DOCUMENT RESUME

ED 034 983 AL 002 234

AUTHOR	Garvin, Paul L.
TITLE	Specialty Trends in the Language Sciences. LINCS Project Document Series.
INSTITUTION	Center for Applied Linguistics, Washington, D.C.
SPONS AGENCY	National Science Foundation, Washington, D.C.
REPORT NO	LINCS-16-69; NSF-GN-771
PUB DATE	Dec 69
NOTE	33p.
EDRS PRICE	EDRS Price MF-$0.25 HC-$1.75
DESCRIPTORS	Anthropology, *Behavioral Sciences, Computer Science, Information Science, *Interdisciplinary Approach, Language Arts, *Linguistics, *Linguistic Theory, Literature, Philosophy, Psycholinguistics, Psychology, Sociolinguistics, Sociology
IDENTIFIERS	Anthrolinguistics, Biolinguistics, Biomedical Science, *Language Sciences, Philology

ABSTRACT

The author feels that it is legitimate to center a survey of the language sciences around the field of linguistics. This survey is based in part on his own view of the scientific study of language, and in part on an informal sampling of the literature available to him. He gives first a characterization of the field of linguistics, then a discussion of the various "hyphenated" fields that have sprung up around linguistics, followed by a survey of the other sciences dealing with language. Finally, he attempts an evaluation of the whole broad area of the language sciences. (Author/DO)

CENTER FOR APPLIED LINGUISTICS

LANGUAGE INFORMATION NETWORK AND CLEARINGHOUSE SYSTEM (LINCS)

SPECIALTY TRENDS IN THE LANGUAGE SCIENCES

by Paul L. Garvin

LINCS PROJECT DOCUMENT SERIES / NATIONAL SCIENCE FOUNDATION GRANT

LINCS #16-69 December 1969 NSF GN-771

CENTER FOR APPLIED LINGUISTICS, 1717 MASSACHUSETTS AVENUE, N.W., WASHINGTON, D.C. 20036

SPECIALTY TRENDS IN THE LANGUAGE SCIENCES

by Paul L. Garvin

CONTENTS

1. The Notion of "Language Sciences"

The significance of our society's preoccupation with matters of language should not be underestimated since, as Joshua Whatmough put it (62:5), "Language is the most important meeting ground of sciences and of letters."

Educators have for a long time now combined all their efforts in the teaching of language skills into a single broad area, the 'language arts', which includes reading, writing, composition, and other related fields of concern to elementary and secondary education. The notion of considering all the sciences dealing with human language as a unified common ground is, on the other hand, fairly recent. The significance of this notion has not long ago been pointed out by Ferguson (13), who has noted the significant connections between the various disciplines dealing with speech and language. Thus, there is increasing sentiment to the effect that to the broad educational field of the language arts there should correspond an equally broad scholarly field of the language sciences. This conception would go beyond, for instance, the classical British conception of the two linguistic sciences of phonetics and linguistics (22: book jacket) or the traditional French notion of *science linguistique* (55:4) which is no more than simply linguistics as a science.

Even within such a broad conception of the language sciences, there is fairly general agreement to the effect that linguistics is the primary science which serves as the unifying focus of the language sciences as a whole. Thus, Ferguson admits a tendency "to put linguistics at the center of it all" (13:4); Sebeok is interested in "tracing the impact of modern linguistics upon associated fields" (47:4).

Hence, it seems legitimate to center a survey of the language sciences around the field of linguistics, as will be done here. This survey is based in part on my own view of the scientific study of language, in part on an informal sampling of the literature immediately available to me.

In the following sections, first a characterization of the field of linguistics will be given, then a discussion of the various "hyphenated" fields that have sprung up around linguistics, followed by a survey of the other sciences dealing with language. Finally, an evaluation of the whole broad area of the language sciences will be attempted.

2. The Field of Linguistics

This section will first attempt to give an overall characterization of the field of linguistics, followed by some comments on broad developmental tendencies of the field, and finally will attempt to give some insights into its internal intellectual structure.

2.1. Characterization of the Field of Linguistics

The classical conception of modern linguistics -- as opposed to the older philology -- is that it is a branch of anthropology. This is evident from the role of linguistics in anthropology curricula; it is based, in the American context, on the close ties its "founding fathers", Franz Boas, Edward Sapir, and Leonard Bloomfield, had with anthropology. It is best illustrated by Bloomfield's statement that "The work of directly observing and recording human speech is much like the work of the ethnologist" (2:1-2).

In the past decade, there has been a significant reorientation of the conception of the place of linguistics among the sciences, although the older, anthropological conception still coexists vigorously with the newer ones.

The most widespread of these newer conceptions of the place of linguistics is the one represented by Chomsky, who speaks of "the particular branch of cognitive psychology known as linguistics" (6:1). This conception is motivated by the well-known theoretical view that the aim of linguistics is to explicate the speaker-hearer's intuition, which has an obvious tie-in with psychology. As Chomsky and Halle put it (7:ix), "The idea that the study of language provides insight into human psychology is by no means novel."

This "psychologizing" view clearly conflicts with the older conception that can almost be called antipsychological. Thus, Nelson Francis speaks of

> ... the psychic aspects of our life, both as individuals and as organized groups. Here belong religion, art, and part, at least, of philosophy and learning. It is true that language is a fundamental part of our actions in this field, which we like to think of as embracing the "highest" qualities of our nature. But because the use of language in this field does not submit itself to the

> kind of analysis which the linguist uses, we must mark it as the province of the rhetorician, the philosopher, the theologian, and the literary critic (15:7).

A second new conception of the place of linguistics is held less commonly by linguists, but is quite wide-spread among information scientists: it is the conception of linguistics as one of the information sciences. Thus, the Office of Science Information Service of the National Science Foundation, in its Current Research and Development in Scientific Documentation series, includes language and linguistic research among its fields of interest (63). Heilprin considers linguistics one of the "component disciplines" of information science:

> [information science] will be drawn from many component disciplines -- linguistics, psychology, mathematical theory of communication, logic, reprography and many others ... (26:19).

Other information scientists consider linguistics a closely related field. Thus, Cuadra speaks of "... intercommunication and adaptation among librarians, documentalists, linguists, computer specialists, [behavioral scientists, and other specialists] ..." (10:2); Simmons, in speaking of automatic language processing, states that "Underlying this work towards potential applications is a significant body of research in linguistics, psycholinguistics, semantics, and logical properties of natural languages" (48:137). Gorn assigns an even more important role to linguistics in this regard: "Information science was engendered by linguistics, psychology, philosophy, logic, mathematics, and the engineering, management and library professions" (20:34).

All three conceptions of the place of linguistics are, in my opinion, based on criteria which are entirely legitimate in terms of their respective frames of reference. The fact that linguistics can be conceived of in three so different, and yet equally valid, ways only serves to underline its central position in the language sciences.

2.2. Some Observations on the Recent Development of Linguistics

The changes in the understanding of the place of linguistics that have been discussed above have not occurred in isolation. They are part of a broader development in the course of the past decade or

so. This development has included some significant and rather conspicuous changes in the texture of the field itself. Some of these will be briefly reviewed here.

