Spelling Progress Bulletin Fall 1979

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

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1. Late News

Brief report on the 2nd International Conference of the Simplified Spelling Society held at Nene College, Northampton, Eng. July 27–30, 1979. (reported by Helen Bisgard)

The Conference considered three aspects of spelling reform: need for change, devising an improved system, and means for implementing it.

All three considerations are interrelated, since a recommendation for change envisions something better which can be put into practical use. At this Conference, the three points were interwoven in the welcome speech by Treasurer Mona Cross, the keynote address by John Downing, the introduction by Vic Paulsen, and the paper by Emmett Betts.

The first consideration, NEED, was shown by the papers of nine contributors: Abraham Citron, Elsie Oakensen, Derek Thackray, Alun Bye. Cautions against unscholarly tampering with present traditional orthography were contained in the addresses given by: Fergus McBride, George O'Halloran, B. G. Scragg, Robert Baker, and Philip Smith.

The second consideration, DEVISING AN IMPROVED SYSTEM, was shown with various ingenious ideas by eight contributors, starting with a color sound motion picture film prepared for this conference by Hugh Jamieson, followed by papers by: Walter Gassner, S. Bakowski, Katherine Betts (presented in this issue of *SPB*), John Beech, Axel Wijk, S. S. Eustace, and David Moseley.

The third consideration, IMPLEMENTING A NEW SYSTEM, was given by two papers: Valerie Yule, and Helen Bonnema Bisgard.

Space limitations precludes our giving the titles of these papers now. However, we will report more fully on them in our Winter issue and hope to have abstracts of them then. We plan to print most of the papers in the coming year and hence will not have much space for other articles.

Obituary

Axel Wijk, formerly Associate Professor of English at Stockholm Univ., died on July 2, 1979 at age 77. Prof. Wijk held several posts at various universities in Sweden and abroad. During 1928–1932 he was senior lecturer in Swedish at University College, London. For several years he was principal of Borgarskolan Language School, Stockholm. During 1948–1951 he was senior lecturer in Swedish at Columbia Univ, New York. Back from the States, he was for some years "lektor" of English at a girls' senior high school, then pedagogical lecturer in English at the Univ. of Uppsala, and from 1960–1968 when he retired, he was University Lecturer in English at the Univ. of Stockholm.

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2. The Spelling Game, by Robert Saysmith*

Toronto, Ont., Canada.

A true story, with a little revision, a little embroidering, but no apologies, based on The Mont Follick Story.

It's now after World War II. Was England going to change its spelling – at last? After centuries of inconsistent spelling that has caused school children much agony, and that has produced such things as spelling books and the classroom spelling bee, dictionaries with fonetic spellings beside nearly every word, spelling-aid books, and studies purporting to establish 'rules' in a hopelessly irregular spelling system, it looked as if English spelling was about to be reformed. English school-children would at last be able to learn to read as effortlessly as Russian, German, Italian kids.

It was on the news. Continental papers had headlines set up. A member of the British Parliament (Mont Follick) was out to bring order and sanity into the chaos of English spelling. No longer would 'height' look as if it rimed (a bona fide alternate spelling) with 'weight,' 'mood' with 'wood,' 'friend' with 'fiend.' Letter combinations would sensibly stand for only one sound, the way they do in German, Italian, Finnish and Turkish, etc. No longer would English look ridiculous with those UCB shibboleths – now you would see 'laf' and 'ruf,' 'thru' and 'tho.' And a continental visiting in Britain (or the U.S.A. or Canada, etc.) wouldn't get fooled like the German who went one evening to a movie which he thought was a comedy, only to find that it was a crime film. He had read *manslaughter* (due to the misplacement of the letters on the marquee) as *Man's Laughter.* At last the archaic, anomaly-ridden English orthography was being brought into line with the times – out of its 18th-century confusion and into a more rational form.

Britain's 'monumental disgrace,' someone had called English spelling. You never could be sure from the sound of a word how it was spelt, or vice versa. You never knew if it was IE or EI, or what OU might stand for, or EA. If you didn't have a dictionary handy, you just had to take a 4 chance when you were 'riting' something. Now you wouldn't have to 'rite' those absurd silent letters, especially K and W in front of certain words. CH would stand only for what it stands for in 'church.' Yes, at long last there was going to be some order in the spelling of the language of Shakespear and Milton – the literary geniuses of the English language, 'hu' took considerable liberty in spelling, it might be pointed out and duly noted.

