

LEXICAL DEVELOPMENT FROM THE PERSPECTIVE OF GENETIC-DRAMATISM¹

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I

Our current information regarding the acquisition of language in children is recognizably extensive. At the same time it is admittedly fragmented and isolated. We view this as unwholesome, and our paper is intended to promote four aims instrumental to the goal of dissolving this state of affairs.

One aim is to make manifest a widespread, if unarticulated, sentiment that understanding any isolated aspect of linguistic activity cannot be achieved without a concurrent appreciation of many other aspects of language functioning: thus, an understanding of "lexical development" is unattainable without the consideration of syntax, morphology, and phonology, on the one hand, and pragmatics and even politics (Kress & Hodge, 1979) on the other.

A second aim, really an extension of the first, is to emphasize that the study of the child's linguistic activity may only be adequately formulated, undertaken, and interpreted in the context of conceptualizations of linguistic functioning in later life. One cannot comprehend child language in isolation from an understanding of adult linguistic functioning, both at its highest levels, and at its most primitive levels (e.g. in pathology).

A third goal is to argue for the need for an overarching perspective, not only for lexical and for language development, as considered in isolation, but for human development, of which linguistic functioning is, although a large part, only a part. A perspective is required that will integrate lexical and language development with the struggle of human beings to perfect themselves; in Whitehead's (1929) phrase, "to live, live well, and live better".

The fourth purpose is to outline and exemplify such an overarching perspective.

II

Even as the Zeitgeist has vacillated from a preoccupation - now, with syntax; now, with semantics and cognition; now, with pragmatics and communication; and now, perhaps again, with syntax (Kessel, 1981), there is a pervasive sentiment that the study of isolated aspects of language behavior is inadequate not only to the understanding of language development as a whole, but even for a grasp of those abstracted aspects themselves.

Yet we all operate in our research as if we can, with impunity, violate "the Humpty Dumpty principle"; we break down the human child into the language-acquiring child, the word-acquiring child, and so on, and assume that someday, somehow, someone will come along and put all the pieces back together again. Not that we are unaware of the possible impact of these segregated aspects on one another. To take but a few examples, we know that newly-acquired verbs tend to be used in

structurally less-complex sentences than are earlier-acquired verbs (Bloom, Miller & Hood, 1975); that "bursts" of higher than usual syntactic complexity may occur in settings (such as arguments) where the child is persistent in purpose (Ervin-Tripp, 1977); that scenes of utterances (e.g. absent versus present objects; peer-peer role-play versus adult-child dialogue) may affect the words, sentence structures, and types of speech acts that are used; and that ease of articulation and auditory salience may contribute to the avoidance or exploitation of specific words by young children (Barton, 1976; Ferguson & Farwell, 1975; Menyuk & Menn, 1979).²

But being aware of the inappropriateness of assuming isolability of aspects of language has not directed us to the adoption of holistic approaches; to the contrary, we continue to breed "experts" on elements and minutiae.

In contrast, workers in cognitive science studying learning, memory, and problem-solving have recognized that performances in any one of these domains are subject to complex interactions among the agent's goals, the tasks imposed by the experimenter, the nature of the materials (content) to be dealt with, the contexts of performance, and the like. They have begun to drop the search for "general laws" of isolated psychological functions (cf. Bransford, 1979; Brown, 1980; Jenkins, 1979). To comprehend lexical development, we may need to embrace the paradox of dependencies of such development upon a multitude of factors seemingly external to words.

III

Yet another type of segregation has been promoted by an exclusive focus on child language. To take the case of "lexical development", do we not find that the study of child language (in general) and the child's dealings with words (in particular) is typically divorced, not only in practice but in theory, from the diverse ways of employing words among adults? More striking yet, do we see students of child language prepared to deal with the most advanced manifestations of linguistic functioning? We act as if the understanding of linguistic development in the child were possible, even likely, without any clarity as to the telos of linguistic development as realized in the poet, the rhetorician, the master "lexicographer". More rarely yet do students of child language and "lexical development" in children relate their studies of changes in word-meaning in children to collective phenomena in the history of languages, as, for example, Heinz Werner (1954) has done. Thus, our focus on a circumscribed population rather than on universal processes has blinded us to a full appreciation and extension of the comparative nature of our (presumably) developmental discipline.