Perhaps the most notable of these changes has been the shift in emphasis from a predominantly empirical orientation to an increasing interest in, and encouragement of, theoretical pursuits. Theory in this context is not always viewed the same way. Thus, Hays calls it "a collection of fundamental propositions about reality" (24:2). Chomsky has a somewhat stricter definition:

> In this paper, I will restrict the term 'linguistic theory' to systems of hypotheses concerning the general features of human language put forth in an attempt to account for a certain range of linguistic phenomena (5:914).

The growing emphasis on theory has been a world-wide development; it has recently been characterized quite accurately, albeit somewhat caustically, by V.A. Zvegincev:

> While some decades ago a young man who had decided to devote himself to linguistics would begin his scholarly activities with a detailed and meticulous study of a very limited question in a very limited problem area, today we find quite the opposite extreme: the young scholar as a rule tries to make his mark in the field by an original, universal, and, of course, all-encompassing construct ... (64:12-13).

Another significant development seems to have been connected, at least in part, with the usefulness, real or imagined, of linguistics for information processing. This has been the rise of a linguistics analogous to the "big science" described by Derek J. de Solla Price in his well-known monograph (42), albeit on the more modest scale befitting linguistics by comparison with the physical sciences. In the absence of a properly documented study, let me just suggest, by way of anecdotal exemplification, a comparison of the rise of grants to the field which were considered quite respectable in the years immediately after World War II (not to mention those of the period between the two wars) with the budgets cited in the by now proverbial ALPAC Report (35:107-11).

A related phenomenon is the development of an "invisible college" (cf. 42:83-91) of linguists, although again, of course, on the more modest scale befitting linguistics. But a casual glance at the situation a couple of decades ago will make it quite evident, here as with regard to "big linguistics", to what extent personal contact

through site visits at projects, attendance at conferences, invitations to lecture, etc., not to mention increasing access to the long-distance telephone, have become the rule rather than the exception, and have created new channels of communication and information exchange.

2.3. Intellectual Structure of the Field of Linguistics

A not too surprising consequence of the developments sketched above is a great deal of disagreement and uncertainty about both the limits and the internal structure of linguistics. I have on two previous occasions raised some pointed questions in this regard, which bear repeating:

> What are the limits of the field of linguistics? This is a meaningful question, particularly when dealing with areas that could either be considered a subfield of linguistics or a separate but related discipline.
>
> Thus, is 'philology' included in linguistics? What about the psychology of language or the sociology of language? What about a field such as semantics, as exemplified by the logical semantics of Charles W. Morris or the general semantics of Alfred Korzybski? Similarly, what about such "hyphenated" or conjoint fields as ethno- or psycho-linguistics, or language and culture, language and literature? Or, for that matter, mathematical linguistics which is not exactly the same as computational linguistics, and which in turn some authors prefer to call mechanolinguistics? Should a subject matter such as folk taxonomy (i.e., the study of the hierarchy of denotative terms used in folk speech) be included in the subject matter of linguistics, particularly since scholars have now begun to refer to it under the heading of 'ethnographic semantics'? Is stylistics to be included as a linguistic subject matter or is it to be left to esthetics?
>
> What about the structure of the field of linguistics? This question has been the subject of controversy ever since the development of modern trends in the wake of nineteenth-century comparative linguistics. One way of avoiding this controversy might seem to be the acceptance of the 'traditional' subdivisions of the field as a point of departure.

One might thus want to base a noncontroversial classification on the Saussurean distinction between synchronic and diachronic. Even here, however, a question might arise in regard to the status of a possible panchronic category, which some linguists have proposed in order to deal with universals that are independent of time.

Likewise, if we accepted the 'traditional' distinction between descriptive and comparative, this raises the problem of the inclusion under 'comparative' of such an area as contrastive language studies. These are called analytic comparison in the Prague tradition, showing that they, too, can be considered a form of comparative linguistics. And what shall one do with the traditionally recognized subfields of lexicography and etymology? [In regard to the former, should one recognize a distinction between lexicography and lexicology?] And where would one place etymology with regard to historical (or diachronic, or comparative) linguistics?

An even more difficult problem of classification arises as one wishes to define the internal structure of the field of descriptive linguistics in the narrower sense, that is, that of the synchronic description of languages and of corresponding theoretical issues. Every theoretical point of view will have as its consequence its own particular subclassification. Some of the problems raised by this are the following.

> Does the term 'grammar' include phonology or is it used in opposition to phonology? Or, is the basic subdivision of a language description that of phonology, morphology, and syntax? [Is it that of deep structure and surface structure?] Or are we to reject both of these subdivisions and instead make up our minds between, on the one hand, phonemics and morphemics, and, on the other hand, phonemics, morphemics, lexemics, and sememics? (16:3, 18:39-40).

Note, in connection with this last comment, that Thomas, for instance, distinguishes four types of grammar: (1) traditional, (2) historical, (3) structural, (4) generative or transformational (54).

The way in which linguists have attempted to answer some of these questions can be gleaned from an examination of the contents of some typical (or perhaps not so typical) textbooks of linguistics.

Thus, Gleason's text deals with the following topics:

1. Language
2 English Consonants
3 The English Vowel System
4 English Stress and Intonation

5 The Morpheme
6 The Identification of Morphemes
7 Classing Allomorphs into Morphemes
8 Outline of English Morphology
9 Some Types of Inflection
10 Immediate Constituents
11 Syntactic Devices
12 Transformations
13 Language and Grammars
14 Some Inflectional Categories

15 Articulatory Phonetics
16 The Phoneme
17 Phonemic Analysis
18 Phohemic Field Work
19 Interpretations of English Phonemics
20 Phonemic Systems
21 Phonemic Problems in Language Learning
22 Acoustic Phonetics

23 The Process of Communication
24 Variation in Speech
25 Writing Systems
26 Written Languages
27 Language Classification
28 Some Languages and Language Families (19:viii).