It had been a long campaign – four years from the time when the Socialist member of Parliament had introduced the issue in a question and answer period in 1949. Every opportunity for airing the spelling reform question was seized. There had been support from a Conservative member whose family had long been active in matters orthographic and in pioneering shorthand (Pitman). Socialism and conservatism had come together in a common cause in two unlikely confreres, and in a land renowned for conservatism in language and social forms.

It was a critical moment, that May Friday in 1953. The spelling reform debate had been wound up after 13 speeches. Both front benches, the Government and the loyal Opposition, had vehemently opposed the Bill. It was back-bench David facing a Philistine power bloc. The Minister of Education's Secretary had flayed the Bill in the spirit of defending one of 'Britain's most cherished

traditions. No one was going to let the kids spell it 'wun' and 'laf' and 'thru.' Let no one destroy the beauty of the English language. It was good for the kids to have a hard time learning how to spell the language.

Then the Socialist opposition's educational critic rose and tore into the Bill. It would undermine the entire educational system, and possibly the very fabric of society. It would be the end of one of the nation's most beautiful assets. The orthography was part of the basis of culture. It must not be allowed to be destroyed by misguided enthusiasts, however well meaning.

The Prime Minister arose with a very grim lip. "I missed – fortuitously in one sense and disastrously in another – having to preside over the dissolution of a considerable part of the British Empire, but let me say it very clearly that I am not about to preside over the dissolution – perish the thought – of the English language."

There was an uproar of applause on all sides.

The orthographer got to his feet as the acclaim died down. He cleared his throat. The opposition to the Bill, he said, amounted to a veritable travesty. Children were being denied the opportunity to read with that facility which a logical spelling would have provided them. Britain was known to have the highest illiteracy rate of any comparable nation. The products of public education in all the other nations of western Europe had much greater reading facility. The scholastic potential of the country was being reduced by at least a third because of reading difficulty.

He noted, looking at her, that the Minister of Education was "looking at the simplified reading procedures with sincere solicitude." But it was time for more than 'solicitude.' It was incredible, he 'continued, that some people still believed that making it difficult to learn reading was a good thing. We should 'encourage,' not 'discourage,' our children to learn to read.

He put it to the House: Did they want to listen to inexperienced people on this question, or to those with professional expertise?

Yes, the press had got a statement from him earlier, and it was true that the word from America was highly favorable to reform. They wanted him to carry on the work started by Theodore Roosevelt in 1906, when the President sent an order to the Government Printer for the revision of some 300 words on the N.E.A. list. Unfortunately, this became a political football because Congress said that this was *their* prerogative. And typically, Congress couldn't agree on anything. So nothing was done about reform.

Someone asked if there was any word from Canada. No, there had been no word from Canada. The questioner continued – preserving English there was not 'very' Americanized.

Rumors rang round the House that the spelling reformers were winning. It was astounding, like a miracle. The Government looked on in helpless dismay. What had happened all of a sudden? Could the House be so fickle? All important Cabinet Ministers were rounded up and virtually pushed into the Chamber and into their seats. Then the perilous vote was taken. And reform won by a majority of 12 votes.

It was a resounding victory. And on second reading the triumph was sustained. The work of some 40 years – the long fight to get the issue into Parliament, and then presented as a bill.

But it would be a long time before the Bill would reach the statute book as an Act of Parliament, and some very dangerous obstacles lay in the way. The Minister of Education was determined that there would not be a victory in committee. The joke had gone far 'enuf.' But again the reformers managed to get it 'thru,' but by only one vote.

They faced closure on third reading. The Minister of Education was determined to smash the reformers. The travesty was going to be settled once and for all. And the way to do that was by 'compromise.' It worked. Spelling, reform was stalled in its tracks by a 'suttel? compromise. A committee would be set up to examine ways and means of implementing a new simplified system of teaching reading. And the House went for it.

The reformers didn't, or weren't inclined, to realize the significance of that action. They really thought they had won what they wanted. It would be a few years before a reform system could be worked out, but it appeared that their goal was in sight.

A sad illusion. Nearly 30 years later and no apparent change – making the parliamentary action little more than a hollow victory. The approval of the Minister of Education was for a teaching alfabet – and for the Government's non-interference in classroom – trials – tests of this i.t.a. The tests have come and gone – the results are known – but still no change.

