B56. Linguistics and Reading

[1939–1940 was Bloomfield's last year at Chicago, 1940–1941 his first at Yale. This article may have been reworked for publication at Yale, but had originally been written in Chicago; see our prefatory remarks to B55. The same applies to B65. B57–B64, and B67, were surely written at Yale.]

Any large gain in the speed and effectiveness of reading instruction in our schools would bring great advantage to the community. Saving years of every child's school time, it would open the way for other improvements in education. To the writer of this essay it seems very likely that such a gain could be effected with small trouble beyond what is involved in the discarding of a few long-established prejudices.

As to motivation and as to most aspects of classroom procedure, our reading methods have been admirably developed; the time should be ripe for the application, in the classroom, of the facts about reading which today are recognized by all professed students of language. A procedure which takes account of these facts, when tried out with individual children, has proved very successful. Trial in the classroom can be made only with the co-operation of schoolmen. It has been begun on a small scale; the present writer would be glad indeed if this essay should lead teachers and school authorities to co-operate in such attempts.

In this essay I shall outline the main facts about reading which are known to linguists. These facts will here be set forth somewhat dogmatically, since space forbids an account of how they were discovered; such an account would have to tell a large part of the history of linguistic science during the last hundred years.[1]

The art of writing is not a part of language, but rather a comparatively modern invention for recording and broadcasting what is spoken; it is comparable, in a way, with the phonograph or with such a recent invention as the radio. Every human society that has come within our ken possesses a fully developed language, but, until recently, only a few communities have practised writing. Until one or two centuries ago, moreover, in com-

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[1] This history is very interestingly presented in H. Pedersen's *Linguistic science in the nineteenth century*, translated by J. Spargo, Cambridge, Massachusetts, 1931.

munities like our own, which practised writing, this art was carried on only by a very small minority of the population.

Writing is merely an attempt, more or less systematic, at making permanent visual records of language utterances. It is evident, of course, that by learning to read and write, the individual greatly extends his linguistic horizon and that such developments as the growth of his vocabulary are from then on largely tied up with his reading. Nevertheless, it is a great mistake to confuse the acquisition of literacy with the acquisition of speech: the two processes are entirely different.

Writing seems in every instance to have grown out of *picturing*. Picturing (or *picture writing*) consists in drawing pictures to represent a message. The elements in the pictures, such as figures of different animals, are conventionalized, so that one need not depend too much on draughtsmanship.[2]

The important feature of picture writing is that it is not based upon language at all. A reader who knows the conventions by which the pictures are drawn, can read the message even if he does not understand the language which the writer speaks. If the reader knows that the picture of an animal with a big tail means a beaver, he can get this part of the message, even though he does not know how the word for a beaver would sound in the writer's language. In fact, he can read the picture correctly, even if he does not know what language the writer speaks. Without going too far into the psychology of the thing, we may say that the reader does not get the speech-sounds (the words or sentences) which the writer might use in conversation, but he gets the practical content (the "idea") which in conversation he would have got from hearing those speech-sounds.

The second main type of writing is *word-writing*. In word writing each word is represented by a conventional sign, and these signs are arranged in the same order as the words in speech, Chinese writing is the most perfect system of this kind. There is a conventional character for every word in the language. Each character represents some one Chinese word. As the vocabulary of a literate person runs to about twenty thousand words, this means that in order to read even moderately well, one must know thousands of characters. Learning to read Chinese is a difficult task, and if the Chinese reader does not keep in practice, he is likely to lose his fluency.

It is probable that word writing grew out of picture writing; at any rate, in the systems known to us, some of the characters resemble conventionalized pictures. However, the difference between these two kinds of writing is far more important for our purpose than any historical connection. The

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[2] The best examples are to be found in G. Mallery's study, published in the 4th and 10th *Annual Reports* of the Bureau of American Ethnology, Smithsonian Institution, Washington, 1886 and 1893.

characters of word writing are attached to words, and not to "ideas." In picture writing you could not distinguish such near-synonyms as, say, *horse, nag, steed*, but in word writing each one of these words would be represented by a different character. In picture writing very many words cannot be represented at all—words like *and, or, but, if, because, is, was*, and abstract words like *kindness, knowledge, please, care*—but in word writing each word has a conventional symbol of its own.