But even if the "walls of Jericho" insulating language studies of child from those of adult, and individual from collective representations, were to tumble and fall, a neutral and putatively value-free account of linguistic or lexical change over time, whether concerning the old and the young, poets as well as plebians, cultural phenomena in addition to individual ones, would not constitute a developmental account. This is because "development" for us, as contrasted with "ontogenesis" or "history", belongs in the domain of ideals, norms, and standards; in a word, it is a VALUE concept (Werner, 1948, p. 46; Kaplan, 1966a; 1966b; 1967/1974; 1981a; 1981b; 1982a; 1982b).

What does this mean? First, that "development" must be distinguished from "change". Second, that "development", as a desideratum, something we

seek to achieve for ourselves and to assist others to achieve, cannot be derived from facts, nor based on empirical findings (Kaplan, 1982a). Rather, it is a standard by which we assess or evaluate the innumerable changes during life. "Development" is a concept of stipulation, not a concept derived through induction.

Although this truism is often masked in psychological discussions of development, as in the name-game of personality development, cognitive development, metamemory development..., reflection will reveal its necessity. Piaget did not arrive at his notion of "development of intelligence" by drawing inductive generalizations from changes in the behaviors of his three children. Nor did Freud arrive at his conceptions of "psychosexual development" from inductive reasoning based on representative samples of children at different ages. We shall never find out what the "development" of language or any of its selected aspects "is", merely through empirical observations or experimental analyses. Before determining the "stages" of lexical or language development, we must already have some implicit conception of what we mean by "development" in the domain we study. What do we take as criteria that allow the judgement that someone is highly developed, linguistically or lexically, relative to someone else? Surely, not that they are older. And no doubt not that they so happen to do the same things that older persons do. We would not infer a leap in moral development if children who had never cheated began to cheat like many of their elders.

The point here is that development is a movement toward perfection; that one must know what the general lineaments of perfection would be in any performance domain in order to ascertain whether developmental advances have or have not occurred. Moreover, one must have such lineaments in mind to determine whether certain conditions in the lives of individuals facilitate, or are inimical to development.

For us, therefore, the study of lexical development is not a value-free inquiry, but an axiological as well as empirical enterprise, linked to intervention. We are concerned with lexical acquisition, whether that of individuals, cultural thesauri, or other "agents", because words are instrumentalities of great power; the full mastery of words is a desideratum. One will recognize that such mastery is not revealed simply by the use and understanding of words as conveying conventional meanings in customary contexts, such as are represented in the dictionaries of our time. Lexical development, in its more advanced reaches, entails the ability to exploit words in metaphor, metonymy, synecdoche, irony, and all the other figures of speech which are also figures of thought (Burke, 1945; Kaplan, 1961/1981). It entails the extension of words beyond their usual denotata to novel configurations and situations, a process some may stigmatize as "overgeneralization" among the young and³ illiterate, and glorify as "creativity" in themselves and their friends. It entails the ability not only to decontextualize words, and to define them in isolation, but to recontextualize words, morphologically modifying their external forms so that they can take on different grammatical functions (Brown, 1973; Werner & E. Kaplan, 1950; Werner & B. Kaplan, 1963). It entails the ability, or "communicative competence" (Habermas; Hymes), to select the right words and locate them in the right places at the right time for the optimal realization of all speech acts or functions, and even to know when silence is the right "word". Thus lexical development can only advance pari passu with syntactic and pragmatic (or rhetorical)

development. The "master lexicalist" is at once also a master syntactician and a master rhetorician (Cirillo & Kaplan, 1981).⁴

From this perspective, lexical developmentalists would not only, or even largely, confine their efforts to describing the actualities of human functioning during the first few years of childhood.⁵ They would deal with human beings throughout the span of life, as they immerse themselves in the lexicons of different professions--jurisprudence, mechanics, theology, or linguistics--; as they write poetry and drama; as they function under transient stress or the enduring stress occasioned by brain-damage or schizophrenia (Kaplan, 1966b). Each of these inquiries into lexical functioning would need to integrate syntactic, pragmatic, phonological, and morphological considerations. And such studies would have to be guided by the standard or telos of lexical development - a perfect mastery, never even remotely achieved, which one might call "competence" in the fullest sense.

