grammar and transform grammar insist that an attempt to describe grammatical structure in terms of morpheme classes alone--even successively inclusive classes of classes--is insufficient. Tagmemics, however, does it by insisting on the necessity of both emic slot and emic class as being relevant to grammatical structure (Pike, 1954, §§7.1, 7.31, 7.32; 1958, p. 276). In this latter we state that an analysis of sentence structures solely in terms of sequences of word classes such as N V N is rejected, and one such as $S^N P^V O^N$--with both slot and filler explicit or implicit, see §11.74--is essential.

Chomsky, on his part, gives very strong evidence that a phrase structure description couched in terms of linear sequences of word classes cannot conveniently handle some problems of grammatical design--e.g., sentences made up of two sentences plus conjunction, certain discontinuous constructions, certain components of verbal phrases (items like have...en), and certain restrictions of subject in relation to object in sentences like John admires sincerity but not sincerity admires John (1957, pp. 36-44). (From Lees we seem to get the caution that it might be ultimately possible to handle some of these problems in a phrase structure grammar, though the price of doing so might be much greater complexity. 'There is as yet, however, no rigorous proof that a phrase-structure grammar of a natural language is inherently impossible,' 1957, p. 402.)

Tagmemic grammar and transform grammar also agree that the treatment of ambiguity in recent approaches to grammatical study is inadequate. Both tagmemic and transform grammar require that English be analyzed in reference to a much finer grid than is possible with a few parts of speech, if ambiguities are to be taken care of. Transform grammar separates ambiguous sentences 'by providing two or more different automatic derivations for them'; 'Thus, He bought stock for me can be understood in one of two ways: either it means He bought stock; the stock was for me, or it means He bought stock; he did it for me,' and the two have different transforms (Lees, 1957, p. 383). See also Chomsky (1957, pp. 86-90). Tagmemics analyzes such ambiguous sentences as different sequences of tagmemes (Pike, 1954, §7.6[2], §7.43 p. 123b). Tagmemics utilizes various types of expansions and of transforms--though not under the latter label--to test for such differences (§§ 7.322, 7.6[2], 7.321). Transform grammar, however, should enable us to make some of these tests more rigorous.

In the previous section we indicated that tagmemics utilizes intuitive reaction to structure as part of practical analytical methodology. Transform grammar expresses this somewhat differently: 'It is undeniable that "intuition about linguistic form" is very useful to the investigator of linguistic form (i.e., grammar). It is also quite clear that the major goal of grammatical theory is to replace this obscure reliance on intuition by some rigorous and objective approach' (Chomsky, 1957, p. 94, see also p. 84). Lees goes even further: 'It is precisely this Sprachgefühl, this intuitive notion about linguistic structure, which, together with the sentences of a language, forms the empirical basis of grammatical analysis; and it is precisely the purpose of linguistic science to render explicit and rigorous whatever is vague about these intuitive feelings' (1957, p. 399 fn.). Compare also Lees, for whom the empirical data include 'various kinds of judgment they [the native speakers] can make and feelings they may have about linguistic data' (in reference to judgments of rhyme, grammatically-permitted sentences, etc.), as over against the intuition of the linguist qua scientist about the data (1957, p. 376, and pp. 392-93).

In tagmemic terms, the empirical basis of grammatical analysis is the composite of structural meaning and linguistic form. As we have earlier stated in this study (§§6.46, 2.2, 5.64, 6.91,

7.83, 9.72), we feel that language is a form-meaning composite. In our view, neither form nor meaning must ultimately be set up as a unit in its own right without reference to the other. Our insistence on a form-meaning composite as applied to syntax material as a tagmemic view is best paralleled, insofar as transform analysis is concerned, by the work of Worth. He states that 'Two phrases which are transforms of each other are correlated in meaning as well as in form' (1958, p. 258). And 'One cannot of course have recourse to meaning alone, but a sharp difference in meaning may well be the clue to an equally sharp, if not equally obvious, difference in form' (p. 259 fn.). In addition, 'Perhaps the major flaw in the traditional approach, however, has lain in the fact that it has divorced meaning from form, and in so doing has departed from the realm of the demonstrable fact to enter that of the unprovable assertion.' So that in this study 'all the class labels and semantic interpretations . . . are firmly grounded in demonstrable formal features' (p. 287) and a 'distinctive feature of transform potential' 'is inherent in the sub-type and is as much a formal characteristic thereof as, say, the fact of belonging to a particular set of correlated morphemes is characteristic of membership in a certain word class' (p. 289). In a moment we shall return to these problems of meaning.

Transform grammar grows out of earlier approaches to language and logic. Note, for example, Morris: 'Logical syntax deliberately neglects what has here been called the semantical and pragmatical dimensions of semiosis to concentrate upon the logico-grammatical structure of language, i.e., upon the syntactical dimensions of semiosis. In this type of consideration a "language" (i.e., L_{syn}) becomes any set of things related in accordance with two classes of rules: formation rules, which determine permissible independent combinations of members of the set (such combinations being called sentences), and transformation rules, which determine the sentences which can be obtained from other sentences' (1938, p. 14).

Harris developed the use of transforms in an attempt to analyze language units longer than the sentence (1952). By transforming certain kinds of sentences into simplier types, he was able to see more clearly certain characteristics of the structure of a text. Harris' treatment of transforms in reference to co-occurrence of members of word classes or of other elements is found later (1957). For an application of Harris' transforms to a total grammar structure, see Gudschinsky (1959a) and for the application to discourse analysis for the same language note Gudschinsky (1959b).

Chomsky, working with Harris' materials in the early stages of their development (see Harris, 1957, p. 283 fn.) seems to have added to the approach a basic emphasis upon evaluation procedures as over against investigation procedure (1957, pp. 51, 54-57, and see above, for quotes, §11.75).

As a result of this development, the use of meaning--to which we now return, from our discussion earlier in this section--takes a different place. Chomsky, in dealing with formal presentation of transformations or in dealing with evaluation of grammar concludes 'that grammar is autonomous and independent of meaning' (1957, p. 17); he considers his approach to be 'completely formal and non-semantic' (p. 93). In contrast with this, Harris, who had been especially interested in investigation procedures, had felt that 'The consideration of meaning mentioned above is relevant because some major element of meaning seems to be held constant under transformation. . . But aside from such differences, transforms seem to hold invariant what might be interpreted as the information content' (1957, p. 290)--though this semantic relation is not 'merely because the same morphemes are involved' inasmuch as The man bit the dog and The dog bit the man contain the same morphemes but describe 'quite a different situation.' (Note my comment on this semantic characteristic as constituting a crucial difference between his former work on word classes and his current work with transforms, Pike, 1959). More recently, however, Harris seems to put less stress upon the meaning involved (1959, p. 28).

It is necessary for the reader to understand what Chomsky means by the term 'meaning,' however, before one can access the relationship between his linguistic approach and that of tagmemics. In tagmemics we have in general treated meaning as reflecting response reactions at some level of one of the lexical, phonological, or grammatical hierarchies (§16). This use of the term meaning differs strongly from that of Chomsky. He considers that '"intuition about linguistic form"' and '"intuition about meaning"' 'have in common only their vagueness and their undesirability in linguistic theory'; that a pair test for distinguishing phonemes is completely non-semantic (1957, pp. 96-97, and 1955, p. 141); that the informant response must not be confused with meaning lest we 'denude the term "meaning" of any interest or significance' (1957, pp. 98-99); and that no structural meaning can be assigned usefully to grammatical relations such as action-goal (pp. 100, 104). It is only in the light of these prior commitments that he is able to state that his theory is 'completely formal and non-semantic' (p. 93).

Tagmemics is designed to relate structure to use. Tagmemics is set up as part of a theory of the structure of behavior, not merely as a formal algebraic system. For this reason also--in addition to our attention to analytical methodology and

to the nature of the form-meaning composite--it refers to meaning more extensively than does transform grammar. Chomsky observes that when he some day extends his studies to cover such matters, then, too, semantic considerations will enter. Note, for example, his reference to a 'metatheory that deals with grammar and semantics and their points of connection' and that 'To understand a sentence we must know much more than the analysis of the sentence on each linguistic level' but 'We must also know the reference and meaning of the morphemes and words of which it is composed; naturally, grammar cannot be expected to be of much help here' (1957, pp. 102 and 103-04).

In the tagmemic approach we would point out that, to Chomsky's acknowledged use of the meanings of morphemes and of words to understand a sentence, we must also add the meanings of the tagmemes. We consider it inadequate to assume that intuition of linguistic form divorced from a larger theory of semantics is a sufficient explanation of tagmemic meaning.

One other difference, of a major type, may be indicated between tagmemics and transform grammar. It can be seen best by way of an analogy with problems earlier treated in linguistic theory. With Sapir, and others, morphological analysis was treated frequently in terms of items and processes--in terms of base forms which were modified by some process of affixation, phonological change, or the like. Especially with the work of Harris, the approach through item and process was largely replaced for a decade by attention to items and their arrangements (see, especially, Harris' introduction of this view in 1944a, p. 204, in which 'we no longer talk about process and change or the priority of the base'). Thus treatment of the distribution of allomorphs without reference to basic forms became popular. Now, in grammar, this difference can be used to illuminate the relation of a tagmemic approach to the transform approach.

Transform grammar is essentially a view of grammar in reference to item and process. Thus a kernel grammar is treated as a set of basic forms which are modified by certain rules to lead to derivative types of constructions.

Tagmemics, on the other hand, is overtly an item and arrangement type of approach. Segmental units of grammar are postulated. Of these units certain allo-units--variants--are identified. The distribution of the allo-units in reference to each other and to the larger including structures makes up the item and arrangement grammar here called tagmemics.

Once this is seen, another conclusion would seem to follow: Just as any grammar can in principle be stated either in terms of item and process or in terms of item and arrangement, provided that both of the approaches cover all of the data, so it would seem possible that if tagmemics and transform grammar are both developed far enough, that they could come to the point of complete overlap. Thereupon one or the other of them would be useful in accordance with the particular starting purpose chosen by the analyst. (For further discussion of these two approaches, and references to some of the earlier literature, note §14.51.)

If, as we feel, transform grammar is an item-process approach, it inherits both the strength and weaknesses of that approach. As strength it may gain in facility of approach to some data. As a weakness, it may be accused of pseudo-historical statements and theory.

Chomsky implies that the history of a derivation must be known before the transform can be treated or the structure identified (that is, 'we must know not only the actual form of S_1 and S_2 but also their constituent structure--we must know not only the final shape of these sentences, but also their "history of derivation"' 1957, p. 37; cf. p. 40, also p. 92; so also Lees, 1957, p. 392).

Statements of this type easily become related to implications of behavior--that the speaker or hearer 'first' acts thusly and 'then' modifies that behavior to produce the observed result. Such implications seem to be the source of Carroll's uneasiness: 'There is also no behavioral reason why a child, for example, could not learn an interrogative structure before he learns a declarative structure; therefore, one would be surprised to confirm Lees' expectation that the order in which a child learns constructions corresponds to the logical taxis of transformations' (1959, p. 43). Similarly, although Carroll assumes that transform grammar 'seems to imply that in the composition of any utterance, the basic building blocks are the kernel sentences and that the speaker seeks out appropriate kernel sentences and combines and "transforms" them "to suit the total linguistic and socio-psychological situation,' Carroll feels that 'before the speaker chooses any kernel sentence, he is more likely to "choose" whether he is going to respond with a generic mand or a generic tact' (e.g., a command statement versus a declarative statement,1959, pp. 42-43). Lees feels (1959) that he has answered this objection, but I do not find his reply convincing.

At some point, it would seem, transform grammar needs a further unit to be identified and transformed. It is our belief that the tagmeme, or something very much like it in structure, is needed for this purpose in transform grammar. A statement in terms of item and process needs an adequate statement of the item units before the processes can be most effectively implied. The

transform grammar approach shows how sentences can be generated, but has difficulty identifying units directly, even in formulas, since their derivational history needs to be known. Already there is uneasiness on the part of some writers on transform grammar which, in my opinion, reflects the need for tagmeme identification in transform formulas. Note, for example, Lees: 'In particular, transformations will have to be so formulated that the transform is provided with a constituent structure which is capable of entering another following transformation as argument, since some sentences will be generated by the use of more than one transformation' and 'Some other way, then, will have to be found to specify the grammatical status of the transform elements' (1957, p. 400). Also (p. 400), 'For the second or question transformation [Bill was hit by John (question) → Was Bill hit by John?] to apply properly, we must be able to recognize automatically that Bill is a subject noun-phrase (NP) of the intermediate sentence'--but noun-phrase as subject is a tagmeme with manifesting class plus slot.

CHAPTER 12

TRIMODAL RESTRICTIONS ON SETTING UP EMIC UNITS

We have now treated the basic kinds of elements of sample behavioremes, including their total structure, minimum units of their three modes, and the hierarchies within each of these modes. Numerous severe problems remain as to the precise relationships between the modes (especially as affected by special kinds of componential systems), by fusion of units, and by interpenetration or interdependence between the modal hierarchies.

Before discussing these difficulties, however, we would do well to face a danger which could easily grow out of the use of behavioremic theory. This is the danger that persons might find alleged emic units everywhere in such miscellaneous and uncontrolled profusion that the approach would collapse into an arbitrary multiplication of units which are not in fact relevant to the internal structure of the cultures studied.

What analytical controls can be applied which would exclude the postulation of unnecessary trimodal units? We suggest several which are by no means final, and which we ourselves may not yet be able to apply in every instance. In fact §13.6 shows some relaxation of the controls for one particular purpose.

There remains, in view of the difficulties, the possibility that the basic trimodal model may need modification while the general "tagmemic" approach is maintained. See §12.5.

12.1 Restrictions Imposed by the Trimodal View of Language as Particle, Wave, and Field

In setting up further emic units within the trimodal model it is helpful to keep in mind that certain general characteristics of the modes seem to be so frequently present that it is unwise to assume too quickly that one has found additional emic units unless they too are structured modally in some such way.

The first set of characteristics to be summarized in this manner indicates how behavioremic modes reflect the basic principles of phonemic theory of the last decades. The feature mode seems to be the one which especially covers elements of CONTRAST and IDENTIFICATION. The manifestation mode includes elements which characteristically show nonsimultaneous variants in COMPLEMENTATION or FREE VARIATION. The distribution mode is the one which most specifically has reference to various aspects of SYSTEMIC DISTRIBUTION and CLASS MEMBERSHIP. In dealing with emic units, their internal modal structuring may in general be expected to follow this pattern.

The second set of characteristics of the modes, to be summarized here, shows a quite different set of relations between them. A system of units which is seen principally through the identificational-contrastive units, or feature mode, of that system may appear as STATIC (seen typically in face diagrams of the phonetics of a system). When, however, the system is seen through the units of its manifestation mode and the physical basis of units as they flow into one another in a sequence of fusing, changing segments, the units of the system appear as DYNAMIC (seen, for example, in segmentation diagrams of the phonetics of a sequence of sounds in an utterance). When the same system is viewed by way of its distribution mode and the manner in which the units of that mode operate within the matrix of larger units and in relation to the hierarchical structure of the sequences and classes of the system as a whole, the system appears as FUNCTIONAL (for example, with phonemes functioning as components of syllable types).

A third set of characteristics of the modes of emic units further specifies characteristics of emic units. The units of the feature mode, more than those of the other modes, are analytically seen as DISCRETE PARTICLES or SEGMENTS of activity. That is, they can be symbolized by discrete signs without violence to their most prominent characteristics. The units of the manifestation mode, on the contrary, have as an essential prominent component the factor of movement as a physiological basis--movements which slur into one another without necessarily discrete border points. Thus, even though the included emic units of the manifestation mode may be symbolized by discrete signs, nevertheless an approach which focuses on their essential physiological components leads to a view of units of the manifestation mode as CONTINUOUS WAVES of behavior within the system. The units of the distribution mode, if viewed in an analogous manner, force one to place attention upon the contexts in which they occur, on the classes and systems of which they are a part,

and without which neither unit nor context nor system exist. In this view, the units of the distribution mode are functioning manifestations of concentrations within, or parts of the TOTAL FIELD of the relevant behavior under study.

Whenever any emic unit is proposed, it is well to attempt to study the internal modal units or components which such a new unit would imply. One asks: Are the internal components of the feature mode of this proposed unit identificational-contrastive? or static? or discrete? Are the internal components of the manifestation mode composed of variants complementarily distributed or freely variant? or dynamically changing and wave-like in their physiological basis? Are the internal components of the distribution mode of the proposed unit clearly related to contextual or class-membership problems? or do they enter into, become related to, and in some way form part of the total field of the units which are embedded in them?

Similarly, as one views the proposed unit in reference to its relation to larger units, one may ask: Does the proposed unit form part of a modal structure of a higher-layered unit? If so, of which mode of that unit are they included parts? If it appears to be part of the feature-mode hierarchy of the larger unit, does the included unit serve as an identificational-contrastive component of the including unit? If the included unit appears to be part of the manifestation-mode hierarchy of the including unit, does it contribute variants, dynamic characteristics, and physically wave-like properties to the including unit? If the included unit appears to be part of the distribution mode of the larger unit, does it somehow form part of the matrix, or functional context, or field within which included units of the feature mode and manifestation mode of the larger unit are distributed? If a significant number of the answers to these questions and to those of the preceding paragraph are "yes," the proposed emic unit is likely to be on a solid footing. If the answers are "no," one should procede with care--the proposed unit may turn out later to be some kind of arbitrarily abstracted etic element rather than an emic structural one.

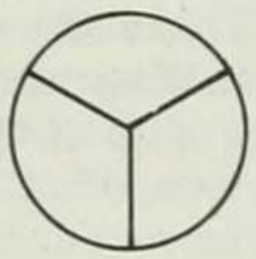
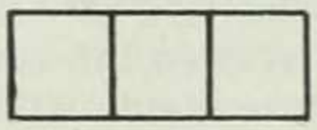
In sum, language under this model is viewed as particle, wave, and field (Pike, 1959). Each of the three views of language contributes an insight into its structure. The particle view leads one to strudy carefully the psycholinguistic data which support segmentation of sequences into chunks of behavior, and the identification of variants as members of units. The wave view accounts better for the physical data of continuous articulatory movements or sound waves. The field view leaves room for a theory of classes and systems of phonemes, morphemes, and tagmemes. Sequence of units is easiest treated under a particle view; smearing of unit borders under a wave view; structure of system, or of universe of discourse, under a field view. (See also §§14.11, 14.3.)

12.2 The Restriction Imposed by the Retention of Simultaneous Modes

The second safeguard to help one test the validity of setting up a particular emic unit is related to the one just discussed. By it one checks to see whether its basic structural components can be studied as additive "parts" of the unit or whether on the contrary they must be treated as simultaneous modes of that unit.

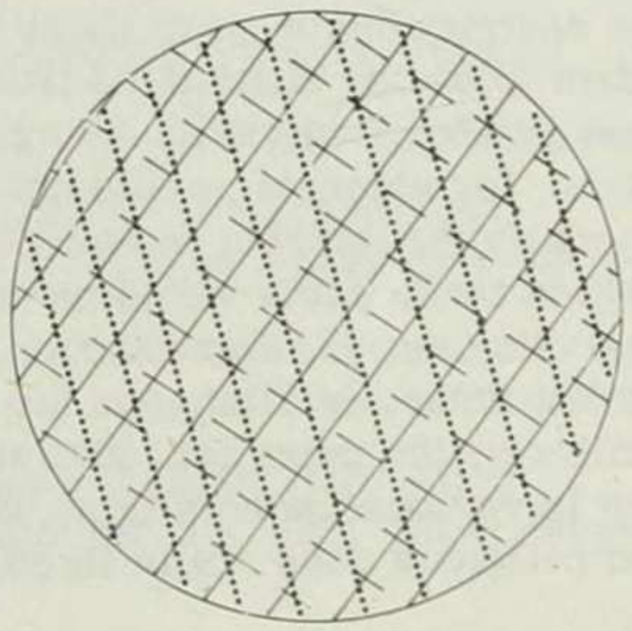
Behavioremic theory is slow to accept as an emic unit any unit which is basically made up of "parts" which are "added" into a whole. It looks, rather, for units which have simultaneous structures each of which covers the entire substance of the unit (cf. §3.56).

The following models of an emic unit must therefore be rejected since they imply a mere sum of units in a larger one. A whole which is cut into separate parts:

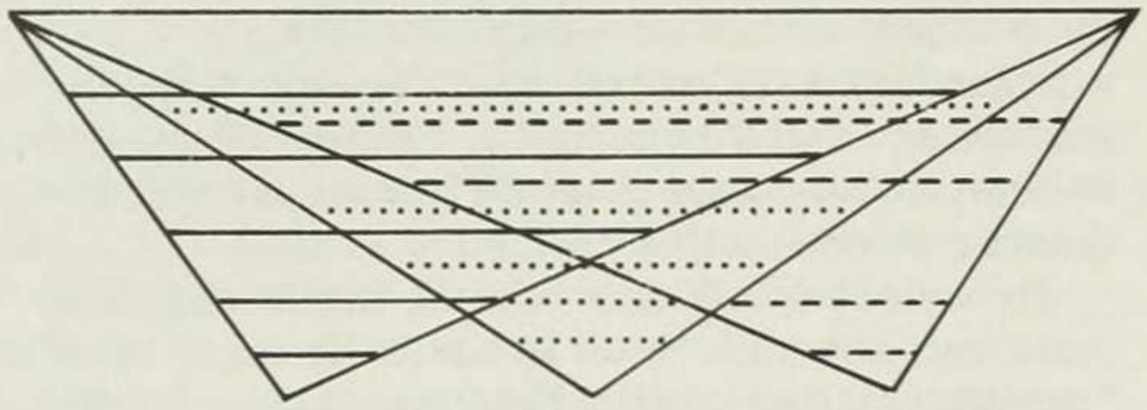
0 + 0 + 0 = **0** or  or 

Any proposed emic unit whose internal modes fit one of these models must be treated with reserve.

A further model must also be rejected, not because it implies parts but, on the contrary, because it implies that the modes are merely aspects of a unit, or points of view in looking at a unit, such that a unit could be seen in these aspects without there being present any simultaneous but structurally-distinct modes. (Cf. discussion of dimensions, in §3.56.) The following diagram is designed to suggest that one can approach data from different points of view, even when there are no natural structural divisions residing in the behavioral data:



A more useful model is suggested by a diagram in which a long solid line represents a high-layered emic unit as such, while three triangles descending from it represent the included hierarchical structuring of the three simultaneous modes. Each mode has its own included structures, with parts which sometimes do and sometimes do not end at the same places as do the units of the other modes:



A sentence type--a sentence syntagmeme--might be viewed from this standpoint somewhat as follows--with variations required for particular languages. (For a related diagram see §5.55; for further modification, see §12.3 and §12.5.) The feature mode has units written in roman type, the manifestation mode in italic, the distribution mode in small caps. There is no attempt to symbolize in this particular diagram the relationships between the borders of units of the modes. That discussion will be postponed until Chapter 15.

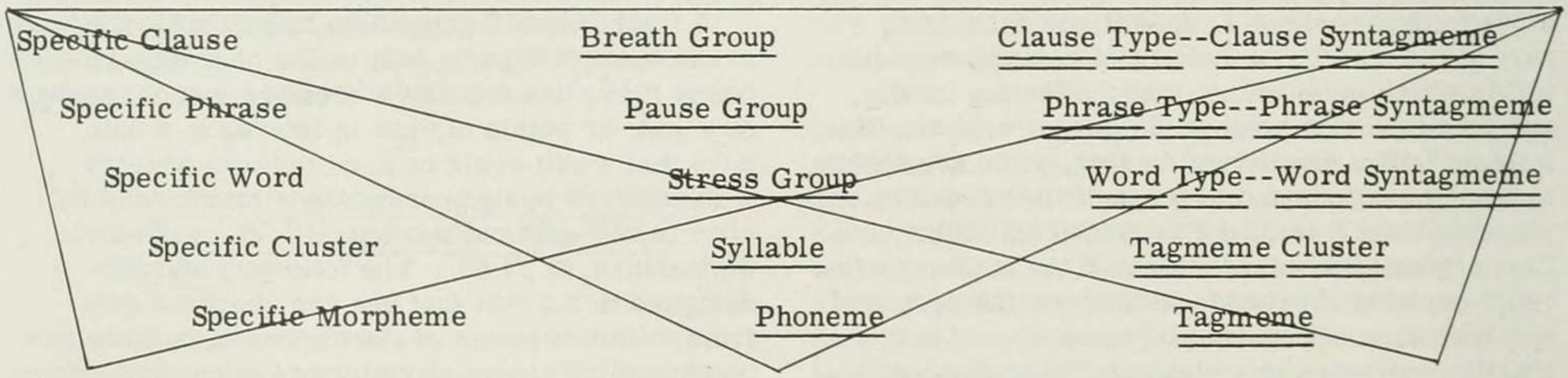
the treatment of that action as trimodally structured. The structural, emic character of each of these aspects would have to be specifically and separately validated if they were to be retained as relevant to behavioremic description.

12.3 "Spectrum" Restrictions on Emic Progression

In seeking further necessary restrictions to prevent the analyst from allowing the emic approach to lead to difficulty by way of unwarranted emic units, one attractive "blind alley" should perhaps be specifically marked: It is simple and elegant, but not fruitful, to assume that every emic unit is composed of three modes, that each mode is itself an emic unit, and that each of these modes is composed of three modes which in turn constitute emic units which in turn are composed of three modes and in turn constitute three emic units, etc., etc. That is, we reject the conclusion that U, F, M, and D are each units such that U = F, M, D (read: unit comprises feature, manifestation, and distribution modes); F = F′, M′, D′; F′ = F″, M″, D″; M = F′, M′, D′; M′ = F″, M″, D″; etc.

I have explored this possibility, but have been unable to come out with anything which can be aligned with the empirical data. Although it may appear at first to be indistinguishable from the

SENTENCE TYPE--SENTENCE SYNTAGMEME



By this set of restrictions a great many three-part groups of data would be eliminated from emic status. An action divided arbitrarily into past, present, and future, for example, would not be considered trimodally structured, in spite of its three "parts," since these parts would be additive, not simultaneous. Nor are the introduction, body, and end of an action three simultaneous modal structures. Similarly, the mere fact that an action may be seen in various aspects (e.g., economic, political, and religious does not in itself justify

kind of EMIC PROGRESSION which we have been using in previous chapters, there is one crucial difference. This blind alley would set up the entire mode of an emic unit as an emic unit in itself. Our working theory, on the contrary, does not set up the total mode of a unit as itself an emic unit but rather selects from the mode various of its components and treats each of them as emic units.

Thus the emic progression is not from units, to modes, to units, to modes; but passes from units, through modes, to component units, and

through their modes to further component units of those included modes. That is, U = F, M, D; $F = F_a, F_b, F_c, F \ldots n$; $F_a = F', M', D'$; $F' = F_a'', F_b'', F_c'' F'' \ldots n$; $F_a'' = F''', M''', D'''$; etc., in which $_a$, $_b$, $_c$ are components of a mode. It is not yet completely clear why this difference has proved crucial.

A mode is a SPECTRUM of components. (For the spectrum used as an analogy in a different manner, in semantics, see Firth, 1951b, p. 132.) The total mode with all its components is like "white light." The individual components are like "colored lights" in which each color has its own specific frequency of vibration. A specific wave length cannot be assigned to white light, but can be assigned only to some specific fragment of the total spectrum. An analysis of white light as a whole can not be made in such a way that it is alleged to constitute a single unitary wave length. By this analogy, then, we suggest that any particular mode of a particular emic unit may be analogous to "white light" which is a composite of a number of units, and the units would be analogous to the separate frequencies which go in to make up that total composite "whiteness."

A second caution concerning emic progression states that it must not be allowed to imply a continuing infinite regress or progress of emic units of any one comparable type. On the contrary, we have indicated at numerous places that there are places where the type of activity changes radically. Some of these have to do with the functioning of communication. Other thresholds differ in accordance with whether one is analyzing the activity of speaker or listener (cf. §§2.4, 4.32, 5.3, 6.41), and so forth. Still other thresholds have to do with observable overt activity versus unobservable and covert activity.

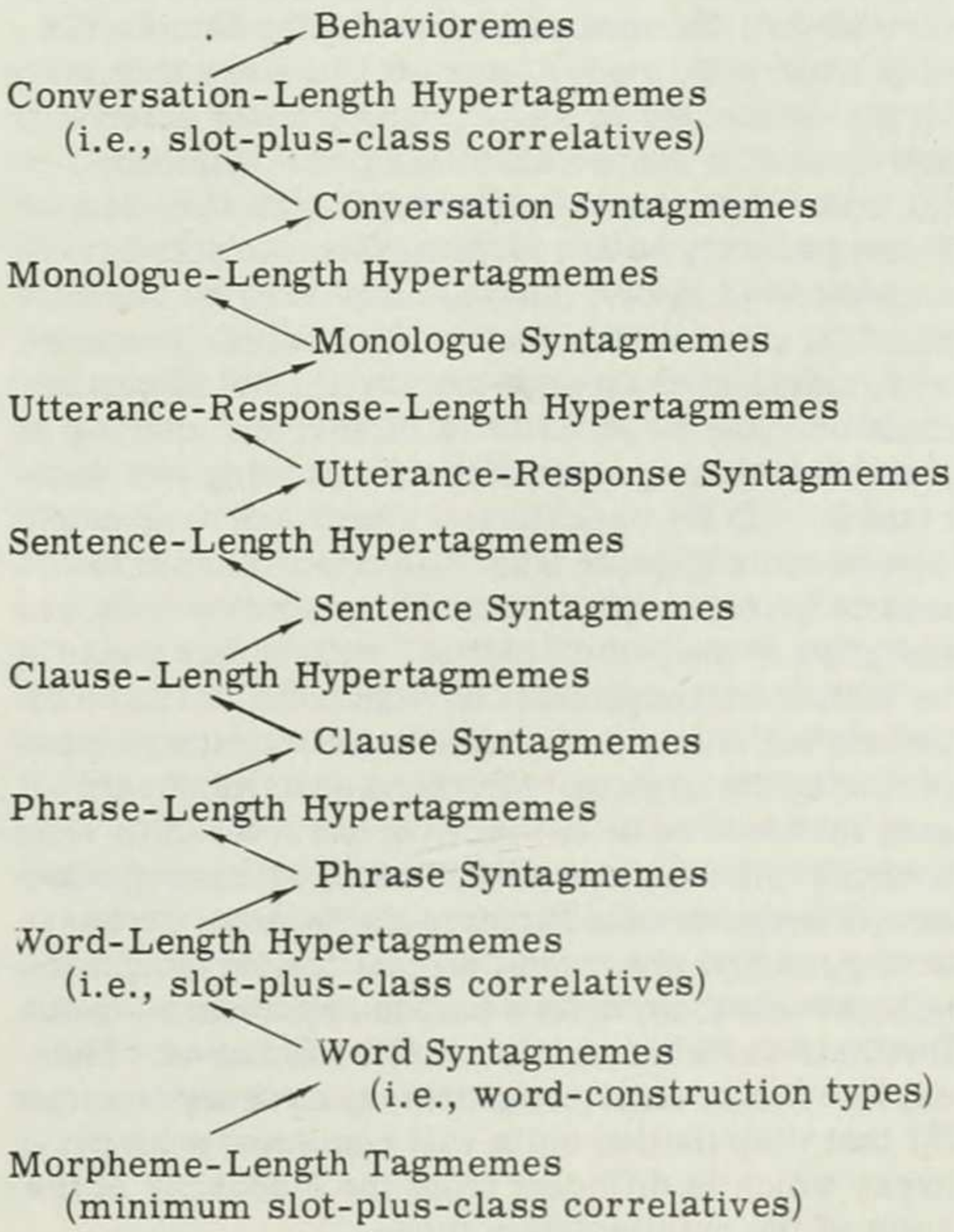
The spectrum analogy again is useful in getting a crude understanding of this phase of our point of view. There are many types of activity which are relevent to behavior but which are not observable by the analyst by direct means. Some of these are the smaller units of activity such as the activity of small muscles, or molecules, or sub-atomic structures. We might compare these small activities to the ultra-violet part of the spectrum. On the other hand, a generations-long event would be invisible to any one person, hence it is INFRA-OBSERVABLE, below the VISIBLE SPECTRUM. The dividing lines would constitute some kind of threshold of activity.

A "short-wave" event of human activity must be seen through a microscope. A "long-wave" event, to be seen, must be recorded intermittently with elapsed-time photography over a period of centuries and projected rapidly.

A third caution concerning emic progression has been implied earlier in the insistence that form-meaning composite units must be retained (§§2.73, 5.64, 6.46, 6.91, 7.83). If a component of meaning is abstracted as part of the characteristic spectrum of a mode, this component is not itself considered to be in the line of emic progression unless some physical component is preserved which can constitute its manifestation mode. In conceptualized hypostasis of meaning (cf. §§6.43, 6.91, 7.85) the neural activity can serve in this way. See also §16.6.

A fourth restriction on emic progression reflects the problem discussed in §11.41, where it was indicated that tagmemes (or hypertagmemes) were not distributed directly into higher-level tagmemes (or hypertagmemes), but into hypermorpheme structures (i.e., into syntagmemes), and the syntagmemes then are distributed into hypertagmemes as their total or partial filler classes. Distribution procedes from tagmeme to syntagmeme to tagmeme, not from tagmeme to tagmeme directly. (This restriction is vaguely similar to that shown earlier in this section whereby units were broken down into a spectrum of trimodally-structured emic components of modes rather than into units composed of emic modes directly.)

If the sentence-type diagram of §12.2 is revised with this provision in mind the right-hand triangle showing the distribution progression would need to be modified, as follows (with arrows showing the direction of distribution of units):



12.4 Restrictions in Solving for Modal Components

Much of the discussion of this chapter has assumed that the investigation of a structure is fairly well along, and is being tested in retrospect for over-all coherence and basic internal relations, or at least that a particular unit has been proposed and is being tested. Occasionally the problem is quite different--How can these principles be rephrased to serve as "sign posts" pointing in the direction of structures to be discovered?

If the investigator suspects that he has in view a unit of the manifestation mode of some unit "X", for example, how can he set out to try to find--if they in fact occur--the corresponding distribution-mode units and feature-mode units, or even "X" itself?

Unfortunately the materials are not far enough advanced to yield the desired vigorous procedures--and perhaps theory will show that they will never be able to do so. Nevertheless it may be worth while to suggest some principles which might have practical value as laboratory hints. To whatever minor extent we can now succeed, we wish to lay the groundwork for using the present achievements as an exploratory tool for further work.

Assuming M and F, while wishing to solve for D (with M implying a unit of manifestation mode, D one of the distribution mode, F one of the feature mode), the investigator looks for the matrix of M and/or F, since D must (1) in some way make up the matrix for M and F, and (2) must enter into and comprise some kind of temporal sequence. (3) Units of D must always be present when M and F are present, so D should be discoverable in sequences of M or F. (4) D must have no other physical content than that which is seen, in some way, manifested through the variants of M and the units of F, so he looks for a further structuring of the same substance, rather than seeking new substances. (5) He seeks some functional re-groupings of units of M and/or F as a unitizing of the matrix as such. (6) If item (5) is successfully completed, then "distribution" will in this sense be unitized through units of D and will not have to be handled solely as an abstracted relational component of the system. (7) These D units should also themselves be tri-modally structured in emic progression with included F´, M´, D´ (except that at minimum threshold points the internal structuring may be observed), so that the investigator--once he has them before him in hypothesis--looks for their variants and contrastive features. The expectation of emic progression, however, implies (8) that distribution units will comprise a hierarchy which is different from the hierarchy of the units of the manifestation mode.

In solving for M, the investigator can begin (1) by assuming that whenever he observes a form of purposeful activity, it is always, in some way or in some place, a variant of an emic unit (or part of a unit or sequence of units) on some level of the hierarchy of some componential system of behavior. Observation that behavior is "random" often implies, from this point of view, that the data under discussion are as yet emically unanalyzed, or--frequently--that the units which they are manifesting have a much greater range of variation in their manifestation than some other units which are more narrowly and rigidly fixed in their variant forms. An emic unit of 'exploratory behavior', for example, may vary more widely than the stroke forms used in serving a tennis ball. After selecting some movement of physical activity as a starting point of investigation, he seeks (2) for related events or activities which have the same function and which might prove to be variants of the same emic unit (its included M´ characteristics of that unit). (3) He studies such items to see if they are complementarily distributed--or freely variant--in sequences of particular events or in their matrix, and studies the distribution of the unit as a whole (its external D characteristics). He checks to see (4) if they are manifesting units of a sequence of events which are clearly meaningful or purposive. (5) He seeks for the internal identifying or contrastive features of the unit (its included F´) (6) He checks to find its relation to a larger manifestation hierarchy, and (7) to note its relation to the entire componential system of which it is a part. (8) M must occur wholly in D. (9) It must be made up wholly of F. He looks to see if the units are (10) "concrete" or tangible, (11) "chunklike"--easily segmented, (12) basically physical and (13) with physical wave-like motion as basic to them.

In solving for F, the investigator may begin with a wave or sequence of waves of motion which at first appear random. He seeks (1) to locate contexts in which the presence, absence, or change of this event appears to elicit contrastive responses. He attempts to determine (2) the significance--meaning or purpose--of the eliciting event (as part of the F´ of this F), (3) its physical cues (a further component of F´ of F), (4) the range of variation in that physical event (its M), and (5) the appropriateness of its occurrence in certain larger contexts (part of its D) as well as (6) its internal functional slots and their fillers (also part of its D). He looks to see (7) if F is one simultaneous component of M, and (8) is identificational and (9) contrastive. (10) The form of F must be made up of M. (11) It must occur wholly in D. Of F, M, and D, the M is the most tangible, D is the most elusive, and F the most immediately significant or purposeful.

One of the most successful applications of this approach occurred when it appeared wise to try to solve some of the problems concerning the overlapping membership of morpheme classes by looking at classes as special kinds of emic units. The results have already been used in Chapter 7 as a basic part of behavioremic theory. This one achievement, alone, has more than justified the energy spent in developing the point of view, since it has brought into coherent, organized relationship many facts about classes--with their variants, functions and identificational contrastive features--which before this were isolated, ignored, buried in footnotes, or treated in an offhand manner as 'semantic restrictions', and so on.

(The data proved to be sufficiently important, in fact, that they were moved from a scheduled place in a later chapter on classes and systems to an introductory place in the chapter treating tagmemes for which the emic class analysis had become crucial. The reader is referred to that treatment, §§7.31, 7.4, 7.52-55, for illustration of results of the extension of the trimodal approach to new areas where the analysis seems to me to be solidly entrenched.)

A further illustration is developed in Chapter 13, however, which is much less certain. It is presented in the hope that the reader will see how the approach leads to an observation of new relationships in old trouble spots of theory. It stimulates the creation of new hypotheses which, even though needing testing and later modification, nevertheless point to new areas where integration of behavioral structures can be observed.

12.5 Modifications Imposed by a Model which Includes Phonotagmemes

Crawford (1959) notes that in the phonological area the phonemes, as parts of classes, occur in structural slots in syllables. Hence a phonemic slot-plus-class correlative can be posited for phonology.

So far, there is no difference from the point of view developed here--since in §8.66 we also noted this fact. Crawford, however, goes farther. He sets up the phonemic slot-plus-class correlative--which he calls a PHONOTAGMEME--as on a par with the grammatical tagmeme. This leads to substantially different results from ours, since we had treated the morpheme, phoneme, and tagmeme as comparably minimum members of their respective hierarchies, with phonemic slot-plus-class correlatives not playing a prominent role in the theory.

It is not yet clear just how far-reaching the changes might be which will develop from this Crawford suggestion. At least two major possibilities must be considered:

(1) On the one hand, the setting up of the phonotagmeme as on a level comparable to the tagmeme may force changes in the theory of hierarchies. f phonemes in classes enter phonotagmemic structures just as morphemes in class enter [grammatico-]tagmemic structures, then our trimodal model would be replaced by a doubly bifurcated one: A phonological pair of hierarchies would be balanced by a lexico-grammatical pair. In the latter pair, the grammatical hierarchy would be composed (1a) of [grammatico-]tagmemic slot-plus-class tactic structures of successively including levels. The lexical hierarchy (1b) would be composed in some way of the specific lexical units of larger and larger size (specific morphemes, phrases, clauses, etc.) which fill the slots in the [grammatico-]tagmemic hierarchy. The phonological pair of hierarchies, on the other hand, would be made up (2a) of a phonotagmemic hierarchy of successively higher-level slot-plus-class tactic structures, and (2b) a hierarchy of "phonemic units" of successively higher levels (i.e., specific phonemes, syllables, stress groups, etc.) which fill the slots of the phonotagmemes. Within this doubly-bifurcated model, however, Crawford retains trimodal structuring of individual units such as phonemes and morphemes.

(2) On the other hand, it is possible that the phonotagmeme may be ultimately accepted as on a par with the tagmeme, and a phonological hierarchy accepted as parallel to the grammatical one, while retaining a third--the lexical--hierarchy. This, however, could only be done under two conditions: (a) A lexico-tagmeme would need to be set up which differed in some crucial way--as yet not delineated--from our grammatico-tagmeme. In addition, (b), the fillers of the two tagememe types would have to be different. Perhaps the syntagmeme types charted in §12.3 (p. 41b) would comprise the fillers for the grammatico-tagmeme--and even relieve us of some of the hierarchical problems of present tagmemic treatment raised in that section. The specific morphemes and morpheme sequences would then in turn comprise the fillers of the lexico-tagmemic units. Unfortunately, we do not yet visualize the characteristics required for postulating a lexico-tagmeme. If, however, the lexico-tagmeme can later be usefully set up, it may help solve problems of metaphor, idiom, and universe of discourse--or other matters--discussed in Chapter 16. (And see §15.13 for supporting reasons for separation of grammatical and lexical hierarchies.)

CHAPTER 13

MODE-LIKE EMIC UNITS AND SYSTEMS

This chapter shows what happened when some of the exploratory devices of Chapter 12 were applied to a particularly mystifying problem.

13.1 Background of the Suprasegmental Problem

In 1949, a year after I had completed the definitive edition of Tone Languages, I was intrigued by the possibility that the frame techniques which I had developed for purposes of tonal analysis could be generalized for all kinds of phonemes--that, if we set up the tone procedures in such a way that they could be used for all sounds, only one basic set of procedures would be needed. Furthermore, the technique of determining the structure of tone systems could become a model for determining all linguistic units, a model which might result in greater simplicity and elegance as all phonemes melted into a single large class, theoretically homogeneous in type.

This viewpoint was supported by the growing conviction that 'Quality, like pitch, is ultimately relative rather than absolute' (Pike, 1947c, p. 66). Vowels and consonants were seen in the same way (Pike, 1952b). If that were so, then tone techniques were theoretically pertinent to their analysis, since the tone methodology was particularly well adapted to handle units which differed not by absolute quality but only by degree--by degree which is relative to and contrastive within particular contexts or frames.

If such a point of view could be sustained, it would wipe out the contrast between segmental and suprasegmental phonemes and erase one long-standing problem. Instead of trying to keep the two apart, and finding criteria for doing so, we would fit all phonemes into a single kind of system.

In addition, characteristics of tone phonemes would serve as a superb proving ground for phonemic theory, since a tone phoneme would be one of the simplest of all phonemes--with a single pure, abstract characteristic relatively determined. Tests applied to it for establishing theoretical principles would be carried on in an almost "sterile" context--i.e., not accompanied by disturbing factors of complicated timbre.

Gradually, however, three difficulties come more and more into prominence:

The first is the simple fact that a tone phoneme is not a total chunk of the phonetic sequence. "Vertical cuts" in a sound continuum might easily result in /s/, /t/, /k/, or frequently might give /o/, /a/, but would never give /ˊ/. Here the two did not act alike.

If, however, the chunk characteristic of a phoneme were abandoned, a second difficulty arose: If a phonetic component such as tone could constitute a phoneme, the consistent application of this principle led to setting up all contrastive components such as voicing, labialization, sibilantization, etc., as phonemes, or even as suprasegmental phonemes. (For 'secondary' phonetic features such as labialization thus treated as suprasegmental, see Trager, 1941, p. 135).

To me such a conclusion appeared as awkward, though not necessarily impossible. Behavioremic theory profited from wave-like chunks as units (§8.42). Native speakers, furthermore, seemed to react to tone phonemes in a manner sufficiently distinct from their reaction to voicing or labialization that it appeared to me highly probable that they were reacting to some structural difference more deeply rooted than that between two components which differed only in degree. I did not believe that the English speaker, for example, reacted to the second syllable of per'mit as containing, on a structural par, the phonemes (among others) of stress, voicelessness (or fortisness), bilabiality, occlusion, retroflexion, etc.

An alternate solution ran into a third difficulty: If one began with the requirement that a phoneme constitute a segment of a continuum, then tone as a phoneme would disappear. Instead, one would obtain single phonemes which were made up, for example, of a vowel plus a tone. Then /á/ would be a single phoneme in contrast to /à/ (rather than /a/ plus /ˊ/, versus /a/ plus /ˋ/ respectively). This of itself is not impossible, though awkward because of multiplying greatly the number of phonemes in any one system.

A much more serious problem arises, however, when one attempts to carry over the same principle to English pitch contrasts. In the sentence If he could, I'd like to have him do it, let us suppose a $^{0}2$-4-3 pitch sequence--a very probable one in such a sentence--on the word could (cf. § 6.2 fn. for symbolism). In this instance a consistent application of the same principle would force us to set up three vowel phonemes ($/^{2}u/$, $/^{4}u/$, $/^{3}u/$), each with its contrastive pitch component. In spite of the fact that this kind of solution has been seriously proposed by highly competent linguists (in public

address--I fail to find the material published) it impresses me as quite impossible to accept as basic to a behavioremic analysis which attempts to arrive at emic units reflecting the way in which native participants react to their behavior. I feel strongly--without benefit of the kind of psycholinguistic experimental data which would be helpful--that native speakers of English do not react to three vowel segments in could, even while they do react contrastively (with corresponding meaning changes) to replacements of any of the three pitches of the accompanying intonation sequence indicated. Similarly, Mazatec has on occasion two or three lexical tones spread over a single vowel segment, or one lexical tone spread over two or three vowel segments (Pike and Pike, 1947). No simple chunk cuts can be used universally without violence to tone or intonation system.

In the face of these problems, early in 1952 I surrendered to the pressure to treat tone phonemes as different in some crucial but mysterious way from segmental phonemes, abandoning the attempt to treat them all as alike in a structural framework in which a simple tone served as a model for them all.

13.2 Segmental Phonemes as Analogous to the Manifestation Mode

What, however, were we now to do? It occurred to me that the approach to many problems through trimodal structuring had brought unexpected help. Could it possibly help here? I decided to try it and see.

Let us suppose, I said to myself, that in some way tone phonemes and segmental phonemes were different from each other in some modal fashion--what would this imply? It would suggest that there are MODE-LIKE EMIC UNITS, so that some of them would be classifiable and describable in a way reminiscent of the feature mode of an emic unit, others as having some resemblance to the manifestation mode of emic units, and still others as having some vague relationship to the characteristics of the distribution mode of emic units.

If this were the case here, would it be the tone phonemes or the segmental ones which more closely paralleled the characteristics of the manifestation mode of units? The answer seemed certain: The SEGMENTAL phonemes such as /s, t, o, m/ were the more "concrete," more readily observable, more chunk-like, more easily seen as physical waves. This concreteness made the segmental phonemes, as wholes, the obvious starting point as analogous to the manifestation mode of units.