We ourselves use word writing in a very limited way in our numerals, and in signs like &, +, −, =, and the like. The symbol 5, for instance, by an arbitrary convention, represents the word *five*, and there is no question of spelling or sound involved here: the symbol is arbitrarily assigned to the word. The characteristic feature of word writing, from the point of view of people who are used to alphabetic writing, is that the characters, like 5 or 7, do not indicate the separate sounds which make up the word, but that each character, as a whole, indicates a word, as a whole. Viewing it practically, from the standpoint of the teacher and pupil, we may say that there is no spelling: the written sign for each of the words (four, seven, etc.) has to be learned by itself. You either know that the character 7 represents the word *seven*, or you don't know it; there is no way of figuring it out on the basis of sounds or letters, and there is no way of figuring out the value of an unfamiliar character.

Word writing has one great advantage: since a character says nothing about the sound of the word, the same characters can be used for writing different languages. For instance, our numeral digits (which, as we have seen, form a small system of word writing) are used by many nations, although the corresponding words have entirely different sounds.

The third main type of writing is *alphabetic writing*. In alphabetic writing each character represents a *unit speech-sound*. The literate Chinese, with his system of word writing, has to memorize thousands of characters—one for every word in his language,—whereas, with an alphabetic system, the literate person needs to know only a few dozen characters,—one for each unit speech-sound of his language. In order to understand the nature of alphabetic writing we need to know only what is meant by the term *unit speech-sound*, or, as the linguist calls it, by the term *phoneme*.

The existence of unit speech-sounds or phonemes is one of the discoveries of the language study of the last hundred years. A short speech, —say, a sentence,—in any language consists of an unbroken succession of all sorts of sounds. Systematic study has shown, however, that in every language the meaning of words is attached to certain characteristic features of sound. These features are very stable and their number ranges anywhere from fifteen to around fifty, differing for different languages. These features are the unit speech-sounds or phonemes. Each word consists of a fixed combination of phonemes. Therefore, if we have a written

character for each phoneme of a language, the sum total of characters will range anywhere from fifteen to fifty, and with these characters we shall be able to write down any word of that language.

The existence of phonemes and the identity of each individual phoneme are by no means obvious: it took several generations of study before linguists became fully aware of this important feature of human speech. It is remarkable that long before scientific students of language had made this discovery, there had arisen a system of alphabetic writing,—a system in which each character represented a phoneme. It seems that alphabetic writing developed out of word writing, and that this remarkable development has taken place only once in the history of mankind,—somewhere between 2000 and 1000 B.C. at the eastern end of the Mediterranean, with Egyptians, the Semitic-speaking peoples (such as the Phoenicians), and the Greeks, successively playing the principal role. All forms of alphabetic writing, then, are offshoots of a single original system. The details of this origin, and of the later history, so far as we can get at them, are of great interest, but would carry us too far afield. It is important for us to know that alphabetic writing was not invented at one stroke, as a finished system, but that it grew gradually and, one could almost say, by a series of accidents, out of a system of word writing. Neither then nor at any time since was there any body of experts who understood the system of phonemes and regulated the habits of writing. Among modern nations, some have almost perfect alphabetic systems, such as the Spanish, Bohemian, and Finnish systems of writing, but others have relatively imperfect systems, such as the Italian, Dutch, or German, and still others have extremely imperfect and arbitrary systems, such as the modern Greek, the French, and the English.

We can illustrate the nature of alphabetic writing by means of English examples, for, in spite of its many imperfections, our system of writing is in origin and in its main features alphabetic. This is proved by the simple fact that we can write all English words by means of only twenty-six characters, whereas a system of word writing would demand many thousands. As an illustration we may take the written representation of the word *pin*. It consists of three characters, and each of these three represents a single phoneme. If anyone told us to use these three characters to represent the word *needle*, we should find the suggestion absurd, because these characters do not *fit the sound* of the word *needle*. That is, each of three characters, *p i n*, is used conventionally to represent a unit *sound* of our language. This appears plainly if we compare the written symbols for other words, such as *pig*, *pit*, or *bin*, *din*, or *pan*, *pun*, or if we reverse the order of the letters and read *nip*.