A sharp theoretical distinction between "development" and "ontogenesis" enables us to see that ontogenesis, the actualities of existence over the life span, does not entail development. It is, indeed, because "development" is at least tacitly distinguished from ontogenesis --the ideal from the actual-- that it makes any sense to talk about "dips" in performance (Bever, 1981), or to refer to "systematic errors" (Bowerman, 1981) occurring in the history of children's uses of words. "Dips", "errors", regressions", and "arrests"⁶ imply norms or standards, imply some ideal for assessing the actual.

IV

We have already suggested that lexical change and lexical development interpenetrate with change and development of phonology, morphology, syntax, and pragmatics. It should come as no surprise if we go further and emphasize the "interfunctional relations" (Vygotsky, 1978) of linguistic activity with other aspects of human behavior and experience. For certain purposes, one may prescind linguistic functioning and development from their natural embeddedness in the multifarious goal-directed actions of persons in society. But the evidence is overwhelming that the manner in which one uses language, the way in which one handles words, is affected by and affects a human being's cognitive, moral, and interpersonal functioning, and so on.

Yet such influences and interconnections are by and large neglected by students of child language or child lexicality, relegated to yet other experts, or taken to be of marginal interest to the enterprise of understanding linguistic development. Such insulation⁸ is testimony to the need for a general developmental perspective⁹, an overarching developmental orientation that would encompass, in one system, comparative studies of a diversity of phenomena: ontogenetic, cultural, psychopathological, neuropathological. A developmental point of view that would encompass phenomena taking place with respect to different time-scales: historical, biographical, diurnal, and microgenetic. A developmental perspective that would allow for, and encourage, a diversity of methods: phenomenological, naturalistic, hermeneutic, and experimental, and which would¹⁰ seek to integrate the findings from all of these different procedures. Such an approach was advanced by Heinz

Werner and his students (Kaplan, 1966b; Kaplan, 1961/1981; Werner, 1948, 1978; Werner, 1956/1978; Werner, 1954; Werner & E. Kaplan, 1950, 1952; Werner & B. Kaplan, 1956; 1963).

It is this organismic-developmental approach of Werner & Kaplan (see Werner, 1948, 1957; Werner & Kaplan, 1956, 1963; Kaplan, 1966a, 1966b, 1967; Wapner, Kaplan & Cohen, 1973; Wapner, Kaplan, & Ciottone, 1981; Pea & Russell, 1980; Russell & Pea, 1980) integrated with the dramatistic orientation of the renowned student of symbolic action in life and literature, Kenneth Burke (1945; 1950; 1966; 1972), that we refer to as Genetic-Dramatism (see Cirillo & Kaplan, 1981; Kaplan, 1981a, 1981b; Kaplan & Pea, 1981; Russell, 1982).

Genetic-Dramatism seeks to provide an explicit account of the perennial perspective, one which virtually all of us adopt in our everyday lives, and use in our transactions with others (Kaplan, 1981a). Leaving out, in this cursory presentation necessary qualifications and refinements, is it not the case that we all construe ourselves and others as agents operating in contexts or scenes to achieve certain ends or realize certain purposes? And that, in so doing, we use instrumentalities or means in the execution of our actions? Do we not in everyday life, and even in a laboratory, or a classroom, or a conference, evaluate our performances and those of others, as "primitive" or "advanced", by using tacit norms of perfection in order to make such assessments? Do we not both characterize and assess an agent's action, linguistic or otherwise, with respect to context and explicit (or imputed) goals? And do we not also construe the scene in which an agent is operating as well as the goals, conscious or otherwise, of the agent on the basis of our understanding of the action she or he performs?