In the U.S.A. they still regard 'thru' as an informal but frequently seen spelling, especially on the 'hiways.' And a British linguist who is unfavorable to any significant reform, purports to see a tendency in America to return to British spelling! (Editor's note: We contest that statement. There appears to be more frequent use of *tho, altho, thru* than ever before, and no return to col*our or* cent*re* in U.S.A.)

And in Canada? There is an order-in-council dating back to Sir John A. Macdonald's day which makes the U in honour, colour, etc. mandatory. Even 'tho' the press drops the U, most advertising retains it, not to mention all official documents.

A professor has stated: "One of the most useful things just now is to break down the respect which a great foolish public has for the established spelling. Some have a religious awe and some have an earth-born passion for it. At present I don't much care how anybody spells, so he spells different from what is established. Any particular individual spelling is likely to be more rational than the ordinary."

English is unperturbed in its reputation as the worst spelt language in the Western world. No language has had more reformers working on it, trying to improve its orthography – always to no avail. But, to quote the onetime maverick Chicago Tribune (which pursued a kind of spelling reform for nearly 50 years), when it reverted in 1975 to standard spelling as a result of public pressure, "We hope that someday sanity may yet prevail in the spelling of the English language."

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Section 11
Spelling and Oracy

This section shows the relationship between the spoken language and spelling and learning to read English.

3. Correspondence of G. B. Shaw relative to Simplification
and Rationalization of Spelling*

*Reprinted by permission of the G.B. Shaw Estate and the Soc. of Authors. **[1]**

Some thoughts of the late George Bernard Shaw relevant to the Simplification & Rationalization (S & R) of English for making more successful the earliest stages of learning English by those who usually speak languages other than English.

The thoughts cover S & R for learning literacy and for learning oracy also, so that English may be understood, and in both forms, by all others in the English speaking world.

The S & R he envisaged covered not only the notation of the sounds to be spoken (or imagined for silent reading), but also the vocabulary and grammar of the language first taught.

Shaw's case for a new, non-romanic alphabet have been purposely ignored in this selection. (I.J.P.)

Mr. Robert Bridges: **[2]** 4 Feb. 1910.

It is hard to say that there is a psychological moment for reforming spelling, or the calendar, or for adding those two digits to our numbers which would combine the advantages of the decimal and duodecimal methods of computation. It may be, however, that we have at last succeeded in making the anti-phonetic stupidity unfashionable. But I confess I am not very sanguine about it. The only people who have got any money in the business are those silly Simplified Spelling Americans who have provided my friend William Archer with an office and a secretaryship in London. As far as I know, they are doing what in them lies to make the reform thoroughly unpopular and ridiculous.

I have been for a long time convinced that the two most important points to get into people's heads are, first, that unless the phonetic spelling is carried out with sufficient boldness and thoroughness to make it quite unlike ordinary spelling and so avoid that ludicrous effect of being simply illiterate misspelling which was so comic in the works of Artemus Ward, the reform will die of ridicule, and, second, *that if we do not spell words as they are pronounced, our readers will pronounce words as they are spelt, so that in the end we shall have a change in the English spoken language which is in no way desirable.* On this second point in particular I should always blame the phoneticians for a lack of debating instinct which has prevented them from carrying the war into the enemy's country.

The modern pronunciation of such words as 'oblige' proves that in the long run scholarly pronunciation cannot stand out against spelling. This has been especially forced on my attention by my intercourse, in Labor and Socialist movements, with working men who read a great deal, but have no opportunity in their own class of hearing the words they read actually spoken. They therefore have to resort to *such pronunciation as the spelling may suggest to them:* for instance, semi-conscious becomes see-my-conscious. If this only led to their being laughed at, it would be painful and unjust; but it would not hurt the language. Unfortunately, it becomes accepted as *the standard pronunciation with quite appalling rapidity,* because if you and I persist in the Orthodox pronunciation, we are simply not understood, just as if you tell a London cabman to drive to Arundel street, he does not understand you; whereas if you tell him to drive to Rundle Street, he understands you at once. Perhaps he may be right; I really do not know what the proper pronunciation of Arundel is; but the illustration is none the worse.

An insistence on these points has been practically my only contribution to the movement. I do not know whether I was the first to urge them; but certainly in the old days of Alexander J. Ellis and James Lecky, none of the men on our side made any use of them.

