CURRENT TRENDS IN LINGUISTICS

VOLUME 12

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CURRENT TRENDS IN LINGUISTICS

Edited by

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VOLUME 12

Linguistics and Adjacent Arts and Sciences

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EDITOR'S INTRODUCTION

To my mind, the greatest weaknesses of this series so far have appeared at its ragged periphery. This book was conceived and designed to alleviate such deficiencies as are said to be characteristic of scientific communities clustering about a well-defined, particular set of problems, or, to use a fashionable single term, with reassuring linguistic resonances, a paradigm. That scientific communities are selectively closed to external influence has been implied not only by T. S. Kuhn but also by A. L. Kroeber, in his *Style and civilizations* (1957), while others, like M. Polanyi, have conceived of academic disciplines and research areas as a sort of honeycomb structure, that is, as consisting of chains of overlapping neighborhoods extending over the entire panorama of science. Each scholar understands the self-contained paradigm of his own field and 'just enough' about those that lie adjacent to his own—but that is about the extent of his understanding. The internal consolidation of some disciplines is more self-sufficient than that of others, and there are wide variations in this respect between, say, mathematics toward one end of the scale and the biological sciences toward the other. Or, as in the history of linguistics, periods of contention for autonomy oscillate with those striving toward integration: 'In other words', Roman Jakobson insists, 'equal attention must be paid to the specifics in the structure and development of any given province of knowledge and, furthermore, to their common foundations and developmental lines as well as their mutual dependence' (1967). Our bias of the moment supports Edward Sapir's vision, expressed in 1927, that linguists, *nolens volens*, 'must become increasingly concerned with the many anthropological, sociological, and psychological problems which invade the field of language. . . . It is difficult for a modern linguist to confine himself to his traditional subject matter. Unless he is somewhat unimaginative, he 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.' The volumes of this series hitherto published have seemingly reinforced the tendency of our discipline toward a high degree of specialization, on

the tacit assumption that linguistic knowledge, to become at once cumulative and progressive, requires a certain amount of closure. However, since a receptivity to external ideas, assimilation of knowledge from other segments of the arts and the sciences, are also necessary to prevent our linguistic community from lapsing into stale dogmatism, this set of tomes was designed as a sort of counterweight to the previous eleven. They will be followed shortly by the publication of Vol. 13, *Current trends in the historiography of linguistics*, which is being typeset as I am writing these lines. The entire series will then come to an end with Vol. 14, constituting a comprehensive *Index to Current Trends in Linguistics, Vols. 1–13*.

Since the reviews of Vols. 1–5 listed in my Introductions to Vols. 6, 8, 9, and 10 have appeared, many further accounts have come to my attention, and I would like to continue below chronicling the published reactions to the series. Many of them have proved extremely instructive, either by their positive criticism, or provision of supplementary factual information, or both; a few were merely perfunctory; but none that I read were unfairly captious. My appreciation is hereby extended to all our discussants, the following among whom were not previously mentioned:

Vols. 1, 2, and 3 — Anton Vorblicher, *Anthropos* 67.938–41 (1972).

Vol. 2 — Anon., *Orientalistische Literaturzeitung* 68.86–94 (1973); Bruno Lewin, *Oriens* 21/22.587–91 (1971); James Matisoft, *JASt* 28.835–37 (1968–69); Roy Andrew Miller, *Journal of the American Oriental Society* 92.137–41 (1972); M. V. Sofronov (on China and Tibet), V. M. Alpatov (on Japan), L. R. Koncevič (on Korea), Z. V. Ševernina (on Mongolia), *et al.*, *Voprosy Jazykoznanija* 1970/2, pp. 110-30.

Vol. 3 — M. Doherty, *Zeitschrift für Phonetik, Sprachwissenschaft und Kommunikationsforschung* 23.619–25 (1970).

Vol. 5 — Michael Agar, *Language in Society* 1.279–83 (1972); George Cardona, *Linguistics* 197.40–46 (1973); G. Fussman, *BEFEO* 58.305–07 (1971); A.-G. Haudricourt, *L'Homme* 22.159–60 (1972); K. V. Zvelebil, *Lingua* 30.79–88 (1972); J. C. Wright, *BSOAS* 34.670 (1971).

Vol. 6 — Robert Hetzron, *Linguistics* (in press).

Vol. 7 — H. A. Gleason, Jr., *American Anthropologist* 74.1490–92 (1972); Jan Knappert, *Linguistics* 124.71–89 (1974); Herbert F. W. Stahlke, *Language* 50.195–205 (1974).

Vol. 8 — Karl J. Franklin, *Linguistics* (in press); A.-G. Haudricourt, *Bulletin de la Société de Linguistique de Paris* 68/2.000 (1973); Hiroshi Kuki, *Oceania* 44.68–71 (1973).

A parochial reviewer, apparently unfamiliar with the conception of the series as a whole, has questioned 'the justification of dividing the volumes according to geographic areas', remarking that, for example, 'the absense of Chadic makes Afroasiatic incomplete', whereas, in fact, this subfamily was actually covered, rather thoroughly, in a chapter of Vol. 7, and soon afterwards reprinted in a comprehensive paperback 'spin-off', *Afroasiatic: A survey*, along with the rest.

Furthermore, almost one third of the volumes — 3, 11, 12, and 13 — are not geopolitically organized at all, and our underlying scheme has been expounded in previous Introductions.

I am grateful for the remarkable generosity of the U.S. Office of Education, which has defrayed the cost of preparing all of Vols. 4, 5, 6, 7, 11, and 12, the latter — under contract No. OEC-0-9-097736-3732 (014), with the Indiana University Foundation — in the amount of $91,038, or, a total of $265,186.

Some of the contents of this book require explanatory observations.

In the original scheme, an opening section was to have been devoted to the historiography of linguistics, by way of a comprehensive chapter that was to have been written in collaboration by Stankiewicz with Hymes. However, it soon became clear to these two Associate Editors that the subject was too vast for so compressed a treatment, and, instead of producing the chapter as envisaged, they presented a preliminary design for an entire book, which was later elaborated and will shortly appear as the next volume in our series.

Many readers will question, and rightly so, the inclusion in this book of a chapter on 'Linguistics and Semantics', implying, in this particular context, that semantics is somehow legislated beyond the pale of linguistics proper. Such a perspective would ascribe a misconception totally alien to me, for, in fact, I believe that most semantic questions are quintessentially linguistic questions; Professors Coseriu and Geckeler also make their point of view about the matter crystal clear in their well-integrated treatment. That their piece appears, nonetheless, where it does, came about thus: originally, the Coseriu-Geckeler article was to have been paired with a second article on the state of semantics, contributed by another prominent expert, laboring, however, in a differing scholarly tradition, who certainly would have posed the *Fragestellung* in quite another light. The two pieces were, of course, meant to be complementary. However, this balanced design was frustrated by the inability of this admired colleague — for reasons wholly beyond his control — to submit his hardly dispensable and very much wanted disquisition.

Other readers may raise an eyebrow at the seemingly unorthodox juxtaposition of anthropology and sociology in Part Seven. This state of affairs is due to the regrettable circumstance that four anthropologists who had made binding commitments to contribute chapters on various pertinent topics simply failed to meet their obligation, whereas all those with a sociological emphasis did so punctiliously. I cannot account for the defection of the anthropologists, for they share only one manifest distinctive feature, in that they are all located in the San Francisco Bay area!

The Editorial Board allocated prime responsibility for the contents of Vol. 12 in the following manner: to Abramson, for Part Ten; to Hymes, for Part Seven; to Rubenstein, for Parts Six and Twelve; to Spolsky, for Part Nine; to Stankiewicz, for Part Three; and to the undersigned, for Parts One, Two, Four, Five, Eight,

Eleven, and Thirteen. Several of the sections will shortly be published, *in toto* or in part, in the form of separate 'spin-off' volumes, and thus become available at prices within the reach of interested individuals, notably students. I am particularly gratified at the initiative of Professors Abramson and Spolsky in this matter. Members of the Board — each according to his predilection — have contributed editorial Overviews to sections in this book of concern to them; my chapter on 'Semiotics' may also be read in that spirit.

With initial help from Lucia Hadd Zoercher, the technical preparation of this mammoth enterprise was accomplished by Alexandra Di Luglio, who also contributed the Master List of Abbreviations, the Index of Languages, and the Index of Names. Penelope Hermann extracted the Index of Subjects featured in these four tomes from the far ampler matrix of Vol. 14, now also nearing completion.

This book took longer to produce than any of its predecessors. The reasons — not excuses — for the inordinate delay are attributable (in that order) to the cussedness of authors, common inadequacy of translators, inaccessibility, to a degree, of the very countries where the best work in certain areas is being carried on, the gigantism of the undertaking, and the sheer immensity of the successive processes of editing, indexing, and printing. To illustrate: one of the most important articles to grace this book was delivered into my hands, by its distant and isolated author in person, taking advantage of my opportune visit, at a time when a very large portion of the rest of the work was already set in pages. Among the obvious alternatives, I opted for inclusion, involving great expense of Mouton funds and all our labor, and further retardation. To edit (*pace* President Kennedy) is to choose; let the readers judge the sagacity of the choices.

Wassenaar, March 11, 1974 THOMAS A. SEBEOK

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PART THIRTEEN: LINGUISTICS AS A PILOT SCIENCE

MASTER LIST OF ABBREVIATIONS

1. JOURNALS AND BOOKS

AASF	*Suomalaisen Tiedeakatemian Toimituksia/Annales Academiae Scientiarum Fennicae*, Series B. Helsinki.
Acta Oto-Laryng.	*Acta Oto-Laryngologica.* Stockholm.
Acta Psychologica	*Acta Psychologica.* European journal of psychology. Amsterdam, North Holland Publishing Co.
Acta Physiologica Scandinavia	*Acta Physiologica Scandinavia.* Scandinavian Physiological Society. Karolinska Institutet. Stockholm.
Acta Radiologica	*Acta Radiologica.* 2 Series. 1. = *Diagnosis*; 2. = *Therapy, Physics, Biology.* Radiological Societies of Denmark, Finland, Norway and Sweden. Stockholm.
AD	*American Documentation.* Washington, D.C.
AEH	*Acta Ethnographica Academiae Scientiarum Hungaricae.* Budapest.
African Music	*African Music.* Johannesburg.
AfrS	*African Studies.* Johannesburg.
AGI	*Archivio Glottologico Italiano.* Florence.
AJA	*American Journal of Archeology.* New York.
AJExpPsych	*American Journal of Experimental Psychology = JExPsych.*
AJPsych	*The American Journal of Psychology.* Austin, Texas.
AJSoc	*American Journal of Sociology.* Chicago.
AL	*Acta Linguistica Hafniensia.* International Journal of Structural Linguistics. Copenhagen.
ALH	*Acta Linguistica Academiae Scientiarium Hungaricae.* Budapest.
AmA	*American Anthropologist.* Menasha, Wisconsin.
American Annals of the Deaf	*American Annals of the Deaf.* Conference of Executives of American Schools for the Deaf; American Instructors of the Deaf. Washington, D.C.
American Behavioral Scientist	*American Behavioral Scientist.* Beverly Hills, Calif., Sage Publications.
American Journal of Psychotherapy	*American Journal of Psychotherapy* (Supplement). Association for the Advancement of Psychotherapy. Jamaica, N.Y.
American Philosophical Quarterly	*American Philosophical Quarterly.* Oxford, Basil Blackwell & Mott Ltd.
Amer. Naturalist	*American Naturalist*, devoted to the advancement and correlation of the biological sciences. American Society of Naturalists. Chicago, University of Chicago Press.
Amer. Zoologist	*American Zoologist.* American Society of Zoologists. c/o California Lutheran College, Thousand Oaks, Calif.
AMNH-B	*American Museum of Natural History, Bulletin.* New York.
AmPsych	*American Psychologist*, American Phsychology Association, Washington, D.C.
Analysis	*Analysis.* Oxford, Basil Blackwell.

Anat. Record	*Anatomical Record.* American Association of Anatomists. Wistar Institute of Anatomy and Biology, Philadelphia.
Anglia	*Anglia.* Zeitschrift für englische Philologie. Tübingen.
Animal Behaviour	*Animal Behaviour* (Monographs). Association for the Study of Animal Behaviour and American Behaviour Society. London, Bailliere, Tindall and Cassell Ltd.
AnL	*Anthropological Linguistics.* Bloomington, Indiana.
Ann. d'Otolaryng.	*Anales d'Oto-Laryngologie.* Societé de Laryngologie des Hopitaux de Paris. Paris, Masson et Cie.
Anthropos	*Anthropos.* Revue internationale d'ethnologie et de linguistique/Internationale Zeitschrift für Völker- und Sprachenkunde. Freiburg, Switzerland.
Antiquity	*Antiquity*; a quarterly review of archeology. Cambridge, Eng., W. Heffer & Sons Ltd.
Architects' Journal	*The Architects' Journal.* London, Architectural Press.
Archives of General Psychiatry	*Archives of General Psychiatry.* American Medical Association. Chicago.
Arch. Klin. Exper. Ohren-, Nasen- u. Kehlkopfheilk.	*Archiv für Klinische und Experimentelle Ohren-, Nasen- und Kehlkopfheilkunde.* (Formerly *Arch. Oh.- Nas.- u. Kehlk. Heilk.*) Deutsche Gesellschaft der Hals-, Nasen- Ohrenärzte. New York and West Berlin, Springer-Verlag.
ArchL	*Archivum Linguisticum.* A Review of Comparative Philology and General Linguistics. Glasgow.
ArchNPE	*Annales Neérlandaises de Phonétique Expérimentale.* Amsterdam.
Arch. Otolaryngology	*Archives of Otolaryngology.* American Medical Association. Chicago.
ArchPsych	*Archives de Psychologie.* Geneva.
AS	*American Scientist*; published in the interest of scientific research. Society of Sigma Xi, Scientific Research Society of America. New Haven, Conn.
ASHA Rep.	*American Speech and Hearing Reports.* Washington, D.C.
Auk	*Auk.* A journal of ornithology. The American Ornithologists' Union. Anchorage, Ky.
AUPELF	*La Revue de l'Association des Universités partiellement ou entièrement de langue française.* Université de Montréal.
Australasian J. of Philosophy	*Australasian Journal of Philosophy.* Australasian Association of Philosophy. University of Sydney Philosophy Department. Sydney.
BAE-R	*Bureau of American Ethnology, Annual Report.* Washington, D.C.
Baessler-Archiv	*Baessler-Archiv.* Beiträge zur Völkerkunde. Museum für Völkerkunde, Berlin-Dahlem. Berlin, Verlag Dietrich Reimer.
BEFEO	*Bulletin de l'École Française d'Extrême-Orient.* Saigon.
Behaviour	*Behaviour* (Monographs); *an international journal of comparative ethology.* Leiden, E. J. Brill.
BCLC	*Bulletin du Cercle Linguistique de Copenhague.* Copenhagen.
BibPhon	*Bibliotheca Phonetica.* Basel and New York, S. Karger.
BICC	*Thesaurus*; *Bolétin del Instituto Caro y Cueva.* Bogatá.
Biological Reviews	*Biological Reviews of the Cambridge Philosophical Society.* New York and London, Cambridge University Press.
Biologisches Zentralblatt	*Biologisches Zentralblatt.* Leipzig, VEB Georg Thieme.
BLI	*Beiträge zur Linguistik und Informationsverarbeitung.* Munich.
Brain	*Brain.* Journal of neurology. London, Macmillan (Journals) Ltd.
Brain Research	*Brain Research.* International interdisciplinary journal devoted to fundamental research in the brain sciences. Amsterdam, Elsevier Publishing Co.
British Journal of Aesthetics	*The British Journal of Aesthetics.* British Society of Aesthetics. London, Thames & Hudson Ltd.
BrJEdPsych	*British Journal of Educational Psychology.* London, Methuen & Co.
BrJPsych	*British Journal of Psychology.* British Psychological Society. New York and