Hockett, on the other hand, favors topics such as these:

1 Introduction

SIGNALLING VIA SOUND: PHONOLOGY

2 Phonemes
3 Phonemic Notation
4 English Intonation
5 English Accent
6 English Juncture
7 Phonetics
8 Contoid Articulations
9 Vocoid Articulations; Timing and Coordination
10 Phonemic Arrangements; Redundancy
11 Types of Phonemic Systems
12 Phonemic Analysis
13 Phonemes and Sound

PHONOLOGY AND GRAMMAR: LEVELS OF PATTERNING

14 Morphemes
15 Morphemes and Phonemes
16 The Design of a Language

GRAMMATICAL SYSTEMS

17 Immediate Constituents
18 Form Classes and Constructions
19 Words
20 Morphology and Syntax
21 Syntactical Construction-Types: Endocentric
22 Syntactical Construction-Types: Exocentric
23 Sentences and Clauses
24 Inflection
25 Kinds of Syntactical Linkage
26 Parts of Speech
27 Grammatical Categories
28 Derivation
29 Surface and Deep Grammar
30 Substitutes
31 The Grammatical Core

MORPHOPHONEMIC SYSTEMS

32 Morphophonemics
33 Types of Alternation
34 Canonical Forms and Economy
35 Secondary Effects of Phonemic Shapes

IDIOMS

36 Idiom Formation
37 Types of Idioms

SYNCHRONIC DIALECTOLOGY

38 Idiolect, Dialect, Language
39 Common Core and Overall Pattern
40 American English Stressed Syllabics

LINGUISTIC ONTOGENY

41 Linguistic Ontogeny

PHYLOGENY

42 Phylogenetic Change

43 Old and Middle English
44 Kinds of Phylogenetic Change
45 Mechanisms of Phylogenetic Change
46 Innovation and Survival
47 The Conditions for Borrowing
48 Kinds of Loans
49 Adaptation and Impact
50 Analogical Creation
51 Further Varieties of Analogy
52 The Nature of Sound Change
53 Coalescence and Split
54 The Consequences of Sound Change

LINGUISTIC PREHISTORY

55 Internal Reconstruction
56 Dialect Geography
57 The Comparative Method
58 Reconstructing Phonemics
59 Reconstructing Morphophonemics and Grammar
60 Further Results of the Comparative Method
61 Glottochronology

WRITING

62 Writing

LITERATURE

63 Literature

MAN'S PLACE IN NATURE

64 Man's Place in Nature (27:ix-xi).

Swadesh's text presents a number of formal topics together with a corresponding informal interpretation: each informal chapter head is followed by an indication of the formal topic, as shown below (my translation from the Spanish):

1 The origin of human language -- an essay on the origin and evolution of human language;

2 Verbal customs -- linguistic ethnography and sociology;

3 The age of writing -- the history and importance of graphic representation;

4 Glasses to see the world with -- psychology of perception, and the relation between thought and semantics;

5 Grunts and phonemes -- physiological and functional phonetics;

6 Patterns of expression -- morphology and syntax;

7 Formulas for language learning -- language pedagogy;

8 A live carpet -- principles of linguistic geography with some aspects of the interaction between linguistic communities;

9 Across the centuries -- historical and comparative linguistics (52:4-5).

A highly idiosyncratic discussion of the structure of the field of linguistics is given by Spang-Hanssen, who divides it in line with two criteria, quantitative and structural, resulting in the following matrix:

	Non-Structural	Structural
Quantitative (arithmetical and statistical)	(a)	(d)
Non-quantitative	(c)	(b)

(50:64)

The term 'structural' is defined by him as follows:

> Here 'structural' means '(research or approach) striving towards an axiomatic (postulational) description of the qualitative part of linguistic phenomena' (ibid.).

It is worth noting Šaumjan's disagreement with Spang-Hanssen's definition of 'structural':

> I believe that the difference between structural and non-structural linguistics is determined by the difference between the taxonomic and explanatory levels in linguistic research (46:70).

Both of these comments underline the tendency towards theorizing and the different conceptions of the nature of theory that were pointed out in the preceding subsection.

Two other important sources of data on the intellectual structure of the field of linguistics deserve mention. One such source are the course offerings, requirements, and other details of the curricula of linguistics departments and programs the world over. Another source consists of the topics of doctoral dissertations and master's theses in these departments and programs. These deserve a separate study.

In summary, it must be noted that the intellectual structure of linguistics is far from clearly defined. This indeterminacy is pointedly illustrated by the following complaint by Coates:

> Lexicology, the scientific study of vocabulary, has long been recognized as a branch of linguistics, but for some reason it is not yet generally recognized that it is an autonomous level of linguistic analysis on a par with phonemics, morphemics, etc. (8:1046).

3. The "Hyphenated" Fields

The motivation for the development of the "hyphenated" fields has been poignantly stated by Hymes:

> ... whereas the first half of the century was distinguished by a drive for the autonomy of language as an object of study and a focus upon description of structure, the second half was distinguished by a concern for the integration of language in sociocultural context and a focus upon the analysis of function (28:11).

Kelkar has recently listed and defined four "hyphenated" fields:

> (a) The biology of language (biolinguistics) includes not only the anatomical and physiological foundations of speaking and hearing but the place of the speech event in human ecology, the development of the individual, and human evolution.
>
> (b) The psychology of language learning, use, maintenance, and loss (psycholinguistics) is closely related

to the preceding; language pathology also falls here largely. The psychology of language use covers the psychology of recognition, production, and reproduction by way of repetition, recall, and translation; and relates these to nonlinguistic behavior.

(c) The ethnology of language (ethnolinguistics) studies man's linguistic customs (e.g. those relating to naming children, joking, greeting, swearing, abusing, and insulting), relates them to language as studies intrinsically and to non-linguistic customs, and finally places language in relation to the larger problems of the science of culture -- as, the assimilation by the individual of the culture of his in-group or of some other group (enculturation and acculturation respectively), tradition and innovation, cultural relativism and ethnocentrism, and cultural evolution.

(d) The sociology of language (sociolinguistics) is the study of man's roles in relation to language, of language networks, of covariation between language traits and social roles, and of the part played by language in various social processes (such as the carrying out of social action, the rise, maintenance, and dissolution of groups, and the recruitment of an individual into a group, including his socialization within the in-group). Basically, then, the sociology of language is an elaboration of the fable by Aesop on language as the great binder and divider of people (32:12).

The first of these, biolinguistics, is fairly recent (except, of course, for the classical physiological and acoustic concerns of phonetics), and the term (coined by Kelkar perhaps) is not in general use. There is, however, no doubt about the relevance of this line of investigation to the language sciences. I have on a previous occasion stated the relation between the biological and the linguistic points of view as follows:

> ... the major contribution of linguistics to the non-linguistic disciplines is a frame of reference; the major contributions of these disciplines to linguistics are a link to the physiological substratum of language and a means of validation (17:263).

The other three "hyphenated" fields cited by Kelkar, ethnolinguistics, psycholinguistics, and sociolinguistics, are much more widely known and have a larger history: ethnolinguistics goes back to the early forties, psycholinguistics to the early fifties, and sociolinguistics to the middle fifties and early sixties. The most spectacular growth has been observed in the third of these: as Mathiot has noted, "the latest developments in sociolinguistics show a tendency to absorb all the other hyphenated fields into its fold" (39).

The basic character of present-day sociolinguistics, as opposed to earlier interest in the relation between language and society, has been defined by Bright as follows:

> It is certainly correct to say that sociolinguistic studies, like those carried out under the name of 'sociology of language', deal with the relationship between language and society. But such a statement is excessively vague. If we attempt to be more exact, we may note that sociolinguistics differs from earlier interests in language-society relationships in that, following modern views in linguistics proper, it considers language as well as society to be a structure, rather than merely a collection of items. The sociolinguist's task then is to show the systematic covariance of the linguistic structure and social structure -- and perhaps even to show a causal relationship in one direction or the other (4:11).

