TRENDS IN TAGMEMICS

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No linguistic theory can afford to remain static and tagmemics is no exception. In this paper we shall outline some of the stresses, internal and external, to which tagmemics has been and is being subjected, and some of the directions of current thinking toward meeting these challenges.

The basic tenets of tagmemics include the following:

(1) postulation of three interlocking but semi-autonomous hierarchies, usually labelled phonological, grammatical, and lexical;

(2) units in each of these which are capable of being well-defined by having their contrast, variation, and distribution stated;

(3) units in each which may be looked at alternatively from any one of three complementary perspectives: particle, string (or wave), and field;

(4) within each there exist structural levels which are arranged to form an explicit systemic hierarchy.

In the revision of his major outline of tagmemic theory, Pike,[1] while continuing to insist on three partially independent hierarchies, gives much stronger attention to the particle, wave, and field perspectives, and gives particular emphasis to grammatical field through matrix. In phonology, Pike treats various phonological units as distinct levels but continues to show great reluctance to propose tagmemic structure for these units. Crawford[2] proposed that various levels of phonological structure be handled with the same type of formulaic description as that used for the grammatical hierarchy. Though Pike, being uncertain of the implications,[3] has had difficulty in accepting the extension of the tagmeme and syntagmeme concept to phonology, others in the tagmemic camp have welcomed it as a logical outgrowth of the original theoretical framework. Longacre[4] thus accepts phonemes as minimal units of the phonological hierarchy and gives a formula for a typical Trique syllable type with slots manifested by various sets of phonemes. Such treatment is now standard in tagmemic pedagogy and description.

Heaviest tagmemic attention has always been focused on description of grammatical structure. Tagmemic treatment of lexical structure has been admittedly weak. Longacre's modifications of Pike's model envisions lexemes as minimal units in the lexical hierarchy, units which enter into lexico-syntagmemic structure.[5] For some unexplained

reason, however, Longacre states that "L-syntagmemes and L-tagmemes are relevant to particular texts rather than to a language as a whole." Most of the uncertainty on lexical structure is due to the absence of detailed studies; and this in turn is due to the complexity of the subject. All languages have a very limited number of phonemes; let us say, conservatively, somewhere between 10 and 100. And the number of contrastive P-syntagmemes is also relatively quite small. The stock of morphemes is much greater, perhaps on the order of 10,000, and the number of contrastive M-syntagmemes is likewise greater. Thus we may expect that the picture becomes vastly more complicated when we come to lexical structure.

At this point let us note some of the criticisms and weaknesses of tagmemics. We shall dismiss criticisms of the proliferation of tagmemic terminology, some of which are justified but none of which really aim at the theoretical basis of tagmemics. We may list the following points at which tagmemics has been or could be attacked:

(1) Tagmemics is described as just one of a subclass of phrase-structure grammars.[6] Tagmemics is accused of dealing only with surface structure and not with deep structure. Although Longacre[7] stresses that a tagmeme is more accurately called a function: set correlation than a slot:class correlation, yet it is true that tagmemic grammatical descriptions deal with morphemes as they are linearly represented, and phenomena such as discontinuous elements have caused problems in description. Aside from this, however, "tagmemics deals only with surface structure" is only saying basically "tagmemics has yet to deal adequately with lexical structure."

(2) Tagmemics is described as having weak generative power."[8] Since the publication of Syntactic Structures it would seem that a grammatical description of language L must be "a device that generates all of the grammatical sequences of L and none of the ungrammatical ones."[9] Included in generativeness is the ability to account for speakers being able to produce an infinite number of new sentences. There is wide disagreement, however, as to what constitutes a generative grammar. Tagmemicists, transformationalists, and stratificationalists would all claim their theories are generative, but all different, depending on the basic axioms of each. Axioms are largely controlled by the goals one has in mind. For adherents of tagmemics, it is axiomatic that we must have a theory which will provide insights for analysis of an unknown language. It also becomes axiomatic that our theory must provide structural insight deep enough to handle the problems of transferring from one language to another material of no small linguistic complexity. Ideally our

linguistic theory should thus relate directly to the processes of encoding and decoding; and tagmemics has had little or nothing to say on this subject.