	London, Cambridge University Press.
BrJSocCPsych	*British Journal of Social and Clinical Psychology*. British Psychological Society. London and New York, Cambridge University Press.
BRMI	*Behavior Research Methods and Instrumentation*. University of Wisconsin Regional Primate Research Center. Psychonomic Journals, Inc. Madison, Wisc.
BS	*Behavioral Science*. Ann Arbor, Mich.
BSOAS	*Bulletin of the School of Oriental and African Studies, University of London*. London.
BSL	*Bulletin de la Société de Linguistique de Paris*. Paris.
BT	*The Bible Translator*. Periodical for the Assistance of Bible Translators. London.
Bulletin of Mathematical Biophysics	*Bulletin of Mathematical Biophysics*. Mental Health Research Institute, University of Michigan. Ann Arbor, Mich.
Bull. Mus. Comp. Zool.	*Museum of Comparative Zoology at Harvard University, Bulletin*. Cambridge, Mass.
CACM	*Communications of the Association for Computing Machinery*. New York.
CanadJPsych	*Canadian Journal of Psychology/Revue Canadienne de Psychologie*. Canadian Psychological Association. Toronto, University of Toronto Press.
CanadPsych	*Canadian Psychologist/Psychologie Canadienne*. Canadian Psychological Association. Ottawa, Ontario.
CAnthr	*Current Anthropology*. A world journal of the sciences of man. Chicago.
CFS	*Cahiers Ferdinand de Saussure*. Geneva.
CDev	*Child Development*. Society for Research in Child Development. Washington, D.C.
CEd	*Childhood Education*. A journal for teachers, administrators, church-school workers, librarians, pediatricians. Association for Childhood Education. Washington, D.C.
CHum	*Computers and the Humanities*. New York, New York.
CJL	*Canadian Journal of Linguistics/Revue Canadienne de linguistique*. Toronto.
Cleft Palate	*Cleft Palate Journal*. American Cleft Palate Association. Gainesville, Fla.
CLex	*Cahiers de Lexicologie*. Besançon.
CogPsych	= JCogPsych.
CollE	*College English*. Chicago.
Comp. Stud. Soc. & Hist.	*Comparative Studies in Society and History*.
Condor	*Condor*. Cooper Ornithological Society, Inc. New Mexico State University Department of Biology. Las Cruces, N.M.
Cortex	*Cortex*. Journal devoted to study of the nervous system and behavior. Varese, Tipografica Varese.
CSHVB	*Computer Studies in the Humanities and Verbal Behavior*. The Hague, Mouton.
CTL	*Current Trends in Linguistics*, vols. 1-12. The Hague, Mouton.
Deutsche Vierteljahrschrift	*Deutsche Vierteljahrschrift für Literaturwissenschaft und Geistesgeschichte*. Stuttgart, J. B. Metzlersche Verlagsbuchhandlung.
DevPsych	*Developmental Psychology*. American Psychological Association. Washington, D.C.
Die Erde	*Die Erde*. Zeitschrift der Gesellschaft für Erdkunde zu Berlin. Berlin, Walter de Gruyter & Co.
Diogenes	*Diogenes*. An international review of philosophy and humanistic studies. International Council for Philosophy and Humanistic Studies. Montreal, Mario Casalini Ltd.
Disorders of Communication	*British Journal of Disorders of Communication* (incorporating *Speech Pathology and Therapy*). Edinburgh, E & S. Livingstone Ltd.
DJbVk	*Deutsches Jahrbuch für Volkskunde*. Berlin.
EE	*Elementary English*. A magazine of the language arts. National Council of Teachers of English. Champaign, Ill.
EdR	*Educational Research*. Hove, Sussex. King, Thorne & State Ltd.

ELEC	*English Language Education Council Bulletin.* Tokyo.
Electroenceph. Clin. Neuropsysiol.	*Electroencephalography and Clinical Neurophysiology.* International Federation of Societies for Electroencephalography and Clinical Neurophysiology. Amsterdam, Elsevier Publishing Co.
Esprit	*Esprit.* Paris.
Estetika	*Estetika.* Prague, Czechoslovak Academy of Sciences.
ETAT	*Eesti NSV Teaduste Akadeemia Toimetised, Ühiskonnateaduste seeria / Izvestija Akademii Nauk Estonskoj SSR, Serija obščestvennych nauk.* Tallinn.
Ethnographia	*Ethnographia.* Hungarian Ethnographical Society. Budapest.
Ethnology	*Ethnology.* International Journal of Cultural and Social Anthropology. Pittsburgh.
Ethnos	*Ethnos.* Etnografiska Museet. Stockholm.
Études camerounaises	*Études Camerounaises.* Douala.
Evolution	*Evolution.* International journal of the Society for the Study of Evolution. University of Kansas, Lawrence, Kans.
Experimental Brain Research	*Experimental Brain Research/Experimentation Cérébral/Experimentelle Hirnforschung.* New York and Berlin, Springer Verlag.
Eye, Ear, Nose and Throat Monthly	*The Eye, Ear, Nose and Throat Monthly.* Chicago, Professional Press, Inc.
FFC	*Folklore Fellows Communications.* Helsinki.
FL	*Foundations of Language.* International journal of language and philosophy. Dordrecht, The Netherlands.
FLing	*Folia Linguistica.* Acta Societatis Linguisticae Europaeae. The Hague, Mouton.
FM	*Le Français Moderne.* Paris.
FPhon	*Folia Phoniatrica.* Journal international de phoniatrie. Basel and New York, Karger.
FR	*French Review.* American Association of Teachers of French. Eastern Michigan University. Ypsilanti, Mich.
Genetic Psychology Monographs	*Genetic Psychology Monographs*; child behavior, animal behavior and comparative psychology. Provincetown, Mass., Journal Press.
GLing	*Germanistische Linguistik.* Marburg/Lahn.
Globus	*Globus.* Hildburghausen, Brunswick (= *Petermanns Geographische Mitteilungen*).
Grundlagenstudien aus Kybernetik und Geisteswissenschaft	*Grundlagenstudien aus Kybernetik und Geisteswissenschaft* (Supplement). Quickborn, Verlag Schnelle.
Helicon	*Helicon.* Leipzig-Budapest.
Hispania	*Hispania.* A journal devoted to the interest of the teaching of Spanish and Portuguese. Appleton, Wisc.
HO	*Human Organization.* Society for Applied Anthropology. Lexington, Ky.
Homme	*L'Homme.* Revue française d'anthropologie. Paris & The Hague, Mouton.
HSPh	*Harvard Studies in Classical Philology.* Cambridge, Mass.
Human Relations	*Human Relations.* A journal of studies towards the integration of the social sciences. New York, Plenum Publishing Corp.
Ibis	*Ibis.* British Ornithologists' Union. London, Academic Press.
IBM J.	*IBM Journal of Research and Development.* International Business Machines Corp., Armonk, N.Y.
I & C	*Information and Control.* New York and London.
IEEE Trans. Audio	*IEEE Transactions. Audio and Electroacoustics.* Institute of Electrical and Electronics Engineers, Inc. New York.
IF	*Indogermanische Forschungen.* Zeitschrift für Indogermanistik und allgemeine Sprachwissenschaft. Berlin.
IJAL	*International Journal of American Linguistics* (Memoir). Baltimore.
IJSLP	*International Journal of Slavic Linguistics and Poetics.* The Hague, Mouton
IL	*Indian Linguistics.* Journal of the Linguistic Society of India. Poona.

Insectes Sociaux	*Insectes Sociaux*. Paris, Masson & Cie.
International Social Science Journal	*International Social Science Journal/Revue internationale des sciences sociales*. New York and Paris, UNESCO Publications.
IRAL	*International Review of Applied Linguistics in Language Teaching/Internationale Zeitschrift für angewandte Linguistik in der Spracherziehung*. Heidelberg.
ISR	*Information Storage and Retrieval*. Oxford.
IUPAL	*Indiana University Publications in Anthropology, Folklore and Linguistics*. Bloomington, Ind.
JAbPsych	*Journal of Abnormal Psychology*. American Psychologists Association. Washington, D.C.
JAbSocPsych	*Journal of Abnormal and Social Psychology*. Washington, D.C.
JAcm	*Journal of the Association for Computing Machinery*. Baltimore.
JAcS	*Journal of the Acoustical Society of America*. Lancaster, Pa. and New York. A = *Abstract*; L = *Letter*.
JAF	*Journal of American Folklore*. Philadelphia.
J. Anat.	*Journal of Anatomy*. Anatomical Society of Great Britain and Ireland. New York and London, Cambridge University Press.
JanL	*Janua Linguarum*. Series maior, minor, practica, and critica. The Hague, Mouton.
JAOS	*Journal of the American Oriental Society*. New Haven, Conn.
Jap. J. Physiol.	*Japanese Journal of Physiology*. Japan Publications Trading Co., Ltd. Tokyo.
J. Appl. Physiol.	*Journal of Applied Physiology*. American Physiological Society. Bethesda, Md.
JASt	*The Journal of Asian Studies*. New York.
JAudEngSoc	*Journal of the Audio Engineers Society*. London.
JAudRes	*Journal of Auditory Research*. For all workers seriously interested in the scientific study of hearing. C.W. Shilling Auditory Research Center, Inc. Groton, Conn.
JC	*Journal of Communication*. National Society for the Study of Communications. Jacksonville, Fla.
JCogPsych	*Journal of Cognitive Psychology*. Washington, D.C.
J. Comp. Physiol. Psychol.	*Journal of Comparative and Physiological Psychology*. American Psychological Association. Washington, D.C.
J. de Psych.	*Journal de Psychologie Normale et Pathologique*. Boulogne-Sur-Seine, PUF.
JEA	*The Journal of Egyptian Archaeology*. London.
JEdPsych	*Journal of Educational Psychology*. American Psychological Society. Washington, D.C.
JEL	*Journal of English Linguistics*. Bellingham, Wash.
JExCPsych	*Journal of Experimental Child Psychology*. New York, Academic Press.
JExPsych	*Journal of Experimental Psychology*. American Psychological Society. Washington, D.C.
JExSocPsych	*Journal of Experimental Social Psychology*. New York, Academic Press.
J. Folklore Inst.	*Journal of the Folklore Institute*. The Hague, Mouton.
J. Franklin Inst.	*Journal of the Franklin Institute*. Philadelphia.
JGenPsych.	*Journal of Genetic Psychology*. Child behavior, animal behavior and comparative psychology. Provincetown, Mass., Journal Press.
JL	*Journal of Linguistics*. London.
J. Laryng.	*Journal of Laryngology and Otology*. London, Headley Bros.
J. Neurophysiol.	*Journal of Neurophysiology*. American Physiological Society. Bethesda, Md.
J. Ornithologie	*Journal für Ornithologie* Deutsche Ornithologen-Gesellschaft. Berlin, R. Friedländer & Sohn.
Journal of Counselling Psychology	*Journal of Counselling Psychology*. For psychologists and personnel workers concerned with the counselling of clients, students, and employees. American Psychological Association. Washington, D.C.
Journal of Mammology	*Journal of Mammology*. American Society of Mammologists. Lawrence, Kans., Allen Press.
Journal of Philosophy	*Journal of Philosophy*. Journal of Philosophy, Inc. New York, Columbia University.

JPSocPsych	*Journal of Personality and Social Psychology*. American Psychological Association. Lancaster, Pa. Formerly *JAbSocPsych.*
JPsych	= *J. de Psych.*
J. Psychiatr. Res.	*Journal of Psychiatric Research*. Elmsford, N.Y., and Oxford, Pergamon Press (Journals Dept.).
J. Psychos. Res.	*Journal of Psychosomatic Research*. Elmsford, N.Y. and Oxford, Pergamon Press.
JPTA	*Journal de Physique Théorétique et Appliquée*. Paris.
JR	*Journal of Reading*. Formerly: *Journal of Developmental Reading*. International Reading Association. Newark, Del.
J. Radio Res. Labs.	*Journal of the Radio Research Laboratories*. Tokyo.
JRAI	*Journal of the Royal Anthropological Institute of Great Britain and Ireland*. London.
JSAm	*Journal de la Société des Américanistes*. Paris.
JSHD	*Journal of Speech and Hearing Disorders*. Wachington, D.C.
JSHR	*Journal of Speech and Hearing Research*. Washington, D.C.
JSOc	*Journal de la Société des Océanistes*. Paris.
JSocI	*Journal of Social Issues*. Society for the Psychological Study of Social Issues. Ann Arbor, Mich.
JSocPsych	*Journal of Social Psychology*. Provincetown, Mass., The Journal Press.
J. Theoretical Biology	*Journal of Theoretical Biology*. London, Academic Press.
JVLVB	*Journal of Verbal Learning and Verbal Behavior*. New York.
J. Zool.	*Journal of Zoology*. Formerly: *Proceedings of the Zoological Society of London*. London, Academic Press.
Kenyon Review	*Kenyon Review*. Kenyon College, Gambier, Ohio.
Keystone Folklore Quarterly	*Keystone Folklore Quarterly*. Pennsylvania Folklore Society, Lycoming College, Williamsport, Penna.
Kongo-Overzee	*Kongo-Overzee*. Ghent/Antwerp.
Kursbuch	*Kursbuch*. Frankfurt (Main), Suhrkamp Verlag.
KZ	*Zeitschrift für vergleichende Sprachforschung auf dem Gebiete der indogermanischen Sprachen*. Begründet von A. Kuhn. Göttingen.
Langages	*Langages*. Paris.
Langue Française	*Langue Française*. Paris.
L'Anthropologie	*L'Anthropologie*. Paris, Masson & Cie.
L'Arc	*L'Arc*. Aix-en-Provence.
Laryngoscope	*Laryngoscope*. A monthly journal on diseases of the ear, nose, and throat. American Laryngological, Rhinological and Otological Society. Collinsville, Ill., Laryngoscope Co.
LBerichte	*Linguistische Berichte*. Braunschweig.
LCC-P	*Linguistic Circle of Canberra, Publications*. Series A, Occasional Papers; Series B; Monographs; Series C, Books. Canberra.
LeSt	*Lingua e stile*. Quaderni dell'Istituto di Glottologia dell Università degli Studi di Bologna. Bologna.
Lg	*Language*. Journal of the Linguistic Society of America. Baltimore.
LgSciences	*Language Sciences*. Indiana University Research Center for the Language Sciences. Bloomington, Ind.
Lingua	*Lingua*. International Review of General Linguistics/Revue internationale de linguistique générale. Amsterdam.
Linguistic Inquiry	*Linguistic Inquiry*. Toronto.
Linguistic Reporter	*The Linguistic Reporter*. Center for Applied Linguistics, Arlington, Va.
Linguistics	*Linguistics*. An international review. The Hague, Mouton.
Linguistique	*La Linguistique*. Revue internationale de linguistique générale. Paris.
Listener	*Listener and BBC Television Review*. London, British Broadcasting Corp.
LL	*Language Learning*. Ann Arbor, Mich.