The alphabetic nature of our writing appears most plainly of all, however, when we put together a combination of letters that does not make a

word and yet find ourselves clearly guided to the utterance of English speech-sounds; thus, nobody will have trouble in reading such nonsense-syllables, as *nin, mip, lib.*

If our system of writing were perfectly alphabetic, then anyone who knew the value of each letter could read or write any word. In reading, he would simply pronounce the phonemes indicated by the letters, and in writing he would put down the appropriate letter for each phoneme. The fact that we actually can do both of these things in the case of nonsense words such as *nin* or *mip*, shows that our system of writing is alphabetic.

In order to read alphabetic writing one must have an ingrained habit of producing the sounds of one's language when one sees the written marks which conventionally represent the phonemes. A well-trained reader, of course, for the most part reads silently, but we shall do better for the present to ignore this, especially as we know that the child learns first to read aloud.

The accomplished reader of English, then, has an over-practiced and ingrained habit of uttering one sound of the English language when he sees the letter *p*, another sound when he sees the letter *i*, another when he sees the letter *n*, and so on. In this way, he utters the conventionally accepted word when he sees a combination of letters like *pin, nip, pit, tip*, and, what is more, all readers will agree as to the sounds they utter when they see unconventional combinations, such as *pid, nin, pim*. It is this habit which we must set up in the child who is to acquire the art of reading. If we pursue any other course, we are merely delaying him until he acquires this habit in spite of our bad guidance.

English writing is alphabetic, but not perfectly so. For many words we have a conventional rule of writing which does not agree with the sound of the word. Take, for instance, the two words which are pronounced *nit*. One is actually spelled *nit*, but the other is spelled *knit*, with an extra letter *k* at the beginning, a letter which ordinarily represents one of the phonemes of our language.

Now someone may ask whether the spelling of *knit* with *k* does not serve to distinguish this word from *nit* "the egg of a louse." Of course it does, and this is exactly where our writing lapses from the alphabetic principle back into the older scheme of word writing. Alphabetic writing, which indicates all the significant speech-sounds of each word, is just as clear as actual speech, which means that it is clear enough. Word writing, on the other hand, provides a separate character for every word, regardless of its sound, and at the cost of tremendous labor to everyone who learns to read and write. Our spelling the verb *knit* with an extra *k* (and the noun *nit* without this extra *k*) is a step in the direction of word writing. This convention goes a little way toward giving us a special picture for the verb *knit*, as opposed to its homonym, and it does this at the cost of a certain

amount of labor, since the reader must learn to ignore initial k before n, and the writer must learn where to place it and where not to place it. It is none the less important to see that in its basic character our system of writing is alphabetic—witness merely the fact that we get along with twenty-six characters instead of twenty-six thousand.

The letters of the alphabet are signs which direct us to produce sounds of our language. A confused and vague appreciation of this fact has given rise to the so-called "phonic" methods of teaching children to read. These methods suffer from several serious faults.

The inventors of these methods confuse writing with speech. They plan the work as though the child were being taught to pronounce—that is, as if the child were being taught to speak. They give advice about phonetics, about clear utterance, and other matters of this sort. This confuses the issue. Alphabetic writing merely directs the reader to produce certain speech-sounds. A person who cannot produce these sounds, cannot get the message of a piece of alphabetic writing. If a child has not learned to utter the speech-sounds of our language, the only sensible course is to postpone reading until he has learned to speak. As a matter of fact, nearly all six-year-old children have long ago learned to speak their native language; they have no need whatever of the drill which is given by phonic methods.

The second error of the phonic methods is that of isolating the speech-sounds. The authors of these methods tell us to show the child a letter, say t, and to make him react by uttering the (t) sound. This sound is to be uttered either all by itself or else with an obscure vowel sound after it. Now, English-speaking people, children or adults, are not accustomed to make that kind of a noise. The sound (t) does not occur alone in English utterance; neither does the sound (t) followed by an obscure vowel sound. If we insist on making the child perform unaccustomed feats with his vocal organs, we are bound to confuse his response to the printed signs. In any language, most phonemes do not occur by themselves, in isolated utterance, and even most of the successions of phonemes which one could theoretically devise, are never so uttered. We must not complicate our task by unusual demands on the child's power of pronouncing. To be sure, we intend to apply phonetics to our reading instruction, but this does not mean that we are going to try to teach phonetics to young children. In the absurdity of trying this we see the greatest fault of the so-called phonic methods.

