Spelling Progress Bulletin Summer 1974

Dedicated to finding the causes of difficulties in learning reading and spelling.

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1. Language, Speech, and Writing, by W. Nelson Francis**

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Some years ago, in connection with a study I had in hand at the time, I made a rather hasty survey of the books on the teaching of reading which a colleague in the Department of Education told me were the standard ones in the field. I was astonished to find that none of them dealt directly with the subject of this paper: the relationship of the writing system of English to the English language. (This situation has since been remedied. See e.g., the work of Venezky). It seemed to me then and still does that a thorough understanding of this relationship should be basic to any serious treatment of the problems of teaching reading. I am accordingly very pleased to have the opportunity to bring some thought on this subject to the attention of this conference.

At the outset I would like to reject two commonly presented models of the reading process as unduly simplistic and hence inaccurate. The first is the view that something called "meaning" can be derived directly from the printed page. The other is that writing simply represents sounds, which must be recognized and identified before understanding can take place.

The first of these notions is inadequate because it overlooks language altogether. Meaning of one sort or another can be derived directly from visual displays such as paintings, electronic circuit diagrams, and architectural plans. But writing is a representation not of the external world directly but of language, and such meaning as it conveys is the meaning in the language it represents. A trained reader can recognize and reproduce the language which a given sample of writing represents without necessarily knowing its meaning, but it is not possible to gather the meaning of a sample of writing without identifying the language for which it stands.

The second notion is inadequate because it assumes that conscious realization of the phonological material for which a sample of writing stands is a necessary preliminary to recognizing the language it represents. This is the view commonly put forward by linguists, especially those committed to a system of linguistic analysis based strictly on phonology. It is also behind various advocacies of the so-called "phonic" method of teaching reading. One of its corollaries is the assumption that an ideal writing system is a strictly phonemic one and that to the extent that a writing system departs from a one-to-one grapheme-to-phoneme relationship, it is an imperfect one. Most proposals for reforming English spelling have this view as a premise, though often without real understanding of the phonemic principle or of the phonemics of English. It is also largely the premise on which the Augmented Roman Alphabet (now more commonly known as the Initial Teaching Alphabet-i.t.a.), now much in the news as a medium of reading instruction, is based.

In place of these models, I would like to suggest a somewhat more complicated one which seems to me to represent more closely what is involved when a literate native speaker of English--whom I shall henceforth call an *expert native reader* – reads a passage of ordinary English prose. The model involves the interrelationships of four systems:

1. *A graphic system*, whose units are graphemes, combined and arranged according to a set of graphotactic rules, governing position and grouping, in graphic words, phrases, and sentences.
2. *A phonological system*, whose units are phonemes, arranged according to a set of phonotactic rules in syllables, phonological words, phrases, and sentences.
3. *A lexico-grammatical system*, whose units are morphemes, combined and arranged according to a set of morphotactic and syntactic rules in words, phrases and sentences.
4. *A semological system*, about whose structure little can as yet be said and which is (fortunately for the author!) largely irrelevant to this discussion.

For purposes of this paper, I shall call this group of interrelated systems a linguistic system. The relationship of these four systems in the behavior of the expert native reader can be schematically represented in this fashion:

Phonological ↘

   ↑ ↓   Lexico-Grammatical → Semological
Graphic   ↗

In this discussion we are concerned with the triangle on the left, whose apexes are the phonological, graphic, and lexico-grammatical systems. The way in which the lexico-grammatical system represents the semological one (or, if the arrow is reversed, the way in which the semological one is realized by the lexico-grammatical one) does not concern us here. The semological system may thus be dismissed from this discussion with the observation that, as was said above, the lexico-grammatical system-language, in the narrowest sense-always intervenes between it and both the phonological and the graphic systems. In other words, neither writing nor speech communicates meaning directly; they represent words in grammatical arrangement, which together in turn convey meaning. This dismissal of meaning is not intended to be cavalier or irresponsible. It merely reminds us that the process of deriving meaning from language is not the primary problem (or

should riot be) of the lower level learner of reading. At higher levels, where the written material may consist of a kind of language unfamiliar to the expert native speaker, this process does become important. But the beginning native reader is concerned principally with the problem of deriving from writing, language of a kind with which he is already familiar.

We are concerned, then, with the relationship of the other three systems: the graphic, the phonological, and the lexico-grammatical. I should like to use the following terminology for the remainder of this paper:

1. The graphic system is realized as *writing*. Any material representing graphemes arranged according to graphotactic rules will be called a *sample of writing*.
2. The phonological system is realized as *speech*. Any material representing phonemes arranged according to phonotactic rules will be called a *sample of speech*.
3. The lexico-grammatical system is realized as *language*. A *sample of language* is not itself material; it only becomes so when it is in turn realized as writing or speech.* It consists of morphemes in grammatical arrangement.

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*Actually, of course, graphemes and phonemes are not material either. They are structure points in the graphic and phonological systems, which are materially realized as *graphs* and *phones,* the entities that actually get written or spoken. But so long as this fact is remembered, we can save complication by omitting one level of abstraction and talking as if graphemes were visible and phonemes audible.

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Our triangular model can now be put into this form:
Speech   ↘ 1

3 ↑ ↓ 4   Language
Writing   ↗ 2
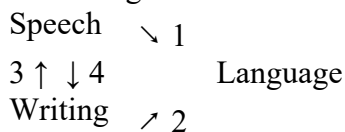
where the arrows represent the process of conversion from one system to another, which I shall henceforth call *interpretation.*

I emphasize that this model is only relevant for the expert native reader. For the learner, the more usual model, which interposes speech as an essential intermediary between writing and language, is undoubtedly the more accurate one:

Writing → Speech → Language

Advocates of strictly phonemic writing systems and of an uncompromising "phonic" method for teaching reading have this model in mind, even though they may not always expressly state it. But since it is an inaccurate representation of the expert native reader's skill, which is the ultimate goal of reading instruction, any method of instruction based exclusively on it cannot succeed. Just why will become clearer as we continue.

Let us return to the triangular model and explore the implications of the numbered arrows:

1. This implies the obvious fact that a sample of speech, correctly heard by a native speaker, is converted by him into a sample of language. Since speech is quite redundant, this interpretation can often be made without hearing all of the phonological material constituting the sample of speech. Sometimes consciously, more often unconsciously, the hearer supplies the phonemes which he does not actually hear in order to have enough phonological clues to permit an acceptable sample of language to be reconstructed. Sometimes the wrong items are supplied, so that the message is

distorted or nonsensical. The hearer also edits out a good deal of phonological (or at least phonetic) material (hesitation pauses and fillers, repetitions, false starts, and backtrackings) in order to make his reconstructed sample of language more coherent. There is need for a good deal of research into the nature of this editing process in the mind, and the way it is learned. It is probably a case of rejecting meaningless sounds, just as one rejects background noises, and concentrating on meaningful language.

2. The second arrow implies that a sample of language can be reconstructed directly from a sample of writing without passing through the stage of speech; in short, that writing can be interpreted as language. I do not mean to deny that there is usually a largely suppressed phonological concomitant to the act of reading. But the fact is that the expert native reader can read much faster than he, or anyone else, can speak. I should like to have a speech-compressor – the opposite of a speech-stretcher--in order to try the experiment of accelerating speech without distortion to the speed at which an accomplished reader can read. My guess is that it would be unintelligible.

My point is that samples of writing are converted into language much as samples of speech are. Again, redundancy permits the interpretation of imperfectly seen samples. Only when the type face or handwriting is very difficult, unfamiliar, or obscure does the expert reader slow down to the point of examining the individual graphs. And only when a graphic word is strange does the reader work out a pronunciation based on his knowledge of the most likely phonological referents of its graphemes and grapheme combinations in order to check its pronunciation against his own(or somebody else's) auditory vocabulary. 3. The third arrow implies not only that writing can be converted into speech, but also that a suppressed physiological and psychological conversion of at least a partial sort is a frequent, if not inevitable, concomitant of the act of "silent" reading. The words and phrases leap to the eyes at once, but along with them goes a ghostly echo of speech. As I have already said, in extremely rapid reading this is very fragmentary. The point is that for the expert it is a concomitant to, rather than an essential part of the reading process. The aim of advanced training in reading should be to minimize it as much as possible.

4. The fourth arrow implies not only the obvious fact that speech can be converted into writing, but also that some shadowy awareness of writing may accompany the act of listening by an expert native reader. I have nothing to base this on except my own introspective experience. But I know that I do not feel that I have grasped a new surname, for instance, until I can visualize its spelling. Even familiar names, if they have alternative spellings, involve this uncertainty. I don't feel that I really know the name of, let us say, /kæθəarin-fréfyžir/ until I know whether her first name begins with <c> or <k> and whether it has an e or an a in the second syllable, nor until I know whether her surname has a medial <s> or a <z> and whether or not it is followed by <i>. Until I know these things, I cannot visualize the name as I speak or hear it and hence I have an imperfect hold on it in memory.

This process is not restricted to proper names. When I hear a new word (*monotonically* is the last one I remember) I visualize it at once. Because of the nature of the English spelling system, this is often not unambiguously possible. In the case of *monotonically*, it was possible, not because of the phonemic shape of the word (which could be represented in various ways, such as *monnotonnickly*) but because of the graphic shape of the morphemes of which it is composed. As a native speaker and reader, I immediately associated it with *monotony* (in spite of the shift in stress and the altered second vowel), *tonic,* and the *-ly* adverb ending. Even the unpronounced <-al> appeared in my visualization, because as an expert native reader I knew that the {-ly} adverb-forming morpheme never follows the {-ic} adjective-forming morpheme without the intervention of a graphic al, even if there is no adjective in {-al}, witness *basically* and *tragically*.

This quasi-visual realization of speech as writing by the literate listener is, I imagine, even more thoroughly suppressed than the quasi-auditory realization of writing as speech in the process of silent reading. In beginning or relatively inexperienced readers it is probably missing altogether. But in the highly literate reader-which it is certainly the aim of the educational system to create – it is undeniably and pervasively present.

The various relationships in the speech-writing-language triangle may be viewed from another point of view as processes or skills. There are six of these, each involving a conversion from one of the three members of the triangle to one of the others. In each case the third member of the triangle is present as a more or less suppressed secondary concomitant. These processes may be summarized in the following diagrams, where the arrows indicate the direction of conversion and the parentheses and dotted arrows indicate the expert native reader's secondary concomitant. The order is that in which (presumably) the skills are acquired.

1. *Listening:*   Speech   → Language   (--->Writing)
2. *Speaking:*   Language → Speech   (--->Writing)
3. *Reading aloud:*   Writing   → Speech   (-->Language)
4. *Taking dictation:* Speech   → Writing   (-->Language)
5. *Silent reading:*   Language → Languages (---->Speech)
6. *Writing:*   Writing   → Writing   (---->Speech)

The illiterate, including the pre-school child, is in command of only the first two of these, without, of course, the suppressed concomitant of writing. Training in the remaining four is the task of the schools. Many people who are technically literate never really acquire the last two. For them, "silent" reading is actually a process of subdued reading aloud to themselves, and writing a process of dictating to themselves. For them our triangular model is not valid; speech is invariably an intermediate stage between writing and language.

        Writing ↔ Speech ↔ Language.

These are the lip-movers and painful scrawlers, whose literacy is adequate to many useful functions in the world, but to whom the higher literacy is unknown.

So far we have been exploring the functional relationships among the three systems of the reading-writing-language triangle. It now remains to look briefly at the *fit* of each system to each of the other two. We may begin with the postulate that the fit between two systems is good if all significant distinctions made in each of them are also made in the other. It is to be noted that fit is directional; that is, if system A makes all the distinctions that B makes, but B does not make all the distinctions that A makes, the A-to-B fit is good, but the B-to-A fit is imperfect. In the case of our triangular system, if a distinction made in any of the three systems is also made in the other two, the fit for that particular set of items is good. Take, for instance, the three words *beer, bare,* and *byre.* These appear in each of the three systems as follows:

1. In *speech,* as the phonological words /biər/, /beər/, /bayr/.
2. In *writing,* as the graphic words <beer>, <bare> <byre>
3. In *language,* as the monomorphemic lexical words {beer} (= "alcoholic beverage brewed from malt,"), {bare} (= "naked, uncovered"), (byre} (= "stable for cows").

These items show good fit: they are in contrast in all three systems. But a pair like *bier* and *beer,* while it shows good writing-to-language fit (contrasting morphemes appear as contrasting graphic words), shows poor speech-to-language fit (contrasting morphemes have the same phonological

realization) and poor speech-to-writing fit (contrasting graphic words have the same phonological counterpart). This is the situation of *homophones.*

On the other hand, a pair like *bear* (the animal) and *bear* (support, carry) shows good writing-to-speech fit (identical phonological words have the same graphic counterpart) but poor speech-to-language and writing-to-language fit (contrasting morphemes have the same phonological and graphic realizations). There is no ready-made term for these; let us call them *homologs.* [1] Finally, a pair like *sow* (to plant seed) and *sow* (female pig) shows good speech-to-language fit but poor writing-to-language fit; these are called *homographs.*

The reasons for poor fit are two; either one of the systems makes a contrast which is not observed by the other two, or one of the systems fails to make a contrast which is made by the other two. Examples of the former--a contrast present in only one system – with suggested terms for them are as follows:

1. /krik/ : /kriyk/ (phonological contrast only) ; phonological variants (popularly "variant pronunciations")
2. *catalog: catalogue* (graphic contrast only) : graphic variants (popularly "variant spellings")
3. *bear: bear* (lexico-grammatical contrast only) : homologs (popularly *homonyms,* though this is also used for homophones and homographs)

Examples of the latter (a contrast missing in only one system) with suggested terms are the following:
1. *bare: bear* (phonological contrast missing): homophones.
2. *sow: sow* (graphic contrast missing) : homographs.
3. *slow: slowly* (lexico-grammatical contrast missing) lexical synonyms.