(3) Related to the question of generative power is the question whether tagmemics is able to formally account for structures obviously related. The concept of transformational rules relating such structures was one reason for the meteoric rise of enthusiasm for transformational grammar, and it accounts for part of the recent tagmemic emphasis on matrix. Quite a few tagmemic descriptions in recent years present summaries in matrix form of contrastive syntagmemes which are closely related structurally, but formal rules which make the relationship explicit have been lacking.

(4) A more general criticism of tagmemics related to the previous two is that the specific relationship of units of one hierarchy with units of another has never been spelled out. Pike still insists on "three hierarchies which are partially independent while also partially interlocking."[10] But refusal to recognize that rules relating units in different hierarchies are as much a part of the structure of a language as verb morphology is, to the writer, the weakest point in tagmemics. For example, the theory has never been sure how to handle morphophonemics -- whether by process statements, by listing phonological environments of alternants, or by setting up morphophonemes.[11]

(5) Tagmemics has never stated how it could handle formally such complex phenomena as regular and irregular pronominal use, synonyms and homonyms, figures of speech, rhetorical questions, and ellipses. Other theories could be castigated for neglect in treating such phenomena too; for any theory which claims to be truly generative should be able to account for the ability of speakers to produce and hearers to understand such phenomena.

Now let us look at some recent trends in tagmemics toward handling some deficiencies. Longacre has tried to answer Postal's claim that tagmemics does not distinguish between deep structure and surface structure[12] by stating that a syntagmeme is an abstract which may have various manifestations.[13] Longacre suggests handling some of the more complex problems of manifestation by a series of three rewrite operations.[14] Reid[15] has utilized this approach in a full syntactic description. He introduces rules which are context sensitive, which eliminates an objection raised by Bach.[16] Such rules easily handle such features as discontinuous elements, obligatory or optional change in order of elements, and optional multiple occurrence of elements. Bee's description of Usarufa[17] utilizes this concept of tagmemic rewrite rules to describe a New Guinea Highlands language.

Recent tagmemic descriptions are also utilizing transformational rules. Pike[18] had noted that transformations were "developed in tagmemic field theory as a phenomemon of matric multiplication -- appearing first of all as a characteristic of the relationship between subsystems in a field rather than primarily as a set of rules." Reid uses this concept as a starting point for a lengthy set of derivations in the latter part of his syntactic description.[19] Longacre[20] has demonstrated how transformational rules relate contrastive clause types in three Mexican languages.

Another useful correlation of transformational rules with matrix theory can be utilized in tagmemic descriptions of the complicated sets of fused person-number morphemes in New Guinea Highland languages. In Gahuku the following set of suffixes marks Indicative Declarative Unmarked tense with one verb class:

Number	Person	1	2	3
sing.		-uve	-ane	-ive
plur.		-une	-ave	-ave
dual		-usive	-asive	-asive

This set defies attempts at segmentation into recurring partials with a 1:1 correlation of form and meaning. Furthermore, there are dozens of such sets which vary for verb class, tense, mood, and aspect. There are obvious similarities between the sets, yet no two sets are identical. The descriptive redundance can be cut drastically by two devices:

(1) dividing the forms into three matrices M_1, M_2, and M_3 of fused person-number morphemes manifesting Person, Number, and Mood slots, as follows:

M_1 (Person)				M_2 (Number)			M_3 (Mood)		
Person:	1	2	3	1	2	3	1	2	3
sg.	u	a	i	---	---	---	ve	ne	ve
No.: pl.	u	a	a	---	---	---	ne	ve	ve
dl.	u	a	a	si	si	si	ve	ve	ve

We then may represent the syntagmemic construction in this case by:

v. stem = ... + Person: M_1 + No.: M_2 + Mood: M_3

In case we wish to describe the corresponding set of interrogative suffixes, we may set up a simple transformational rule replacing M_3 with M_4. We could then list the form of M_4 as we have for M_3; however, a slightly fuller transformational rule will spell out the precise differences in the two sets:

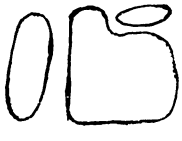
$$M_3 \begin{vmatrix} v \\ h \end{vmatrix} = M_4 \begin{vmatrix} h \\ p \end{vmatrix}$$

That is, the interrogative morphemes simply substitute h for v and p for n in the final syllable. Similar matrices and transformational rules describe the other pronominal sets and their relationships.