In raising these kinds of questions, we have already introduced the famous pentad of Burke's Grammar of Motives and Rhetoric of Motives -- agent, act, scene, instrumentality, and purpose -- and have indicated their reticulate or organic relationships (see Figure 1). It should be

 (Insert Figure 1 here)

obvious that acts or performances, linguistic, lexical, or otherwise, are easily susceptible to variation, given variations in any of the other components of human transactions in situations. Correspondingly, any "assessment" of an individual's level of functioning or developmental status with regard to a domain of action, such as lexical behavior, is "wild developmentalism" (on analogy to Freud's "wild psychoanalysis") if it is based on one or a few performances in circumscribed experimental or observational contexts (see Kaplan, Pea & Franklin, 1981).

In posing our questions, we also alluded to the normative status of the concept of development, a norm that enters into developmental assessments. In their formulation of a concept of development, distinct from ontogenesis, Werner & Kaplan (1956; 1963) introduce the orthogenetic principle (i.e., a principle pertaining to the genesis of perfection): "Wherever development occurs, it involves an increasing differentiation and hierarchic integration". Development in any domain, therefore, is defined as entailing the differentiation of conflated or fused parts, factors, or elements, and correlatively, the integration of these differentiated components into a functional unity.

We have applied this conception of development to lexical development when we earlier pointed out that developed lexicality interpenetrates with

syntactic, pragmatic-rhetorical, morphological, and phonological development. Let us elaborate this point. A lexical master, one who shows a high level of lexical development, will be able to differentiate verbal concepts from each other (recognizing, in Goodman's phrase, that there is no "likeness of meaning"); she or he will have established the various modes of interrelationships among verbal concepts, e.g. hyponymy, synonymy, homonymy, antonymy; she or he will know how to organize and reorganize words into well-formed utterances, and even ill-formed utterances for special communicational contexts; she or he will know how to select words and modulate them morphologically and phonologically with respect to different utterance contexts, and so on (e.g. Fillmore, 1971; Halliday, 1975; Lyons, 1977; Menn & Kaselkorn, 1977; Miller, 1978; Miller & Johnson-Laird, 1976; Werner & E. Kaplan, 1950). Of course, the fully competent, perfected lexicalist would be the master of all lexicons, past, present, and potential; capable of taking on any agent-status, of utilizing all lexical instrumentalities, in any scenes, with the full range of purposes, etc.

Now, no individual agent or social agent has ever remotely approached such perfection because, as embodied beings, we are limited, at best, to relative perfection with regard to very limited parts of very few lexicons. And even where we have attained a relatively high level of performance, the level of performances may drop, when we have no opportunity to plan (Ochs, 1979), or when we are fatigued, injured, frightened, depressed, or under the influence of other subversive contingencies (e.g. Werner & Kaplan, 1963; Kaplan, 1966b). How and when to intervene in order to overcome such "regressions" or "arrests" is of course one of the tasks of developmental psychology as a practico-theoretical discipline (Kaplan, 1982a).

As with critical theorists (Habermas; Horkheimer; Jay), those who espouse the perspective of Genetic-Dramatism take the perspective to be "reflexive". Its presuppositions, categories, and modes of analysis and intervention, insofar as they are taken to be applicable to other human beings, must also be applicable to those who theorize about and investigate human beings. We must assess our symbolic actions as we do those of others. Thus if we take lexical development, in one of its aspects, as entailing clarity and precision in the use of verbal concepts in scientific discourse, we must assess ourselves, and welcome assessment by others, as to where we are with respect to the tacit standards. We ask you to do the same. Only through such cooperative critical reflection on our own lexical activity in the study of lexical functioning, can we hope to advance the study of lexical development, language development, and, most importantly, human development.

NOTES

¹ Paper presented at The Second International Congress for the Study of Child Language, August 9th to 14th, 1981, Vancouver, British Columbia, Canada. To appear in the Proceedings (University Park Press: Baltimore, Maryland).

² We speak in terms of possibility rather than certainty because many such manifestations of "functional dependence" may not occur with other agents, other scenes, other purposes, and other instrumentalities than those involved in the different studies.

³ Such seemingly neutral characterizations are clearly evaluative in nature, and presuppose norms and standards of the investigators. They are also likely to be political in nature - suggesting that some state of affairs be altered, another promoted. We do not reject the use of such terms; only the pretense that they are neutral descriptions.