It is apparent that all cases of poor fit belong to one or the other of these six types, in which one system deviates from the other two. The other two possibilities are (1) that all systems contrast, which is by definition good fit, or (2) that none do, which is the trivial case.

It remains to ask what kind of fit is most efficient and hence most desirable. Admittedly this question is more relevant to designers of writing systems for hitherto unwritten languages than it is to teachers of reading, who must teach the systems as they find them. But it at least applies to the question of reform of English orthography, a matter on which teachers of reading could exert a good deal of influence if they so desired.

The optimal case – good fit in all dimensions for all items – is an impossibility as long as homophones, variant allomorphs, and lexical synonyms exist, as they seem to do in all natural languages. Apart from the trivial case of bad fit in all dimensions, there are three possibilities:

1. Perfect writing-to-speech and speech-to-writing fit, with all imperfections relegated to the other two dimensions of contrast. A phonemic transcription is an obvious example of this; among natural linguistic systems, Turkish and Finnish approach it. Such a linguistic system may contain homologs and lexical synonyms, but no phonological or graphic variants, homophones, or homographs.

2. Perfect writing-to-language and language-to-writing fit, in which all contrasts in language and none that are not in language are represented in writing. Such a system will have homophones and phonological variants, but no homologs, homographs, lexical synonyms or graphic variants. I do not know much about the Chinese system, but I presume it approaches this, at least in its main structural foundation.

3. A mixed system, in which failure of contrast is now in one dimension, now in another. Most natural linguistic systems – perhaps, actually, all of them – belong to this set. Certainly English does. These systems contain lexical synonyms, phonological variants (which may be morpheme variants, such as /pæθ : pæ∂-/ and homophones, and may also contain homographs, graphic variants, and homologs. The English system has them all, as I have illustrated above.

It is clear that for the beginning reader, the first of these is best, since he is primarily concerned, as I have pointed out, with the conversion back and forth between writing and speech, and this is much easier to learn if it is always consistent and regular. But it is by no means clear to me that this type of system is best for the advanced reader, who is largely by-passing the intermediary of speech and is converting writing directly into language. At this level it is at least possible that the identification of morphemes is more important than the identification of phonemes, and hence that a system of the second, or Chinese, sort is best. It is probably the balance of advantages of these two that has brought about the great preponderance of mixed systems among the linguistic systems that have had writing for any length of time.

I leave it to others in this conference to draw psychological and pedagogical conclusions from these facts about the English linguistic system. But I may venture one or two suggestions here:

1. In our culture, as in most, the child learns a good deal of language and speech before his schooling begins. In short, he knows how to listen and speak; his linguistic equipment can be diagrammed as:

<div align="center">Speech ↔ Language</div>

2. The first task of reading instruction is to equip the child to make the writing-to-speech conversion; that is, to add the skill of reading aloud:

<div align="center">Writing ↔ Speech ↔ Language</div>

3. Next, and presumably overlapping the preceding, he adds the speech-to-writing conversion, thus adding the skill of taking dictation:

<div align="center">Writing ↔ Speech ↔ Language</div>

4. If he does not go beyond this, he remains semi-literate --a lip-mover and phonetic speller, unable to read faster than he can talk. But if he is to be truly literate, he must acquire the skills of silent reading and original writing, and thus complete the linguistic triangle:

Speech ↘

↑ ↓   Language

Writing ↗
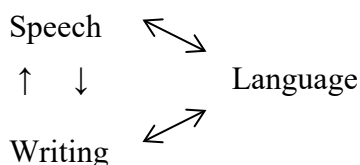
All of us at this conference have attained this last stage; how did we get there?

<div align="center">-o0o-</div>

Appendix

After I had written the above talk, I reread the letter asking me to contribute a paper to the conference and discovered my assignment was to "discuss the relationship between spelling and pronunciation in American English and the implications of this relationship for reading research and development." With some consternation I realized that I have not said very much on that subject, but have instead ventured into a considerably larger field of theory. I do not repent of this, since it has given me the opportunity to air (if not to clarify) some ideas on what I consider a very important and by no means fully explored territory. I trust that they will supply a foundation of theory for the discussion of the conference; or, alternatively, that they will be shown to be erroneous and a sounder theoretical base will be supplied. Meanwhile the following is offered as a sample, at least

of a paper on my true topic. A sample is all that can be offered, since a full discussion would fill a sizeable volume and shorter treatments (e.g. my own chapter in *The structure of American English* and Robert Hall's *Sound and Spelling in English)* already exist.

A quip often attributed to G. Bernard Shaw has it that the English word /fiš/ can be spelled *ghoti-gh* as in *cough, o* as in *women,* and *ti* as in *nation.* I hope that this attribution to Shaw was not intended seriously since he was a very clever man, but this is a very stupid joke. It is stupid because it overlooks the vitally important fact that English spelling, however complex it may be, is a system. That is, it not only has graphemes and grapheme clusters which have phonemic reference; it also has graphotactic rules which govern their distribution. The spelling *ghoti* for /fiš/ violates these rules on every conceivable count. Far from being a possible spelling, it is totally impossible. Any native reader would read the graphic sequence ghoti as /gowtiy,/, with possible variations in the syllabic of the first syllable and in the allophone of /t! He would do this because he knows certain facts about the distribution of these graphemes.

l. <gh> is exceedingly rare as an initial digraph in English orthography. In the desk dictionary which comes first to hand *(Webster's New World Dictionary of the American Language)* there are only 22 entries beginning with this grapheme cluster, or, if derivatives are put with their base words, 16. Seven of these are proper names: three from Italian (e.g. *Ghiberti),* the rest scattering, but all foreign (e.g. *Ghana, Ghent*). Of the remaining nine, two are loan words from Hindi (*ghat, ghee*), two from Arabic (*ghazi, ghoul*), one each from Italian (*ghetto*) and Dutch (*gherkin*). Of the three remaining, one (*ghyll*) *is* an alternative spelling for initial g-. There are only two clear-cut, old-time native words in the lot, *ghost* (and its various derivatives) and the related *ghastly.* These are described as "early printer's spellings." All 22 of these entries are pronounced with an initial /g/. So this digraph is simply not available to spell an initial /f/.

2. So far as I can tell, <o> spells /i/ only in the one word *women.* It has various phonemic equivalents (in *ocean, box, omit,* and *son,* for example) but it is not available as a spelling for /i/.

3. The digraph <ti>is only available as a spelling for /š/ in a medial prevocalic position. As any native reader knows, <i> is very rare as a word-final grapheme, almost always signifying a loan-word. In 35 pages of the same dictionary, I could find only five instances of final <i>, while there were 126 of final <y> Items like *demi, Delhi,* and (of considerable interest here) *dhoti* all carry an exotic foreign look. The native reader would never be so stupid as to spell /fiš/ as <ghoti> or to read <ghoti> as /fiš/. He would almost certainly read it as /gowtiy/. and if he had a bit of sophistication he would guess that it is a recent loan word from Hindi.

The native reader, then, not only knows the permitted phonemic reference of graphemes and grapheme clusters, he knows the positions in which certain references are permitted or not. These distribution rules by no means agree with the distribution rules for phonemes and phoneme clusters. But they are rules nonetheless; without them reading would be impossible. Let us look a bit more closely at the distribution of the grapheme cluster <gh> as an illustration of what some of these rules are.

The cluster <gh> has four positions (if we exclude a few foreign proper names like Diaghilev) and four phonemic references. These are almost completely determined by position, as follows:

1. *Initial.* As we have seen, it is rare in this position, being restricted to loanwords except for the freakish *ghost* and *ghastly.* Its phonemic reference is always /g/.

2. *Final.* Excluding a few place names ending in *-burgh,* it is always postvocalic in final position, and has the phonemic reference /f/ or /0/ (zero). These two are in free variation after <ou> and

<au>. After any other vocalic, the reference is always /0/. But this digraph has a diacritical function on the reference of the preceding vocalic or vocalic digraph. Thus <ou>, whose most common phonemic reference is /aw/, stands for /uw/ before <gh> standing for /0/, and /^/ before <gh> standing for /f/. The classic examples are *through* and *rough.* (British usage must allow for further variation in phonemic reference in *plough,* which American practice spells *plow*). In the light of this function, also operative in the next position to be considered, it might be best to consider such combinations as <igh>, <eigh>, and <ough> (when standing for /uw/) as polygraphs, standing respectively for /ay/, /ey/, and /uw/.

3. *Post-vocalic before* <t>. The phonemic reference is always /0/, as in *straight* (cp. *strait*) and *taught* (cp. *taut*). After <i>, <ei>, and <ou> the digraph has a diacritical effect on the preceding vocalics: compare *bit: bight* and *bout: bought* (there is no minimal pair for *ei: eigh,* but *weight: height* presents an awkward irregularity).

4. *Intervocalic.* Here the phonemic reference depends on the position of the morpheme boundary, which is always present (the single exception I can think of is *gingham).* If it follows the cluster, as in *coughing, through/out,* the rules for final position apply. If it precedes the cluster (only in *aghast,* so far as I know) the rule for initial position applies. If the morpheme boundry falls between the <g> and the <h>, it ceases to be a digraph, and the rules for final <g> and post-junctural <h> apply (e.g. *dog/ house).*

It is clear from the foregoing that the various phonemic references of <gh> are in complementary distribution, and hence determined, except in final position after <ou> or <au>. The distributional rules are clear, and while apparently complicated as stated, they are no more complicated than the rules of allophonic distribution in many languages. Anyone who seriously maintains that initial <gh> can spell /f/ is ignorant of basic facts about the reference of the English writing system, and anyone who makes such a suggestion facetiously is making a pretty feeble joke.

One more example may help to establish the point that the English system, though complicated, is truly a system. Consider the case of word-final <y>. As we have seen, it is quite frequent, with 126 occurences in 35 pages, about 1700 words, of the dictionary; about one word in 14, or 7% of the words in this sample of the vocabulary, end in <y>. It has two phonemic references, in nearly perfect complementary distribution: /ay/ in words of one syllable and /iy/ (with some possible dialectal variants) in words of more than one syllable, with certain exceptions. Actually, in words of more than one syllable, the expert native reader does not consider final <y> as an isolated grapheme; he almost always sees it as part of a larger grapheme cluster standing for a morpheme (or possibly a morpheme combination). 110, or all but 16 of the examples in the 35-page dictionary sample previously cited, are of this sort. The morphemes with their frequencies, are the following:

-ly	25	-ity	14	-ary	6	-ology	4
-ory	17	-cy	10	-ery	4	-try	1
-y	16	-fy	9	-ry	4		

[It is perhaps erroneous to call these morphemes, which are properly units of language, not of writing. But the word is here used as meaning "graphic representation of a morpheme," for which the more technical term is *morphograph.*]

The only problem with final <y> arises when a word which is actually a compound of one of the one-syllable morphemes usually spelled with final <y> looks as though it might instead have one of these other non-stressed suffixes. I have heard *awry* pronounced /'ɔ:riy/, and it is possible to imagine <apply> and <descry> coming out as /'aepliy,/ and /déskriy /. There are also a few two-syllable morphemes with stress on the second syllable, such as <deny>. But with these few

exceptions, the phonemic reference of final <y> is clearly determined by distribution. The expert native reader takes it in stride. On the other hand, the rare final <i>, as we have seen, usually signals a foreign loanword and sets up an alarm signal. But under no circumstances will an expert native reader take final <ti> as a spelling of /s/.

It is unlikely that this demonstration will have the desired effect of annihilating Bernard Shaw's bad joke. But at least it will, I trust, prevent anyone at this conference from bringing it up as *serious evidence* for the need to reform English Spelling!

I will discharge my final mission – to point out areas for research which may assist the teaching of reading – by pleading for a thorough study of the English writing system and its relation to the other two systems, along the lines suggested in this paper. This is no light undertaking. Not long ago it would have been virtually a life's work. But with modern computers and data-processing systems, the onerous statistical work and searching can be done rapidly. Upon such a study a sequential program for leading the beginning reader forward to the goal of the expert native reader's proficiency can be firmly built.

Note 1.

In regard to the use of the term "homolog," I thought I had adequately defined it in the text by example and by its place in the terminological scheme there developed. It is a coinage analogous to *homophone, homograph,* made necessary by the inexactness of the word *homonym.* All elements are Greek:

homo- (like) -phone (sound) = words alike in sound but not in spelling or meaning.
homo- (like) -graph (writing) = words alike in spelling but not in sound or meaning.
homo- (like) -log(os) (word) = words alike in sound and spelling but not in meaning

Note that *homonym* (homo + onymon, "name") could serve this latter purpose but has frequently been used as a synonym for *homophone* (my *American Heritage Dictionary* says "one of two or more words that have the same sound *and often the same spelling* but differ in meaning").

Thus *bare* and *bear* (either one) are homophones; *sow* "female pig" and *sow* "plant seeds" are homographs; *bear* "large woolly mammal," and *bear* "carry" are homologs.

