Book Reviews


Operating within a rather nonrestrictive conceptual framework, the authors of this monograph conventionally assume that both language and the nervous system are organized in a hierarchical fashion. Lower level functions are considered necessary for the modulated by higher levels; and, in a Jacksonian sense, lesions are assumed, not to produce positive symptoms, but only to release positive behavior inherent in the residual structure. That is, in this model, brain damage does not affect only a particular neural circuit and its associated function; it deforms or alters function on a broader base such that the lesioned organism performs as a new organism operating at its maximum level of function. These considerations lead the authors to suggest that language disorders can be characterized in terms of a continuum of linguistic dissolution. As a consequence, they claim little interest in the nature, location, degree, clinical variety, and age of onset of the pathological process. They avow, instead, to attempt a description of a process which operates in a variety of speech disorders. All patients—whether schizophrenic, or aphasic, whether suffering right-hemispheric damage or the dementia of Alzheimer's disease—are taken as representative of various points along this undifferentiated continuum of linguistic dissolution.

However contentious and challenging this approach appears to be—ignoring, as it does, carefully constructed typologies of aphasic symptoms—we, unhappily, never learn the value of it, at least not in this monograph. To begin with, in order to connect the theoretical framework to a manageable empirical question the investigators choose to focus on "the role of speech as a stimulus in the production of language and the role of perceptual experience in the production of speech." This concern with environmental events—including speech events—surrounding language is motivated by their interest in assessing language dissolution in the framework of a total biological economy, and it is, thus, within the confines of their theory (which is, after all, sufficiently diffuse to admit any number of experimental foci). However, even granting the potential importance of this focus—and it is questionable whether relating the organism to the environment at this level is apt to reveal any interesting aspects of language dissolution—the many meth-
odological shortcomings of this study permit what is at best only an extremely loose and often ad hoc characterization of how auditory and visual stimuli affect speech.

The data are presented in the form of detailed case studies. Fourteen such studies—the patients are either right-hemispheric, aphasic, demented, or schizophrenic—comprise the bulk (p. 19–97) of this 126 page monograph. And a large part of each of these 14 presentations is given over to a detailed description of the course, the clinical variety, and the age of onset of the pathological process—in fact, to all those variables in which the authors claim to have little interest. Formal measures of verbal output are also included in each presentation. But little justification is given for the choice of these measures, and for the most part, aside from the fact that each measure has something to do with speech or language, their inclusion seems only vaguely motivated by the aims of the study. Rather, it is a shotgun approach including such diverse measures as the ratio of speech time to total session time, the ratio of speech time in darkness to speech time in light, length of answer to length of question ratio, and Zipf curves.

Moreover, at least one of the measures critical to their analysis is quite possibly ill-conceived, namely, the dark/light ratio. What was done was to record the spontaneous speech of patients under conditions of normal lighting and in total darkness. This procedure was intended to permit an analysis of the effect of "visual stimuli" on the production of speech. Given this crude manipulation of sensory environment, however, and given the finding that only those patients least impaired in linguistic functioning showed any lessening of spontaneous speech in the dark condition, it is really far from obvious what role visual stimulation plays. Is it, as the authors claim, that such patients have a "marked dependence on visual stimuli?" (And, one might object to the use of the word "stimuli" in such an undifferentiated treatment condition.) Or is it that such an unusual experimental alternation inhibits, in some sophisticated sense, any further flow of speech? That is, social interaction might be at stake here, not language. Whatever the interpretation, the finding seems a rather trivial demonstration of the role of perceptual experience in the production of speech.

Equally unconvincing is their analysis of the role of self-generated auditory stimuli in the release of speech at low levels of neural function. It derives almost entirely from the finding that patients with Alzheimer's disease produce palilalic utterances. This ad hoc analysis fails to isolate the auditory releasing agent, whether or not it is internal and self-generated. Put differently, the phenomenon should not be used to explain itself.

Problems of interpretation also arise due to the fact that, as the
authors themselves point out, none of the results are given statistical credence. Consider, in this respect, the authors' statement that patients who show a sensitivity to "visual releasing stimuli" are likely to show greater semantic response latitude. This declaration stems from what is considered to be a correlation between the dark/light ratio measure and the number-of-different-words-in-the-first-500 measure. No computed correlation is actually offered, and, in fact, a graph shows that for each value of the dark/light measure there is extremely wide variation on the "different words" measure. That is, the relation, such as it is, appears to reflect only a few extreme values. Rather than signalling a linear progression it seems to reflect only a difference between the results from the schizophrenic patients and those from all other patients. (Right-hemispheric patients, for some reason, are not included in this analysis.)

The final chapter of the monograph is devoted to a theoretical discussion of language and the brain. It bears little relation to the preceding data, and in some respects, it is quite unmindful of the pertinent literature. For example, partly as a justification for excluding Broca's aphasics from their analyses, the authors claim that aphasics of this type have preserved competence and intact comprehension. This inference, based on the clinical impression that such patients seem to recognize the disparity between their utterances and what they mean to say, ignores a considerable literature detailing specific comprehension deficits in Broca's aphasia (e.g., Goodglass, 1968). Metalinguistic judgments—which the authors wrongly claim cannot be elicited from brain damaged patients—also make the point that agrammatism in aphasia represents a language limitation and not merely an articulatory problem (Zurif, Caramazza & Myerson, 1972). Along another line, the authors, citing Gazzaniga, suggest that receptive language might be represented in the right hemisphere as well as in the left. Yet, in a recent paper, appearing before the publication of this monograph, Gazzaniga has reported that the most the right hemisphere seems capable of is the identification of common concrete nouns; it comprehends neither verbs nor even the most elementary grammatical relations (Gazzaniga & Hillyard, 1971).

This monograph is of dubious value. And despite the authors sensitive summary of the formalisms of generative grammar, it hardly justifies the title, A Study in Neurolinguistics.

REFERENCES


EDGAR ZURIF  
*Aphasia Research Center*  
*Boston University School of Medicine*  
& *Boston V. A. Hospital*  

ALFONSO CARAMAZZA  
*The Johns Hopkins University*


The initial chapter of this recent book on the biochemical basis of learning and memory reviews the past ten to twenty years of research endeavors directed towards understanding the molecular basis of a most intriguing function. It does seem appropriate to ask at this time whether these extensive investigative efforts on lower-mammalian and aquatic organisms have provided information that could be applied to understanding complex learning behavior in the human. On the pessimistic side, the answer would seem to be found in the concluding comments to the historical overview by the editors. In summing up the available information concerning the organic basis of learning and intelligence they comment: "There have been important finds; there have been theories. They have all contributed to some of the confusion in the field but little to the solution of problems." Such a statement would seem to render impossible any extrapolation to human behavior.

However, to one not directly studying the organic basis of learning and memory, it does seem necessary, after so many years have been devoted to study in such an area, to review the material presented in the field and see if patterns and directions are not emerging that could provide a basis for some conceptualization.

The neurochemical research reviewed in the present book can be divided into those studies concerned with the role of macromolecules (proteins and nucleotides) in establishing memory and studies analyzing the involvement of neurotransmitter systems in learning acquisition. The former approach has been criticized on the basis of technical aspects of such studies (see Nakajima, present book) as well as on the basic premise of placing the entire responsibility for memory on the already overtaxed cellular protein synthesizing machinery. The latter approach has received criticism on the basis that most putative neurotransmitters studied (noradrenaline, dopamine, serotonin, and acetylcholine) are