L&LL	*Language and Language Learning*. London, Oxford University Press.
Logos	*Logos*. Naples, Libraria Scientifica Editrice.
L&S	*Language and Speech*. Teddington, Middlesex.
Man	*Man*. A Record of Anthropological Science. London.
Mathematical Biosciences	*Mathematical Biosciences*. An international journal. New York, American Elsevier.
META	*META*. (Formerly: *Journal des Traducteurs*.) Université de Montreal.
Mind	*Mind*. A quarterly review of psychology and philosophy. Oxford, Basil Blackwell.
MIT-QPR	*Quarterly Progress Report, Research Laboratory of Electronics, Massachusetts Institute of Technology*. Cambridge, Mass.
ML	*Modern Languages*. Journal of the Modern Language Association. London.
MLJ	*Modern Language Journal*. Ann Arbor, Mich.
Monist	*The Monist*. La Salle, Ill., Open Court Publishing Co.
MPhon	*Le Maître Phonétique*. Organe de l'Association Phonétique Internationale. London.
MS	*Mediaeval Studies*. Toronto.
Mschr. Ohrenheilk.	*Monatsschrift für Ohrenheilkunde und Laryngo-Rhinologie*. Österreichische Oto-Laryngologische Gesellschaft und Wiener Gesellschaft der Hals-, Nasen-, Ohren-Ärzte. Vienna, Verlag Urban & Schwartzenberg GmbH.
MSFOu	*Mémoires de la Société Finno-ougrienne*. Helsinki.
MSLL	*Monograph Series on Languages and Linguistics*, Georgetown University. Washington, D.C.
MSOS	*Mitteilungen des Seminars für Orientalische Sprachen*. Berlin.
MT	*Mechanical Translation*. Cambridge, Mass.
Nature	*Nature*. A weekly journal of science. London, Macmillan (Journals) Ltd.
NDok	*Nachrichten für Dokumentation*. Zweimonatsschrift für Forschung und Praxis der Dokumentation. Fachausschuss Bibliotheks-, Buch- und Zeitschriftenwesen im Deutschen Normenausschuss. Deutsche Gesellschaft für Dokumentation. Frankfurt (Main).
Neuropsychologia	*Neuropsychologia*. An international journal. Elmsford, N.Y., and Oxford, Pergamon Press.
Nigeria	*Nigeria*. Ibadan.
Nous	*Nous*. A quarterly journal of philosophy. Detroit, Mich., Wayne State University Press.
Oceania	*Oceania*. A journal devoted to the study of the native peoples of Australia, New Guinea and the Islands of the Pacific Ocean. Sydney.
OL	*Oceanic Linguistics*, Special Publication. Pacific and Asian Linguistics Institute, University of Hawaii. Honolulu.
OSlP	*Oxford Slavonic Papers*. London.
Palabra y el Hombre	*La Palabra y el Hombre*. Departamento Editorial de la Universidad Veracruzana. Veracruz.
PAPhilosS	*Proceedings of the American Philosophical Society*. Philadelphia.
PBB(T)	*Beiträge zur Geschichte der deutschen Sprache und Literatur*. Tübingen.
PBML	*Prague Bulletin of Mathematical Linguistics*. Prague.
Petermanns Mitteilungen	= *Globus*.
Philosophical Forum	*Philosophical Forum*. Boston University Department of Philosophy. Boston, Mass.
Philosophical Magazine	*Philosophical Magazine*. A journal of theoretical, experimental, and applied physics. London, Taylor & Francis Ltd.
Philosophical Quarterly	*The Philosophical Quarterly*. University of St. Andrews for Scots Philosophical Club. Dundee, Scotland, The University.
Philosophical Review	*Philosophical Review*. Faculty of the Sage School of Philosophy. Ithaca, N.Y., Cornell University.
Philosophical Studies	*Philosophical Studies*. Minneapolis, University of Minnesota Press.

Philosophy and Phenomenological Research	*Philosophy and Phenomenological Research.* International Phenomenological Society, State University of New York at Buffalo. Buffalo, N.Y.
Philosophy of Science	*Philosophy of Science.* Philosophy of Science Association. St. Louis, Mo.
Phonetica	*Phonetica.* Internationale Zeitschrift für Phonetik/International Journal of Phonetics. Basel & New York.
Phylon	*Phylon.* Atlanta, Ga.
Physical Review	*Physical Review.* American Physical Society. New York, American Institute of Physics, Inc.
PICL 8	*Proceedings of the Eighth International Congress of Linguists/Actes du Huitième Congrès International des Linguistes, Oslo 5-9 August, 1958.* General editor: Eva Sivertsen. Oslo, Oslo University Press, 1960.
PICL 9	*Proceedings of the Ninth International Congress of Linguists, Cambridge, Mass., August 27-31, 1962.* Ed. by Horace G. Lunt. Janua Linguarum Series Maior 12. The Hague, Mouton, 1964.
PICL 10	*Actes du Xe Congrès International des Linguistes, Bucarest, 28 août-2 septembre 1967.* Redacteur en chef: A. Graurs. Editions de l'Académie de la République Socialiste de Roumanie, Bucarest. 4 vols., 1969-1970.
PICPS 4	*Proceedings of the Fourth International Congress of Phonetic Sciences, held at the University of Helsinki, 4-9 September, 1961.* Edited by Antti Sovijärvi and Pento Aalto. The Hague, Mouton, 1962.
PICPS 5	*Proceedings of the Fifth International Congress of Phonetic Sciences, held at the University of Münster, 16-22 August, 1964.* Edited by Eberhard Zwirner and Wolfgang Bethge. Basel and New York, Karger, 1965.
PICPS 6	*Proceedings of the Sixth International Congress of Phonetic Sciences, held in Prague, September 7-13, 1967.* Prague, Academia.
Plains Anthropologist	*Plains Anthropologist*; a medium for the anthropological interpretation of the plains area in the United States (Plains Conference). Museum of Anthropology, University of Kansas. Lawrence, Kans.
PMLA	*Publications of the Modern Language Association of America.* New York.
PMS	*Perceptual and Motor Skills.* Missoula, Mont.
Poetica	*Poetica.* Zeitschrift für Sprach- und Literaturwissenschaft. Munich.
POLA	*Project on Linguistic Analysis.* Columbus, Ohio.
P&P	*Perception & Psychophysics.* Austin, Tex., Psychonomic Journals, Inc.
Practica Oto-Rhino-Laryngologica	*Practica Oto-Rhino-Laryngologica.* International review of otolaryngology. Supplement: *Bibliotheca Oto-Rhino-Laryngologica.* Basel, S. Karger.
Proceedings of the Royal Institution	*Proceedings of the Royal Institution of Great Britain.* Barking, Essex, Elsevier Publishing Co., Ltd.
Proc. Nat. Acad. Sci.	*Proceedings of the National Academy of Science.* Washington, D.C.
Proc. Zool. Soc. London	*Proceedings of the Zoological Society of London.* Now: *Journal of Zoology.* London, Academic Press.
PsychB	*Psychological Bulletin.* Evaluative review of research, literature and articles on research methodology in psychology. American Psychological Society. Washington, D.C.
Psychiatry	*Psychiatry.* Journal for the study of interpersonal processes. William Alanson White Psychiatric Foundation, Inc. Washington, D.C.
PsychM	*Psychological Monographs.* American Psychological Society. Washington, D.C.
Psychologie und Ihre Anwendungen	*Schweitzerische Zeitschrift für Psychologie und Ihre Anwendungen.* Bern, Hans Huber.
Psychology Today	*Psychology Today.* Los Angeles, Calif., CRM, Inc.

Psychonomic Science	*Psychonomic Science.* Austin, Tex., Psychomonic Journals, Inc.
PsychRev	*Psychological Review.* American Psychological Society. Washington, D.C.
QJEP	*Quarterly Journal of Experimental Psychology.* Experimental Psychology Society. London and New York, Academic Press.
QJSp	*The Quarterly Journal of Speech.* Columbia, Missouri.
Quarterly Rev. Biol.	*Quarterly Review of Biology.* Stony Brook Foundation, Inc. Stony Brook, N.Y., State University of New York.
Ratio	*Ratio.* Oxford, Basil Blackwell.
RCAFL-P	*Indiana University Research Center in Anthropology, Folklore and Linguistics, Publications.* Bloomington, Ind.
Recent Advances in Biological Psychiatry	*Recent Advances in Biological Psychiatry.* Formerly: *Biological Psychiatry.* Society of Biological Psychiatry. New York, Plenum Publishing Corp.
REL	*Revue des Études Latines.* Paris.
RESl	*Revue des Études Slaves.* Paris.
Review of Metaphysics	*Review of Metaphysics.* A philosophical quarterly. Philosophy Education Society, Ltd. Haverford, Pa., Haverford College.
RevPhonA	*Revue de Phonétique Appliquée.* Mons.
Revue d'esthétique	*Revue d'esthétique.* Centre National de la Recherche Scientifique. Paris, Klincksieck.
RF	*Romanische Forschungen.* Vierteljahrschrift für romanische Sprachen und Literaturen. Frankfurt a.M.
RH	*Romanica Helvetica.* Bern.
RJb	*Romanistisches Jahrbuch.* Hamburg.
RLing	*Revue Roumaine de Linguistique.* Bucharest.
RLR	*Revue de Linguistique Romane.* Lyons & Paris.
RRQ	*Reading Research Quarterly.* International Reading Association. Newark, Del.
RSSPh	*Revue roumaine des sciences sociales. Série de philosophie et logique.* Bucharest, Editions de l'Académie de la République Socialiste de Roumanie.
RT	*Reading Teacher.* International Reading Association. Newark, Del.
SA	*Scientific American.* New York, Scientific American, Inc.
Science	*Science.* American Association for the Advancement of Science. Washington, D.C.
Science Progress	*Science Progress.* A quarterly review of current developments in science. Oxford, Blackwell Scientific Publications, Inc.
Semiotica	*Semiotica.* Journal of the International Association for Semiotic Studies. The Hague, Mouton.
SG	*Studium Generale.* Berlin, Göttingen, and Heidelberg.
SIL	*Studies in Linguistics.* Buffalo, N.Y.
SJA	*Southwestern Journal of Anthropology.* Albuquerque, N.M.
SL	*Studia Linguistica.* Revue de linguistique générale et comparée. Lund.
SMC	*Smithsonian Miscellaneous Contributions.* Smithsonian Institution. Washington, D.C.
SMIL	*Statistical Methods in Linguistics.* Stockholm.
SocF	*Social Forces.* Chapel Hill, N.C.
Sociology and Social Research	*Sociology and Social Research.* An international journal. Los Angeles, Calif.
Sociometry	*Sociometry.* New York, Moreno.
SocSciI	*Social Science Information/Information sur les Sciences Sociales.* International Social Science Council. Paris.
Southern Folklore Quarterly	*Southern Folklore Quarterly.* University of Florida, Gainesville, Fla.
SovEtn	*Sovetskaja Etnografija.* Moscow-Leningrad.
SPhon	*Studia Phonologica.* Kyoto.
SpMon	*Speech Monographs.* Columbia, Missouri.
SRAZ	*Studie Romanica et Anglica Zagrabiensia.* Zagreb.

STL-QPSR	*Speech Transmission Laboratory, Quarterly Progress and Status Report.* Stockholm.
Strumenti Critici	*Strumenti Critici.* Turin.
Studia Philosophica	*Studia Philosophica.* Jahrbuch der Schweizerischen Philosophischen Gesellschaft. Basel, Verlag für Recht und Gesellschaft AG.
STZ	*Sprache im technischen Zeitalter.* Stuttgart.
Synthese	*Synthese.* An international journal for epistemology, methodology and philosophy of science. Dordrecht, Reidel.
TAPA	*Transactions and Proceedings of the American Philological Association.* Lancaster, Pa.
TCLC	*Travaux du Cercle Linguistique de Copenhague.* Copenhagen.
TCLP	*Travaux du Cercle Linguistique de Prague.* Prague.
Terre et la Vie	*La Terre et la Vie.* Revue d'écologie appliquée. Société Nationale de Protection de la Nature et Acclimatation de France. Paris.
Theoria	*Theoria.* A Swedish journal of philosophy. Lund, C.W.K. Gleerups Forlag.
TIL	*Travaux de l'Institut de Linguistique.* Faculté des Lettres de l'Université de Paris. Paris.
TIPL	*Travaux de l'Institut de Phonétique de Lund.* Lund, Gleerup.
TITL	*Tijdschrift van het Instituut voor Toegepaste Linguistiek.* Leuven.
TLL	*Travaux de Linguistique et de Littérature*, publiés par le Centre de Philologie et de Littératures romanes de l'Université de Strasbourg. Strasbourg.
TLP	*Travaux linguistiques de Prague.* Prague, Editions de l'Académie Tchecoslovaque des Sciences, 1966.
TPhS	*Transactions of the Philological Society.* Oxford.
TraLiLi	= *TLL.*
Trans. Phil. Soc.	= *TPhS*
Tuatara	*Tuatara* (Biological Society). Tuatara Publishing Committee, Box 196, Wellington, N.Z.
UCPE	*University of California Publications in Education.* Berkeley and Los Angeles.
Uganda Journal	*Uganda Journal.* Uganda Society. Kampala.
VFPA	*Viking Fund Publications in Antropology.* Wenner-Gren Foundation for Anthropological Research, Inc. New York.
VJa	*Voprosy Jazykoznanija.* Moscow.
VR	*Vox Romanica.* Annales helvetici explorandis linguis romanicis destinati. Collegii Romanici Helvetiorum. Bern, Francke.
Wilson Bull.	*Wilson Bulletin.* A quarterly magazine of ornithology. Wilson Ornithological Society. Lakewood, Ohio.
Word	*Word.* Journal of the Linguistic Circle of New York. New York.
WPP	*Working Papers in Phonetics.* Ohio State University.
WW	*Wirkendes Wort.* Deutsches Sprachschaffen in Lehre und Leben. Düsseldorf, Pädagogischer Verlag Schwann.
WZUL	*Wissenschaftliche Zeitschrift der Karl-Marx Universität. Gesellschafts- und Sprachwissenschaftliche Reihe.* Leipzig.
YCS	*Yale Classical Studies.* New Haven, Connecticut.
Zchr. Laryng. Rhin. Otol.	*Zeitschrift für Laryngologie, Rhinologie, Otologie und ihre Grenzgebiete.* Stuttgart, George Thieme.
ZDA	*Zeitschrift für Deutsches Altertum und deutsche Literatur.* Wiesbaden.
ZDPh	*Zeitschrift für deutsche Philologie.* Berlin.
Zeitschrift für Kolonialsprachen	*Zeitschrift für Kolonialsprachen.* Berlin.
ZEthn	*Zeitschrift für Ethnologie.* Organ der Deutschen Gesellschaft für Volkerkunde. Brunswick.
ZFSL	*Zeitschrift für französische Sprache und Literatur.* Wiesbaden.
Zoologica	*Zoologica.* Scientific contributions of the New York Zoological Society. Bronx, N.Y., Zoological Park.

