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ABSTRACT

The academic and administrative problems involved in the quest to integrate the language sciences are reviewed. It is claimed that the explanatory power of a truly interdisciplinary approach to language can only be achieved on a meta-paradigmatic level. This failure to consider the disparities in theoretical persuasions, it is noted, is a major factor in the demise of the task force approach to problem solving. Two meta-paradigmatic models are introduced and it is argued that the phenomenological approach to language research provides a basis for greater insights about the nature of language than the traditional positivistic model. What is significant about this investigation is that it not only advocates a more sophisticated analysis of the various schools of thought within the language sciences, but it also demonstrates the fact that discrepancies in language theory and practice can only come about if the various scholars of the language sciences are willing to make a concerted effort to transcend the traditional boundaries of their academic training by resolving language-related issues and sharing powerful insights within the broad dimension of interdisciplinary linguistics. (Author)

ON THE NATURE OF INTERDISCIPLINARY LINGUISTICS*

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INTRODUCTION

The struggle for autonomy in linguistics has been a long and arduous one. During the Middle Ages, for example, the teaching of grammar was considered to be an integral part of the trivium (Paetow, 1910), and this meant that its main function was to serve the higher faculties of theology, law, and medicine. More recently, it was considered to be the handmaiden to literature (Gleason, 1965) or a tool of cultural anthropologists (Lounsbury, 1968). Around the turn of the century, however, this struggle for autonomy culminated in a new level of achievement for the discipline of linguistics. This is evidenced in the rise and growth of departmental structures and degree programs within universities, and in the creation and expansion of national and international professional societies.

After less than a century of autonomy, linguistics is already in the midst of the process of fragmentation which is characteristic of the more mature disciplines of the natural and social sciences. What were at one time mere courses within the discipline have now achieved or are attempting to achieve independent status. Consider, as a case in point, the hyphenated disciplines of psycho-linguistics, socio-linguistics, geo-linguistics, and neuro-linguistics; or the nominally compounded areas of language and literature, reading and linguistics, and the philosophy of language; or the adjectively qualified fields of anthropological linguistics, educational linguistics, computational linguistics, and mathematical linguistics. What this proliferation of nomenclature demonstrates is that linguistics is rapidly becoming interdisciplinary. Hence, it is opportune and within the vested interests of linguists to earnestly inquire into the interdisciplinary nature of the science of language. As a consequence, the academic and administrative structure, and the potential for progress within this new domain of study is the focus of this paper.

IS INTERDISCIPLINARY SCHOLARSHIP POSSIBLE?

In a recent article, John Oller (1974) expressed some concern about linguistic programs which purport to be interdisciplinary. He contends that they are usually mere administrative labels for watered-down programs, and that they generally result from the ineffectual merger of existing structures. A similar concern verging on pessimism was expressed in greater depth by Campbell (1969) at a conference on the interdisciplinary relationships in the social sciences (Sherif and Sherif, 1969). Campbell is skeptical of interdisciplinary attempts to effectuate a synthesis across the traditional boundaries of academia. He argues that the Leonardo da Vinci model of the Renaissance Man is anachronistic in this age of future shock (Toffler, 1971) and information explosions. Campbell not only seriously questions the acquisition of competence in more than

one discipline, but he even doubts that such competence can be attained within any single field of study.[2]

> Lying behind many models of interdisciplinary competence is an unrealistic notion of unidisciplinary competence - the image of scholars competent in one discipline. . . What we have instead is a congeries of narrow specialties each of which covers no more than one-tenth of the discipline with even a shallow competence.
>
> Campbell, 1969:330

Campbell notes that within the administrative structures of a university, the organization of content into departments is highly arbitrary, and largely a product of historical accident.[3]

> Thus psychology is a hodgepodge of sensitive subjective biography, of brain operations, of school achievement testing, of factor analysis, of Markov process mathematics, of schizophrenic families, of laboratory experiments on group structure in which persons are anonymous, etc.
>
> Campbell, 1969:332

In addition to its arbitrary organization, departments are also ethnocentric. In order to function as a decision-making unit, they must arrive at a consensus of priorities and preferences. This consensus, Campbell notes, develops among those specialties which form natural allies within the historical evolution of a discipline. The consensus breaks down and creates problems of compatibility, however, among those specialties which are peripheral to the ethnocentric interest of the department.