The problem with homologs, of course, is the problem of polysemy – how do we draw the line between one word with more than one meaning (polysemy) and homologs as defined above? We probably will want to use various criteria, including grammatical class membership, semantic distance, and perhaps etymology. Thus there is a large class of verbs in English which have nouns identical in spelling and pronunciation: *run, flow, hit, spring, fall,* etc. Since these belong to different parts of speech, we probably want to consider them different words, hence homologs. On the other hand, *board* "flat piece of wood" and *board* "official governing body of some institution" are the same part of speech but apparently of quite different meaning (hence homologs) – but since we can connect these disparate meanings by a semantic chain (via "table" and "persons sitting around a table") we usually consider the semantic distance not too great and treat this as polysemy (all dictionaries do, I believe). The dictionary quoted above lists two nouns *snare,* "a trapping device.." and "any of the wires or cords stretched across the lower skin of a snare drum," presumably because they have different etymologies (Old Norse *snara* and Dutch *snaar,* respectively). Hence they are homologs. But until I discovered this a few minutes ago, I considered this a case of polysemy, the semantic connection being that both are made of wire!

-o0o-

2. The English Language,
by Newell Tune and Helen Bonnema

Who can spell it?	Hidebound we all must surely be
Who can read it?	To know that youth do not progress
Who expel it?	But year by year still more regress
Does one need it?	Because the spelling won't agree.
Who can grasp it?	Why not change it?
Or believe it?	Make it fit?
Who command it?	Rearrange and
Or conceive it?	Straighten it?

One Idea, by Joseph A. Zodl
One idea blended with some ambition yields a concept.
One concept blended with some planning yields a program.
One program blended with some action yields progress.
And progress blended with determination yields success.

From The Foremanship Bulletin; by Dartnell Corp., Chicago, Ill.

-o0o-

3. Phonics: Methods and Orthography, by Emmett Albert Betts*

*Research Prof., Univ. of Miami, Coral Gables, Fla., and also President, Phonemic Spelling Council.

Continued from previous issue

In the previous issue, the subjects covered were:
Spelling patterns in a primary reading vocabulary, vowel and consonant situations, and how to cope with them in various optional means:
   1. Sight Words,
   2. Phonics,
   3. Respelling,
   4. Linguistic Approaches (which is herein continued).

Again, Bloomfield recommended *experimentation,* indicating his interest in experimental research rather than a dogmatic "linguistic" approach to beginning reading. In fact, Bloomfield stated flatly: "The methods of procedure, the order of presentation, and the various minor devices can be determined only by experiment; from the outset, however, one must know what one is trying to do." (p. 501) But alas!, Bloomfield's chapter was to become the bible for those linguists who dabbled during the 1960's with the teaching of beginning reading.

Bloomfield was rightly concerned because he believed: "The difficulty of our spelling greatly delays elementary education, and wastes even much time of adults'." (p. 501) He might have added:

1. Irregular, or unpredictive, spellings present a major roadblock not only for beginners in reading but also for those pupils in *corrective* (garden type) reading programs. Here, then, is one major cause of reading retardation.

2. Irregular spellings, with their "silent" letters and "variable" letters, completely frustrate dyslexics. (As defined psycho-neurologically rather than educationally as unfortunately is common today.) Experimental research on this and the first problem (above) is urgently needed in the 1970's.

Bloomfield did recommend spelling reform:

> "Literary people entertain the notion that graphic eccentricities, such as the spellings of ghost or rhyme, somehow contribute to the connotation of words. For a small minority of over-literate persons they undoubtedly produce the sort of bookish connotation which good writers try to avoid. There would be no serious difficulty about devising a simple, effective orthography for all types of standard English; the use of it would save an enormous amount of time and labor, and, far from injuring our language, would raise the general level of standard speech, both by reassuring, native speakers of nonstandard and by removing the tendency of spelling pronunciations." (p. 502)

At about the time of Bloomfield's death (circa 1949), the Univ. of Chicago Press sent the writer a proposed manuscript for beginners in reading based on:

a. Somewhat consistent spellings, as *at-cap.*
b. Gradual introduction of irregular graphs, as *fi(gh)t,* and *c(a)ll.*

This manuscript was rejected but later appeared as *Let's Read,* Leonard Bloomfield and Clarence L. Barnhart, (Wayne State Univ. Press, 1961.)

Bloomfield's ideas were neglected by linguists and educators for about 30 years. In 1962, Charles Carpenter Fries' *Linguistics and Reading,* Holt, Rinehart & Winston, Inc., caused a big buzz and some confusion in the U.S.A. reading establishment. Fries extended and elaborated on the ideas of Leonard Bloomfield, emphasizing spelling patterns, as *sit-ship, cake-made, road-goat.*

Unfortunately, some linguists fell into their own trap by overemphasizing spelling patterns and neglecting intonation, especially using words with closed syllables. In the Bloomfield-Barnhart *Let's Read,* for example, are samples of atrocities in the name of spelling patterns that surpass the often-cited inaneness and hodge-podge approach to the development of word perception skills!

> Nan can fan Dan.
> A cat can tag a rat.
> Ten slim men can sit in a bus.
> Dick's cat ran away.
> Dad will meet the train at Green Bay.
> Which way did the cat stray?

In the above excerpts of nonsense, there is no real message to be decoded. These excerpts cause one to recall these old tongue twisters:

> Peter Piper picked a peck of pickled peppers.
> She sells sea shells on the sea shore.

In his review of *Let's Read,* Henry Lee Smith commented:

"Some of the objections that will be made to the book will not be unfounded. The work seems to be only an enlarged and slightly altered version of the original Bloomfield materials of 1937-42. Certainly little of significance seems to have been added since 1949, the year of Bloomfield's death. The tragedy is that twenty years ago these materials were not understood and appreciated, published, and thoroughly tested so that the necessary changes of emphasis and the essential improvements could have been made." Language, XXXIX, No. 1, Jan.-Mar. 1963, p. 67)

This overemphasis on spelling patterns, of course, could produce only nonsense, word-by-word reading. The products were proof that language rhythm is violated when the author "goes all out" on the use of closed-syllable words; i.e., words ending in consonants, as *did, pick.* Worse still, this approach was based on the illogical notion: Reading is simply the process of decoding writing into speech--and to heck with decoding the message (if there is any). One more chapter on how reading cripples are created was added to the sad history of word perception.

Later, Carl Lefevre published *Linguistics and the Teaching of Reading,* McGraw-Hill Book Co., 1964. Probably his most significant contribution to "the" linguistic approach to beginning reading is summarized in this statement:

"Intonation alone accounts for most of the rhythmic grouping and clustering of sounds that characterize native American speech." (p. 167) fie further emphasized four signalling systems of language: (1) intonation, (2) function words, (3) structure words, (4) word form changes.

5. Rebus
In the 1940's, the idea of using pictures inserted within the sentence for a word was re-introduced. For example, the word *horse* or *bee* would be represented by a picture, (substituted for it). While this technique had some merit, it never did receive wide or even limited acclaim.

First, only content words may be pictured, as *boy, girl, man, box, dog.* Function words – e.g. *the,* of, *when, and* – get their meaning from language structure. The good Lord never made an *and;* no one has ever seen one. The word *and* merely connects two ideas; it is a language device, in one sense.

Second, content words *tend* to be higher level abstractions, but few people are aware of this fact. A six-year-old raised by a dog fancier will think of a specific *boxer, collie, dachshund,* or whatever is pictured. In fact, he may think of his poodle *Suzette* if this type of dog is pictured in the sentence. Or, he may associate the word poodle with the pictured word. Because dog cannot be pictured, only one kind of a dog can be visualized, producing, perhaps, the responses *Suzette, poodle, puppy*, or *dog*. That is, the word associated with the picture may represent different levels of abstraction, depending upon the child's experience.

6. Capital Versus Small Letters
Ultimately, the learner must be able to respond to capital and lower-case (small) letters used in printing, manuscript writing, and cursive writing. Of course, using these different forms for a letter can stagger the beginner. For printing purposes, three proposals have been made:
a. Use of only capital letters (Charles Fries, p. 191)
b. Use of only lower-case letters
c. Use of lower-case letter forms, with an enlarged lower-case letter as a substitute for capital letters to signal the beginning of a sentence, names, etc. (Pitman, Sir James, and John St. John. *Alphabets and Reading*. London: Sir Isaac Pitman & Sons, Ltd. 1969, p. 122-3).

Beginning Reading: Capital Letters
ONE OF THE PROPOSALS FOR REDUCING THE HAZARDS FOR BEGINNERS IS THE EXCLUSIVE USE OF "UNADORNED" CAPITAL LETTERS USE OF THESE SIMPLE-LINE CAPITAL LETTERS ELIMINATES THEIR CONFUSION WITH LOWER CASE OR SMALL LETTERS WHICH ARE NOT LOOK-ALIKES, AS G-g, H-h, E-e, F-f, T-t, I-i. THERE MAY BE SOME ADVANTAGE FOR THE LOOK-ALIKES, AS C-c, O-o, S-s.

ADVOCATES OF ALL CAPITALS REASON THAT TELEGRAMS FOR DELIVERY HAVE FOR YEARS BEEN TYPED IN CAPITAL LETTERS. BUT THIS ARGUMENT LOSES SOME OF ITS VALIDITY BECAUSE TELEGRAMS USUALLY ARE READ BY MATURE READERS WHILE THE THRUST OF THE DISCUSSION IS HELP FOR *BEGINNERS.* THIS IS SOMEWHAT ANALOGOUS TO COMPARING A CALF WITH A COW AND A COLT WITH A HORSE.

SOME SCIENTIFIC EVIDENCE DOES NOT SUPPORT THIS USE OF ALL CAPITALS. FIRST. THERE ARE GREATER DIFFERENCES IN THE SHAPES OF SMALL LETTERS THAN THERE ARE OF CAPITAL LETTERS. THESE DIFFERENCES AID DISCRIMINATION AND WORD RECOGNITION. SECOND. MATURE READERS READ MATERIAL PRINTED IN SMALL LETTERS FASTER THAN MATERIAL PRINTED IN CAPITAL LETTERS. UNFORTUNATELY, THERE IS VERY LITTLE, IF ANY SCIENTIFIC EVIDENCE OF THE ALVANTAGES OF ALL-CAPITALS OVER ALL-SMALL LETTERS FOR BEGINNERS.

Beginning Reading: Small (lower-case) Letters
advocates of printing reading materials in "lower case," or small, letters have been somewhat successful. more books for beginners have been printed in small letters than in capital letters. in some materials, the small letters have been "blown up," or enlarged, to serve as capital letters for names and the beginning of sentences. this appears to be a reasonable compromise.

theoretically, small letters differing more in distinguishing characteristics should be more easily discriminated than capital letters. furthermore, why should a beginner in reading have to deal with several allographs (e.g. A, a, (*A, a*)? but there is no scientific proof that inconsistencies in letter forms – in printing or handwriting – is a major cause of reading failures.

Enlarged small letters
Perhaps Pitman has a practical resolution to the problem of a confusing number of representations of letters. He simply used lower case for all printing purposes, with one exception. For the traditional capital letters he merely uses an enlarged lower-case form. This solution appears to be a logical one.

7. Alphabets to Predict Pronunciation
Classroom teachers long ago discovered the senseless jargon about "sight methods," the serious limitation of a phonics approach to irregularly spelled words, the limitations of respelling words (e.g. was (wuz)) in terms of previously learned spelling patterns, the paucity of intonation contours and nonsense "content" of linguistic approaches, and the intriguing but bland word-rebus mixture. Hence, there *must* be more productive answers to word perception – to the processing of graphic signals on the printed page.

The English writing system includes:
a. Alphabet to represent segmental phonemes.
b. Punctuation to partially represent intonation contours.
c. Capital letters to indicate sentence beginnings and proper names and so on; contrasting lower-case (small) letters.

One of these "promising" probabilities is the use of a special orthographic system (spelling, morphemic endings as z in boys, etc.) for beginners in reading. Then there is the somewhat remote possibility of an all-out spelling reform, which has been advocated and discussed for centuries.

Many people, even radio and television personalities, use spelling pronunciations because they are mislead by "silent" letters and other spelling idiosyncrasies. For example, often is pronounced /'of-tən/, which is an alternate pronunciation listed in the dictionary rather than the more frequently used /'of-ən/. Consider also solder /'sädər /, *soften* /sof-ən/, *listen* /'lis-ən/, *palm* /'päm/, whistle /'hwis-əl /.

Letters and their Referents
In a discussion of revised alphabets, two aspects of language need consideration:

First, the REFERENTS for letters or combination of letters are likely to be phonemes, as the referents for *d, ir, t* in *dirt* are /'dərt/. But not one of the phonemes of English is represented by a single spelling.

Second, the referents for '*s* in *girl's* or the *s* in *girls* is the same: /'gərlz,/. But the *morphemic* referents are different, indeed.

The ampersand &, standing for the word *and*, has a morphemic referent and arbitrarily is assigned no sound. It is also called an *ideogram*. (Gleason, Jr., H.A., *An Introduction to Descriptive Linguistics*. New York: Henry Molt and Co., 1955, pp. 303-4.)

Another example of the dual role of spellings – the representation of phonemes and morphemes – is in the spelling of homophones. The words *to, too, two* are examples of homophones – of spellings that represent the same sounds but signify different meanings. Other examples *site-cite-sight, hole-whole, lead/*led/-led*, pear-pare-pair, flee-flea, herd-heard, knot-not, no-know, piece-peace*, etc. Of course, these morphemic differences are not represented in speech. The question may be raised: Why are homophonic spellings used in writing?