ZPhon	*Zeitschrift für Phonetik, Sprachwissenschaft und Kommunikationsforschung*. Berlin.
ZPsych	*Zeitschrift für Psychologie*. Incorporating: *Zeitschrift für Angewandte Psychologie*. Leipzig.
ZRPh	*Zeitschrift für romanische Philologie*. Tübingen.
ZSl	*Zeitschrift für Slawistik*. Berlin.
ZSlPh	*Zeitschrift für Slavische Philologie*. Heidelberg, Carl Winter Universitätsverlag.

2. OTHER ABBREVIATIONS

C.A.L.	Center for Applied Linguistics. 1611 North Kent Street, Arlington, Va.
ERIC	Educational Resources Information Center. London.
IEEE	Institute of Electrical and Electronic Engineers. 345 East 47th Street. New York, N.Y.
IRE	Institute of Radio Engineers.
PEGS	Program for Exchange of Generative Studies.
S.I.L.	Summer Institute of Linguistics. Head Office: Santa Ana, Calif.

PART ONE

LINGUISTICS AND PHILOSOPHY

LINGUISTICS AND PHILOSOPHY

J. M. E. MORAVCSIK

Throughout history language has been an important source of philosophic puzzlement. To many outsiders it seems that only twentieth century American and English philosophy has the study of language as its main preoccupation, and in view of this they describe this movement as linguistic, or analytic philosophy. These labels tend to become attached to the philosophies of Russell, Carnap, Austin, and Wittgenstein: the philosophers whose influence dominates twentieth century English-speaking philosophy. A glance at the history of philosophy, however, reveals several previous periods in which the study of language is one of the main preoccupations of the practitioners, beginning with Socrates.

In order to understand a philosopher one has to know what problems he is trying to solve. In order to understand what philosophers have to say about language one has to realize that there is a large variety of problems raised by philosophers concerning language, and that solutions to some of these are irrelevant to solutions of others. Thus philosophical questions and theses about language arise on different levels, and in the contexts of diverse problems. We shall distinguish five of these, though undoubtedly other, equally adequate classifications could also be found.

a) The Socratic Approach. Socrates instituted the philosophic practice of asking for the clarification of certain key terms. These terms are used very frequently, and may be part of the vocabulary in terms of which we characterize persons, e.g. 'courage' or 'wisdom'; or these may be part of the vocabulary needed to characterize scientific activities, e.g. 'knowledge' or 'truth'. Among the typical Socratic dialogues are the *Meno*, the *Laches*, and the *Euthyphro*. Ostensibly Socrates does not ask for the meanings of key terms. He asks questions of the form: 'what is X?' where for 'X' we can substitute one of the terms mentioned above. The ensuing discussions, however, make it clear that in order to answer this type of question to Socrates' satisfaction the meaning of the term 'X' will have to be clarified. Socrates' method has four underlying assumptions. These are worth spelling out since they constitute one of the first, rudimentary, theories of language in Western thought. i) The meanings of terms lie below the surface. Socrates believes that even the meanings of commonly used expressions cannot be determined by merely examining our associations with these, or conducting empirical examinations of the entities which these expressions denote (or are true of). According to Socrates we have to examine

the roles that these expressions play in sound reasoning, and their places in sentences expressing conceptual truths, in order to grasp their meaning. ii) Socrates subscribes to the no-ownership theory of meaning. In Socrates' time as well as in our time there are people who think that a speaker is sole master over his own use of language and over the meanings that he assigns to his use of expressions. According to this view it is somehow up to the speaker to decide what meanings the expressions that he employs should have. One consequence of this view is expressed by the fashionable slogan that the study of language is purely descriptive. Socrates is opposed to such a conception. Like most good linguists and philosophers, he conceives of his task neither as purely descriptive nor as a series of normative reform proposals. He is interested in finding out how members of a linguistic community think we ought to talk. According to the Socratic conception a language has a life of its own, and the meanings of its expressions belong to it, and do not depend on conscious decisions made by members of the linguistic community. Pains or feelings too are not a matter of decisions on our part, but these are in a sense private; the subject has privileged access to these. Socrates would deny that the subject has privileged access to the meanings of the expressions that he uses. Introspection is not a reliable guide to the discovery of meanings; a careful examination of how reasoning is expressed in language is more likely to lead to good results. iii) Socrates believes that it is very difficult to find out what we mean by commonly used expressions, and that often we literally do not know what we mean by an expression 'e' even though we use it frequently and with success as far as communication is concerned. Thus the clarification of what someone meant by 'e' in a certain context requires great intellectual effort in the crucial cases, and the methods of clarification involve tests for consistency of beliefs, validity of accepted inferences, and the determination of what the subject really takes to be true. Yet in spite of ii) and iii) Socrates also believed iv) that finding out what we mean by a certain expression leads to self knowledge. This seems paradoxical only if we think in terms of self-indulgent and overly romantic modern conceptions of the self according to which the self is something elusive, unique to each person, and connected with feelings and other phenomena to which each person has privileged private access. We might think of Socratic self knowledge as analogous to the kind of self knowledge that involves finding out what the nature of my respiratory system or digestive system — or, in this case, thinking system — is, and then the mystery as well as the air of paradox disappears.

The four theses do not require each other, and indeed in the subsequent history of philosophy sometimes one and sometimes another of the four was rejected. Although this rudimentary theory does not say anything specific about a given natural language, it gives a rationale for a certain type of detailed semantic investigation of a given natural language.

This Socratic activity of unearthing initially surprizing semantic facts about a given natural language continues to be one of the key functions of philosophers. In

our time its chief practitioner, or artist, one might say, was John L. Austin. His study of English deals with subtle phenomena and with complexities of sense at a level rarely if ever penetrated previously by philosopher or linguist. Austin thought that this activity has salutary effects on philosophers, but it should be clear that his results are also of great interest to linguists since it provides them with really interesting data that an adequate semantic theory of English has to account for.

b) The Metaphysical Concern with Language. Metaphysics can be roughly characterized as the attempt to understand some of the essential structure of reality, and some philosophers believe that this essential structure is mirrored by or is reflected in the basic structure of language. This belief leads to attempts to uncover what are claimed to be fundamental structures of language, and this investigation leads often to the construction of ideal languages. What is ideal from such a metaphysical point of view may not be ideal from several other points of view, e.g. from the point of view of ease of communication, or flexibility. Thus the notion of a fundamental structure of language, as developed e.g. by the early Wittgenstein, has to be interpreted from the point of view of the metaphysical claims which it is said to assume, or from which it is said to be derivable.

Under this heading we might also consider a concern with language that derives from certain anti-metaphysical attitudes. Some philosophers, e.g. modern positivists hold that there are no non-trivial eternal verities for a special branch of philosophy such as metaphysics to establish. They want to explain those propositions that seem to be both true and non-empirical as having their source in the rules of language.

c) Language and Logic. Still another group of philosophers is interested in examining the extent to which the laws of logic are expressed in the rules for various natural languages. In other words, the question can be raised to what extent a natural language is a suitable vehicle for rigorous deductive reasoning. People interested in these questions will often talk about the logical structure of a language. This is, roughly speaking, a study of those features of language that are relevant to exhibiting deductive inferential relations.

Needless to say, a philosopher may be engaged in more than one of these enterprises. Nevertheless, for obvious reasons, it is important to keep these investigations and the corresponding senses of 'structure' etc. distinct.

d) Philosophy of Linguistics. An integral part of philosophy is the concern with the methodology, evidential basis, and conceptual framework of the various sciences. Thus, for example, what was known earlier as natural philosophy gave way to the philosophy of science, and this in turn split into the philosophy of the a priori sciences, the philosophy of the physical sciences and the philosophy of the social sciences. In some cases a specific science occupies the attention of philosophers; thus we have subjects like the philosophy of mathematics and the philosophy of history. The philosophy of linguistics should be conceived as analogous to these. It examines the methodology, evidential basis, and conceptual framework of linguistics. What is it for linguistics to become a science? What, if anything, is unique

to linguistics? Questions of this sort occupy philosophers working in this field, and it should be clear that the questions raised about language in this context are of a different sort and are on a different level from the ones raised in connection with enterprise a).

e) The Language of Philosophy and Linguistics. Certain terms plays key roles both in philosophy and linguistics. Such terms are 'true', 'meaning', 'refer', 'understand'. These terms are also parts of ordinary non-technical English. Thus the analysis of these terms raises distinctive questions. Do these terms have the same meaning in philosophy and in linguistics? If not, why not? How are these technical meanings related to the ordinary non-technical meanings of these expressions? Analogous problems arise also with regard to the vocabulary of other sciences. We can raise the following question in connection with all of them: to what extent is it necessary to explain ultimately the technical meanings of expressions in terms of the non-technical meanings of everyday expressions?

These five enterprises are logically independent of each other. Each has its distinctive problems and methodology, and each is interested in a different set of features of language. All of these deal somehow with the 'structure of language', but they mean by this different things, and unless one knows the problem and the nature of the enterprise under consideration one loses sight of what this 'structure' is supposed to be — as the practitioners themselves lose sight of this occasionally. At the same time the results of the different enterprises can be relevant to each other. Enterprises a) and c) yield data to be accounted for by a science that is studied by enterprise d). Some of the analysis under e) may resemble that conducted under a).

At the present the greatest need seems to be the clarification of d), and thus this will be the focus of this paper. From time to time, however, matters falling under a), c), and e) will also become relevant, but these will be treated only in so far as they are required for the clarification of d). The decision to focus on d) does not involve a value judgment to the effect that this is the most important, or fundamental, or that this is what everybody should be doing right now, etc. Once we distinguish the five different enterprises, there is no point in raising questions of relative importance and merit. And given the characterizations outlined above it should be obvious that the decision to concentrate on d) does not imply the view that linguists should not be interested in the other topics; on the contrary, without interest in and acquaintance with what goes on under a), c), and e) linguists are likely to be missing important sources of possible data and clarification. One might add in conclusion that if this essay is to be of interest both to linguists and philosophers, then it is easier to tell philosophers something about linguistics under the heading d) than under any of the other headings.

I

Current linguistic theory and the philosophy of language have a striking common feature. Neither field suffers from a dearth of discovered facts to be explained, and both fields lack an over-all non-vacuous conceptual framework that can account for all of the observed facts. One conceptual problem concerns the relation of syntax to semantics within transformational grammar. Another one arises when one tries to fit transformational grammar to the kind of semantic theory that philosophers have worked on in recent times. Finally, there are problems concerning the desired non-vacuousness of both semantics and syntax. These circumstances suggest the following agenda for this paper. First we shall trace historically the relation between syntax and semantics in transformational grammar, and draw some morals from this survey. We shall proceed by reviewing both the strong and the weak points of philosophical semantics in such a way as to make its applicability to the work of linguists clear. We shall also invoke some notions developed in linguistic theory and show how these help to clarify certain issues in philosophical semantics. We shall also consider some salient differences between syntax and semantics, and conclude by attempting to spell out some of the requirements that linguistic explanations have to meet before these can be regarded as scientific explanations in any serious sense, and we shall relate these requirements to certain recent developments in transformational grammar.

It may come as a shock to some people that the starting date for my historical review is not 1957, but 1954–55. At that time an exchange appeared between Bar-Hillel and Chomsky (Bar-Hillel 1954, Chomsky 1955) concerning the relation between formal syntax and semantics on the one hand, and empirical linguistic theory on the other. A careful examination shows that the positions taken and the assumptions made in this exchange had a far-reaching influence on subsequent linguistic theory. Bar-Hillel's main claim is that linguists ought to incorporate into their work on syntax and semantics the approach and some of the results of logicians like Carnap. From our point of view the most crucial part of Bar-Hillel's argument is that in which he divides semantics into 'two separate theories with two different sets of concepts' (Bar-Hillel 1954: 236). These are the theory of meaning and the theory of reference. The former deals with concepts such as logical truth and synonymy, and the latter with the notions of truth and denotation. Bar-Hillel argues that though issues in the theory of reference are of no interest to the linguist except for 'methodological questions', the theory of meaning should be of great interest to the linguist since it raises questions to which the linguist should feel compelled to try to find answers, e.g. questions of synonymy and logical consequence.

In order to appreciate Chomsky's reply one must keep in mind that by the time the exchange took place, an extensive philosophical literature was available, mostly by Quine, Goodman, and M. White (see Chomsky 1955, first footnote for refer-

ences and acknowledgement), that criticized Carnap's theory of meaning. These criticisms included the claims that when applied to natural languages formal semantics furnished us only with vacuous explanations, and that with regard to natural languages a sharp distinction between matters of semantic rules and definitions on the one hand and widely shared empirical beliefs held by the linguistic community in question on the other presents an untenable dualism.

In his reply Chomsky accepts Bar-Hillel's distinction between the theory of meaning and the theory of reference. He also accepts the claim that the latter is of no significant interest to the linguist. '... Both Tarski and Quine have done important work in the theory of reference. This is the branch where real progress has been made; but it is also the branch that has little interest for linguists' (Chomsky 1955:41). With regard to the theory of meaning Chomsky adopts with slight variations some of the criticisms developed by Quine and others, and thus argues that formal semantics takes precisely those notions (e.g. 'synonymy', 'formal consequence') as primitive that the linguist is concerned to explain, and that the practice of listing meaning postulates or pairs of synonyms offers no help to the linguist who wants to know on what basis he should regard a pair of expressions in a natural language as synonymous, and wants to explain the relation between alleged facts of meaning and matters of empirical belief widely shared in a linguistic community (Chomsky 1955:37–9). Chomsky also claims (39–40, 44) that well known facts about conditionals cast doubt on how well we can explain the roles of logical connectives in a natural language with the help of symbolic logic, and that synonymy accounts cannot cope with belief-contexts, but for our purposes these arguments are less relevant. The main outline of what took place is clear enough. Bar-Hillel argues that semantics equals theory of meaning plus theory of reference, and that (with slight qualification) only the former is relevant to linguistics. Quine and others argue that the formal theory of meaning cannot offer non-vacuous and empirically relevant explanations of linguistic facts. Chomsky puts these arguments together and concludes that philosophical, or logical, syntax and semantics have little if anything to offer to the linguist except in so far as they set standards of rigor for a future adequate linguistic theory to be developed (45).

One of the significant consequences of this exchange was that Chomsky continued to think of semantics till around 1964–65 as that part of understanding language that we know least about. It has been claimed from time to time that Chomsky's position was due to the tradition of distrust of semantics running deep in American linguistics. The development traced above, however, shows that Chomsky's doubts had much deeper clearly articulated philosophical justification. Another important consequence of this exchange is the assumed sharp distinction between theory of meaning and theory of reference and the alleged irrelevance of the latter to linguistics. Only this background might make intelligible why Fodor and Katz, as they turned to the construction of a semantic theory, insist that matters of reference are of no concern to them. The few flimsy arguments actually offered

in their work certainly do not explain why they adopted this view as basic to their outlook on semantics. Thus, roughly phrased, by 1965 the theory of reference is still 'out', but the theory of meaning is 'in' as far as linguistic theory is concerned. Since in *Aspects* Chomsky seems to approve — at least in principle — of the Fodor, Katz, and Postal approach to semantics, one wonders what factors changed his mind in the ten years between 1955 and 1965? There is no written evidence on this matter, and one can only conjecture that perhaps Chomsky and other transformalists have become overly impressed by the possibility of a parallel between syntactic and semantic structure. In any case, the shift took place without any explicit attempt to answer the objections to the theory of meaning that Chomsky himself embraced earlier. As far as the new theory has been made clear, the objections in terms of vacuousness, etc., apply just as much to notions like 'semantic marker' and 'reading' as they apply to notions like 'meaning' and 'analytic'.