> Each scientist's competence, his participation in the collective activity of science, is based upon communication. . . Shop talk, reading of dissertations, reading of each other's preprints and reprints, looking at laboratory setups and research instruments all illustrate primary modes of communication seriously warped. . . No such rewards occur for unshared reading, and thus the literature in crossdepartmental aspects of a specialty loses ground to the reinforced intradepartmental reading.
>
> Campbell, 1969:336

Although the ethnocentrism of the department creates a major obstacle to interdisciplinary research, it is a problem which can be resolved, Campbell argues, within the theoretical framework of his fish-scale model of omniscience.

BRIDGING THE GAPS AMONG THE DISCIPLINES

Because departments are ethnocentric, they tend to develop around clusters of interest. This not only results in a redundant overlap of highly similar specialties, but it also creates certain arbitrary gaps among the clusters of disciplinary interests. Rather than trying to fill these gaps by training scholars who are proficient in two disciplines on the doctoral level, Campbell proposes that individuals specialize in the creation and development of new specialties within a central discipline. This approach, he hopes, will create an overlap of disciplines which cover the whole spectrum of knowledge in much the same way that the scales of a fish overlap in spatial coverage. This model of a comprehensive and integrated multiscience reflects, upon closer scrutiny, more of a conglomeration of individuals situated within a division of multidisciplinary studies than a concerted attempt to provide an interdisciplinary integration of theoretical discrepancies in the form of a new synthesis. The fish-scale model of omniscience, then, is nothing more than a methodical effort to expand those specialties within a recognized discipline with the hope that they will overlap and provide a modicum of shared knowledge from which interdisciplinary communication can result. Unfortunately, the model proposed by Campbell is not interdisciplinary, but multidisciplinary, and to add to its difficulties, it is predicated on the assumption that communication takes place in the framework of shared knowledge about data rather than resulting from similarities in theoretical persuasions.

A far more interesting possibility for interdisciplinary research can be found in the family resemblance model of Wittgenstein (1953). By defining interdisciplinary consensus in terms of communities or societies (Downey, 1969; Hagstrom, 1965), Campbell has overlooked the fact that some disciplines are, by nature, incompatible. Furthermore, he has also failed to recognize that this incompatibility even extends downwards into the various arbitrary subspecialties within a discipline. What the family resemblance model has to offer is the concept of a system of disciplines connected by means of natural communicative links, and similar to the phenomenon of speech-chains in language (St. Clair, 1974) similarities across dialects are systematically bridged by means of interpretive procedures (Cicourel, 1972). This model explains why linguistic systems which are beyond the genetic relationships of a speech-chain remain unintelligible to each other. Hence, various degrees of communication and linguistic interaction are possible among the speech-chains of the Romance language or among the Germanic language, but languages such as Japanese and Swahili remain disparate systems because they do not share a family resemblance of features by means of which gaps can be systematically bridged through interpretive procedures, or cognitive strategies. Now let us consider how the family resemblance model can contribute to the development of a chain of communication among disciplines, and in particular, among the language sciences.

INTEGRATING THE LANGUAGE SCIENCES

The reason why some disciplines or academic specialties within a

departmental framework are incompatible is that they do not share the same scientific paradigms on a meta-theoretical level even though they may already have an existing overlap in the date they investigate.[4] The rationale for this position can be readily ascertained from the following recapitulation of the role of the paradigm in the philosophy of science.