Bloomfield answers this question of homonyms:

> "It is wrong to suppose that writing would be unintelligible if homonyms . . . were spelled alike; writing which reproduces the phonemes of speech is as intelligible as speech." (p. 502)

Orthography as a science paralleling linguistics has been much neglected. True, there are many spelling reform zealots, but they, too, have made contributions to spelling reform and to public awareness of a need for possible alternatives.

Orthography is the study of a system of writing and has more than the spelling dimension. But zealots are likely to provide simplistic answers to profound questions For example, discussions may be punctured with absolutes *the* ten vowels, *the* forty-three phonemes, *the* use of digraphs (e.g., *th* in *thin* or *them),* the use of an augmented alphabet to provide necessary letters beyond the 26 letters of our Roman alphabet, the use of unusual combinations (sometimes strange) of letters to represent speech sounds, and so on.

Homographs
Adding to word-perception confusions are the words spelled alike but "differing in derivation, meaning or pronunciation" *read* /'rēd/ or /'red/, *lead* /'lēd/ or /'led/, *row* /'rō/ or /'rau/, *wound* /'wünd/ or /'wound/. Hence, homo meaning "same" and graph meaning "writing."

i.t.a.

The introduction of i.t.a. has suffered from unfortunate publicity by zealots who were quick to "jump on a new bandwagon." One writer hailed the new medium as "instant reading." An educator claimed, in a national magazine, that the new medium eliminated remedial (probably confused with corrective) reading. Another opined that i.t.a. made retardation a thing of the past. Still another: "COMPLETE phonetic spelling." Then others: "i.t.a. is the answer for slow learners;" "has made possible a new definition of literacy;" "teachers agree that i.t.a. is better." When objective evaluations of i.t.a., especially by critics who were quick on the flaw, began to appear, the jubilance of the zealots and unscientific "innovators" of the 1960's subsided like the sound of an old-fashioned phonograph losing its speed i.t.a. is far from dead, however. This medium has many advantages as well as some disadvantages.

i.t.a.
An Initial Teaching Alphabet (i.t.a.) formerly known as the Augmented Roman Alphabet was designed by Sir James Pitman who profited by his grandfather's, Isaac Pitman, frustrating experiences as a pioneer in spelling reform and its use in initial teaching. As the name implies, i.t.a. was designed as a MEDIUM (not a method) for beginners in reading.
Some of the special features of i.t.a. include:
1. Use of ligatured characters (e.g., þ in þin) rather than digraphs (e.g., *th* for the voiced sound in *them* and unvoiced sound in *thin*).
2. Use of *reversed* characters as single symbols (e.g., z in zω and ƨ in aƨ) and as parts of ligatured characters (e.g., þ in þick and ſh in ſhem).
3. Use of æ for the long sound of the vowel, as in *name* as næm.
4. Introduction of 20 new characters:
a. Consonants þ, þ, ſh, ſh, ŋ, ʒ, ſ, ƨ, ᴡh
b. Vowels æ, ɛ, iɛ, œ, uɛ, aʊ, ω, ω̄, aʊ, ɔi, ɑ

þis iƨ a sampl ov i.t.a. rietiŋ. nœt sum nue letters ar introduest tω augment þe 26 letters ov þe rœman alfabet.

Two major problems exist. First, there is need for EXPERIMENTAL research to identify flaws and to compare it with other initial teaching medium proposals; e.g. with World English Spelling, i.t.m. In the opinion of some scholars, almost any reform i.t.m. should prove superior to traditional orthography (T.O.). To date, i.t.a. has been compared only to Edward Fry's Diacritical Marking System. (Fry, Edward. "i.t.a.: A Look at the Research Data," *Education,* LXXXVII, No. 9, (May 1967), pp. 549-53.

Second, there is a need to make EXPERIMENTAL studies of the discriminability of characters (letters), of new symbols for sounds, and of no-new-alphabet symbols for sounds;
e.g. th-th , or th and ?
[The first joined th has t with forward going ligature. The second joined th has t with back going ligature.]

Consider these examples of i.t.a.:

Word	Dictionary Respelling	i.t.a.
alone	/ə-'lōn/	alœn
baker	/'bā-kər/	bæker
blossom	/'bläs-əm/	blossom
cabinet	/'kab-ə-n ət/	cabinet
carrot	/'kar-ət/	carrot
elephant	/'el-ə-fənt/	elefant
furnace	/'fər-nəs/	furnæs
temple	/'tem-pəl/	templ

Third, one of the features of most spelling reform proposals, especially for beginners in reading, is the primary concern with stressed syllables to the neglect of the weak stress, or unstressed, syllables. But when the chips are down, perhaps the emphasis on stressed syllables is a key to word perception.

In summary, Isaac Pitman's phonology, Benn Pitman's experiments, and Sir James Pitman have made significant contributions to both spelling reform and reading instruction.

First, an opening wedge has been made to spelling reform via the introduction of an initial teaching alphabet. Second, i.t.a. "employs lower-case (small) letters only, capitalization being achieved merely by making them larger." (Pitman, Sir James and John St. John. *Alphabets and Reading.* London: Sir Isaac Pitman & Sons, Ltd., 1969, p. 122). An obvious (only to Sir James Pitman!) solution to the learning of capital and lower-case letters

(e.g. b- b for B-b,   t – t for T-t)

can be adopted for all reading materials NOW and with a minimum of expense and opposition. (Like the two Indians on a mountain top watching another Indian on another mountain top sending up smoke signals. One Indian said to the other, "I wish I had said that!")

Third, i.t.a. has demonstrated the use of symbols to *augment* the traditional Roman alphabet and, therefore, has taken one approach to a truly phonemic alphabet. (There are other approaches. See below.)

Fourth, i.t.a. has demonstrated one approach to achieving compatibility between a phonemic alphabet and our traditional spellings, supposedly easing the transfer from i.t.a. to T.O. At the same time, the rules for spelling have been simplified.

Fifth, i.t.a. increases the value of phonics as one method in the teaching of word perception. While a child may be thrown for a loss by applying analogical reasoning to the vowel sound represented by *o* in *home-bold,* he can transfer from hœm to bœld. Furthermore, the sound /ō/ is consistently spelled as in

show - ʃhœ, toe - tœ, no - nœ, though - thœ, coal - cœl, sew - sœ, owe - œ.

Sixth, i.t.a. is undoubtedly superior to T.O. because of its consistency. Furthermore, it offers an opportunity to experimentally validate other approaches to an initial teaching medium. It has set the stage for thorough, ongoing experimental studies of one approach to the reduction of the orthographic burden for beginners in reading.

Seventh, i.t.a. typewriters are available. For example, the I.B.M. "Selectric" typewriter has "custom elements" (spheres with type) which can be exchanged from T.O. to in seconds.

WES, i.t.m.

The Simpler Spelling Association (U.S.A.), antecedent of the Phonemic Spelling Council, has developed over a long period of years a revised spelling called World English Spelling. This revision was achieved via classic studies by Dr. Godfrey Dewey, Executive Secretary of the S.S.A. and plenary sessions of S.S.A. and The Simplified Spelling Society (Great Britain), including scholars from many countries.

More recently, a WES, i.t.m. has been developed for use with beginners in reading only. But Dr. Godfrey Dewey emphasizes that WES, i.t.m. is not generally a spelling reform:

> To teach children to read effectively is increasingly being recognized as the paramount problem of American education. In this effort it has long been realized that the complex irregularities of our traditional orthography (T.O.) are a chief obstacle. The simple and obvious way to remove this handicap would be to reform our English spelling, but that long-sought goal still lies one or two generations in the future. There is, however, an immediately available alternative which minimizes the impact of our spelling difficulties – a phonemic notation to be used for the first teaching of reading and writing, to be followed by a complete transition to reading and writing English in its traditional form. Such an initial teaching medium (i.t.m.) is not spelling reform but an educational tool, to be judged strictly on its merits in producing better results more quickly. (Godfrey Dewey. *World English Spelling (WES) for Better Reading*. Simpler Spelling Assoc., 1968, Lake Placid Club, N.Y. 12946, p. 1)

Dr. Dewey continues with a brief description of WES i.t.m.:

WES, in the modified form here presented, assigns the same values to the 24 Roman alphabet letters when written singly, but supplies the remaining phonemic symbols required by standardized combinations of the Roman letters (usually familiar digraphs) instead of new characters, and makes substantially the same concessions from strictly phonemic writing made in i.t.a. The result is, in effect, a Roman alphabet paraphrase of i.t.a., keeping strictly within the resources of the universally available Roman alphabet. (Godfrey Dewey. *World English Spelling (WES) for Better Reading.* Simpler Spelling Assoc., 1968, Lake Placid Club, N.Y. 12946, p. 1 and 8.)

Selected items can be used to illustrate the close relationship between WES, i.t.m. and i.t.a. This list gives a good comparison of both of these with the dictionary respellings. The reader should notice the absence of diacritical markings on WES and i.t.a. Such markings interfere with the transition to T.O. and are difficult to write and type.

Dr. Dewey's point of view and scholarship is reflected in these publications:

Dewey, Godfrey. *Relativ Frequency of English Speech Sounds.* Cambridge: Harvard Univ. Press, 1923.
- *English Spelling: Roadblock to Reading.* New York: Teachers College Press, Columbia Univ. 1971.
- *Relative Frequency of English Spellings.* New York: Teachers College Press, Columbia Univ. 1970.
- *i. t. a.: Not Spelling Reform, but Child and Parent of Spelling Reform.* New York: The i.t.a. Foundation at Hofstra Univ. 1968.

Word	Dictionary Respelling	WES i.t.m.	i.t.a.
at	/ət, at/	at	at
age	/'āj/	aej	æj
air	/'aər/	aer	ær
law	/'lȯ/	lau	lɑu
church	/'chərch/	church	church
ice	/'īs/	ies	ies
thing	/'thing/	thing	thiŋ
zoo	/'zü/	zoo	zω
was	/'wəz/	woz	woʒ
low	/'lō/	loe	lœ
shy	/'shī/	shie	ʃhie
thin	/'thin/	thin	thin
this	/this/	this	ᴛhis
foot	/'fu̇t/	fuut	fωt
moon	/'mün/	moon	mωn
few	/'fyü/	fue	fue

this iz a sampl ov w.e.s., i.t.m. rieting. noet that noe nue letterz ar introduest and that thaer ar very fue spelling roolz to lurn.

The i.t.m. version of WES has several advantages:
1. It "employs 24 of the 26 letters of the universally understood Roman alphabet." (Dewey, *World English Spelling (WES) Dictionary,* Phonemic Spelling Council, Univ. of Miami, P.O.Box 8065, Coral Gables, F1. 33124, p. 6)
2. A standard typewriter may be used.
3. Digraphs rather than ligatured characters are employed, but this is one hypothesis to be explored via experimental research.
4. The common spellings for speech sounds (phonemes) are based on the extensive researches of Dr. Godfrey Dewey, reported herein.
5. WES spellings have been simplified for the i.t.m. version; e.g. *th is* used for both the voiceless sound in *think* and the voiced sound in *there.*
6. A dictionary, *World English Spelling (WES) Dictionary,* lists the few guidelines, spelling rules, and the spelling of about 3,600 commonly used words, as is done for i.t.a.
7. The spellings are highly compatible with T.O., as is true of i.t.a.

8. The names of the letters usually recorded in standard dictionaries are retained and respelled in WES, i.t.m.; e.g., the name of the letter *b* is *bee* not *buh.* (This procedure minimizes the probabilities of a teacher telling the child that the first letter of *bat is buh--a* confusing absurdity of first rank.)

9. The need for the schwa (c) sound in unstressed syllables is solved by retaining "any single vowel letter of T.O., or, when that might be misleading, write /e/." (*WES Dictionary,* p. 24) For example:

Word	Dictionary Respelling	WES, i.t.m.
belief	/b -'lēf/	beleef
quiet	/'kwi- t/	kwie.et
common	/'kam- n/	common

10. Syllable-by-syllable reading (i.e., the stressing of all syllables observed in some classrooms) is reduced by respelling certain unstressed syllables, as in *captain-capten, stable-stabll, situation-situeashon, probable-probabl.*

11. To avoid "clumsy" spellings, a redundant spelling *ue is* used for the /yü/ glide, as in i.t.a. (see above). For example, the letter *y* as in *yet* and the *oo* as in *moon* are available, but *few is* simply spelled *fue* rather than *fyoo.*

12. Diacritical markings are obviated by employing digraphs, as *sh* in *sure-shoor, sugar-shuugar, ng* in *finger-fingger,* versus *singer-singer.*

13. Lower-case letters are used, as in i.t.a., so that the child will not have to learn different letters (graphic shapes) for F-f, G-g, and so on.

14. Spellings with zero or almost no signals (predictability) of sounds are significantly reduced as roadblocks to reading; e.g., *one-wun, once-wuns, you-yoo, eight-aet, does-dux.*

8. Eclectic Approach

An eclectic approach by definition requires the selection of methods and materials to meet the needs of one or more learners. For example, a few children appear to profit from usual visual-auditory-kinaesthetic tactile techniques for word learning, because they need help via both phonic skills and motor skills (Betts, Emmett A. *Foundations of Reading Instruction.* New York: American Book Company, 1954, p. 381-3).