13.3 Suprasegmental Phonemes as Analogous to the Feature Mode

Where, then, would the SUPRASEGMENTAL phonemes of tone, stress, length, and intonation fit? They cannot be observed directly, without prior or simultaneous reference to the segments. In this sense, the suprasegmental phonemes are almost intangible simultaneous components of the segmental phonemes.

Segmental phonemes, also, do not exist except as combinations of intensity, duration, and vibrational frequency. These physical characteristics are in this respect simultaneous components of the segments, and make one segment differ from another. The phonemes of tone, intonation, stress, and length, however, are organized in some fashion different from or beyond the mere frequency, intensity, and duration which make up those ordinary segments which have no accompanying suprasegmental phonemes. The suprasegmental phonemes are vaguely analogous to the feature mode of emic units--they carry a "flavor" of "feature-like" quality--because of their componential nature. (And their difference in organization will appear in analytical perspective a bit later, §13.5.)

13.4 Subsegmental Phonemes (Voice Quality) As Analogous to the Distribution Mode

The question now arose: Is there, by chance, some set of units which looks, analogously, as if it were mode-like in a distributional sense? A list of requirements (similar to the ones now presented in §12.4) were drawn up to serve as a guide as to the kind of unit to look for, and as a test of success in the event such units seemed to be found.

Soon an answer presented itself which seemed at first to meet all the requirements. The syllable constituted the matrix of distribution for segmental phonemes and their variants, and for many pitch phonemes. It entered structured sequences made up of syllables; it was always present when segments were present (except for a rare possible situation in which the abdominal pulse but not the syllable would be relevant--§9.76). The syllables themselves could be analyzed in an F-M-D manner (§§9.22-24). And there was hierarchy involved, in that syllables were distributed in stress groups, pause groups, and breath groups. This analysis looked very attractive indeed.

Presently, however, a flaw in the analysis began to appear: The segments seemed to be part of the same hierarchy to which the syllables belonged. This was disturbing, since the phonological hierarchy had already treated the syllable as a higher layer in the manifestation mode of the sentence.

How then, could it serve double duty as also something quite different--as a special distribution unit of mode-like type? This objection obtained even greater force when it appeared that the grammatical hierarchy of the tagmeme must be kept separate in the theory from the lexical hierarchy of the morpheme. If the present data were to be somehow analogous to these, the syllable would not serve as the sought-for matrix unit.

I returned to the search, therefore, to find a phonological unit with matrix characteristics in a hierarchy different from that of the phoneme-syllable-stress group. Presently one appeared. It was VOICE QUALITY.

Every sentence, syllable, and segment occurred in some over-all timbre or vocal organic set which colored it. These qualities changed from time to time with borders frequently the same as those of major units of stress or pause groups, but conflicting with them often enough to give a crucial indication that the quality units were in sequences whose hierarchy was not the same as that of the regular phonological hierarchy previously treated. In my collected materials qualities of voice would occasionally change sharply in the middle of these other units--a fact which had been very disconcerting when in earlier analysis I had at first attempted to treat quality chunks of speech as on some level in the same hierarchy with stress but on a higher layer of that hierarchy.

Some of these settings last only a short time. Thus a sentence may contain a parenthetic utterance which carrys its own particular qualitative elements with it. A sharp break in quality may occur within a sentence within a fraction of a second.

Now an exciting implication was forced into attention: Inasmuch as certain of these qualities seemed to be consistently used in the recorded breakfast materials, at certain kinds of points in the conversation or with certain kinds of effects on the hearers, we concluded not only that they were part of the signalling apparatus of speech but also that this signalling apparatus must be considered a basic integrated part of the total of the language and form-meaning modal and hierarchial structure. Voice quality was not just a vague kind of unstructured "expression" outside the total organization of the culture, nor a mere quasi-irrelevant appendage or isolated compartment of behavior. Voice quality would have to seen as an interwoven part of the intricate total speech network.

The voice quality components could be viewed as SUBSEGMENTAL, modally paralleling the segmental and suprasegmental phoneme types already treated, much as the distribution mode of a unit parallels its manifestation and feature modes.

The thought of quality phonemes as such, however, was not new to me. I had been working with phonetic quality (Pike, 1945, pp. 101-02) and phonemic voice quality for some time. It was rather the modal tie-in to the total speech system, as distinct from a mere collection of peripheral phonemes, which was the immediately added factor in my thinking. I had earlier reached the conclusion that quality was phonemic, and had begun collection of materials for analyzing these qualities. In January of 1952 I started writing an article, entitled 'Phonemic and Morphemic Voice Quality,' exploring 'the possibility of finding voice quality contrastive, and used to signal contrastive meanings.' From one sample address, I began by noting six contrasting quality types: (1) light, smiling, and reassuring (God is faithful in promising--yes), (2) husky, indicating importance, (3) hollow, awesome (God is love), (4) shouting, emphatic (The trumpet shall sound), (5) chanting (And so much the more), (6) dulcet, prayerful (God--give me a word), (7) normal (Second Corinthians, Chapter fifteen).

Yet this analysis was not satisfactory--and the article was left unfinished--for several reasons. The first was that many such qualities seemed to be involved. Those noted in this attempt were far too few to cover the others which continued to show up in the recorded breakfast, football, and church materials--whining (by the children), amused tolerance (by the parents) unctuousness (as the children try to elicit favors), whispered, devotional, and angry qualities, and so on. Note a few samples:

From Record 37:
Relaxed: Testing, one, two, three, four.
Reassuring: Oh, I think Daddy will be here in a minute.
Breathy, with surprised protest: Sweetheart, look at the color of your socks!
Sad: That needle can just hurt my S- a great deal.
Whine: I want to sew!
Tender, breathy on last word: He brought these possums in a box.
Petulant: Daddy tell the story; I don't know this story.

A second difficulty was that several of these qualities could be combined. What was to be the phonemic analysis of a quality which had several such components? Was it a single new composite unit? or was it a simultaneous bundle of several phonemes? If so, were there limits to the combinations?

It later appeared that the answer to these difficulties could not be a simple accretion of more and more phonemic quality types. Rather the various combinations would have to be studied to

find any internal structural ordering in them--and possibly even a hierarchical and criss-crossing layering of small quality units distributed in larger ones.

The size of this newer research task--analysis of the recorded materials--was such that it had to be delayed, rather than being prepared for inclusion here as originally planned.

(More recently, other scholars have worked on quality types. Since, however, our purpose here is to indicate how the trimodal model stimulated our thinking in the development of the theory, reference to later studies will be delayed until §13.81.)

13.5 Componential Systems of Mode-Like Emic Units

The conclusion that voice quality was phonemic, and subsegmental, brought in its wake a number of insistent questions: What specific phonemes and types of phonemes of voice quality would be found in a particular language--say English? How would these be related to a phonetic conceptual scheme paralleling that for segments? What permitted sequences of these would be found? Would they in turn be hierarchically ordered into larger and larger units? Would characteristics of trimodal structuring apply to each,then? And why should it be that there should occur phonemes of the various mode-like types?

The answer to this last question seemed now available: The mode-like types were not arbitrarily and miscellaneously arranged. Rather there were emic classes of phonemes, just as there were emic classes of morphemes. Evidently sets of these classes comprised simultaneous COMPONENTIAL SYSTEMS MODALLY ARRANGED. Phonological units were structurally arranged not only in sequence groupings, not only in hierarchically-arranged larger and larger types, and in emic classes of phonemes distributed in syllables and stress groups, but also they were arranged in basic systems in a trimodal fashion so that segmental, suprasegmental, and subsegmental types could all comprise simultaneous but distinct structural arrangements of a single sequence of events.

The discussion in the previous section has indicated that voice-quality units would be part of a subsegmental componential system of phonology. It suggested that these would be hierarchically arranged--though the details are as yet unknown to us. Voice-quality phonemes presumably comprise or are parts of voice-quality morphemes and tagmemes in hierarchical structures.

It became evident that intonation studies, in the light of this theory, also needed further development along hierarchical lines. Intonation structure in English should not be viewed as a sequence of intonation phonemes unrelated to higher-layered intonation units. Rather the phonemes of intonation should be seen as combining into larger and larger units. These units must be studied modally also, to see to what extent--or whether--there are simultaneous but distinct phoneme versus morpheme hierarchies of intonation. Terms such as 'precontour,' 'complex rhythm unit,' and so on (cf. Pike, 1945, and cf. §§6.2-3, 9.22, 9.241, 9.31-33, 9.6) need reassessment in an intonational morpheme hierarchy as units analogous to the prefixes, stems, words, phrases, sentences, of lexical elements. At the same time, their relationship to componential systems in general (§§6.41, 6.46, 10.51) and to stress groups (§§9.31-33, 9.6) need clarification if a total structural picture is to be obtained. This empirical study, also, is too large to attempt for inclusion in the present volume.

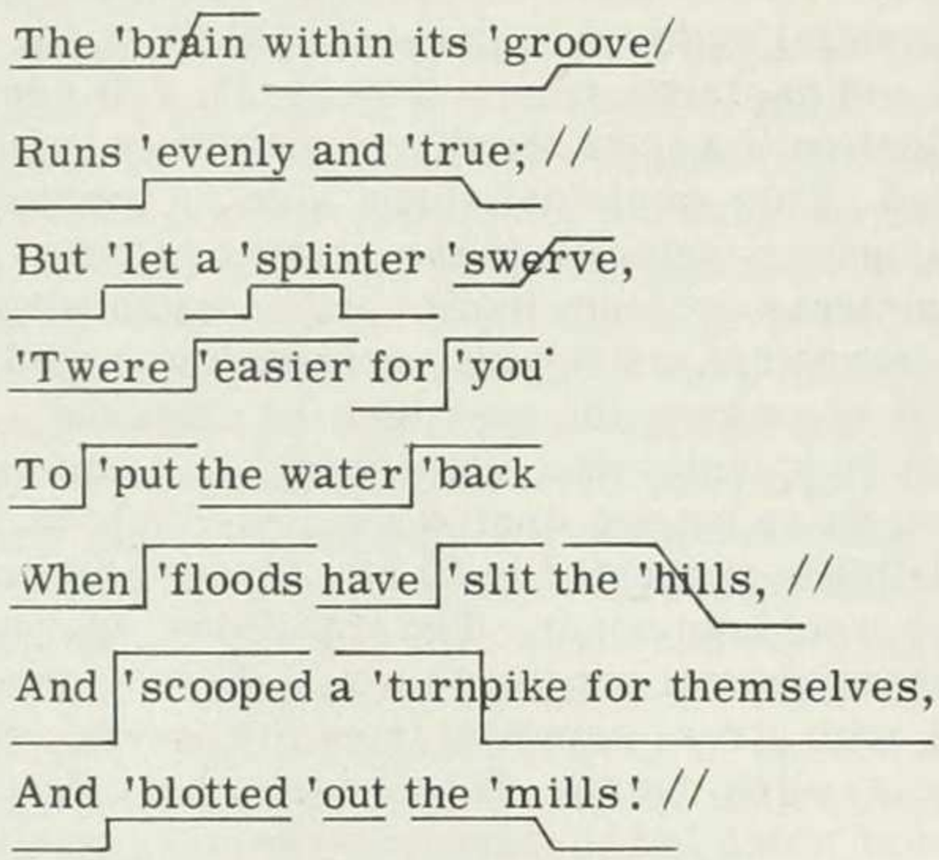
The stress problem itself became acute when the hierarchical articulatory approach was applied to it. If one adopts the view that the stressed syllable is a contrastive component of an emic abdominal pulse but not itself a separate emic unit (a possibility suggested in §9.63), stress phonemes as such would not occur. The traditional approach to suprasegmental phonemes would thereby be affected, with stress removed from the normal trio of stress, pitch, length. It was partly hesitation at this point which led to some reserve in suggesting "Solution C" of §9.63, and made it wise to leave room for the possible--I would now say probable--eventual adoption of "Solution B" (§9.62) which would preserve stress phonemes as such. Even so, however, the modal and hierarchical status of stress as it would present itself under "B" is still obscure.

Length problems also arise. It is clear that length may be both lexically phonemic and also contrastive in various nonlexical manners (see §§9.221, 9.225, 9.236). Was it possible, we asked ourselves, that a hierarchical structuring of length types could be found? How would rate of utterance, lexical length, and exclamatory length be related to this structuring, if it occurs? Would such an approach shed any light on the problem as to whether, in a particular language, contrastive lexical length should be treated as a separate abstracted phoneme of length rather than as a repetition of the short vowel phoneme, and rather than as an additional but long vowel phoneme?

All of these components--phoneme segments, voice quality, pitch, stress, length--were evidently involved in any speech situation, and needed to be recorded for study. Supplementing the materials of 1945, I decided to test for some of these contrastively, by having texts recorded by different speakers, and transcribed.

The data repeated here are taken from an illustrated paper, unpublished, given at the Michigan Academy of Arts and Sciences, Section on Linguistics and Literary Criticism, Detroit, 1953.

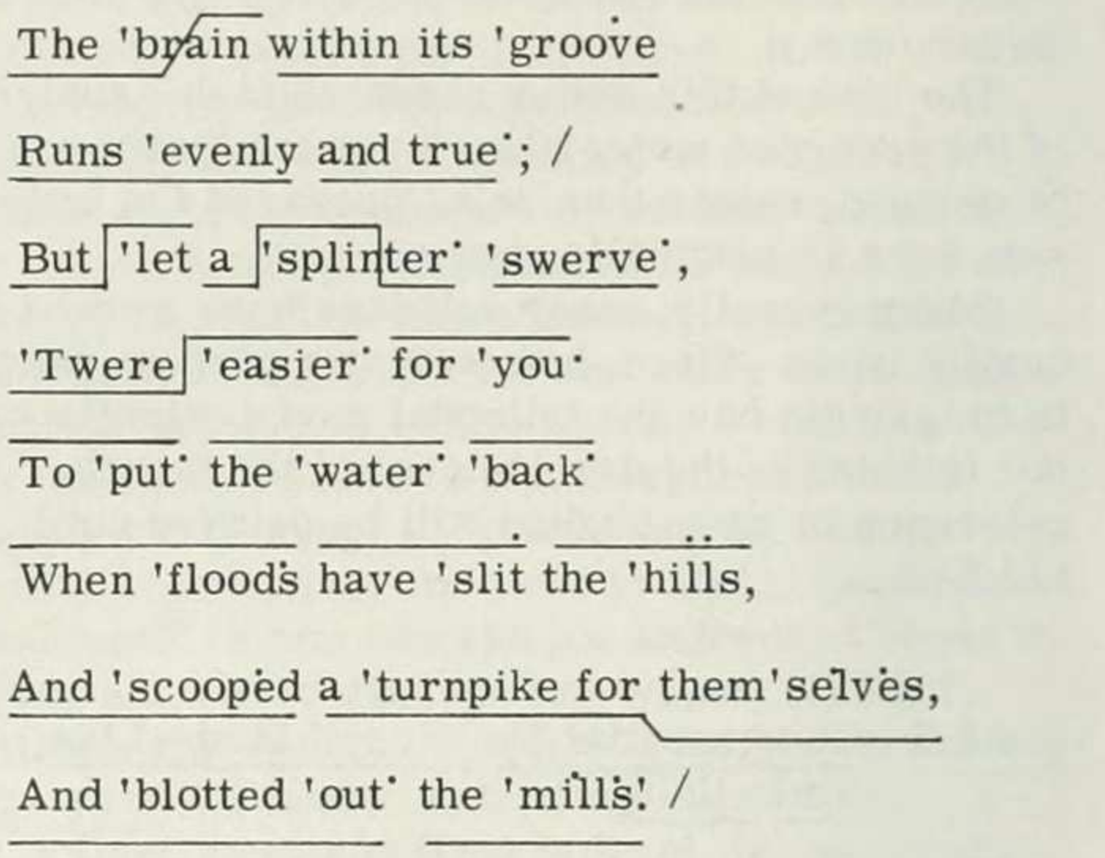
Note Reading Type A. Here a poem by Emily Dickenson is read by a graduate student. The general voice quality--and total effect--is very prosaic. It could have been used to read a news report on lack of progress in a congressional filibuster. No special pitch intervals or height occurred. Phones were conversational types. Rhythm was controlled by the physical phrasing, and so appeared as rather mechanical, with short and rather evenly-spaced stress groups.



Type A: Read by a Graduate Student

The normal voice quality and pitch height are not given special symbols here--though symbols were available (cf. Pike 1945, pp. 101-03, for specific detail). Note, however, that a pitch line hugs the top of the letters for high, may pass considerably above them for extra high, and immediately or further below for mid and low respectively. A break in the line, furthermore, indicates the end of a stress group. Stress is indicated by a vertical stroke, and vowel or consonant length by a raised dot--as after you. The single diagonal bar indicates "tentative" pause, with sustained pitch; the double bar indicates a "final" pause, with pitch dropping more than the emic levels themselves require.

Type B is very different in voice quality. The whole reading is very soft, low, quiet, with narrow pitch spread. The dynamics of the whole is a sustained even loudness, with very little change of intensity for stress, and very little change of speed. Rhythm groups are frequently identified as much by their borders as by their peaks: ends of the rhythm units are frequently lengthened either by consonant, vowel, or both. A gradual decline in general height of pitch occurs in the latter part, and is only inadequately suggested by the dropping of the "high" line six to mid pitch in seven, to low

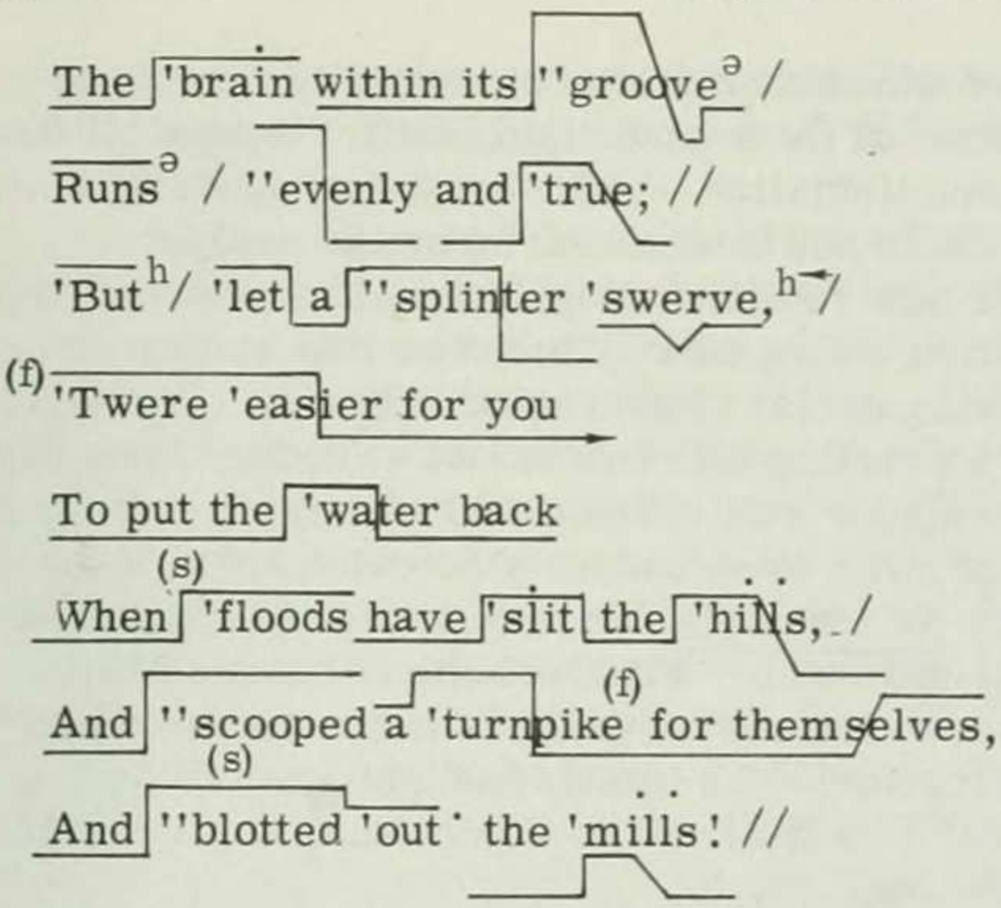


Type B: Read by a Poet

in eight. Otherwise, an extraordinary degree of sustained pitch is held throughout, on individual words and phrases. No final fade is recorded for the last word. The only pause in the entire poem comes after the second line. The softening of all phonetic elements of contrast gives a "pensive" mood to the whole, as if the reader were pondering meanings--not trying to point them out to others.

This reading is by James Squires, who is himself a poet. When I showed him this graphic analysis of his recording he commented that the purpose for utilizing this general style was an attempt to subdue the dangerously heavy tendency toward doggerel through a line with characteristic stresses, since the phonological structure tended to obscure the meaning by calling attention to the sound; but that in a different kind of a passage--say some types of prose--his reading might rather have been designed to try to enhance the rhythmic characteristics rather than subdue them.

The contrast between Type B and C could scarcely be greater. In Type C, many phonetic techniques are used to achieve deliberate, dramatic effects, and to force the reader to focus on various aspects of the poem. The pitch range is very large. Pitch falls from extra high to low on the word groove. Pitch direction changes in the middle of syllables--as in groove and swerve. Stress changes are abrupt, intense, and varied--indicated by single versus double vertical stroke. Very great changes of speed show an intensity of implication. Note (f) as showing very fast tempo building up on line four, and (g) slowing down to a very deliberate pace in line six--repeated in lines seven and eight. Rhythm groups are set off by a combination of techniques: Length on brain gives a feeling of "poise" for "leaping" to the fast precontour



Type C: Read by a Literary Critic

within the plus the very sharply focused, extra-stressed, pitch-contrasted groove; this last word, in addition, is set off at the end by a release of the consonant v to a slight voiced vocoid [ə], and pause. Line two utilizes a very similar technique, with runs "poised" by vocoid release plus pause, followed by the extra-stressed, pitch-contrasted evenly.

After a relaxed "final" pause at the end of line two, line three begins in a similar way--though with voiceless vocoid [h] replacing the voiced one of line two. Line three ends, however, very differently. It has audible indrawn breath (see arrow) as preparation for the very fast beginning of line four, without the slow-down of lines one, two, and three.

The last line shows a sharp pitch transition from high falling to low falling, signalling change of mood from excitement at watching the awesome nature scene to one of quiet contemplation of the permanent effects on man's works.

The reader in this instance was Austin Warren, a literary critic who considers Emily Dickenson our greatest American poet and who has made commercial recordings of some of her materials. Professor Warren commented, after he had recorded the material, that he liked a poem in which every word is important--and we have seen that by his rhythmic groupings, extra stresses, high pitches, and rate changes he was able to emphasize many individual words such as groove, evenly, splinter, scooped, blotted out.

It should now be evident that the author of the poem exploited, directly, only the segmental system of the various componential systems available. The readers, however, were able to utilize effectively the suprasegmental and subsegmental systems of pitch and voice quality or dynamics.

The written form gives much less opportunity for the composer of the poem or other literary work to communicate to the reader the moods or emotive qualities to which he was reacting as he thought through the poem. In the process of "thinking through" any such literary production the author would be unconsciously "hearing" the words with some pitch and quality scheme. Yet only part of this which he "hears" and "feels" can get into ordinary print. Whatever part of his mood were in fact contained in such unwritten elements would be lost to the reader.

Should one not--we now inquire--consider what would happen if the poet were able to control consciously and write down for us alliterative intonation? or voice qualities contrasting with words proper so as to give special irony? or pitch patterns introduced for delicate surprise at points where the reader would not be expected to produce them for himself? We have already seen humorous selections marked delightfully (by Stark, in Pike, 1947c, pp. 50-52). (I have also attempted to compose a poem or two where special pitch patterns gave part of the essential meaning--but my general artistic ability is too low to be effective.)

Thus far, poets are exploiting only part of available linguistic resources. If literary students could be training to read material marked for intonation--let alone other components--poets might have an interesting time exploiting new art forms for them. By way of encouragement to anyone who wishes to try, I might add that in phonetics classes I have used, for practising the reading of intonation, some poems of Frost marked for pitch, as read by the author. To my astonishment I have found a number of the linguistic students suddenly excited by poetry who had never been interested before. The visual pitch allowed them to perceive and enjoy thoroughly what they had never been able to grasp in print--nor from phonograph records directly!

13.6 Larger But Incomplete Modal Analogies

At this point in the investigation the segmental, suprasegmental, and subsegmental approach now made a further contribution. It served as a rather remote analogy to hint at some of the structural relationships between verbal and nonverbal behavior. In the breakfast scene, for example, the ordinary physical activities of eating, of sitting at the table, and so on, would constitute a hierarchy of activity of a type which would be considered partially analogous to the general segmental componential system of the total breakfast behavior, whereas the conversation superimposed upon that physical activity but not directly correlated with it would be a kind of adventitious addition making up a separate hierarchy with a separate set of elements of a "suprasegmental" type.

The analogy is incomplete, however, in that the criteria set up in Chapter 12, by which one solves for F when one has M, are not met in this instance. One cannot state, for example, that all the eating activity of the breakfast scene is wholly included, even though restructured, in the verbal activity. Nevertheless, the partial success at describing the verbal-nonverbal relationship by this model is, to me, of interest in itself in addition to the fact that it has proved stimulating at other points.

One of these was the search it initiated for a subsegmental system analogous to the verbal and nonverbal components, utilizing the suggestions of Chapter 12 as to solving for D. We were now ready to ask: What would be the subsegmental characteristics of a trimodal structure in which conversation and nonverbal behavior were respectively suprasegmental and segmental? We must seek, again, for an element in which both these activities are combined--units of activity which are larger than either of these two by themselves, within which both of these are simultaneously distributed, which do not add elements which are not visible as parts of the manifestation mode of these other elements, but which nevertheless are distinct from them in the sense that they constitute further higher layers of organization.

It would not do to suggest that a merely larger set of behavior patterns would serve this function, since a larger set of elements of the same general type would merely be higher layers of the same componential systems. It must, rather, be in some respects different in kind.

Our suggestion: That EPISTEMOLOGICAL ATTITUDES or ACTIVELY-HELD BELIEF SYSTEMS (and the active moral character of a person) provide this integrating organization. All conversational activity, as well as all nonverbal activity, is contained within the general FRAMEWORK OF REFERENCE of activity which can be viewed in some such way. Without a belief system (conscious or unconscious, vague, or organized concerning the nature of the world around him and concerning his own person) the individual could not act purposively.

Character and actively-held belief systems do not exist in a vaccuum, apart from activity. Character and belief systems are built during such activity. Nevertheless, though character may be built--for better or for worse--during a basketball game, the structure of that manifesting basketball game is not itself the structure of the character or belief system of the player.

If one wishes to discover the nature of a particular adult's epistemological attitudes, or belief systems, or character, one can do so only by examining his overt behavior. It is this overt behavior which manifests or constitutes the manifestation of these underlying attitudes, and without this manifestation--both verbal and nonverbal--they could not be discovered by the analyst.

We now return to linguistics, and a second contribution stimulated by the view that speech is suprasegmental to nonverbal behavior. We begin with a puzzling bit of data: At a luncheon one day my neighbor was in the midst of a reply to a question of mine when suddenly he quietly spoke the words No thank you, and continued the explanation in normal voice. What was the relation of this phrase to the conversation? None, except as an interruption. The interjected phrase was an "aside" to a waiter who was holding a serving tray toward him.

The verbal insert was not organized in relation to the hierarchy of the conversation. Within what hierarchy then did it take place, and what hierarchy did it in part constitute? It would seem that this utterance was part of the luncheon as such, rather than of the conversation conducted at the luncheon. Yet in relation to the luncheon activity it was suprasegmental. Here, then, were two simultaneous suprasegmental relationships. One of these--seen in No thank you--was more closely related to the manifestation mode of the luncheon episode and its basic segmental character. The other--the conversation in general--was more detached from that segmental structuring. Evidently, then, we are in this instance meeting an INNER SUPRASEGMENTAL hierarchical relationship and an OUTER one. Confusion of description would result if this layering were ignored, and all verbal utterance treated as a single linear hierarchy.

13.7 Overlapping Hierarchies of Mode-Like Emic Units

The conclusion that behavior as a whole could have simultaneously an "inner" and an "outer" suprasegmental verbal system, with the inner one more closely related than the outer one to the segmental nonverbal system, was paralleled and reinforced by a similar query regarding language itself. Was it not possible that a language might have two or even three simultaneous structurings of pitch in different hierarchical relationships? And would this lead to the solution of the very difficult question as to the relationship between lexically-contrastive tones, phrasally-contrastive intonations, and socially-contrastive height of voice? To me the answer is "yes".

Phrasal intonation would be analyzed as, in general, an outer suprasegmental layering of speech. Lexical tone would be an inner suprasegmental layer, closely related to the "segmental" hierarchial system of sounds and words. General

height of voice, however, would perhaps be treated as subsegmental, analogous to or part of the system of voice quality.

In Mazahua (Eunice Pike, 1951), for example, there are two heights of lexical pitch which occur contrastively on nonfinal syllables of words, as in items such as zá̱phə 'gun,' zà̱phə 'lake'. Other contrastive pitches and pitch sequences are of a phrasal, intonation type, and occur on word-final or on phrase-final syllables, with a different number of contrastive heights--three of them. The lexical type contribute as parts of segmental morphemic structure. The intonation type themselves wholly constitute morphemes, as parts of the intonational componential hierarchy; compare thús$^{\text{ʔə}1}$ 'a cigar, you say?,' with thús$^{\text{ʔə}2}$ 'and a cigar?,' thús$^{\text{ʔə}3}$ 'a cigar?' (In these illustrations of Mazahua the acute and grave accents indicate high and low lexical pitch respectively, whereas the numerals indicate intonation levels, with 1 high 3 low). Note also the glides on rà-šo̱rą$^{2-1}$ 'tomorrow?!' and ʔyahkə$^{2-3}$ 'Hey, you give it to me!'

Eunice Pike suggests that the two kinds of units should not be combined into a single system of pitch even although an occasional allophone of a tone and of an intonation phoneme may be homophonous. Her reason: 'To us, however, it seems that the tonemic material and the intonemic material constitute two separate systems. The presence of these two systems is indicated by their different distribution, by their different types of allotones, and by the different grammatical-semantic characteristics of the morphemes into which they enter, or which they constitute. We do not wish to combine into a single phoneme allophones--even homophonous ones--taken from two different systems.' The modal analogies developed here support this view, and indicate that intonational pitch may constitute a componential system different from that to which the units of lexical pitch belong. (1951, p. 39 fn)

Once we had granted the usefulness of the modal analogy for pitch relationships, the question arose as to whether the same approach would be useful for length and stress. It became evident that a comparable situation existed, even though less-extensively developed systems, with fewer included units, might be involved (cf. §9.221).

For length: Lexically-contrastive length would parallel lexical tone as an "inner" suprasegmental layer closely related to the sound and word segmental hierarchies. Phrasally-contrastive or expressive length would parallel phrasal intonations, as an "outer" suprasegmental layer. General rate of speech--fast and slow--would parallel voice quality, as subsegmental.

For stress (cf §9.3): Expressive, phrasal stress would similarly appear as an "outer" layer of the suprasegmental hierarchies. Lexical stress would seem closely related to the segmental systems of sounds and words. General loudness would, in turn, parallel subsegmental voice quality.

Finally, as we look back at all three--pitch, length, stress--we see that the three types in turn have their mode-like relationships as to classes of units. The lexical pitches, stresses, and lengths, though all suprasegmental from one hierarchical viewpoint, are all--when viewed "close-up" (i.e., with attention addressed to their own modal structure)--somewhat segmental in type. The phrasal intonation, expressive length, and expressive stress are all suprasegmental, in general, but seem heightened in this quality (i.e., suprasegmental to the suprasegmental system) when compared with the lexical units. The socially-relevant height of voice, the rate, and the general loudness are also all in one sense suprasegmental, but when viewed in this "close-up" of the suprasegmental components as a system are in another sense subsegmental to that suprasegmental system.

Could this vague relationship in turn be further generalized and clarified, without bringing in concepts other than those seen to be necessary for describing the characteristics of sounds, words, and sentences already studied? It soon appeared probable. As emic progression (§12.3) shows units trimodally structured, with the modes containing a spectrum of units each of which may be trimodally structured, and as classes of morphemes are trimodally structured (§§7.313, 12.3), so also systems as a whole may be trimodally structured. The total language system may be structured into suprasegmental, segmental and subsegmental systems. It is the internal modal structuring of these larger mode-like systems which, in an internal layering of emic progression, gives rise to the various kinds of suprasegmental relationships which led to some of the puzzles looked at in this chapter. Many of the details, however, remain obscure. Other problems are undoubtedly left untreated--and some may prove to have been distorted--but the general significance of the approach seems to be sufficiently clear to make it evident that suprasegmental units must be studied hierarchically and multi-systemically.

13.8 Bibliographical Comments on Chapter 13

The sequence of development of my thinking indicated in this chapter is not an idealized memory which reads later persuasions into the earlier conclusions, but a more serious report of an unfolding view--a view still immature, but growing. From the time I began to work out behavioremic theory in 1948 I have dated and filed all my notes (whether repetitive or exciting or dull).

13.81 On Voice Quality, La Langue and La Parole

As more and more materials in speech begin to appear structured, the view that "language" as a structure differs from "speech" as activity is threatened. In behavioremics, furthermore, the structural units always retain substance as relevant to their manifestation mode (§§6.91, 7.85, 8.82). Under the impact of these two attacks, we abandon the distinction between la langue and la parole proposed by de Saussure (1931 [1912]).

Voice quality would, then, in my view be considered linguistically relevant whether, on the one hand, unitized (i.e., 'discretely coded') in contrastive phonemes or in componential systems such as whisper versus song, or whether, on the other hand, it is socially significant but gradient (i.e., 'continuously coded' by degree) as may be rates of speed, degree of voice loudness, or general height of voice. (Though Professor Martin Joos suggested to me some years ago that even the general height of voice may prove to be discretely split into four "kinds" of pitch levels, which I would call--from low to high--relaxed, normal, intense, excited). Even qualitative characteristics which are considered 'unlearned' may often be modified under social pressures, and so move into the linguistic orbit as signals of social conformity and of social level. Even sneezes, laughter, coughing, and nervous affects on the voice differ sharply according to one's social environment. And the fact that actors--or nonprofessional mimics--can imitate many characteristics of voice quality normally associated with particular individuals shows that these characteristics, also, are cues to the listener which allow him to learn much about the speaker's personality--which may be relatively constant for him, but fixed by his attitudes and habits rather than by physiological necessity. Even those over which the speaker has little control--resulting, for example, from cleft palate--carry a message differentiating one individual from another.

For a different point of view see Togeby (1951, p. 264), and Sebeok, Walker, Greenberg (in Osgood, Sebeok, and others, 1954, p. 76; from this volume, however, I take the phrases 'discretely coded' and 'continuously coded'--p. 85). Compare Hjelmslev (1953, p. 74). Hamp (1957) in discussing Grimes' treatment of Huichol, feels that the vocal qualifiers may not even be properly labelled by the language name 'Huichol,' 'since the latter is a linguistic term' and it is 'highly unlikely that the other system is coextensive with linguistic Huichol' (p. 141); rather the qualifier system 'runs alongside the linguistic [system] and impinges on it in a peculiarly intimate way.'

For physiological conditioning of voice quality, see also Meader and Muyskens, 1950, p. 226). For early attempts at listing discrete voice qualities note, among others, Rush (1833). Some bibliography is given in Pike (1945, pp. 5, 12-13, 181-84).

For discussion of gradient problems in quality, see Pike (1945, p. 99).

For an attempt to lay an articulatory groundwork for the phonetics of voice quality, and transcriptional symbols, see Pike (1945, pp. 99-104). A relatively high tongue position in the mouth leads to a "thin" or "childish" quality. The tongue low in the mouth produces a more "hollow" or "sepulchral" sound. With the tongue back, a more "choked" or "muffled" variety is likely to be heard. Other effects come from fronting, lip rounding, throat tension, etc.

For voice quality as signalling personality characteristics, see Sapir (1927, Selected Writings, pp. 535-36, 540-41, with such phenomena occurring in a 'bewildering range' as yet unclassified or named, and yet perhaps 'in some way a symbolic index of the total personality'), Newman and Mather (1938, with listing of qualitative and dynamic factors found in patients with classical depressions, gloom, or manic syndromes, etc.), Stevens (1951, pp. 1068, 1070, with the possibility of judging one's occupation from voice-quality cues), Kennedy (1953, p. 369, with masculine tone varieties).

For voice quality as part of vowel signals, see Firth (1935-37, p. 534, tone with breathy vowels), Henderson (1952, p. 151, sepulchral voice).

For recent attempts at listing phonemic 'voice qualifiers,' see Smith (1952, pp. 61-63; with overloudness, oversoftness, rasp or stricture, raspleSSness or openness, drawling, whining, singing, chuckling, ingressions, and whispering). Stockwell, Bowen, and Silva-Fuenzalida have shown some quality types for Spanish (1956, pp. 661-65). McQuown shows sample transcriptions and comments from quality analysis (1957b, pp. 82-84). Pittenger and Smith show the implications of vowel quality for psychiatry (1957, pp. 72-74), with differentiation of quality phenomena into vocal qualifiers, vocal differentiators, vocal identifiers, and vocal quality and voice set. (These divisions of Smith are mentioned, but not illustrated, in a review of Jassem in Language, 1955, p. 153.) Trager has a similar, but more elaborate, analysis of vocal types (1958): voice set (prelinguistic, including data from background of physiology and physical peculiarities--sex, age, mood, location, etc.); voice qualities (pitch range and control, resonance and rhythm control, tempo, articulation control, etc.), vocalizations--of three types (a) vocal characterizers (laughing, crying, whispering, whining), (b) vocal qualifiers (intensity, pitch height, extent--i.e., drawl or clipping), (c) vocal segregates (uh-huh, sh).

Moving from these studies back to the possibility of a subsegmental hierarchy suggested in §13.4, we suggest that voice set, reflecting personal or social characteristics, might be a high-level unit in a hierarchy whose low-level units would be more localized quality changes affected by specific oral adjustments (Pike, 1945, p. 101). Intermediate between them would be the long units of song, whisper, etc. General rate of speed and local length phenomena might be part of a second such hierarchy. Dynamic factors of stress-group type, with dynamic contour affected by early or late, sharp or gradual crescendo and decresendo, etc., (Pike, 1957c) might be high-level components of a third hierarchical set with special controlled or ballistic syllable types (§9.221) intermediate in range, and single phoneme dynamics at the bottom of the hierarchy.

13.82 On Suprasegmental Phonemes

There have been numerous attempts to define suprasegmental phonemes (see collection of definitions in Wells, 1945, pp. 28-29). These approaches do not all lead to the same units, however. For Hockett, 'Those [features] which clearly extend over a series of several segmental groupings are SUPRASEGMENTAL' (1942, p. 8), so that, for example, voicelessness and 'absence of nasality' are both suprasegmental over the last two phonemes of crypt. Compare Harris on long components (1944b, pp. 191-96; 1951, pp. 125-36). Trager included among the suprasegmental components various secondary phonetic characteristics such as labialization (1941, p. 135); cf. Harris, with height of tongue as suprasegmental (1944a, p. 206). In 1947c (p. 65b, 63a) I attempted to define the suprasegmental phonemes as those units that 'affect sounds quantitatively but not qualitatively,' limiting the list to length, stress, pitch, and possibly glottal stop (pp. 147-48a). For glottalization, see also in this connection Harris (1944a, p. 205), where glottalization (but not glottal stop) is suprasegmental because it is 'addable to and removable from glottalized continuants' and 'a glottalized continuant configurates as one consonant'), and Haugen (1949, p. 281, where, in Danish, glottal stop is a prosodeme because of 'the effect of timing'). Haugen, moreover, wishes to say that 'all phonemes are successive' (even if stress could not then be called phonemic) and that 'any significant sound feature whose overlap of other features is temporally correlated to syllabic contour should be called a prosodeme' (1949, p. 282). For other views of prosody, quite different from that of Haugen, see Uldall (1936, pp. 54-55, in which prosodies are defined as 'consolidating one syllable' and in Danish include h, not-h, glottal stop, not glottal stop, and others), Hjelmslev (1936, p. 53, in which consonants must be capable of occurring both final and initial, but prosodies in one or the other position only), Firth and others (references and discussion in §§8.814, 9.73, 10.51). For suprasegmental elements as behaving like a separate system, see Wells (1945, pp. 28-29). In sum, definitions have been attempted in reference to larger structures (e.g., syllables in reference to segmental spread), in reference to componential analysis, in reference to phonemic analysis, articulatory production, or acoustic form, and in reference to system formation.

Some authors, instead of trying to work their way through these knotty problems, build the foundations of their system without including them (Jakobson, Fant, Halle, 1952, p. 15). Others have assumed that the problem may be structurally irrelevant, and that the traditional analysis of tone phonemes versus voice phonemes 'has no doubt been largely determined by our traditional orthography' (Greenberg, in Osgood, Sebeok, and others, 1954, p. 12). McDavid, in reviewing Jones, says that 'Not only is this multiplication of technical terms [toneme, stroneme, chroneme] esthetically disturbing; it suggests a hierarchical difference that does not necessarily exist' (1952, p. 381). Hockett, in objecting to the title of my Tone Languages, protests that 'Such terms may form no part of an objective linguistic taxonomy' and 'the expression "tone languages" . . . may be no more meaningful than, say, "velar spirant languages"' (1949, p. 30)--a position which may be a corrective to the implication in Black that 'whispering in a tone language almost denies the premise that tone is the [sic] feature of the language' (1948, p. 520).

For references to stress, see §§9.74-76.

For length, note §9.22. Note also Vogt, on Norwegian (1940, p. 9), where CV·C is contrasted with CVC·, vi·s 'wise' versus vis· 'certain', and 'the distinction must be of a prosodic nature, because phoneme sequences as a whole and not single phonemes are opposed.' See also Haugen, where a sound which 'extends beyond the boundary of a syllable' 'is uniformly interpreted as a new phoneme' (1949a, p. 280). On vowel length in Estonian, see Ariste (1939, pp. 277, 279, with three phonemic lengths plus two or more others). For a more recent study of Estonian, based on spectrographic analysis and juncture theory, see Lehiste (to appear in 1960). Note also, for Hausa, Carnochan (1950).

13.83 On Intonation

A long-standing misconception concerning intonation is rejected by scholars today, namely

that 'the tones expressive of sorrow, lamentation, mirth, joy, hatred, anger, love, pity etc. are the same in all nations' (Sheridan, 1798, p. 170). Note, for example, Sapir's rejection of this view (1927, Selected Writings, p. 538). In Comanche, no contrastive intonations have been found (Smalley, 1953, 297; cf. discussion above, in § 6.41); rather 'Greater emotional intensity is sometimes conveyed, not by intonational changes, but by segmental changes,' for example in 'ïsapï '(You) liar!' versus 'isapï 'a liar' (Canonge, private communication). Note also contrastive intonation exclusively on a few exclamatory particles, in Oto (Pike, 1945, p. 21). Experimental evidence that intonation patterns are learned is found in Evelyn Pike (1949).

For intonation as a distinct system from tone, in a language containing both, see Pike (1948, pp. 16-17, 36, 85-86), Hockett, on Mandarin, (1950, p. 65), Eunice Pike, on Mazahua (1951), Haugen and Joos, on Norwegian, (1952). Cf. also Von Laziczius (1936, pp. 58-59) with reference to 'emphatica' which are expressive as against lexical phonemes which are representational, and Bazell, for whom intonation is not in the 'central structure of a language' (1953).

The best illustration of the opposite point of view--that lexical and phrasal pitch should be analyzed as a single linear set of pitch phonemes--is seen in Bloch, with four resultant Japanese pitch phonemes (1950, versus 1946, in which the accented syllable of a word and all but the first of a series of syllables immediately preceding it in a word had high pitch, p. 98 fn. 4).

The presence of four discrete contrastive pitch levels in English was first pointed out by Pike (1942, pp. 32-34). Extensive analysis was made of meaningful sequences of these pitches, in the same volume (pp. 48-86), along with drills for foreign student practice, as well as discussion of problems of quantity and a listing of voice qualities (pp. 91-95). The pedagogical material utilizing the contrastive pitches was incorporated in Fries (1943, and subsequent editions). The theoretical material was then expanded and published separately (Pike, first printing 1945; the date of this publication is frequently misquoted, with a 1946 date--that of the second printing--utilized, as by Wells 1947b, and most recently Trager, 1958, p. 1). For other approaches to pitch phonemes in English, see Wells (1945, with reference to pitch morphemes), Trager and Smith (1951, with reference to junctures and terminals). Bolinger rejects this view, attempting to show intermediate pitches (1955)--but fails to operate within the restriction set by Pike (1945, p. 26) that only the crucial contour points must be treated in this contrastive way. The domain of intonation phonemes, that is, is not the individual vowel but a place in the emic stress group.

Discrete steps of intonation are also rejected by Togeby (1951, p. 38), and by Weinrich (1953, p. 277). Possibly some of the difficulty here (apart, that is, from failure to deal with contour points) is their failure to seek the contrasts only in specific contrastive frames with general height of pitch controlled. The contrasts occur within any particular general height or style of voice, with some particular spread of intervals. Thus, for example, all the contrastive contours may occur in falsetto; falsetto cannot, therefore, be considered as a special fifth pitch level which breaks the system of four contrastive levels (our reply to Bolinger's attack in his review of 1947, p. 71).

For bibliography on English intonation, see Pike (1945). See, also, references in preceding paragraph. For more recent treatments (but without the structural views needed for behavioremic synthesis) see Jassem (1952), Hockett (1958, pp. 33-61), and Bolinger (1947, 1951, 1955, 1958). For a structural analysis of Spanish intonation, see Anthony (1948) and Stockwell, Bowen, and Silva-Fuenzalida (1956). For structure in the intonation of an American Indian language, see Larsen and E. V. Pike (1949).

13.84 On Tone

For bibliography on tone languages, see Pike (1948). For first treatment of frame techniques in the analysis of tone, stress, and length, see Pike (1938; developed in detail, 1948). For first use of term 'toneme' (pointed out to me by Daniel Jones) see Armstrong and Tin (1925, p. 20).

For minimal pairs with four tone levels, in Chatino, see McKaughan (1954, p. 27; kItá 'you wait', kItā 'he waits', kita 'cigarette', kItà 'flour'--with [I] representing voiceless vowel, and [́] high tone, [̄] mid tone, [(unmarked)] lower tone, [̀] lowest tone). For pitch contrasts as differences in timing of the tonal curve, in Scandinavian languages, see Haugen (1949a, pp. 279-80). For five tone levels in Trique of Mexico, see Longacre (1952); in Tahua Yao of China, see Chang (1953, p. 375), in Ticuna of Peru, see Anderson and Anderson (to appear). For special problems in analysis: tone variants, Jones (1948); toneless syllables in Mandarin, Hockett (1949b, p. 211); upper tones with voiceless initial, lower tones with voiced initial, in Kennedy (1953, p. 368); incomplete symmetry, and length pseudo-contrasts in Zapotec, Eunice Pike (1948); pitch pseudo-contrasts in Campa, Pike and Kindberg (1956); pitch analysis of words without reference to tone phonemes, in Chaga, Sharp (1954, pp. 167-68; and cf. above §8.814); for models of tone systems,

Pike (1952b); for historical origin of tone in Swedish, Oftedal (1952); also Jakobson (1931); on African languages, Welmers (1949, 1950a, 1950b, 1952). For intonation in relation to tone, see §§13.5; 13.83.