In spite of the special methods, such as the "phonic" method, which have been advocated at various times, the actual instruction in our schools consists almost entirely of something much simpler, which we may call the *word-method*. The word-method teaches the child to utter a word when he sees the printed symbols for this word; it does not pretend to any pho-

netic breaking-up of the word. The child learns the printed symbols, to be sure, by "spelling" the word,—that is by naming, in proper succession, the letters which make up the written representation of the word, as *see-aye-tee*: *cat*, and so on. No attempt is made, however, to take advantage of the alphabetic principle. If one examines the primers and first readers which exemplify the various methods that have been advocated, one is struck by the fact that the differences are very slight: the great bulk of the work is word-learning. The authors are so saturated with this, the conventional method, that they carry their innovations only a very short way; they evidently lack the linguistic knowledge that would enable them to grade the matter according to relations between sound and spelling. It is safe to say that nearly all of us were taught to read by the word-method.

The word-method proceeds as though our writing were word-writing. Every word has to be learned as an arbitrary unit; this task is simplified only by the fact that all these word-characters are made up out of twenty-six constituent units, the letters. In order to read a new word, the child must learn the new word character; he can best do this by memorizing the letters which make up this new word-character, but these letters are arbitrarily presented and have nothing to do with the sound of the word.

The most serious drawback of all the English reading instruction known to me, regardless of the special method that is in each case advocated, is the drawback of the word-method. The written forms for words are presented to the child in an order which conceals the alphabetic principle. For instance, if near the beginning of instruction, we present the words *get* and *gem*, we cannot expect the child to develop any fixed and fluent response to the sight of the letter *g*. If we talk to him about the "hard" and "soft" sounds of the letter *g*, we shall only confuse him the more. The irregularities of our spelling—that is, its deviations from the alphabetic principle—demand careful handling if they are not to confuse the child and to delay his acquisition of the alphabetic habit.

Our teaching ought to distinguish, then, between *regular* spellings, which involve only the alphabetic principle, and *irregular* spellings, which depart from this principle, and it ought to classify the irregular spellings according to the various types of deviation from the alphabetic principle. We must train the child to respond vocally to the sight of letters, and this can be done by presenting regular spellings; we must train him, also, to make exceptional vocal responses to irregular spellings, and this can be done by presenting systematically the various types of irregular spelling. For instance, we must train the child to respond by the *k*-sound to the sight of the letter *k* in words like *kiss*, *kid*, *kin*, *kit*, but we must also train him not to try pronouncing a *k*-sound when he sees the written *k* in the words like *knit*, *knife*, *knee*, *knight*.

The knowledge required to make this classification is not very profound.

Although this knowledge is easily gained, persons who lack it are likely to make troublesome mistakes. The author of a text-book and the class-room teacher does not need a profound knowledge of phonetics; he needs only to realize that information on this subject is available and that he need not grope about in the dark.

Although the various methods that have been advanced are, in practice, only slight adaptations of the universal method of word-reading, it will be worth our while to glance at one of them which has some vogue, namely the *sentence method* or *ideational reading*. This method attempts to train the child to get the "idea" or content directly from the printed page.

When a literate adult reads, he passes his eyes rapidly over the printed text, and, scarcely noticing the individual words or letters, grasps the content of what he has read. This appears plainly in the fact that we do not often notice the misprints on the page we are reading. The literate adult now observes the laborious reading of the child, who stumbles along and spells out the words and in the end fails to grasp the content of what he has read. The adult concludes that the child is going at the thing in a wrong way and should be taught to seize the "ideas" instead of watching the individual letters.