On the other hand, there are those who use the term "eclectic approach" as a cop-out. "Boobus Americanas" is what H. L. Menken called them. These are the people who claim to teach phonics in beginning reading, *sans* knowledge of phonemics, orthography, phonic countdowns, and irregular spelling hazzards. These, too, are those who misuse the V-A-K-T technique by having the pupil say each letter (as *bee* or *buh* for *b)* rather than the syllable or a pronounceable part (e.g., *ba, a,* or *at* of *bat)* as he traces the word with his forefinger.

Then, too, these are the people who dismissed linguistics with the abandon of a tyro by saying, "Linguistics! This is a new branch of a dismal science. Don't let the linguists take over our field because there is no relationship between linguistics and reading." To these copouts an "eclectic" approach to reading is a sine qua non. At best, this illusion is rhetorical pedagogy.

9. Other Proposals

In the 1974 edition of *Orthographies,* published by the Phonemic Spelling Council, there are examples of 53 proposals – some "far out" and others, possibilities for an initial teaching medium. Selected proposals will be reviewed in forthcoming publications of the Phonemic Spelling Council.

Prologue to Progress

1. Phonics is one facet of word perception in the motivation-perception-cognition triad.

2. Since the pupil has only one mind, he cannot DIVIDE his attention between decoding writing and decoding the message. That is, the pupil's reading processes embrace automatic perceptual-cognitive processing of graphic signals.

3. Because the end is inherent in the means, word-perception skills are developed for AUTOMATIC use in achieving comprehension.

4. A guided directed reading-study activity is effective to the degree that the pupil in a directed, individualized or group, reading study activity is operating at his INSTRUCTIONAL level.

5. When the pupil is reading "on his own," the development of skills and versatility in adjusting rate and depth of reading to his purpose is achieved when he is reading at his INDEPENDENT reading level or below.

6. Memorization of sight words is not a "method."
7. Learning phonic skills in beginning reading is effective to the degree that spellings consistently represent speech sounds. But the signals of both syllable stress and phase stress appear to be essential to rhythmical reading reflected in comprehension of the message. (To a degree, inflated concepts of phonics appear to be a modern form of the ancient belief in magic. Those who entertain these notions have a low "reality quotient.")

8. Respelling words in terms of learned patterns (e.g., sight words, *was* (wuz), *is* (iz), *one* (wun) may be used as self-help aids for the pupil. But sooner rather than later, gifted and even average pupils may ask embarrassing questions about why *one, eye, could,* and so on are spelled as they are.

9. Overemphasis on spelling patterns (regularly spelled words, as *hide- ride),* by some linguists who dared to dive into the deep swimming holes of reading instruction without being able to swim, violated three basic premises:
    a. The linguists' emphasis on intonation as a keystone of grammar.
    b. The educators' notion that "intonation-grammar" is a keystone to comprehension.
    c. The psycholinguists' concept that reading requires the simultaneous processes of decoding the writing and decoding the message (the semantic and pragmatic as well as the syntactic dimensions).
(Note: Statement 9, above, poses a semantic problem itself, because not all linguists, educators, and psycholinguists have tunnel vision so far as reading instruction is concerned.)

10. At first blush, the use of a rebus (a picture) to clue the beginner to a word appears to be a pragmatic approach to beginning reading. But this approach breaks down at the semantic (meaning) level, especially when levels of abstraction are understood. For example, a *pear* may be pictured but the word *pear* represents all kinds, shapes, and colors, therefore cannot be pictured. The word *fruit* omits a multitude of differences among *apples, peaches, pears,* etc. and limits the concept to generalized likenesses. Of course, the word *food,* as a higher level of abstraction, gives no clues to pears, vegetables, meat, bread, ice creams, and so on. How the pupil interprets a rebus depends on the concepts and attitudes he brings to it.

11. The use of enlarged lower-case (small letters) for capital letters is a boon for all beginners in reading. Why should the beginner have to learn two forms (grapheme shapes) for each letter (e.g., T-t, E-e)? He doesn't if tradition can be waived and common sense substituted for it.

12. A revision of orthographic devices for signalling speech sounds (degrees of syllable stress and phrase stress) – an alphabetic approach – have been considered by pragmatic tinkerers for centuries. But nostalgia (the old oaken bucket delusion in which the vine covered well is recalled rather than the calloused hands caused by the rough rope), aversion to change, a lack of understanding regarding the handicap traditional English spellings imposed on the beginner in reading whether a child or a speaker of a foreign language, opposition by scholars, in linguistics and cognate areas, who view an initial learning medium (an i.t.a., i.t.m., i.l.m., or i.l.a.)from a morphological point of view as a general spelling reform – these and other factors confuse the public and confound the sincere researcher in orthography.

At this point in the history of reading instruction, an initial teaching medium (alphabet) deserves the increasing interest it is receiving. But EXPERIMENTAL research is urgently needed rather than *opinions* by experts and others who expatiate on the necessity of unravelling the complex problems in regard to valid characteristics of graphemes (e.g., the *b-d-p* confusers for beginners) and the nature of the perceptual and cognitive processing of graphic signals (letters, punctuation, etc.) at different levels of the complexities of reading processes.

When an interdisciplinary approach is made to the EXPERIMENTAL study of traditional orthography (T.O.), premises as well as hypotheses are severely critiqued before case-study or experimental research is initiated. For example, the NEED for a phonemic based beginning reading orthography is too often an unquestioned premise. Then, too, the hypotheses regarding a no-new-letter alphabet versus an augmented alphabet require scientific inquiry. So does the hypothesis regarding the morphophonemic basis of an i.t.m.

Case studies in depth made by a sophisticated team of observers may reveal many insights to tentatively validate assumptions and premises. In fact, carefully planned case studies have yielded some of the best evidence on learning.

This type of research program is an enormous undertaking over a protracted period of time. Certainly substantial funds are required, but money is not the only answer, as attested by the attempts of Congress and the administration who multiply rather than solve problems by merely making enormous appropriations of the tax-payer's money. One of the prerequisites of research is honest cerebral deliberations by scholars, from cognate disciplines, who can and will come to close grips with the complex of problems under the guidance of a pragmatic, energetic, and highly intelligent leader who has a plan of action. In short, disciplined minds of *productive* scholars are enlisted before research zealots start dashing around the country to dispense millions of dollars to political units who sometimes have leadership unqualified to maintain the status quo.

But the over-riding purpose is to gain some basic understanding of the reading process(es) and, at the same time, produce a modus *operandi* for the immediate removal of major roadblocks to learning and a *modus vivendi* for achieving general acceptance of validated approaches to the escalation of reading instruction.

In Conclusion

A certain percentage of the commonest words have spellings which complicate the perceptual processing of them. That is, they vary from *one* /'wən/, *you* /'yü/ and *of* /'ov/, *weigh* /'wā/ and *through* /'thrü/ to *done* /'dən/ and *come* /'kām/. That phonics as THE approach to word perception in beginning cannot be held sacrosanct and is being better understood as educators glean scholarship from linguistics, orthography, psycholinguistics, child development, and Cognate disciplines.
To escalate reading instruction, there is need to:

1. Differentiate instruction in terms of the learner's linguistic, perceptual, and cognitive achievement; motivations; cultural reinforcement and conditions; emotional deficits (e.g., attention span); and so on.

2. Up-date English spellings to reflect speech patterns and reduce the number and complexity of spelling rules, especially for beginners, e.g., increase opportunities for analogic, or spelling pattern, learning and decrease probability learning. (There probably will always be a need for phonics as one facet of word perception when a phonemic-based alphabet is employed.)

3. Methods of capturing and reinforcing the pupil's motivation to *learn to read* and *to read,* of developing automatic word-perception skills, and of promoting comprehension will reflect improved differentiation of instruction and the effects of a revised orthography.

In short, administration PLANS for differentiation of instruction in the classroom, METHODOLOGY, and a MEDIUM, or writing system, more nearly consistent with speech are imperatives for improving reading instruction.

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(The entire list of 189 references is available on request to the Reading Research Lab, Univ. of Miami, Coral Gables, Fla.

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4. Experimental Analysis of Reading, Spelling, and Printing in the First Grade, by Edmund B. Coleman*

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Experimental investigations of written instruction study the effect that a characteristic of prose exerts upon some response such as learning or understanding. The purpose of this paper is to advocate performing a systematic array of such studies. Much of education can be most precisely defined as the learning of prose. The student reads prose and learns it or learns from it. We can develop a technology for this portion of education; we can develop a technology of written instruction if we collect a systematic array of the S-R (Stimulus-Response) functions that relate the stimulus dimensions of prose to measures of learning and understanding.

If one is interested in developing a technology of written instruction, his most efficient strategy for charting the unknowns of verbal behavior might be to slight explanation for the time being and concentrate upon *quantitative* S-R description. (Here, stimulus and response are being used as analytical terms useful in designing experiments; they have no explanatory connotations whatsoever.) Since linguistics has provided a grid of stimulus dimensions important to verbal behavior, a systematic way to begin would be to select a few such S-dimensions distributed at more or less equal steps across the grid and relate them to measures of behavior. Then further experiments would relate intermediate dimensions to R-measures. Once the grid is dotted with systematically located S-R functions, the gaps can be bridged by interpolation. Then we can extend the descriptive system to the other subgoals of prediction, explanation, and control. In the interim, the functions can be used as the basis for a technology of written instruction.

Obviously, an investigator following this research strategy cannot collect all the S-R functions, only a tiny sample of strategically located ones. First he must outline roughly the set that will be most useful in developing a technology of written instruction. Then he must collect a sprinkling of functions systematically distributed throughout the set. If these functions are properly located, the gaps can be bridged by interpolation.

One way to spot dimensions at more or less equal steps across the grid is to select them from the steps involved in understanding prose. At the present preliminary stage of data collection, a gross description is all that is needed: e.g., (a) *S* recognizes the individual letters and packages them into words; (b) he packages the words into simple sentences; (c) he packages these simple sentences into more complex clauses and sentences; (d) he packages these into paragraphs. These steps to understanding graduate our grid in terms general enough to include such S-dimensions as legibility and typography.

This rather gross description of understanding will serve to step off the grid in sufficient detail for preliminary data collection. Elaborations will be required for refined quantification, e.g., as data accumulate, the grid must be graduated in finer detail by inserting steps such as ones concerned with syllables, morphemes, and tagmemes.* (*the smallest unit of grammatical form, a word). Also several of the steps must be relabled as processes of analysis, particularly if *E* is interested in the behavior of a reader or listener. Also, different responses are of primary importance at different parts of the grid. At the beginning (at step *a)* perceptual responses such as recognition are important. Then word-for-word memorization becomes important. But by step *b*, we are already concerned with true understanding and must consider the relation of the prose to the universe it describes. Now everyone is really interested in this final response, understanding, and this brings us to the first of several methodological requirements we must impose upon readability experiments if

their S-R functions are to form the basis for a technology. Let me concentrate on three of the most important methodological requirements:

1. The test instrument should measure the behavior which is our main interest, and the most interesting behavior is understanding. So we must develop *a measure for understanding,* and then relate that R-measure to recognition and rote memorization. Until these R-R relations are plotted, functions that use recognition or rote memorization will be of slight value in quantifying the sort of behavior that is of interest for a technology of written instruction – behavior such as education, training, reading, listening, and the rest. Joe Follettie will have more to say about this.

2. Also, before an S-R relation can contribute to a technology, we must be sure the stimulus described by the experimenter is truly the stimulus responded to by the learner. Ernie Rothkopf has some new data concerning the old problem of the *actual* versus the *nominal* stimulus.

3. The sample of language materials should represent the population of true interest, and experimental designs that allow us to generalize to that population should be used. There are many studies of verbal learning that could contribute to a technology of written instruction if they were repeated using a more useful sample of language materials. Coleman, in *Journal of Reading Behavior,* Vol. 5, 1973, discusses experimental designs that allow us to generalize simultaneously to several populations.

These three requirements create formidable problems indeed, but fortunately there is one area of language behavior for which at least two of them have already been largely solved--the learning of the language arts by first graders. First, the language population is well defined and small enough to be sampled exhaustively; it contains only 26 letters, some 40 phonemes, and the 300-400 most commonly used words in English. Second, the responses are fairly well defined and consist essentially of paired associate and concept formation type learning. We have a large reservoir of theory and techniques concerning both.

Furthermore, we already have a vast collection of studies that plot the effects that a number of S-dimensions exert upon the above responses. It is true that few of these studies resemble the precise mathematical functions of physics; few of these S-R functions could form the basis for a technology. Many are qualitative, not quantitative, because they were performed to make a theoretical point (e.g., studies of *m,* pronounciability, association value, etc.). Others were performed upon non-representative language populations such as nonsense syllables. Others were performed using non-representative subject populations such as college sophomores. Nevertheless, there is available a fragmented array of gross S-R functions that at least permit a crude research and development study of the learning of the language arts by first graders.

To show the massive contributions that experimental studies of readability can make to educational technology, I selected a pre-primer and then I wrote a more-readable one that was exactly matched in number of words, number of different words, number of sentences, and grammatical complexity. Then, in a tightly controlled, matched-pairs experiment, I compared the two pre-primers. I consider it self-evident that it is advantageous to make a beginning reader's pre-primer as readable as possible. We want him to learn a maximum number of words in a minimum amount of time, and we want his words to be of maximum usefulness. As far as teaching a child to read is concerned, a readable book is the ultimate teaching machine. If we teach him the basic skills and give him books that he finds readable, much of his problem is solved; he will begin reading to himself and teaching himself.