13.85 On Communication with Abstracted Components

In Africa, communication by drums may follow the linguistic pitch; for a few references see Pike (1948, p. 36). For similar treatment of drum communication in Bora, Peru, see Thiessen (to appear).

Conversation by whistling, in Mazatec, Mexico, with apparently unrestricted topics, is described by Cowan (1948); this also follows the abstracted linguistic pitch.

In a more recent article Cowan (1952) describes briefly a different system of communication by whistling--in Tepehua, a language of Mexico--which so far as is known is nontonal, in which the contrasting consonants and vowels are whistled. A difference between "stops" and "fricatives" is in the whistle talk carried by lip movements. Consonants are palatalized in the whistle. Both consonants and vowels are somewhat labialized, but varying degrees of rounding or spreading retain the contrasts of speech. One is not nasal, but has a front and raised tongue position. Distant whistling is achieved by a doubled finger in the mouth, which fogs the contrasts and reduces the number of possible messages. A bilingual informant illustrating the data, by whistled replies in Spanish, made the same kinds of adjustments for the Spanish sounds. For whistled Spanish, in the Canary Islands, see Classe (1957).

A 'hum talk', on the other hand, is known through an abstracted intonation of Yiddish, utilized for conversation during parts of certain religious occasions where regular conversation is taboo (private communication from Prof. Abraham Kaplan, who tells me that he himself participates in such conversations, and that a sample conversation--quite legitimate, except that the novelist carries it to excess--occurs in The Passover Guest, by S. J. Rabinowitz [Sholom Aleichem]).

For a discussion of western music stimulated by speech intonations, see Hall (1953). For references to Chinese, African, and American Indian music based on linguistic pitch see Pike (1948, p. 34); see also A. M. Jones (1949, pp. 11-12).

CHAPTER 14

FUSED UNITS

In the last chapter we showed how the modal outlook led to a general view of the relationship between suprasegmental, segmental, and subsegmental systems of sound. In this chapter we again use the modal outlook to help us understand the changes which occur when segments come together in sequences. (For earlier mention of these problems, see §§6.55, 6.66, 7.56, 8.42, 8.442, 8.446, 9.225, 9.236-37, 9.241, 9.32, 9.61, 9.74.)

14.1 The Item-and-Arrangement (Particle) and Item-and-Process (Wave) Views of Sequence

Specifically, we wish to know whether a modal view of the phenomena occurring at the borders of segments in sequence can help us attain an over-all scheme which will apply to a wide range of segment types. Fusion, change, or interference between segments must ultimately be studied in a wide variety of sequence types or JUNCTIONS, if we are to arrive at a framework which will be useful for further inquiry.

We are using 'junction' to refer to a sequence of two abutting segments of any kind. (The term 'juncture' is more generally used to refer to the "joint" which is "between" two units, and is usually restricted to postulated phonological units at these joints. Cf. §§9.61, 9.74.)

14.11 The Modal Analogy

The reader will recall that in §12.1 we indicated that the characteristics of feature mode and manifestation mode led by crude analogy to static versus dynamic versus functional views of data, or to views of particle versus wave versus field. Here we apply the static (i.e., particle) and dynamic (i.e., wave) analogies to two approaches which have been called respectively 'item-and-arrangement' and 'item-and-process.' (For the field view, see §14.3.)

Under the STATIC view a sequence of units is treated as a sequence of discrete segments--of PARTICLES or ITEMS. Each unit segment in the sequence is assumed to have, in principle, a specific beginning and ending. Each junction is analyzable, in principle, into two concrete, non-overlapping units. Thus the junction cats is analyzed into cat and -s; /æžu/ as you is analyzed into /æ-/ as and /-žu/ you (or into /æž-/ and /-u/; or into /æz/ and /-ʸu/ in which the raised /-ʸ/ implies an abstracted palatal component).

The strength of this static view lies in the fact (1) that it allows units to be treated as discrete, thus paralleling the basic outlook of emic units as distinct, contrastive components of speech. Also (2), it holds out promise (which in my view cannot be fulfilled) of allowing linguistics to be treated simply and exclusively as composed of two kinds of theoretical constructs--phoneme and morpheme units on the one hand, and distribution on the other--hence suggesting a linguistic theory of considerable simplicity.

Basic techniques to implement this static view would require (1) theory and methods for determining the point at which a junction is to be cut into two--a technique for resolving the junction into two discrete sets of components. They would also require (2) theory and methods for determining the allo-units of a unit, and their distribution, i.e., variants which differ according to the particular junction in which they occur. One must, that is to say, be able to segment /æžu/ in some way in principle and practice. It would seem to me that these practices should ideally be consistent, reflect a coherent view of language, and should not in principle permit numerous conflicting alternate analyses. This, for me, would be part of a definition of ideal--unattainable--methodological rigor.

Under the DYNAMIC view, on the other hand, a sequence of units may be treated as a series of WAVES flowing into one another, fusing at their boundaries, with the ending point of the one unit and the beginning of the next frequently indeterminate. While on the one hand an emic unity is postulated for each member of the junction, such that each unit is contrastive and emically distinct from the other unit, nevertheless the manifestation mode of each unit is seen as wave-like, with merging borders. The "center" or wave peak of a unit may be detected--or, at a minimum, the fact of the presence of the unit may somehow be attested--while the borders of the unit may be indeterminate. Thus the sequence /æžu/ as you may have morphemic wave peaks of as and you at /æ-/ and /-u/ while the borders of both are indeterminate within the phoneme /-ž-/. The junctions comprised of cuts and buds may have peaks somewhere

within cut, bud, and within /-s/, or /-z/, but the borders may be conveniently treated as indeterminate for either junction if (for reasons unspecified here) one wishes to treat the voicelessness of the /-s/ plural allomorph as part of the cat morph, or the voicing of the /-z/ plural allomorph as part of the bud morph.

The strength of this dynamic view lies in the fact (1) that it allows the indeterminacy-in-fact of segment borders to be treated as indeterminacy-in-theory as well. A cut does not have to be made at any particular spot in the sequence and a phoneme shared by two morphemes does not have to be arbitrarily assigned to one or the other. Further (2), it allows the wave-like character seen clearest in phonological movement to be generalized to other linguistic levels, so that the wave character of phonology becomes an integral part of a total theory. (3) A large series of events in a particular language can be easily summarized by a simple, elegant statement of changes--e.g.: 'any stop will be lost when it would otherwise occur before a second stop across a morpheme boundary within a word.' Such a statement eliminates the necessity of making separate statements for the action of each stop or for the distribution of each allomorph. (4) A theory of linguistics emerges, with this as one component, which has a few simple theoretical constructs applying to the whole system of human behavior--constructs which can deal with modal and hierarchical ordering of that behavior as well as with its simple segmentation. (5) The entrance, into the theory, of merging units meets one basic philosophical requirement for any theory which is to portray adequately the universe as a system in which units can in fact interact with one another. This approach contrasts with a purported universe of discrete units which can only, in principle, react at a distance.

Basic techniques to implement this dynamic view would require (1) theory and methods for determining the degree of fusion of the units in a junction. They also require (2) theory and methods for describing the type or process of fusion within the junction. (3) Theory and methods must be available for handling the implication that every fusion should ultimately be treated in reference to a higher layer of structure in some hierarchy, whether phonological, lexical, or grammatical. (4) Theory and methods are required for determining the actual or reconstructed allomorphic bases from which the fusing process is assumed to start--since statements of fusion, change, and process all imply some real or assumed point of departure. One must, that is to say, be able to determine that /æžu/ is the end product of a fusion between /æz/ and /yu/, and to note that the fusion is partial, with the border phonemes coalescing phonetically into one mutually-shared phoneme which is different from either of the reconstructed phonemes at the border point.

The analyst is tempted to inquire: Which of these two views--item-and-arrangement or item-and-process--is correct? and to try to force the issue one way or the other. The modal approach implies that this question is itself in error, since the question implies that one or the other is wrong. The modal approach utilizes both. Each view shows one phase of language structure. Each must be included in any comprehensive view of language or behavior. Yet neither is complete in itself. Each will by itself lead to distortion (see §14.2). The two together are still incomplete, needing a field view--§14.3--to round out the modal approach and to correct some of the distortion introduced by the other approaches. (See also §11.76.)

In spite of the necessity for the two, they cannot be fused into a single, undifferentiated median approach. Like the modal structures discussed in earlier chapters, these approaches must be treated separately, weighted for the distortion involved in abstracting either of them from the total system, and recombined into a higher synthesis of understanding.

14.12 Summary of Some Fusion Types

Before making more explicit the specific distortions involved in the application of the two views, it is useful to list briefly a few of the kinds of fusion which we must meet--and most of which have been mentioned in earlier chapters. This listing begins to show that problems of fusion run throughout all kinds of sequences, all kinds of hierarchies, all kinds of units, and to show that a few principles may be applied to the etic classification of all of them.

For convenience in discussion, the degree of fusion between the segments in a junction may be arbitrarily subdivided (a) into those where there is no audible effect, (b) those with PARTIAL fusion, and (c) those with COMPLETE fusion.

First we note fusions within the phonological hierarchy: Across a pause, even in the middle of a sentence, phonemes often have no effect on one another above the perceptual threshold. Across a stress-group boundary or a syllable boundary there may be some modification of one sound by another. Within a syllable, adjacent phonemes often affect one another much more appreciably. These latter changes may be considered as partial fusions, and include subphonemic labialization, voicing, nasalization, and so on.

Often--especially in a junction of consonant and a vowel--the partial fusion of phonemes is BI-DIRECTIONAL, with the first sound in the junction

partly anticipating the articulatory formation of the second, and the second containing the delayed decay of the articulatory formation of the first. At times--especially in a junction of two vowels--the articulation of the one may slur or glide smoothly into the next. (Cf. §§8.42, 8.442.) Complete fusion of two phonemes in a junction, however, would result in a single PORTMANTEAU phone (§8.446), as in Record 72/13.7, S--: [aị hat] I'm hot where /i/ and /m/ fuse to a nasalized vocoid.

Syllables in sequence may be partially fused through the effect of partial fusions of the included phonemes at their borders. A complete etic fusion of two emic syllables results in one etic portmanteau syllable of the two emic ones (for an example see§§ 9.236, 9.225; and cf. 9.237 for abbreviations or other types). In addition, at the border point in a syllable sequence a single phoneme in double function (§9.236) may simultaneously end the one syllable and begin the next. Two stress groups, similarly, may have their phonemes modified by one another, and may have a mutual border syllable in double function (§§9.241, 9.32).

Within junctions of the lexical hierarchy there occur the subphonemic phonological changes already referred to in the preceding paragraphs (and see §6.66[5]). If one looks at the morpheme junctions after they are written phonemically, however, there may appear to be either clear segmentation--with no fusion in evidence--(as in rain versus raining) or the borders may be blurred by some type of fusion (§6.55). As with phonology, so here with morphemes, the fusion modification may be partial as the voicelessness versus voicing of the plural morpheme of cut-s versus bud-s). It may be complete, with a resulting morphemic portmanteau (as in French /o/, à le, Bloomfield, 1933, p. 179). Some partial portmanteaus may overlap all the phonemic material of one morpheme with part of the phonemic material of another, or others (cf. /j‿nǰoi ‿t/ Did you enjoy it?

The fusion may be UNI-DIRECTIONAL, either anticipatory and affecting the first morpheme (as in- in improbable versus incapable) or with decaying influence, affecting the second (as in cat-s or bud-s). The fusion or modification may be bi-directional, affecting both morphemes (as will and not in won't). The fusion also may at times be considered as producing a phoneme in double function (as /ž/ would then simultaneously be a member of as and you in /æžu/).

In addition to these morphemic junction types, which parallel phonological ones, others can be added: Fused forms can at times be clearly segmented even when one morpheme is included within another (as in Zoque /y/ 'his' plus /pata/ 'mat' /pyata/ 'his mat'; Wonderly, 1951, p. 117). At other times the analysis of an apparent inclusion is much more difficult, since the segments thus abstracted are not themselves regularly found occurring elsewhere (as /. . .æ. . ./ and /r . . . n/ in ran; cf. also sold, feet).

Further complications are made up of irregular forms where the particular morphemes in the junction (rather than the specific phonemes or classes of phonemes manifesting the morphemes) lead to an irregular change (cf. -en plural after ox). Other irregularities may be due to the tagmemic function of one member of the junction (him, in object slot) or to particular morphemes manifesting particular tagmemes after certain particular morphemes (be, after I, in am). Occasionally an irregularity occurs in one of the morphemes of the junction such that the modification of the first morpheme signals to the bearer the interpretation of an otherwise ambiguous second morpheme (the stems dij- and dig- of decir 'to say' in Spanish help signal the preterit dijo 'He said' and present digo 'He says' in which -o is otherwise ambiguously 'I' or 'he).

There may appear to be excessive phonemic material in a particular junction (e.g., the -r- in children), or apparent complete lack of phonemic material for one morpheme (as in the plural sheep, where no phonetic data are present beyond that in the singular sheep). Occasionally the lack of a phoneme or phonemes may itself signal the presence of a second morpheme (as when a minus feature signals masculine, in French: plat [pla] 'flat' versus platte [plat], Bloomfield, 1933, p. 217).

Tagmeme borders may be blurred subphonemically insofar as the phonemes manifesting them slur together (§7.56[3]). They may be blurred also when the morphemes of a junction are partially or completely fused (§7.56[1-2]).

The most interesting tagmeme fusion, however, occurs when a single morpheme simultaneously fills two tagmemic spots (§7.56[6]), in a tagmemic portmanteau. There is a crucial difference between the morphemic portmanteau and the tagmemic one: In the tagmemic portmanteau only one morpheme is assumed to be present, whereas in the morphemic portmanteau two morphemes are present in a phonologically-fused form. In the tagmemic portmanteau, however, two semantic components or complexes of components may be expected in the manifesting morpheme. In Spanish ablo 'I talk', for example, the -o carries mood and tense, as well as person and number, but is here treated as a single morpheme (but for treatment as two morphemes, one of which is zero, see §14.53). In ablamos 'we speak', however, mood and tense are covered in -a-, with person and number in mos. It is the presence of such two-morpheme sequences, plus the paralleling

semantic components in -o, plus the fact that synchronic data do not supply formal evidence for splitting -o into two or more morphemes, that lead us to treat this instance as tagmemic fusion rather than as a morphemic portmanteau (and cf. §§7.56[6], 14.53).

Fusions (or modifications) of morphemes within junctions from the various hierarchies may be optional (as for I'm versus permitted I am) or obligatory (as /kəp-s/ cups but not /kəp-z/). Some fusions vary in this respect: not is optionally fused in He doesn't (or does not) want to go; but it is obligatorily so, in my normal style, in Doesn't he want to go?

(For some special purposes, a morpheme variant which is part of a regular process occurring between morphemes may be called a DYNAMIC VARIANT, a predictable one. On the other hand, an irregular variant which is restricted exclusively to a particular hypermorpheme--as the -en of oxen is restricted to the hypermorpheme oxen--may be called a STATIC VARIANT. Note, however, that all variants can be treated from static, dynamic, and field points of view.)

14.2 Distortion Introduced by Arbitrary Cuts and by Reconstructed Bases

Both the item-and-arrangement and the item-and-process approach to allomorphic description, however, lead to serious problems. Whether the one or the other--or both--are used, at some point distortion occurs.

With the static item-and-arrangement approach, the chief difficulty seems to be the fact that it requires a sharp-cut segmentation even when this cannot be achieved without arbitrariness, as we indicated in §14.1. In order, for example, to abstract segmented allomorphs of as and you from /æžu/ a cut unwarranted by the data must be made either before the consonant, after the consonant, or between components of the consonant--or one may present to the reader alternate cuts, with pros and cons for each, but with each of them a distortion of the fused borders of the morphemes.

The reader should note carefully, however, that we do not say that this item-and-arrangement approach must not be used. On the contrary, it is very effective whenever one needs to list morphs or morphemes separately, as in a dictionary. In doing so, however, one should acknowledge the distortion, noting that a more complete view must keep in mind static, dynamic, and field approaches as each makes its own essential contribution to a total view. Each simultaneously provides a necessary corrective to the respective distortions of the others.

A second kind of distortion introduced by a static, segmenting approach is seen in an analysis of Spanish dijo 'He said', referred to in the preceding section. If the cut is made between the stem dij- and the pronominal element -o, one might be expected to assume that the -o gives the total cue to the reader that the third person is subject. Yet -o by itself may be elsewhere the manifestation of the morpheme 'I', as in digo 'I say', a different form of the same verb. Actually, part of the hearer's cue to the morphemic (and hence semantic) interpretation of -o comes from the stem allomorphs dij- and dig-. A cut which implies, then, that -o is the total manifestation of the form-meaning composite translated by 'I' or 'he' is a distortion. (An attempt to treat the -j- and -g- as part of the pronoun would lead to even more difficult problems in such forms as dice 'He says'.)

One further problem may be mentioned which is not a distortion, in the sense of the latter two problems, but that leads to complications so great that, if no solution is proposed, it destroys the elegance or simplicity and usefulness of some descriptions based upon it. When a whole series of regular changes of a single related type occur, such as can be simply and elegantly summarized in a process statement (as for example, the loss of the first consonant in a cluster, as mentioned earlier), a crude static approach may be forced to list laboriously every stem, with each of its allomorphs, just as if no regularity could be observed. This is especially costly in situations involving tone perturbation where, for example, every stem which has low final tone in its basic allomorphic form (to use process terminology) is replaced by an allomorph with final high tone.

The solution to this problem (Pike, 1953) is now simple, preserving the usefulness of the item-and-arrangement approach. It consists of setting up CLASSES OF ALLOMORPHS on a phonological, grammatical, or--if necessary in particular instances--arbitrary basis, such that the distribution of an entire group of regular allomorphs can be handled in a single statement. This achieves the same effect as does starting from a basic form in an item-and-process approach, while avoiding calling the members of any particular class "basic." In consonant cluster reduction, for example, one may refer to an allomorph class comprised of stem allomorphs without final consonant, and a related allomorph class comprised of stem allomorphs with final consonant; one may say that any member of the first class may occur before morphemes beginning with a consonant, but any member of the second class before morphemes beginning with a vowel. This descriptive technique allows an item-and-arrangement approach to be used in complicated tone situations where

otherwise only an item-and-process solution has so far been feasible.

With the item-and-process approach, on the other hand, the chief distortion seems to occur when it leads to statements which imply that a particular form "A" and a form "B" "first" come together in sequence and "then" are modified--although in fact the two unmodified forms may never have occurred in sequence in the observed data. The unmodified sequence is a hypothetical construct, a theoretical starting point for description of the observed facts. The basic forms postulated by this approach, then, are frequently present in the description but absent from these particular sequences in the data--though in general, but not always, a form set up as basic to a modified sequence will be found unmodified in some other sequence in the language. If, for example, the form /ə z/ as in houses is chosen to be considered the basic form of the English plural morpheme, then cat plus /-əz/ (which never occurs after cat) is "changed" to cat plus /-s/ (in which the term "changed to" is a descriptive "as if" expression, not a statement of observed change going on). This pseudo-history, the positing of hypothetical starting points, is the major price one must pay for the very great advantage of the simplicity of some item-and-process statements.

A further distortion within an item-and-process statement may creep into it from a partial combination with the item-and-arrangement approach, if during the process approach there is an attempt at segmentation of the parts. With /æžu/ the process statement need not attempt such segmentation--it can leave the borders fused, and segmentation indeterminate, with /ž/ shared by both morphemes. With a form such as Spanish dijo 'He said', however, the analyst is more likely to wish to combine an item-and-arrangement approach with the process approach by calling dij- the stem and -o the suffix. The moment this is done, however, the segmentation leads to the problem pointed out above in the item-and-arrangement approach. A pure process approach refuses to specify a border between stem and suffix--but this in turn leads to serious practical problems of description which, so far as I know, have not been solved or even carefully explored. It is often still convenient to use an item-and-arrangement approach, specifying stem and affixual allomorphs, in spite of the distortion brought in thereby.

Illustrations for item-and-arrangement and for item-and-process distortion have been drawn here from morpheme sequences since it is for these sequences that the two approaches, as such, have been developed. Inasmuch as our handling of the problem is designed to cover a much larger area, however, a few illustrations from phonology may be added to suggest that the basic issue is not one limited to morphemes, but is crucial to all units of behavior.

An item-and-arrangement approach describes sequences of phonemes as if they were comprised of allophones each of which has a sharp border. The concept of "slur" does not enter this approach. Each allophone is treated as a distinct subphonemic entity, which occurs next to other such entities like beads on a string. This is an obvious distortion of the data, since in a continuum of sounds there is frequently no specific point where one sound ends and the next begins. The cuts between phonemes are arbitrary, as were the morphemic cuts, since characteristics introduced by anticipation and slow decay of phonemic components lead to overlap, and are therefore not completely segmentable.

On the other hand, an item-and-process type of approach to phonemic description elegantly handles slurs and indeterminate borders. It may lead to a different distortion, however, since it in effect sets up basic phonetic forms of phonemes--often called "norms"--which are treated as convenient theoretical starting points for the description of the observed slurs and observed conditioned variants. These norms, however, are at times arbitrarily chosen, or may even appear to imply some kind of irrelevant normative judgment. As for morphemes, so for phonemes, a sweeping, simple generalization can often be made by a process statement when regular changes affect a class of phonemes. A statement that in a particular language all stops are nonphonemically unvoiced in utterance-final position would be an example. The comparable statement by a rigid item-and-arrangement approach would be strikingly unwieldy, unless here, as for morphemes, allophone classes are set up which are distributionally analogous to classes of allophonic norms.

A phonological problem parallel to the one in which two morphemes share one phoneme (as /ž/ in the morpheme sequence /æžu/ as you, is simultaneously part of two morphemes, in a process view) would be seen when the phoneme /t/ is simultaneously part of two syllables in a rapid pronunciation of English biting (see §9.236).

The basic assumption of clear-cut segmentation in an item-and-arrangement approach and of identifiable peaks in the process approach both lead to the most serious dead end, however, in a phonological or morphemic portmanteau, i.e., in a "sequence" of simultaneous phonemes or simultaneous morphemes. In such an instance neither internal borders nor internal distinct peaks can be found in a junction. (See §14.12.) The treatment of one etic segment as two emic ones, of one etic wave as two emic waves, is a serious distortion

of the data which theory in some manner should account for.

14.3 The Hyper-Unit (Field) View of Sequence

It is here that the third approach--a field view --serves us well. By it an entire junction, a "sequence" of two units, is treated as a single hyper-unit with no essential requirement of internal specific segmentation or specific peak identification. For this field view it is sufficient to know that a junction of two units is present, and to know their semantic function, formal function, and structural interrelations in higher-level structures, without the requirement of being able to separate the components of their respective manifestation modes. Thus a phonetic quadruple portmanteau such as [o̜] (occurring in my record 84/9 S: [ai o̜ 'wa̜nə] I don't want to [see]) has one wave peak for both the morpheme do and the morpheme not , as well as--presumably--for the phoneme /o/ and the phoneme /n/. Both the morpheme junction and the phoneme junction fuse to a single phonetic segment.

In this instance the nasalization is clearly related to the /n/. In some instances, however, the fusion is so irregular that no certain phonetic identification can be made. In my, for example, if one concludes that there is a junction of I and posessive -s (Hockett, 1947a, p. 343) the phonetic character of -s is completely lacking. Here the field approach can be used--if the investigator on other evidence is convinced that my represents two morphemes--to treat my as a morphemically-nonsegmentable hypermorphemic unit. (For a third approach, with the base mVy, see Trager and Smith, 1951, p. 62.)

The strength of this field approach is (a) that it gives theoretical support to the formal treatment, as wholes, of complex but unanalyzable units; (b) that it helps to explain the fact that some high-level units (such as dijo) are semantically relevant as wholes; (c) that it gives theoretical support to the fact that in practical language learning it is often simpler, faster, more efficient to memorize a few "exceptions" than it is to learn complex analytical descriptions created ad hoc to treat single examples whose "segmented" description reflects little or nothing of recurrent pattern in the language; (d) that it points up the fact that eventually every instance of fusion must be described in reference to a larger unit of structure; (e) that it lays the groundwork for understanding the development and use of phrasal idioms, of compounds, or of any high-layered units which show unpredictable unitary semantic or formal characteristics; (f) that it relates junction theory to the theory of learning, since often complex expressions are learned as wholes before the child learner can manipulate the substitutable items which alone can show that the child is reacting to a pattern of units in sequence (and adults never completely leave such principles or early reactions).

It is instructive here to compare the experience of the papyrologist who is attempting to read and transcribe a text written in an obscure handwriting. Professor Herbert Youtie of Michigan tells me that 'you read the words and letters after you recognize them,' in some sense. That is to say, that in practical operational procedure it is impossible to decipher letter by letter a cursively-written manuscript. The reader must first try to grasp the meaning of a whole document, and of the sentences in that document, before he is able to understand some of the more obscure words or recognize some of the letters within it. Once he has gained this initial over-all understanding, however, he is then able to turn to the specific obscure letters and words and see that "of course" those were the particular letters and words which were "there all the time," but which could not be "seen" until this larger understanding was obtained.

Basic techniques to implement this field view would require (1) theory and methods for determining that a junction--a structural complex--exists even though it is not segmentable; (2) theory and methods for handling the resultant mixture, in a descriptive statement, of some low-layer segments--with some complex unsegmentable hyper-units or junctions--without losing the elegance gained by keeping a description restricted to compartmentalized descriptions of one layer at a time; (3) theory and methods for handling the inventory of such diverse units--as when, in a lexicon, single-morpheme listings need to be supplemented with morpheme sequences which have special meanings not predictable from the included parts; (4) theory and methods for discovering and describing the extent to which fusions are created not only between comparable segments of a single subsystem in the language, but between disparate units of disparate systems; (5) theory and methods to explore the implication that ultimately language must not be viewed as a series of unit segments in a sequence, but rather as one total, continuous field, with various overlapping waves of "concentrations of energy" of various types (which can in part be factored out "as if" they were segments, but which never can actually be pulled out of the mass as a list of "things" which are added in rows with "gaps" between the units and layers or systems of units).

14.4 Distortion Introduced by Incomplete Segmentation

Should we by chance try to adopt the field approach completely, rejecting the approaches of static segmentation and dynamic wave units, we soon find, however, that--if we are consistent--we can no longer find in our data anything which resembles language. Without unit substitution at structurally-relevant places, there is no language pattern and no communication. Yet unit substitution in pattern slots implies some kind of segmentation--whether with clear-cut borders or with indeterminate ones. A field view as part of a larger approach may simplify the study of elements like ate, sold, ran, won't, went, am, feet, or sheep (plural), or idioms such as to step on the gas, but by itself it cannot serve as the single foundation stone on which to erect a satisfactory linguistic theory. It must be accompanied by both the item-and-arrangement and item-and-process views. The three together complement one another and in part serve as a corrective to their respective distortions. No one of the three can dispense with either of the others.

This conclusion is in line with the entire thrust of behavioremic theory. It emphasizes that systems are comprised of mutually-related parts, units, and subsystems which are in part mutually defining. Neither unit types, nor systems, nor layers of structure can--in the behavioremic view--be discovered or adequately described without some large or small degree of reliance upon units, systems, and layers of structure which are diverse from those momentarily under most direct attention.

We are ready now to devote a chapter to pointing up some characteristics of this integration. First, however, we will refer to samples of the large body of literature relevant to the topics we have just been discussing.

14.5 Bibliographical Comments on Chapter 14

Much of the bibliographical data relevant to this chapter has been mentioned in other connections. For general materials on phonemics, including phonemic variants, see §§8.4, 8.8; for the syllable, §§9.22-23. Phonemic changes at morpheme boundaries are in general handled under the term morphophonemics--which see in references given in the first paragraph of §6.9. For some continental views of morphophonemic data, one must watch for the term 'implication' (Uldall, 1936, and Hjelmslev, 1936; compare also mention of neutralization, intersection, and archiphoneme--§8.85). For morphophonemic data treated from the viewpoint of prosodies, see Robins (1953a, p. 143). For the approach of the Prague school, see Projet (1931, pp. 321-22; with references to work of earlier scholars).

14.51 On Item-and-Arrangement versus Item-and-Process

The earliest specific discussion which I have noted of the differences between item-and-arrangement and item-and-process descriptions occurs in Harris (1944, pp. 203-05). In this article he seemed to imply that, in general, modern linguistics should preferably not imply 'primacy of the base' or a 'motion analogy' of process, but deal with distributions. Soon after the appearance of this article, the general trend of American Linguistics for the next decade was to use item-and-arrangement statements--with process statements carrying low prestige. Nida, for example, changed largely from process to item-and-arrangement (allomorphic-item-in-distribution) statement between the 1946 and 1949 editions of his Morphology. The change was incomplete, since some terms such as 'replacive' or 'minus feature' remained essentially process in type. Harris, himself, continued to make occasional reference to alternate descriptions by process (1951, pp. 373, 367 fn. 9).

Tone studies proved resistent to this trend (Pike, 1948, Mak, 1953), since the available allomorphic techniques were so awkward as to be hopelessly impractical in a situation where complicated tone changes occurred. It was not until the concept of allomorph classes was developed (in Pike, 1953) than an item approach to these tone systems was feasible.

In the meantime, problems inherent in the item-and-arrangement approach, and the continuing advantages inherent in the process approach, forced various scholars to attempt to reconcile the two. While this chapter was in early draft, for example, Hockett published a study urging that neither item-and-arrangement nor process approaches should be rejected (1954), but that the process approach should be formalized. In the same issue of that journal Harris reassessed the two views, finding the 'combinatorial or item style' 'more parsimonious and representative for much of linguistic data' but granting that for 'certain situations, especially in compact morphophonemics' the 'process style . . . is useful' (1954a, p. 149). See above, §11.76.

It is a curious fact that in this respect linguistics during the previous decade was moving counter to the general stream of the philosophy of science. Note, for example, the philosopher Sinclair: 'It seems probable that we in our culture are now moving into a stage of our intellectual development in which we are going to think more

and more in terms of process and less and less in terms of things' (1951, p. 80), and 'Physicists no longer think of atoms and the like as things, . . . but in another way which can be described in terms of "process" while a parallel change can be found in biology and psychology and a wide range of other subjects' (cf. also Whitehead, 1952 [1925], p. 74, 'The reality is the process', and, p. 71, 'concrete fact is process'). Possibly the best explanation for the recent linguistic unpopularity of process statements is seen in Haugen and Twaddell, in reference to process terms in connection with treatments of phonetics: 'historical terms--"phonetic result", "raised" etc.--seem out of place in a descriptive statement' (1942, p. 233-34). Compare also the segmentation statement about 'the usual notions' regarding the nature of words, referred to by Greenberg, that 'every phoneme should belong to only one word' (in Osgood, Sebeok, and others, 1954, p. 66); our view of phonemes or syllables in double function eliminates this requirement and opens up an avenue to process statements. (Compare the discussion of possible description in terms of shared phonemes in Nida, 1949, p. 77, and Lounsbury, 1953, p. 12.)

For a recent attack on the 'antiquated and improper process-metaphor,' assigning the 'phonic data . . . to prosodic categories,' see Allen (1954b, p. 556). See also Sharp (1954), who rejects a process approach to tone studies. He uses no reference to shifted tones or perturbations of tones or basic tones, preferring to analyze the pitch structure of words without their being written phonemically. He seems to be unaware that desired invariant formulas, in the American approach, are found in rigid morphophonemic symbolization--e.g., Swadesh (1934) and Hockett (1948b) which attain Sharp's goal of invariants without ignoring crucial phonemic contrastive data; see, also, Lounsbury (1953, pp. 11-15).

I have not seen in any treatment by way of the item-and-arrangement approach any simple, adequate handling of a morpheme which (seen through the process approach) is itself constituted of a process. 'Minus Feature' as a label for a kind of morpheme (e.g., Bloomfield, 1933, p. 217, and Nida, 1949, p. 75) is essentially a process term. For unvoicing (a process) suggested as a morpheme in English, see Harris (1951, p. 209, with noun house composed of verb to house plus unvoicing). Note, also, zero treated not as 'a "segment" supplied' but as 'an operation performed on overt forms,' W. Haas (1957, p. 42).

14.52 On Arbitrary Cuts and Hyper-Units

The problem of making some cuts in an item-and-arrangement approach has been succinctly stated by Lounsbury: 'The locations of the cuts are not always uniquely determined' and they are made 'to some extent arbitrarily' (1953, p. 12). The advantage of the approach is that 'it deals with the segmentation of actual utterances rather than with constructs' (1953, p. 15) [e.g., a reconstructed form] as 'a fictitious agglutinating analog' (1953, p. 13) once removed from reality but 'the resulting very discrete localizations of meaning associated with some of the procedures under the method of morpheme alternants [i.e., varients of items] are, or may be, highly unrealistic' (1953, p. 15).

For numerous alternate suggestions for cuts, see Harris (1951, Chapter 12), Nida (1949, p. 77). Bloch has effectively shown us the arbitrary end result of insistence on cuts in some especially difficult cases. Of these perhaps the most instructive is his exploring of the price to be paid for segmenting am and are in English: 'Any solution of the problem is inescapably ad hoc; we propose to regard the alternants of the base here as /æ/ and /ah/ in complementary distribution, and to posit a suffix morpheme with two alternants /m/ and /r/, the choice between them being regulated by the shape of the base alternant: /m/ after /æ/, /r/ after /ah/' (1947, p. 408). Under such circumstances it becomes relevant, also, to note Bloomfield's practical protest against analytical segmentation of some irregular forms: 'The partial resemblances between forms which we describe in morphology are often so whimsically irregular that a rigorous statement has practical disadvantages. It may take more discourse to describe a few eccentric forms than it would merely to cite them' (1945, p. 8); and similarly Bloch, 1947, p. 418 fn. 26, rejects the analysis of English atonic verbs from use in pedogogical materials). In connection with such matters, Bolinger urges that 'the statement of a law shall be more economical than the mere enumeration of the phenomena for which it is supposed to account' (1948, p. 136).

For problems in analysis--problems for which I think the 'field' concept is needed--see Harris analyzing English was. He says that the phoneme /w/ is there 'in one morpheme with the -t "past" [such as in missed], with the /əz/ and /ər/ of was and were allomorphs of be' (1951, p. 209 fn. 9). Later in the same volume he gives an alternate analysis of was, by saying that 'if we analyze was as {be} + {-ed}, but have no basis for placing the boundary, we do not place it arbitrarily, but recognize no phonemic correlation for the alternants of {be} and {-ed} in each other's environment, but only for the sequence of them together, which is /wəz/' (1951, p. 372). For references to my as I plus possessive, see §14.3. For the problem of Spanish words such as digo, see Nida (1949, pp. 130-38); compare, also, Lounsbury (1953, p. 17 fn).

For portmanteau morphs, see Bloomfield (1933, p. 179); Hockett (1947a, p. 333; 1954, p. 216), Nida (1948b, pp. 417-18), Wonderly (1952, p. 367), Aschmann and Wonderly (1952), Pittman (1954, p. 21). For portmanteau under the European term cumul, see Bazell (1953, p. 9; and compare 1948a, pp. 20-21; 1952, p. 36, where duke in duchess is 'determinate on the part of content, but indeterminate on the side of expression'). For the possibility of portmanteau on a word level, see Trager (1951, p. 129), Trager and Smith (1951, pp. 59, 72). For had as have before -d see Harris (1951, p. 213), and for wh- as a morpheme in when (1951, pp. 210 fn. 23, 192-93). For the problem of went see Bloch (1947, p. 410), versus Bloomfield (1926, p. 161); see also Martin (1952, p. 102). For allologs see Trager and Smith (1951, pp. 59, 72). For detailed instances of irregularity where morphemic segmentation gives extensive difficulty, see, concerning Mazatec, Pike (1948, pp. 126, 147-57), and for an instance in Otomí verb morphology see Wallis (1956). See also Kennedy (1953, p. 370), and Wells (1949).

For the possibility that hyper-units of various kinds are learned or utilized as units, rather than as sequences of smaller segments, compare Osgood, Sebeok, and others, where 'probably individual words and trite phrases' 'are encoded as units and run themselves once initiated' (1954, p. 57). In the same volume, Jenkins indicates that some mechanical movement sequences 'are actual integrations,' in typing, and 'not merely a rapid sequencing of discrete responses' (1954, p. 25).

14.53 On Zero

The use of zero in linguistic analysis has had a long history. Bloomfield attributes its development to early Hindu scholars (1933, p. 209), stating that it 'is necessary for Sanscrit' and 'probably economical for English' (1926, p. 160); see also Allen (1953a, p. 12). Jakobson attributes emphasis to Bally (in Mélanges . . . Bally, 1939), following the principle of de Saussure that oppositions may be units opposed to nothing, hence zero is a sign (1931, p. 124). Zero has also been used by many other scholars as an accepted analytical tool, e.g., Project (1931, p. 314); Harris (1951, pp. 213, 256, 334, 356 fn 13).

Zero allomorphs are perhaps the most frequent zeros postulated. Nida recommends the use of zero allomorphs but hesitates about the use of morphemes which are totally zero (1949, p. 46 and fn 44). Olmsted tries to salvage morpheme zeros from excessive--and fatal--overuse, by restricting zeros to one zero allomorph per morpheme and one zero morpheme per class (1951, pp. 163-66). Jakobson and Lotz utilize a 'zero-phoneme' for French, although they state that it occasionally has vocalic or aspiriation variants (1949, p. 155). Zero allophones are postulated by Moulton (1947, p. 220). Bloomfield claims that distinctions in one or more parts of a paradigm imply homonymy in the remaining forms (1933, p. 224); rejected by Bazell (1948a, p. 17).

There have been protests against some phases of the use of zeros. Kurath in reviewing Bloch and Trager's Outline says, 'In other words, if two forms behave alike syntactically we must act as if they behaved alike morphologically as well, whether they do so or not. A treacherous device indeed!' (1945, p. 210). Voegelin suggests that symmetrical considerations must not be considered adequate justification for zero units, lest, for example, we postulate a 'zero nose' in a man (1952, in Tax, p. 224). Pike (1947a, pp. 171-72) criticizes Moulton's zero allophones in German, on the grounds that the variant overt forms are not specified, and might make the analysis contradictory. Compare Hockett, who says that 'we cannot assign phonemic status to something when it is not present, and therefore "potential pause" cannot be phonemic' (1949, p. 48).

Nida has objected (1948b, p. 427) to assigning semantic-morphemic function exclusively to a covert (zero) allomorph when an overt difference is present (e.g., in song, treated by Bloch--1947, p. 407 --as a morpheme alternate plus zero, with the zero signalling the nominalization). Nida's solution includes three morphemes in such a word as feet; one as the stem, one as the replacive -ee-, and one as the zero allomorph of the plural morpheme (1949, p. 54). Lounsbury discussed various alternative possibilities with and without zero (1953, pp. 12-13) in an attempt to find solutions which give a more 'realistic localization of meaning' since both meanings (of the morphemes of a fused sequence) are associated with the part which is not zero, and 'a zero morph cannot otherwise be perceived than through the occurrence of the morph which implicates it.'

Pickett gives one of the most instructive specific instances of problems arising when trying to apply rules for allomorphic zero (1953). She suggested that theory be modified from Nida's view so that 'If two related forms contain an overt difference and a structural zero difference as the only significant features for establishing a minimal unit for phonetic-semantic distinctiveness, the semantic value should be assigned to the overt difference, not to the zero, unless that overt difference can be established as sub-morphemic on the basis of complementation in cases where no zero is involved' (p. 296).

The most extensive recent discussion of the concept of zero is in W. Haas (1957). He insists

that one must not use contrast of the presence of zero with the absence of zero--in a false 'distinction of indiscernibles'--but that zero must contrast with overt forms 'in some of its environments' (pp. 36, 41). Further, as 'order' has form consisting only of syntagmatic relations, so 'zero' has form consisting only of paradigmatic relations (pp. 42-43). A zero allophone--but not a zero allomorph--'seems to be a contradiction in terms' (p. 47).

For zero in reference to bimorphic members of a class (compare our use of fused tagmemes, §14.12), see Haas (1957, pp. 52-53). See also Frei (1950, p. 171, in reference to cumul types). Frei also has extensive treatment of other problems of zero. For him, 'Le nombre des phonèmes zéros successifs est théoriquement illimité' (p. 171).

From the viewpoint of behavioremic theory it would seem that problems involving zero arise when one tries to arrive at a linear sequence of morphemes without adequate reference to hierarchical structure and tagmemic function. The use of zero is one result of an item-and-arrangement approach when that approach is not combined with the hierarchical elements involved in an item-and-field approach. If one is rigorously describing language as exclusively made up of a combination of observable sequences of morphemes and phonemes, only, there is no room for linguistic elements which simultaneously have the characteristics of (1) containing two morphemes but (2) being empirically nonsegmentable. The use of zero in such instances provides a pseudo-segment which allows to function an approach which must, in principle, have every sentence segmentable down to the morpheme level.

A hierarchical item-and-field view, thus, may need to modify Bloomfield's Assumptions 5-8, which seem to imply that every utterance is a small submultiple of phonemes, (1926), by leaving room in the segmentation for a few unsegmentable phonological units known to comprise simultaneous (portmanteau) phonemes, or morphemically-unsegmentable units known to comprise simultaneous morpheme composites. It must also leave room for one morpheme to comprise the simultaneous manifestation of two tagmemes. Only in this way can zeros be even temporarily avoided. Zero would not appear within this aspect of the analysis of a language.

When, however, one is using an item-and-arrangement approach, the use of zero continues to appear necessary, as part of the distortion price paid for the temporary advantages of that approach. Even so, however, one should try to use caution, as recommended by Nida (1949, p. 46), Olmstead (1951), and W. Haas (1957), so as to avoid an excessive multiplication of numerous zeros in a single system. Otherwise, one arrives at many morphemes which--because they are zero--are all homophonous. But since the reason for setting up zeros in the first place was in part the desire to avoid having in the analytical system units whose structure is morphemically-different but homophonous, the unrestrained use of zeros is self-defeating.

For a study which works out in detail the contrast between analysis with multiple zeros versus analysis with none see Aschmann and Wonderly on Totonac (1952). Certain grammatical categories are treated there 'as implicit in stems and affixes rather than as zero morphemes' (p. 130). For a list of Totonac implicit morphemes, see p. 145; for contrast with Olmsted's and Nida's views, p. 143. For a sample of the alternate result (rejected by Aschmann and Wonderly) containing six postulated morphemes of zero out of eight morphemes in sequence, we quote from p. 144:

> The Totonac verb pucay he looks for him consists overtly of the stem -puca- and the suffix -y, and is now structured as $V^{a1} + 71$. Implicit in this V^{a1} stem are third person singular identified subject and third person singular object; implicit in suffix 71 is present tense. In Aschmann's earlier analysis he treated certain of these categories as zero morphemes; we now find that if this were done consistently in line with the above paragraph, what we now treat as simply a bimorphemic sequence $V^{a1} + 71$ would then become a sequence of eight morphemes, six of which are zeros: V^{a1} (lexical meaning only) + 0 (3rd pers. subj.) + 0 (sing. subj.) + 0 (identified subj.) + 0 (3rd pers. obj.) + 0 (sing. obj.) + 0 (present) + 71 (ord. action).

The net result of their preferred (nonzero) approach, according to the authors, gives a simpler morphemics and tactics but somewhat more complex semantics--since all stems and some affixes 'are made to be associated with one or more basic meanings, and our structural statement must cover the circumstances under which these additional meanings are present or absent' (p. 145).

An item-and-field approach to these data would presumably leave some of these items as single morphemes, without zero, but would find in them the simultaneous manifestation of several tagmemes. It is possible that such a further step would for certain temporary purposes retain the advantage of using an analysis without zero while finding structural contrast between some of the meanings at another--the tagmemic--part of the system. For other purposes an item-and-arrangement approach might continue to find zeros of some value here. Static, dynamic, and functional contributions can be made by the approaches through item-and-arrangement, item-and-process, and item-and-field respectively.

CHAPTER 15

INTERLOCKING HIERARCHIES AND SYSTEMS

In this chapter we first wish to take up the particular problem as to the manner in which hierarchies interlock with one another. Then some similar relationships will be discussed concerning systems.

The attempt to show this interlocking is important, since it would appear that tagmemic theory as a coherent approach must eventually stand or fall by crucial demonstrations in this area. If it falls, pieces of the theory (such as attention to slot and class relationships as constituting tagmemes), can be salvaged, but the trimodal hierarchical system as presented here must then be sharply modified. If it is to stand, crucial evidence must be presented indicating above all that the lexical hierarchy is different from the grammatical hierarchy as such. The most crucial evidence is summarized in §15.13, but we delay that evidence until the background setting for it can be presented.

In Chapter 14, we were largely interested in LATERAL INTERLOCKING of units within any one layer of any one hierarchy. In that chapter two units of a comparable layer and of the same hierarchy fused to a greater or lesser degree at their borders. Lateral fusion or interlocking can also be demonstrated, however, between units of distinct hierarchies.

At various points, especially in Chapters 9, 10, and 11, we have shown that there can be VERTICAL INTERLOCKING, in which low-layered units of a hierarchy are included within higher-layered units of the same hierarchy: Phonemes may be included in syllables and stress groups, as morphemes may be included in hypermorphemes of various kinds, and tagmemes within syntagmemes. Across hierarchical boundaries, however, vertical interlocking can occur such that low-level units of one hierarchy are specifically relevant to high-layered units of another hierarchy. Progressive inclusion of smaller units within larger units, as well as fusion of units at their borders, are all relevant to the total hierarchical system of language.

15.1 Interlocking Between Hierarchies

Interlocking between hierarchies may relate two or three of the hierarchies as a whole, but when it does so the actual linking must take place between one particular unit or layer of one of the hierarchies and one particular layer or unit of one of the other hierarchies. Multiple linking at the borders and/or nuclei of units of the hierarchies makes up the interlocking of the hierarchical system as a whole.

Language constitutes a system but no language system can occur unless some kind of interlocking also occurs. Lower-layered units within one modal hierarchy must somehow be fused into or integrated with larger units of activity on a higher level of that hierarchy, or else there is no structure joining these units.

Structure, in this sense, is in part a function of the interlocking and interpenetration of levels or layers of a hierarchy. The various hierarchies of such a system, furthermore, must also be relevant to and interlocking with one another or else no structural organization of them occurs. On the one hand there must be certain points or regions at which some of the units of the hierarchy are co-terminous or co-nuclear, in order for the units of the various hierarchies to be relevant one to another. On the other hand there must be certain points in the system at which some of the units on various levels of the hierarchies of the modes are not co-terminous or co-nuclear. If all units of all hierarchies were always co-terminous and co-nuclear then there would be no trimodal structuring at all, but merely a single structure which could be looked at from three different points of view.

The linking of one unit type or another leads not only to co-terminous and co-nuclear relations, but also to fusion, to double function, and to indeterminacies of various kinds. These fusions and indeterminacies are not to be considered as disastrous to the presenting of a system--not to be considered as undesirable or as the result of an incomplete analysis. On the contrary, at times they are seen to be essential features of the system itself. It is these which allow for that type of integration which itself is essential to a system.