Note that we have set up tagmemes consisting of functions manifested by matrices of fused morphemes with parameters of person and number. Pike and Erickson's failure to make this theoretical point in their description of Potawatomi[21] led Hockett[22] to reply that "matrix technique is useful, if we remember that it is a discovery trick and not a theory." But matrix is of deep theoretical significance, because matrices reflect patterns of structure, and language is patterned behaviour. If we abstract the pattern of like formatives from the Gahuku matrices above, we have the following matrix patterns:

M.P.$_1$ (Person)

No.:	Person: 1	2	3
sg.			
pl.			
dl.			

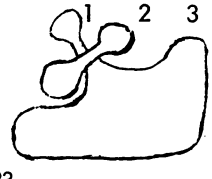


M.P.$_2$ (Number)

	1	2	3
	—	—	—
	—	—	—

M.P.$_3$ (Mood)

1	2	3



Let us now note a similar set of suffixes listed by Pike[23] in Fore, which, according to Wurm's classification,[24] though a member of the same East Central family as Gahuku, is a member of a different sub-family:

	Person		
	1	2	3
sg.	uw	aan	ay
pl.	un	aaw	aaw
dl.	us	aas	aas

Again dividing the matrix into three sub-matrices labelled Person, Number, and Mood, we have the following:

M_1F (Person)

No.:	Person: 1	2	3
sg.	u	aa	a
pl.	u	aa	a
dl.	u	aa	a

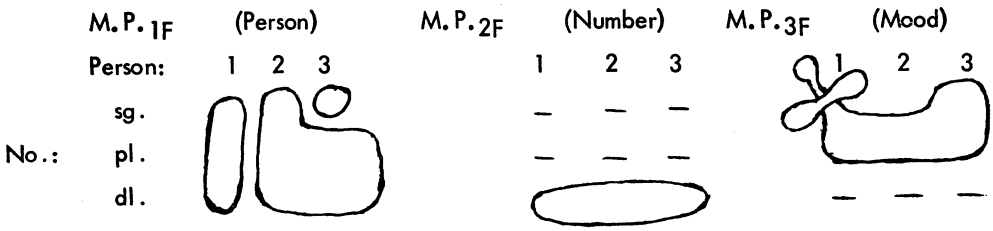
M_2F (Number)

	1	2	3
	--	--	--
	--	--	--
	s	s	s

M_3F (Mood)

1	2	3
w	n	y
n	w	w
--	--	--

Abstracting the pattern of formatives we have the following Fore Matrix patterns:



The similarities both of the phonemic forms and the patterns between Gahuku and Fore are striking, and the fact of their persistence across considerable linguistic distance is even more significant. It is likely that matrix theory has provided a means of investigating language affinity using form-meaning contrasts on a basis other than the Swadesh word list.

We have already noted that tagmemics has been very weak on descriptions of lexical structure, but this area is receiving much current attention. Merrifield[25] discusses the character of four kinds of rules which characterize lexical structure (which he prefers to call the semantic component). The types of rules he lists, however, are very general ones and do not indicate what sort of lexico-syntagmemes will comprise the description of lexical structure. Merrifield rightly notes that here we are dealing with finite subclasses of objects, events and qualities, not with categories such as subject, predicate, and modifier.[26] Lexico-syntagmemic structure will then delineate restrictions on cooccurrence of lexemes. Put very simply, it is precisely rules of lexical structure that rule out "colorless green ideas sleep furiously." Given lexico-syntagmemes consisting of object and quality tagmemes, if "idea" is one of the lexical set manifesting the object function, color lexemes cannot manifest the quality function. Similarly, given lexico-syntagmemes consisting of object-as-actor and event tagmemes, if "sleep" is one of the lexical set manifesting the event function, the lexeme "idea" cannot manifest the object-as-actor function.