⁴ That one is a master lexicalist, or highly advanced in lexical development, no more entails that one is highly advanced as a person than does being a master-carpenter or master-killer. Development -- "movement toward perfection" -- in one domain does not necessarily entail development in other domains, although some developments, as suggested here, may presuppose others. One scarcely needs the theoretical apparatus of "stages" or "decalages" to make this obvious point. For discussion, see Kaplan, Pea & Franklin (1981).

⁵ It will be understood, from this developmental perspective, that current debates and experimentation in studies of "lexical" or "semantic development", focussing on whether "functions" or "features" are the predominant, first, or central aspect of early word-meaning acquisition (e.g. Clark, 1979; Nelson et al., 1978), are confined to a narrowly designated theoretical corridor.

⁶ The political significance of using "actuarial" or "statistical" norms as standards -- "whatever most individuals of an age do is right for that age" -- is discussed in Kaplan (1982a) and White (1978, 1982).

⁷ Although Vygotsky openly acknowledged the pioneering role of Werner's work in integrating developmental analysis and experimental techniques, this role is rarely mentioned in psychological writings today (but see Wertsch & Stone, 1978).

⁸ Some indication of the impact of Werner's work outside the presently circumscribed discipline of psychology may be found in: W. Shumaker, Literature and the Irrational; J. Love, Worlds in Consciousness: A Study of Virginia Woolf's Novels; R.D. Sack, Conceptions of Space in Social Thought: A Geographical Perspective; S. Arieti, Interpretation of Schizophrenia; H. Searles, Collected Papers in Schizophrenia.

⁹ The relation of our perspective to that of the phenomenologist of social reality, Alfred Shutz, should be apparent from these comments. See Shutz, Collected Papers (3 vols.).

¹⁰ We recognize that the future prospects of developmental research from such a developmental perspective depend upon its empirical viability. Such viability is contingent on concerted efforts, by ourselves and many others, at collaborative research which is truly integrative in nature, and directed toward the holistic nature (Werner & Kaplan, 1963) of human psychological functioning. Such large-scale attempts at addressing these issues have received scant attention to date. This paper may be viewed as an invitation to dialogue, about methods and effective ways of promoting the integration of the diverse "disciplines" called upon by the perspective. As one aspect of such a reorientation to psychology, we aim in an expanded paper to reanalyze results from a diversity of studies, from a wide range of "fields", which bear on lexical development from this

developmental perspective. Kaplan & Pea (1981) provide a related analysis of reasoning activities, and Kaplan & Cirillo are currently engaged in a project on metaphor.