According to Kuhn (1970), science is not the mere accretion of data and laws. Scientists do not add new theories or discoveries to their existing repetoire. What normally occurs in the history of science, Kuhn argues, is a change of intellectual commitments to a new theoretical perspective, i.e. scientists participate in the retical revolutions. This transition from the old to the new is initiated, Kuhn notes, with normal science where a community of scholars all share the same theoretical persuasions, and dedicate themselves to the same research interests. During normal science, anomalies in theory and practice are considered to be exceptions and are either dismissed or suppressed as being of no interest. While working within the paradigm or Weltanschauung of normal science, however, some scholars continue to report discrepancies in their research. They find it disturbing that the results of their experiments are not concomitant with their theory, and that some of their underlying postulates are contradictory. As these anomalies continue to mount, there is a feeling of anxiety within the scientific community which eventually leads to anomie and precipitates into a crisis situation. At this time, theories proliferate as new solutions are sought which will alleviate or resolve the acute problems within the fragmented paradigm of normal science. When the paradigm ceases to pervade throughout the community and there is an absence of shared value, eclecticism results. As these theories struggle for supremacy, one theory will emerge as the dominant problem solver. When this occurs, a new paradigm of shared values will develop around a revolutionary theory which is incompatible with the old paradigm of normal science because there has been a realignment of research interests, interpretations of data, and theoretical frameworks.

The concept of scientific paradigms hold many interesting implications for interdisciplinary research. First, it explains why certain academic specialties within a departmental framework are incompatible and remain disparate after a scientific revolution occurs. Although Campbell (1969) discussed the concept of natural allies, he did so on the level of shared data rather than on the level of shared paradigms. Second, it explains why an interdisciplinary alliance can occur even when the data under investigation appears totally unrelated. Third, it accounts for the fact that task-force management frequently results in failure in the natural sciences, social sciences, and the humanities. Usually it is directly attributed to built-in organizational conflicts about paradigmatic differences rather than about the data to be considered or the problems to be solved. Finally, it provides insight into the level of interdisciplinary research which can be immediately obtained from sharing theoretical perspectives. The closer scholars are to each other within a network of family resemblance or within a disciplinary chain of communication, the greater will be their productivity. Again, this aspect of interdisciplinary attrition across unrelated paradigms and the greater prospects for

interdisciplinary research among participants of a chain of communication has been overlooked by Campbell's fish-scale model of omniscience.

Within the language sciences, there are many conflicting paradigms. As expected, these do not only occur across disciplines, but they also create problems within established disciplines.[5] Hence, if the language sciences are to be integrated, this can only be achieved by realigning those specialties within a discipline which are compatible on a meta-paradigmatic level of shared values and theoretical persuasions. Consider, as a case in point, the following areas of interdisciplinary linguistics which have the prospect of emerging into an integrated language science.[6]

PSYCHOLOGY

- Cognition (Neisser, 1967; Bruner, 1975, 1976; Fodor, Bever, and Garrett, 1974)
- Language (Slobin, 1971)
- Development (Piaget and Inhelder, 1969; Furth, 1969; Sinclair-de-Zwart, 1969; Gibson, 1969)
- Clinical (van Kaam, 1969)

ANTHROPOLOGY

- Cognition (Tyler, 1969; Cole and Scribner, 1974)

EDUCATION

- Psychology (Bruner, 1963)
- Testing (Cicourel, et al., 1974)
- Foundations (Ramírez and Castañeda, 1974)
- Reading (Gibson and Levin, 1975; Smith, 1970, 1974)

SOCIOLOGY

- Ethnomethodology (Garfinkel, 1967; Mehan, 1975; Cicourel, 1974)
- Sociology of Knowledge (Berger and Luckman, 1966; Holzner, 1968; Natanson, 1962; Broderson, 1964; Schutz, 1966; Wagner, 1970)
- Phenomenology (Psathas, 1973; Phillips, 1974, 1975)

HISTORY

- Philosophy (Hanson, 1969; Collingwood, 1956; Kuhn, 1970; Rickman, 1962)

PHILOSOPHY

- Existentialism (Barrett, 1962)
- Phenomenology (Farber, 1968)
- Language (Searle, 1969; Fodor, 1975)