We have noted that tagmemics has been slow in making specific intra-hierarchical relationships. Merrifield[27] considers this a basic problem in tagmemics, and proposes formalizing these relationships by several sets of context-sensitive and unordered realization rules. Several other tagmemicists have been strongly influenced by Lamb's stratificational approach[28] and propose incorporating such rules relating lexical units to morphemic units and morphemic units to phonemic units. Enough has been written in the literature on morphophonemics that we need not suggest what material would be covered in

such rules. Since rules relating lexical units to morphemic units have received considerably less attention, we list a few phenomena which we consider would be handled by such rules in a tagmemic description:

(1) Rules for changing active to passive.

(2) Rules for changing finite verbs into gerunds participles, infinitives, and dependent coordinate clauses in which subjects are deleted; also rules controlling morphological changes in dependent verbs which vary for tense and which depend on whether the actors of succeeding clauses are the same or different.

(3) Rules for realizing event lexemes by non-verbs, quality lexemes by non-adjectives, object lexemes by non-nouns; e.g. such English words as belief, death, depth, goodness, pollinate, liquidize. Such rules will account for deletions of object-as-actor, object-as-goal, and clause-relating lexemes and the introduction of substitute morphemes. For example, such rules will account for a clause sequence such as:

a. He preached (this:)

b. "Be baptized . . .

c. and repent . . .

d. in order that God will forgive your sins"

being realized by:

" . . . preaching a baptism of repentance for the forgiveness of sins"

(4) Rules for various kinds of ellipsis. Such rules adequately handle such sentences as Are you going or not? and John walks faster than Bill.

(5) Rules covering agreement and case.

We now must ask whether sets of rules relating lexology to morphology and morphology and phonology will handle all the data before us. It seems that the answer is negative, for we are confronted with phenomena such as the following which seem to imply clearly a set of rules which, in the process of encoding, obtain before we reach the level of lexical structure.

(1) Pronouns. We may consider pronouns as a sort of shorthand notation for referring to the dramatis personae of a particular discourse. Thus if one wishes to refer to EGO, he ordinarily uses a lexeme denoting first person singular. However, under certain circumstances, he will select an alternate rule and refer to himself by a first person plural lexeme (i.e. the editorial on "royal" we), or using another rule, by a noun phrase such as the speaker, the writer, this correspondent. The choice of whether or not to use a passive

may be governed by a rule which dictates that in writing a paper such as this one will avoid use of first person singular lexeme. And even in ordinary use there are complicated rules which determine pronominal use. A recent paper by Pike and Lowe[29] presents a mathematical structure giving rules by which three individuals in a conversation can refer to one another (excluding plurals and reflexives). These rules handle a sentence such as I said to you that he said to me that you said to him "I hit you," and indicate for any finite number of such embeddings to whom the embedded pronouns refer. All these rules, relating pronominal realizations to social situations, clearly seem to relate the world around us to the lexemic choice involved.

In a previous paper[30] we noted other areas which seemed to force us to postulate a set of realization rules which precede lexemic structure in the encoding process. In metaphorical speech it is apparent that there must be alternate rules relating the lexemic structure to the real world, and that in the process of decoding it is an awareness of a clash with reality that blocks the path or rule which would lead to a literal understanding, and forces the hearer to select an alternate rule leading to a non-literal interpretation. Let us note how we expect tagmemics would handle formally the well-known metaphorical statement "The harvest is great but the laborers are few." We will list some of the features covered in each level of description.

(1) Morphemic level:

a. We have a sentence consisting of two independent clauses joined by the coordinating conjunction but.

b. We have two independent stative clauses consisting of subjects manifested by noun phrases, copulative verbs, and adjective complements.

(2) Lexo-morphemic realization rules:

a. A class of human object lexemes occurring as actors plus a class of event lexemes may be realized morphemically by a noun consisting of a verb stem plus the nominalizing suffix -er.

(people) + labor → laborers

b. A lexical construction consisting of a qualifier lexeme, an object lexeme, and the existential lexeme be may be realized morphemically by a stative clause construction.

c. The lexeme be is realized as singular verb be in the morphemic environment of following singular subject.

(3) Lexemic level:

a. We have lexemic constructions each consisting of a stative lexical tagmeme in which the object is modified by another event tagmeme.

many objects exist which people can harvest

few people exist who will labor

(4) Semo-lexemic realization rules:

a. The sememes gather crops and win adherents may both be realized by the lexeme harvest, the latter in a metaphorical sense (because both contain the semantic component gather).

b. The sememes not plus many may be realized by the lexeme few.