The next development in this area brings us up to the present. For in some recent work (Bach 1968, Lakoff and Ross n.d., Ross 1970) we see the adoption not only of the theory of meaning, but also of the theory of reference and denotation as expressed in first-order predicate calculus under the usual interpretation. This shift, like the earlier one, takes place without any sign of awareness of the theoretical considerations and implications that such an adoption carries with itself. In particular, there is no discussion in the recent literature of the theoretical issues concerning the explanatory power of the theory of meaning, of the alleged irrelevance of the theory of reference, and of the well known (by philosophers) shortcomings of the first-order predicate calculus to handle adequately a natural language with the richness of e.g. English.

This development and the current situation calls for the following comments. The assumption shared in the early papers by Bar-Hillel and Chomsky that became so influential in the subsequent literature, namely, that the theory of reference or denotation is irrelevant to linguistics, is unsound. This can be seen by a review of the arguments that Bar-Hillel uses in its support. The arguments are that it is not the business of the linguist to find out which pairs of expressions in English happen to be co-extensive (have the same denotation) such as e.g. 'morning star' and 'evening star' or 'man' and 'featherless biped', and that it is not the business of the linguist to find out which English sentences happen to express something that is true; thus e.g. whether 'all cats have tails' expresses something true or not is of concern to the zoologist, but not the linguist (Bar-Hillel 1954: 236). Though the claims made here are true, the irrelevance of the theories of truth and denotation does not follow. For although it is not the business of the linguist to find out whether what 'all cats have tails' expresses is true or not, it is the business of the linguist to find out under what conditions this sentence, or any other sentence in English, expresses something true. In short, it is an essential part of understanding English that we should know under what conditions a given sentence would express something true; whether a given sentence in fact expresses something true is, of

course, not something the knowledge of which would be part of linguistic competence. Thus a theory of truth is a part of any adequate semantics for a natural language. The same considerations apply to matters of denotation. It is the business of the linguist to attempt to delineate those expressions in a natural language that are denoting expressions (can have denotation) from those that have other roles, and within the class of denoting expressions he should attempt to discover subclasses in terms of the different types of entities (e.g. concrete things, events, properties, etc.) that different types of denoting expressions might denote. E.g. it is not of interest to the linguist to note whether two given verbs happen to be co-extensive. It is, however, of interest to the linguist to develop a theory that explains what sorts of entities verbs denote; e.g. events, relations between substances, properties of substances, etc. (Davidson 1969 and Martin 1969). It is also the business of the linguist to decide how to handle from a referential point of view what functions syntactically as abstract singular terms. Countless other examples could be added.

To say, however, that a theory of truth and denotation is part of an adequate semantic theory for a natural language like English is very different from saying that the scheme associated with first-order predicate logic is adequate to capture the semantics of a language like English. Philosophers have discussed over the past decades a whole range of phenomena that defy this type of simple analysis. Since this list is rarely presented in its totality and since linguists seem to be unaware of it, a brief review in this paper might not be inappropriate. The key features of first-order predicate calculus that are responsible for the break-down of the analysis are the following: the ways of conjoining elements to produce new predicate expressions are very limited, the denotation range assigned to various expressions are fixed for all contexts, and terms with the same denotation range are substitutable. The following items resist this sort of analysis.

a) Sentences involving modal notions such as necessity and possibility. A sentence of the type: 'necessarily all A's are B's' will not retain its truth-value regardless of which term co-extensive with 'A' is substituted.

b) Sentences involving intentional notions such as knowledge, belief, desire, etc. Here again the trouble is substitutability, for different descriptions of a belief will not retain truth-value under unrestricted substitution of co-extensive terms.

c) Sentences involving intentional verbs such as seeking, hunting, trying, etc. The difficulty with these terms is that on the one hand they do not indicate simple properties of agents, and on the other hand they cannot be characterized as relations between agents and other concrete entities.

d) Sentences containing indexical or token-reflexive terms such as 'here', 'there', 'I', 'you', 'now', etc. Though these terms retain their meaning, i.e. they are not systematically ambiguous, they denote different entities in different contexts and under different circumstances; thus one cannot be sure that simple deductive inferences turning on repeated occurrences of these terms will be valid.

e) Sentences containing second-order terms such as 'is a number', 'is a shape'.

These terms do not characterize spatio-temporal particulars but rather properties that these particulars may have. Attempts to reduce such sentences to those that are only about particulars have been unsuccessful.

f) Sentences containing adverbs and similar constructions. In a sentence like 'John read the book rapidly' we want to construe the predicate as a complex of parts, and yet we cannot derive it from 'John read the book' and 'John rapidly'.

g) Ambiguity. This notion cannot be analyzed simply in terms of difference in denotation.

h) Translation. One cannot translate adequately from one language to another solely on the basis of co-extensiveness.

It will be left to the reader to ask himself how much of English is left as analyzable once we removed all sentences falling under a) to g).

Once we abandon the naïve hope that the semantics of English can be captured by the structure of first-order predicate logic, we can consider more recent developments in the theory of reference. Recent work, e.g. Hintikka 1962, Kripke 1965, and Montague 1970a, has extended the theory of reference and helped in reducing the list presented above. This work involves, however, extending the universe of discourse to cover not only actual but also possible individuals, and not only the actual but also possible worlds, and thus presents us with a new framework. Within this new framework we can define some of the notions, such as intension, that were previously part of the theory of meaning as belonging now to the theory of reference. Thus the focus of discussion in philosophical semantics has shifted in such a way that the distinction between theory of reference and theory of meaning as drawn earlier by Quine, Bar-Hillel, and Chomsky is no longer crucial.

In considering recent work in philosophical semantics two main questions arise: to what extent does this work help to reduce the list of 'unmanageables' cited above, and to what extent does this work help to answer Quine's criticisms raised against the empirical applicability of the theory of meaning? In order to deal with these questions adequately Quine's criticisms have to be divided into three categories. One of these categories is that of logical criticisms. These criticisms center around the notions of identity and substitutivity. Quine insists that the entities that we admit into our explanatory framework should have clear criteria of identity, and that if something is true of an entity, it should be true of it regardless of the mode of reference applied on any one occasion to that entity. Quine claims that these conditions are not met by the explanations offered in the theory of meaning. Another set of criticisms concern the alleged vacuousness of the concepts of the theory of meaning. The third category is made up of Quine's epistemological criticisms. These include the questions of how one would know that two sentences in a language are synonymous, and of how one would establish the synonymity of two sub-sentential expressions, as well as the challenge to produce a sentence of English other than a truth of logic such that it is true by virtue of the meanings of its

constituents and thus not subject to revision on the basis of possible future empirical evidence. This last issue received a fair amount of attention in the recent philosophical literature, and a series of more or less successive articles (Putnam 1962a, Moravcsik 1965, and Harman 1967) tends to confirm Quine's scepticism as more and more allegedly analytic propositions are shown to be disconfirmable on the basis of possible future empirical evidence. Verdict should be postponed, however, until philosophers and linguists do more work on the semantics of verbs and terms standing for relations. For the majority of the examples discussed by philosophers involve nouns and adjectives. From facts like the one that there is no strict synonym for 'bachelor' in any of its senses in English it does not follow that we might not find more promising candidates when we turn to a thorough analysis of verbs.

Whether one feels that Quine's logical objections have been answered depends on the extent to which the framework of possible entities and possible worlds and functions relating these is acceptable. This topic is the subject of lively controversy among philosophers and logicians today.

The three categories of criticism are logically independent. Thus even if the logical objections were to be answered that would leave the epistemological criticisms as well as the charge of vacuousness alive. Again, the charge of vacuousness does not depend on the extent to which the search for a pair of strict synonyms in English has been successful or unsuccessful. In order to consider the charge of vacuousness in a clearer light, we should restate some of the salient features of the theory of meaning that are at times ill understood by friend and foe alike.

The most profound statement of the problems of meaning as well as the most penetrating solutions these problems were presented by Frege (consult the topically organized bibliography for some references).[1] For Frege the fundamental underlying fact to be explained by a theory of meaning is: 'that mankind has a common store of thought which is transmitted from one generation to another' (Frege 1892 (1952): 59). In others words, the key fact to be explained is that in language thoughts are expressed, thoughts that are about reality and that are true or false. For a large and fundamental part of our language the following applies: a competent speaker-hearer can grasp the thought expressed by a given sentence, without knowing who said it, when, where, and why. This is what makes the development of science, mathematics, and other intellectual endeavours possible. 'Language speaks for itself', which is to say that a large and fundamental part of our language is such that its meaning is totally independent of considerations of extra-linguistic context. On this point there is a striking similarity between Frege and Chomsky (see the latter's *Cartesian linguistics*). The problem for the theory of meaning becomes: how is this transmission of thought possible? It requires that sentences should be expressing

[1] I would like to acknowledge my indebtedness to Mr. Fred Goldstein of Stanford University for many useful suggestions concerning the material that follows. He also contributed most of the items and classification for the logic section of the topical bibliography.

what is true or false, and this in turn requires that parts of sentences should refer to or denote parts of reality. (E.g. 'is a table' has as its denotation range the class of all tables). A name denotes its bearer, a predicate denotes a class of elements, i.e. those to which it truly applies. But now the question arises: what connects sentence and truth or falsity, and what connects a term with its denotation range? If the connections were arbitrary, then one could not explain the projective character of language, i.e. that we know how to go on applying predicates, and we know how to combine denoting elements in order to form new complexes. But again, the relation between term and denotation range might not be a direct one; or else in order to understand a term one would have to be acquainted with its entire range of denotation. This is, of course, impossible, since most denotation ranges are spatio-temporally unbounded. Thus the relation between term and denotation range must be mediated by something, something the grasp of which enables us to say what falls and what would fall in the denotation range of a given term. This element is the sense or meaning of the term. The senses of expressions contained in a sentence make up the thought expressed by the sentence. In certain contexts, such as the context of belief, an expression denotes indirectly, and what it denotes is its usual sense. The senses and denotations of complexes are always functions of the senses and denotations of the elements. This account also explains how identity statements of certain sorts can be both true and informative, since e.g. in the sentence 'the man in the White House in 1970 is the president of the U.S.A. in 1970' we have two denoting expressions that have different senses but denote the same thing.

In order to appreciate this proposal we must invoke the distinction familiar in recent linguistic theory but unfortunately not used in philosophical semantics between competence and performance. For Frege's theory is clearly a competence theory. The ability linked to grasping the sense of an expression, namely the ability to tell what does and does not fall within a denotation range is not the actual perceptual ability or recognitional skill. Furthermore, the notion is not brought in so as to explain what in fact we do on some particular occasion when we decide that entity x falls within the denotation range of expression 'e'. Much of the philosophical literature on semantics suffers from the confusion between competence and performance. Some philosophers tried to link the notion of meaning to that of intention, or to the use of an expression, or to the kinds of acts that one can perform by uttering a certain expression. At no point in this literature is it made clear whether these philosophers talk about what in fact takes place, or whether they are specifying a part of linguistic competence. The same lack of clarity affects the first two chapters of Quine 1960. The reason this paper is restricted to the discussion of Frege's theory is that it is the only philosophical theory of meaning that is clearly a competence model and a plausible one at that. Another distinction that one should borrow from syntactic theory and apply to semantics is between weak generative capacity and strong generative capacity. As the result of the ap-

plication of this distinction we can grade semantic theories in terms of the extent to which they can account not only for semantic units but also for their internal structure. E.g. both Quine (1960: 168ff.) and Frege can account for sentences in which someone is said to be entertaining a certain belief. But whereas on Frege's view the semantics of these sentences reveal the internal structure of the elements that make up the belief, on Quine's view each belief is in effect a different attribute ascribed to the believer.

The question of psychological reality must be viewed in the light of the above. Frege certainly thinks that the notion of sense must have psychological reality, else the process whereby a competent speaker-hearer can relate expressions and their ranges of denotation becomes unintelligible. But the psychological reality in question is not the same status as that held by elements that are parts of the causal chain that makes up an average performance.

Is the notion of sense vacuous? If it is so, then this is the sense of 'vacuous' that applies to something programmatic. Frege is giving the most abstract and general characterization of an element in the theory of language the existence of which he thought to have demonstrated. To make this characterization more specific is a matter of further research, both conceptual and empirical. Thus Frege's notion is not vacuous in the sense in which 'dormative power' in 'opium puts people to sleep on account of its dormitive power' is vacuous. The latter is construed as a completed explanation; the former as a general characterization or a program for a series of explanations.

The related questions of indeterminacy and admissible evidence have been discussed in a recent exchange between Quine and Chomsky (Chomsky 1968b, Quine 1968). This exchange, however, concerns the notion of a rule of language in general, and Chomsky's argument that there is no more indeterminacy in linguistics than there is in any of the other sciences does not cover the specific issue of Quine's position with regard to exclusively semantic phenomena. In short, the extent of the force of Quine's arguments depend on how well we can distinguish between the nature of syntax and that of semantics. (This was urged already in Moravcsik 1967).

It is thought at times that a Fregean theory of senses is incompatible with various types of lack of effectiveness discovered in semantics. This, however, is not the case. In the context of this paper it might be useful to review and distinguish the different types of inexactitude that have been discovered in languages like English.

a) Terms with border-line cases of application. There are many examples for this to be found among color terms. The range of application of a color term might be such that for a large number of cases one does not know whether to apply one color term or another term naming the neighboring color. Thus in these cases, the problem is not that language does not provide a description, but that one does not know which member of a disjunction provided by language one should select.

b) Vagueness. A vague term is one whose criteria of application seem unclear. This makes vague terms obviously different from terms with border-line cases since

for some of these e.g. colors, the criteria of application are very clear indeed. A typically vague term is 'experience'; one does not know just what this term is supposed to cover; and it makes no sense to talk in this connection about clear cases and border-line cases; what two concepts would the border-line cases fall between?

c) Terms admitting only of disjunctive definitions. Wittgenstein explored some of these terms (see topical bibliography) and described the relevant phenomenon as 'family resemblance'. An example would be the word 'game'. Again, this phenomenon does not show a limitation on linguistic competence; rather, it indicates the need for complex operations in assigning sense to expressions of this type.

d) Openness. By far the most interesting phenomenon of this type was discovered by Waismann (1951 : 120ff.) and discussed also by Austin (1961 : 35–6). Openness is a characteristic of those denoting terms in connection with which we find that though there is a class of entities to which the term applies and a class to which it does not apply, there are certain possible cases such that when asked if term 't' applies to these — or any other term — we do not know what to say. Thus, for example, an entity might seem to fulfil the conditions required for it to be an eagle, and then it explodes, or starts reciting Homer, or does some similar 'outrageous thing' as the late Professor Austin would have said. The problem here is not one of vagueness, ambiguity, or border-line cases. In none of those cases does linguistic competence come to a halt. We have descriptions available; what we do not know is which of these to apply. But in the cases now under consideration, linguistic competence does come to a halt. There is no way of describing these possible phenomena without introducing new legislation over the semantics of the language. The semantic rules of English simply do not cover these cases.