What is common to these disciplines is the meta-paradigm which views man in terms of the construction of social reality (Berger and Luckman, 1966) and phenomenology (Farber, 1968). Emphasis is given to the individual in his everyday living and in terms of his unique biographical history which provides him with coping strategies (Ramírez and Castañeda, 1974), cognitive styles (TenHouten and Kaplan, 1973), and interpretive procedures (Cicourel, 1972). This movement is consistent with the Geisteswissenschaft approach of Dilthey (Makkreel, 1975), but runs counter to the tradition of positivism which originated with Comte (1853) and culminated in the Wiener Kreis (von Mises, 1951; Weinberg, 1960).[7]

Since these two philosophical traditions contrast in their fundamental interpretations of man, it is not surprising that scholars are theoretically polarized and fail to establish a bond of communication even with the same discipline. Hence, the fact that Skinner (1957) and Slobin (1971) are both interested in language does not guarantee that they could participate within an interdisciplinary framework together. As Campbell (1969) has noted, departmental structures are arbitrary and largely a matter of historical accident.

CHAINS OF INTERDISCIPLINARY COMMUNICATION

Contrary to the skepticism of Oller (1974) and the pessimism of Campbell (1969), it is argued in this paper that interdisciplinary research is possible. Obviously, it is not to be found in the task force approach which creates conflicting structures by intercalating antithetical paradigms, and must develop solely from the individual scholar in his personal quest for theoretical insight.[8] By seeking colleagues across established disciplines who share in a meta-theoretical orientation, an individual can work progressively towards a new level of achievement in theory. This concept is not radically new, and merely represents a common effort in theoretical studies to achieve greater explanatory power across disciplinary traditions (Chomsky, 1965).

The chains of interdisciplinary communication can be readily incorporated into a larger network of predilections. Since the aspects of a scientific paradigm are multifarious, it is to be expected that different modalities of common interest overlap and eventually provide special links within a communicative chain. Language, for example, is a part of the domain of semiotics. As a verbal system it may be of special interest to other sign systems such as music[9], film, dance, literature, mathematics, etc. The importance of this spreading network of academic interests is that it provides for a model of interdisciplinary communication. It explains how disciplines can interact and develop in unique ways. It is in contrast with that form of interdisciplinary training which requires the equivalent of two or more doctorates in separate disciplines. Since communication is not even possible within single disciplines as a result of conflicting paradigms, the answer to the problem of interdisciplinary training must come from only those aspects of academia which share meta-theoretical perspectives.

CONCLUSION

The dichotomy of interdisciplinary and multidisciplinary research are frequently confused. The former represents a concerted effort to arrive at a new level of the integration and synthesis of knowledge. It is best approached by means of a common paradigmatic perspective in which chains of communication are open. Those who are skeptical of the feasibility of interdisciplinary research have misconstrued this task. The quest for total training across two or more disciplines is naive and assumes incorrectly that disciplines are rationally constructed rather than arbitrary products of political and social history. Another misconception about interdisciplinary research can be found in the view expressed by Campbell (1969) that disciplines should overlap in order to produce a spectrum of knowledge, i.e. data, which would fill the existing gaps which currently separate clusters of disciplinary interest. The issue is not one of a search for new information, but a search for insights compatible with the research interests across the disciplines. Hence, the Leonardesque ideal of the Renaissance Man is not only impossible, but should be avoided because it is irrelevant. The only feasible model of interdisciplinary research can be found in the family resemblance model with its emphasis on shared meta-paradigms. In an age of increasing diversity and academic specialization, such attempts to bridge the traditional boundaries of compartmentalized knowledge are no longer merely desirable, but have become a necessity.

FOOTNOTES

* This is a revised and expanded version of a paper which was originally presented at the regional meeting of the Institute of System Sciences on the campus of the University of Louisville in September, 1975. I wish to acknowledge the constructive suggestions of John Robingon (University of Louisville, Skip Porter (University of Louisville), and Kristin Shrader-Frechette (University of Louisville).

1. The terms "interdisciplinary" and "multidisciplinary" are commonly confused. The latter refers to the mere conglomeration of disciplines under the rubric of an area studies, or some other kind of administrative super-structure. The former, on the other hand, implies a highly interactive quest for a new level of synthesis across disciplines.

