Comments and Communications

Prosodic Patterns and Oral Stress

W. F. Dearborn, P. W. Johnston, and L. Carmichael, in their comments on "Oral Stress and Meaning in Printed Material" (*Science*, 1949, **110**, 404) are talking about matters in a highly specialized and technical field of science of whose existence they seem to be completely unaware. The analysis of the cultural behavior known as language, and of specific languages, has been going on for some time in various places, and there exist in the world some dozens at least of persons who devote themselves to the science of linguistics—a branch of anthropology. These linguists (a technical use of the term, not to be confused with the layman's use of it to mean one who speaks many languages—a polyglot) have long proclaimed the basic fact that language is "the noises you make with your face," not the marks you make on paper with pen and ink. What is called "written language" is only a very limited and pale reflection of linguistic behavior. A language is understood only as it is spoken and heard; reading a printed page necessarily means converting the symbols into the sounds they stand for. All existing orthographies are rather inadequate. English is especially bad in some ways, but all of them are equally defective in failing to represent to any great degree those large and important parts of utterances that the linguist analyzes as prosodic patterns—those of stress, juncture, and intonation (these are all technical terms, and cover what Dearborn *et al.* probably mean by "oral stress").

It is therefore not surprising, nor is it any new discovery, that those persons who cannot recognize the prosodic patterns of a printed passage are unable to understand it. These patterns are just as much part of the language as are the vowels and consonants represented by the printed letters.

The suggestion that ways be found in printing to bring out the prosodic patterns is well taken. But it must be understood that this cannot be done merely by supplying a few italic or boldface characters, nor can it be done by those who are completely unaware of what is known about linguistic structure and analyses. It is most unfortunate that many workers in psychology and related fields are not acquainted with the pertinent findings of other social sciences, and especially of linguistics, and are therefore unable to take advantage of knowledge already systematized which could help them in setting up their researches and in avoiding the performance of activities whose results are vitiated by lack of a suitable frame of reference.

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The recent communication from Dearborn and others on oral stress and meaning in printed matter gives a welcome reminder of the close relation between those qualities. But I do not believe that there is need of indicating oral stress by new typographical devices, for countless degrees of emphasis can be conveyed in ordinary roman type by means of structure and punctuation.

Good structure, brought out by intelligent punctuation, results in a quality that may be called good cadence. Cadence is best put to the proof by reading aloud; prose may be said to have good cadence if, when it is read aloud at sight, the oral stresses tend to fall automatically on the more significant words. Most of those words ought to be placed at or near the ends of clauses, sentences, and paragraphs, where a large proportion of them will be closely followed by punctuation marks. When significant words or word groups are so placed, they not only are stressed in reading aloud but readily catch the eye, so that they seize the attention not only of auditory but of visual readers. If the accents are well distributed, at intervals that are varied and rarely very short or very wide, the cadence will afford pleasure to those who mentally hear what they read; but good cadence is not a merely ornamental quality: it helps make printed matter understandable for visual and auditory readers alike.

While cadence depends primarily on arrangement of words, it would be hard to perceive in matter that had no punctuation, and is best perceived in matter that is well punctuated. Punctuation deserves more respect than it commonly receives; we are too often told that the less we have of it the better—which is no truer of punctuation than it is of food—and writers too often expect that it will be done for them by somebody else. The writer who punctuates for himself will understand the structure of his writing better than one who "lets George do it"; and punctuation, when guided by understanding of a few principles rather than by a multitude of rules learned by rote, is less difficult and more interesting than is commonly supposed. It assumes a new interest when considered in relation to cadence.

Punctuation and syntax have been the means by which, time out of mind, competent writers have been able to indicate innumerable shades of emphasis, and that is why the use of italics, except under a few special circumstances, is generally regarded as a confession of weakness. In laboratory directions and military orders it may be justifiable to employ italics more frequently than in ordinary reading matter, or even to resort to large and small capitals. These, together with conventional type, would indicate four degrees of emphasis in addition to those producible by structure and punctuation, which ought surely to be enough without adding (or substituting) the esthetically pleasing devices that Dearborn and his colleagues promise to reveal in due time. One cannot help fearing that even these will distract attention from the meaning rather than bring it out.

This distracting effect would gradually wear off if the scheme were widely accepted; but I do not think it ever will be, because it is unnecessary for the reasons I have tried to indicate. If it won universal acceptance, it would oblige the printers to invest great sums in new fonts of type. Its probable effects on our habits of writ-

ing and reading seem rather terrifying to the conservative mind; if people wishing to express ideas in print became accustomed to leaning on these typographical crutches, they would not bother to learn how to write, and those who looked at nothing but current publications would forget how to read. Literary English might then become a dead language.

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The Use as Test Material of Inbred Strains of Mice Having High Frequencies of Audiogenic Seizures

As a result of Hall's discovery of a strain of mice which showed a high and predictable frequency of audiogenic seizures, the idea has been advanced by several workers that these animals may be used as convenient test material for analyzing the results of a large number of psychological, pharmacological, hormonal, and nutritional factors which may affect the nervous system.

At a recent informal conference of workers on audiogenic seizures at the Jackson Laboratory it was suggested that it would be desirable to summarize the basic information necessary for new workers in the field, so that results comparable to those of other workers may be obtained, and so that ineffective techniques may be avoided. It was also agreed that the Division of Behavior Studies at the Jackson Laboratory would, for the present, act as a center for exchange of information between workers, with the cooperation of C. S. Hall of Western Reserve University, and Benson Ginsburg of the University of Chicago.

Three essential factors concerning seizures in mice need to be kept in mind:

1. The bell-tub technique of Hall appears to be adequate to elicit the phenomenon. A 2½-in. doorbell run by two or three No. 6 dry cells or a bell transformer, hung over the edge of an ordinary 14-gal. galvanized wash-tub is rung for 2 min. If seizures occur, they usually appear in less than 60 sec. It has been conventional to record at least the following variable aspects of behavior: a) preconvulsive behavior, b) latency of convulsion, c) type of convulsion, d) survival or nonsurvival.

2. It has been conventional to test animals at 30 days of age (which appears to be close to the time of maximum frequency in the dba[2] strains), and to repeat tests on survivors daily thereafter for a total of four or five tests. In the dba strains the phenomenon disappears almost entirely after 45 days of age.

3. Subline differences appear to be extremely important. Care should be taken that the animals used come from an inbred stock, tracing back through a single line of brother-sister mating as pedigreed by known workers. At the present time the following strains are known to produce high frequencies: Dilute Brown subline 1 (dba[1]) (Little, Murray, Fekete, Hall), and Dilute Brown subline 2 (dba) (Little, Woolley, Vicari). The C57 Black strains, subline 6 (Little, Fekete, Hall), and subline 10 (Little, Russell, Scott), are known to give very low frequencies of seizures. All these strains are carried at the Jackson Laboratory at the present time and can be made available to workers at other institutions.

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