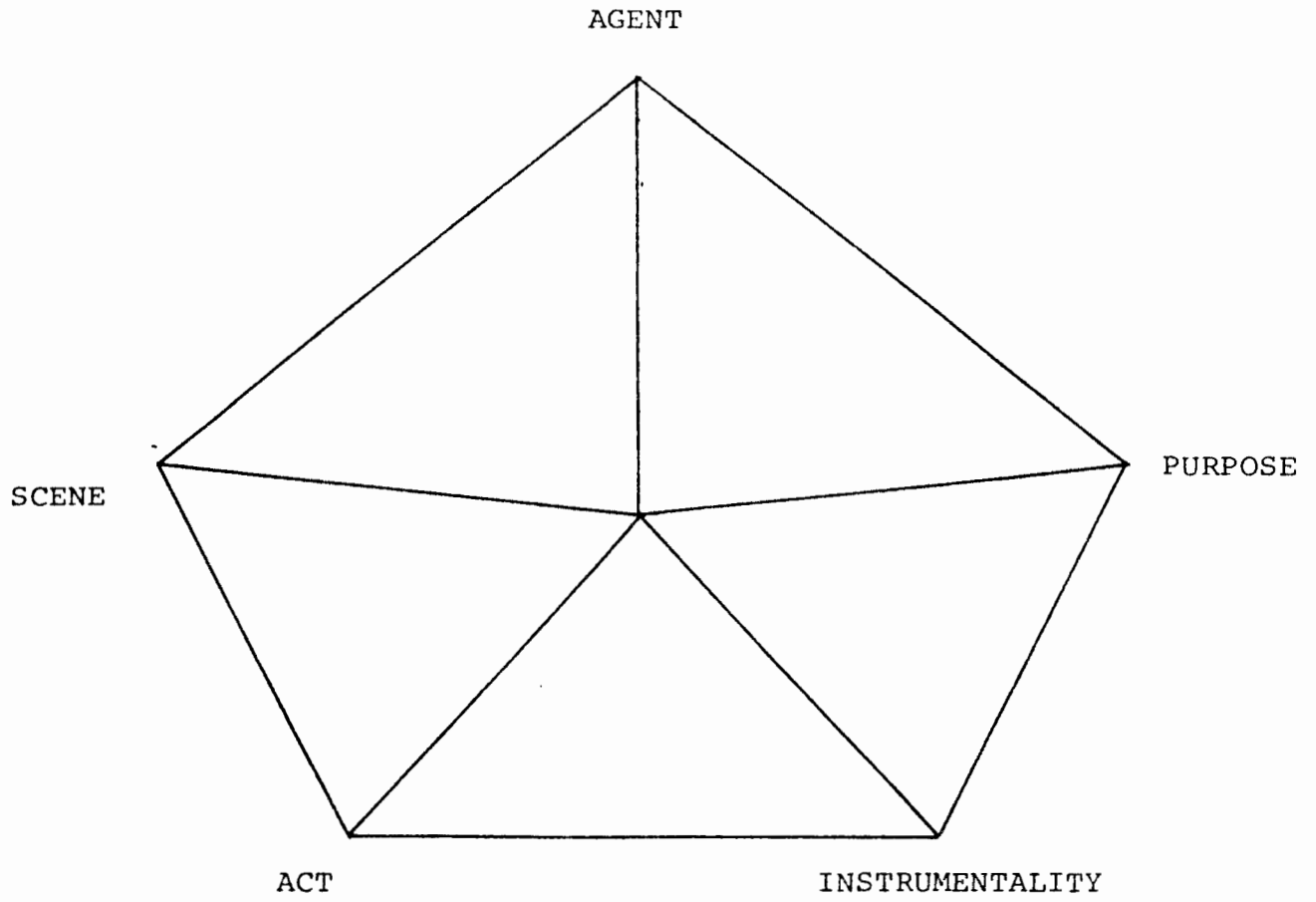


Figure 1. Burke's pentad of categories

REFERENCES

- Barton, D.P. The role of perception in the acquisition of speech. Ph.D. thesis, University of London, 1976.
- Bever, T.G. (Ed.), Regressions in Mental Development: Basic Phenomena and Theories. Hillsdale, N.J.: Erlbaum, 1981.
- Bloom, L., Miller, P. & Hood, L. Variation and reduction as aspects of competence in language development. In A.D. Pick (Ed.), Minnesota Symposium on Child Psychology, Vol. 9. Minneapolis: University of Minnesota Press, 1975.
- Bowerman, M. Starting to talk worse: Clues to language acquisition from children's late speech errors. In S. Strauss (Ed.), U-Shaped Behavioral Growth. New York: Academic Press, 1981 (in press).
- Bransford, J.D. Human Cognition: Learning, Understanding, and Remembering. Belmont, Ca.: Wadsworth, 1979.
- Brown, A.L. Learning and development: The problems of compatibility, access, and induction. Human Development, 1980.
- Brown, R. A First Language: The Early Stages. Cambridge, Mass.: Harvard University Press, 1973.
- Burke, K. A Grammar of Motives. Berkeley: University of California Press, 1945.
- Burke, K. A Rhetoric of Motives. Berkeley: University of California Press, 1950.
- Burke, K. Definition of man. Hudson Review, 1963-1964, 56 (Reprinted in Burke, 1966.)
- Burke, K. Language as Symbolic Action: Essays on Life, Literature, and Method. Berkeley: University of California Press, 1966.
- Burke, K. Dramatism and Development. Worcester, Ma.: Clark University Press, 1972.
- Cirillo, L. & Kaplan, B. Figurative action from the perspective of genetic-dramatism. Paper delivered at the First Biennial Conference of the Heinz Werner Institute of Developmental Psychology, Clark University, June 1-2, 1981.
- Clark, E.V. Building a vocabulary: Words for objects, actions, and relations. In P. Fletcher & M. Garman (Eds.), Language Acquisition. Cambridge: Cambridge University Press, 1979.
- Ervin-Tripp, S. From conversation to syntax. Papers and Reports in Child Language Development, 1977, 13.