2. The myth of unidisciplinary competence is implicit in most linguistic programs. Usually, students are required to participate in the core areas of phonology, syntax, semantics, and diachronic linguistics, and they are required to elect a minor area of specialization which covers a plethora of interdisciplinary or multidisciplinary interests, viz., anthropological linguistics, psycholinguistics, sociolinguistics, the biological foundations of language, mathematical linguistics, reading, foreign language education, applied linguistics, the philosophy of language, or semiotics. In many universities even the core areas are not given equal value, and students are asked to develop competence in only one of the major fields, and a modicum of confirmed wisdom in the others.

3. Linguistics is an interesting example of the highly arbitrary nature of departmental structures. It could have remained, for example, as one of the major areas of study within anthropology. Similarly, it could have been incorporated under the rubric of semiotics, or as a mode of cognition in psychology. Its arbitrary nature, however, is also problematic on a divisional level. Some areas of linguistic study, for example, are fully within the domain of the natural sciences, and others fall within the social sciences or the humanities. But, in general, most of these specialties overlap across divisional structures.

4. This explains why the task force approach to problem-solving usually fails. Only because a group of experts share in a problem, does not mean that they can agree on a solution. Each member of a task force brings with him or her a biographical history (Wagner, 1970) which reflects a predilection towards certain values and cognitive strategies. If a task force accomplishes its goal, it is due more to good fortune than to sagacious management techniques. This point has been grossly overlooked by advocates of task-force management (Toffler, 1971). The success of a problem-solving organization is directly proportional to its shared paradigm. Without this common theoretical persuasion, communicative failure results.

5. This is largely a result of the vestiges of normal science as practiced prior to the advent of the scientific revolution.

6. This synopsis is not exhaustive. In the area of artificial intelligence, for example, the research of Minsky (1968), Reitman (1965), and Quillian (1968) could be added. The areas listed here reflect my personal research interests, and will be substantially modified as I progress into interdisciplinary linguistics in greater depth.

7. For an interesting commentary on positivism in socio-political terms, cf. Rose and Rose (1973).

8. My concept of interdisciplinary research within the individual differs from that of Campbell (1969). He envisages training within a subspecialty. My view operates from a meta-paradigmatic level.

9. The recent series on music and linguistics by Leonard Bernstein at Harvard demonstrates how two fields which appear to have nothing in common can form a common bond of research interest on a paradigmatic level. Bernstein has provided another link between linguistics and music within the global network of semiotics.

REFERENCES

Barrett, William. 1962. IRRATIONAL MAN. Garden City, N.Y.: Doubleday Anchor Books.

Berger, Peter and Thomas Luckman. 1966. THE SOCIAL CONSTRUCTION OF REALITY. N.Y.: Doubleday and Company, Inc.

Broderson, Arvid, editor. 1964. COLLECTED PAPERS II: STUDIES IN SOCIAL THEORY. The Hague: Nijhoff.

Bruner, Jerome S. 1963. THE PROCESS OF EDUCATION. N.Y.: Vintage Books.

_____ 1975. "The ontogenesis of speech acts," JOURNAL OF CHILD LANGUAGE 2.1-19.

_____ 1975. "From communication to language - a psychological perspective," COGNITION 3.255-287.

Campbell, Donald T. 1969. "Ethnocentrism of disciplines and the fish-scale model of omniscience." In M. Sherif and C. W. Sherif, editors, INTERDISCIPLINARY RELATIONSHIPS IN THE SOCIAL SCIENCES. Chicago: Aldine Publishing Co., 333-348.

Chomsky, Noam. 1965. ASPECTS OF THE THEORY OF SYNTAX. MIT Press.

Cicourel, Aaron V. 1972. "Interpretive procedures and normative rules in the negotiation of status and role." In David Sudnow, editor, STUDIES IN SOCIAL INTERACTION. New York: The Free Press, 229-258.