The trouble with the child, however, is simply that he lacks the long practice which enables the adult to read rapidly; the child puzzles out the words so slowly that he has forgotten the beginning of the sentence before he reaches the end; consequently he cannot grasp the content. The adult's reading is so highly practiced and so free from difficulty that he does not realize any transition between his glance at the page and his acceptance of the content. Therefore he makes the mistake of thinking that no such transition takes place,—that he gets the "ideas" directly from the printed signs.

This mistake is all the more natural because the adult reads silently; since he does not utter any speech-sounds, he concludes that speech-sounds play no part in the process of reading and that the printed marks lead directly to "ideas." Nothing could be farther from the truth.

The child does his first reading out loud. Then, under the instruction or example of his elders, he economizes by reading in a whisper. Soon he .reduces this to scarcely audible movements of speech; later these become entirely inaudible. Many adults who are not very literate, move their lips while reading. The fully literate person has succeeded in reducing these speech-movements to the point where they are not even visible. That is, he has developed a system of internal substitute movements which serve him, for private purposes, such as thinking and silent reading, in place of audible speech-sounds. When the literate adult reads very carefully,—as, when he is reading poetry or difficult scientific matter or a text in a foreign language,—he actually goes through this process of internal speech; his

conventional way of reporting this is that he internally pronounces or "hears himself say" the words of the text. The highly skilled reader has trained himself beyond this: he can actually shunt out some of the internal speech-movements and respond to a text without seizing every word. If you ask him to read aloud, he will often replace words or phrases of the printed text by equivalent ones; he has seized only the high spots of the printed text. Now this highly skilled adult has forgotten the earlier stages of his own development and wants the child to jump directly from an illiterate state to that of an over-trained reader.

It is true, of course, that many children in the upper grades—and even, for that matter, many post-graduate students in the university—fail to seize the content of what they read. It was this unfortunate situation which led to the invention of ideational methods in reading instruction. This however, meant confusing two entirely different things. So much can be said, however; the child who fails to grasp the content of what he reads is usually a poor reader in the mechanical sense. He fails to grasp the content because he is too busy with the letters. The cure for this is not to be sought in ideational methods, but in better training at the stage where the letters are being associated with sounds.

The extreme type of ideational method is the so-called "non-oral" method, where children are required not to pronounce words but to respond directly to the content. They are shown a printed sentence such as *Skip round the room*, and the correct answer is not to say anything, but to perform the indicated act. Nothing could be less in accord with the nature of our system of writing or with the reading process such as, in the end, it must be acquired.

The stories in a child's first reader are of little use, because the child is too busy with the mechanics of reading to get anything of the content. He gets the content when the teacher reads the story out loud and, later on, when he has mastered all the words in the story, he can get it for himself, but during the actual process of learning to read the words he does not concern himself with the content. This does not mean that we must forego the use of sentences and connected stories, but it does mean that these are not essential to the first steps. We need not fear to use disconnected words and even senseless syllables, and, above all, we must not, for the sake of a story, upset the child's scarcely formed habits by presenting him with irregularities of spelling for which he is not prepared. Purely formal exercises that would be irksome to an adult, are not irksome to a child, provided he sees himself gaining in power. In the early stages of reading, a nonsense syllable like *nin* will give pleasure to the child who finds himself able to read it, whereas at the same stage a word of irregular spelling, such as *gem*, even if introduced in a story, will discourage the child and delay the sureness of his reactions.

There is always something artificial about reducing a problem to simple mechanical terms, but the whole history of science shows that simple mechanical terms are the only terms in which our limited human capacity can solve a problem. The lesser variables have to wait until the main outline has been ascertained, and this is true even when these lesser variables are the very things that make our problem worth solving. The authors of books on reading methods devote much space to telling why reading is worth while. The authors of these books would have done far better to stress the fact that the practical and cultural values of reading can play no part in the elementary stages. The only practical value of responding correctly to the letters of the alphabet lies in the messages which reach us through the written or printed page, but we cannot expect the child to listen to these messages when he has only begun to respond correctly to the sight of the letters. If we insist upon his listening, we merely delay the fundamental response.

If you want to play the piano with feeling and expression, you must master the keyboard and learn to use your fingers on it. The chief source of difficulty in getting the content of reading is imperfect mastery of the mechanics of reading.