In addition, it is at these points that change can occur within a system. Without such possibilities of fusions and indeterminacies between units of a system many of the kinds of changes which are empirically observed could not occur. A dynamic system finds change possible at these points of interlocking between units and hierarchies. A description of the empirical data, if it is to include reference to the dynamics of a system, must allow for such indeterminacies, such linkages, and

such fuzzy borders between hierarchies and systems. It is only a static, arbitrary segmentation and arbitrary compartmentalization of systems or units which can in presentation eliminate these empirical data.

We now summarize a few of the ways in which the various hierarchies interlock.

15.11 Interlocking between the Lexical and Phonological Hierarchies

Units of the lexical hierarchy and units of the phonological hierarchy often have borders in common. The common borders reinforce each other and make much more easy the segmentation of units in a lexical sequence or of the units in a phonological sequence. This reinforcement however, does not take place uniformly on every layer of the one hierarchy in reference to every layer of the other hierarchy. For each particular language the particular co-terminous relations of the various borders must be specified on the basis of empirical evidence.

Apart from instances where fusion of certain types occurs (§§14.12, 14.3) morphemes are likely to begin and end with a phoneme. It is precisely this characteristic of the interlocking of the lexical and phonological hierarchies which made it convenient in §8.35 to treat the phoneme as occurring just above a threshold of the phonological hiearachy. By starting the phonological hierarchy with the phoneme (rather than treating the componential features as the minimum unit of that hierarchy) one is able to segment a sentence into morphemes at whose boundaries there is usually a phoneme boundary as well.

The beginning analyst is likely to have the false assumption that every word in the lexical hierarchy should simultaneously constitute a unit of the phonological hierarchy--say a stress group. Word segmentation may be neatest and simplest when each word does begin and end with a stress group beginning and ending, but this would be only one special instance of the interlocking of the lexical and phonological hierarchies by border reinforcement of their units.

In another type of language many words may not end with a stress--a stress group may contain several lexical words. Yet the lexical word unit may nevertheless exercise a control over the ending of stress groups of the phonological hierarchy, such that if a stress-group ending is to occur at all, it is highly likely to occur at the end of a lexical word, and such that the end of any lexical word may optionally be reinforced by the ending of a stress group. Here the lexical unit controls, to a considerable extent, the options as to the potential placing of endings of stress groups. English has many characteristics of this type--such that discovery of options in a sequence where stress groups may end is one of the best criteria for determining word boundaries (Pike, 1945, pp. 79-82). (Note that there is no normal option to stress the word ticket on the second syllable. On the other hand the phrase Lick it! may be made into two stress groups with the second one heavily stressed under special circumstances.)

Optional lexical placement of phonological borders is by no means restricted to one level of the phonological hierarchy. It affects placement of syllable boundaries even as it does the placement of stress group boundaries. Syllable-boundary placement may change noticeably with change of speed. For example, such items as a name versus an aim may be quite distinct at slow speed, whereas in rapid speech they may become homophonous. It is important to note, however, that when a rapidly-pronounced sentence is then repeated slowly by the informant, that the syllable divisions "revert" to their earlier places. The control of the places to which the syllable boundaries revert is based upon the lexical structure and not upon the phonological structure (versus Stetson, 1945, pp. 46-47, 1951, p. 74, who implies that control of reversion is in the syllable structure itself; see our comment on this view, in §9.72; and cf. §8.52).

Special pronunciations under special circumstances may lead to further changes and may either obscure the syncronization of boundaries between syllables and lexical units, or may sharpen this co-terminous relation. When people speak slowly over a difficult telephone connection these boundaries may frequently be pronounced in such a manner as to reinforce one another, whereas in quick, quiet, secret communication the boundaries may be slurred and the co-terminous relations lost.

In some languages such as those of southeast Asia the syllable of the phonological hierarchy is likely to be co-terminous with a morpheme of the lexical hierarchy. Any one morpheme is likely to begin a syllable and to end with that same syllable. In English, morphemes are likely to end at the end point of a syllable, and to begin at the beginning of a syllable, but many morpheme ends occur in the middle of syllables (as in boys where two morphemes make up the one syllable).

In some instances, however, even in English the syllable segmentation clashes with (rather than reinforces) lexical segmentation. Note, for example, that pronunciation of at all in which the syllable break comes after the first vowel, while the t syllabifies with all.

Similarly, on higher levels of the hierarchy, phonological pause groups often--but not always--end at the point where sentence units of the lexical hierarchy end. Here again the lexical units exercise some control over the places where the

optional endings of pause groups may occur. Pause groups may also at times embrace units larger than the sentence. Pause-group borders may be made to crisscross with sentence borders, however, so that at the sentence border no pause occurs whereas immediately after the second sentence begins the pause does occur. This is the device by which people talk so that others "cannot get a word in edgewise." Note: That is what she used to say. ‿ But ← now she doesn't say it any more (with no pause at the period-plus-ligature; but with pause and sharply indrawn breath after But).

In some languages, furthermore, rhythm groups from the phonological hierarchy at times ignore the lexical word units, such that within the phrase the word units are not marked phonolgically.

One should notice, however, that the units of the phonological hierarchy may often have quite different simultaneous analyses at some one point. In the phrase as you like (see §§6.55, 14.11, 14.12, 14.2) the phoneme /ž/ is in double function as member of the two morphemes as and you, and of the syllables. In a rapid pronunciation of a book of stories (see §§9.241, Pike, 1945, p. 37), on the other hand the syllable of is in double function between the stress groups, with indeterminate phonological border between the first and second stress groups; nevertheless the lexical and grammatical break between the phrases a book and of stories is not indeterminate, but clearly segmentable.

It is not only the borders of units of the lexical and phonological hierarchies, however, which may reinforce one another. On occasion the nuclei must be given special attention as they also have particular synchronous interrelations. In the illustration just given, for example, the nuclei of the two stress groups a book and of stories coincide with and reinforce the nuclei of the lexical phrases so that the head words book and stories both receive stress. Similarly, it frequently happens that a word composed of two or more morphemes has one--the stem--which is nuclear to the other and is reinforced by being simultaneously the nucleus of a stress group.

There are also interrelations between these hierarchies in reference to distribution. Units of the lexical hierarchy and units of the phonological hierarchy exercise some mutual control as to the patterns of sequence of small phonological units within them. The phonological hierarchy because of its physiological mechanism exercises some ultimate control upon the possible phonological patterns within lexical structure: For example, it seems to be a physiological component of the syllable--the chest pulse--which in part limits languages as to the number of consonants or vowels which they may have in sequence. In the vast majority of languages no more than four consonants occur in sequence within any one syllable, and seldom do more than four vowels occur in sequence. (Cf. §9.76.)

On the other hand, the lexical units exercise detailed control over the distribution of specific sounds within the limits set up by the phonological mechanism. The limits imposed upon the particular structure of particular syllables, the particular sounds within particular classes of phonemes--the particular detail of structural classes and subclasses of such sounds--is determined by the lexical units. Addition of loan words, for example, may lead to considerable change in the over-all distribution of sounds in a particular language. This is a simple instance in which it is clear that the introduction of new lexical items has modified the phonological patterning.

Occasionally control of internal pattern of a unit may best be considered as a composite of lexicon and of phonology. Perhaps one such situation is illustrated by morphophonemic changes where at morpheme boundaries certain phoneme replacements occur. When these replacements are phonologically arbitrary, it is clearly the lexical item which is the basic control. When the changes are phonologically regular, it may be argued that the control is at heart a phonological one as well.

15.12 Interlocking between the Phonological and Grammatical Hierarchies

Since there is some type of tagmemic border whenever there is a lexical border (§§6.66, 7.56), interlocking of borders of the units of the lexical hierarchy with those of the phonological hierarchy will always in some manner be interlocked also with some units of the grammatical hierarchy. Thus much of what has been said in the preceding section about the relation of phonological units to single lexical items such as single words or particular morphemes or to specific phrases applies equally well to particular distribution classes of morphemes, to particular kinds of phrases, and the like. In this section, then, we need only to emphasize that certain types of interlocking of phonological and nonphonological hierarchies are particularly under the control of tagmemic situations representing a grammatical pattern as such, rather than under the control of some more arbitrary manifesting member of such a pattern. (Cf. §8.52.)

In the preceding section, for example, we indicated that there is a possibility in English that a stress group or pause group may optionally end at the end of any one word. In this section, however,

it is important to notice that it is more probable that a pause group or stress group will end at the border of a prepositional phrase--say--than in the middle of one. For many speakers, a pause seldom is noted in the midst of a phrase such as in the house, or in the middle of a verbal phrase such as will come, or after the subject of a clause such as He knew the man. I have recorded data on only one American speaker who frequently ends a breath group in the middle of such phrases. The indrawn breath at an unexpected place in the sentence gives his speaking style a specific individuality. Note: . . . that you write into--the magazine; . . . who have--solid character; because of his--ability (where the dash represents breath intake).

Just as one feels that it is esthetically satisfying to find that a lexical word unit is paralleled by a phonological unit--say by the stress group--so it is esthetically satisfying to find a language structure in which a particular grammatical sequence must be paralleled by a particular kind of phonological structuring. When the grammatical hierarchy and the phonological hierarchy coincide in this way it seems to give a neatness of structure which is easy to recognize because there is a reinforcement of the borders of the one kind of unit by borders of the other kind of unit. In such instances the phonological characteristics are diacritica of the grammatical units. In some Mandarin sentence types, for example, one expects a pause between subject and predicate (Chao, 1948, pp. 34-5).

Because of this general expectation of grammatical unity and phonological unity to be somewhat parallel, a sequence of words which is grammatically ambiguous in that it potentially can be manifesting either of two sentence patterns will likely be interpreted as representing the grammatical pattern which has internal units most closely paralleled by the accompanying high-level phonological units. That is to say, that the high-level phonological breaks may lead to a perceptual forcing of breaks in the lexical and grammatical structure. Note, for example, the effect of an included pause on interpretation of the triple pun in the next sentence: /ð sə/nz rez mit/ the sons--raise meat and the sun's rays--meet. For further instances where the intonation affects structural interpretation of the segmental materials see Fries (1952, pp. 221, 225, 227, 249, 216, 163-64, 157, 254-65), Schubiger (1935, pp. 13-23), Trager and Smith (1951, pp. 50-52).

One should not, however, assume that the grammatical and phonological hierarchies must coincide. Although they often do coincide, and the frequency of such coinciding may be very high at crucial high-level grammatical junctures, they by no means always reinforce one another this way. We have already given illustrations of exceptions both in terms of individual style, cited in this section, and in the style of 'not allowing one to get a word in edgewise,' but a great many exceptions occur in ordinary speech which go unnoticed unless they happen to lead to misunderstanding. It is a serious methodological and theoretical error to deal only with the frequent form and ignore the many options and exceptions. Failure to observe such deviations--whether for emphasis or for special style or otherwise--allow one to get a false security in his feeling that phonology and grammar are parallel. This in turn makes it difficult for the analyst to realize the extent to which the lexical, phonological, and grammatical hierarchies must be treated as relatively independent. Instances where the phonological and grammatical hierarchies reinforce one another must be treated as special cases of reinforcing border points rather than as illustrating a theoretical norm.

In practical field work analysts have often worked with "cleaned-up text"--either with text dictated sentence by sentence so that each one is a phonological unit, or with sentences repeated separately by the informant after having been given in consecutive text. Methodologically this is helpful, since (like the isolation of words by an informant) it helps to find psycholinguistically-relevant grammatical (or lexical) units. For theory, however, this may prove fatal. One may, by limiting himself to such artificially-selected data, build a theory of language structure which will not apply to language as it is in fact spoken. Practically, it would fail (a) to account for the lack of phonological juncture between certain units which by the demand of simplicity and coherence must be treated as sentences, and (b) to account for the presence of phonological junctures where they seem not to "belong." Theoretically, such an omission of data could lead to an unwarranted rejection of distinct hierarchies of units, inasmuch as the data on which the theory is built have in fact been selected so as to bias the judgment by eliminating empirical areas where multiple hierarchies must be postulated.

Note a few samples, from our recordings, of data in which unit borders of high-level phonology and high-level grammar do not coincide:

B37/6.5 I always enjoyed-oh-changing . . . to wear the---wear the--thing of the day before. . . [Note pauses, shown by dashes within the verb phrase and within the noun phrase]. B37/8.3 . . . that's the reason you've--had more trouble [pause within verb phrase]. B37/8.5 May I have --the sugar please [pause between verb and object]. 8/1/1.6 I'd like to say thanks to . . . for sitting in for me . . . last week when--L B got the gun [pause between conjunction and balance of its

clause]. 8/1/4.3 . . . more drama ← more strange twists, and more action than anything ← dreamed up for the silver screen// [breath ← group ending with in-drawn breath, between noun anything and its post modifier]. 8/2/3.8 B . . . picks up nothing ← as T--the right tackle moves in there ← and drops B in his tracks. ‿ In fact--he lost a yard on the play [The intonation links In fact with the following sentence, but pause with elongated final t of fact occurs after that second sentence begins.] 8/2/4.9 L P caught a beautiful pass, right on his--knees [pause between possessive and head of phrase]. 8/2/5.2 First and ten for Michigan on the Minnesota 17 yard line ‿ Listen to the crowd. [Ligature indicates that there is no juncture between the two sentences.] 8/2/5.2 . . . allowing . . . to skirt--the left end [pause between verb and object]. 8/2/5.6 The ˈbattle ˌ is ˈbitter ˌ and the action ˌ is sweet ˌ Here comes Michigan ˌ out of the huddle now [juncture between sentences slight, like that between the other phrases, without pause; raised dot shows fortis b]. 8/2/6.1 Those big white jersey boys from--gopher town [pause within prepositional phrase].

The seriousness of an over-emphasis upon coincidental high-level phonological and grammatical border points becomes acute when one meets a language in which a very high degree of nonconformity at such borders is common. It was this very point of grammatical-phonological nonconformity which started me on the quest for a new grammatical theory. The extraordinary degree to which rhythmic groupings failed to coincide with grammatical groupings in Mixtec forced me to describe Mixtec grammar (Pike, 1944, 1949) without postulating a sharp morphology-syntax boundary. The following sentence will give one example of this kind of criss-cross: te-nìkaʔàn tuku-i 'And the youngster spoke again'. Here the first stress group is composed of the word te- 'and' as well as of nì- and kaʔàn 'complete speak', the first two components of the verbal phrase. The second stress group is comprised of the last part of the verbal phrase--tuku 'again' --and the subject of the phrase, which is -i 'child'. Thus the major phonological break comes in the middle of the close-knit verbal phrase. The major grammatical break follows the particle 'and' which is within a stress group. The second major grammatical break precedes the enclitic 'child' (which is an alternate of a full grammatical form sùčí, a free form), and so falls within another stress group.

The crisscrossing of borders between phonological and grammatical hierarchies may be seen on phonological units lower than that of the stress group. It is seen frequently on the syllable level in English. Notice the sentence I'll go. Here I'll constitutes a single syllable of the phonological hierarchy, crossing over the grammatical immediate constituent break between subject and predicate, but interrupting the verbal phrase. An even more complicated illustration is the one which we used for fusion earlier (§6.55 /jǎnjoi ɪt/ Did you enjoy it? . Here the first syllable includes the subject you with the first word did of the verb phrase, and the first syllable of the second word enjoy of the verb phrase. Occasionally, for some pronunciations, such abbreviations lead to ambiguities which can be exploited for puns. Note, for example: Why are a mouse and a pile of hay alike? Answer: /ðə kǽtl it əm/, with ambiguity between The cattle eat 'em and The cat'll eat 'em.

Illustrations such as these help to let us see clearly that grammatical theory must be specifically stated so that (1) phonological and grammatical units are not required to be always coterminous, but that (2) the hierarchies interlock at a sufficient number of points to guarantee that we are dealing with a single larger system rather than with various systems which are structurally unrelated.

Similarly, just as there is some relationship between the nuclei of lexical units and the nuclei of phonological units, so there is sometimes a relation between the nuclei of grammatical patterns and the nuclei of phonological units. Thus when there is a regular occurrence of stress upon the stems of words in general, rather than on the stems of just a few words, this regularity indicates that the relation from nucleus to nucleus is between the nucleus of the phonological unit and the nucleus of the syntagmeme, as well as between the nucleus of the phonological unit and the nucleus of the particular lexical units involved. (Cf. §§7.313(2), 8.52.)

Nuclear interlocking may also occur on higher levels of the grammatical and phonological hierarchies. For example, a "sentence stress" may frequently occur upon the nucleus of some grammatical pattern such as a phrase or sentence structure. Most frequently, for example, one would expect a stress to occur on the word house within the phrase within the house. It is only under exceptional circumstances of special attention that the stress would be likely to shift to the word in for that phrase (cf. Pike, 1945, pp. 84-5).

We conclude, then, that grammatical patterns in part--but by no means completely--control the placement both of the borders of units of the phonological hierarchy and of the nuclei of these units. The control is sufficient to provide for interlocking of these hierarchies. The lack of control is sufficient to allow for the independent structuring of the two hierarchies.

15.13 Interlocking between the Lexical and Grammatical Hierarchies

That the lexical hierarchy and the grammatical hierarchy are closely integrated parts of a single larger system is clearly shown by the fact that borders of their units coincide in many ways and in many places. Most important of these facts is that at every point where there is a morpheme boundary there is simultaneously the boundary of some tagmeme (§§6.1, 6.66, 7.56). In the phrase the biggest boys there are morpheme boundaries as well as tagmeme boundaries before and after the, big, -est, boy, -s. Where there is complete or partial fusion between the morphemes of the sequence, there is therefore simultaneously some correlated fusion between the manifestations of the tagmemes of that sequence.

If the facts of border relations between units of the lexical hierarchy and units of the grammatical hierarchy were to include only these facts, then the analyst would be forced to conclude that there were not two hierarchies structurally differentiable but that there was only the one hierarchy which could be arbitrarily viewed in two or more aspects. It is crucial to the theory of trimodal structure and of tagmemics, therefore, to see that in some other senses the borders between some units of the lexical hierarchy occasionally do not coincide with some units of the grammatical hierarchy. This can be accomplished if one looks at the hierarchies not merely on the layer in which the single morpheme is relevant, but at layers of these hierarchies where more morphemes are in view.

Here the essential, critical observation is that a morpheme at its beginning may be simultaneously coincidental with the beginning borders of two tagmemes (or tagmeme and hypertagmeme) of different layers, whereas that same morpheme in the same morpheme sequence is at its ending coincidental with the ending of only one of the tagmemes mentioned. In this way there is a definite difference in the border relations of the lexical hierarchy and the tagmemic hierarchy as wholes. In the utterance the boy ran away, for example, there is one tagmeme which we may call 'demonstrative' which is manifested by the definite article the. There is another tagmeme (or hypertagmeme) 'subject-as-actor' which is manifested by the morpheme sequence the boy. The demonstrative tagmeme is an included tagmeme within the actor-as-subject tagmeme. We observe that the initial boundary of the morpheme the is coincidental both with the beginning of the tagmeme 'demonstrative' and the tagmeme 'subject-as-actor'. On the other hand, the end border of the morpheme the is coincidental only with the 'demonstrative' tagmeme and not with the 'subject-as-actor' tagmeme. If, however, the 'subject-as-actor' tagmeme were manifested by a single morpheme such as John, then that single morpheme would begin and end at the beginning and ending of the 'subject-as-actor' tagmeme, and no argument could be based upon it alone to separate the lexical and grammatical hierarchies at this point.

We shall return to further ramifications of this argument in a moment, but first wish to refer to some of the data discussed in Chapter 14, in order to indicate how border relationships between units of the lexical and grammatical hierarchies affect the relationship between the hierarchies themselves:

(a) A particular sequence of morphemes may sometimes be ambiguous in reference to its tagmemic structure. Ambiguous items which have the same morphemes but different tagmemes may be called HOMOMORPHIC. The morphemic content in them is the same, but the fundamental grammatical structure is different. If the grammatical boundaries--the immediate constituent breaks--may occur in two or more places within the morpheme sequence and yet make correct speech, then we may observe that there is a certain control of lexical grouping exerted by grammatical structure. See the phrase: He paid for a bench in the park (§11.43, commentary on [tt], and Pike, 1943b, p. 79).

(b) A single morpheme may, on the other hand, simultaneously serve as manifesting a part of two overlapping grammatical constructions. This morpheme is in double function between the two tagmemes or tagmeme sequences. See the illustrations from Fries: They have to have the students pay (in which the second have serves simultaneously in reference to the infinitive relation and in reference to the verb pay [1948, pp. 4-8]; and They have had to have the students have the money sent). Such a morpheme in double tagmemic function is further evidence that there is not a one-to-one correlation between units of the lexical and grammatical hierarchies.

(c) A related phenomenon occurs when a single morpheme fills the slot of two fused tagmemes. This is the circumstance in which a morph with two semantic components is nevertheless analyzed as a single morpheme, but the semantic components in part reflect semantic elements of the two tagmemes fused in that one morpheme. An illustration is the -o of digo, with components which are both personal and tense or mode, (cf. §14.12, 14.2).

We turn from the study of border relationships between the units of the lexical and grammatical hierarchies in order to study the relationships between their nuclei.

(a) The nucleus of the grammatical structure and the nucleus of the lexical structure are often

the same, especially in an endocentric construction. In big John, for example, the word John is the nucleus of this specific lexical phrase, and in addition is the nucleus of the personal-noun grammatical construction (the syntagmeme) as such. Similarly, in boyish, boy is nuclear and -ish is marginal. When dealing with the particular instance boyish, one is dealing with it as a lexical item, in part. When, however, one generalizes on this term and refers to a class of stems any one of which may be modified by the suffix -ish, then a statement of the problem in terms of class and affix becomes a tagmemically-orientated statement, with the nuclei of the lexical and grammatical units reinforcing one another.

(b) In some circumstances the relation between nucleus of grammar and nucleus of lexical items may be skewed. This is especially true in the metalanguage of linguistic discussion. Notice, for example, the phrase the -s, (meaning the suffix -s). Here the head of the construction is obviously the item -s. Yet in lexical terms and in normal speech this is a marginal item which in routine use occurs with a stem. In this special metalanguage use the lexically-marginal item is temporarily treated as grammatically nuclear. Related but quite distinct situations occur in normal language.

Compare Those more-or-less-once-a-month-promised-but-usually-not-that-often-forthcoming letters. . ., and It [the paper wad] went right over the-boy-that-sat-in-front-of-me's head. Here it is the simple modifiers in the structural models good boys, and boy's head which are skewed by the elaborate replacing phrases.

The lexical hierarchy and the grammatical hierarchy exercise to a considerable extent mutual control over each other's distributional and semantic characteristics: Lexical items can occur only in relevant tagmemic slots, whereas tagmemes (and hypertagmemes) have as one of their crucial characteristics the appropriate class of morphemes (or morpheme sequences) which may manifest them. If units of the lexical hierarchy occur, units of the grammatical hierarchy must occur (§§6.1, 6.66, 7.56). Neither can occur without the other. Occurrence of fused varieties of the one implies the occurrence of fused varieties of the other (§6.66). A lexical meaning may be modified by a tagmemic meaning (cf. terribly pretty, §§ 7.323, 7.43, 11.44, commentary 16 on Table 3). Where a class of morphemes occurs as manifesting only one tagmeme in the language, there is an indeterminacy between the meaning of the morpheme class and the meaning of the tagmeme (§7.324). When the class which can manifest only one tagmeme is itself comprised of only one morpheme, there is a further indeterminacy between the meaning of the morpheme, the meaning of the class, and the meaning of the tagmeme (§7.324). In situations where such limitations occur, the presence of any member of a class which is restricted in distribution to the one tagmeme signals the presence of that tagmeme. Similarly, where there is a morpheme which is the sole member of the class, and the class occurs only as manifesting one tagmeme, the presence of this morpheme signals the presence of the lexical unit, the presence of the lexical class, and the presence of the grammatical unit.

When specific lexical items signal grammatical relations because of their restricted distribution, they may be called FUNCTION WORDS (and cf. §6.45). It is not yet clear, in tagmemic terms, what else is implied by Fries' category of function words (1952, especially p. 106). Probably some of the structures in which function words fill the same slot, in Fries' analysis, would have to be separated into distinct syntagmemes within the present treatment. That is, I would expect to find that a sentence type or construction which required a particular function word to signal its crucial relationships would have to be set up as a separate sentence type or--at the least--sub-type. The sentences Who came? and John came would in syntagmemic terms come out as different structures.

In at least two other ways the interlocking of lexical and grammatical hierarchies appears in the work of Fries. In his formulas for sentence types he finds it necessary in some instances to note whether the subject of the sentence does or does not refer to the same person as does an expression later in the sentence. It is important, for example, in understanding the sentence My husband is the director that one recognize that my husband and director have the same referent. Unless this is indicated in some way in the formula, the structural characteristics are not adequately shown (Fries, 1952, pp. 191-92, 268-69).

Secondly, in the sentence formulas of Fries there occasionally occurs a specific listing of a specific lexical item such as -d for 'past tense'. These items become crucial parts of his sentence formulas for certain purposes (Fries, 1952, pp. 198-99, 211, 220). It is not yet certain to what extent this kind of symbolism will carry over into syntagmemic formulas. If these particular morphemes are always unique members of a class such that no other morphemes enter the class, then the morpheme formula could be replaced by a class formula which in fact would signal the same morpheme, but in principle would avoid the necessity of listing specific morphemes as such. The morphemes could in that instance be listed in reference to their class function even though the class were uniquely comprised of a single morpheme.

Whether or not a similar tagmemic reinterpretation would allow one to bypass the signalling of identity of lexical referents is much more doubtful. I would expect that further study would show that identity of referents would have to be retained in the grammatical formula, but that these would be handled in terms of alloclasses which were made up of potentially-same referents with some type of allotagmemic tie involved. Shell (1957, p. 204) found it necessary for Cashibo, for example, to symbolize allotagmas in accordance with the fact that a subordinate clause had the same subject (same referent) as the principal clause. This seems to be a parallel situation to that symbolized by Fries for English, though in a sharply different construction.

The interlocking of the various levels forces one to take a much more wholistic approach in which data from various levels and hierarchies may need to be called upon in order to explain the layer under attention. Occasionally high-layer material must be anticipated in the presentation of low-layer data, and when one reaches the description of higher layers, one may find it necessary to go deeply into the details of a lower layer in order to make the empirical situation clear.

One of the clues for tagmemic recognition is not just the presence of lexical classes, but the presence of allomorphs of morphemes which are tagmemically conditioned. Note the analysis of he and him as one morpheme in §6.53; the presence of the particular allomorph him helps to signal the occurrence of the 'goal' tagmeme in John saw him. For certain purposes, therefore, one cannot afford to completely eliminate from consideration on a high grammatical level the details of a low lexical level which normally are subsumed in the presentation of intermediate levels of the hierarchies. This is analogous to the manner in which a particular allophone of a phoneme may help signal the fact that one is at the end of a pause group--though this phonologically-relevant clue would be graphically invisible at the time one is working on the pause layer of the phonological hierarchy, if the data at that point had meanwhile been respelled phonemically.

We turn again, now, to one of the most crucial questions of this chapter, and of the book as a whole: Can we be certain that the lexical hierarchy is structurally different from the grammatical hierarchy? Must we indeed deal with three hierarchies--the lexical, the phonological, and the grammatical--or could we deal with only two, one of which is phonological and the other is a composite of grammar with its manifesting bits? In our view, the data which have been presented thus far indicate that the lexical and grammatical hierarchies must indeed be kept distinct. Since the question is very crucial, however, it may be helpful to the reader to summarize here a number of the most important considerations leading to this conclusion. Most of them have been discussed elsewhere and need only be briefly mentioned here. (But see §12.5.)

(1) Units of the lexical hierarchy can be expressed in terms of phonemes, whereas structures of the grammatical hierarchy can be expressed only in terms of formulas. The cat fell down, as a lexical structure, can be crudely expressed in the following phoneme sequence /ð ə kæt fɛl dawn/. The grammatical structure which that sentence manifests, however, can only be expressed by formulas which indicate subject-as-actor hypertagmeme followed by a certain kind of predicate hypertagmeme, with internal tagmemic construction further symbolized if desired; the symbols must explicitly or implicitly have reference to manifesting classes, structural meanings, rigid or flexible orders of occurrence, potential expansions, etc.

(2) There is a difference between a particular sentence and the sentence type of which that particular sentence is one illustration or sample or manifesting member. That is to say, that a hypermorpheme on a sentence level is not the same as a syntagmeme. We wish to be able to say that John came home is a sentence, that Bill came home is a sentence, that John came home and Bill came home are different sentences, but that John came home and Bill came home both manifest the same sentence type. We can talk this way without contradiction if we differentiate between units of the lexical hierarchy and units of the grammatical hierarchy, but if we fail to make this distinction between the two hierarchies then such descriptive statements will lead to contradiction at some point. Here 'sameness' is defined in one instance in reference to the lexical hierarchy, and in the other instance in reference to the grammatical hierarchy.

(3) A particular idiomatic phrase may have a lexical unity of a type which is quite different from other lexical units manifesting the same grammatical structure. Thus the idiom to step on the gas has a hypermorphemic special meaning which is quite different from the hypermorphemic regular meaning which is part of phrases such as to step on the worm. Nevertheless, the tagmemic structure of the two seems to be the same. The lexical hierarchy includes specialized hypermorphemes which are not of themselves specialized tagmemes or syntagmemes.

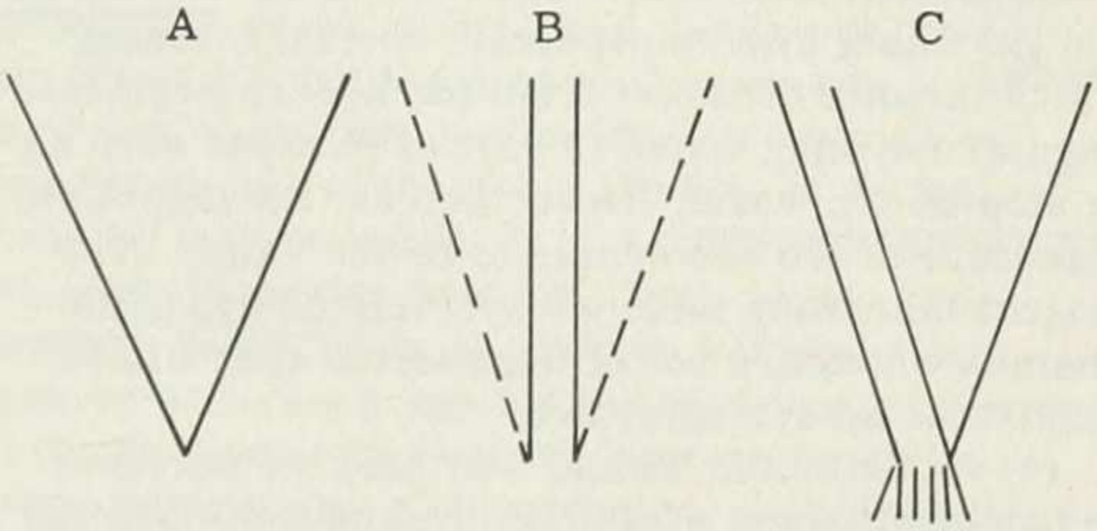
(4) A particular lexical unit may be the same in two utterances, while the grammatical function is different. John is lexically the same in the utterances John hit Bill and Bill hit John, but the tagmeme manifested by John in the two instances is different.

(5) A single member of the lexical hierarchy may simultaneously and unambiguously serve as parts of two grammatical structures in a single sequence. A morpheme may be in double function within a sentence. (See reference to have earlier in this section.)

(6) A lexical item or sequence of such items may simultaneously and ambiguously serve as a member of two contrastive structural sequences of grammatical units. (Cf. discussion of paid for a bench in the park.)

(7) A single morpheme may serve to manifest two fused tagmemes in a portmanteau tagmeme, as in the -o of digo (cf. above).

(8) Given a particular sentence such as John came home, the lexical entities may be changed without changing the basic tagmemic entities, if one replaces John by big John. This leads to an important generalization which in part covers several more specific arguments: Units of the phonological hierarchy expand differently from units of the lexical hierarchy, and from units of the grammatical hierarchy. Starting with a brief sentence such as John came home, every added morpheme expands the basic lexical hierarchy. Big John came home is a larger hypermorpheme than John came home; the two expressions are not the same hypermorpheme. Big John came home quickly is a larger hypermorpheme than Big John came home. On the other hand, expansion of one of the tagmemes can be made internally without adding to the basic tagmemic structure as a whole. Thus John came home and Big John came home each have the same basic subject-as-actor hypertagmeme, in spite of their different internal structure. The phonological hierarchy on the other hand may expand in kind structurally from the phoneme threshold up to the breath group threshold without expanding in length or content. A single phoneme such as /o/ may, that is to say, simultaneously constitute a phoneme, syllable, stress group, pause group, breath group. These three different types of expansion can be diagrammed crudely as follows:



The diagram A represents the lexical hierarchy, which beginning with a single morpheme expands by accretion upwards, such that each added morpheme makes a larger hypermorpheme. Diagram B indicates the phonological hierarchy with the phoneme at the narrowest part of the vertical column at the base of the diagram. Here a single phoneme is present. If that phoneme constitutes a breath group as well, then the breath group of this single-phoneme size is represented on the diagram at the narrow part of the column at the top. If, however, the breath group includes numerous syllables, stress groups, and the like, then there is further climbing of the hierarchical ladder not only by kind of unit, but by size of unit, by accretion, and this is indicated by the dotted lines ascending upward. By the upper part of Diagram C it is intended to suggest that the growth of a syntagmeme may be by several hypertagmemes in a row, just as the growth of a hypermorpheme may be by several morphemes in a row. Yet Diagram C also indicates schematically that one of the hypertagmemes (the one between the parallel lines at the upper left) can be expanded internally by various included tagmemes, as is indicated by the lines at the bottom of the diagram which expand that one hypertagmemic slot.

(9) Since the lexical and grammatical hierarchies expand differently, it means that at some point in some of their layerings their borders will not be co-terminous. This we indicated, above, by saying that in Big John came home the subject-as-actor hypertagmeme begins with the morpheme big, but does not end with that morpheme. It is only an included tagmeme which ends with big.

(10) The lexical and grammatical hierarchies in some languages expand with a sufficient degree of independence that a high-level unit of either one may occur filling a low-layer slot in the other. A highly-complex lexical unit, such as an intricate verb structure, may fill a low-level tagmemic slot as predicate of a sentence. This causes no surprise. When, however, a complex lexical item of a type which normally fills only slots of a high-level syntagmemic structure is found filling a low-level slot, the result may be unexpected, and cause analytical difficulty if one is using classical procedures. Such a situation occurs in the "phrase word" the king of England's hat. Here the phrase the king of England is a high-layered lexical item grammatically structured with a high degree of internal tagmemic complexity. Yet the entire morpheme sequence is put in the slot preceding the possessive -'s where normally only a low-layered structure would occur.

It is the criss-crossing of layerings of the two hierarchies which makes this phrase awkward to handle within traditional analyses. If, however, one does not make too rigid, or too early in his theory, a dichotomy between morphology and syntax, but leaves room for independent handling of

hierarchical materials in various ways, then this kind of situation is much less difficult to analyze. One describes it as merely being a high-level structure within a low-level slot; one adds the further note that statistically these are infrequent. Under such an approach a "phrase-word" is no longer structurally "queer," inasmuch as it can easily be handled within the structural framework proposed, but is merely statistically infrequent.

15.2 Interlocking between Systems

Systems may interact, interlock, and affect one another in various ways. If this were not true, the smaller systems could not be structurally integrated into a single larger language system. In order to be part of a higher-layered system, the included systems must at some point interlock in reference to some of their respective borders and/or some of their respective nuclei.

Perhaps from this point of view we can get further insight into the problem of the relation of the systems of intonation and stress in English. If an abdominal pulse, or rhythm group, or stress group, is part of the phonological hierarchy of the regular segmental system (as is implied in §9.3), whereas the system of pitches in English constitutes a distinct system or subsystem within the total English structure (as is implied in §§13.3, 13.5), how is it possible that stress placement is empirically relevant to the structure of intonation groups, or how may it be theoretically valid that an intonation contour should be tied in definition to stress placement such that a primary contour begins with a stress (§9.32)? Does this not lead to a "mixing of levels" of analysis? Does not the stress-pitch interrelation completely invalidate the suggestion that in some sense the pitch system is a separate one in English?

In the light of the present chapter our necessary reply is clear: (1) Unless systems or subsystems at some point interlock through their nuclei or their borders they cannot be parts of an integrated larger system. Language, in order to comprise a system, must have its subsystems integrated in some way. (2) The particular details of this integration must be discovered by empirical research for any particular language, however, even though the fact of such integration can be confidently expected. (3) It is our empirical observation, (Pike, 1945, pp. 27-8, 179) that a satisfactory statement of the structure of the English pitch system can only be made in reference to placement of stress. The interlocking of the two systems occurs in such a way that one of the principal structural sequences of pitches in English may be called a primary contour, and this primary contour can only be identified in reference to its initial border, which begins with a stressed syllable.

At this point a unit of the high-level segmental system of the phonology (the stress group) and the pitch sequence units interlock by having nuclei synchronized. Similarly, the end of the primary contour is in general synchronized with the end of a stress group, whereas the beginning of a primary contour frequently comes in the middle of a stress group. The beginning of a stress group, however, is co-terminous with another intonational unit--the precontour--which with the primary contour makes up a total intonation unit which is then co-terminous at its beginning and its ending with the stress group. In the phrase if I wánt to do it, there is only one stress group and only one total contour if there is but one stress on the phrase falling on the word want. The primary contour begins with that word, and ends with the word it. The precontour covers the words if I.

Differences in the degree and type of integration of the pitch system with other phonological systems in a language can make a sharp difference in the structural pattern of that language. Where pitch phonemes join with segmental phonemes to make up the basic segmental lexical morphemes of the language, the resultant tone language (like Mandarin, or Mixtec) has a structure completely different from that of English where the pitch phonemes integrate with the segmental phonological units only through the integration of their total systems, which manifest distinct morphemic systems. In English the pitch phonemes constitute contrasting features of pitch morphemes, the pitch morphemes enter into pitch-morpheme sequences such as the total contours, and these into contour sequences. It is this total suprasegmental pitch system with its own pitch phonemes, its pitch morphemes, and its pitch tagmemes, which integrates with the phonemes, morphemes, and tagmemes of the segmental system. (See §§13.3, 13.5, 15.2.)

An entirely different type of integration of systems is seen in reference to the subsegmental systems of style or of voice quality (§13.4). Each style has its set of phonemes. Yet most of the phonemes of any two sets--such as those of speech aloud and of speech whispered, in English--may be considered the same. The differences between the topologically-same phonemes in the respective systems may be considered as conditioned by the system itself (§8.44). The overlapping of phonemes between the systems is such that the phonemes--or most of the phonemes--are structurally the same in a topological sense, even though phonetically different as conditioned by the systems. This topological interrelation constitutes the interlocking bond between the segmental and subsegmental systems.

The morphemes of a language might also

simultaneously belong to a number of style systems, and link them together. These styles may lead, however, to systemically-conditioned variants of those morphemes (§6.56).

In some instances the difference between the phoneme or morpheme systems of the styles may be greater than that of mere allophonic or allomorphic variants, and may include differences in the membership of their respective phoneme and morpheme classes. In this latter instance one of the styles will have extra phonemes or morphemes that the other does not have (compare the special usages of thee and thou, §7.46).

When speakers of a language come from different social strata of a culture, their language subsystems may differ somewhat as styles differ. At most points in the two systems the respective items will be topologically related (§§8.44, 8.33[5], 9.231). At a few other points there may be over-differentiation or extrasystematic features (§8.61), or there may be special or extra phonemes, morphemes, or tagmemes in the one or the other subsystem.

Individual dialects may also differ in these ways, as may the dialects of people of different ages. Deliberately-distorted dialects would have to be similarly analyzed; these might include the temporarily-adopted speech of a person who was distorting his usual speech for special effects, as he might by using "Pig Latin," or mock pronunciations of the dialect of some other person.

Similarly, speakers of a language may have slightly different systems of that language if they come from different geographical areas. Geographical dialects, like the social dialects, may in many characteristics be topologically related while differing structurally in others.

Dialects of one language may also differ over a time span. The structure of earlier dialects may be largely similar to that of later dialects. The degree of their similarity is statable in terms of the degree of their topological relations.

It is obvious that systems and subsystems of language change in time. But the mechanism of this change, within the implications of the present theory, requires that some units within the hierarchies of one or more of these systems adjacent in time interlock by continuity of function or by double function within the two systems.

The details of such interlocking, whether it be for social, geographical, or temporal dialects, may be seen, first, in reference to the interlocking of units vertically or laterally within any one hierarchy of any one of these systems. Second, the interlocking is seen between the various units of the hierarchies of lexicon, phonology, and grammar. Third, interlocking occurs between subsystems such as intonational and segmental ones. Fourth, the interlocking comes by way of over-all topological relationships of units from one system to another in all of these layers and hierarchies and systems.

That set of component units of a series of dialects--whether social, geographical or temporal--which are topologically related throughout these dialects may be said to comprise the OVER-ALL PATTERN or COMMON CORE of that series of dialects.

There is also interlocking between systems in some instances where it is not useful to assume that there is an over-all pattern since the topologically related bits are so sporadic as not to be systematic. This in turn, implies that the basic lexical, phonological, and grammatical hierarchies of the one system fail to be topologically related to the basic pattern of the lexical, phonological, and grammatical hierarchies of the other systems. Systematic topological relations between units implies topological relation between hierarchies.

There can be language mixture, however, between language systems which are not related topologically to an extensive degree. This occurs when fragments of one language are interspersed non-systematically throughout a second language--especially when bilingual speakers utilize bits from one language while they are speaking another language. There may be FRAGMENTS of one language COEXISTANT within the system of another language. These coexistant injected fragments may be loan words or loan structures of one kind or another.

If the borrowed bits are so modified during the borrowing process, however, that the structural characteristics of their lexical, phonological, and grammatical contents are in pattern indistinguishable from the hierarchical structuring of the language into which they are injected, complete assimilation has taken place. The degree of this assimilation, however, varies from language to language, from speaker to speaker, and from item to item within the speech of any one speaker under any one such situation. There is an indeterminacy as to the point at which a loan word or phrase may be considered as having been completely assimilated. At its first usage by a bilingual the phrase may be especially set off by junctures of some type which serve as the equivilent of "spoken quotation marks" and which therefore indicate that it has some special status in the language. It may also in the early stages have special phonological characteristics brought in from the lending language. These characteristics may disappear and yet leave special shape types of morphemes which are not present in the native stock. In such instances it is impossible to determine by straight descriptive techniques whether a special shape type is merely a rare form inherited from the native stock due to some unknown historical

situation, or whether it is in fact a borrowing.

There is also a further difficult problem raised by such mixture: To what extent does the bilingual act as if he were using a HYPERSYSTEM of language, in which the two languages that he speaks somehow fuse into one larger system? Occasionally when a bilingual is learning to read, the experience which he has had with one of the languages will affect the learning process of the other. Phonemic contrasts in one language which parallel in phonetic content some allophonic occurrences of the other may lead him to react to the allophones of the second language as if they were in fact distinct phonemes, insofar as his demands for their being written separately are concerned.

Speakers who are normally considered to be monolingual, but who nevertheless vary their styles on occasion, must certainly be considered as having a hypersystem (or hypercongruent system, cf. §§5.4, 6.7, 7.313[3], 8.61) to the extent that the respective subsystems of the language make up one larger system. The structure of hypersystems of all kinds is obscure and needs further study. Speakers themselves, however, are often quite aware of the complex nature of their system. They may state concerning a loan: 'Oh, that's a word from Spanish,' for example. Or they may be unaware of the loan character of the borrowed words. Fully assimilated materials are likely to be unidentified by the monolingual speaker as coming from a foreign source. Psycholinguistic studies are needed at these points before some of the structural problems involved are likely to be clarified.

Just as there is doubt as to how large a unit is conveniently considered as part of the language system or hypersystem, so there is a problem as to how small a part of language is best called a 'system.' Occasionally it is convenient to speak of 'the phonological system' or the 'grammatical system' of a language. Sometimes it is useful to apply the term system to smaller parts of the language structure, such as 'the system of stops.' Linguists differ as to the minimum size unit to which they will apply this term. Occasionally it is applied to very small parts of the language system, such as to the class of vowels which may come in a particular slot in a particular syllable structure, or to a particular lexical class of words. In this latter instance the 'system of phonematic units' which comes in a structure such as b . . . t would be a different phonematic system from that which occurs at the end of a syllable in a structure such as b . . . .

These problems arise since any list of items is a distribution class of some structural relevance if that set of items occurs within some structural slot in the language. Thus a class of morphemes is relevant if it comes in a subject slot, a class of sentences is relevant if it comes in a certain paragraph slot, and the total utterances of a language make up a language system by virtue of the fact that they come in conversational slots within the matrix of behaviour of a particular society. In this sense distribution class and system tend to merge.

Distribution class (or filler class), from this point of view, is a term applied to a structural set of items seen as a filler of a slot. The same materials seen as some kind of top layer of focus may be viewed as a system. Distribution class and system, then, are to some extent terms of relative focus. Similarly, system, subsystem, and hypersystem are terms of focus. If our top focus is on a particular system, then the included systems within it are subsystems, and within the subsystems may be classes.

When the systems do not come in comparable contexts, then the term hypersystem may be used in this volume for the over-all material under discussion. Thus the two languages of a bilingual are in general sorted out into different language contexts such that the utterances of the one language are in general kept within the matrix of other utterances of that same language. It is for this reason that we speak of the over-all bilingual structure as a hypersystem rather than as a simple system. It is evident, however, that different people will apply the term system to different data according to their area of attention.

If for the moment we speak of classes of words as being a system we can make one further generalization here. When two systems of morphemes --that is two morpheme filler classes--in part overlap, fuse, or interlock, CLASS CLEAVAGE results. Here the tagmemic analyst finds it most fruitful to set up two or more distinct classes of morphemes even though certain of the morphemes are members simultaneously of the two classes (i.e., in double function between the classes). Class cleavage--from this point of view--would be a special instance, on a low focus of attention, of interlocking subsystems.

A further problem confronts us about the relation of the interlocking of systems in general: Can we find any fruitful use of the terms 'border' and 'nucleus' as applied to systems, as we did for reference to the borders and nuclei of specific units of the system as they fuse and interlock in sequence and hierarchy? Does the concept of wave of motion, which helped us to find a way of discussing fusion at the borders of the units themselves, help in reference to description of system interrelationships? Perhaps so. If two or more dialects are looked at as if they were 'waves' of dialect, then transition areas between them would be areas of indeterminacy as to where one dialect

begins and ends, just as we had areas of indeterminacy in the phonetic border between two sounds, or in the border area between two fused morphemes. Similar transition areas might be postulated between temporal dialects, if a brief indeterminate transition area of rapid change comes between two temporal dialects which otherwise are relatively more stable.

Social dialects or systems would be interlocking at their nuclei--that is at their crucial topologically-related structures. They would differ at their borders--at their points of over-differentiation and under-differentiation relative to one another (cf. §8.61). Two different languages would be sharply distinct as to their nuclei, but overlapping at their borders, to the extent that bilinguals utilize loans from the one in speaking the other.