- Ferguson, C.A. & Farwell, C.B. Words and sounds in early language acquisition. Language, 1975, 51, 419-439.
- Fillmore, C.J. Types of lexical information. In D.D. Steinberg & L.A. Jakobovits (Eds.), Semantics: An Interdisciplinary Reader in Philosophy, Linguistics, and Psychology. Cambridge: Cambridge University Press, 1971.
- Halliday, M.A.K. Learning How to Mean: Explorations in the Development of Language. London: Edward Arnold, 1975.
- Jenkins, J.J. Four points to remember: A tetrahedral model and memory experiments. In L.S. Cermak & F.I.M. Craik (Eds.), Levels of Processing in Human Memory. Hillsdale, N.J.: Erlbaum, 1979.
- Kaplan, B. Radical metaphor, aesthetic and the origin of language. To appear in B. Kaplan, Collected Papers, in preparation, 1981. (Originally presented as a paper at a meeting of the American Psychological Association in 1961 in a symposium on Metaphor.)
- Kaplan, B. The latent content of Heinz Werner's developmental psychology. In S. Wapner & B. Kaplan (Eds.), Heinz Werner: Papers in memoriam. Worcester, Mass.: Clark University Press, 1966(a).
- Kaplan, B. The study of language in psychiatry: The comparative approach and its application to symbolization and language in psychopathology. In S. Arieti (Ed.), American Handbook of Psychiatry, Vol. 3. New York: Basic Books, 1966b.
- Kaplan, B. Meditations on genesis. Human Development, 1967, 10, 65-87.
- Kaplan, B. Strife of systems: Tension between organismic and developmental points of view. (1967/1974). In Kaplan, B. Rationality and Irrationality in Development. Worcester, Mass.: Clark University Press, 1982(b).
- Kaplan, B. Genetic-dramatism. Paper delivered at the First Biennial Conference of the Heinz Werner Institute of Developmental Psychology, Clark University, June 1-2, 1981(a).
- Kaplan, B. Reflections on culture and personality from the perspective of genetic-dramatism. Paper delivered at the First Biennial Conference of the Heinz Werner Institute of Developmental Psychology, Clark University, June 1-2, 1981(b).
- Kaplan, B. A trio of trials. To appear in R. Lerner (Ed.), Developmental Psychology: Historical and Philosophical Perspectives. Cambridge, Mass.: Harvard University Press, 1982(a).

- Kaplan, B. & Pea, R.D. Reasoning from the perspective of genetic-dramatism. Heinz Werner Institute for Developmental Psychology, Working Paper, 1981.
- Kaplan, B., Pea, R.D. & Franklin, M.B. Multiplying entities. Heinz Werner Institute for Developmental Psychology, Working Paper, 1981.
- Kessel, F. (Chair) Symposium: The development of language and language researchers: Whatever happened to linguistic theory? (Contributions by Bowerman, Cazden, Maratsos, Pinker, Slobin). Presented at the Biennial Meeting of the Society for Research in Child Development, April 2-5, 1981, Boston, Massachusetts.
- Kress, G. & Hodge, R. Language as Ideology. London: Routledge & Kegan Paul, 1979.
- Lyons, J. Semantics (2 vols.). Cambridge: Cambridge University Press, 1977.
- Menn, L. & Haselkorn, S. Now you see it, now you don't: Tracing the development of communicative competence. In J. Kegl (Ed.), Proceedings of the Seventh Annual Meeting of the Northeast Linguistic Society, 1977.
- Menyuk, P. & Menn, L. Early strategies for the perception and production of words and sounds. In P. Fletcher & M. Garman (Eds.), Language Acquisition. Cambridge: Cambridge University Press, 1979.
- Miller, G.A. Semantic relations among words. In M. Halle, J. Bresnan, & G.A. Miller (Eds.), Linguistic Theory and Psychological Reality. Cambridge, Mass.: M.I.T. Press, 1978.
- Miller, G.A. & Johnson-Laird, P.N. Language and Perception. Cambridge, Mass.: Harvard University Press, 1976.
- Nelson, K., Rescorla, L., Gruendel, J. & Benedict, H. Early lexicons: What do they mean? Child Development, 1978, 49, 960-968.
- Ochs, E. Planned and unplanned discourse. In T. Givon (Ed.), Syntax and Semantics. Vol. 12, Discourse and Syntax. New York: Academic Press, 1979.
- Pea, R.D. & Russell, R.L. Foundations for a scientific theory of communicative development. Paper presented at the Fifth Annual Boston University Conference on Language Development, October, 1980.
- Russell, R.L. Psychotherapeutic discourse: Notes on a framework for its future investigation. In R.L. Russell (Ed.), Language in Psychotherapy: Strategies of Discovery. New York: Irvington, 1982.