The 16 five-year olds who served as subjects in this experiment were taught to read using pre-primers having 20 different words. They learned the 20 different words in the fullest sense of the

term; they learned to recognize them on flash cards, to spell them, print them, and read stories written with them. The ease with which they learned clearly depended upon the learnability of the 20 words and the learnability of the letters within these words. In short, to write a maximally learnable pre-prime; we must select the most easily learnable sample of words and the most easily learnable sample of letters.

Since different skills will be facilitated by different characteristics of language materials, the first step in selecting a language sample that is most learnable is to make a gross analysis of the skills involved in our definition of "learning." As a first approximation, let us say the skills are reading, spelling, and printing.

A more detailed analysis is suggested by the literature of verbal learning and concept formation. Even when defined in its most mechanical sense, a child's learning to read can be analyzed into at least three subskills:

1. The child learns words by the rote paired-associate (PA) memorization of whole word-shapes (look-and-say learning), and this in turn can be analyzed into several lower-level subskills:
    a. He discriminates the 20 different word-shapes from one another.
    b. He integrates their pronunciation responses; he makes the pronunciations available in his repertoire; he can free-recall them all.
    c. He pairs the word-shape with its appropriate pronunciation response.
2. The child learns to sound out words (analysis and re-synthesis):
    a. He learns to analyze or larger sub-units (m-a-n).
    b. He pronounces these letters or a word into letters subunits (mmm-aaa-nnn).
    c. He re-integrates them into the word and pronounces it (man).
3. But before he can sound out a word, the child must learn phonics or the rote PA memorization of letter-shapes:
    a. He learns to discriminate each letter used from all others.
    b. He learns to free-recall all the letter pronunciations; he makes these sounds available in his repertoire.
    c. He pairs the letter stimulus with its appropriate pronunciation response.

A more detailed analysis of reading is possible, but this one will serve for a pilot experiment. Similar analyses were made for learning to spell and learning to print, but I will not reproduce them here since they were quite similar to the above three subtasks. Each subtask for spelling and printing was also analyzed into three sub sub-tasks analogous to the above. The major difference was in the direction of the association. Whereas in the above analysis of reading, the printed word-shapes and letter-shapes were considered the stimuli and the pronunciations were the responses, in spelling the reverse was true – the pronunciations were considered the stimuli and the responses were giving the letter in some fashion such as picking it out on the typewriter.

The above analysis gives a column of three skills and nine subskills to be taught in reading. In addition, there are two other columns--analogous ones for spelling and printing. Altogether there are 9 skills and 27 subskills. They are "skills" if we consider them from a standpoint of the teacher. From my standpoint (from the standpoint of an experimenter) they are best labled as "responses." To prepare the most easily readable pre-primer, I need to know what stimulus-dimensions (what language characteristics) affect all 27 responses. Ideally, I would like precisely calibrated S-R relations that plot each of these 27 responses as functions of the S-dimensions that most strongly affect them. These S-R functions (these readability experiments) are non-existent at present; I must guess their shape from gross, inadequate data. Let me repeat again that the purpose of the following research and development study is to suggest *the massive improvements in teaching technology we could make if we had such S-R functions.*

In actual fact, I prepared a large matrix listing the 9 skills (or responses) and 27 subskills (or subresponses). Then I listed the S-dimensions that I thought exerted the most effect on each one. However, because the S-R relations are based on crude guesses, in the interest of brevity I will collapse the 27 subskills into two more general, more abstract skills: (1) a PA, rote memorization skill in which a stimulus is paired with a response, and (2) a conceptualization skill, in which a complex stimulus is analyzed into subunits, a response is given to each subunit, and the responses are re-synthesized. Both skills and their 3 subskills are given below in capitals. Common sense suggests a long list of language characteristics that will facilitate the learning of each subskill. They are given below. The list is meant to be suggestive, not exhaustive.

1. PA, ROTE MEMORIZATION (Print to sound and sound to print).
A. THE CHILD DISCRIMINATES ALL STIMULI (words, letters, pronunciations, phonemes) from one another.
In general, this subskill is facilitated by having the stimuli differ from one another by a maximum number of dimensions. Word-shapes can be made to differ maximally by differences in their letters, by their lengths, internal pattern of angularity and roundness, contour of protrusions, internal pattern of repeated letters, and so on. Letters can be made to differ maximally from one another by height, complexity, angularity, upward or downward protrusions, and so on. Pronunciation of both letters and words differ by voicing, place of articulation, manner of articulation, volume, internal pattern of these dimensions, and so on. In the experimental pre-primer, the number of rounded and angular letters was roughly equalized, as was the number of upward-protruding, downward-protruding, and non-protruding letters. This increases the distinctiveness of word-shapes as well as letter shapes.

B. THE CHILD INTEGRATES THE RESPONSES AND MAKES THEM ALL AVAILABLE.
In general, this is mainly facilitated by pre-learned response integration, by how well he knows the response as a whole before his learning task begins. For words, it is essentially their familiarity to the children, and this can be estimated from the Rinsland list. For phonemes, the degree of pre-learned integration can be estimated from a study by Jones and Cartarette (1965) who computed their frequency of use by six-year olds. For printing letters, the degree of response-integration can be estimated from the letter's complexity. The experimental pre-primer employed only frequently used words and phonemes.

C. THE CHILD PAIRS THE STIMULUS AND RESPONSE
This pairing is facilitated by positive transfer, by the degree of pre-learned association between the two. The pre-learned association may be either immediate or mediate. For instance, if the child knows that a snake makes a sound like s-s-s, it might be easy to teach him the sound of *S* because *S* resembles a snake. The pairing of stimulus and response is depressed by negative transfer which mainly results because different responses are paired with the same stimulus. In the experimental pre-primer, negative transfer was minimized by using *no capital letters,* and by using *only regularly spelled* words. A few function words were spelled in i.t.a. (*iz, thee, mee*). These particular words were selected because their shapes permit them to be gradually faded back to traditional orthography.

Below is given the second general task with the subtasks in capitals and language dimensions that facilitate their learning given below each one. Again the list is suggestive, not exhaustive.

2. CONCEPT LEARNING (The steps below are best applied to deduction or to sounding out a word or spelling it; however, the same stimulus dimensions facilitate induction--such as the induction of phonic concepts.)
A. THE CHILD ANALYZES A COMPLEX STIMULUS (word-sounds or word-shapes) INTO SUBUNITS (phonemes or letters.)

Word-shapes are easily analyzed into the component letters, but some letters *(sh, ch,* etc.) must be paired to represent a single phoneme. The use of ligatures is the obvious answer to this problem (e.g., sh, th), Although there is little direct evidence, it also seems reasonable that word-sounds composed of continuants (*m, s, sh,* etc.) would be more analyzable than those containing stops (*p, b, t, d, k, g).* It is impossible to pronounce the stops in isolation; the child inevitably learns sounds such as *puh*. Not only are continuants analyzable and easy to pronounce in isolation, many of them enjoy a good deal of response integration in that they exist as meaningful units. The sound *s-s-s* is the one made by snakes, *m-m-m* is a sound meaning good food, *sh* means to be quiet, etc. Thus, the experimental pre-primer used short words, used no consonant clusters, and most of its consonants were continuants. It also used the i.t.a. ligature *th*?

B. THE CHILD RESPONDS TO EACH SUBUNIT.
For instance, he pronounces the isolated sounds of the letters if he is sounding out a word, or he prints the letter representing the sound if he is printing a word. That is, his ability to make this response depends upon his having learned simple PA skills such as those of (1), namely having memorized the sound for each letter and the letter for each sound. The degree to which he has mastered this pairing largely depends upon the number of letter-sound pairings he had to master – the number within the word, and the total number of different letter-sound pairings used in the whole book. A word can contain a single letter or 15; a 20-word book can contain as few as 6 different letters or as many as 26 (actually 52 or even more when capitals and ligatures such as *fi* are allowed). Also the number of letter-sound pairings is increased in a particularly harmful way when spelling irregularities are permitted. Clearly this subskill would also be facilitated by repeating subunits smaller than words, e.g., using rhymes in the 20 words such as *an, nan, man, ran.* Therefore, the experimental pre-primer used only 11 letters, used no capitals, and used only regularly spelled words. It spelled a few – a very few – function words in an i.t.a.*
*See SPB, Vol. 7, No. 1, Spring 1967, p. 10-15.

C. THE CHILD RE-INTEGRATES THE RESPONSES INTO A SINGLE UNIT.
Clearly the letters or sounds of short words are more easily integrated into the appropriate whole units than long words. Clearly some consonant-vowel sequences (CVC such as *maf*) are more integratable than others (CCC such as *scr*). Although there is little evidence, it seems reasonable to guess that vowel-continuent sequences (*am*) might be easier to integrate than stop-vowel sequences (*ti*). Thus, the experimental pre-primer used short words, no consonant clusters, and most of the consonants were continuants. In order to get words having a high frequency of usage, two stops (*t, d)* had to be used. However, they were used only in word-final position.

It is worth emphasizing yet another time that the above lists are suggestive, not exhaustive. The subskills could be analyzed in finer detail, and additional language characteristics could be added that would facilitate learning subskills. For instance, the discriminability of a set of stimuli from one another is facilitated if there are no irrelevant dimensions--dimensions that are not useful in discriminating. Furthermore, no mention was made of higher-order language habits such as integrating words into phrases and sentences, nor the effects of syntactic complexity, nor the effects of marking sentences into phrases by spaces or punctuation, or arrangements into separate lines.

The important principle is that certain characteristics of words and letters make some of them easier to read, others easier to spell, others easier to print, pronounce, etc. The effects of many of these language characteristics have already been measured, but usually in a gross way upon language samples and learner samples that do not represent the population which is our particular interest. It would be a simple matter to replicate the studies on relevant populations and plot precise functions showing the effects they exert on the relevant language skills.

Once we have such precisely calibrated functions, we could select the language materials that are most easily readable, the ones that are most spellable, the ones that are most printable, etc. Furthermore, we could combine the characteristics in ratios that optimize the learning of different combinations of the language skills. Clearly we do not have such quantitative functions at present; we must rely largely on guesses to select the set of words and letters that will optimize a combination of reading, spelling, and printing.

One thing is clear, however, even from the gross analysis and rough guesses presented above; different language skills are optimally facilitated by different language characteristics. Some words are easier to learn by PA memorization of word-shapes (look-and-say) and an entirely different set is easier to spell and read by learning phonic concepts.

In the specific project I have been outlining (developing the most easily learnable pre-primer that uses 20 words) it would be ridiculously easy for an experimenter to "prove" that some extreme teaching system that emphasizes one skill is superior to all others. He simply selects a test that emphasizes the skill his system emphasized and/or selects a sample of words that optimally facilitates his skill. For instance, to optimally facilitate rote, PA memorization (look-and-say), select the 20 most frequent words from the Rinsland list. These 20 words are easy to learn by rote, PA memorization because their response integration is high; they are hard to learn to spell or to sound out by phonics because they are spelled irregularly. On the other hand, to optimally facilitate the learning of spelling and phonics, select 20 regularly spelled words generated by a minimum of letters. They would be easy to spell or to sound out because only five or six phonic generalizations must be learned; they would be difficult to learn by PA memorization because they are so similar that the discrimination of the 20 separate stimuli would be extremely difficult.

But we do not want a set of 20 words that optimally facilitates learning of one skill to the detriment of the others. For in spite of the number of extreme teaching methods that have presented statistical proof of being THE answer, classroom teachers have shown a perverse reluctance to abandon an eclectic system. We must select 20 words that optimally facilitate a combination of all skills under 1 and 2 above.

Clearly the state of our present knowledge as summarized in 1 and 2 above is inadequate to select the proper 20 words. We must perform a series of research and development studies and gradually approximate the optimal set of 20 words. So far I have performed 3 such studies. I selected one set of 20 words, wrote a pre-primer using them, taught several children to read the pre-primer, and noted its deficiencies. This was repeated two more times. The study using a third pre-primer will be described in detail, but a paragraph should be devoted to each of the first two studies.

Pre-Primer 1. After two weeks of teaching several children, it was clear that the first pre-primer overemphasized phonics and spelling to the detriment of PA memorization of whole word-shapes. Its 20 words were generated from only 7 lower case letters (s, *m, l, n, ee, a, i).* From these 7 letters, I generated *see, mee, lee, al, am, ann, Sam, sal, seem, man, lass, lam, sis, miss, ill, mill, min.* Note that no capital letters were used for these words. The word I was also used as well as the i.t.a. symbol, reversed z which allows plurals and third person singular form of verbs. Since the child must learn only nine letter-sound pairs, and since the sounds are easily analyzable continuents, it might seem ridiculously easy to teach a child to read such a pre-primer. Such is not the case. It is extremely difficult for a beginner to discriminate the 20 whole word-shapes from one another; they are too similar. In the second place, these words--and any other set generated from a restricted number of letters--contain a number of relatively unfamiliar words; their degree of response integration is low. For these two reasons, the PA rote memorization of whole word-shapes was extremely difficult and the book was hard to read.   No matter how much phonics and spelling is emphasized, actual reading appears to involve a large amount of such whole-word memorization.

Pre-primer 2. By using a few more letters (*s, m, n, 1, reversed z, th, ee, a, i*) this pre-primer generated 20 words that were considerably less similar to one another and that were more commonly used. The average frequency of usage by first-graders according to the Rinsland list was 2,592 per word compared to an average of 3,432 for Houghton and Mifflin's *Tip*. The second pre-primer was compared to *Tip* in a matched-pairs experiment, and it was probably easier to learn. Certainly it was easier as far as spelling and phonics was concerned, but there is little reason to report it in detail since the data showed it could be improved considerably.