(But note that this use of nucleus in reference to common core of two languages is quite different from the use of 'Kernal' applied to a single language. See §11.6).

15.3 Bibliographical Comments on Chapter 15

15.31 On Simplicity, Elegance, and Levels of Analysis

Elegance and simplicity of statement in linguistic description can be sought in various ways. In each of them one attempts to take the bewildering variety of linguistic data, to abstract out various parts of that data, and to present them in a simple fashion.

In this section we point out that by using a few simple concepts, such as the presence and partial independence of the lexical, phonological, and grammatical hierarchies with interlocking at various layers of the hierarchies, we are able to discuss problems of very great complexity. The fact that this enormous complexity of interlocking systems, layers, and units of various kinds can be described in reference to a few simple components leads us to consider behavioremic theory elegant and fruitful.

This view, however, is sharply in contrast with a different one which attempts to get simplicity in linguistic description by a rigid separation of levels in 'ascending levels of complexity of organization' (Trager and Smith, 1951, p. 81; cf. also pp. 8 and 54). In the latter, the ascending order is assumed to be first phonetics, outside of linguistics proper, then phonemics, next morphemics, followed by syntax, and then--and only then--the structure of meaning or so called 'metalinguistics.'* For the earlier statement of this rigid sequence see Trager, 1949. See also above §9.71.

To me, this latter approach to grammatical layerings appears inadequate for several reasons: (1) It does not easily allow room for a structural syllable, nor a structural stress group, nor for a structural treatment of idioms. If the pyramiding is from phoneme to morpheme to word to sentence, the syllable and stress group and idiom do not easily fit. When phonological, lexical, and grammatical hierarchies are treated separately, however, their respective hierarchies all find structural place in the system. (2) It gives priority structurally to the phoneme as over against the morpheme, and leaves no room for the tagmeme as such. In my view the morpheme has equal theoretical primitiveness with the phoneme. In fact, were I forced to give priority to one or the other, I would give it to the morpheme since it is here that the form-meaning composite is most easily seen--and my theoretical view is based upon the fact that language is a communicating system with form-meaning relationships at its heart. (3) The third reason is related to the second--that this pyramiding from phoneme to sentence through morpheme does not give adequate room for meaning as a primitive concept, but leaves it to some kind of a layering beyond that of the sentence, rather than working it into the most primative terms. (4) It shows a relationship between levels of structure exclusively as that of an including one, such that one layer is included within the next higher layer, and the higher layer is built up of units of the lower layer. In my view the relationships often are quite different: Rather, the three hierarchies pyramid side by side, with constant cross correlation and interlocking at various points; in addition, the units of one hierarchy are undefinable excepting in some kind of reciprocal relationship with units of the others. It is not possible, in my view, to first define phoneme and then to define morpheme in reference to it. Rather phoneme, morpheme, and tagmeme must all be defined in reference to one another at the start of the handling of the system of language as a whole.

The differences between these two approaches to language can in part be expressed in terms of criteria of elegance. In the interlocking hierarchical view which I have proposed here, the key criterion of elegance is INTEGRATION. The data are considered to be elegantly described when, in terms of simple hierarchies, the relationships of their various units are neatly set forth as a pattern of integration of these units. In the second, the criterion of elegance has as its keynote the

*An unfortunate term, since the term 'metalanguage' is best used in the traditional sense to refer to language talking about language; e.g., Haugen (1951, p. 213).

concept of COMPARTMENTALIZATION. Here elegance is assumed to consist of distinct presentation of one set of data with no reference to data of compartments later to be described in the analysis. (See Trager, 1949; Bloch, 1950, p. 86; Trager and Smith, 1951.) Elegance in this instance is a function of separateness of parts of the language one from another in the presentation.

There is a third criterion of elegance, which leads to an entirely different approach to language analysis. This is a view which takes ABSTRACTION at various levels of analysis as its focus. Firth and his colleagues have been developing the view that one can move into a language structure at any point and study all the components of the language relative to that one point. If, for example, they have arbitrarily or for some reason started to study language at the word level, they would want to study the phonetics of the word directly (without going through phonemics), both in its segmental aspects and in its high-level prosodic characteristics. For numerous references and discussion of this kind of material see mention of prosodies in §§5.63, 8.814, 9.73, 9.74, 10.51. Note also, specifically, Robins (1953a), p. 145, 'By this treatment, in what formerly appeared as the arbitrary substitution of individual letters, there is revealed a certain correspondence of systemic patterning between the grammatical and phonological levels of analysis, when Nasalization, as a process in the morphology of the language, is applied to the phonological structures comprising Sundanese words and syllables' (1953, p. 145). See also, for summary of 'prosodic' approach, Robins (1957).

For further discussion of the strength and weakness of these three different points of view see Pike (1958b).

15.32 On Mixing, Skipping, and Mashing Levels

Growing out of the different results gained when one applies criteria of integration of levels versus compartmentalization of levels, certain negative views develop and may be mentioned briefly.

Trager and Smith, as compartmentalizers, emphasize 'the extreme importance of levels in the observation and classification of events in the whole field of human behavior,' and emphasize that it 'has been and will doubtless continue to be one of the most important criteria for scientific work in the social sciences,' so that 'failure to separate and classify data properly in this regard has been one of the main weaknesses of much of what has been done not only in linguistics but in all the social sciences to date' (1951, p. 81). Trager asserts that 'one cannot mix up several levels of analysis and get anything but a mess' (1950, p. 157). Trager and Smith object to trying to present simultaneously data concerning phonetics, phonemics, morphemics, syntax, and meaning. This, from our viewpoint, is in part an objection to the mixing of discussion of layers or units across the hierarchical boundaries.

It is further made clear by other writers that there is a second (somewhat different, but related) objection--an objection to bringing considerations of a low member of one hierarchy into the treatment of a member of the same hierarchy two or more levels removed from it. It is assumed by these writers that one should procede to treat all the relevant data of the lowest member in reference to the next higher layer, and then the third-higher layer should be treated in reference to the middle layer without returning to the lowest layer. If I understand him, for example, this is the implication of McQuown's reference to skipping levels, or 'level hopping' (1957a, pp. 189-92).

As over against these views, however, we have already indicated that Allen wishes to be able to refer to some phonetic matters in dealing with sound change--rather than dealing with phonemes alone (1951, pp. 135-36; and see above §8.814). Our view, also, insists that at any point in communication various items from various levels of the hierarchies involved are simultaneously affecting that communication. For any one purpose of abstracting some particular kind of phonemenon, it may be relevant to look at items from various levels of the hierarchy rather than dealing with only the highest level which seems to be relevant and attempting to subsume all other data under that one.

A third kind of objection in dealing with hierarchies is the one which comes out of our integration point of view. I have objected to 'attempts to squeeze such data [of high-level phonological units] into one nonhierarchical sequence of chopped-up disparate segmental phonemes and quasi-segmental juncture phonemes' (Pike, 1957, p. 35). By this I have meant the mashing of a hierarchy, or the treatment of the symbolization of the units of a hierarchy, in such a way as to make it appear that the units of that total hierarchy were all of one kind, collapsed into a linear sequence. In my view it is a distortion of levels to treat phonemes, syllables, stress groups, and pause groups, etc., as if they could be symbolized with a single sequence of unit phonemes. For one type of linearization of pitch materials see Martin, 'The emphasis (pitch 4), however is considered to occur after the syllable which is accompanied by the pitch phoneme' (1952, p. 18). For a different type of linearization see reference to and discussion of juncture treatments in §§9.61, 9.74.

It is necessary now to deal with a possible charge of contradiction within the theory. In the

last paragraph we insisted that levels should not be mashed together. Elsewhere we have insisted that under certain circumstances items be treated in reference to several levels and from several hierarchies. How do we reconcile these two points of view, on both of which we have insisted? Part, at least, of the answer is this: That to whatever degree the data warrant, levels be considered distinct. For levels treated as discrete 'insofar as possible,' see Mitchell (1953, p. 378). (Cf. also Hjelmslev, 1953, p. 72, who states that the two planes of form and content must also 'not be conformal.') The phrase as far as possible gives us the leeway needed to reconcile the two points of view mentioned above. Two questions remain, however. The first is, does such a restriction necessarily have to be made at all? And if so, how large a variation is hidden in the phrase as possible?

I have no theoretical answer as to the precise limits to which treatment of language in distinct levels may be carried. It seems to me that this answer must be an empirical one for particular structures one at a time. On a theoretical level, however, I have already indicated in various parts of §15.1 that it is essential that there be some interlocking of hierarchies and of levels within hierarchies if language is to be a unified structure. Both the theoretical treatment and the presentation of the empirical data, in my view, should reflect this necessity, even though the details cannot be predicted in advance. (Cf. §§11.1-4.)

We do suggest an argument by analogy, however, to show why it seems to us that interlocking of systems or layers must always be kept in mind as a distinct possibility whenever one is dealing with a complicated situation. These analogies are not designed to prove the theory, but merely to illustrate the fact that the problem of interlocking units, layers, and systems, is much more widespread than in linguistics alone. In automobile mechanics, the battery can almost be described as separate from the car. Yet if the two poles of the battery are not joined through the frame (or through some other device) the battery has no functional validity and no operating power. It interlocks with the rest of the system.

In physiology there is similar interlocking.

In the instance of a pregnant woman, for example, the unborn child may be viewed as an "independent" physiological system, with the mother constituting another. Nevertheless, it is evident that they are closely interlocking so that at one and the same time they count as two systems and as a single higher-layered system. They constitute two systems in spite of the fact that it is impossible to say at exactly what molecule the blood stream of the mother stops and that of the child begins.

The independence but interlocking of two levels of analysis can clearly be seen also in house construction. If one has a house of two floors--of two levels--this house clearly cannot be described adequately without keeping the two levels apart. Any mashing of them to treat them as a single floor plan would be disastrous. Nevertheless, if joining the first floor to the second floor there is a stairway which is unenclosed on the bottom floor, and unenclosed on the top floor, it is impossible to tell at this particular part of the structure as to where the first floor leaves off and the second begins. To insist on rigid separation of levels at this point in the structure is to fail to report the empirical data.

An entirely different set of important interlocking elements and systems has recently been developed under the concept of "feedback." An automatic machine or factory of great complexity may have many separate parts which are not completely separate, in that they are under the partial control of signals from each other. The result of activity of one part of the machine affects a second part so that it in turn feeds back information or activity to affect the activity of the first part. Engineers are well aware of these problems so that, for example, as one approaches the ideals of a completely automatic factory the 'chief electrical engineer cannot have exclusive control over all matters electrical, nor the mechanical engineer over all matters mechanical' (Brown and Campbell, 1952, p. 63). In such a situation 'Scores of unit processes are interlocked with a meticulous balance of energy distribution' (Ayres, 1952, p. 85), so that 'In the present state of the art there is a growing recognition among engineers and scientists that they cannot deal with control systems part by part, but must design each system as a unitary whole' (Brown and Campbell, 1952, p. 58).

Linguistics, in some senses, is like an automatic factory with various component parts each of which feeds back on the other. The interlocking of these various parts through the feedback system makes it utterly impossible to give a complete, adequate description of any one part without reference to the degree to which it interlocks with and is affected by other parts. Tustin further develops these materials in terms of factory automation by indicating that the 'existence of feedback' is in general a question of 'interdependence'; in such instances 'each is a cause, and each an effect, of the other' so that 'we have a closed chain or sequence' which 'engineers call a "closed loop"' (1952, p. 48). Such concepts of interdependence are closely related to our concepts of interdependence of morpheme classes, morpheme boundaries, and tagmemes. Compare also the phrase 'synchronization circuits' used by the linguist

Twaddell (1953, pp. 437-38) in reference to levels of the phonological hierarchy.

There is another way in which it seems possible to make an effective case for the fact that a language system cannot be eventually treated as a purely formal system without reference to semantic elements. Goedel's theorem seems to demonstrate that no system which is sufficient for mathematics can be proved consistent by methods expressible within the system itself--or, more specifically, 'the consistency of arithmetic cannot be established by any meta-mathematical reasoning which can be represented within the formalism of arithmetic!' (Nagel and Newman, in J. Newman, 1956, p. 1694).

Similarly we must know from sources outside the language itself that 'sound systems we attempt to analyze are indeed real language utterances and the utterances of a single language, not those of several languages--a dozen or a hundred' (Fries, 1954, p. 61). These points of view imply that there is an interlocking of levels of form and meaning which cannot be ignored.

Psycholinguistic considerations show still further different types of interlocking of levels. For example, the 'behavioral correlates of tightness of unit formation' (which seems to be to some degree a measure of the coherence of the units of a particular hypermorpheme as in B'lieve-'t-'r-not) 'should be latencies between elements in production and the existence of skill modifications, such as truncation, amalgamation, and anticipatory and perseverative alteration' (Osgood, Sebeok, and others, 1954, p. 59). Further interlocking may be seen in 'the conditional dependencies between input and semantic systems' (p. 120); interlocking pause points are much more likely to correspond with decoding units, however, than with encoding units, in which the 'unit of decoding' would 'have to be given in terms of speech comprehension' (p. 100). Similarly, 'points of decision' have reference to various hierarchies, such that under certain circumstances a unit may have been chosen 'as a phonological unit (a syllable) or as a morphological unit (a morpheme)' so that 'Obviously the two levels need not exclude one another' (p. 62). Finally, 'from the speaker's point of view, selection at each hierarchy is a simultaneous function of all of the preceding sequence and of regulating inputs from all levels of organization' (p. 97). All of these things lead one 'to feel overwhelmed with problems of multiple causation affecting the production of utterances' (p. 112)--another way of indicating that the various hierarchies are simultaneously relevant.

15.33 On Systems

For an attempt to deal with over-all pattern, see Trager and Bloch (1941, pp. 243-45), Trager and Smith (1951, pp. 9, 22, 27-29). For common core and over-all pattern as technical terms, see Hockett (1955, pp. 18-22, and 1953, in Lévi-Strauss and others, p. 40); over-all pattern as a graphic device, Stankiewicz (1957, pp. 53-54).

For bilingual relationships, see especially Haugen (1950b, 1953, and 1954), and Weinreich (1953); also Swadesh (1941).

For language as having a dual system of phonology and grammar, note Hockett (1958, p. 574). Compare metric and glottic diagrams of Jakobson and Lotz (1952).

On over-differentiated sounds, see Pike (1947c, p. 142); for extra-systematic sounds, idem. (p. 143), Hockett (1948b, p. 2), Larsen and E. V. Pike (1949, pp. 275-76).

For an extensive study of coexistant systems on various linguistic levels and the various types, with charts suggesting schematically various interlockings, see Flydal (1952). For an attempt to set up criteria for the presence of co-existant systems or fragments, see Fries and Pike (1949). For objection to such procedures on the grounds that 'the phonemic system of a dialect is necessarily single, not multiple,' see Bloch (1950, p. 153; see also his bracketed note in Language 26.409, 1950). Note, however, that for him certain sounds which we would treat as extra-systematic, such as the alveolar click of commiseration in English, can either be 'excluded' as not part of the relevant material, 'or else treated as an organically-separate part of the system (though not as part of an independent system coexisting with the main one)' (1950, p. 87 fn). At this point it seems to me that the argument is no longer a basic question of analysis as to whether all the material is to be treated in a uniform way or not, but becomes a question of determining what one will call system, subsystem, part of system, independent system, fragmentary system, etc. For further argument that loan words should be included with analysis of other material for arriving at phonemic systems, note especially Wonderly (1946), Trager (1948, p. 159), Hockett (1948a, p. 269). For argument in favor of a 'substructure' for foreign phonemes, note Lunt (1950, p. 409). Contrast also the treatment of the vowel in oops by Trager and Bloch where the vowel 'is not really part of our active vocabulary' (1941, p. 230). For 'independent grammatical systems,' note Harris (1951, p. 346). For treatment as a pseudo-problem the question

whether English is a Germanic or Romance language, and replacement of such a question with treatment of the languages as containing various types of systems which 'can be related to those set up for the languages generally called Indo-European,' see Allen (1953b, p. 91). Many other scattered references to problems of loans occur throughout the literature. For polysystemic analysis of language, see Firth (1948, p. 151). For prosodic systems, see Firth (1948, p. 151), Sprigg (1954), Allen (1954b), and §§8.814, 9.73, 10.51.

For consonantal change or addition to signal special kinds of style or persons with certain characteristics, note Sapir (1915, in Selected Writings, pp. 180-81, 190-92; 1910, in Selected Writings, pp. 456-67). For style and 'metacongruence,' see Smith (in Castiglione, 1952, p. 60). For the structural status of phonemes in different styles, see Grimes (1953, with related phonemes across two styles as distinct; reply by Hamp, 1957); and Martin (1952, pp. 13-14, with the related phonemes across two styles as members of the same phonemic unit but with tempo styles as containing tempo phonemes); see also above, §8.441. For the term 'code-switching' which may also be relevant to style congruence, note Jacobson (in Lévi-Strauss and others, 1953, p. 16).

For class cleavage, see Bloomfield (1933, pp. 204-06, 241, 251, 258-70). For a detailed discussion of the possible relations between classes and the manner in which a particular item is a member to a certain degree of one class and to a different degree of another class, see Kaplan and Schott (1951).

A high-level system of some kind may serve as 'field' for lower units. See the 'backward-working adaptations' of agreement of adjective with following noun as indicative of hierarchy, in Sebeok and others (1954, p. 60). Compare the implications of recursive 'subroutines' in Carroll (1959, p. 45). Thus a style may be field for a set of allophones of a particular voice quality §13.4); or for a set of special morphemes (thee, thou, §§7.313(3)). Field may affect a system more extensively, as in interpreting the meaning of words (§6.56), or even affecting rules of ethical requirements of truth values of statements as in "April Fool" jokes (§5.4) or in science fiction. A relevant UNIVERSE OF DISCOURSE, then, in this system is a field concept (§§16.12, 16.81) related to system.

CHAPTER 16

MEANING

The special problem to be treated in Chapter 16 is meaning. Here we are concerned not with the general nature of a theory of meaning, but with the manner in which a hierarchical view of language illuminates a few of the specific problems which arise in a more general study of meanings.

In general, however, we shall assume that meaning has reference to COMMUNICATION between individuals. Meaning, in this view, would have reference to the activity of the communicating individuals. Both covert and overt characteristics of the activity both of the speaker and listener would thereupon be relevant.

On the part of the speaker, there may be a covert PURPOSE or INTENTION of eliciting a response, or of having an IMPACT on the hearer, by means of his overt utterance. The speaker may elicit either a positive or a negative response by his utterances. In addition, there may be overtly communicated to the hearer an UNINTENDED inpact from the speaker's attitudes, personality characteristics, and other situational information.

The hearer, on his part, may give an overt response either in the form of verbalization or in the form of physical activity. The response which he gives may be either the one elicited and expected by the speaker, or it may be a negation of the material desired by the speaker, or it may be a response to unintended communication. On the other hand, the covert response of the hearer may consist of UNDERSTANDING or of failure to understand.

Thus the intention of the speaker along with the understanding of the hearer, and the eliciting activity of the speaker along with the responding activity of the hearer together make up the behavioral context of communication in a society. The various components of this communicating situation of eliciting activity and responding activity, of intention and of understanding, constitute the social components of language meaning.

16.1 Meanings of Units of the Lexical Hierarchy

When meanings are discussed, it is usually meanings of the lexical hierarchy which are the subjects of such discussion. It is here that one gets the meanings of idioms, words, phrases, or novels. But when one attempts to locate or describe the particular meaning of a particular morpheme or morpheme sequence, difficulties arise. The meaning of the morpheme seems to change from context to context. There is uncertainty as to the identification of particular morphemes—whether two morphs are occurrences of the same morpheme or of different morphemes.

16.11 Semantic Variants of Morphemes

We have already indicated that conditioned changes of lexical meaning are treated, within our approach, as components of variant morphs within the morpheme units. Allomorphs differing by meaning may have the semantic difference determined by the neighboring morpheme (note drive in drive a car versus drive a horse §6.53) or the semantic variants may be conditioned by their tagmemic occurrence, as is frightfully in the phrase frightfully beautiful (§7.323, 7.313[4]). Semantic variants may also be conditioned by the universe of discourse within which they occur—by their style or congruent system, or by their physical matrix (§§6.56, 7.313[4]). See also §11, Table 3, item 18, and §15.33.

A severe problem remains, however: When two morphs having related meanings (for illustration and definition of related meanings see Nida, 1949, pp. 56-57), how are we to determine that the two morphs do not contrast? How can we be certain that the difference in meaning is sufficiently great, on the one hand, to guarantee that the two morphs are distinct morphemes, or is sufficiently small, on the other hand, to indicate that the two morphs are members of a single morpheme? It seems to me that there frequently is indeterminacy in the lexical system at such points (see port in §6.44). In such a pair of morphs as /sil/ seal (meaning an animal) and /sil/ seal (meaning a stamp) the meaning is sharply different and the larger contexts in which the two occur is also very different. Only occasionally would the immediate contexts be the same as in such a sentence as There is a seal over there. This sharp difference of meaning and context makes it easy to determine that these are distinct morphemes. With the two morphs apple and apple, however, where the one refers to a Baldwin apple and the other refers to a McIntosh apple, there may be two

sentences which are ambiguous in The apple is over there. The properties of apple in each instance are quite different. The contexts in which they occur are also different. For example, concerning the one apple one might say That is an excellent eating apple whereas the other would not normally be referred to in that context.

It seems clear that the situations for seal and for apple are different. It is by no means clear, however, that we have a set of operations which will unambiguously decide between the two kinds of relationships. We continue to treat seal and seal as two morphemes, whereas we continue to treat the two morphs apple and apple as one morpheme even though the theory and operations for doing so need further development.

Perhaps the answer will lie in the direction of attempting to find a statistically much greater set of common contexts for the two uses of apple than is true for the two morphemes seal (All apples are fruit and He likes apples are presumably much more frequent types than All seals--both animals and stamps--are things). A second approach would be by way of tests for native reaction. If careful operations could be worked out, there may be useful 'same or different' tests for allomorphic membership in the morpheme (see Nida, 1949, p. 57).

Sometimes, on the other hand, the specific meaning of a single morpheme such as (to) win may summarize the common subsequent cultural effect of a large variety of specific physical events. The 'winning' in football may be accomplished by a pass over the goal line, by a run over the same, by a ball kicked over the bar between the goal posts, or by other events such as a touch back. The winning may be a composite of these in a total score. A large variety of such physical behavior may have to enter into the components of the physical behavior which goes into winning. Where the identity of their sameness or difference cannot be determined by physical measurement, it can only be identified in reference to resultant cultural activity of the participants, as attested by careful observation. A win implies standing in a league. A win implies going to higher echelons of battle, a win implies receiving a victory cup, and so on. It is these subsequent activities which constitute the culturally-attested sameness of these behavior patterns or results.

16.12 Central Meanings of the Hierarchy

When a morpheme has several meanings, one of these may appear to be clearly CENTRAL, or basic, with the others marginal to it or derived from it. The meaning of nose in the phrase the nose of a projectile seems marginal to the central meaning observed in the phrase the man's nose. This difference, furthermore, seems important to language function. The ability of a speaker to start with a small vocabulary and yet discuss a wide variety of topics is directly related to his ability to take words with central meanings and use them in a wide variety of marginal senses. It is part of the symbolic system of language, a crucial part of the productive potential of language. Without this ability to extend the meanings of words to a variety of contexts which are only vaguely related to the first one, language as we know it could not function.

How, then, do we determine the central meaning of a morpheme? In my view there are several essential components to an answer of this question. The first component in the answer is that, other things being equal, the central meaning will be one which was learned early in life. Meanings early learned are likely to have a certain primacy about them which is lacking in later meanings.

A second component in the identification of a central meaning is the fact that it is likely to have reference to a physical situation--a physical situation which is early encountered by the child as he learns the language. The word nose is learned in the context of the child's body rather than in the context of projectiles. It is learned in this physical context rather than in the context of sticking one's nose into somebody's business. This early, physical context sets up the central meaning of nose. A most instructive confirmation of these characteristics is seen in the anecdote referred to by Bloomfield. 'If a speaker has heard a form only in some marginal meaning, he will use this form with the same meaning as the central meaning--that is, he will use the form for a meaning in which other speakers use it only under very special conditions--like the city child who concluded that pigs were very properly called pigs, on account of their unclean habits' (1933, pp. 431-32). The early learning of the child involved the local physical context of eating (eating like a pig) or of dirt (filthy as a pig). The later meaning, applied to an animal, was from her point of view an extension of the earlier central meaning. Perhaps both of these criteria are instances of a more inclusive one: If two meanings are related, the more central is the one in terms of which the other can be explained (private communication, William Alston).

Another criterion of central meaning may be that, in general, in the community as a whole it may occur with greater frequency than any one of the marginal meanings. This does not apply to special universes of discourse, however, where a marginal meaning may have a special technical sense for that particular discussion, and be used again and again without the central meaning being mentioned at all.

For the adult linguist who cannot recapitulate the child's experience in a strange language, central meaning may sometimes be detected by studying the learning process of children in the culture, or by some kind of psycholinguistic test to get from the people native reactions which are based upon these early experiences. On the other hand, if the linguist--as an adult--learns the language by a monolingual approach (see §§1.4, 7.32), he builds up for himself some of the same reaction to central meanings. Since, however, his experiences differ from those of a child in the same culture who is learning monolingually, he can never attain quite the same reaction to the language that native speakers would have.

Similarly, if in the adult experience of native speakers the physical context in which a word is used changes in frequency greatly as over against the contexts in which this word was used when they were children, the central meaning for the adult native speaker may also change. As the speaker grows older, therefore, the central meaning becomes to some extent relative to the universe of discourse in which it is used.

By analogy with this treatment of central and marginal meanings of single words or morphemes, we may suggest that there is a HIERARCHY OF CENTRAL MEANINGS of sequences of words. The central meaning of a phrase, as against the central meaning of a particular word, would first of all be related to the central meaning of its included words. Thus the phrase as a whole, if treated in its central meaning, would have its included words understood in their central meanings. From this it follows that the central meaning of a phrase is the predictable sum of its parts taken in their central meanings. The meaning of idiomatic phrases would not be considered as a central meaning. The phrase to step on the gas would not be interpretable in terms of its central meaning, nor predictable in terms of the meanings of its parts. It would not, therefore, have an over-all central meaning, but rather a special one.

Many samples are collected by Mencken: to spread it on thick, to do the square thing, to face the music, to keep one's shirt on, to shell out, to go the whole hog, to make a stab at, to go haywire, to get the axe, to pass out, (1945, pp. 392-94, 594-95). For further full sentences with special meaning one may note proverbs of various types such as A stitch in time saves nine, and Let sleeping dogs lie.

Greeting forms such as How do you do?, also have a meaning which is quite different from the sum of their parts. Their function, too, differs from the structurally most-closely-related sentences. Thus one says How do you do?, but one does not say How does he do?--though one might frequently hear How does he do it? Similarly, but in a different behavioral framework, a speech such as the Gettysburg address may be repeated by a child as a patriotic memorial in which the communication impact is one of patriotic sentiment rather than of the verbal content of the address.

By and large, words from small distribution classes, such as if, an, who, the, to, do not have central meanings which have as their reference physical objects, or physical actions or qualities. The child may be able to use a number of words which have a physical central meaning before he can control any of these terms. It is more difficult, therefore, to state that such words as and have a central meaning as distinct from a marginal meaning. Occasionally, however, phrases may occur in which these items are obviously not used with the meanings which--early learned by the child--bring the more concrete terms in relationship with one another. Such a phrase is a marginal one and has a marginal meaning. For an example, note And how!

Special meanings relative to the UNIVERSE OF DISCOURSE are seen clearly on April Fools' day when the impact of sentences is not designed to communicate in the ordinary way but to be deceptive. A lie on the other hand is intended to be deceptive within the normal use of discourse by eliciting a response as to the regular meaning of the sentences while actually the normal connection between these sentences and reality is broken.

If a meaning central to a word has reference to a particular universe of discourse, the implication follows that a universe of discourse, as a whole, may also, in some way, be central to the total body of universes of discourse. The possibility of a hierarchy of universes of discourses, with progressive degrees of centrality, is implied by this approach. Such a hierarchy of universes would be part of the field within which metaphorical lexical hierarchies orbit--hierarchies which we shall discuss in the next section.

16.13 Metaphorical Meanings of the Hierarchy

The relation between central and marginal meanings does not stop with the word or phrase. It continues up the lexical hierarchy. A verse as a whole may have an over-all meaning which is marginal to its internal contents. An example would be constituted of the counting rhyme Engine engine number nine, running down Chicago line, please tell me the correct time, where the meaning or purpose of the rhyme is to determine a person to be selected for a part in a game. One could not predict this from the words engine, nine, etc.

In contrast to the central meanings highlighted in the last section, we turn attention now to the the special metaphorical meanings which are

marginal to the central ones, at all levels of the hierarchy. Some illustrations of special meanings, however, were also given in the preceding section and included the metaphorical meanings of single words such as nose in the nose of a missle, of idioms as in to step on the gas, and of larger units such as Engine engine number nine. . . .

The regular or central hierarchy is INDEPENDENT in that it can and does occur without the presence in the system of the metaphorical usages. On the other hand, the metaphorical and idiomatic usages are DEPENDENT or DERIVED. These develop as an extension of words used in central meanings, and so are derived rather than primitive. They are dependent, furthermore, since the derived metaphorical use of a word continues to have its strong metaphorical impact only while that same word is also actively in use currently in the system in its non-metaphorical sense. If in the system a metaphorical use of a term develops, and if the earlier central meaning disappears because of cultural change or for other reason, then the former metaphorical meaning automatically becomes the central meaning. A metaphorical meaning requires the presence of a central meaning but not vice versa.

Cultural evidence can also sometimes be found to identify metaphorical use as over against the central use of a term. If one speaker says to another Why did you call it "Y" when it really is an "X"? while the hearer replies I called it a "Y" because it is like "Y" in that it does thus and so, the utterance and response constitute cultural evidence that a metaphorical use is involved.

It is useful at this point to introduce a figure of speech to provide an analogy for the distributional change of words and their impact on the hearer when they pass from metaphorical use to central-meaning use. If, let us say, we have a planet with an artificial satellite, then the "distribution" of the satellite in a wider orbit carries with it more energy than its distribution in a narrower orbit. As the satellite loses energy it spirals down into an inner, closer orbit. Let us now assume that the central meaning of a word has reference to an ORBIT. Words occur in particular distributions which are frequent and close to the physical situation which they name directly. If, however, the same word is used in distributions remote from the original distribution, and especially if they are remote from the physical contexts in which the words were first learned by the child, or within which they have their central meanings, these special distributions carry with them a certain kind of "communication energy." These extended symbolic usages, because of their special distributions, have a heavier impact on the listener. Here the analogy is that the outer distributional "orbit" carries the greater communication energy in the form of hearer impact. If, however, the word is used very frequently in this metaphorical sense, and as such comes in more and more contexts, so that it takes the distributional place of the word which formerly was used for the central meaning relevant to it, the communication energy of this special meaning has been dissipated, and the now "dead metaphor" carries no more impact than an ordinary word with its ordinary central meaning.

Although in general the metaphorical meaning will be expected to be statistically less frequent for the community as a whole than is the marginal meaning, this percentage of occurrence may be reversed during the time that the metaphorical meaning is spiralling down into the central orbit. As the word in its metaphorical or marginal meaning gradually becomes the only linguistic item easily available to label a particular object or situation, the alternatives to that labelling become less and less frequent, so that in due time the statistical characteristics of distribution are reversed. Metaphorical meaning has then become central meaning.

There seems to be no specific number of distributional orbits or degrees of remoteness from central meaning or degrees of communication energy which words or series of words can carry. It is clear, however, that under some distributions words carry much greater impact than under others. It seems to me that SLANG obtains its power by an extra-special distribution of words in a metaphorical sense. The impact of the slang seems to come in part from its metaphorical use as such, and in part from the fact that in reference to the community as a whole it has a very infrequent distribution (and hence a "remote" outer orbit). As more and more people use this particular slang, it ceases to be the property of a small group, spreads out more widely in the community, and the distribution therefore has become that of a lower orbit with less communication energy involved. If the slang becomes very frequent indeed for the adult as well as the younger members of the community, it has lost so much of its communication energy that it becomes useless for its original purposes and must be replaced by a new set of slang terms.

On an artistic level the parallel situation seems to involve poetic distributional innovations. A poem may be striking and fresh because of unexpected distributions of words in a symbolic fashion, or in special collocations. If these identical phrases are used a great deal by many authors, however, they become hackneyed, and spiral down to an inner orbit of CLICHÉ which is no longer effective for poetic purposes.

Occasionally a word may have a double function between two orbits simultaneously. Many puns

have phoneme sequences which function in two central orbits. Note the three-word pun in Why was Pharoah's daughter a financier?--Because she drew a little profit (or prophet) from the rushes on the bank. In some puns the reader is expected to react simultaneously to the central meaning of the word and to a marginal meaning. Note the word worst, in the following sentence I heard recently: I've always wanted to fly in the worst way--and by the way, the worst way is in a single-engine airplane [to fly to South America from the USA].

16.14 Collocational Meanings of the Hierarchy

The frequency of occurrence of items affects meanings in a further way. If a normal sequence of morphemes with central meanings occurs with great frequency, and potential phrases of the same structure but with some different morphemes are relatively infrequent, the high frequency of the particular morpheme sequence may lead to the specialization of this particular sequence. This specialization is made possible, however, by the fact that each morpheme ultimately obtains its meaning only in relation to other morphemes of the total system and other morphemes of the particular sequences within which it occurs. The meanings of the morphemes are affected by these particular sequences (§16.11). When a particular morpheme sequence occurs with great frequency, the special characteristics resulting from the particular combination of morphemes is heightened and tends to be fixed. The end product may be a special hypermorpheme which becomes rigid so that it reacts as a total idiomatic unit rather than a regular sequence of substitutable parts. If metaphor is involved in the meanings of one or more of the words of such a phrase, an idiom may be produced which is a special hypermorphemic collocation with fixed symbolic metaphorical meanings. The phrase to step on the gas, therefore, obtains its idiomatic value not only from the fact that central meanings are not completely involved, but also because of the frequency of the occurrence of these particular morphemes in sequence. If no metaphorical meanings are involved, the specialized phrases may become trite or clichés and hence to be avoided for effective literary style. Compare such phrases as abject terror.

Once a phrase has become thus set, one or more of the morphemes of that phrase may disappear from normal usage elsewhere. When this happens, the specialized hypermorpheme includes rare morphemes within it. Compare wrack and ruin, might and main, kith and kin, short shrift, wax and wane, (and compare their treatment as empty morphemes in §6.45). These are in turn related to the greeting formulas such as How do you do?, and the like, which we discussed in the preceding section.

Many of these phrases such as the nick of time allow the hearer, once he has listened to the beginning of the phrase, to predict with considerable probability the ending of that particular phrase. If one has heard in the nick of the probability of time being the next word is high. The statistical probability, however, is quite different in type from that which has reference to the tagmemic sequence. In the grammatical structure the prediction and expectancy is of a succeeding structural component, without the same degree of prediction as to the particular member which will fill the structural slot involved. In the sentence I'm going to the store to buy a pound of . . ., the blank may be filled by nails, sugar, salt, glue, and many other items. The expectancy for some member of the noun class is very great, but the particular noun expected cannot be predicted as well.

On a high level of the lexical hierarchy prediction of completion can be equally strong under special circumstances. If a person begins to quote a well known poem, the hearer, who knows the poem, will expect the ending of the poem to be in the traditional fashion. It is possible, of course, either for the speaker to make a mistake, or for a special effect to introduce a deliberate distortion of the poem. A special kind of impact--a special meaning--will be obtained when these probabilities are overridden. The change puts the misquoted material in an 'outer orbit' with either pleasant or unpleasant effects, and is likely to elicit a comment in reply. (For example I have in my notes: S--: We use them once in a red moon. M--: The expression usually is once in a blue moon.)

16.15 Class Meanings within the Lexical Hierarchy

A distributional class of morphemes may as a whole have a class meaning. This class meaning may be vague, and derived from only some of the members of the class. Nevertheless the class meaning may be an effective part of the signalling apparatus of the hierarchy. For discussion of it notice §§7.313, 7.324. (For lexical sets of morphemes, showing some congruence between distributional classes or partial distributional classes of morphemes--(leading in turn to specific collocations of various kinds, with their respective meanings--see §7.313[4].)

16.2 Meanings of the Phonological Hierarchy

The deliberate control of the selection of units of the phonological hierarchy can be used to elicit responses of various types. This is most frequently seen, perhaps, in the use of rhyme or of alliteration in verse.

The choice of particular vowels may call upon a sound symbolism embedded in a particular culture or language such that morphemes containing vowels like [i] can be chosen to reinforce lexical meanings of smallness or sharpness, as the sound of [u] can be used to reinforce the impression of large size, or smoothness, or gliding continuity, or roundness. Patterns of words chosen such that they end with voiceless stops like [p], [t], or [k], may lend a heightened feeling of abruptness or ruggedness.

Certain sequences of phonemes may have a more specific impact, under appropriate circumstances. Thus the sequence -ush as in hush, slush, mush or the sequence fl- as in flicker, flare, flame, or the gl- in glare, glimmer, glance, glow may reinforce the lexical meaning component which is vaguely common to all of them. The fl- in these words, for example, seems to heighten the impact of the component of 'light' in the words referred to. It is not sufficiently uniform in this impact, however, to seem to have effect on words such as flow, flimsy, flute, fly, flower, float, flat, flag, and so on. Usually the phonological material by itself does not carry this impression. It occurs only as a heightening of a lexical semantic component already present in the morpheme. A possible exception to this generalization, however, occurs when nonsense syllables are put together to carry particular kinds of impacts. For example a vowel sequence such as /ɪ/ /æ/ /a/ as in flip, flap, flop may be used in nonsense syllables to carry an impact of progression from a smaller movement to a larger one.

Whenever part of the response is linked directly to the sounds as sounds, rather than to morphemes as morphemes or to words as words, part of the meaning--within this theory--may be attributed to the phonological hierarchy rather than to the lexical one as such. (Cf. §6.53.)

These special items are quite different from the response obtained from one's general phonological pattern as a whole. One also attains an effect from his general over-all style of pronunciation. This style may become indicative of the particular individual and obtain a response from listeners (even when they cannot see the speaker) as "meaning" that "such and such a person is speaking." Similarly, the use of a particular phonological system, from one dialect, in an area where speakers of that dialect are not socially acceptable to the populace, may elicit a strong reaction against the intruders.

On the other hand a person (for example, a politician returning to his home town) may deliberately vary his current sophisticated style in order to conform to the local pronunciation of the group with whom he is speaking at the moment, so as to avoid such unpleasant reactions, or in order to capitalize upon favorable reactions where the local populace is pleased by the phonological adaptation of the speaker in the direction of their own dialect. In this type of a situation, the general phonological style can "mean" the "belongingness" to a particular group and as such elicit the significant reactions which are regularly expected between members of such a group.

16.3 Meanings of the Grammatical Hierarchy

The units of the grammatical hierarchy as such, as over against the particular lexical items filling the slots of the hierarchy, are meaningful. The meanings of the tagmemes, hypertagmemes, and syntagmemes, are functional meanings. The functional meanings of tagmemes of various sorts--such as 'subject-as-actor'--are the meanings of these grammatical structures. For illustration and discussion of them note §§7.322-24, 7.43, 7.6, 7.83. Meanings of higher structural units are discussed in §7.74.

For overlap of the lexical meaning of function words with the meaning of a tagmeme see §§6.45, 7.324.

16.4 Meanings of Componential Systems

Meanings differ considerably as to whether they come from one or another part of the total system. Intonational meanings in English, for example, may have more basic reference to attitudes than to objective reference. Meanings of the segmental morphemes may include reference to attitudes as well, and function in a different way. (For meanings of English intonation contours, see Pike, 1942, 1945.)

Alternative systems or styles may signal various types of group solidarity, and include clues from the various hierarchies. (For phonological impact, note §16.2.) The use of particular tagmemic rearrangements and phonological rhyming subclasses may force special attention, as in verse. The utilization of a style in which many loan words from a language of prestige are included--more loan words than the average person commands--signals elegance and social standing in some areas. In reverse, in some radio broadcasts there are "mock Indian" personalities who speak with English words but whose syntax or choice of words is designed to imply that of the American Indian (whose

grammatical structures, in hundreds of languages of North and South America, in fact differ enormously).

Ordinary speech is carried on within a matrix of a tacit crude agreement as to the semantic value of the hierarchies of speech. This community agreement may be transgressed for purposes of jokes ("April Fool" erroneous statements), or for serious deception (as in lying). On the other hand, people may overtly state that they are changing their system in some way. They may redefine terms for scientific purposes. Or they may change meanings just for play (e.g., Let's say "Yes" when we mean "No"). That the matrix may be modified by arbitrary fiat, within certain limits, is one of the great points of difference between the speech of man and the calls of birds and animals. In principle, it would seem that extensive, permanent changes of this type could not be made too violently or arbitrarily, however, without disrupting the speech community--since communication would break down faster between those who failed in using the new system than it could build up between those who were learning it. Extensive change of system to system over a period of time, or of meaning to meaning, must therefore be in a wave form rather than in large discrete steps (cf. §§12.1, and Pike, 1959, p. 50).

16.5 Meaning of the Total Structure and Semantic Segmentation

Having treated meaning as if it were fractionated into signals from the units of the various hierarchies, we must now return to the synthesis of these materials. Meaning has its locus not in the individual bits and pieces of the total structure, but within the language structure as a whole functioning within a behavioral matrix as a whole. None of the bits and pieces has meaning of and by itself. Meaning occurs only as a function of a total behavioral event in a total social matrix.

The sharp-cut segmentation of meanings or partial meanings out of this total structure is therefore in principal impossible. There are no sharp boundaries to the meanings of these parts. Meanings fuse and flow into one another on these lower levels--they overlap and occur simultaneously and interpenetrate. The meaning of one unit not only affects the meaning of a neighboring unit in a collocational fashion, but in fact the meaning of one unit in part constitutes and in part is constituted of the meaning of a neighboring unit. The reciprocal action of one meaning on another is such that they cannot be completely disentangled, as collocational studies demonstrate.

How, then, can we ever speak legitimately of the meaning of a particular isolated abstracted item? How can we even have spoken of the meanings of units of the separate hierarchies?

For our answer we turn for an analogy to our segmentation and abstraction of the morphemic shapes out of a continuum. In some instances morpheme boundaries are very clear--especially across pause. In others, there is fusion on a phonetic level but not on a phonemic level when two neighboring phones of two distinct phonemes in sequence slur into one another at their boundaries. In another instance two morphemes fuse in that they have in common a single phoneme, as in the rapid pronunciation of as you discussed in §14.11. In other instances the morphemes may completely coalesce phonemically in a portmanteau morph (§14.12). Nevertheless, we isolated out phonemes which slurred together, and morphemes which slurred together, by identifying the peaks of the waves of movement or the peaks of the waves of morphemic identity. In a sequence of several phonemes, each one may affect every one of the others so that in principle no one phoneme can be completely abstracted from the sequence. Nevertheless, the peak of the articulatory wave may be identified, and symbolization be set up to indicate that such phonemes are present in the sequence in such and such an order. Similarly, even though a sharp segmentation of a morpheme sequence may be arbitrary, nevertheless one can usually determine that such and such morphemes are present, and the order in which they occur; and these morphemes can be symbolized in some way within such an order.

Similarly, we now conclude, semantic components cannot be segmented neatly with sharp-cut borders. On the contrary, we must assume that semantic techniques must be prepared to identify the presence of semantic components without identifying the exact boundaries of the semantic components within the collocational stream. Just as we indicated that we have a morphemic field (§14.3) which for certain purposes must be treated as a whole, so we have a semantic field in a total communication situation in a total social matrix which cannot be completely and neatly segmented or fragmented, but must be treated as a total field with "concentration of semantic energy" at various points in it.

Technically, therefore, we must leave room for indeterminacy between the boundaries of semantic components. In practice, for certain purposes we will segment between them arbitrarily if necessary, in order to be able to abstract these components from the continuum and present them in list form for classificatory and discussion purposes. For different types of studies, however, we may find it essential to revert to a kind of collocational study in which this segmentation need not be completely sharp or determinate.

An illustration of the manner in which impact must come from a total structure and not merely from the bits of a structure is the limerick. The particular structure of the stress groups and their sequence types (i.e., the meter), the number of larger units constituting lines, the morpheme subclasses phonologically defined so that selection from these classes produces rhyme, the particular selection of morphemes and the collocation at a particular phase in the limerick (there was an old lady from . . .), the grammatical structure so arranged that the "pay off" statement comes in the last line--these and other items all work together to produce the particular impact of the limerick. If one uses a reduction process to try to analyse such a form into particular words making up that form, the impact as a whole disappears.

In general, one expects the various components of meaning of a large unit to be integrated so that each supports the other. Occasionally this is not true, in the sense that a combination of small components may produce a higher-level component sharply diverse from the components themselves. A double negative, for example, may result in a positive. A conversation which concerns the weather may in fact not be concerned with items about the weather at all, but may rather have as its basic purpose or meaning the putting at ease of people or the getting acquainted with people. Similarly, there may be mixed motives in an event. Internal meanings may contradict one another or may contradict the over-all meaning or purpose of the larger utterance. An address may be given with an overt purpose, but have concealed within it a quite different purpose, and a quite different reaction on the audience from the one which the audience assumes is desired by the speaker: For Brutus is an honorable man (Shakespeare, Julius Caesar, Act III, Scene 2).

Where a person gives a discourse or statement whose intention is to confuse the hearer rather than to enlighten him, moreover, it is clear that the over-all meaning and purpose and response elicitation is not the sum of the bits even though these enter into and contribute toward the total effect.

16.6 Segmental versus Subsegmental Meanings

The meanings which we have been discussing thus far in the chapter are meanings which were components of structurally-segmented verbal material. For our purpose in this present section it is convenient to call them SEGMENTAL MEANINGS--i.e., meanings which are "put into words." Frequently these segmental meanings can be abstracted by the speakers of the language, discussed overtly, and treated on their part with some assurance of accuracy even though the scientists may find a wide area of inaccuracy in their naive treatment. This abstraction of the meanings by the speakers of the language we earlier called--in §6.43--conceptualized hypostasis of meanings. As we indicated there, children or adults may consciously inquire What does 'X' mean? in an attempt to discover (segmental) meanings which they assume to be present for words which are new to them. Note, for example, R29/ . . . S--: What's a lap?, and R84/2/2.8 S--: Daddy, what's "space patrol" mean?

We now wish to provide a term for certain other kinds of behavioral situations which we have all experienced and which seem to be related to but different from the ones just mentioned. We sometimes have a "hunch" or "feeling" toward a certain conclusion or classification or understanding without seeming to know precisely what this means in a sharply focused way. We go through internal struggle to find a way to label our feeling or understanding, or may even invent a new term to cover the situation. Once such a label has been found and applied to the vague mass of data, covert activity, and prior set of mind (or intention, or purpose, or desire, or crude understanding) the result is explicit. Once it is thus formulated in words the meaning comes under the term 'segmental' given in the preceding paragraph. We call the meaning of the earlier vague state a SUBSEGMENTAL MEANING.