The significance of Bright's comments is emphasized by the following complaint by Duncan concerning the sociologist's interest in language:

> In his Sociology of Language, published in 1965, Joyce O. Hertzler says that while there has been increasing reference to communication in the sociological literature of the past ninety years, notably among sociologists who call themselves 'symbolic interactionists', sociological writings on language have been superficial and unsystematic (11:3).

Closely related to the "hyphenated" fields are the ones that might be called "adjectivally compounded".

The oldest of these is anthropological linguistics, for which Hymes recently has proposed the term "linguistic anthropology" and which he defines as "the study of language within the context of anthropology" (28:xxiii).

More recent in origin and growing in popularity are the fields of computational linguistics (cf. 25) and mathematical linguistics (cf. 30), dealing with the impact of computation and mathematics, respectively, on linguistics. Spang-Hanssen has raised the question as to whether in fact mathematical linguistics constitutes a separate field, noting that we are simply dealing with attempts at applying mathematical methods in the field of linguistics pure and simple (50); the same question could be asked about computational linguistics.

The broader problem of the status of the hyphenated (and "adjectivally compounded") fields in general has been raised by Mathiot (39), who notes that this matter is related to the conception of linguistics one holds: in a broad conception, these marginal fields are absorbed into linguistics; in a narrow conception they remain separate.

4. Other Sciences Dealing with Language

As was stated in Section 1, many sciences deal with language, but linguistics is generally admitted to be central to the language sciences. Thus, the relation between linguistics and the other language sciences is one of the crucial questions in considering the broader area.

Halliday, McIntosh and Strevens conceive of this relation as follows:

> ... the relevant fact is not that those working in these various fields study different parts of language; it is that they study language for their own different purposes. The physiologist may draw conclusions, by observing language activity and classifying types of aphasia about the operation of the brain and the nervous system; to do this he needs to know something about language, the more so if he wishes to apply his understanding to the treatment of brain disorders affecting the use of language. So too the speech therapist studies the working of the vocal organs, the better to treat and cure speech defects. Neither need be concerned with all aspects of the phenomenon of language and of the part it plays in our lives. The communication engineer is interested in the properties of the message only to the extent that this knowledge allows him to improve the transmission of it. The logician is concerned with systems of concepts and relations which, though they cannot be described without reference to language, extend beyond language into any field where they can be systematized. The literary critic operates with scales of value-judgment whose criteria are formulated in non-linguistic terms.
>
> None of these, however, studies language for its own sake, to find out how it works. This on the other hand is precisely the task of the linguistic sciences. They have been built up to throw light on language; not to use language to throw light on something else. Their purpose is to find out how languages work and how language works (22:4).

Hockett approaches this same question from a somewhat different angle. He lists the many specialties that are in need of information about language:

> ... many people have professional need to know something about language -- as opposed to simply being able to use it. Here are some examples:
> (1) The speech correctionist, since his job is to help people overcome difficulties or impediments in their use of language.
> (2) The teacher of English composition, for a somewhat similar reason.
> (3) The foreign language teacher.
> (4) The literary artist, who must know his medium and its capacities just as a painter must know pigments, brushes, and colors; the literary critic for a similar reason.
> (5) The psychologist, who knows that language is one of the vital factors differentiating human behavior from that of rats or apes.
> (6) The anthropologist, both because language is part of what he calls "culture", and because in his anthropological field work he is often confronted by practical problems of a linguistic sort.
> (7) The missionary, who may have to learn some exceedingly alien language, for which there are no ready-made primers or dictionaries -- learning it not just for the management of everyday affairs, but well enough to deliver sermons and make Bible translations.
> (8) The historian, because his sources of information are documents; that is, written records of past speech.
> (9) The philosopher, particularly in dealing with such topics as logic, semantics, and so-called "logical syntax".
> (10) The communications engineer, part of whose business is to transmit messages in spoken form (telephone, radio) or in written form (telegraph, teletype) from one place to another (27:1-2).

A great many authors limit themselves to simply noting the relationships between linguistics and other fields, or to enumerating the various fields. A survey of these opinions can serve as a basis for an over view of the language sciences as a whole and will therefore be presented here. In this survey, opinions of linguists will be kept separate from those of nonlinguists. An evaluation of the overall picture is reserved for the next section.

4.1. Linguistic Opinions

The "classical" view, based on the opinions of Sapir and Bloomfield, relates linguistics primarily to the physiological and physical (i.e., acoustic) aspects of phonetics on the one hand, and to the behavioral sciences on the other.

Thus, Sapir notes that

> [the modern linguist] cannot but share in some or all of the mutual interests which tie up linguistics with anthropology and culture history, with sociology, with psychology, with philosophy, and, more remotely, with physics and physiology (45:161).

To this he adds that

> ... it is clear that the interest in language has in recent years been transcending the strictly linguistic circles. This is inevitable, for an understanding of language mechanisms is necessary for the study of both historical problems and problems of human behavior (45:165).

Bloomfield is primarily interested in delimiting linguistics. By setting it off from other fields, however, he establishes its relationships to them by implication:

> Thus, the physiologic and acoustic descriptions of acts of speech belongs to other sciences than ours. The existence and interaction of social groups held together by language is granted by psychology and anthropology (3:154).

More recently, Gleason has voiced a very similar view:

> As each of the social sciences has developed, it has encountered language problems within its domain. Psychology, sociology, and anthropology have each investigated language both as a type of human activity and as a system interacting with personality, society, or culture. Language has intruded even upon technological problems, and engineers have found themselves driven to basic research on human speech (19:iii).

An elaboration of the classical view, based on the work of George L. Trager, William M. Austin, Ray L. Birdwhistell, and others, is

presented by Pei (41:9-20), who lists the following nonlinguistic systems of communication which he considers closely related to language: proxemics, haptics (body control), kinesics, paralanguage.

A closely related view is implicit in Fenton's description of the mission of a newly created linguistic research center:

> ... the Research Center for the Language Sciences will encourage interdisciplinary activities in the fields of psycholinguistics, sociolinguistics, formal languages, applied linguistics, animal communication, and stylistics (12:1).

Finally, let me illustrate this view by the standpoint implicit in some of the selections for a recently published reader in sociolinguistics: communication in animals (14:14-37), linguistics and psychology (ibid., 38-67), language development (14:68-98), the ethnography of speaking (14:99-138).

The "modern" view includes among the fields related to linguistics, in addition to the above, many more, including a number of scientific and technical areas previously thought unrelated, or at best only marginally related, to linguistics. A fairly explicit statement of this view has recently been given by Lyons:

> ... contemporary linguistic theory draws simultaneously, and in roughly equal measure, upon the more traditional approach that is characteristic of the 'humanities' and the more 'scientific' approach that has developed recently in connection with advances that have been made in formal logic, computer science and automata theory (37:ix).

Others differentiate less sharply between the traditional and the newer connections. Thus, Martinet:

> ... many linguists are prone to stress, less the unity and recent self-sufficiency of their discipline, than its multifarious connexions with other branches of research, old and new, humanistic or scientific, such as psychology, logic, anthropology, cybernetics, and electronics (38:1).