Pre-primer 3. By using additional letters including two stops (although they were used only in a word-final position) this pre-primer improved the discriminability of the 20 words from one another and further increased their familiarity. Their average Rinsland frequency for first graders was raised to 3,672. (*Tip's* is 3,432). Discriminability of both word-shapes and letter-shapes was increased by increasing the number of downward-protruding letters and angular letters. Eleven lower case letters were used (s, M,7:., t, n, d, th, ee, A, i, 1) and they generated the following 20 words: see, Mee, I, AM, SAM, Miss, sis, M Art, it, sit,. in, SAt, Ann, n An, M An, And, thee, *f1* At, bis, i; plus plurals and third person singulars.

From these words, a pre-primer was written that matched Houghton and Mifflin's *Tip* in number of different words (20), total words (620), number of sentences (188). It equalled or exceeded *Tip* in morphological and syntactic complexity. The experimental comparison of the two matched pre-primers will be described in considerable detail.

Much of the difference between the two pre-primers can be economically presented by a pair of consonant-by-vowel tables. A child could learn to spell and sound out my regularly-spelled 20 words by mastering Table 2(a 3 by 7 table). To spell and sound-out the 20 words of *Tip*, a child has to master Table 1 (a 13 by 18 table). It is important to note, however, that the two tables have only slight relevance to the memorization of whole word-shapes.

If the teaching system overemphasizes look-and-say, whole-word memorization, there isn't too much room for improvement in the 20 words of *Tip* (except for eliminating capitals and improving the legibility of the type).

Table 1
Consonant-by-vowel Table for *Tip*

Letter			e		o			a		i		ou	ay
Sound	e	e	ē	e	o	ō	u	a	aw	i	ī	oo	ā
Consonant													
t										Tip			
p										Tip			
n					not	no							
h			here		here								
r			here										
c							come						
m				me									
J		Janet						Jack					
k								Jack					
s										is			
w										with			
th										with			

f			find
d		and	find
g		go	
b		ball	
l			will play
y			you

Table 2
Consonant-by-vowel table for Regularized Pre-primer

Vowel Cons.	ee	A	i
s	see	sAt sAm Am	sis
M	Mee	MAn	Miss
z			iz
t		MAtt	it
n		nAn Ann	in
d		And	
th	thee	thAt	this

*In both pre-primers, there was also the capital I.
[Green *ee* and *th* should be joined, *z* should be reversed.]

Procedure

Eight pairs of five-year olds were matched according to their scores on the Lee-Clark Reading Readiness Test. One member of each pair was taught from my regularized pre-primer and the other was taught from Tip. Thus, the experimental design was a 2-by-8, treatment-by-pairs design.

Each child was taught individually for approximately 30 minutes each day. The teaching method was designed to require a minimum contribution from each teacher and to provide a maximum of scored responses from each child each day. From 77 to 82 responses were recorded from each child each day.

A minimum contribution was required from each teacher by extrinsically rewarding the child for each of his 80-odd responses. The child was trying to earn a toy by working for marbles. At the beginning of each subtask, he was given a handful of marbles – one for each response in that subtask. For each incorrect response, he was punished by having to give a marble back to his teacher. For each correct response, he was rewarded by being allowed to place a marble in a transparent jar. When the jar was filled, he won a toy – a toy he had picked out himself from the store.

Except for casual conversation, every response the child made was recorded letter-for-letter, word-for-word. These 80-odd responses were to the following eight tasks:

1. The child tried to recognize seven words presented individually. A word was presented for 12 seconds and if the child made no response, he was told the pronunciation of the word and a marble was taken away. After he had recognized a word correctly three times (on three separate days), that word was dropped and a new one was added.

2. He read approximately 40 words in the story (to the nearest sentence period). He started Task 2 with 20 marbles, one being taken from him for each word he read incorrectly. After finishing, he placed his remaining marbles in his transparent jar. The teacher merely pointed to each of the 40 words, and if the child made no response after 10 seconds he was told the correct pronunciation. Each omission or error was recorded above the word in the book. After recording an error, the teacher might give the child instruction in guessing from context if it seemed appropriate, e.g, "What's the boy's name here," or "What is Matt saying," or "What is Tip doing," etc.

3. From 8 letters, the child picked out the letter that made a certain sound. The 8 letters were laid out and the teacher said, for instance, "Which of these letters says m-m-m?" If the child made an error, he was corrected immediately. Then from the remaining 7 letters, he picked out the one that said another sound and so on until he had responded to 5 sounds. As might be surmised, he started task 3 with 5 marbles, and he placed one in his transparent jar each time he picked out the correct letter. If he made an error, it was recorded and a marble was taken from him. A similar method of rewarding each correct response and punishing and recording exactly each incorrect one was followed for the remaining tasks, so this will no longer be described.

4. Upon being shown a letter, the child tried to give its correct sound. After the child finished Task 3, the teacher had 5 correct letters in her hand. One by one she showed them to the child and asked for its sound. All his errors were corrected immediately. After the child pronounced a letter correctly the third time (on 3 separate days), it was dropped and another substituted.

5. The child sounded out 3 words. The teacher pointed to each letter of the word and the child gave its sound. After giving the individual sounds of all letters, he tried to pronounce the complete word After sounding out the word correctly on two different days, it was dropped and another added.

6. The child spelled each of 3 words by picking out its letters from an array of 8 letters. The teacher pronounced the word, and the child tried to pick out its letters from the array. If he omitted any or selected any wrong letters, the teacher handed him the correct ones and asked him to arrange them in the correct order. After a word was spelled correctly twice, it was dropped and another added.

7. The child tried to print each of 5 letters as the teacher pronounced its sound. Letters printed upside down or in reverse were counted correct. After a letter was printed correctly 3 times, it was dropped and another added. 8. The child tried to print 3 words as the teacher pronounced them. After a word was correctly printed twice, it was dropped.

In summary, a few points should be noted explicitly: Only the *sounds of the letters* were taught, not their names. As in programmed instruction, the tests were the teaching method. The child was asked to give some 80 responses, and each correct response was immediately rewarded. Each error was immediately corrected, and all responses were recorded. Furthermore, it should be clear that the regularized pre-primer uses a combination of the look-and-say, the basal reader, the spelling, i.t.a., and linguistic systems. Presumably, I was getting closer to the optimal percentages of the different systems by the third pre-primer, but further research and development studies could certainly improve the mixture.

As would be predicted, the child learned to read, spell, and print my 20 regularized words faster than those of *Tip*. The magnitude of the difference in favor of the regularized pre-primer was so great, however, that it seems clear that the experimental children had learned far more than was being recorded; they had mastered the underlying phonic concepts of its system Therefore, an additional test was given to see if they could use the phonic concepts to generate words they had never seen before. From common letters of the two books, 9 new words were formed: *at, add, sad, mad, sand, dim, tan, thin, did.* The children were asked to sound out (Task No. 5), spell (Task No.

6), and print (Task No. 7) each word. Three words were sounded out first, three were spelled first, and three were printed first. The results indicated that the experimental group was more successful in all these tests than the conventional group.

Discussion

Although this study greatly reduced the time a first grader needed to learn 20 words, it is most certainly not an argument for further research and development studies; it is an argument for *more basic studies.* The present study was based upon grossly inadequate data – based more upon guesses than upon precisely measured functional relations. In order to make massive improvements in the readability and teaching capacity of textbooks, we must first collect a systematic array of functions that plot the effects different language characteristics exert upon the different language skills.

Collecting the needed functional relations at the elementary level should not be overly difficult even though important problems remain to be solved before we can collect such relations at higher levels. In the first place, at the higher levels we have yet to develop an adequate response measure. That is, since language provides so many techniques for paraphrasing and transforming what one has learned, it is obvious that we are really interested in a response more complicated than word-for-word memorization; we are interested in the response usually called comprehension. We have yet to develop an adequate measure for comprehension. In the second place, the language population for adults is too vast to yield to experimental analysis.

There are fewer such problems for elementary readers. Experimental techniques are available that precisely measure the skills involved in learning and concept formation; we have a vast reservoir of techniques for measuring such skills. In addition, the language population is so small that it can be exhaustively sampled; there are only 26 letters, some 40 phonemes, and 300 or 400 words important in first grade learning.

Because the set of letters and of phonemes is so small, and because so much information already exists about these systems, their functional relations should be collected first. From studies such as those of Templin (1957), we know the order in which phonemes are first used meaningfully by children. From Jones and Carterette (1964), we know the order of frequency for the phonemes. Marion Cline is preparing to collect pertinent data on the relative hearability of the phonemes. Perhaps the most information of all concerns the relative legibility of the different graphemes.

But other information about letters and phonemes is scanty or non-existent. Little or no experimental evidence is available on one of the most important characteristics -the ease of associating the visual stimulus of the letter with its pronunciation, and surely some letters are easier to associate with their sounds than others. Surely some phonemes are easier to blend into words than others. Surely some phoneme combinations are easier to analyze into their components than others.

In general, one step in the research strategy is to analyze the stimulus into fundamental elements and measure the ease of learning various reading responses to each element. Once the letters (and letter combinations) are graduated and ordered as to difficulty, it would be possible to prepare reading materials that are far easier for the child than those currently available. Beginning texts could restrict their vocabulary to a few of the easier letters, which would probably be the continuents and vowels. Material might be written for mental retardates and very young children that use as few as three letters.

Surely it is possible to prepare books simple enough to be read by children after a minimum of formal teaching, in perhaps as little as 5 minutes. And once you give a child books simple enough to be intrinsically rewarding, you've solved much of his problem: incentive; you've given him the ultimate teaching machine; he begins reading to himself and teaching himself.

Let me hasten to add that these "books" will not be deathless literature. They will be mostly pictures or cartoons – only two or three different words – only two or three different letters. Just as the child need not learn all half-million words in his first story, he need not learn all letters. The first book might have only three letters and only two real words (see, mee). But, a gifted cartoonist can get considerable mileage – considerable interest and drama – with those two words. The story of show-off or tattle-tale coming to grief can be repeated in endless variety using *see* and *mee.* Such a book, simple as it would be, could teach two of the most basic, most fundamental concepts in reading--the concepts that the shapes represent sounds and the habit of left-right progression.

By adding only a few more letters and words, we can teach other basic notions: (a) that words can be analyzed into letters, (b) that each letter represents a sound or a group of sounds, (c) that sounds can be re-integrated into words, (d) that letters spell words, and so on. Isn't it best to enable the child to actually read, spell, and print as soon as possible? Learning by reading enjoyable books is far more pleasant than learning by memorizing long lists of words, letters, and irregularities.

Of course, the more complex books would require an additional few minutes of formal instruction. The more important point is that the formal instruction can be *distributed – interspersed* with actual reading right from the beginning. Another important point is that these 3 or 4 letters should be selected very carefully as to usefulness and ease of learning. If that all-important first book is to be maximally effective, those few letters must be the easiest ones to learn.

In brief, the rationale is to rank the letters and letter combinations according to the ease of learning, and then to restrict the beginning vocabulary to a few of the easier letters, probably the continuents and vowels.

Besides the functional relations that plot the effects exerted by letter characteristics, higher order language characteristics must be plotted. Buried within the basic literature of verbal learning are hundreds of studies of language characteristics that affect readability as it applies to first graders – pronounceability, m, length, frequency, degree of response integration, inter-item associative strength, associative structure, and stimulus similarity, to mention a few. Their relevance to improving readability may not be obvious because a theoretical psychologist usually performed the study to prove a theoretical point and his jargon obscured the everyday meaning of the variable, or because his measure was word-for-word memorization, or because the data were qualitative rather than quantitative, or because either the learner population or the language population or both was non-representative. It would be easy to repeat these experiments and remedy such deficiencies. The statement has been made that "no one questions that very young children can be taught to read, but it requires much effort and is not worthwhile." In the same way, it is difficult to teach a handicapped child. But it would *not* be difficult, and it would be worthwhile if there were reading materials simple enough for them to read independently, simple enough to be intrinsically rewarding. If the only available reading material was the *Encyclopedia Britannica,* it would be a tedious task, hardly worthwhile, to teach an average 10-year old. Each child would require an individual teacher to encourage him to read each individual word. Only the superior – and rich – would learn to read at all.

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5. Talks given at International Reading Assoc. Convention in New Orleans, May 1–4, 1974 Reported by Helen Bonnema

Many of the 300 presentations at various sessions during the four convention days included facts that are of significance for spelling reformers. Very likely the speakers were not thinking of reform at all, and expected their data to be applied only to the teaching of traditional orthography. Eight of the talks which seemed pertinent to our cause are summarized herein.

Reading in other countries

When an American visits schools in non-English speaking countries, he is impressed by the speed with which children learn to decode their languages-all of which are more consistent in sound-symbol relationships that English. At the same time, however, he is puzzled to find that in many places the educational level is lower than in the U.S.A. The reason for the discrepancy is the limited schooling, and paucity of educational materials in those lands.

The conclusion drawn by spelling reformers is that American children could progress even more rapidly than they do if their language was spelled as simply as others.

Another observation made by American visitors abroad is that English, when not the first, has become the second one practically everywhere, and that its inconsistent spelling is universally deplored.

Implications for the improvement of English orthography can be drawn from facts given in the two following talks:

1. "An observation of reading programs within selected countries around the world," by Ted M. Gloger, U. of Mass. A study of early reading and remedial programs of 12 countries in Europe, Asia, Australia, and New Zealand, included a questionnaire, teacher interviews, observations in classrooms of private, municipal, and special schools. Noted pre-school testing, prereading programs, age at which child starts having formal instruction, audiovisual facilities, standardized tests, relevance of reading material, teacher training, and influence of the structure of the language.