The choice of the term 'subsegmental meaning' is based on an analogy with our use of 'subsegmental phonological features' to label the voice qualities which underlie the segmental phonemes of speech (§13.4). It seems to have a vaguely related function in that the voice qualities extending "under" and "throughout" speech reflect basic attitudes and intentions of that speech. Similarly the vague subsegmental meanings and dispositions underlying speech and in part prior to the specific mental formulations or overt motor verbalizations of speech provide a covert dispositional background to the segmental meanings and explicit intentions of speech. To some extent therefore they form the background unarticulated field within which articulate meaning takes place.

Perhaps at this point it would be useful to suggest that DENOTATIONAL meanings may prove to be segmental in this sense, whereas CONNOTATIONAL meanings might be in part subsegmental. The denotational meanings, from this point of view, would be more often treated by participants in the culture as "the" meaning of a word. That is to say, the denotational meanings would be the ones more likely to be given, in their conceptualized hypostasis of meaning, as the "real" meaning of the word. The connotational meaning of the word would frequently not be defined as part of the meaning by

normal participants when they were attempting to give in paraphrase a statement concerning the meaning of the words under attention.

Poets, or literary critics, would in this sense be functioning rather as technicians than as naive participants in the culture, when talking among themselves about the connotative power of words. Similarly, linguists, or dictionary makers, in discussing the connotation of these words would also be acting as specialists who as part of their duties attempt to make segmental--to force into explicit verbalized attention--those meanings which normally are subsegmental. Subsegmental differences would in part differentiate the phrase to stink versus to have an offensive odor. They would also include the romantic connotations of a phrase such as the silver moon. The analyst, however, discovers these meanings by observing the kinds of contexts in which the words occur--as he determines other meanings.

The term subsegmental meaning could also be used to embrace those kinds of meanings which Bloomfield observed in such situations as the child saying I'm hungry when as a matter of fact he was trying to avoid going to bed. Bloomfield considered it nevertheless a 'remarkable fact' that both mother and child if asked to give the meaning of I'm hungry under such circumstances would describe the meaning in terms of hunger rather than of desire to avoid going to bed (1933, p. 142). Here we would suggest that this situation is an especially-clear illustration of the fact that conceptualized hypostasis by normal participants deals with segmental meanings rather than subsegmental ones--and that the subsegmental meanings may in fact have an extremely important impact on our behavior. Sometimes subsegmental meanings override the segmental meanings just as voice quality as a subsegmental phonological characteristic may on occasion override the impact of the segmental phonemes and of the morphemes which the segmental phonemes symbolize. Great novelists and dramatists are adept 'at laying bare the mainsprings of human action' and pointing out some of these subsegmental meanings, purposes, and drives (cf. Kluckhohn, 1949, p. 298).

16.7 Hypermeanings--Concepts and Ideas

We turn now to a further problem. Under what label do we subsume the fact that the meaning of a word such as horse has something in common with the meaning of a phrase defining it: a large solid-hoofed, herbivorous mammal (Equus caballus) domesticated by man. . . . (Webster's Collegiate Dictionary, 1936)? If meanings are to be exclusively handled as components of specific verbal items such as particular words or particular sentences, what are we dealing with when we say that two morphemically-distinct utterances 'mean the same thing'?

We speak of a HYPERMEANING, which is the meaning of two or more utterances or parts of utterances (1) for which there is culturally-attested conceptualized hypostasis of that meaning by native speakers (that is, the meaning has been talked about in some contexts by the participants in that culture), and (2) for which there is evidence that these participants identify the two verbal expressions as having the same meaning. Where the participants claim that two meanings are the same even though the morpheme sequences involved are different, the common identified meaning is a hypermeaning. Since informant reaction is involved in this definition, however, hypermeanings of a particular text may differ for the native naive speaker, native scientist (including native linguist), and native poet.

If two items with the same hypermeaning are both single morphemes (or words), the morphemes (or words) will be SYNONYMS; the meaning of synonyms is a hypermeaning. Where two expressions have the same hypermeaning but the verbalization of at least one of them is extensive so that a phrase or sentence, or more is involved, one of the utterances is a PARAPHRASE of the other--or 'gives the meaning' of the other.

The native conceptualized hypostasis of a meaning (of morpheme, word, phrase, paragraph, chapter, etc.) or of a hypermeaning (of sets of morphemes, phrases, chapters, etc.) may be given a specialized label such as VERBALIZED CONCEPT or even idea. For identification, meanings and hypermeanings require the test of sameness and difference with informants--or, in vigorous tests of proposed theory, an elaborate distributional substitute for this procedure--such as is used for identification of the sameness or difference of homonyms, or other utterances.

All the problems of a philosophical type which are involved in the recognition of synonomy can carry over to the problem here. As we see it, however, it is ultimately from an etic point of view, alone, that one may claim that there are never any genuine synonyms. Emically, we must reckon with the fact that participants in the culture do claim that--for certain purposes, within certain contexts --some words do 'mean the same thing.' Any analysis of behavior designed to study that behavior in reference to the manner in which natives react to that behavior, therefore, must take account of the fact that people identify two paragraphs as talking about the same idea, or that two people may affirm that they are discussing the same concept.

For a few illustrations of implied hypermeanings, note the relationship between He sent me a wire and He sent me a telegram. Compare also

the statement R82/17 J--: Honestly, it seems too funny to hear [grammar school] kids start calling math arithmetic again . . . because in [junior high] school it's always math. Compare the popular statement A rose by any other name would smell as sweet with the statement Call it what you like just so long as you use the term consistently. For verbal play in which hypermeanings are retained but pleasure is obtained by changing the formal items carrying these meanings, note R82/13 S--: Bow-wow . . . Mother . . . I'm daddy's puppy . . . I'm a big doggy--and know what my name is . . . when I'm a doggy? Flippo. Compare, also, the hypermeanings of the child who says Let's say "Yes" when we mean "No."

Within our theory, we treat the overt handling of such cultural sameness and difference as identification or separation of hypermeanings. Within a hypermeaning, however, the linguist--or poet, for that matter--may detect wide etic diversity which may become emic in another universe of discourse. Other etic differences may be conditioned variants--affected by style, particular morpheme collocations, or structural matters.

Both in scientific discourse and in practical speech there will be indeterminacy at the borders of hypermeanings as there is indeterminacy at the borders of morphemes or phonemes. It may be impossible to state where the hypermeaning revolving around words and phrases discussing plant versus animal begins and ends, or liquid versus gas. Here, however, our difficulties are similar, in principle, to the problems of phoneme or morpheme segmentation which we have discussed at length earlier.

To some extent, however, native reaction indicates that hypermeanings are in some sense, for some purposes, in some universe of discourse, discrete one from another. Hypermeanings may be considered as CONCEPTUAL QUANTA. On a technical front, scientific classifications or logical groupings are deliberate placings of variant elements into systematic sets of units with their correlated hypermeanings in order to be able to handle masses of data which would otherwise be unmanageable. In ordinary common sense thinking, similarly, a vast amount of data is made manageable by one's "mental computers" by having a bewildering variety of data "indexed" in terms of items filed mentally by means of "punch cards" in which the actor has been forced by experience or culture to determine the category within which he chooses to view a certain phenomenon. It is only when phenomena have thus been mentally quantized and classified in mental "storage" that he can call on this experience rapidly for rational manipulation. The process of careful, verbalized thought is dependent upon this prior process of discrete storage of experience.

Hypermeanings, therefore, may lead to STEREOTYPES such as that of the "typical Frenchman." Such a stereotype leads the unwary to group together things which lead to stereotyped handling of situations which would better be handled as relevantly distinct. Stereotyped thinking, therefore, may carelessly be considered unwarranted and undesirable. From a linguistic point of view, however, it would appear that some degree of thinking in terms of discrete hypermeanings, each with its range of variations, is an inevitable requirement for useful and rapid reaction to one's environment.

The flexible person, the innovator, or the one sensitive to new experiences, can transcend these culturally or experientially-given straight jackets, see new relationships, and develop new mental categories. Once he has done so, beginning with his subsegmental reaction to new situational features, and working until he has segmental verbalization of them, other people can use his new segmentalized expressions in order to enter into these categories of experience with him. Education within a culture should ideally include not only the assimilation of the standard hypermeanings available, with practice in reacting to one's environment in terms of the ranges of deviation of these hypermeanings, but should also include training to help a person to transcend these categories where it would prove fruitful. Education, in order to accomplish this, needs to provide the student with a range of etic classifications in various areas of knowledge and to train him in emic analysis of unfamiliar situations. The etic stereotypes give starting components which can be structurally analyzed to find relevant new units and relationships.

Scientific discourse and practical discourse have many hypermeanings in common. Thus The sun should be up soon so we can walk without stumbling in the dark has one or more hypermeanings in common with the scientific description of the earth's rotating relative to the sun and the resultant bombardment of the earth by protons which help a person to get the sensory stimuli needed to keep from stumbling, and so on.

Participants in speech behavior discuss their speech behavior. That is to say, they have a METALANGUAGE by which language can talk about itself. Here it must be seen that a hypermeaning implies the presence of a metalanguage. It implies that language can be used to discuss itself--that speakers of a language, even linguistically-naive speakers, can discuss the meanings of words by functional conceptualized hypostasis of that meaning, and can equate meanings of words, or equate meanings of paragraphs, or of conversations, or of lectures. This characteristic of man makes up one of the most important elements which distinguishes human speech from communication by animal

noises. It leaves open the way to the development of science. It opens the door to symbolic representation in poetry. It provides the mechanism for the possibility of metaphor and symbolic development which allows man to go beyond mere verbal responses aroused by physical stimuli and to enter into the discussion of non-physical problems.

There is a close relation, but one difficult to analyze, between subsegmental meanings and hypermeanings. Let us suppose, for example, that some participant in our culture has never discussed the term 'closure' in technical contexts, nor has ever had the fact of closure in music or art or behavior brought to the level of awareness in his thinking. Suppose, nevertheless, that he begins to get some kind of a vague reaction to closure and is 'trying to put his finger on' something to describe the vague reactions he is beginning to sense. At this level in his behavior we would speak of a subsegmental meaning of closure. After he has brought this sharply into focus, however, or after he has met someone who can describe clearly to him the phenomenon that he has been vaguely feeling after, and especially after he has been given the term 'closure' as a label for this kind of events, the meaning of the word closure would have become definitely segmental. It would have become articulated. When, furthermore, he next engages in discussion in which he relates the word closure to such phrases as 'completing a figure' or 'completing a form,' the common semantic core of these terms, phrases, and discussions will carry with them a hypermeaning or concept, which he will be discussing overtly in these technical terms. In our approach, the overt discussion of this meaning of his technical concept would be treated as the functional but conceptualized hypostasis of that hypermeaning.

Hypermeanings enter into a HIERARCHY OF MEANINGS such that one meaning is included within another as an illustration of subtype of the more inclusive meaning. Thus man and woman are both included in adult person, boy and girl are included in child, child and adult are also included in person (Nida, 1955). The criterion as to whether or not one hypermeaning is included in another may be obtained from native reaction to this kind of data. Instead of asking an informant whether two items are 'same' or 'different' one asks 'Is "X" a kind of "Y"?' Presumably the data would include a number of overlapping answers, which would result in crisscrossing hierarchies of meaning, with various kinds of indeterminacies and class cleavage between them.

When dealing with two dialects or two languages a different hypermeaning type comes into play. Thus the translation of English table by the Spanish word mesa or the German word tisch involves a cross-cultural tacit or explicit hypermeaning. Here, however, the hypermeaning which is identified by bilingual participants in these cultures is not the total range of meaning of table with the total range of meaning of mesa or of tisch. Rather the hypermeaning covers in such instances the common core of meaning covered by the various words. This must be evident inasmuch as translations cannot be made by routine substitution of one word for another; in various contexts the translation must be different. That is, hypermeanings have reference to meanings abstracted not from isolated words and phrases, but from words in context.

16.8 Bibliographical Comments on Chapter 16

16.81 On the Definition or Nature of Meaning

The problem of defining the nature of meaning is exceedingly complex and has a long history. For a general study of the problem see Ogden and Richards (1952 [1923]), and Urban (1939). Learning theory is also relevant (Carroll, 1953, p. 111).

One of the most influential of the early students of meaning, especially of meaning related to signs and sign situations, was Peirce. For him 'the "meaning" of a concept' included, among other constituents, the 'general habits of conduct a belief in the truth of the concept' 'would reasonably develop' (1931-35, §§6.481 and 6.490). Compare Kluckhohn (1949, pp. 146-47) who has language as an 'instrument for action.' Compare Sinclair, with 'language as causative' (1951, pp. 120-21, 172, 204; with language causing people to 'hold certain attitudes or follow certain ways of selecting and grouping in attention,' or 'to consider holding' these attitudes). Note, also, Firth with words as both 'affecting and effective' so that 'They mean what they do' (1937, p. 126, as in the expression Say when!).

Some of Peirce's chief terms are summarized by Ogden and Richards (1952, pp. 279-85); for Peirce, for example, a 'type' as distinct from a 'token' seems to be a generalized unit or 'form' as distinct from an event which is a particular instance or occurrence of that form unit; an 'icon' may be some kind of physical graphic symbol of the unit (e.g., a footprint, or an alphabetical letter); a sign itself may be a 'sinsign' (a sign event), a 'legisign' (a general sign type), a 'replica' (a sinsign of a legisign), or a 'qualisign' (which seems to be a characteristic of a sign); etc.

The approach by Ogden and Richards themselves, however, postulates a triangular relation between symbol, referent, and thought (or reference); the symbol symbolizes a thought (or reference) correctly or incorrectly, the thought refers to the referent adequately or inadequately, and the

symbol truly or falsely stands for an imputed relation between it and the referent (1952, p. 11); similarly, there are five functions of language which include 'symbolization of reference', 'expression of attitude to listener,' 'expression of attitude to referent,' 'promotion of effects intended,' and 'support of reference' (1952, pp. 226-27); for them, any item which is interpreted is a sign (p. 50), whereas a symbol is a kind of sign used for communicating (p. 23).

Morris has attempted to handle the analysis of signs and meanings in a behavioristic context. He avoids the term 'meaning' because it usually throws 'a handful of putty at the target of sign phenomena' (1946, p. 19). In general, usages can be divided into the 'informative, the valuative, the incitive and the systemic usage of signs' (1946, p. 95); while 'three major factors discriminable in sign-behavior corresponding to the nature of the environment' include 'designative,' 'appraisive,' and 'prescriptive' components. In reference to a dog acting as he hears a buzzer 'the buzzer is the sign; the dog is the interpreter; the disposition to seek food at a certain place, when caused by the buzzer, is the interpretant'; on the other hand, 'food in the place sought which permits the completion of the response-sequences to which the dog is disposed is a denotatum and is denotated by the buzzer; the condition of being an edible object (perhaps of a certain sort) in a given place is a significatum of the buzzer and is what the buzzer signifies' (1946, pp. 17-18). Rather than token and type, Morris uses the terms 'sign-vehicle' and 'sign-family' (pp. 251, 20)--as he indicates that Carnap uses the terms 'sign-event' and 'sign-design'. A symbol, for Morris, is 'a sign which is a substitute in the control of behavior for another sign, signifying' the same material as the sign for which it substitutes (p. 25). Earlier, Morris indicated that the study of signs may have semantical, pragmatic, and syntactic dimensions, when the relations are that of sign to the applicable object, or of sign to interpreter, or of formal relation of signs to one another, respectively (1938, pp. 6-7). For Morris, 'a language is a set of plurisituational signs with interpersonal significata common to members of an interpreter-family, the signs being producible by members of the interpreter-family and combinable in some ways but not in others to form compound signs' or 'a language is a system of comsign-families' (1946, p. 36). The 'communicative activity' implied in this definition would seem to make it that of a pragmatist, rather than that of a formalist with inclination 'to consider any axiomatic system as a language,' or that of the empiricist who 'is inclined to stress the necessity of the relation of signs to objects' (1938, p. 10).

Russell feels that language indicates facts, expresses speaker states, and alters hearer states (1940, p. 256); the 'purpose of words, though philosophers seem to forget this simple fact, is to deal with matters other than words' (p. 186). Gardiner considers a meaning as 'something mental' (1932, p. 42), with speaking assuming 'the form of an intention to affect the listener' (p. 74). Miller gives four reasons for social communication: 'to increase uniformity of information' and 'of opinion,' 'to change status,' and 'to express emotions' (1951, p. 253). For a summary of various theories of the psychology of language--dualistic, expressionistic, behavioristic, and interbehavioral --note Pronko (1946, pp. 215-32).

For intonation as having no encapsulated meaning, note Smith in Lévi-Strauss and others (1953, p. 29). Malinowski objects to the conception of any meaning 'as contained in an utterance' of any type (1952 [1923], p. 307).

The basic distinction between an emotive versus a symbolic use of language is considered by Ogden and Richards as one of their basic contributions toward the foundations of a science of symbolism (1952 [1923], p. viii; see also pp. 150-51, 241; for 'good' as used in 'a purely emotive' manner, see p. 125). On the other hand, Morris indicates that 'no distinction of emotive from referential meaning really issues' from the analysis (1946, p. 71; compare, however, his pages 68-69, 72). For a detailed assertion of the relevance of the difference between descriptive and emotive, however, see Stevenson (1948).

For objection to the notion that 'words have meanings just by standing for or indicating something,' note Robins (1950, p. 21). For an epistemological argument that knowledge--and, by implication, a specific meaning--is not of a type that is an 'entity which can be possessed or shared or conveyed,' note Sinclair (1951, pp. 122-23).

In British linguistics, theories of meaning have been heavily influenced by Malinowski's views on 'context of situation' (in Ogden and Richards, 1952 [1923], reprinted in 1948; and see 1935, pp. 73, 214). Firth extends the relevance of contextual relations to include phonetics, grammar, and other functions (1935, pp. 53-54); also Robins (1950, pp. 22, 82-83, 91-92, with emphasis upon function).

For insistence that the context of situation is not enough but that one must, to understand meanings, take into account a universe of discourse in which 'a mutual acknowledgment, by speaker and hearer creates the context and therefore gives referential content to the word or term in question,' note Urban (1939, pp. 194-98, 203-04). Compare attention given to the 'associative field or the semantic field of an item,' in which there are closely organized sectors of vocabulary such as scale of colors, or system of intellectual values, etc., Ullmann (1956, p. 16). For further

discussion of fields, note also his summary of early work of Trier (Ullmann, 1957a, pp. 295-97); the history of a word can only be fully understood with reference to 'what happened to its neighbors in the field.'

Lounsbury shows that unitary definitions of the meaning of words is impossible without reference to the 'semantic field' (or universe of discourse) under attention--as 'Our Grandmother the Moon' must be left out of the analysis of the kinship system of Iroquois (1956, p. 195).

For a bibliography of studies on semantic fields and some discussion of the history of this view, note Öhman (1953, p. 125; and Ullmann, 1957b, pp. 322-42). Metaphors under this view presuppose an elementary semantic field (Öhman, 1953, p. 129). Sinclair refers to 'the whole of the circumstances' and effects (1951, p. 177); Firth insists on reference to various specific systems (1951a, p. 85). Within these systems, Firth insists that the 'modes of meaning may be stated at a series of levels, which taken together form a sort of linguistic spectrum,' in which 'the meaning of the whole event is dispersed and dealt with by a hierarchy of linguistic techniques descending from social contextualization to phonology' (p. 76).

For evidence from aphasic patients that meaning in part has reference to context learned, such that some patients can formulate a word only when it comes in a series, note Goldstein (1948, pp. 6, 64, 211, 258, 268-69).

Bloomfield set the tone of recent American linguistics by using the definition of 'the meaning of a linguistic form as the situation in which the speaker utters it and the response which it calls forth in the hearer' (1933, p. 139). Emphasis upon response is found in Harris (1951, p. 20), in Fries (1952, pp. 22 fn., 32-53). For meaning as 'the feature common to all the situations in which it is used,' see Bloch and Trager (1942, p. 6). For this view rejected, note Kurath (1945, p. 210). For emphasis upon elicitation in language function, note Fries (1954, p. 65 fn). For a view by an anthropologist, note Nadel (1951, p. 33). For expectations of response, see Parsons (1951, p. 5). For response, see also G. Mead (1934, pp. 67-75), and Hayakawa (1950, pp. 101-02).

For meanings as the 'point-by-point and pattern-by-pattern relations between the language and any of the other cultural systems,' note Trager (1949a, p. 7). See also Harris (1951, p. 187).

For a completely different approach, note Twaddell, who states that 'whatever we notice is a meaning to us' (1949, p. 6), such that 'there is an element of choice in language which we call meaning' (pp. 4, 6).

16.82 On Meaning in Relation to Structure

16.821 On Sememes

The general question as to whether meanings form a structure is discussed by Hjelmslev (1958). On the other hand, Kurath states that 'the vocabulary or lexicon of the language does not constitute a linguistic system but refers to the "practical world" in which the speakers of any given language move and have their being' (1945, p. 207). Chomsky states that 'semantic notions are really quite irrelevant to the problem of describing formal structure' (1955, p. 141). Harris has stated that it is impossible 'in general to work out a structure of meanings' (1944a, p. 202).

The attempt to set up a minimum structural unit of meaning, the 'sememe,' was made by Bloomfield (1926, p. 157). He assumed that these could not be analyzed further 'by linguistic methods.' Although he clearly recognized that for meanings there is no way 'of demonstrating their constancy' (1933, p. 144), nevertheless, in spite of the fact that we know that 'the agreement of the community is far from perfect, and that every person uses speech-forms in a unique way' (1933, p. 75), 'we have to take the specific and stable character of language as a presupposition of linguistic study' (p. 144) in order to operate within the fundamental assumption of linguistics that in a speech community 'some speech-utterances are alike as to form and meaning.' So that the 'constant and specific meaning' (p. 145) implied by the fundamental assumption 'is true only within limits, even though its general truth is presupposed not only in linguistic study, but by our actual use of language.'

An attempt to treat variants of meaning as allosemic within sememes has been presented by Nida (1951). He deals not only with variants, but shows different kinds of relationships of item to context which affect meaning (linguistic versus cultural context, endocentric-predictable-meanings of morpheme sequences, versus exocentric-nonpredictable-meanings of such sequences). Nida indicated that semantic structure was obtained by pattern of substitution without reference to the particular reference involved, and that this reflected the people's world view. In these items the context was not a grammatical one but a semantic one.

16.822 On Synonomy

In order to operate such a system, however, one must be able to identify whether two items at a particular moment are the same in meaning or different. Chomsky assumes that this leads to a

basic philosophical problem of synonomy, and hence to an almost insoluble difficulty for linguistics, so that 'to know difference in meaning is to know synonomy and this is the central term of the theory of meaning. If accepted then, this claim is an open admission that linguistic analysis must be based on precisely the most dubious part of semantic theory' (1955, p. 142). For a logician's discussion of synonymy, see Quine (1953, pp. 24-32, 37-38, 48-49, 56-64); and note that for him the phrases Evening Star and Morning Star 'cannot be regarded as having the same meaning' although the two refer to the same object (p. 9).

For problems of synonomy in reference to translation, note Malinowski who argues that in numerous instances translation 'cannot, in my opinion, be carried out with any degree of accuracy' (1952 [1923], p. 303; also p. ix). Contrast the view of Humphrey that 'a given thought may be linguistically expressed in different languages' (1951, p. 262). Note also Ogden and Richards who state that it seems 'as clear as anything can be in philosophy that the two sentences "Socrates is wise," "wisdom is a characteristic of Socrates" assert the same fact . . . they have the same meaning, just as two sentences in two different languages can have the same meaning' (1952 [1923], p. 97 fn).

Kaplan suggests that the sameness of a concept employed in different contexts of inquiry would be explicated 'not by the constancy of a single reference, but by the pattern of its references' so that it is like 'the "same face" in the members of a family' (1946, p. 287). Thus the unity of a linguistic meaning refers not 'to the logical sum nor product of these regions [of semantic overlapping], but to the pattern as a whole . . . not an entity but a complex of symptoms . . .' so that 'It is made clear, not by precise definition, but by a specification of the characteristic syndrome' (p. 287). Compare also his handling of characteristic patterns of items for class membership according to a set of profiles of properties of these items (1951, p. 186).

Bolinger indicates that a simple relationship between 'identity and opposition' is no longer practical, but rather there must be degrees of likeness and difference (1950, p. 117); if song and sing represent the same morpheme, why not also shine and sheen--and if handle and hand, why not hear and ear (p. 119)? Similarly, Öhman indicates that words have multiple meanings each of which have a 'single unarticulated section of a field' (1953, p. 155--as in Swedish the words for 'playing' blind man's buff versus 'playing' chess [leka versus spela] are different and hence the field is divided differently in English and Swedish). Ogden and Richards, because of such difficulties in similarity identification, define sameness as having 'sufficient similarity to allow profitable discussion' (1952 [1923], pp. 91, 133-34).

16.823 On Variants and Universals

The insistence on focusing attention upon variants of meaning (or of items) is one of the characteristics of "General Semantics." When variants are numbered, they are sometimes called 'indexes' with references; for example, house$_1$ house$_2$ (Johnson, 1946, pp. 211-13). The use of dates (p. 213) has a similar function. An extreme attention to such allomeanings (or allo-units) coupled with a denial of the emic unity of such meanings (or units) leads to a distortion of human experience. Note, for example, Korzybski: 'Identity appears, then, as a primitive "over-emotional" generalization of similarity, equality, equivalence, equipollence, and, in no case, does it appear in fact as "absolute sameness in all respects." As soon as the structurally delusional character of identity is pointed out, it becomes imperative for sanity to eliminate such delusional factors from our languages and s.r. [stimulus reaction]' (1948, p. 400). Also: 'The present Ā-system is not only based on the complete rejection of the "is" of identity, but every important term which has been introduced here, as well as the Structural Differential, is aimed at the elimination of these relics of the animal, the primitive man, and the infant in us' (p. 403). It is difficult to conceive of a theoretical effort more directly opposed to ours. For Korzybski, emic units--'allnesses' (p. 404)--are animal relics, and insane. For us they serve at the height of the rational process, though subject to abuse through the formulation of unrealistic stereotypes. Sameness of meaning is emic.

It is not only individual words which have differences of meaning; the entire semantic system is in a fluid state. Without a possibility of change in meanings human communication could not perform its present functions. Note, for example, Urban's claim that in our living 'A language is required which is fluid in such a sense that it makes it possible always to be passing from the unknown to the known' (1939, p. 172). This very flexibility is a further differential characteristic between the speech of man and the communication of animals. In the latter, the 'non-mobility of signs forever limits communication to the hearer now' (Urban, 1939, pp. 229-30). On the other hand, semantic units must be sufficiently 'solid' to allow for the communication of common experience, and for the verbal communication to other persons of experience which is otherwise private to an individual. Thus Urban emphasizes that language shall not only be indeterminate in the sense of being essentially changeable, but also must be 'completely

determinate in its references' within some limits (1939, p. 172). For similar emphasis upon the necessity for language to be stable for communication but mobile for particular needs, note Karcevskij (1929).

There seems to be a further relation between the emic semantic units of speech and that which philosophers have in some other contexts called 'universals.' Some of the kinds of reactions which we have to the necessity of considering the emic structuring of the semantic component of speech--as over against treating everything in etic detail as the general semanticists are prone to do--can be translated into some of the philosophical vocabulary of universals. Note, for example, Urban's claim that 'They [the universals] are real at least in the speech community, whatever other reality they may or may not have. They are the sine qua non of there being any linguistic meaning and therefore any communication whatever. A word intends an object directly, but it always intends a universal indirectly, and these two intentions can never be separated' (p. 142). Thus one cannot look at a tall man and put the observation into words 'without intuiting the seen man as a man,' and 'the individual Nansen is a universal, as a connecting link of his own manifold and varying states, relations, qualities, and activities. We cannot see the individual Nansen except through this universal' (p. 142). (Cf. also §16.86.) Nansen is emic--cf. §17.4.

For an objection to treating universals--or, in our view, emic structural semantic components of words--as real units in themselves, note Aristotle: 'nor are the Platonists making the Forms anything other than sensible things' (Metaphysics, Book III, Chapter 1, Section 2; compare also Section 1; also Chapters 3, 6, 7).

Morris objects to 'looking for meanings as one would look for marbles,' rejecting also these '"platonic ideas"' (1938, p. 44; also 1946, p. 19). Ogden and Richards adopt a related view (1952, [1923], p. 188). Note also rejection by Quine of items such as '"household"' (1953, p. 10). On similar grounds, Brain rejects words as 'notional units' (1950, p. 131). Bruner, Goodnow, and Austin suggest that the view that psychological equivalence is determined by similarity of environmental events must be 'replaced by the view that psychological equivalence is only limited by and not determined by stimulus similarity' (1956, p. 8). Postman treats stereotypes under the label of 'strong monopolistic hypotheses about classes of objects and people' which can be confirmed by small or minimal information (1951, pp. 254-55). Humphrey insists, however, that only 'by such discernment of similarities can the organism survive; without it organic response must be chaotic in a chaotic-seeming world' and 'is, at bottom, the ability to learn from experience' (1951, p. 307). Brazier assumes that the nervous system must have the possibility of choice in 'this conflict between the universals' (1950, pp. 43-44).

16.824 On Forms of Perception

Note Cassirer who assumes that 'the concepts of mass and force [are] "fictions"' since reality is not immediately graspable, but only mediated through such concepts (1953, p. 76); the 'fundamental concepts of each science' are 'symbols created by the intellect itself' (pp. 74-75; cf. also p. 78); so that there is a 'copernican revolution' which is 'the hypothesis that, instead of human knowledge being shaped to reality, it is our human judgment which determines whatever is to have the character of the reality for us' (p. 6).

Compare, also, Cassirer: 'Thus the special symbolic forms are not imitations, but organs of reality, since it is solely by their agency that anything real becomes an object for intellectual apprehension, and as such is made visible for us. The question as to what reality is apart from these forms, and what are its independent attributes, becomes irrelevant here' (1946, p. 8) so that 'the basic philosophical question is no longer that of their relation to an absolute reality which forms, so to speak, their solid and substantial substratum; the central problem now is that of their mutual limitation and supplementation' (1946, p. 9). Compare also Urban, who says that language 'is the mould in which reality as significant is first given' (1939, p. 375).

Experimental evidence that language forms affect our perception is seen in Lenneberg: 'Statistically, codable colors [i.e., those for which names can be given rapidly, easily, in short linguistic terms, etc.] are recognized significantly more often than less codable ones, and thus there is good evidence that the particular linguistic fact, codability, affects the cognitive process, recognition' (1953, p. 470). Experimental evidence that language forms affect our perception is seen in Brown and Lenneberg, who indicated that 'the codability of a color' 'proved to be related' to the subject's ability to 'recognize colors' and 'accounted for more variance in the recognition task as the task was delayed and complicated to increase the importance of the storage factor' (1954, p. 462). Compare also Doob (1957, p. 98). See, now, also Brown (1958, pp. 236-37). And see below, §16.86.

A great deal of current discussion concerning the relation of language to thought and perception is centered about discussion of the writings of Whorf, who argued that language strongly affects or channels forms of thought prevalent in a culture. See his Selected Writings (1956), especially the

article on the relation of language to habitual behavior (pp. 134-59). For a detailed discussion of this view, including a historical perspective, note the volumes by Hoijer (1954), and by Lévi-Strauss and others (1953). See, also, analysis in Brown (1958, pp. 230-37). For a critique objecting to a certain 'extreme form' of the Whorf view which may seem 'to predict perfect correspondence of cultural and linguistic areas' inasmuch as 'the Hopi and the Hopi-Tewan who share a general puebloan culture . . . speak very divergent languages,' see Brown (in Bruner and others, 1956, p. 304); furthermore, 'most of the conceptual oddities' turned up by Whorf and others 'can be found in some group in our complex society' (pp. 311-12). Note also that Malinowski rejects the 'dangerous' 'assumption that language simply mirrors reality' (1935, pp. 64-65).

For words as providing 'linguistic "summaries,"' note also Nadel (1951, p. 72 and p. 42). Compare also Kluckhohn (1949, pp. 160, 165-66), and Sapir (1924, in Selected Writings, p. 157, where 'the mould of his thought, which is typically a linguistic mould, is apt to be projected into his conception of the world'); (also 1933, in Selected Writings, p. 10).

16.825 On Meaning and Componential Analysis

The most significant recent attempt to treat meaning structurally lies, in my judgment, in work of Lounsbury (1956), and Goodenough (1956). They have each, independently, attempted to illustrate semantic analysis by way of kinship systems. Goodenough attempts to provide analysis to indicate how any speaker of a language 'is able to use a given form in new contexts in ways perfectly intelligible to other speakers' (p. 197 fn). He divides components of meaning into significata, which are prerequisites (and defining characteristics), and into connotata, which are probabilities or possibilities (p. 195). (These characteristics might be rephrased, in tagmemic terms, as obligatory and optional, nuclear and marginal.) A person, for example, can be known to be my brother 'whether he acts like it or not' (p. 107).

They indicate that the data to be examined (as we stated in §16.81) must first be selected in reference to a universe of discourse, a 'delimited area' (Lounsbury, 1956, p. 193), or a 'semantic field' (p. 195). Such a field (or semantic system, Goodenough, 1956, p. 107) is then further treated to an abstracting process, so that for one set of dimensions (or poles) the field, or some part of it, may exhaustively be divided into its parts, into a 'paradigm of terms' by the one variable (Lounsbury, p. 193). Such classifications (or 'paradigms') may overlap each other. Formulas are provided to show each sub-universe, and for each variable within such a universe.

For a different approach to semantic components, see Osgood, Suci, and Tannenbaum (1957). Note, also, resumé in Osgood, Sebeok, and others (1954, p. 179, with gentleness, for example, scored against the poles fresh versus stale, strong versus weak, hot versus cold). This approach seems an etic one, in reference to gradients of connotation, rather than the emic, structural one of Lounsbury and Goodenough. See also Carroll (1959, p. 45). See §16.85; and cf. §16.821 on Nida's allosemes.

16.83 On Phonological Meaning

For phonological impact as part of the spectrum of meaning, such that 'It is part of a Frenchman's meaning to sound like one,' note Firth (1951a, p. 83). Compare Harris, with phoneme as meaningful (1951, p. 188 fn). Cf. Strevens, with Gold Coast pronunciation 'identifying members of a community' (1954, p. 84). For Bloch and Trager, however, 'A phoneme is meaningless' (1942, p. 53).

Sapir states that 'one of the really important functions of language is to be constantly declaring to society the psychological place held by all of its members'(1933, in Selected Writings, pp. 17-28). Thus '"He talks like us" is equivalent to saying "He is one of us"' (p. 16; compare also 1927, in Selected Writings, p. 537).

When some characteristics of the language of a speaker are used by the analyst as 'a means of gaining information' about the speaker, Morris implies that the point of view is that of 'descriptive pragmatics' and may be used in psychoanalysis, in sociology, etc. (cf. 1938, p. 38). For voice quality in reference to psychiatry, see Pittenger and Smith (1957), and McQuown (1957b).

Brown indicates that the psychiatrist studies speech as an expression of characteristics of the patient--rather than as denotating the verbal content (in Bruner and others, p. 296). Here, lying, for example, may characterize one as a liar (p. 295; see also Ogden and Richards, 1952 [1923], p. 194). Firth indicates that a child's 'sense of social and linguistic differences' is quite well developed before the age of six, and has relevance to 'snob commodities' (1937, p. 104). Note also that a poem may be written to convey something about the author to the reader rather than to convey the actual data of the poem (Morris, 1946, p. 97).

For documentation concerning the change of dialect 'from standard to folk forms according to the audience,' note Mencken (1945-48, I, p. 9; II, p. 347). Note also McDavid (1949, p. 74 fn 17).

Hill states 'that rhyme and alliteration are structures correlated with language structure but

not a part of it' (1955, p. 973). An opposite view 'that form is a part of meaning, that content expressed in any other way would not be the same content' is expressed by Lynch (1952, p. 104).

In experiments on sound symbolism, Newman found, for example, that subjective judgments as to small or large size were consistently made in reference to a symbolic scale which followed t, p, k, or d, b, g, and so on (1933, p. 68). Carroll, however, emphasizes that it 'is doubtful, however, whether any general phonetic symbolism exists across various linguistic families' and suggests that the experiments by Sapir and Newman show only 'that it exists in an artificial experimental situation' (1953, p. 238). Similarly, on the other hand, others have suggested that sound symbolism is 'a myth, or better that it is always a function of particular associations with meaningful words in a given language' (Osgood, Sebeok, and others, 1954, p. 182). On the other hand, Brown, Black and Horowitz feel that there 'may be some features of phonetic symbolism which have a universal validity' (1956, p. 388; see also Brown, in Bruner and others, pp. 282-84). For a bibliography on phonetic symbolism see Pronko (1946, pp. 205-07). Bolinger has tested some impact of sound-symbolism relations experimentally by trying to have observers rate according to preference their various choices of sentences in which some of the words may 'echo a number of other forms not very closely related among themselves, and be attracted sufficiently to take on a cast of their meaning' (1950, p. 129).

The Greek dramatists used higher-level phonological units for special symbolic functions, to 'express certain specific moods, actions, and reflections' so that 'the Ionian phrases, with their initial short syllables, induced a feeling of something softer or more exotic, sentimental and feminine' and 'A slightly modified form of a Dorian . . . was also used to suggest sensuous beauty or exalted reflection' (Gardner, 1949, p. 130).

16.84 On Grammatical Meaning

See also references in §§7.81-83, 11.76.

For grammatical meanings, note Bloomfield (for 'constructional meanings,' 1926, p. 158; for class meanings, 1933, pp. 146-47, 280; for tagmeme meanings, 1933, pp. 146, 163-68, 190, 202-03, 205, 247, 249, 266-68). For meanings used to name grammatical categories but not to establish them, note Robins (1950, p. 94-95; compare also 1952a, p. 295). For insistence that 'the parts of speech . . . often have no meaning at all,' note Sweet (1875-76, in Collected Papers, 1913). On the other hand, note that Sapir feels that 'we can represent a quality or an action to ourselves as a thing' (1921, p. 124), and hence have some kind of feeling for a class meaning. For a similar view of a psychologist note Brown (in Bruner and others, 1956, p. 310--where '"thingness"' can infect our thought of such things as '"beauty"').

For problems in handling grammatical meaning, note Fries (1952, pp. 54-64, 74-75, 201, 203, 206, 217, 223-24; 1954). For tagmemic meanings see also Pike (1943, 1957). For discussion of many specific meanings of English grammatical constructions, note Jesperson (1940-49, 1937).

For the fact that meanings are relevant to the study of transformations in English grammar, see Harris (1957, p. 290); Chomsky, otherwise (1957, pp. 96-97); discussion in §11.76, above.

16.85 On Meanings of the Lexical Hierarchy

See references in §§6.91, 6.93.

The problems discussed in handling lexical meaning are so vast that we can do no more than give a brief sampling. For a convenient summary, note Bloomfield (1933, pp. 139-57, and see index). Note that for Bloomfield 'a proper analysis' must be 'one which takes account of the meanings' (p. 128). For a list of problems in handling meaning, note the extended discussion in Bolinger (1950; and 1948, p. 18). See also a specific discussion in terms of the technique of differentiating words closely related in meaning, Bull (1950, p. 469). For another problem, note Bloomfield (1933, p. 145, with the word charge). For the reaction that some morpheme differentiations are 'essentially terminological and unimportant' (as for 'two, to, and too,' which might turn out to be 'one morpheme') see the view of Harris (1951, p. 258 fn).

Harris feels that 'In principle, meaning need be involved only to the extent of determining what is repetition' in descriptive (combinatorial) grammatical analysis (1951, p. 7 fn), while for Fries, one should 'Note that lexical meaning does not form part of the apparatus in which to test structural arrangements' (1954, p. 68), although one must be able to 'control enough of their meaning to know whether their referents are the "same" or "different," what "substitute group" they belong to, and whether a word of that substitute group is structurally substitutable in the utterance' (1952, p. 196).

Semantic components of morphemes have been broken down in various ways. Note, for example, Osgood and Sebeok (1954, p. 179), Wonderly (1952, p. 366), Lounsbury (1956), and Goodenough (1956). See discussion above, §§16.825. For the rejection of the 'least common denominator' approach to meaning, note Nida (1951, p. 9) with the meaning rather the 'total of the series' of allosemes than

that of a constant component. For a rejection of 'words as isolates corresponding to concepts or ideas, often endeavoring to combine a constant core with a field of indeterminacy,' note Firth (1952, p. 5). Bazell likewise insists that 'Two meanings of a morpheme need have nothing in common providing that they are linked by an indiscrete series of intermediate meanings' (1948b, p. 286). Compare also Ogden and Richards, (1952, pp. 128-29; 147).

On the other hand, Bloomfield has referred to the 'distinctive or linguistic meaning (the semantic features) which are common to all the situations which call forth the utterance of the linguistic form' (1933, p. 141). Compare also Nida (1948b, p. 421 fn 15). For the suggestion that 'The remarkable thing about these variant meanings is our assurance and our agreement in viewing one of the meanings as normal (or central) and the others as marginal (metaphoric or transferred),' see Bloomfield (1933, p. 149). The 'central meaning is favored in the sense that we understand a form (that is, respond to it) in the central meaning unless some feature of the practical situation forces us to look to a transferred meaning' (1933, p. 149, as with fox used in referring to a person; cf. also p. 402 in reference to slang which dies out if it becomes more frequent than the central meaning). Note, also, reference to pigs (pp. 431-32, and above, §§16.12). Compare also the treatment of 'the "object language" or the "primary language"' where 'every word "denotes" or "means" a sensible object or set of such objects,' etc., in Russell (1940, p. 20); this seems to have some reference to our treatment of central meaning in reference to the early physical circumstances in which words are learned. Compare Osgood and Jenkins who indicate that the 'strongest and most available decoding habits' for a word such as ball will be those 'most frequently elicited by the distal cues of the particular objects encountered' (in Osgood, Sebeok, and others, 1954, p. 182).

Another approach to central meaning might be that of identifying the 'focus' of uniform naming, in the experiments of Lenneberg and Roberts; certain colors, for example, were named consistently by individuals and consistently from one individual to another, with rapid responses, utilizing short terms; these particular shades of color were treated as the focus of the color concepts (1956, p. 16).

The problem seems to be related, furthermore, to the fact that it may be impossible to invent a language without names since without names there may be an end to the 'power of discussing' a question (Russell, 1940, p. 117). Sapir also states that a large stock of basic radical concepts such as objects, actions, and qualities are absolutely essential if language 'is to be a satisfactory means of communication' (1921, p. 98).

For meanings as affected by context--for collocational meanings--note Firth (1952, p. 9, and 1951b, pp. 123-24, 135). Note also Kaplan, who discusses the way in which a specified meaning grows and changes with context, from a philosophical point of view (1946, p. 287).

For 'unusual distribution' as 'the cue to metaphor,' note Fries (1954, p. 67 fn). For the pun as 'the first step toward the achievement of symbolic metaphor,' note J. Brown (1956, p. 18). For metaphor as necessary to reason, note Urban (1939, pp. 177-78). For the nonsense which results if one attempts to carry back 'the meaning to the primary physical context,' however, note Urban (1939, pp. 639-40) who quotes an illustration from Anatole France who indicates that the phrase The Spirit possesses God insofar as it participates in the absolute would become 'The breath is seated by the Shining One in the bushel of the part it takes in what is altogether loosed.' See also Count (1958, p. 1072).

For connotation versus denotation, note Ogden and Richards (1952, pp. 188-89). For denotation as an actual referent but connotation as meaning which refers to 'other meanings which the form may suggest,' note Carroll (1953, p. 95). Osgood has suggested that 'connotative meaning'--in reference to the 'psychological state of the communicator' may be measured by techniques of 'semantic differential.' By 'a combination of association and scaling procedures' a sample of 'potential bi-polar associations to a particular concept is provided for the subject, his task being simply to indicate the direction of each association and its intensity on a 7-step scale' (Osgood, in Osgood, Sebeok, and others, 1954, p. 177).

For the pun as giving a kind of 'context-linking' within the total context, note also J. Brown (1956, p. 26). For meaning as part of the total hierarchy of structure, note Firth (1951a, p. 76, and 1951b). For meaning in reference to the social-cultural context, note Fries (1954, p. 68, and 1952, pp. 294-95, in reference to the difficulties which Rip Van Winkle got into because of changing social meanings). For the 'whole context' as giving meaning to a new word, as one first meets it, see Piaget (1955, p. 164). See also W. Haas (1954, pp. 80-81, 1957) for meaning of a word as it functions in a total context.

For the 'total meaning' of a literary work, note Wellek and Warren (1949, p. 184). For further discussion of total meaning in literature, note Geiger (1953).

16.86 On Concept Formation

Problems of concept formation are related closely to the problem of lexical meaning, since the conceptual categories may be marked out by various characteristics of behavior--by winking, salivating, embracing, and the like but 'in all cases' by speech (see Brown, in Bruner and others, 1956, p. 279). These authors consider that the 'working definition of a concept is the network of inferences that are or may be set into play by an act of categorization' so that when one calls an item an apple, because he sees an object that is red, shiny, and roundish, one may infer further that it is edible, juicy, will rot if left unrefrigerated, etc. (1956, p. 244). Similarly, Brown assumes that 'when someone has learned to understand an utterance his nervous system is partially "rewired"' so that he 'is disposed to behave appropriately with regard to that utterance' (pp. 274-75).

From the psychological point of view, 'Concepts are responses which tie together, or link, or combine discrete sensory experiences'--concepts that result from collecting data are not the data themselves, they depend on experience, the ties are symbolic, usually in the form of words, and selective factors are at work in the tieing together of these responses (Vinacke, 1951, pp. 1-3). So that 'A category is, simply, a range of discriminately different events that are treated "as if" equivalent' (Bruner and others, 1956, p. 231). Cf. also discussion on universals, in §16.823.

Theories of cognition are summarized by Postman: The Formalists deal with such matters as more-or-less self-sufficient processes, by way of associationism, relating physical stimulus and experience; the Instrumentalists are 'interested above all in the relation between cognition and motivated, goal-directed behavior in the role which cognitive processes play in adjustment and survival' (Postman, 1951, pp. 242-43), and hence are integrated more with personality dynamics and social processes.

Concept types may be 'conjunctive' such that several attribute values must all be present for an object to 'be considered as an exemplar of the category' (Bruner and others, 1956, p. 244); a 'relational class is one in which the "rule" of inference requires that values of different attributes bear a specified relation to each other' (pp. 244-45); in a 'disjunctive concept' the presence of either one of two--or both--attributes must be present for a member of the class to be defined or recognized (p. 245). The latter class type is the more difficult for people to master since it 'seems to violate the expectation that to each effect there be but one cause' (p. 245), and 'The possibility of using the "common features" of a collection of positive exemplars is ruled out' and such concepts 'have the property, finally, that to locate or learn their defining properties one must begin "backwards"--by taking as a focus an instance of what the category is not' (p. 159). In linguistic terms, a high versus low tone would be relational; a sound identified as being always voiced and continuant would be conjunctional; allophones one of which is sharply different from the other with very little common denominator between them would be essentially disjunctive--compare the t's at the beginning and middle of tatter for an approximation of this type in English.

A summary of conceptual types in detail does not leave 'much to be gained' even though one may attempt it in some crude way (Sapir, 1921, p. 113--e.g., basic concrete, derivational, concrete relational, pure relational types).

Vinacke indicates that a person may attain a concept without being aware of its nature, and specifically without verbalizing it (1951, p. 23). Bruner and others insist that the categories are 'inventions and not "discoveries"' (1956, p. 232). Sapir emphasized the relativity of concepts (1924, in Selected Writings, p. 159).