The material reviewed i nthis sketch is covered in a large part of the literature by the oft repeated and quite unilluminating remark that the semantics of natural languages is fuzzy or inexact. What we need is an exact theory of inexactitude that distinguishes the different phenomena, shows which types of expressions are affected by the different phenomena, and tries to give an account of these. For example, the phenomenon of openness might indicate that a 'principle of least effort' operates within the semantics of natural languages. The language at any one stage contains semantic rules only to cover a range of phenomena that has some likelihood of occurring. Unlike artificial and formal languages, natural languages may have semantics that do not function in such a way as to cover all logical possibilities. In any case, neither openness nor any of the other phenomena of inexactitude are incompatible with a Fregean theory of meaning. It is a part of the task of such a theory, however, to find a way to build these phenomena into a formal model of competence.

This brief outline of suggestions toward an exact theory of inexactitude launches us in the task of presenting a list of problems that still await solutions in current work on semantics. Within the context of this review we must restrict ourselves to a brief mention of some of the more immediate problems.

One of these is the problem of intensional contexts, in particular those involving belief, knowledge, hope, etc. We face the task of determining what should count as criteria for sameness of object of belief, etc., and thus of substitutability. To say on the one hand that everything that is logically equivalent is substitutable in such contexts is to draw the line too widely; on the other hand, to say that no two distinct expressions can be substituted in such contexts is to draw too restrictive a line. A complete answer to this question has not yet been given, though interesting suggestions have been made recently (see the topical bibliography under Epistemic Terms).

Another nest of problems is represented by the variety of semantic links to be found in a language like English. Four different ways of joining terms seem to yield different semantic configurations.

1) Molecular conjunction. E.g. the molecule 'this building is large and beautiful' can be built up from the atomic units of 'this building is large' and 'this building is beautiful'. From the logical point of view this is the most fundamental link.

2) Adverbial conjunction, e.g. 'John reads rapidly'. The difficulty is that though one cannot regard this as the conjunction of 'John reads' and 'John rapidly', an adequate analysis cannot treat it simply as a new non-composite predicate, since we have to account for the fact that from 'John reads rapidly' it follows that John reads.

3) Modifying conjunction, e.g. 'the Notre Dame is a tall building'. The peculiarity of this link is that though the two conjuncts can be separated without yielding nonsense, one of these in isolation is ambiguous, or even if unambiguous it requires interpretation with reference to the other conjunct. Thus the above statement is equivalent to 'the Notre Dame is a building' and 'the Notre Dame is tall', but the latter is ambiguous; is the Notre Dame tall as such, or is it tall for a building? (For dramatic effect, compare this case with the by now notorious example: 'Flora is a large flea'.) One does not want to say that terms like 'tall' or 'large' are systematically ambiguous; yet somehow the criteria of application will vary depending on the sense of the other term that the term in question quasi-modifies.

4) Non-detachable conjunctions. E.g. from 'Leo is an alleged dictator' one cannot infer either 'Leo is a dictator' or 'Leo is alleged'. It is not easy to see why a certain compound represents one link rather than another. E.g. 'this is a spurious dialogue' decomposes into 'this is a dialogue' and 'this is spurious', even though 'spurious', 'alleged', 'supposed', and 'fake' seem to be semantically similar.

In terms of these four links we can form semantically significant categories. One cannot simply take expressions in English one by one, and make their ways of joining a matter of so many individual meaning postulates without missing important generalizations. Thus the task that lies ahead is either to classify expressions in English according to these links and work out the representation of the links in formal semantics, or to reduce links 2), 3), and 4) to 1) by elaborate paraphrases of the items to be linked.

Another item on this list is the adequate semantics of mass-terms. For terms like 'water', 'iron', etc., function differently from those like 'table', 'animal', or 'number', and the difference is not solely a matter of syntax. Mass terms, as Quine noted (1960:91ff.) can stand both in subject or in predicate position, and as subjects seem to have a quite different referential role than that which count nouns have in that position. It is also interesting to note that from the semantic point of view a noun like 'water' and an adjective like 'red' seem to behave in a similar fashion. Both 'water' and 'red' can be construed as denoting a huge, spatio-temporally scattered object, parts of which are all the red entities and all of the waters respectively. One cannot construe the denotation ranges of count nouns and many adjectives in this fashion.

Still another problem on this list of outstanding difficulties is an adequate treatment of the subject-predicate relation. In this connection again, one sees discussion proceeding in linguistics without any signs of awareness of the relevant philosophical debates that have taken place concerning this topic over the past decades — indeed, over the past centuries. The relevance and importance of these grammatical relations for semantic interpretation and for the stating of selectional rules is recognized by Chomsky (1965). In the recent literature, however, we find statements to the contrary, without careful supporting arguments. Thus in Bach's work the significance of the subject-predicate relation is belittled (Bach 1968) and in a recent paper (Lakoff and Ross n.d. : 2) we find the statement: '*subject of* and *object of* are not directly relevant to semantic interpretation'. On the grammatical side, the notions must be crucial since on whichever level these are defined, we will also have to define at least some of the more important selection restrictions. On the semantic side, the issue is very complex, and no conclusions should be reached on this matter without a careful consideration of the literature by philosophers such as Frege, Russell, Strawson, and Quine (see topical bibliography). The key problems in this area are: an adequate account of predication, the distinction between singular and general terms, the significance or lack of significance of the notion of singular reference and identification, and plausible ways in which one can relate the structure of quantificational logical notation to the structure of natural languages. Thus, e.g. for Frege subject and predicate stand to non-linguistic entities in quite different semantic relations (Frege 1892 (1952):42ff.) and issues between Russell and Strawson (Russell 1905, Strawson 1950) turn on the semantic significance of the notion of a subject, with a resulting difference in assignments of truth-value to sentences of a certain type, and again the issues between Quine and Strawson (Quine 1968, Strawson 1968) on the intelligibility of the relevance of quantificational structure to natural language rests on the distinction between singular and general terms, which for Quine is based on the distinction between subject and predicate, and the 'distinct grammatical roles' (with respect to subject and predicate positions) that singular and general terms play in sentences (Quine 1960:96). These debates have not been resolved, but without understanding these, linguists

are unlikely to arrive at sound positions with regard to the importance of these grammatical notions for syntactic organization and with regard to the underlying importance for semantic interpretation.

As an illustration of the difficulties that careless analysis might encounter, let us consider some of the things said about this matter by Bach. In the course of an argument that, if accepted, would support the thesis that the subject-predicate distinction is not crucial for the semantics of English, Bach claims that an expression like 'the anthropologist' in the context of sentences of subject-predicate form is synonymous with an expression like 'the one who was an anthropologist' (Bach 1968 : 92ff.). This claim is rather peculiar, and the source of the peculiarity can be gleaned from some of the recent philosophical literature on semantics. As Gilbert Ryle put it, a term like 'one' is substantive-hungry. Nothing is simply one; if someone describes an entity as one, we want to know immediately one what? One man, one number, one table? This feature of the expression can be seen when we observe that 'the one who' typically requires previous reference, and it points back to the previous referent. This is why one would not start a discourse with 'the one who . . .'. In the typical case we have somewhere in discourse a complex referring expression like 'the women sitting in our living room', and later we might find a phrase like 'the one who was an anthropologist' embedded in a sentence. In this way we can show that 'the anthropologist' and 'the one who was an anthropologist' are not synonymous. If they were synonymous, then they could be substituted for each other in any context. But there is at least one context in which they cannot be substituted for each other, namely in the beginning of a discourse.

Another way to show that the two expressions in question are not synonymous is to consider them in the context 'the same . . .'. It is an important feature of some nouns and noun phrases — among these, prominently, count nouns — that understanding them involves knowing what it is to count as 'the same so-and-so'. Thus it is part of the understanding of 'anthropologist' that one knows what counts as 'the same anthropologist'. This feature is not correlated to pluralizability. For though both 'one' and 'anthropologist' admit of pluralization, only the latter provides criteria to decide under what conditions something is the same item, i.e. anthropologist. One does not know under what conditions something described as 'the one' simpliciter remains 'the same one' until the expression is supplemented like 'the one dog', 'the one star', etc. Bach's claim seems to be an instance of not considering a wide enough range of phenomena, in particular, regarding the question of what can begin discourse, and the question of sameness and individuation. These two questions are, however, quite vital in the discussion of the significance or lack of significance of the subject-predicate distinction.

The last item on our list of urgent current problems is the need for a thorough examination of ways in which the semantics of various types of expressions is context-sensitive, in the sense in which 'context' means 'non-linguistic context'. A well-known class of expressions with context-sensitive semantics is the class of ex-

pressions that are or include indexicals. Recently Donellan (1966) has pointed out that singular terms in subject position that do not contain indexicals may also be prone to drastic context-sensitivity, and similar points were made earlier in Hintikka's study (1962) of belief-contexts. E.g. in a given context a man could point to an individual and say: 'the murderer is a red headed man', and be able to have made a successful identifying reference for a specified audience, even though the man in question is not a murderer but is only believed to be one. The question arises: to what extent is this type of context-sensitivity restricted to singular as opposed to general terms? Or to terms standing in subject as opposed to predicate position?

To sum up, the items briefly described here have to be dealt with. Also, Quine's charge of vacuousness has to be answered in more than a mere programmatic way, and the conceptual foundations of the new theories of denotation have to be investigated. We shall have to reconsider also the question of how sharply one can separate semantic information from empirical information about the world widely shared in a linguistic community. It seems, however, that the best hope of finding an adequate semantic theory to go with transformational grammar lies in further developments of what has been characterized here as an essentially Fregean theory.

II

Since most of this part of the paper is concerned with the explanatory power and empirical content of linguistic hypotheses, it might be well to remind ourselves of the basic outlines of what and how grammatical theories are supposed to explain. Let us consider a language L. Within L we can distinguish the class of minimal meaning-bearing units; let us call this class K. We can then form another class K* by considering all possible combinations of the elements of K. At this stage we consider an abstract device that divides K* into two classes; the well formed formulae of L and those that are the not well formed. On the assumption that understanding what is or is not grammatical is a rule-following process, we assume that the device accomplishes this task by generating the well formed formulae according to a set of rules. This set of rules is the syntax of L. The more we find out about the formal properties of the syntax of L, the more we also know about the degree of complexity that we have to assign to the device that understands L. By showing that the grammar of L has certain formal properties we might be able to argue that no device or mind with a complex structure less than T, can understand L. This is the sense in which the study of generative grammar might give us limiting proofs about the structure of the mind, and this is why there is formal as well as substantive scientific interest in constructing a grammar that not only includes all of English but includes only a language like English.

The languages whose grammars we are interested in in this context are the natural

languages, and it is assumed that their grammars will have at least partly the same fundamental structure. The general justification for this assumption is that — as Chomsky has rightly insisted — language is a biological phenomenon, and thus there is no more reason to suppose that languages should be fundamentally different than there is to suppose that the bone structure or digestive system should show fundamental variations within the species. One difficulty encountered in the discussions of this topic is the specification of what is meant by a natural language. The term 'natural' admits of several contrasts. A brief exploration of these will help us to see why some delineations of the concept of a natural language are more adequate than others.

'Natural' contrasts, among other things, with 'non-natural', or 'artificial'. Accordingly, a natural language is one that originated under natural circumstances while an artificial one is generated by conscious invention and construction. This distinction is, however, trivial. For the mere fact that a language is invented and artificially constructed does not show whether that language could not also have come into being the natural way. Some artificial languages may be such that nobody could have learned them as his first language, and that could not have developed naturally; but this need not be true of all artificially produced languages.

Far more significant is the contrast between a natural language in the sense of a language that can be the first language of a human being or some entity sufficiently similar to a human, as contrasted with a non-natural language that cannot serve as the first language to be acquired. In this sense 'natural' means 'initially acquirable'. From the point of view of a linguistic theory that views language as a biological phenomenon this is clearly the fundamental class of languages that we are interested in. If someone asks why we should give acquisition such a privileged position, the answer is that this follows from our conception of language as a biological phenomenon. We describe as human anatomy that anatomical structure that people are naturally born with and develop under normal circumstances. The same considerations will apply to other biological phenomena.

One could also define 'natural language' as covering all of those languages that can be used by humans for certain essential tasks, such as describing empirical phenomena, formulating scientific laws, reasoning, etc. A non-natural language will be in this conception a language that cannot be used for these purposes. It is a purely empirical task to determine what the relationship is between the naturally acquirable languages and the natural languages as defined in this paragraph; most likely the latter would include the former class but would not be co-extensive with it.

The distinction between natural and non-natural is at times confused with the distinction between formal and informal languages. A formal language is constructed in order to express as clearly and explicitly as possible a theory, e.g. biology, mathematics, etc. An informal language is one within which any number of different and mutually incompatible theories can be expressed. As a limiting case of informality in this sense, one could take the characteristic of universality;

i.e. a language is universal in its semantics in this sense if and only if it can express anything that is not logically inconsistent.

It is important to see that there is no necessary correlation between the senses of 'natural' as defined above, and the notion of informality as introduced here. Rather, these distinctions enable us to state a number of interesting questions in a reasonably clear way; e.g. can everything be expressed in some natural language; can everything be expressed in all natural languages; does talking the same natural language require a certain sharing of a theory about the nature of the external world, etc.? At the present stage we are far from being able to answer any of these questions, but adequate answers to these, when they become available, would shed a great deal of light on the nature of language.