_____ 1974. COGNITIVE SOCIOLOGY. New York: The Free Press.

_____, Jennings, A.V.; Jennings, K.; Leiter, S.; Mackay, R.; Mehan, H.; and D. Roth. 1974. LANGUAGE USE AND SCHOOL PERFORMANCE. New York: Academic Press.

Cole, Michael and Sylvia Scribner. 1974. CULTURE AND THOUGHT. New York: John Wiley and Sons, Inc.

Collingwood, R.G. 1956. THE IDEA OF HISTORY. New York: Oxford University Press.

Comte, Auguste. 1853. Cours de philosophie positive.

Downey, Kenneth J. 1969. "The scientific community: organic or mechanical," THE SOCIOLOGICAL QUARTERLY 1.438-454.

Farber, Marvin. 1968. THE FOUNDATION OF PHENOMENOLOGY. Albany, N.Y.: S U N Y Press.

Fodor, Jerry A. 1975. THE LANGUAGE OF THOUGHT. New York: Thomas Y. Crowell Co.

_____, Bever, T. G.; and M. F. Garrett. 1974. THE PSYCHOLOGY OF LANGUAGE. New York: McGraw-Hill Book Company.

Furth, Hans G. 1969. PIAGET AND KNOWLEDGE. Englewood Cliffs, N.J.: Prentice-Hall.

Garfinkel, Harold. 1967. STUDIES IN ETHNOMETHODOLOGY. Englewood Cliffs, N.J.: Prentice-Hall.

Gibson, E. J. 1969. PRINCIPLES OF PERCEPTUAL LEARNING AND DEVELOPMENT. New York: Appleton-Century-Crofts.

_____ and Harry Levin. 1975. THE PSYCHOLOGY OF READING. MIT Press.

Gleason, J.A., Jr. 1965. LINGUISTICS AND ENGLISH GRAMMAR. New York: Holt, Rinehart and Winston.

Hagstom, Warren O. 1965. THE SCIENTIFIC COMMUNITY. New York: Basic Books, Inc.

Hanson, Norwood R. 1969. PATTERNS OF DISCOVERY. New York: Cambridge University Press.

Holzner, Burkart. 1968. REALITY CONSTRUCTION IN SOCIETY. Cambridge, Mass.: Schenkmen Publishing Company

Karmiloff-Smith, Annette and Barbel Inhelder. 1975. "If you can't get ahead, get a theory," COGNITION 3.195-212.

Kuhn, Thomas S. 1970. THE STRUCTURE OF SCIENTIFIC REVOLUTIONS. Chicago: University of Chicago Press.

Lounsbury, Floyd G. 1968. "One hundred years of anthropological linguistics." In J. O. Brew, editor, ONE HUNDRED YEARS OF ANTHROPOLOGY, Cambridge, Mass.: Harvard University Press, 153-225 and 256-264.

Makkreel, Rudolf A. 1975. DILTHEY: PHILOSOPHER OF THE HUMAN STUDIES. Princeton University Press.

Mehan, Hugh and Houston Wood. 1975. THE REALITY OF ETHNOMETHODOLOGY. New York: John Wiley and Sons, Inc.

Minsky, M. 1968. SEMANTIC INFORMATION PROCESSING. MIT Press.

Natanson, Maurice, Editor. 1962. COLLECTED PAPERS I: THE PROBLEM OF SOCIAL REALITY. The Hague: Nijhoff.

Neisser, Ulric. 1967. COGNITIVE PSYCHOLOGY. New York: Basic Books, Inc.

Oller, John W., Jr. 1974. "Towards a supradisciplinary graduate degree in the language sciences," GEORGETOWN UNIVERSITY ROUND TABLE ON LANGUAGE AND LINGUISTICS.

Paetow, Louis John. 1910. THE ARTS COURSE AT MEDIEVAL UNIVERSITIES WITH SPECIAL REFERENCE TO GRAMMAR AND RHETORIC. Dubuque, Iowa: William C. Brown Company.

Phillips, Derek. 1974. "Epistemology and social knowledge," THEORY AND SOCIETY 1.59-88.