Development of language in the child, as related to concepts, have been summarized in Miller (1951, pp. 141-43); 'name words appear first, verbs and adjectives later, relational words still later, and pronouns are just beginning to be used by the most advanced children by the end of the second year'; combinations of words do not begin for some time. For bibliography, note Pronko (1946, pp. 201-04). The language development of the child is closely related to concept formation: 'One might, indeed, go as far as to say that the process of socialization consists of building into the child a system of hypotheses [concepts] which will prepare him to perceive and know his environment in the ways which his culture favors' (Postman, 1951, p. 263).

Concept formation (in which the concept is unknown to begin with and must be learned or developed by the speaker) must be differentiated from concept identification (in which the concept is known to the speaker, but he is trying to identify it by the use of unfamiliar terms such as nonsense syllables) (Brown, in Bruner and others, pp. 298-301); second-language learning is in part related to identification rather than formation (p. 301); concept formation may from some points of view be considered in relation to generalization of stimulus (Vinacke, 1952, pp. 151-56), or to generalization of response (see Miller, 1951, pp. 181-84). Here the response might be affected about sevenfold as to what word one would get according to the context in which it occurred (Miller, 1951, p. 187). Note also Johnson on cognitive patterns (1955, pp. 132-35, 312-17). For related

discussions see also Leeper (1951) and Humphrey (1951). For further references, note Carroll (1953, p. 238). Compare also philosophical discussion on universals (see some references in §16.82).

Abstractions are formed by strengthening 'associations between certain invariant aspects of the materials and the particular verbal response that symbolizes this aspect' (Miller, 1951, p. 239). Sometimes 'nonlinguistic reality' may 'serve as a guide to the categorization of speech' just as speech may serve 'as a map' of the region of the world mapped (Brown, in Bruner and others, 1956, p. 294). In some respects a concept is a kind of 'hypothesis' about the way one should react to one's environment; experimental studies of the development of such concepts have been made with artificial figures (Postman, 1951, pp. 267-68); since, after some delay, memory reconstructs figures more in the direction of the conceptual code, it seems that the 'process of remembering is often one of active reconstruction, with systems of hypotheses giving direction to this process of reconstruction' (p. 268; the artificial 'code' used by Postman was two line figures which could be changed by dropping a piece from the one and adding it to the other).

For testing the learning of a concept, it seems to be essential that a person be able to apply the label for the concept adequately 'to new instances' since one must do more than simply learn 'to recognize instances encountered' (Bruner and others, 1956, p. 45; Brown, in same, pp. 275, 286).

People 'reassure themselves that their categorizations are "valid" ' by the test of the 'ultimate criterion' [i.e., whether it ultimately works or not in the world] by 'consistency,' by 'consensus,' and by 'effective congruence' (Bruner and others, 1956, pp. 17-21). A 'defining attribute' is one set up by official sources--such as the law--whereas a 'criterial attribute' is one by which a person actually operates (Bruner and others, 1956, p. 30, as in a person's feeling of safe driving speed as over against legal driving speed). An attribute is 'critical' if it 'alters the likelihood of an object being categorized in a certain way,' whereas it is 'noncritical' if it does not produce such changes (as in the 'probability' of an object 'being called an apple') (Bruner and others, 1956, p. 31). A further extensive discussion of the strength of such conceptual structures or hypothesis is found in Postman, where hypothesis strength depends on frequency, number of alternatives available, motivational support, frequency of confirmation, amount of stimulus information available, support from the larger cognitive organization, amount of appropriate stimulus information available, and social consensus (1951, pp. 252-63).

Availability of concepts seems to be related to codability (Brown and Lenneberg, 1954, p. 456, and Brown, in Bruner and others, 1956, p. 309; and see above, §16.824. Abbreviation of phrases (as in TV) may have reference to frequency of use; concepts such as 'damp soft snow' are expressed in long phrases since they 'are not only less frequently expressed but less frequently utilized in perception and thought,' so that they 'are not habitual cognitive modes' and so are 'less available to the English speaker' as 'manifest in the fact that the concepts are not coded into single words' (Brown, in Bruner and others, 1956, p. 308).

Concepts may be built up which are nonverbal, and may then receive verbalization (see above, §16.6, see also below, §16.87). On the other hand, one may first learn a word which is the label for a concept, from someone else, and then learn the attributes of that concept. Thus 'If a biology professor in his first lecture uses the word "coelenterate" he establishes an empty category to be filled in later' (Brown, in Bruner and others, 1956, pp. 277-78).

The study of aphasic patients contains a great many items of interest in reference to concept characteristics and loss, and in relation to hierarchical interrelationships within language structure. A massive amount of information is available in Goldstein (1948). Under some types of aphasia the patient may be able to react to a situation as having relevance to a particular 'realm of ideas' or 'sphere' but not be able to pick out from this grouping of words the particular one which is relevant. That is, instead of replying with a term such as village he may reply with house; instead of mouse he may say cat; instead of God he may say church (pp. 226-27). In one instance, however, the patient responded to words in their 'totally concrete character' such that he could not mention items such as dog, cat, mouse, but could refer to polar bear, brown bear, lion, tiger, etc.--animals which he mentioned in the order in which he saw them upon entering the zoo (pp. 61-62).

Similarly, a person may be able to report something seen, but not grasp a reported situation (p. 211). Items learned in the concrete situation are not easily extended, for some patients, to situations in a marginal or metaphorical sense. Thus the German word Anhaenger means a pendant hanging on a chain about a girl's neck, or one following a person, or a second car attached to a first street car trailing it, but the patient cited could not understand that once the word was used as follower it could also mean pendant or trailing car (pp. 61-63).

In amnesic aphasia the patient may be unable to find names for ordinary objects--or for adjectives and verbs--even though he can repeat words or correctly accept those presented to him orally or

written (p. 246).

In visual agnosia, on the other hand, there are 'learned motor automatisms' such that a person may be able to count or do multiplication but have no idea what the numbers mean--may not know, for example, 'which is the greater, 6 or 8, etc.' (pp. 133-34). Sometimes 'large' words may be better understood than the 'small' function words, sometimes separate words are better understood than sentences, and sometimes separate sentences are better understood than words, depending upon the particular variety of aphasia present (p. 91). In particular, Goldstein emphasizes that the abstract potential may be seriously affected and this involves (1) loss of 'initiative' or 'beginning performance on demand,' (2) 'Shifting voluntarily from one aspect of a situation to another, making a choice,' (3) 'reacting to two stimuli which do not belong intrinsically together,' or 'keeping in mind simultaneously various aspects of a situation,' (4) 'Grasping the essentials of a given whole, breaking up a given whole into parts' voluntarily, and so on, (5) Abstracting common properties, planning ahead ideationally . . . performing symbolically,' etc., (6) 'detaching the ego from the outer world' (pp. 6, 64, 258, 268-69); note also that this has some characteristics of the figure-ground relationship (p. 5).

Miller gives some summary of these matters--as the patient with 'receptive aphasia' may confuse 'words in the same associative cluster' though he may be 'aided by the context'; since a person may 'perceive a word correctly when he cannot repeat the individual vowels and consonants that make up the word,' and so on. Since other psychological functions may not be effective in the situation, Miller concludes that these perceptual processes are 'not an indispensible element of the thinking process' (1951, pp. 246-47).

Leeper warns against considering, in concept formation, only those having reference to class concepts since the 'emphasis on class concepts is consistent with traditional logic, but is inconsistent with our present knowledge that actual deductive thinking usually starts from a premise that states certain cause-and-effect relations on certain sign-significate relations' (1951, p. 754). Deductive and inventive concept formations do not necessarily follow the types implied by formal logic, especially where 'the premises are not well established--situations frequently occurring in actual living' (pp. 755, 748-54).

Miller calls one an amnesic aphasic when 'A group of similar objects cannot be associated in such a way as to form a category' so that 'the associative clusters themselves' have been damaged or destroyed and the patient 'cannot handle two aspects of a situation simultaneously,' etc., since he cannot form abstractions in a normal way (1951, p. 247). For mention of behavioral definition of an abstraction such that one learns to 'respond to similarity in a variety of contexts' as applied to learning by monkeys, note Miller (1951, p. 169).

The relationship between study of aphasia and language is not yet completely clear for linguistic purposes, though a summary has been attempted by Jacobson (in Jakobson and Halle, 1956, pp. 55-82). He calls aphasia a 'similarity disorder' when power of combination or of sequence is partly preserved but selective capacity is impaired strongly (p. 70). When the word 'is the sole linguistic unity preserved' (p. 74) in atactic aphasia a person can recognize, understand, repeat, and spontaneously produce words like coffee or roadway but be unable to grasp or discern nonsense syllables which are phonologically comparable to them. When hierarchical levels of language tend to be reduced, the last level to remain is either 'a class of significative values, the word,' or 'a class of distinctive values, the phoneme'; in the latter, phonemes can be identified, distinguished, and reproduced, but words cannot be (p. 75).

16.87 On Subsegmental Meanings and Preverbal Mental Activity

There is some objection by behaviorists to the treatment of "Platonic ideas" which in some way are special 'mental entities' in relation to psychical states (note Morris, 1938, p. 44). They wish to have the term replaced by others which 'do not stand for isolated existences but for things or properties of things in certain specifiable functional relations to other things or properties (pp. 44-45); nevertheless some kind of mental activity is retained even in behavioristic formulations. Thus Morris prefers a phrase like 'disposition to response,' rather than 'idea,' as being 'more suitable for scientific advance' (1946, pp. 28, 187, 14). For similar views under the label 'set,' see Woodworth (1938, pp. 790-800), Postman (1951, p. 253), Johnson (1955, pp. 67-79, 83-90, 103-13, 185-86, 311-45, and bibliographical references, pp. 97-101), and Humphrey (1951, p. 105). For 'intention' note Osgood and Jenkins (in Osgood and others, 1954, p. 128), Jacobson and Halle (1956, p. 32); for 'motivation,' Leeper (1951, pp. 752-53), and Humphrey (1951, p. 308). For purpose in a behavioral formulation, note Morris (1946, p. 92), see also Brazier (1950, p. 43); for 'objective-setting,' note Bruner, Goodnow, Austin (1956, p. 243); for intent of behavior, Carroll (1953, pp. 89, 99)--and further discussion of the problem as to the manner in which 'the individual handles information in central mediation processes' (pp. 103-04).

Of special relevance to our handling of

subsegmental meaning, however, are discussions of the 'pre-language stage of thought, which is unarticulated' (Humphrey, 1951, p. 260 after Pick), or those 'rapid premonitory perspective views of a scheme of thought not yet articulate . . . the feeling of what thoughts are next to arise before they have yet arisen' (Humphrey, 1951, p. 260, after William James); although this may be rejected strongly as not constituting 'an "idea" of what we want to say,' so that there is 'no more reason why an "idea" should precede speech behavior than it should precede any kind of behavior'--a view which has been 'experimentally disproved' (Humphrey, 1951, p. 259, cf. also p. 311, where a 'hundred years of psychologizing have shown only what statements to avoid,' such as the 'idea results in action' or 'the idea (or image) precedes thought'; cf. also p. 261 fn). Vinacke refers to Galton's 'antechamber' (1951, pp. 24-25). Cf. also Piaget's 'ego-centric thought' (1955, pp. 63-66). Note, also, Schilder, for whom 'every action is based on an anticipatory plan' which is not 'in the full light of consciousness' (1950, pp. 50-51).

On the other hand, Miller specifically sets up subvocal speech where 'many reaction tendencies' may 'compete and interact' so that at this level 'we compare and edit and search for words,' and 'Several directions of association may run simultaneously' (1951, p. 236). And so we may speculate that 'the average talker needs to plan his sentences, on the average, only about five to ten words ahead of his voice' (p. 192, cf. p. 191). Lounsbury refers to 'semantic encoding in a higher mediational system' (in Osgood, Sebeok, and others, 1954, p. 100), while Greenberg, Osgood, and Saporta refer to the 'central programming of neural events in the motor cortex' which 'is much more rapid than the sequential execution of the movements' (in Osgood, Sebeok and others, 1954, p. 150).

Concepts can be formed and operated upon without awareness of the subjects as to their criteria for these, so that 'behavioral attainment' and 'verbal attainment' may be different tasks (Bruner, Goodnow, Austin, 1956, p. 60; cf. Miller, 1951, p. 238). Malinowski also indicates that words are not in a one-to-one relationship with sociological reality in some instances (1935, pp. 65-66; cf. Leeper, 1951, pp. 743-55). Long-range strategies for solving a problem may be present, demonstrable experimentally, and yet not constitute a conscious plan (Bruner and others, pp. 54-56).

That some kind of thinking can be carried on 'without the aid of the sequential habits of normal speech' seems to be demonstrated by the presence of patients with expressive aphasia who can nevertheless think in a manner which is unimpaired--where persons speak and convey their meaning but frequently have difficulty with grammar, often omitting articles, prepositions, and the like (Miller, 1951, p. 246; cf. pp. 236, 182); compare also Humphrey (1951, pp. 149, 185-216, 262, 264, 310, 315). For subvocal talking to oneself, note Morris (1946, p. 47), Miller (1951, pp. 223-24). For a definition of thinking, note Vinacke (1951, p. 2). For a differentiation of the laws of logic from the dynamic laws of thought, note Miller (1951, p. 226); see also Leeper (1951). For further discussion of the relation of language to thought note Adams and Powers (1929, pp. 241-47). For an epistemological view in which 'it is not possible to divide the sensory and the intellecual into two distinct spheres' such that 'the very first perception' of the matter of sensation 'contains a reference to the form of space and time' and 'the chaos of immediate impressions takes on order and clarity for us only when we "name" items' and so permeate them 'with the function of linguistic thought and expression' in which the world of impressions 'acquires a new intellectual articulation,' see Cassirer (1953, pp. 87, 198; see also references to discussion of world view or Whorf hypothesis in §16.824).

CHAPTER 17

THE MATRIX OF BEHAVIOR

Up to this point in our discussion we have been dealing with behavioral events. These events have been both on a large scale--the football game, the church service, the family breakfast, and on a small scale--a football pass, an articulatory movement. Attention in recent chapters has been largely directed to verbal materials. Now we turn from a concentration on verbal behavior with its events and systems to give attention to certain non-verbal materials.

The materials in view in this chapter, however, are not those of behavior as such, but rather the matrix of behavior as it is affected by behavior. We wish to discuss a society as a structured group of individuals sharing in that behavior. We will discuss the individual as a unit of such behaving groups. We shall turn briefly to the consideration of "things" and discuss these too from the point of view of their nature as a matrix of human behavior and as a product of human behavior. Nor will "things" be the only kind of item which is considered simultaneously as in part a matrix of behavior and in part as a product of behavior. Society, and the individual in society, may also be viewed in this double sense. They, too, are part of the matrix within which human behavior occurs, and in turn they are in part molded into the structure that they have by the behavior itself.

Specifically, we hope (1) to show that the structure of language shares many kinds of characteristics with the structure of a society (or with the structure of an individual or of a "thing" in the society). With this we hope (2) to demonstrate that man has certain structural traits which are more pervasive than have previously been suspected, and which therefore tell us something important about man himself. By this technique we would try (3) to build a conceptual framework which will provide a bridge over which, on the one hand, the linguist can travel in order to understand more easily certain problems of the anthropologist or sociologist and, on the other hand, over which the anthropologist may pass in order to understand some problems of the linguist. This, we trust, will make it easier for the beginning student (4) to grasp the total field of anthropology as a unit rather than as accidental cluster of sharply distinct, diverse, unrelated disciplines.

Our immediate aim, however, is restricted to the exploring of these analogies in the area of synchronic structural description. We specifically are not attempting any testing for analogies (1) in reference to the transmission of culture, nor (2) in reference to change of structure through time or (3) in geographical spread, or (4) in reference to problems of culture contact. Nor (5) are we attempting to discuss postulations concerning cause-and-effect relations between substructures within a culture, or between culture structures and environment.

This is not intended to imply however, that structural components are irrelevant to the transmission and change of a culture whether via its language or its social system. On the contrary, current historical research in language is finding it necessary to restate much of the older historical material precisely because structural--especially phonemic--considerations have been proved to be of great relevance to the kinds of changes which have occurred or may be anticipated. Structural patterns and emic units--not just the sheer physical data--are part of the cause and of the end product of change.

We are convinced that analogous structural components are present, and crucial, in change of non-verbal habits and social organization. That is, we believe that to whatever degree cultural studies currently may lack attention to structural, emic contrasts and to structural, emic units, some important insights are yet to be added to the field. Nevertheless, the task we have set ourselves is not to explore the possible implications of structure as such but rather to explore the structural analogies themselves.

In order to facilitate reference to the analogies of society with language, we will from here on in this chapter use S- to mean society, and terms such as S-phoneme, S-morpheme, S-tagmeme, and S-syntagmeme to refer to components of the structure of society which are in some sense analogous to phoneme, morpheme, tagmeme, and syntagmeme of language respectively.

To some anthropologists this approach may seem merely formal, and lacking in insight into the ultimately-important or deeper problems. If so, the same difficulties may be seen in linguistic analysis: Recent study has contributed much to the understanding of the formal structure of systems of phonemes and morphemes but less to the understanding of meaning--the ultimate goal of study of communication. Nevertheless, the growth of formal studies has been very stimulating to understanding the "mechanics" of language

activity, and now--some of us hope--is ready to make substantial contribution to the study of meaning in a manner which previously was impossible. So, too, a more formal study of some matters in culture may lay the groundwork for later advance in areas which at first seem remote from that of the formal units themselves.

We are well aware, also, of the fact that analogies can be distorted until they misrepresent data and give false leads to the investigator. We are convinced, however, that little creative thought is possible without at some point employing analogies and testing likenesses in areas where they may not have been suspected. In this chapter, therefore, we take the risk of suggesting various analogies in the hope that some of them will prove fruitful in giving direction to our search for unity in the study of the structure of human behavior and of the matrix of that behavior.

17.1 A Society as a Whole

We first claim that there is an analogy between a particular society, as a whole, and a language. A particular society, in this view, may be called an S-LANGUAGE.

Comparable characteristics of a language and an S-language include the following:

(1) The structure of each can be detected only by observing individuals in action.

(2) Each language or society is relatively independent of other languages or societies, although there may be fruitful contact between different languages by way of bilinguals, and contact between societies through individuals bi-socially oriented.

(3) Both kinds of structures are relatively stable, outlasting the lives of the individual members of the society or of the speakers of the language.

(4) A language may have dialects distributed in space, or distributed in terms of social levels, or distributed in time, or as differences in style of a particular speaker. Any one style or dialect, furthermore, may be simultaneously structured to contain co-existent systems or fragments of systems of various segmental and suprasegmental types. Similarly, a society may have variation geographically, in spite of over-all unity. There may also be subgroupings (S-social-dialects) according to particular strata in the over-all society. But, in addition, there may be many interlocking groups (S-interlocking-systems) relevant to any one segment of a society at any one time where various individuals are simultaneously members of different groups with different functions.

(5) The structure of a particular society comprises a set of relationships in a network. Individuals having relationships in this network have relevant contacts with other persons not only in a hierarchical ordering of groups within groups, but across such hierarchical lines--the lowest commoner may wave to a passing king. In addition, since a single individual may act in several roles --as father of a son, son of a father, husband of a wife, etc.--the individuals are not members of a single hierarchy but form a network of crisscrossing hierarchies and relationships. In this sense a society constitutes a system of individuals within a network just as a language has a network of sounds all in contrast directly one with another, of syllables likewise in contrast, of words and sentences in contrast, and so on. As language utterances in sequence form a hierarchy of parts, whereas the language units as an abstract system constitute a network of intersecting hierarchies, so society likewise has the activities of its individuals sequentially but hierarchically structured while the relationships between those individuals themselves are integrated in a total network.

(6) Further parallels between society and language can be seen when we view both within our trimodal conceptual framework. In a society, as in language, we see (a) identificational-contrastive features of units, (b) physically-manifested variants of the units, with problems of their segmentation, and (c) distributional function of the units relative to more inclusive structures and in reference to their internal structuring by way of functional slots and appropriate classes of units filling those slots. We approach this material first in general terms, and then return to it more specifically in terms of hierarchy types and certain units of those types.

(a) The identificational-contrastive mode of a language--or sentence--as a whole involves its meaning, significance, or societal impact. The significance of language is its communicative relevance to a society. Thus the "meaning" of language might be said to be 'fruitful communication between its members.' Comparably, the significance of society (the S-meaning), might be treated as 'maintaining orderliness of personal interaction.' Whereas the breakdown of language would result in isolation of individuals into communication chaos, breakdown of society would result in the chaos of a struggle in which each was against the other.

Comparable also to language meanings or purposes are perhaps certain related components of a society: self-awareness as a group, essential to its coherence; esprit de corps, contributing to its driving thrust; shared, articulated goals, values, and cognitive orientations giving direction, sustaining motivation, preventing the on-set of disintegrating apathy, and allowing for rational organization; psychological orientation, or ethos,

characterizing the outlook of a group or part of a group; rules, customs, rights, and duties of the group or part of the group, outlining some of its expectations or responses. These characteristics, and more, seem to be some of the S-meanings of a society or components of a society.

Analogous to the more tangible identificational-contrastive features of language are the formal features of a society which identify or contrast it with other societies: language, as part of a communications system, essential to maintaining and passing on the crucial S-meanings of the society; habitual shared patterns of behavior, essential for coherence in self-awareness, for maintenance of life, for recruitment and training of members, for regulating emotional situations, for defense against attack by force or fraud from inside or outside the group, and for carrying out tasks set in reference to the shared values and goals--whether the goals be economic, normative, political, or educational. In addition, the specific membership in the society would be a formal identificational-contrastive component of its over-all feature mode, as the membership of a class of morphemes is a contrastive characteristic of that class.

(Similarly, the structural sequence of included obligatory and optional S-tagmemes might be viewed as a characteristic of this mode; cf. §11.44, Table 3. But see below, Subsection (c), for a slightly different approach.)

(b) Within the conceptual framework as we have been developing it here, we have never completely abstracted language or language structure away from the physical matrix. We have persistently maintained a manifestation mode as a component of each of our units. This has resulted in retaining the relevance of the physical, phonetic content of sound units or of words as part of their structure. The analogy with the study of society is to retain a physical component in the statement of social structure. That is to say, that the structure of society, seen from this point of view, would include the grouping of the individuals within the society, rather than be constituted exclusively of a mathematical network of abstracted relationships between its members. As we have dealt with language as a structuring of verbal behavior--as a structuring of the particular verbal events or as the events in a structured pattern--so the structuring of society would in this view involve the grouping of individuals in a structure rather than a pattern of grouping abstracted from their relationships. Our units of society would then always involve a physical component, the individuals organized.

As the manifestation mode of language involves a segmentation of its included units--segmentation which frequently is indeterminate at the borders even though the centers of the units may be clearly identified as being present--so the physical component of social structure would in this view involve the segmentation of a society into groups. The presence of structured groups might be clearly identified, even though their membership at times would be overlapping, or indeterminate at the boundaries, without destroying the possibility of the identification of the presence of the segment by reference to their centers.

The manifestation mode of language emphasizes variants of the occurring instances of its relevant units under different circumstances. Units of society, likewise, have variants in terms of their membership, where the membership varies in time or in terms of the particular situation in which the group is functioning.

(c) As, in language, our conceptual framework involves functional slots with classes of verbal behavior appropriate to those slots in various hierarchical levels and in various systems and subsystems, so the similar concept is crucial to our view of society. The distribution mode of society in reference to its internal structuring would involve the relevant slots or positions in the society which are appropriately filled by individuals or groups of individuals, and which must be manned if the society is to survive. We shall return to this concept in more detail, presently, in reference to role and the S-tagmeme.

The external distribution of society involves the contact of one society with another in larger loose-knit associations (such as the United Nations) or in the network of human society as a global whole. It involves, also, distribution in an identifying geographical area, even though the borders may be indeterminate (or overlap in the case of emigrants retaining nationality abroad). Geographical distribution, in turn, implies not only spacial occurrence as such, but physical restrictions which limit the range of possible behavior patterns concerning travel, building, clothing, food, and the like. Distribution in a time sequence, furthermore, affects available heritage of physical and mental behavior patterns, physical products of prior behavior, both of that society and of others with which it directly or indirectly comes into contact.

(7) One further analogy needs to be explored before we pass on to the study of specific groups within a society. Is there something in society which can be compared to the lexical, phonological, and grammatical hierarchies of language? The answer to this question is by no means clear. Yet the possibility is sufficiently great to warrant study.

As a starting point we note that in every society there seems to be at least a double structuring such that there is the physical grouping of all individuals into kinship elements, on the one hand,

and into various kinds of adventitious groups such as football teams on the other. It is possible that this difference--often sharp--shows us where to begin to look for a difference in societal groups which would parallel the difference between phonological versus lexical units in language.

We assume that groups of individuals are comparable to the physical groupings into phonemes, syllables, and stress groups, or the like, if they have identifying criteria (1) which are physical, essential, universal or nearly-universal in all societies, (2) which cut across the entire population of a society, and (3) which have characteristics which make them functioning units in the society (e.g., as an organized warrior class). Within this type of grouping would be included, amongst others, some general kinds of kinship structures.

Age and sex differences can cut across a kinship structure, but would usually be considered as identificational-contrastive components of the kin structures (i.e., as a 'category' rather than an emic unit)--except, for example, where an age group as a whole has certain unifying behavior patterns and cognitive features which weld it into a functioning unit. In this latter instance it might be necessary to treat an age structuring as in some sense S-suprasegmental to a kinship structure, simultaneous with it.

The particular details of groupings can not, of course, be rigidly prescribed for all societies, since that would be attempting to force a generalized etic a priori grouping on to a particular emic situation. As for language, so for society grouping, the general etic categories with which an investigator begins to study a society must be treated as only preliminary starting groupings which must give way to groupings identified by structural criteria for that particular society. In a particular instance, for example, some society-wide groupings such as the strata of a caste system might serve as higher levels in the S-phonological hierarchy.

If the physically-identified but society-wide groups of individuals are considered as vaguely analogous to the phonological units of language, the regroupings of sets of individuals into units for special purposes would be considered analogous to lexical units. This conclusion is based on the fact (1) that the phonological units of language are in this theory assigned to the physical, manifestation mode, (2) whereas in language the lexical meaning is largely found attached to morpheme clusters and (3) meaning of a lexical type is treated by the theory as analogous to purpose in nonverbal behavior. As phonemic units can arbitrarily be joined to form morpheme units such as cat and dog, so individuals who in their selection cross over kin-group lines may be joined into various units for particular purposes. A high specificity of purpose of such a small group--for example to play football--adds to the strength of this analogy, by paralleling the meanings of many morphemes. The purpose of such a group, when it is specifically goal-oriented, has this lexical-like flavor, as over against the much more diffuse purpose of a kinship group. Just as the analyst may decide that the "meaning" of a phonemic system is its contributing to group solidarity, so kinship groupings contribute to such solidarity. But this type of meaning is considerably different from that of a specific goal-directed group where the society itself verbalizes the purpose of such a group.

Similarly, (4) the openness of a class of morphemes, such that the number of morphemes can be in principal infinitely expanded, as over against the closed number of phonemes for a language, seems to be reflected in the possibility of developing an unlimited number of specialized groups dedicated to particular purposes in society, as over against the essentially limited number of kinds of kin groups, or functioning age groups, or the like, in that same society.

Groupings of S-morphemes--of small purposeful groups in a society--into larger wholes would constitute the higher layers of the S-lexical hierarchy (i.e., S-words or S-phrases) just as a clan including smaller family units could be a higher unit of the S-phonological hierarchy (i.e., an S-syllable or S-stress group).

We now turn to discuss the presence in society of possible analogies to grammatical units and hierarchies of these units. In language, the minimal unit of the grammatical hierarchy proposed by this theory is the tagmeme.

We may list several of the components or characteristics of this unit which are important to us at the present stage of this general discussion; more detail would be required for elaborate treatment. Each tagmeme has a relevant (emic) slot (or position) in a larger grammatical structure. Thus John comes in a subject-as-actor slot in a sentence type of which John hit Bill is a particular illustration. Such a slot often has a detectable meaning, for example--in this instance--'subject-as-actor.' The slot in this particular sentence (chosen from the class of sentences making up that sentence type) is filled by one of the members of a distribution class which in turn is defined and identified (1) by the fact that its members can fill this structural slot in the various manifestations of this sentence type or (2) by the fact that the same members can fill other tagmemic slots in this or other sentence types. Thus Bill fills the subject-as-actor slot in the cited sentence, but might be replaced by Joe, John, the boy, etc. Similarly, each of these may occur in the object slot, as in He saw Joe. This distribution class,

the filler of the slot, may also have a meaning--though often vague or inconsistent; in this instance the meaning of the class might be called 'object.' The tagmeme as a whole, then, is in general comprised of a significant slot-in-a-structure with an appropriate class of filler.

The S-analogies are perhaps as follows:

An S-tagmemic-slot would be a slot, position, or STATUS (or STATUS-SLOT) in some type of organized group of people. Occasionally members of the society call such an S-slot an 'office' (e.g., the 'office of president') or 'job opening' or even 'position in the company.'

The S-meaning of the S-slot would be comprised of the privileges, standing, influence on or power over other people in the society, and expected behavior of the occupant of the status-slot. The S-meaning of the status-slot, in sum, is the ROLE of the occupant, with especial emphasis upon the appropriate behavior in view.

The S-filler of the status-slot is first of all viewed as the immediate occupant, the incumbent of a particular slot in a particular instance of a particular society type, as Mr. John Doe might be president of the federal bank in Jenkins City. In addition, it should be noted that the S-filler is considered to be the total distribution class of members immediately eligible for filling that slot in that society type. Thus, if the organization of certain federal banks is considered to comprise a structural type, then the sum of all the bank presidents of this particular type would constitute the S-distribution-class (or STATUS-CLASS) as an S-filler of that S-slot.

The S-meaning of this total S-distribution-class would then be the abstracted set of personal and professional characteristics of that status-class of federal bank presidents. As it is for language-class meanings, so this general status-class meaning would be inconsistently applicable to some members of the class. It would nevertheless be emically relevant, since members of the community sometimes react to such persons as if they had these characteristics. That is, the S-class-meaning is to some degree a stereotype, and functions as such in the community. (The STEREOTYPE meaning would be, thus a conceptualized hypostasis of the status-class meaning.)

The S-tagmeme, as a whole, would include each of these components--it would be a concept combining status-slot, role, status-class, and stereotypic meaning. In addition, however, it suggests that there is a functional unity here which is structurally relevant to the society. (No single, current, common term refers to the S-tagmeme uniformly and unambiguously. The term 'role' is specialized above to refer specifically to the behavior and standing of a person occupying an S-tagmemic-slot. On occasions when no ambiguity is likely to occur, the term might perhaps be conveniently applied to an S-tagmeme as a whole until some other simple but less ambiguous term is found.)

The S-tagmeme, like other emic units, may itself be viewed trimodally. In such a view, the status-slot meaning, and filler status-class with its meaning, would be components of the S-tagmeme's feature mode. Its occurrence in larger structures, and any internal structuring within it would be characteristics of its distribution mode. The fact that the status-class can be manifested in a particular instance by any one of its members leads to variants of the manifestation mode; in this mode, also, might be found variants in terms of geographical occurrence of a particular type of structure within a particular society, and variants of these kinds.

17.2 An S-Sentence-Type within Society

We turn now from the broad generalizations concerning societies and languages as wholes, to a particular group in American society. This particular group is a 'college-football-team.' The structure of the team as a group is now in view, rather than its behavior which we discussed briefly in Chapter 4. The specific structure of a football team is relatively independent of other structures within the society. It would, therefore, imply a fairly high quasi-independent place in this particular part of the society structural hierarchy. Because of its relative independence and internal coherence, we suggest an analogy between a particular 'college-football-team' and a 'sentence-type' (i.e., the football team is an S-syntagmeme).

17.21 Feature Mode of the Football S-Syntagmeme

The feature mode of the S-sentence-type 'a particular college football team' includes, among other components, the purpose of 'playing the game according to the written rules' (see Official, 1956) and the unwritten customs of sportsmanship. The specifications, by the rules, of number and characteristics of players, kinds of permitted and prohibited activities and goals, and the type and organization of playing field and equipment, allow one to identify this game when one sees it and leads to contrasts between football, baseball, tennis, hockey, or warfare, and so on. A second component purpose is to 'play to obtain the status of winner of the game in hand, and of champion in a league as a whole.' The first is somewhat analogous to 'understanding' in verbal activity, and the second to 'intention,' 'elicited response,' or 'meaning.' If the second were to override the first, 'cheating' in

football would develop in a manner vaguely analogous to verbal 'lying,' in that the elicited response--elicited status of winner--is not in fact justified by the actual behavior in reference to principles tacitly or explicitly accepted by the community.

The formal components of the feature mode of the football S-sentence-type include classes of the individual members of the full squad of regular players and substitute players available and eligible to fill any of the slots of the team-on-the-field, and the observable patterned, shared behavior characteristic of these individuals. The full squad may be treated as an S-dictionary for this S-sentence-type. On a program giving the personnel for a game, the members are often listed alphabetically with a key to indicate which are halfbacks, quarterbacks, ends, and so on, as a dictionary labels entries as nouns, adjectives, verbs, and the like. From this point of view, then, the separate players are S-morphemes (or perhaps S-words).

At the top of this S-lexical hierarchy of this S-sentence-type, however, would be the S-sentences themselves. These would be the various actual varieties of the team-on-the-field from moment to moment. At each substitution of a player, a new S-sentence would be formed (as Bill hit John is a different sentence from Joe hit John). The sum--the class--of these many different S-sentences is one of the components of the feature mode of the team as a whole, i.e., of this S-sentence-type.

In addition, the structural, contrastive sequences of included S-tagmemes (which will be discussed in §17.23) comprise part of the feature mode of the emic team. The arrangement of front-line slot with its fillers, in relation to the back-field with its fillers, characterizes college football, and contrasts it with unrelated games such as baseball.

17.22 Manifestation Mode of the Football S-Syntagmeme

Thus far, however, we have been viewing the sum of all substitute groups as making up the total team. We now change our vantage point and view any one S-sentence--any particular team-on-field as somehow representing the team as a whole. If the team-on-field scores, the behavioral reaction and status effect is that of the total team scoring. The final score and win-status has no essential structural reference as to which team-on-field made this-or-that-part of the score for the total team. All the unplaying-substitutes of the squad win along with the team-on-field which represents them. Disappointment at not getting to play, or at an unfortunate play, is personal rather than team-structural. From the point of view of structural reaction, when a team-on-field makes a play the total emic team--the S-sentence-type--makes the play.

Now since in our theory any one variant of a unit manifests the unit as a whole, these S-sentences are simultaneously components of the manifestation mode of the team unit; there is a strong modal overlap here. Thus a particular team-on-field is a membership variant--a membership allo-unit--of the total emic team unit (i.e., as an S-sentence is an S-allo-sentence-type, an S-allosyntagma).

In between a total team-on-field and the individual-players-on-field are intermediate structural variants. A particular combination of individuals may make up, say the 'first-string-backfield'; another group may be the 'second string.' One of these particular sub-groups, by analogy, may be called an S-phrase; a particular forward line combination would be a different kind of S-phrase.

The variants so far mentioned are made up of substitutions of personnel. Other kinds of variants --a different, crisscrossing kind of S-allo-sentence-type--are constituted of field arrangements of personnel, and are conditioned in part by the place of their occurrence in slots in larger structures. For example, the team-on-field when playing defensively (i.e., in the S-response-slot) has various structural options not open to the offensive team which is in the S-utterance-slot). The offensive team-on-field must retain at least seven men in the front line ('the scrimmage line'). The defensive team may have more or fewer there. Thus a four-man front line becomes a part of a team variant of a restricted (partly-conditioned) kind. The defensive team often pulls some of its men to a place considerably back of the line in order to defend against a pass attack. (Such a team variant may be viewed both as an S-allosentence and as an S-allosentence-type, since the particular team-on-field personnel varies in its arrangement at that moment, while this particular arrangement may be preserved through various changes of personnel.)

Both the offensive and the defensive team-on-field, however, have certain free structural options as to the precise degree of closeness of the players. The men on the offensive front line may be close together (although no more than the center and one man on either side of him may lock feet), or somewhat far apart (provided that none is more than fifteen yards from the ball, and all are inbounds). Within these limits, free variation in the lateral starting position of men on the offensive front line is permitted. Certain variants are favored--more frequently used than other variants--by certain teams for certain purposes (e.g., a variant in which the two ends are relatively far apart; or a line unbalanced to one side, with four versus two men on

one side of the center; and so on). The defensive team has similar variants but without these restrictions:

R8/2/1.8: T-- looks over Minnesota's 5-2-3 defense, then he shifts the Wolverine's unbalanced to the right, single wing, K-- deep, B-- close; R8/2/2.9: T-- looks over Minnesota's 6-2-2-1; R8/2/3.8: Minnesota operating now in the defensive pattern with five men on the line, three line backers , . . . with two halfbacks , . . . and the safety man.

Segmentation problems also enter the area of study of the manifestation mode. And as provision for indeterminacy must be made in segmentation of language units, so it must be here. For example, what is the structural position of eligible substitutes who do not get to play? Since they never become part of an S-sentence--a team-on-field in competition--are they part of the emic team? Or if they are trying out for the squad, but have not yet been accepted or rejected as permanent members of the squad--what then? Or if they are on academic probation and not eligible for official competition? Segmentation in such instances is as arbitrary as it is in linguistics if one tries to draw a line between as and you (in as you like) when they partially fuse in rapid speech. For some purposes (when units as bounded 'particles' are in view), it is essential that the line be drawn, even though this must be done in an arbitrary manner--as when some members of the squad are awarded a "letter" to wear, as a token of achievement of full team status. For others (when one wishes to study the manner in which units as 'waves' overlap and fuse), no sharp boundary is drawn, but the data are left as indeterminate.

17.23 Distribution Mode of Football S-Syntagmeme

If we treat a particular team as an S-sentence-type, then a pair of such teams in combat with each other may be called an S-utterance-response-unit. At the moment when a team is on the offensive it would be filling the S-utterance-slot; when on the defensive, it would be playing the S-response role.

The single league, say the Big Ten, would constitute a higher layer in the hierarchy--as an S-paragraph, perhaps. If so, the national collegiate league, in turn, would then be an S-conversation.

The distribution mode of the emic team has reference not only to its occurrence in an S-utterance-response competitive series, and in a league, but also to its internal slot-plus-class units. (For a theoretical problem involved, which might assign some of these characteristics--in sequence--to the feature mode, see §§11.44, 17.21.)

Each man on the team has a role to play in reference to the particular slot on the team which he occupies. The person in the offensive-quarterback slot, for example, calls the plays which are to be attempted. The man in the center slot of the front line initiates the play by moving the ball from the ground. The ends of the front line may run down to receive a pass, and so on. These different structural slots are equivalent to the tagmeme slots in a sentence type, and therefore may be called S-tagmeme-slots, or status-slots. The S-morphemes--the individual players--may replace other players in the relevant functional slots on the team.

Sometimes the use of language of those reporting a football game approximates our technical terms. Note, for example, '. . . and P-- and D--O-- will alternate at the safety slot' in the defensive field arrangement (Michigan Daily, Saturday, October 25, 1952).

Particular tagmemes may be modally described. The quarterback S-tagmeme has, as part of its feature mode, the responsibility for offensive strategy and the calling of particular plays. The total membership of the quarterback S-tagmeme, including substitutes available on the squad, would be a formal part of that mode. The manifestation mode of the unit would include particular variants represented by the specific individual occupying the slot-on-field at a particular time. The distribution mode might include his place among the backs, all of whom by rule are required to be in physical position at least a yard behind the linemen (except that one and only one back is permitted to be immediately behind the center--an option usually exercised, if at all, by the quarterback).

A distinction, however, must be made between S-tagmemes which might be treated as optional, since not required by the rules themselves, and those which are obligatory. The quarter-back S-tagmeme is in this sense optional. Always, however, one is used on offensive. On defense, occasionally one sees a team-on-field with no quarterback present. On defense an optional but expected arrangement would sometimes include a person in safety position, far back on the playing field to defend against a kick or long pass. The player in that slot might well be the quarterback (with this as an added quarterback function in that allodefensive arrangement--i.e., as an alloposition variant of the quarterback S-tagmeme). If the player in safety slot is not the quarterback, the emic arrangement of the defensive team-on-field would involve the reassignment of that etic-safety-slot to a different S-tagmeme.

The position of field captain on the other hand is an obligatory one, required by rule. He, and he

alone, is legally permitted to speak for his team in any dealing with officials. He exercises for the team options available to it as to which goal his team elects to defend, calling for time-outs, acceptance or declining of application of penalties which the officials offer to apply to the opposing team, and so on. Any player on the field, however, may be appointed to serve as field captain. This slot is not mutually exclusive with that of quarterback, halfback, end, center, and so on, but can be simultaneously held by a person who is also in one of these other slots. The status of that of captain is superimposed upon one of the individual team functions and has reference to the team as a whole, but is not structurally related to any other one particular playing slot. The field captaincy, therefore, we will tentatively consider an S-supra-segmental-tagmeme.

Sometimes the squad has a small degree of structuring off the field as well as on. Thus for many teams the team captain is automatically the field captain while on the field, but in addition is their squad captain, and speaks for them during the entire season at banquets, and so on. For other teams, the captain may be appointed just for the one game, and function only on the field.

Higher-layered S-tagmemes (S-hypertagmemes) must be postulated to allow for the action of sub-groups on the team prescribed by rule and by strategy. The group of linemen manifest one such obligatory unit, with variants as to number, physical positions, and permissible actions differing according to offensive versus defensive function. A group of backs fills another such obligatory S-hypertagmemic-slot, with strategy free variants which differ sharply as to arrangement.

In the larger spectacle of the football game being played, moreover, the player has a participant role in the team. The official has a controlling or judging role. The coach has a teaching and advising role. The onlooking fan has an observer role. The radio announcer describing the game for other listeners has a specific kind of an active observer role in which he is a vicarious observer for others. The spectacle as a whole, therefore, has an S-tagmemic structuring of its participants. This structuring is intricate, with overlapping intricate details which we have only sampled here. We have not mentioned, for example, rules affecting spectator interference with the players (leading to interlocking activity hierarchies of the two groups).

17.3 An S-Syllable within Society (the Family)

If we adopt the point of view as tentatively suggested in §17.1 that physical types of grouping cutting across a society may be analogous to the phonological hierarchy of language, and if we take a kinship system as one such S-phonological hierarchy, we must then indicate what would be the analogies to phoneme, syllable, stress group.

The S-syllable analogue might be a family group. Within any one S-syllable the particular individuals in kin roles might be S-phonemes. As different syllables may have similar structure but different specific phonemes, so different families in a society as different S-syllables have different S-phonemes constituting them.

An alternate way of developing the analogy would be to treat a particular kinsman as analogous to phone instead of to phoneme. (See §17.7, in reference to Lounsbury.) Then, in a particular society, the 'father class' rather than the particular father would be analogous to the phoneme. A particular father would be an instance of occurrence of that phoneme. This approach avoids the postulation of a very large number of S-phonemes for any one society, and is therefore closer to results of language analysis.

The feature mode of this family group would contain characteristics identifying the unit and contrasting it with other groups in the society. The particular membership of the family--specific parents and children--would constitute one of these features. The family has a task to perform which is to provide a matrix for harmonious working and growing together in an orderly fashion, just as the syllable provides the physical matrix for communication.

An essential feature of the identification of an S-syllable--comparable to the necessity for a chest pulse in the phonological syllable--would be the presence of a married couple as the minimum but complex S-nucleus of the family. If the nucleus is represented by the married couple, then the children would represent marginal S-consonants. So far so good, but the analogy is then not immediately useful if one returns to the football team where the S-syntagmeme would not then include any S-syllables, since the family unit does not function in the team. The family S-syllables are S-phonological-units for the society as a whole, including the football team indirectly. Once the football team is viewed in its matrix of support, this support comes heavily from the family unit which fosters its members going to school.

When, however, one drops focus to the team alone, the family S-syllable is irrelevant. A different physical structuring of the team membership coexists with the kin relationship and is more immediately relevant. For the team itself, then, an S-phonological analysis would require a hierarchy which by-passes the family. If, however, we had been discussing a society and a game where families, as such, participate, then the S-phonological hierarchy of the society as a whole and the

S-phonological hierarchy of the included subgroup of the total S-lexical hierarchy would have been more immediately and mutually relevant on the same levels of their respective hierarchies.

The manifestation mode of the family S-syllable includes its variants. In our family illustration, the addition of children would result in S-allosyllables. Death of one member would also cause variants. If, on the other hand, there were to be remarriage of one of the partners, with additional children by the step mother, say, then half-sibling children would constitute a partial 'portmanteau' overlap of two S-syllables, with an indeterminacy at the boundary.

The distribution mode of the S-syllable would include the function of the particular family as a member of a class of such families (an S-class of S-syllables) in a larger structure. A class of genetically related families functioning as a unit in the society--say a clan--would be analogous, perhaps, to higher level phonological units. We will suggest, therefore, that a clan may be considered tentatively as a S-stress-group, with a moiety as an S-pause-group.

Internally within the S-syllable is a further distributional structure. In our society the status-position occupied by the father (who in turn is a member of a status-class, one of whose contrastive features is that of adult male), carries with it the S-class-meaning or role of 'breadwinner,' 'partial disciplinarian,' and so on. The wife and children fill other status-positions. In terms of immediate constituents, the relationship between husband and wife in our society is in some way nuclear as over against a marginal function of the children, as we indicated above.

17.4 The Individual

We assume, to begin with, that the individual is at least as complex in his internal structure as the language is which he speaks--otherwise, how could he speak a language which is complex? Something within his structure, furthermore, is presumably responsible for the structuring of his language and of his other behavior. It would seem possible, then, that some of the structuring phases of the individual himself might be analogous to structured components of language. It is this pair of considerations which gives us courage to suggest some of the analogies below. The same observations, however, would suggest that the seeking of these analogous materials in detail would be a very extensive process--a process which we are not prepared for. Our suggestions are merely pointers, therefore, rather than any attempt at analysis comparable to that which we have presented for language structure. As we used the prefix S- for suggested societal analogues of language, so we use the prefix I- as individual, or person analogues.

For the identificational-contrastive features of the individual we look first at elements of I-purpose and I-meaning. Specific characteristics of a goal-directed type, especially when these are in a zone of awareness, would certainly be in this I-feature-mode, analogous to one component of the feature mode of the morpheme. Possibly here, too, would be placed beliefs, values, desires, ideals, standards, and the like. A particular individual has influence on some of his fellows, and in turn is likely to be influenced by others. This component of relative influentialness becomes a part of the feature mode of the individual. Apathy, as over against purpose, could contrast individuals as its presence can fatally differentiate societies, causing their death. Self-awareness itself would presumably be an identificational-contrastive feature of a human individual as over against a tree or a dog. Concepts and ideas, insofar as they can be handled in this conceptual framework, presumably come here also. Emotional states would in general be here--though it is highly possible that the affective characteristics of the individual may be in a different subsystem of the personality, in a further analogy that we shall mention presently.