Likewise Sebeok, who lists as the fields associated with linguistics:

> ... literary studies (notably, in metrics and stylistics), including philology; the history of ideas; anthropology and sociology; computer research (especially the storage and retrieval of information, and machine translation); acoustic and other kinds of phonetics, biology (for

> example, the study of animal communication systems); and, of course, psychology, philosophy, and mathematics ... (47:4).

The above statements refer to quite a number of fields. It is interesting to note the fields that are retained when the statements refer to just a few of them.

Thus, Todorov relates linguistics only to logic, semiotics ("la sémiologie") and literature (55:4); Hartmann relates it to mathematics, psychology and data processing, from the point of view of structuring, behavioral problems and new techniques of description, respectively (23:203-4).

Sometimes, such limited mentions are due to the limited scope of the statements. Thus, Jakobson in connection with mathematical linguistics notes that "... the attention of linguists, logicians and mathematicians has become focused upon problems of mutual interest" (30:v). Hays, in connection with computational linguistics, speaks of "linguists, computer specialists, and managers" (25:v).

Stankiewicz (51), Jakobson (29), and Lotz (36) link linguistics to metrics and poetics in general. Jakobson goes so far as to simply include poetics in linguistics: "Since linguistics is the global science of verbal structure, poetics may be regarded as an integral part of linguistics" (29:350).

Saporta and Sebeok (49) link linguistics to content analysis; Halliday (21) and Riffaterre (43) link it to stylistics; Tauli (53), and of course many others, to language planning.

In summary, it is worth noting how linguists have gradually broadened their view of the relationship of their field to other areas until at present hardly any area that is in any way concerned with language is considered unrelated to linguistics. This broad view of the language sciences is, if anything, broadened somewhat further when nonlinguistic opinions are considered, as will be done in the next subsection.

4.2. Nonlinguistic Opinions

The nonlinguistic views on the relationship of linguistics to other fields that I have had an opportunity to consider fall into two broad categories. One set consists of opinions to the effect that the study of language is relevant to the author's field, or that

linguistics is related to it. Some of these opinions elaborate on the relationship.

The second type of opinions lists a whole set of related fields of which one is linguistics or the study of language. Opinions of both types need not be overtly formulated but may be implicit, for instance in the titles of articles -- just as was the case with some of the linguistic opinions cited in the preceding subsection.

Let me first present some opinions relating linguistics or the study of language to one other field. Many of these opinions refer to relationships that have also been noted by linguists.

Thus, Wellek speaks of himself as "... one of those students of literature who recognize and emphasize the enormous contribution of linguistics to literary scholarship" (59:410).

Werner (60) and Kubie (33, 34) may be sufficient as examples of the many nonlinguistic authors who relate language to various psychological phenomena and thus focus on the link between psychology and linguistics.

More interesting are those nonlinguistic opinions which do not find their analogs among linguists.

Thus, Rosenblith speaks of the "... relations between what constitutes the psychophysics of hearing and the totality of the facts of language" (44:68).

Allen makes the point that "As a group, lawyers have more reason to be sensitive to the intricacies of language than most other professional groups" (1:164-5).

And finally, Crothers and Suppes note that "... the range of phenomena to which mathematical learning models have been applied is now extended to include second-language learning" (9:v), thus establishing a link between mathematical psychology and the study of language.

Let me now give a sampling of those nonlinguistic opinions in which linguistics or the study of language is included in a more extensive listing of fields. Often, such a listing is centered around a field other than linguistics or the study of language.

Thus, Von Foerster observes that

> ... information storage and retrieval can be looked upon as an exercise in inductive reasoning within the constraints of cognitive processes and linguistic representation (57:146).

And Jones points out that it takes

> ... judges, lawyers, philosophers, engineers, linguists, businessmen, physical and social scientists, and computer experts to explore the fundamental problems involved in adapting the computers to the administration of justice (31:15).

Equally often, the listing of fields is centered around a special aspect of language or around a closely related area.

Thus, Werner and Kaplan place among

> ... scholars from various fields of inquiry bound together by their interdisciplinary orientation towards expressive language ... representatives of the following major disciplines concerned with linguistic activity: philosophy ..., literary criticism ..., linguistics ..., psychology ..., psychiatry ... (61:1-2).

Trojan (56) lists among the fields relevant to phoniatrics and logopedics the following as physiological: physiology, genetics, physiological phonetics, physiopathology, surgery (e.g., for palate repairs). He lists the following as physical: measurement-taking, aerodynamics, acoustics, optics (e.g., for stroboscopic diagnosis). Finally, he lists the following fields as psychology, linguistics, educational therapy, voice training, and the education of the deaf and dumb.

Finally, Molles and Vallancien consider the following topics of interest to the study of communication: the informational structure of languages, reception and perception of the vocal message, animal language and human language informational interpretation of perception (40).

5. Summary and Interpretation

As can be seen, the opinions collected in the preceding sections confirm and expand the notion of the language sciences presented in Section 1. In this section, an attempt will be made to sum up and coordinate the many views that have been presented, followed by some final interpretive comments.

5.1. Summation

Figure 1 shows the connections and ramifications between the language sciences as seen by the staff of the Language Information Network and Clearinghouse System project of the Center for Applied Linguistics and as apparent from the survey of opinions conducted here. In line with the central position of linguistics noted in section 1, figure 1 shows linguistics in the center of a "star pattern".

In figure 1 the numbers referring to the references cited in the bibliography have been written onto the line representing a connection between two fields, whenever such a connection has been mentioned either overtly or by implication in the referenced item. Thus, figure 1 shows clearly how frequently each connection has been mentioned in the literature cited. And since the literature for this essay has been selected so informally that the selection approximates a random sampling, it can for the present purpose be considered fairly representative of the totality of significant opinions about the language sciences.

In line with the above, the most frequently mentioned connections are considered to be the strongest. They are the following: anthropology, biomedical science, computer science, information science, language studies, literature, philology, philosophy and related fields, psychology, and sociology.

5.2. Interpretation

As has been shown in the discussion so far, a great variety of fields has been mentioned in the literature as having some bearing on the study of language or being in some way related to linguistics. All these fields can thus be considered to belong, to varying degrees, to the language sciences.

In addition to the characterization of the connections between the fields attempted in the preceding section, it is also possible to characterize each field individually in terms of a distinction recently proposed by Alvin M. Weinberg which seems to be of definite interest in the present context. This is the distinction between mission-orientation and discipline-orientation.