_____ 1975. "Paradigms and incommensurability," THEORY AND SOCIETY 2.37-62.

Piaget, Jean and Barbel Inhelder. 1969. "Gaps in empiricism." In Arthur Koestler and J. R. Smythies, editors, BEYOND REDUCTIONISM. Boston, Mass.: Beacon Press, 118-160.

Psathas, George, editor. 1973. PHENOMENOLOGICAL SOCIOLOGY: ISSUES AND APPLICATIONS. New York: John Wiley and Sons, Inc.

Quillian, R. 1968. "Semantic Memory." In M. Minsky, editor, SEMANTIC INFORMATION PROCESSING, MIT Press, 227-270.

Ramírez, Manuel, III and Alfredo Castañeda. 1974. CULTURAL DEMOCRACY, BICOGNITIVE DEVELOPMENT, AND EDUCATION. New York: Academic Press.

Reber, Arthur S. 1973. "On Psycho-Linguistic Paradigms," JOURNAL OF PSYCHOLINGUISTIC RESEARCH 2.289-319.

Reitman, W. R. 1966. COGNITION AND THOUGHT. New York: John Wiley and Sons, Inc.

Rickman, H. P., editor. 1962. PATTERNS AND MEANING IN HISTORY: THOUGHTS ON HISTORY AND SOCIETY - WILHELM DILTHEY. New York: Harper Torchbooks.

Rose, Steven and Hilary Rose. 1975. "Do not adjust your mind, there is a fault in reality - ideology in neurobiology," COGNITION 2.479-502.

Schutz, Ilse. 1966. COLLECTED PAPERS III: STUDIES IN PHENOMENOLOGICAL PHILOSOPHY. The Hague: Nijhoff.

Searle, John R. 1969. SPEECH ACTS: AN ESSAY IN THE PHILOSOPHY OF LANGUAGE. Cambridge: Cambridge University Press.

Sherif, M. and C. W. Sherif, editors. 1969. INTERDISCIPLINARY RELATIONSHIPS IN THE SOCIAL SCIENCES. Chicago: Aldine Publishing Company.

Sinclair-de-Zwart, Hermina. 1969. "Developmental Psycholinguistics," In D. Elkind and J. H. Flavel, editors, STUDIES IN COGNITIVE GROWTH: ESSAYS IN HONOR OF JEAN PIAGET. New York: Oxford University Press.

Skinner, B. F. 1957. VERBAL BEHAVIOR. New York: Appleton-Century-Crofts.

Slobin, Dan. 1971. PSYCHOLINGUISTICS. Glenview, Illinois: Scott, Foresman.

Smith, Frank. 1970. UNDERSTANDING READING. Holt, Rinehart and Winston.

_____, editor. 1974. PSYCHOLINGUISTICS AND READING. Holt, Rinehart and Winston.

St. Clair, Robert N. 1974. "Communication across linguistically related systems," LINGUISTICS 126.83-95.

TenHouten, Warren and Charles D. Kaplan. 1973. SCIENCE AND ITS MIRROR IMAGE. New York: Harper and Row, Publishers.

Toffler, Alvin. FUTURE SHOCK. New York: Bantam Books.

Tyler, Stephen A., editor. 1969. COGNITIVE ANTHROPOLOGY. New York: Holt, Rinehart and Company.

van Kaam, Adrian. 1969. EXISTENTIAL FOUNDATIONS OF PSYCHOLOGY. Garden City, New York: Image Books, Division of Doubleday and Co.

von Mises, Richard. 1951. POSITIVISM. New York: Dover Publications.

Wagner, Helmut R. 1970. ALFRED SCHUTZ: ON PHENOMENOLOGY AND SOCIAL RELATIONS. Chicago, Illinois: University of Chicago Press.

Weinberg, J. R. 1960. AN EXAMINATION OF LOGICAL POSITIVISM. Paterson, New Jersey: Littlefield, Adams and Company.

Wittgenstein, Ludwig. 1953. PHILOSOPHICAL INVESTIGATIONS. New York: Macmillan.