In recent times the notion of intuition has figured prominently in linguistic discussions. The limits of the justification for introducing this notion into linguistic theory, however, have not been understood, nor have we so far succeeded in building this notion into a non-vacuous theory of mind. Psychologists rightly mistrust the notion of intuition, and thus it becomes that much more important to explain the justification for introducing this notion into a linguistic theory. The key concept is that of intuitions of grammaticality. The reason for regarding this notion as legitimate is that it has a corresponding part in the formal analogue of the competence model. As we saw, in explaining the device that accepts a language, we assigned to it the role of dividing K* into two sub-classes. The device accepts the well formed formulae and rejects the ill formed ones. Corresponding to this notion of acceptance and refusal we postulate the notion of intuitions of grammaticality. In general, one is justified in introducing the notion of an intuition only if one can find corresponding to the introduced entity an analogous part in the formal competence model. Viewed in this manner, it is best to regard intuitions of grammaticality as theoretical constructs, to be distinguished from beliefs about intuitions of grammaticality, with the latter as possibly evidence for the former. Another important difference between these two notions is that only instances of the former are immune to revision unless the language changes. Intuitions of grammaticality are self-warranting beliefs, while beliefs about these intuitions are fallible, like all other empirical beliefs. Under these circumstances a lot of work will have to be done in order to develop reliable testing methods for intuitions of grammaticality. That these intuitions can be reliably established was, understandably, a programmatic assumption in Chomsky's early work. The practice of people simply asking themselves in a class-room what is grammatical, etc., was meant merely as a crude temporary substitute until more objective and reliable methods were developed. Unfortunately, current practice by linguists seems to indicate that the original methodological considerations and justifiable ways of postulating intuition have been lost sight of, and the crude temporary methods of introspection etc. tend to be taken as final. Predictably, this has resulted in strange claims concerning grammaticality. The following is a sample of recent judgments concerning what is un-

grammatical. 1) Tom doubted that Ann could swim, but nobody believed him (Ross 1970). 2) As for myself, I promise you that Tom will be there (Ross 1970). 3) John praised Mary, and then *she* insulted *him* (Lakoff 1969). There is no doubt that all three of these sentences are strange. But strangeness has many sources, and — as has been argued elsewhere (Moravcsik 1970) — there are strong methodological considerations suggesting that we should draw the line around what is grammatical very liberally. This amounts to saying that we should look for sources of strangeness elsewhere, and set up as precisely as we can criteria of what counts as grammatical. E.g. with regard to declaratives, if we can state the conditions under which what a sentences expresses is true, then the sentence is grammatical. With regard to example 1), we should note that doubts can be entertained privately or publicly. Thus there is no reason to suppose that Tom could not doubt something, that this doubt would not be noticed one way or another by other members of the linguistic community, and that the doubt could not be not shared by anyone. Thus the sentence is grammatical, and its strangeness — if any — arises from the fact that it is not indicated how others came to know about Tom's doubt. The strangeness of 2) is likewise not a question of grammaticality. The distinction between a reasonable promise and an unreasonable promise is not the same as the distinction between a grammatical sentence and an ungrammatical one. Under normal interpretation 2) expresses an unreasonable promise; but so does the proverbial sentence that indicates that the lover promises the stars for his beloved; and though the promises of lovers are often unreasonable, it will hardly do to regard them as ungrammatical. The strangeness of 3) turns on the fact that most of the time we do not regard praise as insult. But if someone were to regard it that way, he would simply show himself to be odd with regard to his relation to his fellow humans, rather than showing himself to be violating English. Through the centuries English had to accommodate itself to describing a variety of very strange social and psychological attitudes; it is doubtful that psychological abnormality could outstretch grammaticality. The difficulty is that apart from claims and counterclaims about introspective episodes there are no ways at present to settle issues of this type. Those of us who regard sentences 1) — 3) as grammatical will be regarded as deaf but long on imagination, while we describe our opponents as having perhaps sensitive ears but being definitely short on imagination. Inasmuch as we want to reformulate the structure of linguistic theory so that it should have the form of a scientific explanation, this exchange of metaphoric praise and insult is a scandal in current linguistic practice, and its replacement with more reliable tests is imperative.

This discussion of the role of intuition in the treatment of syntactic phenomena leads us to the comparison of syntax and semantics, and the consideration of possible deep differences between the two.

There are at least three crucial differences between syntax and semantics. One of these is their different roles with respect to non-linguistic context-sensitivity. We

saw above, that in order to interpret correctly the referring roles of singular terms under certain circumstances, the non-linguistic context has to be taken into account. The question arises: can we find something analogous in the case of syntax? Are there sentences such that the interpretation of the syntactic structure of one of their tokens depends on matters of extra-linguistic context? If the answer to this question is negative, as the author of this paper suspects it is, then we have found an important difference between syntax and semantics.

The second difference arises with regard to the role of intuition. In the case of syntax, there are well founded arguments on the basis of which we postulate intuitions both concerning grammaticality and concerning the internal syntactic structure of that which is grammatical. These intuitions play a key role in syntactic theory since these are the data which are to be accounted for. Do intuitions play an analogous role in semantic theory? And if so, what are the relevant intuitions? Although this question has not been treated explicitly in the literature, the philosophic debates involving Quine and others, are relevant to this topic. For example, on the basis of recent and current discussions of synonymy in natural languages it seems most implausible to suppose that claims of synonymy or paraphrase should be construed as accounting for phenomena that are intuitive in the same way as the syntactic phenomena are. Again, there seems to be no need for a semantic intuition of well-formedness in addition to grammatical well-formedness. There are two candidates for the status of semantic intuition. One of these is an intuition of validity as applied to deductive arguments. Since such arguments are represented in natural language, these intuitions need to be captured by semantics. The other candidate is an intuition that entities of certain sorts fall under the denotation range of a given predicate. In any case, it seems that with respect to the role of intuitions semantics and syntax reveal important differences.

The third point of comparison involves the distinction between matters of linguistic fact and matters of widely shared beliefs about the world. Quine claims that this dictinction is difficult to maintain with regard to such phenomena as synonymy and meaning-inclusion. Can one present an analogous argument concerning matters of syntax? Although there exists no argument to this effect in the current literature, some of the material presented in a recent paper by Lakoff (1969 : 115–6) could be used for this purpose. Lakoff argues that grammaticality is to a large extent based on presuppositions about the world shared by members of a linguistic community. Although Lakoff does not think that this should lead one to deny the distinction between linguistic and extra-linguistic facts, someone might try to draw such a conclusion from Lakoff's evidence. This evidence, however, is limited to matters involving features like Animate and Human. It is fairly obvious that questions of what is and what is not capable of performing tasks that humans perform, and what is or is not animate and thus a possible object for use, worship, etc., involve empirical beliefs about the world. Consequently any deviance from grammatical rules based on Animate and Human allow in principle two interpretations.

Either a mistake has been made, or a new hypothesis concerning certain entities in the world has been formulated, perhaps implicitly. It is worth noting, however, that these features affect a relatively small portion of syntax. Lakoff speculates (1969:116) that not much of interest would be left in 'presuppositionless syntax'. This is false, however, unless one can show that the distinctions between concrete and non-concrete particulars, between count + and –, between proper name and general term, as well as between categories like noun, verb, etc., are also based on empirical assumptions about the world. But what change in our empirical beliefs could affect the above mentioned distinctions? Thus as long as these are independent of our beliefs about the external world, that part of grammar that makes statements of identity, individuation, and predication possible remains non-linguistic context-free. Thus with regard to this point too, semantics and syntax differ. These differences should be brought to bear upon points that cannot be discussed within the confines of this paper, e.g. comparison of the explanatory power of syntactic and semantic categories, the claim that semantic transformations are formal objects on par with grammatical transformations, etc.

The observation that at present a detailed comparison between syntactic and semantic categories is not possible leads us to an important lacuna in current transformational theory. This lacuna is related to the question of the explanatory power of explanations within transformational grammar. Presumably the syntactic aspect of the capacity of a speaker-hearer to understand a sentence is to be explained in terms of his ability to recognize what is or is not grammatical, and his ability to assign a structural description to the sentence. The elements of a structural description will include the syntactic categories. This means that until we arrive at an adequate analysis of the syntactic categories, our explanation of the ability to understand a sentence is no better than the explanation offered by Molière's doctor of the capacity of opium to put people to sleep by reference to its dormitive power. With regard to an adequate analysis of syntactic categories we must distinguish between the demand for a language-independent definition and the demand for universality. An analogy should make the difference clear. Suppose that we have to give a different account of the syntactic categories for each natural language. This would amount to saying that we can give only 'local' accounts of these categories and that no 'global' account is available. An analogous case would be if we could define only phrases like 'gold in Siberia' or 'gold in Canada', but not gold in general. This would be a scandal for science. It is obvious, then, that in order to have a viable concept of a syntactic category in linguistic explanations, we need a global account. But just as the availability of a global account of gold does not imply that there is gold to be found everywhere, so the availability of global accounts of the syntactic categories would not guarantee universality. The latter is an additional and stronger hypothesis. It is required for our conception of language as a biological phenomenon, as we saw above, but it is not required for the mere respectability of explanations in linguistics as scientific hypotheses. The current difficulty is that apart from

some of Chomsky's earlier programmatic comments, and a few useful suggestions in *Aspects*, one cannot find either constructive work on these matters within the current literature nor even any sign of an awareness of how crucial this problem is for linguistics as a science. Until this problem is tackled, linguistic accounts will have to function as if they were full-blown scientific explanations, and the danger of ad hoc, or vacuous, or near-vacuous explanations seeping into the literature remains considerable. Let us consider in this connection two examples from the recent literature.

In his recent papers Lakoff claimed that quantifiers must be treated as a kind of adjective. It turns out, however, that the quantifiers that are fundamental for quantification theory ('some', 'all', 'every') — in contrast to other quantifiers like 'few' and 'numerous' — are utterly unlike adjectives. They carry no relevant selectional restrictions, they do not admit molecular conjunction, etc. So what are we to say? Why call them adjectives? Why not regard them as 'sui generis'? In view of the fact that there is no general definition available for Adjective, one does not know what counts as a conclusive argument one way or another; thus Lakoff's claim remains outside the sphere of claims with specific empirical content that could be confirmed or disconfirmed.

Another relevant example is the so-called 'performative analysis' proposed by John R. Ross for declarative sentences (Ross 1970). How is one to assess the claim that in the deep structures of all declarative sentences there are performative elements that get deleted in most cases? To what extent does such a proposal have empirical content? It is curious that Ross makes this general claim, since all of the difficulties that he seeks to solve arise in connection with sentences containing indexicals. Philosophers have recognized for a long time that there is an important distinction between indexical and non-indexical sentences. Why should this distinction not be applied to Ross's work? Why is it that Ross's discussion takes no cognizance of recent attempts to work out the semantics of indexicals? The practice of postulating all kinds of elements in deep structure that have no 'traces' in the sentence itself at all creates more problems than it solves. For it casts doubt on the whole enterprise as a legitimate, empirical, and non-vacuous way of explaining a part of linguistic competence. If Ross were right, then the view of language that we attributed to Frege earlier would be wrong. But there is nothing in Ross's paper that could be construed as arguments supporting the claim that contrary to Frege the fundamental part of our language is not context-free.

To illustrate the danger of adopting unclear and undefined notions let us consider the recent mushrooming of the notion of presupposition in linguistic literature. The notion was first introduced in the philosophical literature on reference by Strawson (1950) and the utility of the notion with regard to these matters is still a subject of debate. This debate has not been joined by linguists; instead we find the uncritical employment of the notion in a number of contexts. It has been suggested by Lakoff ('unpublished discussion of quantifiers') that 1) 'Pedro regrets

being a Norwegian' presupposes that Pedro is a Norwegian. In fact, there is no logical relation between the two propositions in question. Whether Pedro regrets being a Norwegian has nothing to do with his being or not being a Norwegian. It has to do, however, with his believing that he is a Norwegian. Once we see this, we realize that there is no need for a new relation called presupposition, since 1) logically entails that Pedro believes himself to be a Norwegian.

Again, we are told that 2) 'Sam's murderer reads the *Reader's Digest*' presupposes that Sam was murdered. But brief reflexion should convince one that in this case too, the customary notion of entailment will suffice. For 2) entails that Sam was murdered, and if we succeed under unusual circumstances to make a true statement by using 2) even though Sam was not murdered, then this is possible only in view of the fact that 'Sam's murderer' can be given different interpretations in context (see Donnellan 1966).

Something having the semblance of an argument is presented occasionally in linguistic discussion for presupposition by claiming that it helps to explain negation. Thus we are told that 'John is a bachelor' presupposes 'John is an adult male' and asserts that John is not married. As support for this interpretation we are told that 'John is not a bachelor' means 'John is an adult male who is not unmarried'. But this last claim certainly cannot be regarded as a rule of English; rather, it is a statistical correlation of some sort, to be noted as a matter of performance, not of competence. 'John is not a bachelor' says that John does not satisfy the criteria for being an unmarried adult male. He may fail, of course, in a variety of ways. He may fail because he is married, or he may fail because he is still a baby. The fact that most of the time it is the former rather than the latter type of failure that underlies our ordinary negation is not a matter of law but a matter of statistical correlation, and it is not one of those facts the knowledge of which constitutes knowing English; rather, it is a fact the knowlege of which facilitates communication and other pragmatic skills.

Finally, let us see if the notion of presupposition is really needed in order to explain the difference in meaning between a pair like 'accuse' and 'criticize'. Below we shall present an analysis that accounts for the differences without invoking the notion of presupposition. Consider two examples: a) 'John accuses Bill of having stolen the money', and b) 'John criticizes Bill for having stolen the money'. Both a) and b) entail 'John believes that Bill stole the money', and both entail 'John believes that Bill's having stolen the money was bad'. Needless to say, neither a) nor b) entail or presuppose 'Bill stole the money'. The difference between 'accuse' and 'criticize' can be brought out by pointing out that a) entails 'John believes that Bill's having stolen the money is morally wrong, or violates a law' while b) does not entail this. What b) entails can be perhaps expressed by 'John believes that Bill's having stolen the money was a performance that fails to meet certain standards', where the standards in question can be technical, prudential, a matter of limited ends and means, etc. To accuse is to assert a belief that someone is guilty

of something, to criticize is to assert the belief that someone made a mistake; guilt and mistake are different notions. This explains why it sounds natural to say: 'John accused Bill of murder' and odd to say 'John criticized Bill for murder' though the latter makes perfectly good sense in the context in which we are assessing the fulfillment of a mission by someone, and a murder can be regarded as endangering or damaging in some other way the end for which the mission was designed.

Within the confines of this paper we cannot survey each use of 'presuppose'. Hopefully, enough has been shown to convince linguists that the introduction of this notion does not solve interesting questions in semantics, and that one should restrict oneself to relatively clear and well defined notions that have been developed in logic, and not introduce new relations unless absolutely necessary. Once such introductions are made, they must be accompanied by rigorous definitions, and explanations comparing the formal properties of the new notion to the already accepted ones.

In conclusion we shall take up recent formulations of anti-Whorfian hypotheses and see how the methodological remarks made above bear on these. Both Ross (1970) and Bach (1968 : 121–2) seem to regard it as an advantage if deep structure turns out to be more abstract than we think, and they think that on a very abstract level of deep structure all languages can be shown to have the same universal grammatical structure. They think that on an equally abstract level the semantics of all natural languages can be shown to be universal. The use of the word 'abstract' in this context is rather misleading. The issue is not abstractness; that in itself is neither good nor bad. E.g. mathematics is very abstract, but this fact has no bearing on its value. In the context of linguistic theory the issue centers around the notion of a structure being very remote from surface structure. Thus for 'abstract' as Ross and others are using this term, we should substitute 'remote from surface structure'. The methodological remarks made above should bring out the point that there is nothing good about deep structure being very remote from surface structure. On the contrary, the more remote, the less clear it becomes that we are making empirical claims. Given the extremely powerful notion of a transformation, as defined so far, it is not in the least surprizing that if one makes deep structure sufficiently remote from surface structure, then one should achieve universality. We are operating here with a much too powerful notion, i.e. a transformation, that has not yet been sufficiently restricted, and this notion ranges over phrase-markers, which are entities containing undefined syntactic categories as their elements. Under these circumstances, the more 'abstract' (i.e. remote from surface structure) deep structure is, the more vacuous and trivial the claim of universality is. Linguists must be careful lest their zeal for generalizations of ever widening scope leads them to vacuousness and ad hoc explanations. With regard to semantics, the claim of universality was first formulated by Tarski (1936). His remarks were made, however, in the context of comparing formal languages, ones designed to express a certain theory, with informal languages, i.e. those within which we can

express a variety of different theories. His remarks cannot be applied, without additional premisses to a comparison of the semantics of different natural languages. This latter comparison will become more fruitful at some future time when the conceptual framework of linguistic theory is more clearly defined, and its relation to empirical evidence more clearly spelled out.