Weinberg applies this distinction to scientific institutions, calling the national research laboratories mission-oriented (58:126ff), and

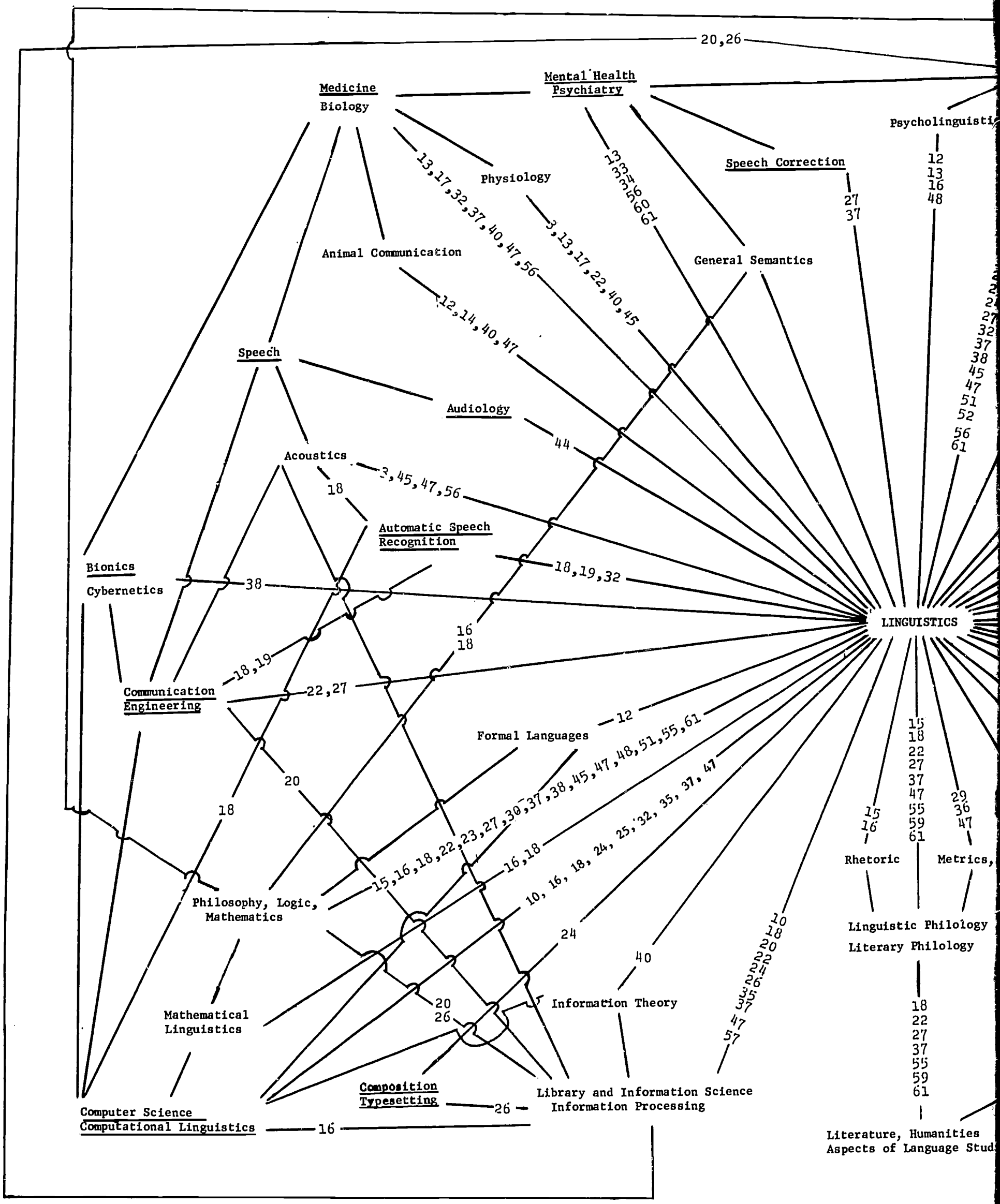
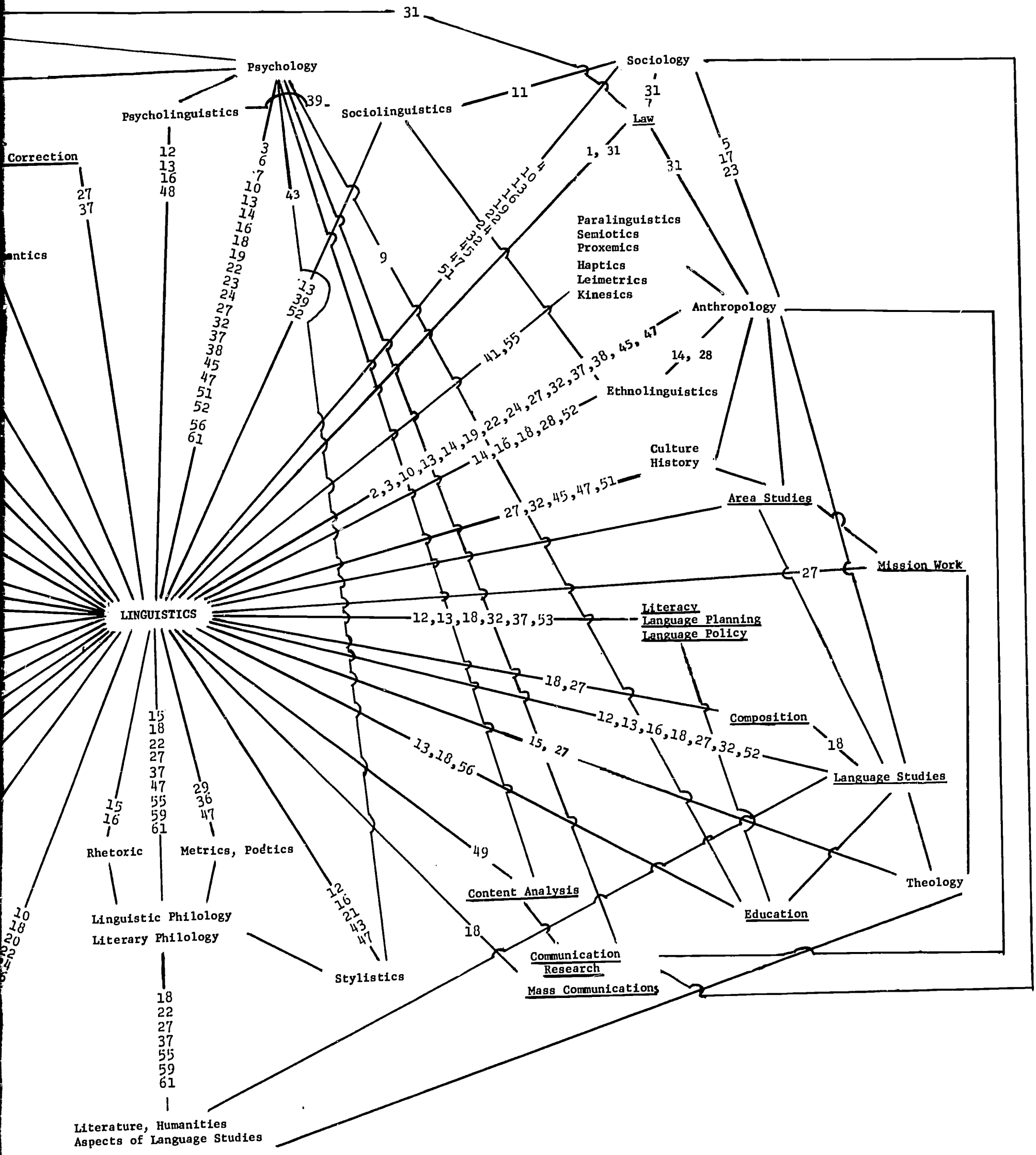


Fig. 1. SPECIALTY FIELDS IN THE LA

Underlined fields are mission-o
others are discipline-oriented.