This study indicated that there was as wide a diversity in methodology within a country as between countries.

2. "International English," by Thomas M. Paikeday, Mississauga, Ontario, Canada.
English is spoken internationally by about 330 million people. Another 150 million use it as a second or foreign language. These people often have difficulty communicating in identical terms: e.g. potato chips means one thing in Britain and something else in the United States. Since 75% of the world's business is being conducted in one language, why not have common elements of the written and spoken styles if its dialects standardized thru a truly international dictionary and have reading programs keyed to it from the earliest stages?

Paikeday proposed a dictionary of international English designed to influence reading programs in regard to spelling, pronunciation, vocabulary, syntax, usage, etc. Such standardization would be without prejudice to the use of regional dialects.

Perplexities of Decoding

The reform of spelling will alleviate many problems encountered by young children learning to read, but it cannot overcome them all. Difficulties caused by the design of the Roman letters will remain.

Members of the Phonemic Spelling Council who favor for this generation the use of an initial teaching medium as an introduction to traditional orthography, realize that before the beginner encounters even consistently spelled words, he needs to be able to distinguish one letter from another. This skill can be taught more easily when applied in identifying consistently spelled words. Less often will the teacher be tempted to use the spurious excuse that the child failed to learn because of "perceptual reversals."

3. "Letter recognition difficulties," by Marvin Cohn, Adelphi Univ.
The decoding problems of 322 primary graders were examined. Each child was asked to name all the lower case letters, which were presented in non-alphabetical order. Error frequency and order of difficulty were tabulated, then correlated with frequency-of-letter-use.

The hardest letters to identify were those which visually and auditorily resemble other letters. Number of errors and frequency of use were unrelated. Inability to note the subtle differences between letters that resemble each other apparently accounted for almost all systematic error. No evidence supported the idea of perceptual reversals.

4. "The truth about vowels," by Robert L. Hillerich, National College, Evanston, Ill.
The effectiveness of vowel generalizations was analyzed from two viewpoints: the nature of letter-sound and sound-letter relationships as derived from Dewey, Hanna, and Hillerich, and the reliability of generalizations. Some generalizations hold true most of the time but include too few words to be worth teaching, others apply to many words but are too unreliable. Hillerich sees little value in the direct teaching of generalizations about vowels.

5. "Effects of the vertical element in b, d, p, q on reading reversals in kindergarten children," by Joan S. Hyman, Yeshiva Univ., New York.
Hyman hypothesized that young children would more likely reverse the letters b, d, p, q which contain a vertical and a directional aspect than similar letters without a vertical property, and that there is a causal relationship between the strength of the vertical aspect of the letter and the number of reversals. 180 kindergartners were selected randomly from a racially mixed population and assigned randomly to one of four visual matching-of-letter tasks. The outcome supported all hypotheses, showing that the "drawing power" of the vertical element intensifies the effect of a weak sense of directionality.

Beginners' Vocabulary

In the preparation of lesson materials, teachers need to know what are the words most frequently used by their pupils. When writing dictionaries showing spellings of words in a new system, linguists also must know word frequencies. Godfrey Dewey explains in his *WES Dictionary* how he selected the slightly over 5,000 words. *The New Horizon Dictionary* for teaching English to non-native users, presents 5,000 words, divided into five levels of frequency; 1,000 are in the group of most used words. *The i.t.a. handbook for teachers and parents* has a word list of 2000 items. Vic Paulsen's *Torskript* shows the forms for 231 common words.

In making decisions about the 200 or 5000 words to use, teachers, dictionary compilers, and originators of initial teaching media, find assistance from on-going research studies such as the following:

6. "Updating the Dolch Basic Sight Vocabulary for the schools of the 1970's," by Jerry L. Johns, Northern Illinois Univ.

Four recently published word lists were compared to a recent revision of the Dolch Basic Sight Vocabulary to find words common to at least 3 of the 4 word lists which were not on the Dolch list. These lists were: (1) the 500 most frequent words from the American Heritage Intermediate corpus, (2) the 188 high frequency words from the Durr study of popular library books, (3) the 500 most frequent words from the Kucera-Francis, and (4) the 727 words used at least 50 times by kindergarten and first-grade children in the Murphy study. The comparison of word lists revealed that 37 words appeared on at least 3 of the 4 word lists. These 37 words were added to a recent revision of the Dolch list, resulting in a total of 226 words. Not only are the words used by young children but also by those at all levels of reading development.

7. "Approaches to the introduction of words," by Alden J. Moe, Purdue Univ.
Moe pointed out and described the factors to be considered in selecting the words for beginning reading instruction. Vocabularies for beginning reading may be based upon: the child's oral language, and interests, sound-letter regularity, and common words found in written literature. In addition, there must be a balance between the classes of words introduced to the beginning reader, Words presented to children in the initial stages must be primarily determined by the oral language and interests of children.

8. "Word lists that make sense – and those that don't," by Dale D. Johnson, Univ. of Wisconsin. Because language changes, there continues to be a need for updated word lists. The use of computers has greatly facilitated the ease and accuracy of word tabulation--but the lists will only be as language reflective as the sources from which they are derived. Johnson explained that the majority of vocabulary tabulations are illogical in that they are derived exclusively from schoolbooks, which puts "the cart before the horse." He contends that lists developed from the language of children (Rinsland, 1945, Murphey, et al, 1957, and Wepman, 1969); or occurence in literary and supplemental materials (Moe and Arnold, 1973, and Durr , 1973) are considerably more relevant for text authors.

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6. Our Readers Write

The problem of dialectal variations

Sir James Pitman KBE   Helen Bonnema.

Dear Jim:

Your paper "The Importance of Medium in the Generation and Maintenance of Motivation in the Learning of English as a Foreign Language" arrived while I was away on a six-week trip thru Africa. Your excellent treatise anchored some of the hazy thoughts which drifted thru my mind during the trip.

In every country I visited, people spoke English. They did so with a French accent in Senegal, Dutch and Bantu accents in Capetown and Johannesburg, British and Swahili in Nairobi, Amheric in Addis Ababa, and Hebrew, German, and Polish in construction camp at Fisiha the Genet, Ethiopia, where my daughter is employed as an engineering technician.

After hearing the many accents, I was receptive to the logic you used in presenting your case for *Speech i.t.a.* You answer questions which have disturbed me when I consider an eventual use of reformed English spelling for the world. In developing such a system, we are stymied by the wide differences in pronunciation of many vowels and some consonants. We are forced to weigh the degree of accuracy of speech sounds which will be represented by the alphabetic letters. We ask, is phonetic perfection as important as stability in the appearance of a meaning unit? That is, does ease and speed of recognition and comprehension have highest priority in the act of reading? Or should orthography be expected to teach correct pronunciation to foreign learners of English? Some alfabeteers expect a spelling system to so closely represent local speech sounds that it can improve a child's articulation. Certainly that is not the task of an alphabetic code.

The *primary* purpose of an orthography is to promote literacy, not what you have so aptly called "oracy."

Your mention of Chinese writing reminds me of what Prof. Kwang-Chung Yu of our college told me: "The advantage of ideograms over alphabetic symbols is that any one in the entire Republic of 21 provinces, regardless of local language or dialect, can assign his own pronunciation to the symbols. It is as if the character representing tree were shown to a German, Frenchman, Spaniard, and Italian. They could respond *Baum, arbre, arbol* or *albero* correctly. They would all be reading the meaning of the symbol." Such universal understanding of a given system is the basis of uniform international road signs.

Fortunately, with English we can have more than mere sight-reading comprehension. Spoken English has not as yet been split into unintelligible dialects. An improved spelling system can restrain the growth of discrepancies between sounds and symbols.

Our aim in a universal orthography for English is that it will represent speech which is intelligible to any other user of English even tho the quality of sounds so indicated may not be phonetically identical.

It follows that standardization of sounds will be helpful and in many cases necessary. That is the /oo/ sound of *ough* in *through* cannot be used by a speaker when he says *tough, trough* or *bough.* If he did so, his words would become T.O. /too/, /true/, and /boo/, and probably unintelligible.

When spelling is reformed, all English speakers of the world must be kept in mind. The task is too big for a commission appointed by any one national government.

UNESCO is the agency which should assume this responsibility. I believe the time has come to turn our attention in the direction of the United Nations.

Yours cordially, H.B.

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<h1 align="center">The different aspects of spelling reform</h1>

Dr Helen Bonnema   Sir James Pitman, KBE

Dear Helen:

Your penetrating mind has gone even more deeply than you are kind enough to say than mine has gone. Thank you thus doubly for your letter of April 9th.

The issue turns on the difference between the diaphone (the receptive) and the phoneme (the emissive). Your third paragraph from the end goes to the very root. If there is represented on paper any of the "speech(es) which is intelligible to any other user of English," everyone will be able to read it & *will find nothing amiss in the pronunciation represented* – or so little as not to matter, seeing that even *Sceduel* and *Fuetiel* are acceptable to British and American eyes, as much as to their ears, in the movies or on T.V.

We ought to honor the great G.B.S. who expressed this very clearly in his will – and to me when we met. He chose the pronunciation of "His late Majesty King George V" because of the number of recordings of his speech which existed and the undoubted fact that his speech was as you say "intelligible to any other user of English."

At the risk of offending you, I would say that under Nixon the claim has been made that the absolute monarchy of the U.S. President is much more absolute (e.g. less limited) than that of George III and that, maybe, the hangup against royalty might be overcome in accepting that criterion which Shaw proposed. For my part, I'm easy. That of Richard Burton, or any of the top flight actors whose business it is to be intelligible to any other user of English would suit me if that were the outcome of UNESCO judgement – I hardly think it ought to be necessary, once you and I have converted others to the view which you so brilliantly state in that two-line paragraph about oracy.

Whichever one of those which works best to promote literacy and in so doing to diminish the risk of (as you put it), spoken English being split into unintelligible dialects will be best, in that it will be generally accepted – notwithstanding that there could have been a number of others no less good.

I expect that when the time comes we will need seriously to consider whether the aims of your Council (and of the British Society, and of the i.t.a. Foundation) ought to include reform of the spelling of *all* printed matter, even all *new* printed matter. So many of the words on any page in a book or even in a newspaper are read easily and correctly by anyone who is literate and will be pronounced in his own individual habituation, whether printed in T.O or in the reformed spelling system. It is only the unusual word--the very unusual word for those who have learned their oracy at all properly on the lines suggested in that IATEFL paper--which will cause hesitation and their upbringing will have taught them that T.O. is a broken reed for indicating pronunciation and they will fly to the phonemes in an appropriate pronouncing dictionary to find out how that rare word is to be pronounced in the "dialect" of their own society.

We need to discriminate between the quite different aspects of spelling reform – from the I.L.M.'s to Bernard Shaw's proposal for a brand new alphabet. I wrote an article on this. Would you like a copy?

Yours admiringly, Jim

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On Colour Coding

Dear Newell:

Colour coding (Ms Novak et al and your reply of May 18) is covered in my book *Alphabets & Reading,* p. 101-2. Since then there have been others. Nellie Date was the most important of all. I rejoice whenever I learn that any school is using colour coding (see p. 15 of my *Evidence to the Bullock Committee)* because it is T.O. which is the "arch villain" which needs to be superseded in the early months. In point of fact I suspect it (colour coding) will not last because more and more teachers will recognize the importance of *writing* as the best means of teaching reading. The child reads his own writing and with a special attention to his success which gives encouragement. One should note that we read by shape, not by colour – and the sooner the better. (There is no value* in using colour for the three sounds in *ship:* the *sh* is close enough to *sh* for the shape differences to be diaphonically irrelevant. The same sound would come from either.)

Enclosed is a m.s. of an article I have written at the request of *Visible Language* which you may fmd interesting. I like the way you keep on plugging and keep up such high standards in scholarship in so doing. Long may you do so.

Yours cordially, Jim Pitman.
*I want a research study which combines the shapes of i.t.a. with colour, and have worked out what I believe will be the ideal relationship for use in such a research.

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Curing illiteracy in Australians

Dear Sir:

If up to 46% of students will leave school "virtually illiterate" *(The Sun-Herald,* March 3), why hasn't a state of emergency been declared? Surely an epidemic is upon us.

If 40% of the 16-year-olds were observed to have one leg shorter than the other, there would be an outcry. And yet these less than literate individuals, who are also seriously handicapped, are abandoned to the adult world ill- equipped to cope with their language and with life.

The education establishment proffers excuses to explain its failure to teach little children to be literate in their own tongue – a simple and interesting task, surely, as children of foreign-language countries find when they learn their own language.

Children of most foreign-language countries do not have to "learn spelling." Problems relating to the learning of English may well have been created years ago by the educationists and the scholars who decided that English-speaking children needed to learn "spelling" (encoding) and "reading" (decoding) as separate subjects.

But before anyone can encode and decode – whether it be Morse, shorthand or the English language – he must know and understand the code.

This is the root of the problem. In English this is very difficult because the code is so complex. But it is not impossible to teach it.

> Foreign children are led early to understand the code of their language. Our children are deprived of this experience. It should be obvious that a more simple code would make the teaching of English much easier.

The establishment has had more than 100 years to lead our children to literacy; it has failed!, even with spending millions! Today it is so deeply entrenched in traditional attitudes that it cannot recognize that a whole new attitude and a new way of teaching and learning English must surely be needed.

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