To sum up, this essay is designed to show the different kinds of interests that philosophers have in language, the ways in which their semantic analysis is relevant to the work of the linguists, and ways in which distinctions from linguistic theory can be applied profitably by philosophers to their own work. Finally, in the last part some methodological suggestions have been made from a philosophical point of view. The aim of these suggestions, as well as the implicit encouragement to linguists and philosophers to borrow from each other, is to contribute toward achieving the formulation of an adequate theory of language. While such a formulation is not yet within our grasp, a survey of recent work both by linguists and philosophers cannot help but impress one with the relative amount of progress made. Further empirical work, a few more conceptual reforms, coupled with awareness of the requirements of scientific methodology, should make the future work of linguists and philosophers in this area rewarding.

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ON LOGIC AND THEORETICAL LINGUISTICS

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I. INTRODUCTION

'Language, Truth, and Logic' has a familiar ring. Russell wished he had written the well-known book of that title; Ayer, no doubt, is grateful that *he* did. Our study, though more mundane, is perhaps a less devious treatment of these topics than Ayer's. It attempts to comprehend the multifarious interconnections among linguistic theory, the theory of truth, and logical theory.

Linguistic and logical inquiry have had an affinity since classical times. The Middle Ages and several subsequent centuries saw a cultivation and enrichment of this relationship, though by the nineteenth and early twentieth centuries, it had chilled. As their fields gained academic independence, the linguist and the logician questioned the interest, relevance, and even comparability of the other's to his own work. Of late, a new cameraderie between the logician, especially the philosophical logician, and the linguist has emerged. This exchange of ideas has occurred at a time when their respective theories have progressed strikingly, and have achieved, if not a firm foundation, at least a clear direction. Integral to this development has been the concept of Form or Structure. Though not new in its centrality to either field, it has only recently become theoreticaly specifiable in a way which encourages the kind of comparative understanding we are seeking. It will occupy center stage in what follows.

One note of explanation: conspicuously lacking in our study is a detailed discussion of the pragmatic element in language and argumentation. The lack is due not to disdain nor to a paucity of interesting work in the area (for some recent work see Bar-Hillel, ed., 1971), but to a shortage of space only.

II. SOME PRELIMINARY CONSIDERATIONS

What then are the interconnections among the structures proposed respectively by the linguist and the logician? The terms of the question demand refinement. But first we must consider briefly some claims which, if true, would seem to make further discussion pointless.

The first such claim is that logic, being normative, can have no significant

overlap with linguistics which is descriptive. Ignoring the questionable clarity of the normative-descriptive dichotomy, we are ready to grant in some sense of these terms that logic *is* normative, and linguistics descriptive. But we must also acknowledge that, in the sense in which logic is normative, so is linguistics, and in the sense in which linguistics is descriptive, so is logic.

Consider first the normative character of logic. We start with an infinite set of logical truths of ordinary language. Among them are the conditionals, whose validity when valid permits us to describe the antecedent as entailing the consequent. Our logical theory will be adequate only if it generates all and only the members of this initial set. In virtue of these truths, for example that A entails B, we talk of what sentences a person SHOULD accept, and how he SHOULD reason; that he SHOULD accept B if he accepts A or conclude B from A. A weaker conception of the norms would require only that he should not accept not-B if he accepts A. Logic then is normative insofar as it defines the ideal reasoner, insofar, that is, as it specifies through its rules the competence that such a reasoner should possess.[1]

Expressed in this way, the parallel normative character of linguistics is apparent. Corresponding to the set of logical truths is the set of grammatical sentences. In terms of these sentences we talk of how people SHOULD speak, we criticize and correct the ways in which they do speak, and we specify the competence of the ideal speaker-hearer.

Turning now from competence to performance, we can locate the descriptiveness of both linguistics and logic. It would be rather absurd, although it is unclear to what extent, to claim to have specified the grammar of a language L, and yet acknowledge that the speakers of L never perform according to its standards. We want a grammar both to answer to the linguistic intuitions of the ideal native speaker-hearer, and to count as grammatical many, perhaps most of the utterances of those who know and perform in the language. 'Strings heard from natives count as well-formed, at least provisionally' (Quine 1970:389).[2] The normative grammatical theory alone need not be an adequate model of performance in the weakest sense of having its output match the performance output. It certainly will be part of a theory of this performance, however, insofar as it produces a partially realized

[1] The problem of relating norms of reasoning to truths of logic is notorious. Our vague formulation 'in virtue of' is meant to avoid any commitment to a specific relationship and to deny that the relationship can be viewed as itself a logical one. Whatever the relationship, however, certain distinctions must be made in formulating the norms. Thus the ideal reasoner should accept B if he accepts A) though it need not be the case that he should accept B (if he accepts A). — Among the issues on which the ultimate resolution of the entire question rests are: (I) failure of substitutivity in knowledge and belief contexts, (II) the relation between truths of logic and empirical facts, e.g. that the output of a certain computer is such and such, and (III) the relationship of norms to what a person believes. — We are indebted to S. Morgenbesser for the need to express caution here, though he may not agree with the specific cautions expressed.

[2] The behavioral expression of linguistic intuition is also an element in performance and part of the test. But in another sense, we want to contrast what we know to be right and what we do. In this sense the intuition is not part of the performance, but functions as competence.

description of it, to the extent that the performance conforms to the rules of the theory in this weak sense.

Chomsky has introduced a deeper sense in which linguistic theory is descriptive (his second sense of 'theory'); namely, it is descriptive of the tacit knowledge of the native. The competence of the native will then be described in terms of the competence of the ideal speaker, and the performance of the native in terms of his competence. This is a deeper sense of 'description', because it does not merely claim to generate the observations of performance but to describe an element in the process of the native's performance.[3] (Contrast the laws governing falling bodies as a description of the 'performance' of Newton's apple.) Other elements, further mechanisms, need also to be introduced to explain performance; for example, attention, motivation, and memory.

An account of the application of this framework to logic is unnecessary. That the various levels of description presented here arise also in discussing the logical performance of reasoners seems plain enough. Logic, thus viewed, becomes part and parcel of a description of reasoning behavior and, in a deeper sense, of the mechanics of this behavior.

Until now we have described the output of linguistic theory in terms of grammaticality only. Similarly, logical truth marked the domain of logical theory. Chomsky, of course, views grammaticality as only a small part of the adequacy conditions a linguistic theory must fulfill. In contrast to weak generative capacity, the capacity to generate all and only the grammatical strings, stands strong generative capacity, fulfillment of which assures that the strings are appropriately marked. This addition of structural description has a place in each major part of our characterization of linguistics. In these terms this means that (a) in addition to the basic norms associated with grammaticality, there are standards of labelling and bracketing to which we should conform; (b) our model must partly fit the actual performance of the natives in this endeavor; and (c) the natives will, presumably, tacitly know the right structural description of the sentences of the language, and this knowledge will figure prominently in the linguistic process.

Using these terms may not be a fair way of extending the adequacy conditions of linguistics. Thus Quine objects to the idea that a native tacitly knows one of two weakly equivalent theories as opposed to the other.[4] This idea is very intimately tied to the interest in getting the strong generative capacity right. Were the notion of the right structural description given new behavioral content, at least we would know clearly whether the native's performance, other than his parsing, fits one of the two theories and not the other. Nonetheless, it is central in Chomsky's scheme

[3] Talk of process (and later of mechanisms) should not be taken to suggest that from a description of the output of the theory anything specific follows about the nature of the process or mechanism. More generally, we must repeat that these preliminary considerations are meant only to head off very general objections to our concern and are not meant to be serious discussions of the often controversial topics they mention.

[4] But see also Quine's comments on Geach (1970 : 391).

that we talk of one such grammar, picked out presumably by further constraints, viz. Universal Linguistic Theory, as the one internalized by the native. Does this force a divergence of logic and grammar? Janet Fodor writes:

> For the logician, the existence of more than one type of logical system dealing with the same subject matter is not disturbing (although he may be interested in comparing and contrasting some of their formal properties), but many linguists argue that there may be just one correct grammar for any language and that, given any two proposals, it should be possible to determine which of them is the more correct, either on the basis of further empirical data or else by reference to their relative simplicity or conformity to general universal principles concerning linguistic structures (1970 : 209).

Though this argument seems to play off the logician against the linguist, it in fact only catches them in different moods. First of all, the variety of logical systems is certainly matchable by a plurality of grammars — at least at the level of weak generative capacity. If now we raise the stakes and claim a need for strong generative capacity to characterize linguistic knowledge, what is to keep us from similarly specifying greater constraints on an acceptable logical theory to characterize logical knowledge? In short, the psychologician will be as particular as the psycholinguist, and the formal (weak) logician as tolerant as the formal linguist. [5]

Finally, we should comment briefly on the assumption that the native tacitly knows or internalizes one grammar and/or one logical theory. This idea must face whatever strength there is in the objection implicit in Quine's notion of indeterminacy of translation. If Quine is right, there is no sense in talking about THE CORRECT linguistic or logical theory of a language L; and there is no fact of the matter about the logical or linguistic structure of a sentence. Our use of simplicity and other considerations in developing a theory is all well and good, but it does not get us closer to any reality — and in particular, no closer to the reality of the native's knowledge.

This indeterminacy, if there is one, need not result in a parallel neurophysiological indeterminacy. Neurophysiological theory is one with scientific theory, towards which even Quine manages a realistic attitude. Further, it does not rule out the idea of a neurophysiological explanation of linguistic knowledge. Rather it says something about the relation between the description of mentalistic and physiological linguistic theory. [6]

Before turning to the second claim, there is a further sense in which logic may be normative and linguistics not. This is the sense in which the language of logic might be considered an ideal language. The notion of ideal language has been closely connected with that of logical form from the time of Russell and Wittgenstein. Since we shall discuss this notion below in the section on logical form, we can be brief here: An ideal language, if it conflicts in an interesting way with the

[5] It should be noted that Janet Fodor's comments were not originally intended for the purpose to which we put them. Her point is relevant to the discussion in the final section of the paper.

[6] For some interesting arguments related to this, see Davidson 1970a.

sense of logic given above as a theory of logical truths of ordinary language[7] must be a replacement of ordinary language as opposed to a characterization of its logical properties. This distinction is embodied in great part in the properties of the scheme which correlates the ideal with the ordinary language. But a new language will not qualify as a replacement merely because it is a sub-part of the ordinary language, or differs from the ordinary language in surface features, or finally contains a replacement of the non-logical, lexical elements of the ordinary language.

That there are ideal replacement languages developed for the use of science may be clear. But it is also clear that everything which may appear to be such is not. In any case, there are logics which do attempt to be descriptive logics of ordinary language, and this is enough to justify further investigation.

Having responded to the 'normative-descriptive' objection, we are still not quite free. A parallel and perhaps interconnected objection (images of non-Euclidean geometry(?)) might be raised in the form: Logical theory is language-independent, known a priori, and necessary, while linguistics is language-dependent, known a posteriori, and contingent. Still, we think there is a sense in which logic and linguistics share some of these characteristics. In seeing how this is so, a point of Quine's is worth noting. 'Grammar,' he says, 'is linguistic on purpose' (1970:15). Logic is not. In logic we become involved with language because of the technical difficulties in generalizing directly. We soon realize that generalities must be expressed in terms of truth and truth-bearers. Such semantic ascent is not mere quirk as would be the habit of a scientist who, instead of asserting sentences, insisted on saying that they were true. It is a necessity.

On the surface, to ascend to truth is not to be language-dependent. After all, the device of a proposition is just a way of freeing ourselves from specific languages.[8] If we grant they exist, then surely it is for the purpose, among others, of bearing truth. Furthermore, even if the need to talk not only of truth but also of form eliminates propositions, as ordinarily conceived, from the competition (of truth-bearers in logic), there are other entities equally language-free to take their place. But this is all beside the point, for any truth-bearer we choose, even if not sentences in specific languages, will have a clear relationship *to* sentences in specific languages. Further, given that in logic we *must* talk of truth-bearers, it remains plausible to see in this talk an extension of the domain of logic to include discussion of the relation between sentences in language to these truth-bearers.

In other words, logic, however characterizable independently of language, has an 'application' to particular languages. In this process we meet the claims which invite comparison to linguistics; e.g. S in L has form F, S is a translation of S' . . . .

What now of being necessary and a priori? Granting the concepts, we will

[7] This characterization of logic in terms of logical truths of ordinary language makes irrelevant to our discussion pure mathematico-logical theories.

[8] Propositions are sometimes conceived in such a way as to free us from *all language*.

likely admit a sense in which both these concepts apply in logic and not in linguistics. But, again, the contraries, being contingent and known a posteriori, apply also in logic, and present us with the field for comparison.

This point may be clarified as follows: As might be expected, the application of these contrary terms is just to those sentences of logic which are 'linguistic' in character. The characterization of the form of S in L or the translation relation holding between S and S^1, both in L, are presumably descriptions of contingencies known a posteriori. And, of course, it is just when we fix our glance on this element of logic that we begin to wonder about its relation to the various elements of a grammar. Furthermore, claims like these constitute the network which interrelates logic as formulated explicitly in terms of sentences, with logic formulated in non-explicitly linguistic terms.

Finally, we must not overestimate the language-dependence of linguistics as presently conceived by many, especially those influenced by Chomsky. The idea of language universals has become a basic addition to the theoretical vocabulary of the linguist, and in the case of Chomsky, the concept of universals is integral to the notions of the descriptive and explanatory adequacy of a linguistic theory. Since we shall not return to the question of universals we shall remark about it briefly here.

Semantic universals invoked in the context of the semantic component[9] emerge in talk of non-linguistic entities, concepts, thoughts, readings, and in the possibly identical idea of language-neutral semantic representations. Thus, whatever moment there is to objections of such talk in logic, or to such talk independently of translation schemes between sentences or other linguistic expressions, applies to the acceptability of such talk in the context of semantic universals.

More generally, care must be taken in formulating hypotheses of linguistic universals, if they are not to be somewhat hollow empirically. In the case of syntax, we must avoid interpreting purely grammatical categories and constructions along with the structuralist, immanently, lest there be no sense in asking about universals.[10] In the case of semantics, we must avoid collapsing the claim to universality onto a claim of the intertranslatability of all languages, at least if the universal categories and constructions are transferred by translation which itself fails of objectivity. Regarding semantics (assuming Quine views predication as a fundamental construction for semantics and not just syntax), Quine writes:

> Someone says, let us suppose, that the subject-predicate construction occurs in all the languages he has examined. Now of course all those languages have been translated, however forcibly, into English and *vice versa*. Point, then, in those languages to the translations of the English subject-predicate construction, and you establish the thesis;

[9] Or simply the grammar, if generative semantics is accepted. On this issue, see below.

[10] Quine is a superstructuralist in the sense that not only are the particular categories and constructions immanent, but so also are the notions of a category and a construction themselves.