1. SPECIALTY FIELDS IN THE LANGUAGE SCIENCES

Underlined fields are mission-oriented,
others are discipline-oriented.

the universities discipline-oriented (58:145ff). He defines mission-oriented as serving an externally defined purpose, such as, for instance, the "resolution of problems arising from social, technical, and psychological conflicts and pressures" (58:145). Discipline-oriented, on the other hand, refers to "the viewpoints of the separate, traditional disciplines," dealing with "problems generated and solved within the disciplines themselves" (ibid.).

Clearly, this distinction is as applicable to fields of endeavor as it is to institutions. It is similar to, but certainly not identical with, the classical distinction between "pure" and "applied"; it has the advantage of having fewer value-laden connotations. Its application to the fields of the language sciences is based on my impressionistic judgment and is, of course, tentative.

The following fields are considered primarily discipline-oriented: acoustics, animal communication, anthropology, biology, culture history, cybernetics, ethnolinguistics, formal languages, general semantics, haptics, information theory, literary analysis and criticism, logic, mathematical linguistics, mathematics, metrics, paralinguistics, philology, philosophy, physiology, poetics, psycholinguistics, psychology, rhetoric, semiotics, sociolinguistics, sociology, stylistics, theology.

The following fields are considered primarily mission-oriented: area studies, audiology, automatic speech recognition, bionics, communication engineering, communication research, composition, computational linguistics, computer science, content analysis, education, information science, language studies, law, library science, mass communications, medicine, mental health, mission work, psychiatry, speech, speech correction.

The difference between discipline-oriented and mission-oriented fields is indicated in figure 1 by underlines for the mission-oriented fields.

REFERENCES

1. Allen, Layman E. "Logic and Law." In: Edgar A. Jones, ed., Law and Electronics: The Challenge of a New Era (Albany, New York, Matthew Bender, 1962), pp. 148-228.

2. Bloomfield, Leonard. "Why a Linguistic Society?" Language 1.1-2, 1925.

3. -----. "A Set of Postulates for the Science of Language." Language 2.153-64, 1926, p. 154.

4. Bright, William. "Introduction: The Dimensions of Sociolinguistics." In: William Bright, ed., Sociolinguistics (The Hague, Mouton, 1966), pp. 11-15.

5. Chomsky, Noam. "The Logical Basis of Linguistic Theory." In: Proceedings of the Ninth International Congress of Linguists, 1962 (The Hague, Mouton, 1964), pp. 914-78.

6. -----. Language and Mind. New York, Harcourt, Brace, 1968.

7. Chomsky, Noam and Morris Halle. "Preface." In: Noam Chomsky, Cartesian Linguistics (New York, Harper, Row, 1966), pp. ix-xi.

8. Coates, William Ames. "Meaning in Morphemes and Compound Lexical Units." In: Proceedings of the Ninth International Congress of Linguists, 1962 (The Hague, Mouton, 1964), pp. 1046-51.

9. Crothers, Edward and Patrick Suppes. Experiments in Second-Language Learning. New York, Academic Press, 1967.

10. Cuadra, Carlos A. "Introduction." In: Carlos A. Cuadra, ed., Annual Review of Information Science and Technology, Vol. 1 (New York, Interscience Publishers, 1966), pp. 1-14.

11. Duncan, Hugh Dalziel. Symbols in Society. New York, Oxford University Press, 1968, p. 3.

12. Fenton, Kathleen. "Language Sciences at Indiana University." Language Sciences 2.1, October 1968.

13. Ferguson, Charles A. "The Domain of the Language Sciences." In: Arnold W. Pratt, A. Hood Roberts, and Kathleen Lewis, eds., Seminar on Computational Linguistics. October 6-7, 1966, National Institutes of Health, Bethesda, Maryland, Public Health Service Publication No. 1716 (Washington, D.C., Public Health Service, U.S. Department of Health, Education, and Welfare, 1968), pp. 4-8.

14. Fishman, Joshua A., ed. Readings in the Sociology of Language. The Hague, Mouton, 1968.

15. Francis, W. Nelson. The Structure of American English. New York, Ronald Press, 1958, p. 7.

16. Garvin, Paul L. "Notes on the Treatment of Professional Information in Linguistics." Presented to Committee on Linguistic Information, Paris, 19-21 June 1963, (mimeographed).

17. -----. "Summation and Review." In: E.C. Carterette, ed., Proceedings of the Third Conference, November 1963: Speech, Language and Communication, Brain Function, Vol. III. UCLA Forum in the Medical Sciences (Berkeley, University of California Press, 1966), pp. 263-8.

18. -----. "What is Linguistic Information?" In: Robert R. Freeman, Alfred Pietrzyk, and A. Hood Roberts, eds., Information in the Language Sciences: Proceedings of the Conference held at Airlee House, Warrenton, Virginia, March 4-6, 1966, under the Sponsorship of the Center for Applied Linguistics (New York, American Elsevier, 1968), pp. 33-40.

19. Gleason, H.A., Jr. An Introduction to Descriptive Linguistics. Rev. ed. New York, Holt, Rinehart, 1965.

20. Gorn, Saul. "The Individual and Political Life of Information Systems." In: Laurence B. Heilprin, Barbara E. Markuson, and Frederick L. Goodman, eds., Proceedings of the Symposium on Education for Information Science (Washington, D.C., Spartan Books, 1965), pp. 33-45.

21. Halliday, Michael A.K. "The Linguistic Study of Literary Texts." In: Proceedings of the Ninth International Congress of Linguists, 1962 (The Hague, Mouton, 1964), pp. 303-7.

22. Halliday, Michael A.K., Angus McIntosh, and Peter Strevens. The Linguistic Sciences and Language Teaching. London, Longmans, 1964.

23. Hartmann, Peter. "Zur Aufgabe der Linguistik." Lingua 21.197-225, 1968.

24. Hays, David G. "Introduction." In: David G. Hays, ed., Readings in Automatic Language Processing (New York, American Elsevier, 1966), pp. 1-7.

25. -----. Introduction to Computational Linguistics. New York, American Elsevier, 1967.

26. Heilprin, Laurence B. "On Trends in the Information and Language Sciences." In: Robert R. Freeman, Alfred Pietrzyk, and A. Hood Roberts, eds., Information in the Language Sciences: Proceedings of the Conference held at Airlee House, Warrenton, Virginia, March 4-6, 1966, under the Sponsorship of the Center for Applied Linguistics (New York, American Elsevier, 1968), pp. 17-21.