- Russell, R.L. & Pea, R.D. Communicative interaction and its development: An organismic-developmental approach to 'doctor-patient' interaction. Paper delivered at the International Congress on Applied Systems Research and Cybernetics, Acapulco, Mexico, December 11-16, 1980.
- Vygotsky, L.S. Mind in Society: The Development of Higher Psychological Processes. M. Cole, V. John-Steiner, S. Scribner & E. Souberman (Eds.). Cambridge, Mass.: Harvard University Press, 1978.
- Wapner, S., Kaplan, B. & Cohen, S. An organismic-developmental perspective for understanding transactions of men in environments. Environment and Behavior, 1973, 5, 255-289.
- Wapner, S., Kaplan, B. & Ciotto, R. Self-world relationships in critical environment transitions: Childhood and beyond. In L. Liben, A. Patterson & N. Newcombe (Eds.), Spatial Representation and Behavior across the Life Span. New York: Academic Press, 1981.
- Werner, H. The Comparative Psychology of Mental Development. 2nd ed. New York: Harper, 1948.
- Werner, H. Change of meaning: A study of semantic processes through the experimental method. J. General Psychology, 1954, 50, 181-208.
- Werner, H. The concept of development from a comparative and organismic point of view. In D.B. Harris (Ed.), The Concept of Development: An Issue in the Study of Human Behavior. Minneapolis: University of Minnesota Press, 1957.
- Werner, H. Developmental Processes: Heinz Werner's Selected Writings. 2 vols. S.S. Barten & M.B. Franklin (Eds.). New York: International Universities Press, 1978.
- Werner, H. & Kaplan, B. The developmental approach to cognition: Its relevance to the psychological interpretation of anthropological and ethnolinguistic data. American Anthropologist, 1956, 58, 866-880.
- Werner, H. & Kaplan, B. Symbol Formation: An Organismic-Developmental Approach to Language and the Expression of Thought. New York: Wiley, 1963.
- Werner, H. & Kaplan, E. Development of word meaning through verbal context. J. of Psychol., 1950, 29, 251-257.
- Werner, H. & Kaplan, E. The acquisition of word meaning: A developmental study. Mono. Soc. Res. Child Devel., 1952, No. 51.
- Wertsch, J.V. & Stone, C.A. Microgenesis as a tool for developmental analysis. Quarterly Newsletter of the Laboratory of Comparative Human Cognition, 1978, 1, 8-10.

White, S.H. Psychology in all sorts of places. In R. Kasschau & F.S. Kessel (Eds.) Psychology and Society: In Search of Symbiosis. New York: Holt, Rinehart & Winston, 1978.

White, S.H. The idea of development in developmental psychology. In R. Lerner (Ed.), Developmental Psychology: Historical and Philosophical Perspectives. Cambridge, Mass.: Harvard University Press, 1982.

Whitehead, A.N. The Function of Reason. Princeton, N.J.: Princeton University Press, 1929.