The presence of components such as value and purpose in the individual is detected in the same way that meaning in language is detected: either by studying distribution of acts by the individual, in which case the presence of meaning and purpose is deduced by the analyst-observer; or by inquiring of the actor directly, or by gathering comments about these matters made by the individual when he is "off guard." In each of these instances there are available objective clues for analysis. The analyst may discover the personality structure of the individual as perceived by the individual himself, or the analyst may find something of the personality structure as it is assumed to exist in reference to its relation to the community as a whole or in reference to other objective criteria. Both approaches are relevant to understanding the I-meanings of the individual, as they are to the understanding of language meanings.

The formal features of the individual include reference to his physiology, and any identificational-contrastive components which can be expressed in physical terms. They differentiate man from dogs, trees, and stones, and differentiate one man from another. These characteristics, then, include facial contours, body, sex, age, size, and shape as well as the nature and function of internal organs.

Identity in the form of continuity of personality is an extremely important characteristic of the individual. If continuity were not part of the identificational characteristics of man, a person could

not be sent a bill today for something he bought yesterday, as the Greeks seem to have pointed out. For society to operate, it must assume that John Doe in the morning is the same I-emic individual as John Doe in the afternoon (see §6.65, and compare §16.823).

The manifestation mode takes account of the changes within this recognized continuity. John Doe in the morning is an allo-John-Doe; in the afternoon there is a different allo-John-Doe. The allo-units of John Doe do not destroy the identificational-contrastive unity of him as an individual. Changes may come about in his physical nature by age, by environmental impact, and the like. Changes can also affect his cognative, affective, or value components. He learns, he gets angry, and he changes his standards. These changes also lead to allo-John-Does. In an allo-state he may be awake, asleep, alert, tired, careless, and so on.

Just as an informant may have his structure affected by being asked questions (so that the informant is "spoiled" as an informant, because he is made aware of things to which as a naive informant he would not normally react--see §6.44), so a person's cognative and emotional structures are affected when items are forced to a level of awareness. Curiously enough, that which to the linguist is detrimental--since, it changes the structure which he wishes to study, before he can finish that study--is a major tool of a psychoanalyst. By forcing to awareness components of the structure, he succeeds in changing the structure.

In terms of segmentation of the individual, boundaries on the whole are fairly clear. Occasionally, however, segmentation problems arise as when Siamese twins are born. Here there is an indeterminacy of the boundaries of both individuals, inasmuch as there is a partial portmanteau involved where two individuals share a single vital organ or other portion of their bodies.

The internal structuring of the distribution mode of the individual would from a physical point of view leave him a bundle of physiological organs and parts such as nerves, liver, eyes, and feet. From the psychological and social point of view his internal distribution has more reference to components of expectancies in reference to his nature as a social actor. He is a bundle of roles, in which the roles on the one hand constitute part of his identificational-contrastive features as an individual, and on the other hand reflect the internal structuring of his social personality. His distribution mode includes components of his status in the kinship network, age groups, sex groups, and other (S-phonological) physical groupings of his society. In addition he has a distributional place within slots of other (S-lexical) groups crisscrossing these, such as religious groupings, groups for playing games, for educational activities, and so on.

It must also be noted that the individual is distributed in a physical matrix, geographically, climatologically, and in reference to the particular kind of physical objects which surround him.

It would appear that the I-meanings of the feature mode, as given above, are highly diverse. Is there some way in which our theory would suggest that this might be accounted for without destroying the modal approach? The answer appears to be in the affirmative. It would be necessary, however, to increase the complexity of the analogies at this point by suggesting (1) that there is an emic progression of structural units within structural units (§12.3) within various of these components, and (2) that there are various I-componential systems which are either simultaneous or complementary. The simultaneous systems would in turn have their units modally structured. Diverse items which are assigned, say, to the feature mode as a whole would then be reassigned to the feature mode--or other mode--of various units within components of the respective systems. (Cf. outer units, §13.6.)

This task we have not undertaken seriously. It could probably be undertaken usefully only by someone whose speciality is dealing with the individual. On the other hand, it might be of interest to suggest a few clusterings of elements which might conceivably be treated as components of a subsystem in some such over-all view.

There might, for example, be postulated a subsystem of the personality unit such that its feature mode would include the understanding of what it would be wise to do (i.e., wisdom, reason). This would be analogous to the meaning component of language. The manifestation mode of this subsystem would include the programming of the personality to prepare it for action (i.e., intent, will), in accordance with or counter to wisdom and obligation. Here the analogue would be to the manifestation mode of language in which specific acts and events are in view as physical entities; the will to act would line up the personality ready for such physical action. The distribution mode of this same subsystem on the other hand, would be constituted of a conviction as to what one desires or ought to do (i.e., feeling, emotion, desire, or conscience). This would constitute the distributional background within which understanding and the will to action occur. The inclusion of both desire and obligation in the distribution mode, however, hints at a further needed subdivision of subsystems at this point, or may imply that the basic set of analogies itself needs revision. The internal warfare involved in choosing to do what one wants to do versus what one feels one ought to do would suggest that there are clashing subsystems

involved. The presence of substructure of this kind in the personality is perhaps supported by instances of double personality in which a person while acting the role of one of his substructures may be unaware of the existence of the other.

If belief systems, standards of morality, and so on, when affecting a person's judgment and actions are not brought to the level of conscious formulation, it might be possible to treat them as I-subsegmental. If, however, these are codified into specific spoken or written laws, it might be necessary to treat them in this case as having been brought up to I-segmental status. (Compare subsegmental and segmental concept formation as treated in §§16.6-7, 16.86-87.)

17.5 Things

We now turn specifically to the discussion of the physical matrix of society. All activity of the society occurs within and somehow in reference to a physical matrix. People must live and act within a geographical place, in physical dwellings, with physical clothing, and come in contact with these items through their physical bodies.

If this were all that were involved in the physical matrix it would not be interesting to add to this chapter. The important point which makes it relevant here is that items as experienced take some of their perceived characteristics from that experience. The individual is unable to experience his background coldly and interpret it completely neutrally. All phenonema, all "facts," all "things," somehow reach him only through perceptual and psychological filters which affect his perception of the structuring of and relevance of the physical data he observes. (Cf. §§16.823-24, 16.86, 17.76.)

(In my own epistemology I assume that there is some type of ultimate truth, including an ultimate way of looking at the structure of physical reality. This truth, in my view, would be the emic perception experienced by God, who in turn could focus upon the emic perception of individual men as a component of the total reality available to His observation. Since, however, His views on such matters are not available to us, it does not seem to affect our discussion here. This fact, in turn, leaves us always with the empirical possibility of a plurality of equally-true--or equally-false--observations, coming from different standpoints and from different observers.)

We seem, then, to be left with some relativity of phenomena--a relativity due to and limited by the fact that the nature of the observer inevitably in part structures his observation of the matrix of his behavior, just as it structures significantly and sharply his emic perception of the significance of acts of behavior in his own culture or in that of others. This is merely a way of indicating that the observer is part of any equation where perception is involved. The scientist who reads a moving pointer on a dial is in some sense limited by his own internal equipment which determines the nature of his reactions to the perceived reflected light. His perception of the space-time continuum and of his instruments which record data about this matrix are in part a product of his own internal structuring. "Things" and "man" are not divorced from each other but are involved in a larger complex such that man's own structure is involved directly or indirectly in his perception and discussion of either.

We do, however, make a crude distinction for practical purposes--a distinction, however, which runs into indeterminacies of various kinds--between (1) items of the physical matrix which are not part of the deliberate products of man's behavior (and are affected only in the perceptual sense mentioned) and (2) those which wholly or in part are made by or modified by man's purposive behavior.

Unplanned components of matrices include such things as a rainstorm affecting the course of a football game by leading to fumbles of a slippery ball, or of a dog wandering across the field disturbing play. On the other hand they may include a mountain "just sitting there" but "waiting to be climbed" and hence the passive matrix of planned behavior. These, however, all differ sharply from the football field, in which the planning of the line placement is deliberate, as is the levelling of the ground. This prepared field as a passive matrix of the game is in turn different from the football itself which becomes involved in the behavior directly.

We wish to indicate the general direction in which research might conceivably go to try to analyze any one particular physical item through our conceptual framework of feature mode, manifestation mode, and distribution mode. The problem is in part impossible since such a generalized statement requires first that the various types of matrices--of which we have hinted at a few--be separated out so that they would not interfere with one another in such a statement. Nevertheless, a few preliminary suggestions can be made.

We begin with a particular football as an item to be analyzed. Here the identificational-contrastive feature which is analogous to meaning and language or purpose in behavior would seem to be USEFULNESS or EXPECTED USE. Note that it is precisely at this point that the observer is brought into the equation in reference to the football. Meaning, purpose, function, and utility seem to be the bridge by which a physical thing or a physical behavior pattern enters into the structuring of

society or of the individual and his behavior patterns.

In addition, the observer is brought into the description in that one of the identification features of the football is the individual's specific emic perception of that football. The football in its full utility has its character as an emic component of the emic matrix only for those individuals who know enough about football to identify this object as relevant to that game. The football would not "mean" the same thing to a Hottentot as it would to an American. This, in our view, is one of the identificational-contrastive features of the football itself--that is to say, by 'football itself' we do not mean the concatenation of molecules as a "thing-in-itself," but an item which has its structure and relevance within the matrix of human perception and behavior. If one attempts to describe the football exclusively as a concatenation of molecules, and all that goes with it for the physicist or chemist, one must note that these concepts in turn are the result of the emic structuring of a person--the scientist--and the proposed units are not immediately perceptible to him. His experiments and his private cultural history structure him so as to use these terms in order to "understand" the football on a microscopic scale. The observer is not by-passed by going to the microscopic level.

Formal contrastive features would include the length, girth, weight, two-pointed shape, lacings, seams, bladder and pressure of air in it, and the composition and color of its cover. All are specified by the official rules.

The manifestation mode of the football would include its variations from day to day as it gets more and more worn out. The rules specify maximum and minimum permitted dimensions, i.e., free variants. Conditioned permitted variants are also specified: A white or colored ball may be used for night games, if there is mutual agreement between the teams. A team on the offensive has the option of using a rubber-covered ball instead of the more normal leather one--or both teams may use it by mutual agreement.

Its segmentation from the rest of the physical matrix poses no practical problem. The actors know where the football leaves off and the atmosphere begins. On a much more technical level, however, segmentation of the football from the surrounding atmosphere may be very difficult or impossible. There may be an indeterminacy since the gases from the atmosphere penetrate the skin of the football, and so on. In addition, the segmentation of the football on the technical ground of perception is also an elaborate procedure. Specifically it involves all the psychological problems of figure against ground--details which we shall not discuss. One may note in passing, however, the perceptual sharpness of break between the edge of the football and the surrounding matrix. This sharpness of change is analogous to the perceptual change when one goes from, say, a consonant to a vowel. Movement also is relevant, when one can see the football move against the stadium background--even as a vowel quality may remain constant, as ground, while a tone changes, as figure--or vice versa.

The distribution mode of the football includes internally its inner-bladder structuring in reference to outer cover, with the outer cover having in turn slots for insertion of laces. Replaceable parts in this structure would include the lace itself, and the bladder. In terms of external distribution a football occupies a place in the total physical matrix of the game. It occurs as part of the total apparatus along with specialized protective clothing, goal posts, and marked field.

The playing field is likewise structured. In the feature mode it contrasts in shape with a baseball diamond, for example, by being rectangular. The purpose of its design reflects the expected activity which is to occur upon it and which likewise differs from that of the baseball game. The field has a continuity of time in spite of replaced goal posts or redrawn marking lines which lead to minute variations in its manifestation mode. Its distribution mode includes its occurrence in the larger area for the total spectacle so that the slot for the playing field is distinct from that where spectators are permitted. The official hundred-yard distance for the play has beyond it certain end zones at either extremity for further limiting the legal area within which the catching of a pass over the end line is effective within the rules. (Other details, of course, are relevant to the game, but are not mentioned here since it is not our purpose to describe the field but merely to suggest the direction in which the analysis would go within this conceptual framework.)

The distribution mode of any object, as perceived by man, seems to have--if it is to appear to be structured at all--the requirements that the parts be in some sense "replaceable." That is to say, the observer brings to his handling of recognition or understanding of an inanimate structure something conceptually analogous to the slots and the replacing-classes-of-items which occur in language. A particular table, for example, may be observed to be comprised of top plus four legs. These four legs are treated perceptually as if in some sense they are replaceable by substitutes if one of them were to be broken, even if in this particular table the top and legs are made from a single piece. (Note that here when we are discussing a table we are talking of a specific table, a specific thing, rather than a general concept such as we had in view in §16.823.) Without this

perceptual structuring into actual or potentially-replaceable parts, perceptual structuring does not seem to occur.

Many products of behavior may themselves have behavior. Automatic factories and many kinds of machines have feedback operations which in part control the behavior of the machines. Provided that such a machine is treated as relevant to the persons using it--that is, provided that human observers are brought into the equation--its operation can be analyzed trimodally. Purpose, value, usefulness, quality, and the like, would be treated as components of its feature mode, as attributed to it by the participant observers in the matrix of human society within which the machine operates. For this reason, to the stone-age man in New Guinea a mechanical pencil, colored green, with a red eraser and a red-lead point, might not be "the same object" as to the European. To the European its usefulness and value have to do with writing. To the person who has never known of writing it might appear to be--at a distance--some kind of caterpiller with a stinger to be avoided.

Just as the analyst of language or nonlanguage behavior and the actor of that behavior may have different views of basic purpose, so the builder of the product may see the value or usefulness of that product in slightly different terms from those in which the user sees it--as when gold coins are used for personal decoration. The difference of analytical results which one achieves may in part, therefore, depend upon the kind of observer and the relative values which the analyst has in mind.

Some products of behavior, however, are purposeless and without utility, in the ordinary sense at least. Incidental effects of accidents are of this type. "Traces" of behavior such as footprints in the sand are also nonpurposive products. Still further products, however, are traces of behavior which are deliberate--as the footprints in the snow if they are designed to form the matrix for a game of tag, or the magnetic recording on a tape as a deliberately preserved "archeology" of speech, or a picture as a result of painting activity. These distinct kinds of products must be analyzed in different ways. Those products which are the result of purposeful activity have as components of their feature mode their usefulness as seen by the observer. Those which are accidental products have as the comparable component of their feature mode rather the brute cause-and-effect relation as seen by the observer.

If one turns to things perceived by man which are not fashioned or modified by man, nevertheless the modal view of them seems to be obligatory to man's perception, to the extent that he intrudes himself into the observation of the phenomena. In these instances, also, the distribution mode includes--if the item is to be seen as structured--parts which are somehow in principle thought of as replaceable. This is especially true of such things as molecules, where experiment allows one atom or group of atoms to be replaced by another. It seems to be true also, however, of an object such as the moon concerning which the mind divides the surface into mountains, plains, craters, which in fact form a continuum but which the observer perceives "could have been otherwise." A crater formed by a meteor might have been placed elsewhere; or the crater rim might later be dispersed by the impact of further meteors, and so on.

During these replacements, or modifications, if the identity of the object is conceived as being constant because of its relationship to man or to some larger item of the matrix--as the moon is considered to be constant because of its general overall relation to the earth--then the modification of the item as a whole would lead to variations in the manifestation mode of that item.

As regards the feature mode of observed phenomena, the observer intrudes into it. Just as in language we have referred to meaning as part of the observer's addition to the language structure, and as in physical behavior we have similarly referred to purpose, and as in reference to items created or modified or appropriated by man we have referred to utility, so in reference to objects such as the moon, or to particular molecules, the observer brings in a related component. In this instance, however, it seems to be the 'perceived or attributed relation between such an object and its environment.' Specifically, just as an utterance is treated as eliciting a response, so in this further area a physical event may be observed as a CAUSE elicitng an 'effect.' Thus we treat cause-and-effect in physical matters as an analog of meaning in verbal behavior. By extension, similarly, the analog of meaning when applied to the particular object entering into such a cause-and-effect relation would be the 'function' or 'relationship' of that object to the order of nature.

A further epistemological note needs to be added here. If the scholar tries to discover and describe structures either of things or of language without reference to the component which man-as-observer brings to these, then similar results occur in both instances: If language is described without reference to man's reaction to it, then language behavior is described as a mathematical system without reference to meaning or purpose. If things and physical phenomena are described without reference to the observer, then they must be described without reference to cause-and-effect. The attempt to eliminate from one's analytical techniques and from one's descriptions all ultimate reference to intuitive components of man is an

attempt to discover and describe structures in the universe without reference to meaning, purpose, utility, function, relationship, or cause-and-effect. Inasmuch as we as observers are ourselves men, we can only partly succeed in such an attempt. At some point hidden assumptions of one or more of these observer-oriented types must creep back into our descriptions, either under their traditional names, or under others, whether at a late stage in the description of results, or in the early overt or covert assumptions and axioms with which the work begins. In our particular approach, we have chosen rather to face this necessity directly and bring overtly into our description these human characteristics. We consider this to be fruitful; and fruitfulness itself--along with elegance and simplicity--is a similar human component brought to the scholar's observation and understanding of the meaningfulness of his own behavior.

We may also suggest that the observer component of meaning, purpose, or usefulness, is part of an outside component which must be utilized to prove the validity or consistency of a presentation of the formal structure of behavior much as Goedel has shown that data from outside the formalism of arithmetic must be used to prove the consistency of arithmetic as a system (see quotation in §15.42, taken from Nagel and Newman, 1956, p. 1694).

17.6 The Struggle to Understand

The struggle to understand is the struggle to sense structure and its criteria. Cultural clues can be found in the language of the participants in behavior or in society which show where they are trying to discover components of structure.

When the child asks Why?, he is asking for one essential component of the feature mode of an emic behavior unit. He assumes that there are no units of behavior which lack such a component. If, occasionally, he asks for the purposive component of a product of accidental behavior, the question is embarrassing since purpose--as we indicated in §17.5--is not then a part of the feature mode of the unit, even though observed cause-and-effect may be. The scholar who does not sense this may be puzzled at the child's insistence. Guthrie, for example, first protests at the 'absurdity' of speaking of a goal 'as a cause.' Rather, goals 'do not determine activity; but stimuli may incite activity that is directed toward a goal previously attained by the activity because the stimuli remain associated with the movements that ended in the goal attainment' (in Henry, 1935, p. 52). He relates over-emphasis on purpose to a 'childish mode of thinking' and the use by children and parents of the question Why?. Then he states: 'I have on occasion found it quite impossible to convince a child who insisted on knowing why I had driven into my garage with a rear door of the car open, that I had no plans for what happened. That an adult should act and that the act have unplanned results were beyond comprehension at the age of five' (p. 52).

Guthrie, it seems to me, failed to sense the fact that the child's understanding of the emic, structural organization life and action must include purposive factors. The child must learn the purpose of acts as he must learn the meaning of words.

Thus the question Why? or What for? in behavior structure or society structure is analogous to the question What does "X" mean? in reference to language.

The question How? is a request for information concerning the manifestation mode of a behavior unit. When these details are furnished, the physical activity may be largely portrayed. Who? may elicit manifesting physical components of a group unit, or of an S-tagmeme.

If one asks What then?, or Which was first?, How are they related?, or Who's boss?, etc., the reply may give information concerning the distribution mode of an activity or of a social group. The physical distribution of behavior may be investigated by asking concerning time (When?), or concerning space (Where?).

The general nature of a large behavior unit under attention may be explored by such a question as What's going on? The matrix of that behavior may be elicited by What is the set up?

The class membership of the elements, and the general structural sequence of replaceable parts, may be tested by such a question as If X had happened then what different things could Y have done?

Report of an activity--as by a football broadcaster--may cover the same area of components to give understanding to the listening audience. The phrasing, only, differs. Clues occur in such phrases as in order to . . . , by . . ., after . . . , so that . . . , and so on, or in general descriptive statement.

17.7 Bibliographical Comments on Chapter 17

17.71 On the "Grammar" of Society

Thompson has suggested that 'society, like language, is something that has a grammar' (1934-35, p. 512); by this, however, he implies only that there is in society an internal organization below the conscious level; similarly, Freedman and others (1956, p. 12). Sapir insisted that culture, like language, has pattern, but without trying to give analogical detail (and rather

indicating that the two types may even be different by suggesting that language is 'not significantly at the mercy of intercrossing patterns of a non-linguistic type' [1929, in Selected Writings, p. 165]); see also 1927, in Selected Writings, p. 546, where 'All cultural behavior is patterned,' though the actor is frequently unaware of the patterning.

An attempt to find a more specific analogy is that of Lounsbury, who analogically relates phones to kinsmen, phone type to kin type, and phoneme to kin class (1956, pp. 191-92). For this analogy he provides both conceptual framework and procedural steps to arrive at the kin analysis. Note that he suggests a parallelism between phoneme and kin class rather than between morpheme and kin class--as we also have suggested that this kin material (according to Lounsbury the 'segmentation of a portion of one's social environment' p. 166) is analogous to the phonological field rather than to the lexical or grammatical one. He utilizes contrastive features, in general chosen from Kroeber, and clusterings of these features to define the kin classes. For example, in Pawnee 'the "father" class, atías, can be defined as males who are uterine kinsmen of Ego's first-ascending-generation agnatic kinsmen' (p. 174). Related data are found in Lévi-Strauss (1945, emphasizing oppositions between traits, and 1951), and in Greenberg (1949).

Goodenough, like Lounsbury, has tested for analogues of phonology and kinship structure. He had earlier 'found the linguistic criterion of "complementary distribution" . . . exceedingly helpful, though applied to non-linguistic data' (1951, p. 64); some gift types (niffrag and kiis) were applicable contrastively in similar property-exchange situations, but others were varieties of a unit (of niffrag) with responsibilities of food payments differing according to whether the exchange object was a canoe, pig, chicken, house, etc. In kinship analysis, Goodenough's emphasis is upon symbolization of 'the particular set of criteria' by which a 'judgment is made' as to whether, for example, 'A is or is not B's cousin' (1956, p. 195); it is an attempt at applying to 'other types of cultural forms' 'the methods of componential analysis as they have been developed for analyzing linguistic forms' (p. 195).

For sources of our statement about double structuring of phoneme versus morpheme analogies in society in §17.1(7), note Herskovits, with two broad classes of institutions, those that grow out of kinship, and those that result from the free association of individuals (1948, p. 289); Nadel, with charting of a distinction between 'recruitment roles' and 'achievement roles' (pp. 53, and cf. 84, 91); and Henry, with 'biological involvement' versus 'administrative involvements' (1958, p. 829).

Speiser suggests the term 'etheme' for 'the minimum distinctive political organization in its socio-cultural setting,' but does not work out the details of the implication of such an emic term (1953, pp. 138-39).

Greenberg (1957) discusses parallelisms between functional approaches in ethnology and linguistics (pp. 76-81) suggesting organic, activity, and internal function types. He also shows parallelisms between culture area, diffusion, and linguistic areal classification (pp. 66, 73). Other parallelisms, related to change of structure, might also be investigated; compare sounds conditioned in production by their environment, for example, with the 'cultural differentiation [which] was produced [in social structure] by process of adaptation under varying technological and environmental conditions' (Sahlins, 1957).

Aberle objects to the use of language analogs for cultural study, especially on the grounds that cultures have a number of role systems, with division of labor and so on, which have not been shown thus far to parallel linguistic systems. This lack is especially acute when one person's idiolect is treated as a small-scale total language. A person's language, he feels, must be sharply differentiated from a society's system of communication since people do not share--but do participate in--the system precisely because of their different roles or positions in the network (unpublished data).

In my view, language-culture analogies or language-society analogies can be profitably maintained, meeting these objections, if on the one hand tagmemes are added to phonemes and morphemes as units in language theory, and if in discussing a language one insists on the relevance of the total lexicon of all speakers of a language as an essential characteristic of that language. By adding the tagmemic concept one is able to provide for analogs to role. By adding reference to multi-personal lexicon, it then becomes fairly evident that no one person in a complex society shares in handling all of the vocabulary of that society, but his particular idiolect differs in lexical respects in accordance with his particular position in the society. Thus the communication network contains a total vocabulary even though one idiolect does not. In this respect, language study, as well as culture study, demands a network concept. (Non-linguists wishing to read material on tagmemics may find it easiest to begin with articles rather than a full-scale treatment, e.g., Pike, 1958a, 1959.)

17.72 On Society Requisites

We now turn to bibliographical notes which are designed for the linguist, rather than for the

sociologist or anthropologist. In general, they are intended to suggest to the linguist some readings in these areas which will be of interest to him if he wishes to see data which will allow him to consider these analogies in more detail.

Among the many books available on social structure which I have found especially helpful are the following: Linton (1936, especially good for early orientation to prepare for society-language analogs with emphasis on the cultural view; Murdock 1949, for worldwide detail), Freedman and others (1956, pp. 70-74, with emphasis on the sociological view, and list of kinds of groups). For collections of brief descriptions of cultures and social structures, note Murdock (1934), Mead (1937, pp. 15-16), with organization around competitive, cooperative and individualistic types of cultures, Service (1958, with economic components under special attention). For theoretical treatments of social structure, note Weber (1947, e.g., pp. 124-32, for orientation to binding rules in 'legitimate order'), Sumner (1940 [1906]), Parsons (1951), Merton (1949), Herskovits (1948), Radcliffe-Brown (1949), R. Firth (1951), Nadel (1951 and 1957), Parsons and Shils (1951), Levy (1952), Argyle (1957); also, for summary of various aspects of the study of man from the viewpoints of various disciplines, Linton (1945). For various descriptive studies, often with theoretical treatment; see also: Fortes and Evans-Pritchard (1940), Eggan (1950), Lowie (1950), Radcliffe-Brown and Forde (1950, with extensive theoretical treatment), Goodenough (1951), Murdock (1951), Gluckman (1955). For further listing of group types, note Weber (1947, pp. 145-46, 151-52, 154-57, 171-73, 250-54, 424-29), Cooley and others (in Lee, 1951, pp. 70-71).

Prerequisites of a society are summarized most conveniently in Aberle and others (1950). He lists adequate relation to environment, sexual recruitment of members, role differentiation and role assignment (including allocation of scarce values), symbolic learned communication techniques with shared cognitive (meaningful) orientations, shared articulated sets of goals, normative regulation of means, regulation of affective expression, provision for socialization, and effective control of disruptive forms of behavior. Other lists may be found in Linton (1936, pp. 91, 98-99, 101-03, 107, 109, 142-52, 157, 233, 271, 422, and 272-74 with universals, specialities, and alternatives), Mead (1937, pp. 458-59), Malinowski (1945, pp. 43, 44-46, 50), Parsons and Shils (1951, p. 190), Levy (1952, pp. ix, 122-34, 149, 157, 166, 168, 173, 182-83, 187, 191, 193, 240, 248, 255, 263, 270, 275; and p. vii a suggestion toward 'a general conceptual scheme' for 'comparative analysis of societies'--with a phonetic-like chart p. 214). Note also Wissler (1935, p. 526), Redfield (in Freedman and others, 1956, p. 2, for folk society), Beardsley (1953, pp. 27-28), Sumner (1940 [1906], pp. 56, 70), and Honigmann (1954, pp. 42-43, for ethos and mores), Parsons and Shils (1951, p. 192, for boundaries), Murdock (1949, p. 3), Wiener (1954, p. 16, in reference to communication theory), Lowie (1950, p. 3, association, versus society, versus community), Parsons (1951, pp. 26-36, the language requirement), Nadel (1957, p. 150). For cultural universals found in every society, note Murdock (summary in Linton, 1945, pp. 123-42); also Murdock (1949, pp. 2-3, the family), Kluckhohn (in Kroeber, 1953), Malinowski (1945, p. 50). See Boulding (1958, pp. 69-70) for analogues from economics. For attention to 'institutions' within a social system, note Malinowski (1945, pp. vii-viii, 49-52, 74, with their contrastive features including charter--with reference to personnel, norms, aims,--material apparatus, activities and functions), Nadel (1951, p. 78). See also Sapir (1931, in Selected Writings, pp. 104, 365), Kardiner (in Linton, 1945, pp. 107-08), Lowie (1950, p. 3), Parsons (1951, pp. 36-58), Radcliffe-Brown (1952, p. 10), Levy (1952, pp. 102-03), Leopold von Wiese (in Lee, 1951, p. 339), Evans-Pritchard (1954), Freedman and others (1956, p. 189-90).

Characteristics of a society may be 'studied from many points of view: demographic, genetic, ecological, symbolic, structural' (Oliver, 1958, p. 802). Oliver gives extensive lists of structural characteristics emphasizing types of emotional interaction of its members (pp. 808-09--affection, avoidance, etc.), transactions (pp. 807-08--symbiosis, altruism, exchange, competition, with further reference to the nature of goods and direction of their circulation, explicitness of the transfer, repayment conditions, and stated or implied purpose), and interactions in reference to duration, sequence, space (p. 802), and in reference to normative, historical, and suppositional kinds (pp. 803-04). Henry views the personal community rather in reference to the number of persons frequently affecting the individual, the constancy of the relation--the time spent in interaction--and involvement in terms of obligations to heed wishes of others, and the coefficient of reliance of one person on another in support or approval (1958, p. 827).

Emphasis upon purposive activity, with shared goals or aims as relevant or essential to society and/or culture, may be found in Levy (1952, p. 173), Merton (1949, pp. 128-29), Park and Burgess (1951, in Lee, p. 17), Nadel (1951, pp. 30, 31-33, 76), Malinowski (1945, p. 51), Merton (1949, p. 126), Opler (1948, p. 120, with approved 'themes'), Kluckhohn (1949, pp. 35-36), Sapir (1927, in Selected Writings, p. 341).

For the functionalist approach which treats 'processes of culture as an explanation of its

products' see Malinowski (1945, p. 34, also pp. 26, 75), amplified most clearly by Merton (1949, pp. 51, 61-81, with 'manifest' functions as 'intended and recognized by participants' but 'latent' functions as 'neither intended nor recognized'; also pp. 25-26, 50, with emphasis upon 'observable objective consequences' versus 'subjective dispositions [aims, motives, purposes]'). See also Freedman and others (1956, p. 122), Levy (1952, p. 83), Radcliffe-Brown (1952, pp. 178-87), Murdock (1949, p. xii), Linton (1936, p. 404), Murdock (1951, p. 469). As an over-all statement of the relation between the total purpose of language and the total purpose of other behavior patterns in a society, note the usefulness of the statement by J. R. Firth (1951a, pp. 82-83, that 'normal linguistic behavior as a whole is a meaningful effort directed towards the maintenance of appropriate patterns of life').

For the consideration of those end products of activity which are purposeless (and not 'functional') even though recurrent (e.g., road accidents), note Nadel (1951, p. 33); for activity without goal, following frustration, note Maier (1949).

For discussion of the difference or relationship between society and culture, note Kluckhohn and Kelly (in Linton, 1945, p. 79), Herskovits (1948, p. 49), Kroeber (1948, pp. 268-74), Kluckhohn (1949, p. 24), Radcliffe-Brown (1949, p. 510), R. Firth (1951, p. 483), Nadel (1951, pp. 79-80), Parsons (1951, pp. 6, 18), Bidney (1953, pp. 84-124), Freedman and others (1956, p. 4), Nadel (1957, p. 149).

17.73 On Role as S-Tagmemic

There is some confusion in the field in reference to the terms status, position, and role. I interpret this to be due to the fact that on occasion the authors wish to refer to an S-tagmeme of role, and at other times to the components of that S-tagmeme--i.e., slot, slot-meaning, filler, filler-meaning, total tagmeme, and total tagmeme meaning. Sapir speaks of 'a status which that person happens to fill' (1934, in Selected Writings, p. 564). Linton refers to 'individuals who occupy the statuses and express the rôles in overt behavior' (1936, p. 253; here status is slot, individual is filler, role is expected behavior). The actor 'is performing a rôle' (p. 114); and there is a distinction 'between statuses and the people who hold them' 'like that between the driver of an automobile and the driver's place in the machine' (p. 113). For a brief reference by Linton to the quarterback in football--which I found only after I had written this chapter--note p. 114. For Linton, statuses are 'polar positions' within social relationships, with the statuses occupied by individuals (pp. 256-57); a status 'is a position in a particular pattern' (p. 113), although each individual may have 'many statuses.'

Murdock and others refer to an individual as the 'occupant of a status' with status 'to connote the position occupied by an individual in any repetitive social relationship,' with the role as the behavior or 'enactment' of the individual's part in the relationship (1950, p. 77). For Parsons, the fillers are 'encumbents as persons' (1951, p. 400); status 'is his place in the relationship system'; role is 'what the actor does' in his relations with others; the status-role forms a 'higher order unit than the act'; the actor 'holds a status or performs a role' (p. 25); while the actor himself 'is a composite bundle of statuses and roles' as a 'social actor' or a 'social unit' (p. 26); for further extensive discussion of roles, note pp. vii, 58-88, 399-414.

Radcliffe-Brown refers to the fact that 'each person may be said to have a role' so that in a 'structural system we are concerned with the system of social positions, while in an organisation we deal with a system of roles'; the 'social structure' is referred to 'as an arrangement of persons in institutionally controlled or definable relationships, such as the relationship of king and subject, or that of husband and wife' whereas the term organisation is used 'as referring to an arrangement of activities' (1952, p. 11). Levy argues the use of the terms: For him role means 'any position differentiated in terms of a given social structure whether the position be institutionalized or not' (1952, p. 159); by status he means 'the sum total of an individual's (or group's) institutionalized positions in a social structure' (p. 160); individuals 'occupy' a status (or position), with roles constituting 'aspects of status' (p. 160); furthermore, 'the sum total of an individual's ideal roles may be termed his ideal social standing, or alternatively, his status' (160). For Warner, role places 'primary emphasis on the person'--how he 'stylizes his behavior'--whereas status 'emphasizes membership and place in a social universe' (1953, p. 51), and is a 'social position located in a social universe' (p. 49).

Freedman and others have role as 'the position which an individual occupies' in a social system (1956, pp. 206-08). Nadel, however, doubts the value of status as positional and role as acting; he tries to fuse the two in a single view of which there are the aspects of the 'rule and its application'--of knowledge and performance (1957, p. 29); presumably he is here feeling toward the S-tagmemic unity of status-role-actor. He is unable, in my judgment, to follow through consistently his treatise of a unitary status and role without reference occasionally to the componential character of the aspects which he has here specifically rejected. Thus, he refers elsewhere in his book to 'the flow

of the population into given roles' (p. 77, and cf. p. 69), which is clearly reference to substitute fillers in specific slots. For Nadel's earlier reference to groups in which, for example, 'both mother and child have their appointed "position,"' note 1951 (p. 77).

For an economist's view, note Boulding: 'Somebody has defined an organization as a set of holes tied together with lines of communication; the hole is the "job" or the "role"; and as one person leaves it another must be found to fit it' (1957, p. 6). Or compare Time (July 21, 1958): 'Into the slot of president . . . moved Bob Kintner.' See also Parsons (1951, p. 70) concerning the concept of division of labor as developed by Adam Smith.

For contrastive features of roles, note Linton, with statuses ascribed and achieved (1936, p. 115), with status as 'simply a collection of rights and duties' (pp. 256-57, and 114). For contrastive features of role as a 'configuration of prescriptions by which the status is derived,' see Goodenough (1951, p. 114). For components of role characteristics in urban communities, note Freedman and others (1956, pp. 444, 448-49; for various other contrastive features, p. 208). Role expectation as a conceptual unit of action may be seen in Parsons and Shils (1951, p. 190); compare Nadel (1951, pp. 67-68) and Merton (in Lee, 1951, p. 60). For the essential language function, note Parsons (1951, p. 34). For an extensive discussion not only of 'obligations, rights and expected performances,' but also of features of role differentiation based upon various criteria of age, generation, sex, economic allocation, political allocation, religion, cognition, and in nonhuman environment, and solidarity, see Levy (1952, pp. 159, 306-07). For status as having unavoidable 'dominance-subordinance relationships,' see Count (1958, p. 1065).

In any extensive treatise of role, many other features are treated which have analogies with linguistics. Note, for example, in Nadel (1957): distributional characteristics of role--outer distribution with obligations and rights in reference to a wider public, inner distribution with implications to the immediate group (pp. 85-88, 92); distribution in a class of people such as the class of 'fathers' and in reference to in-groups and out-groups with focus of various types (pp. 89, 92-93); hierarchical characteristics of role in social strata (pp. 31-32); free variants in terms of optional activities in role (pp. 27, 31-32, 33, 64, 66, 136, 139) versus contrastive features which make a difference to the basic character of the role (pp. 32, 43, 65); minimal--contrastive--pairs of roles (p. 67, for example, manager versus worker, elder versus common citizen, priest versus worshipper); a Sapir-like set of two artificial systems of roles, each containing the same common group of elements in different arrangements (p. 67); the taxonomy--etics--of roles generalized, e.g., independent versus dependent (pp. 78, 80, 82); simulated role (compare lying in language, p. 26); recruitment (or membership or kin) type versus achievement type (pp. 36, 38, 42, 53, 70, 83-84, 91); active versus passive (p. 56); roles from different points of view--role conception (pp. 56-57); number of roles in any one society or subgroup, with one subgroup having 'never less than three, never more than five' out of a total of 16-33 female roles in the total society of Nuba (pp. 61-62); role from the observer versus participant viewpoints--'structure abstracted' versus 'structure envisaged' (p. 140); the role system as a 'role map of society in his head' (p. 58); role meaning as reflected in verbal cues (pp. 33-34); 'purpose and utility' as an essential concept in studying social existance (p. 158); roles 'filled discontinuously'--compare discontinuous morphemes (p. 132); originating versus responding actions--compare utterance-response of language (p. 111); the multi-systemic nature of social structure 'being always in the plural'--versus Meyer Fortes 'within a single system'--(p. 155); 'social reality' within social structure, as related to short-range constancies (pp. 149-50, 145-46); the sum of roles leading to 'social being' (pp. 65-66).

For status in reference to social strata, note Sumner, where folkways 'create status' (1940 [1906], p. 67); Sapir (1934, in Selected Writings, p. 567, in reference to etiquette); Linton (1936, p. 110, Weber (1947, pp. 424-29, for 'control or lack of it' 'over goods or services,' and in reference to 'property holdings,' 'exploitation of services,' and 'plurality of class statuses'); Kluckhohn (1949, p. 254, with 'division of labor' making 'class stratification almost inevitable in a complex society'), Murdock and others (1950, p. 80, with castes lacking mobility but classes having it); Warner (in Lee, 1951, pp. 245-48, 256, with differentiation of different classes in American society); also Warner (1953, with extensive discussion and with annotated bibliography; chart of levels, p. 58); Freedman and others (1956, with 'rank status,' p. 232; with 'class crystallization,' pp. 234-35; with 'urban stratification,' pp. 520-61).

17.74 On Personality and the Individual

For a classification of 'Why' questions of children into types of causal explanation, motivation, and justification, see Piaget (1955, 175-79). Morris, in reference to signs, refers to 'where,' 'what,' 'why,' and 'how' signs (1946, pp. 72-73). Burke suggests that for investigation one must look at 'act,' 'scene,' 'agent,' 'agency,' 'purpose' (1945,

p. xv).

If one attempts to look at the literature of psychology, as well as that of personality in reference to culture, one finds it very large, and beyond the scope of this study. The linguist finds useful summaries of the literature on personality, as it applies to cultural problems, in Kardiner (in Linton, 1945, pp. 107-22), Kluckhohn and Murray (1948), Bidney (1953, pp. 327-44), and Hallowell (1955). For early bibliography see also M. Mead (1937, pp. 513-17); for later bibliography see also Honigmann (1954). In them one finds attention to personality structure in reference to culture theory on the one hand, as well as to psychoanalysis, learning theory, and projection techniques such as that of the Rorschach ink-blot test. For the latter, see Klineberg (in Linton, 1945, p. 76). The cultural approach studies many problems--for example the degree to which self-awareness is a cultural or social product (Hallowell, 1955, p. 81). In the psychoanalytic approach Freud has developed the analogy 'between the practices of primitive people and neurotic symptoms' (Kardiner, in Linton, 1945, p. 109). In learning-theory technique, one studies the results of drives, cues, responses, and rewards (Dollard, in Linton, 1945, p. 442). Through projection techniques one may discover 'emotional combinations which are not identifiable in the psychopathological entities common in our society' (Kardiner, in Linton, 1945, p. 117). Honigmann summarizes 'the genetic, descriptive, structural and phylogenetic approaches to the field' (1954, p. 48). For cross-cultural limits to Rorschach testing, note Adcock and Ritchie (1958, pp. 886-87).

Insistence on the fact that the individual cannot be treated apart from reference to society is found in Sapir (1932, in Selected Writings, p. 519, also 1934, in Selected Writings, p. 592), Cantril (1950, p. 81), Rohrer and Sherif (1951, pp. 1-2), G. Mead (in Lee,1951, p. 87), Henry (1958, p. 827). The concept of social personality is closely related to this point of view; note Murdock and others (1950, p. 8), Radcliffe-Brown (1952, pp. 193-94), and Nadel (1957, pp. 65-66). A different view, which emphasizes the independence of culture and the individual in certain limited senses, in that there is 'such regularity in the composition of societies of men, that we can drop individual differences out of sight, and can thus generalize on the arts and opinions of whole nations' is found in Tylor (1913, vol. 2, p. 11). More recently, see White (1949, pp. xviii, 78-79, 84, 86, 92, 100); for an opposite psycho-cultural view, note Bidney (1953, pp. 47-53, 79-83); note, however, White's rebuttal to Bidney's earlier publishing of this view (1949, pp. 108-09). Compare Opler (1948, pp. 115-16), and Kluckhohn (1949, p. 23).

For an attempted summarizing chart of the components of personality, after Kluckhohn and Mowrer, note Herskovitz (1948, p. 57; cultural, social, biological, and physical-environmental components are each correlated with universal, communal, role, idiosyncratic components. For the individual's 'psychological prerequisites for the functioning of a culture,' see Spiro (1954, p. 26). It is of interest to compare 'the three components of personality structure postulated by dynamic personality theory: id, ego, and superego' with our postulated three structural modes of behavioral units. The individual has 'needs (id) [cf. our physical, manifestation mode], values (superego) [cf. our distribution mode, and our discussion of the place of belief systems in this mode in §13.6], and executive-response processes (ego) [cf. our treatment of meaning, purpose, choice and identificational-contrastive elements as components of the feature mode]' (p. 28). He equates the executive-response processes with the ego-processes of 'perception, learning, and cognition' (cf. p. 27). And in addition to the structural components he gives a fourth psychological prerequisite, the 'mechanisms of defense' of the self--the 'symbolic techniques of projection, displacement, rationalization, sublimation, and so forth' (pp. 28, 26).

For the problem of the point of view of observer of events versus participant, see Levy (1952, p. 101). For 'value' as 'a relation between subject and an object' see Radcliffe-Brown (1952, p. 139). For contrasting views of the same data seen by different observers of Pueblo culture, note Honigmann (1954, pp. 100-05).

17.75 On Things

The philosophical problem of how we recognize "things," and of the relation of things to ultimate reality, is very difficult. Extensive discussion of things as a selection and grouping in attention is found in Sinclair (1951, for example pp. 149-50; for the arbitrariness of such groupings as seen in the difference between the perception of adults and children, note p. 175). The relation 'of the word to the thing' as 'the key problem about which all culture and all knowledge finally rests' is discussed in Urban (1939, p. 23); our meanings and communication ultimately depend 'upon the mutual acknowledgement of values' and 'upon the mutual acknowledgement of "things" ' (p. 146). The question of how 'one comes to learn to categorize in terms of identity categories is . . . little understood,' though 'a variety of stimuli as forms of the same thing' is relevant to all our psychological experience (Bruner and others, 1956, pp. 2-4); a simple stimulus-response theory is insufficient to account for the 'subtle events that may occur between the input of a physical stimulus and the emission of an

observable response' (p. vii).

Some of these events are, in our terms, an emic reaction; for similar problems in reference to the building of the emic concept 'table,' note Eddington (1928, pp. ix-xii). The problem of the relative and the absolute becomes difficult in this respect. Planck feels that 'The Theory of Relativity, too, is based on something absolute, namely, the determination of the matrix of the space-time continuum; and it is an especially stimulating undertaking to discover the absolute which alone can make meaningful something given as relative' (1949, pp. 46-47).

Kant taught that 'a body is extended' and that this proposition 'holds a priori, and [is] not a judgement of experience'; since 'before I proceed to experience I already have in the concept of body all the conditions for my judgement' (1953 [1783], p. 18). Schilder maintains that one's own body image 'is acquired . . . and gets its structure by a continued contact with the world' (1950, p. 174), and there 'is no primary perception of space' in spite of Kant's 'erroneous opinion.' 'Localization is built up by optic and kinaesthetic impressions' (p. 21). Recent approaches to 'maturation of innate behavior-patterns,' emphasizing psychoneural activity which includes components both of 'instinctive' and of 'learned' acts would probably lead to a synthesis of views of Kant and Schilder (cf. Count, 1958, pp. 1051, 1053, 1067, 1069; and Kluckhohn and Murray, 1948, p. 38).

For discussion of relation of figure to ground, note Koffka (1935, pp. 177-210).

Morris considers that 'A behavior-family is any set of response-sequences which are initiated by similar stimulus-objects and which terminate in these objects as similar goal-objects for similar needs' (1946, p. 10). Koffka emphasized the perception of things or objects according to principles of continuity, contiguity, closure, unit formation, simplicity of shape, maximum and minimum properties, regularity or symmetry, attitude of the observer, and so on (1935, pp. 153, 302, 332, 437; 164, 482; 167, 151, 449; 125; 107, 171; 109-110; 149); these items are in turn perceived in geographical [etic] space, versus phenomenological [emic] space (pp. 69-105).

Hebb, on the other hand, shows how certain of the supposed immediate perceptual organizations are in fact developed, as a square cannot be recognized immediately, but the corners have to be counted, by a person born blind, but who later is made to see after surgery (1949, p. 32). In our terms, certain of the perceptions which Koffka considers to be innate are shown by Hebb to be emic. For the treatment of 'things'--especially highly automatic systems--as having 'a characteristic pattern of behavior,' such that a number of the terms of human behavior (e.g., 'rules' and 'variation') may be applied to them, note Nagel (1952, pp. 44-46), Oliver (1958).

In looking at objects, Lundberg feels that the term 'value' should be replaced by 'valuating activities' (1951, in Lee, p. 400); 'we say a thing has value or is a value when people behave toward it so as to retain or increase their possession of it.' It is essential to find out values of neighbors, by observing their behavior, if we wish to live satisfactorily in any community. In a factory 'engineers are conscious that quality of product is the ultimate objective' (Brown and Campbell, 1952, p. 62). Non-physical characteristics--characteristics which are not the result of objective valuation nor utilitarian considerations--affect, for example, the emic reaction to kurdaitcha shoes in Australia, since they are 'associated exclusively with evil magic' (Davidson, 1947, p. 116). When the function of a particular object or practice is not manifest, a 'latent function' such as maintaining prestige--the wearing of buttons on the sleeve, etc.--may serve to assist 'individuals to maintain their security by preserving continuity with the past and by making certain sectors of life familiar and predictable' (Kluckhohn, 1949, pp. 27-28).

After Part III was in press, there were called to my attention materials which I had not seen, by Barker and Wright (1955) that have a treatment of behavior settings which has interesting points of contact with our's here (as their segmentation of behavior units parallels in various ways our treatment in Part I, 1954). They 'have called this place-time-thing constellation to which a standing pattern of behavior is attached the psychological milieu or simply milieu' (p. 8).

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