27. Hockett, Charles F. A Course in Modern Linguistics. New York, Macmillan, 1958.

28. Hymes, Dell, ed. Language in Culture and Society. New York, Harper, Row, 1964.

29. Jakobson, Roman. "Linguistics and Poetics." In: Thomas A. Sebeok, ed., Style in Language (Cambridge, Technology Press of Massachusetts Institute of Technology, and New York, John Wiley, 1960), pp. 350-77.

30. -----. "Introduction." In: Roman Jakobson, ed., Structure of Language and its Mathematical Aspects: Proceedings of Symposia in Applied Mathematics, Vol. XII (Providence, Rhode Island, American Mathematical Society, 1961), pp. v-vi.

31. Jones, Edgar A., Jr. "Foreword." In: Edgar A. Jones, Jr., ed., Law and Electronics: The Challenge of a New Era (Albany, New York, Matthew Bender, 1962), pp. 1-17.

32. Kelkar, Ashok R. "Language: Linguistics: The Applications." Language Sciences 4.11-13, February 1969.

33. Kubie, Lawrence S. "The Relationship of Symbolic Function in Language Formation and in Neurosis." In: Heinz Von Foerster, ed., Cybernetics: Transactions of the Seventh Conference (New York, Josiah J. Macy, Jr. Foundation, 1951), pp. 209-35.

34. -----. "Body Symbolization and the Development of Language." In: Heinz Von Foerster, ed., Cybernetics: Transactions of the Seventh Conference (New York, Josiah J. Macy, Jr. Foundation, 1951), pp. 237-49.

35. Automatic Language Processing Advisory Committee, National Academy of Sciences, National Research Council. Language and Machines: Computers in Translation and Linguistics. Publication 1416. Washington, D.C., National Academy of Sciences, National Research Council, 1966.

36. Lotz, John. "Metric Typology." In: Thomas A. Sebeok, ed., Style in Language (Cambridge, Technology Press of Massachusetts Institute of Technology, and New York, John Wiley, 1960), pp. 135-48.

37. Lyons, John. Introduction to Theoretical Linguistics. Cambridge, at the University Press, 1968.

38. Martinet, André. A Functional View of Language. Oxford, Clarendon Press, 1962.

39. Mathiot, Madeleine. "The Current State of Sociolinguistics in the United States." (To appear in Sociolinguistics Bulletin of the Interamerican Program for Linguistics and Language Teaching, Kingston, Jamaica).

40. Molles, Abraham A. and Bernard Vallancien, eds. Communications et Langages. Paris, Gauthiers-Villars, 1963.

41. Pei, Mario. The Story of Language. Philadelphia, J.B. Lippincott, 1965.

42. Price, Derek J. de Solla. Little Science, Big Science. New York, Columbia University Press, 1963.

43. Riffaterre, Michael. "The Stylistic Function." In: Proceedings of the Ninth International Congress of Linguists, 1962 (The Hague, Mouton, 1964), pp. 316-22.

44. Rosenblith, W.A. "La Perception Catégorielle des Phénonènes Sonores." In: Abraham A. Molles and Bernard Vallancien, eds., Communications et Langages (Paris, Gauthiers-Villars, 1963), pp. 67-80.

45. Sapir, Edward. "The Status of Linguistics as a Science." In: David G. Mandelbaum, ed., Selected Writings of Edward Sapir in Language, Culture and Personality (Berkeley,

University of California Press, 1951), pp. 160-6. (Originally published in Language 5.207-14, 1929).

46. Šaumjan, S.K. "Discussion" of Henning Spang-Hanssen's "Mathematical Linguistics -- A Trend in Name or in Fact?" In: Proceedings of the Ninth International Congress of Linguists, 1962 (The Hague, Mouton, 1964), pp. 68-70.

47. Sebeok, Thomas A. "Linguistics Here and Now." Language Sciences 1.3-5, May 1968.

48. Simmons, Robert F. "Automated Language Processing." In: Carlos A. Cuadra, ed., Annual Review of Information Science and Technology, Vol. 1 (New York, Interscience Publishers, 1966), pp. 137-69.

49. Saporta, Sol and Thomas A. Sebeok. "Linguistics and Content Analysis." In: Ithiel de Sola Pool, ed., Trends in Content Analysis (Urbana, Illinois, University of Illinois Press, 1959), pp. 131-50.

50. Spang-Hanssen, Henning. "Mathematical Linguistics -- A Trend in Name or in Fact?" In: Proceedings of the Ninth International Congress of Linguists, 1962 (The Hague, Mouton, 1964), pp. 61-7.

51. Stankiewicz, Edward. "Linguistics and the Study of Poetic Language" In: Thomas A. Sebeok, ed., Style in Language (Cambridge, Technology Press of Massachusetts Institute of Technology, and New York, John Wiley, 1960), pp. 69-81.

52. Swadesh, Maurice. El Lenguaje y la Vida Humana. Mexico, Fondo de Cultura Económica, 1966.

53. Tauli, Valter. "The Theory of Language Planning." In: Proceedings of the Ninth International Congress of Linguists, 1962 (The Hague, Mouton, 1964), pp. 605-9.

54. Thomas, Owen. "Grammatici Certant." English Journal 52:5. 322-6, May 1963.

55. Todorov, Tzvetan. "Présentation." Langages 1.3-4, March 1966.

56. Trojan, Felix, ed. Current Problems in Phoniatrics and Logopedics. Vol. I. Basel, S. Karger, 1960.

57. Von Foerster, Heinz. "Biological Principles of Information Storage and Retrieval." In: Allen Kent, Orrin E. Taulbee, and Gordon D. Goldstein, eds., Electronic Handling of Information: Testing and Evaluation (Washington, D.C., Thompson, 1967), pp. 123-47.

58. Weinberg, Alvin M. Reflections on Big Science. Cambridge, M.I.T. Press, 1967.

59. Wellek, René. "Closing Statement." In: Thomas A. Sebeok, ed., Style in Language (Cambridge, Technology Press of Massachusetts Institute of Technology, and New York, John Wiley, 1960), pp. 408-19.

60. Werner, Heinz. "On the Development of Word Meanings." In: Heinz Von Foerster, ed., Cybernetics: Transactions of the Seventh Conference (New York, Josiah J. Macy, Jr. Foundation, 1951), pp. 187-204.

61. Werner, Heinz and Bernard Kaplan. "Introductory Remarks." In: Heinz Werner, ed. On Expressive Language (Worcester, Massachusetts, Clark University Press, 1955), pp. 1-2.

62. Whatmough, Joshua. Language: A Modern Synthesis. New York, St. Martin's Press, 1956, p. 5.

63. National Science Foundation, Office of Science Information Service. Current Research and Development in Scientific Documentation No. 1-15. Washington, D.C.: National Science Foundation, Office of Science Information Service, 1957-1969.

64. Zvegincev, V.A. Teoretičeskaja i Prikladnaja Lingvistika. Moscow, Izdatel'stvo "Prosveščenie", 1963.