Space forbids our giving more than a meager outline of a system of reading instruction based upon the facts which have been set forth on the preceding pages.

The first step, which may be divorced from all subsequent ones, is the recognition of the letters. We say that the child *recognizes* a letter when he can, upon request, make some specific response to it. One could, for instance, train him to whistle when he saw an A, to clap his hands when he saw a B, to stamp his foot when he saw a C, and so on. The conventional responses to the sight of the letters are their names, *aye, bee, see, dee,* and so on, down to *zee* (which in England is called *zed*). There is not the slightest reason for using any other responses.

It is an open question whether all the letters, small and capital (in printed form, of course) should be taught before reading begins.

At the pre-primer stage the habit of left-to-right scanning should be developed by means of appropriate exercises, which may well afford, at the same time, an introduction to the letters and the numeral digits.

Our first reading material must show each letter in only one phonetic value; thus, if we have words with *g* in the value that it has in *get, got, gun,* our first material must not contain words like *gem,* where the same letter has a different value; similarly, if we have words like *cat, can, cot,* our first material must not contain words like *cent.* Our first material should contain no words with silent letters (such as *knit* or *gnat*) and none with double letters, either in the value of single sounds (as in *add, bell*) or in special values (as in *see, too*), and none with combinations of letters

having a special value (as *th* in *thin* or *ea* in *bean*). The letter *x* cannot be used, because it represents two phonemes (*ks* or *gz*), and the letter *q* cannot be used, because it occurs only in connection with an unusual value of the letter *u* (for *w*).

Our first reading material will consist of two-letter and three-letter words in which the letters have the sound-values assigned at the outset. Since the vowel letters are the ones which, later on, will present the greatest difficulty, we shall do best to divide this material into five groups, according to the vowel letter.

The work of this first stage is all-important and should be continued until the pupils are very thoroughly trained. Nonsense syllables, such as *bam*, *bap*, *mim*, *mip*, should be included. Words unfamiliar to the child, such as perhaps *van*, *vat*, should not be avoided; they should be treated as nonsense syllables or, if there is time, accompanied by a very brief explanation of their meaning.

Short sentences of the type *Nat had a bat* can be used at this stage.

The second stage takes up regular spellings in which double consonants and other digraphs appear in consistent uses, e.g. *ll* as in *well*, *th* as in *thin*, *sh* as in *shin*, *ch* as in *chin*, *ee* as in *see*, *ea* as in *sea*, *oa* as in *road*, *oo* as in *spoon*. If a very few words of irregular spelling are introduced at this stage (e.g., *is*, *was*, *the*), it is possible to devise connected reading of reasonably varied content.

The third stage takes up words whose spellings may be called *semi-irregular*, for example the type of *line*, *shine*, *mile*, *while* or the type of *bone*, *stone*, *hole*, *pole*. At this stage, also, two-syllable words whose spelling is consistent with the other materials, can be taken in: *winter*, *summer*, *butter*, *sister* (but not, for instance, *father*, *mother*, *brother*). A small set of the commonest irregular words (pronouns, forms of the verbs *be*, *have*, *do*, and *go*) is included because it enables us to give extended readings of connected text.

The last stage takes up irregularly spelled words, such as *father*, *mother*, *night*, *all*, *rough*, *cough*, *though*. It is only here that the question of reading vocabulary need be considered. In the first three stages an individual word (apart from the small stock of irregular ones that have been taken in) offers no problem: all that is needed is the habit of connecting letters with sounds. At those stages, unfamiliar words like *van*, *moot*, *mote*, afford good practice precisely because they are unfamiliar, and the same can be said of nonsense syllables. At the fourth and last stage, however, each word, being entirely irregular in shape, is a separate item to be memorized. At this last stage, accordingly, we use only familiar words which are needed for reading.

No matter how well we plan in other respects, our teaching will yield inferior results so long as the material which we present is clumsily chosen.

Only if we choose our material in accordance with the nature of English writing, will the classroom procedure which we have so carefully developed, produce proper results. The children will learn to read in a much shorter time, and they will read more accurately, more smoothly, and with better understanding of the content.