If such an analysis is valid, we are immediately faced with the question of an additional sememic level. A crucial question is whether we may retain analysis of the semantic components of words on the lexemic level. Not to do so would be a blow to the traditional trimodal structure of tagmemics. It is interesting that in a recent dissertation by Wise [31] if one abstracts from the form her three aspects of meaning (the plot or reference, the observer, and the social setting), what remains is more or less equal to stratificational semology - a fourth level of structure.

These are the areas into which tagmemics is moving, both to meet challenges of other theories and to handle theoretically the problems which confront us in translation. The total implications for tagmemic theory in many cases are yet to appear.

Footnotes

[1]Pike, Kenneth L., Language in Relation to a Unified Theory of the Structure of Human Behavior, Second, Revised Edition, The Hague: Mouton (1967), p. 9.

[2]Crawford, John, Totontepec Mixe Phonotagmemics, Linguistic Series of the S.I.L. of the University of Oklahoma No.8 (1963).

[3]Pike, op. cit., p. 520.

[4]Longacre, Robert E., "Prolegomena to Lexical Structure," Linguistics 5 (1964), pp. 5-24.

[5]Idem, pp. 17-22.

[6]Postal, Paul, Constituent Structure: A Study of Contemporary Models of Syntactic Description, IJAL 30 No.1 Part III (1964), p. 35.

[7]Longacre, "Some Fundamental Insights of Tagmemics," Language 41 (1965), pp. 65-76.

[8]Postal, op. cit., p. 36.

[9]Chomsky, Noam, Syntactic Structures, The Hague: Mouton (1957), p. 13.

[10]Pike, op. cit., p. 9.

[11]Compare the three treatments in Elson, Benjamin, and Pickett, Velma, An Introduction to Morphology and Syntax, Santa Ana: S.I.L. (1962).

[12]Postal, Review of Grammar Discovery Procedures, IJAL 31 (1965), pp. 93-98.

[13]Longacre, Reply to Postal's Review of Grammar Discovery Procedures, IJAL 33 (1967), pp. 323-28.

[14]Longacre, Grammar Discovery Procedures, The Hague: Mouton (1964), pp. 24-34.

[15]Reid, Lawrence, An Ivatan Syntax, Oceanic Linguistics Special Publication No.2 (1966).

[16]Bach, Emmon, An Introduction to Transformational Grammars, New York: Holt, Rinehart & Winston (1964).

[17]Bee, Darlene, Usarufa: A Descriptive Grammar, dissertation received by the University of Indiana, (1965).

[18]Pike, "Dimensions of Grammatical Constructions," Language 38 (1962), p. 226.

[19]Reid, op. cit., p. 123-55.

[20]Longacre, "Transformational Parameters in Tagmemic Field Structure," Georgetown University Monographs No. 18 (1965), pp. 43-58.

[21]Pike, K.L., and Erickson, Barbara, "Conflated Field Structures in Potawatomi and Arabic," IJAL 30 (1964) pp. 207-12.

[22]Hockett, Charles, "What Algonquian Is Really Like," IJAL 32 (1966), p. 73.

[23]Pike, "Theoretical Implications of Matrix Permutation in Fore (New Guinea)," Anthropological Linguistics Vol. 5 No.8 (1963), pp. 1-23.

[24]Wurm, Steven A., "The Linguistic Situation in the Highlands Districts of Papua and New Guinea," Australian Territories, Canberra (1960), pp. 14-23.

[25]Merrifield, William, "On the Form of Rules in a Generative Grammar," Georgetown University Monographs No.20 (1967), pp. 43-55.

[26]Idem, p. 50-54.

[27]Idem.

[28]Lamb, Sydney M., Outline of Stratificational Grammar, Washington: Georgetown University Press (1966).

[29]Pike, D.L., and Lowe, Ivan

[30]Deibler, Ellis W., "Sememics and Translation," paper presented at Kivung, July 1967.

[31]Wise, Mary Ruth, in a dissertation presented to the University of Michigan, July 1968.

Revised version of talk given at Second Annual Conference of KIVUNG, Port Moresby, October 12, 1968.