The man of that time I had most hopes for was Henry Sweet; but Sweet's utter want of any sort of social tact – sometimes even of common humanity – seems to make him hopeless except as a writer of books which are only read by specialists. At the time when Imperialism was booming, I induced the editor of one of the leading reviews to invite Sweet to write an article on the importance of phonetics as a means of not only making the English language easy to learn, but also of preventing it from finally splitting up into dialects which would make American and Australian and South African and Eurasian practically foreign languages. Sweet jumped at the opportunity to make a terrific attack on an Oxford professor whom he regarded as an imposter from the phonetic point of view, on the University for giving the professor the appointment, and on the Universe generally for tolerating the University. The editor of course refused to print the article (which would probably have involved him in a libel action) and if Sweet ever writes another magazine article, he will probably devote it to a similar denunciation of that editor of that magazine, and by extension, of the entire press of the world. I then tried to get a sort of Chair of Languages established at the London School of Economics; and if Sweet had been socially capable of following this up, and had been willing to shift his quarters to London, I believe I might have pulled it off. But Sweet has now got the Oxford habit of life in his antagonistic way just as hopelessly as any Don has got it in the conformist way; so nothing came of it.

What we want now is a phonetic institute of some kind or another, either independent, or as a branch of some of our great educational institutions. I believe the British Museum has already taken steps to procure and store for future reference phonographic records of contemporary speech. As a definite project, it might strike the imagination of the country a little, I should suggest that a fund should be collected for the purpose of printing a *phonetic Shakespear.* It so happens that at this moment we have one actor, Forbes Robertson, who, being Scotch by extraction, speaks a dignified, handsome, and what I should call correct English, and not the dialect of the motor car and the week-end hotel. [3] If we could get some good gramophone records of speeches from Robertson's Shakespearian parts, and agree upon a method of recording his pronunciation in ordinary type, so as to make the book available for the use of actors and the public generally, we could employ some young man – say one of Sweet's pupils – to prepare a complete Shakespear. This, of course, would

be a considerable job; but it has the advantage that if it were found too large an undertaking, it could be cut down to a selected number of plays, or even to one play: say Hamlet. I have sometimes thought of getting a gramophone record made of Robertson's delivery of the Sphinx speech in my own Caesar and Cleopatra and proceeding as above to issue a phonetic edition of the play as a sort of document in the history of the language. But I had only time to imagine these things; when it comes to action, I find myself always with two years arrears of pressing literary work on my hands and so nothing gets done. I daresay you are pretty much in the same predicament yourself. Until by some means, we can get a little group of trained phoneticians who will put all their time into the work for a modest salary, nothing but talk will come of it.

I need hardly say that it would he very delightful to make gramophone records of some of your poems, as spoken by yourself. The advantage of this sort of thing is that it gets rid of the entirely impossible and insoluble question as to whether your pronunciation is ideally correct, which is the rock that splits all the phonetic enterprises. If we could leave in the British Museum – failing a public institution specialized for phonetics – a record of your pronunciation, with a simple statement of your birthplace, and education, and class, and, if necessary, a string of testimonials from your contemporaries to say that your speech was that customary among educated Englishmen of your time, with any criticisms they like to add, as, for instance, that you pronounce such and such words like a Kentish man, or that you had an Oxford drawl, or had inherited some locution from an Irish grandmother, or anything else that might strike them, the phoneticians of the 25th century would at any rate have something to go on that we have not got with regard to Shakespear or Chaucer. In the same way, all question as to whether Robertson's pronunciation is correct could be set aside: the record would go down as Robertson's pronunciation for what it is worth, with of course the information that Robertson was accepted as the finest speaker on the British stage. If we had such a record of Garrick's pronunciation we should never dream of questioning its value simply because no twenty scholars of Garrick's time could have been induced to agree that his pronunciation was ideally correct.

I throw out these suggestions more or less at random. I do not exactly know what you propose that we should do though I am tolerably certain that I shall not have time to do anything of it. But if you can plan a campaign with any sort of promise in it, I am game to give it my blessing and subscribe a few pounds towards paying for the executive part of the business.

Yours faithfully, G. B. S.

Notes
[1] From the collection of Sir James Pitman, K.B.E.
[2] Poet Laureate at the time, who had many of his poems printed & published by the Oxford Univ. Press in a S & R alphabet of which CBS impliedly approved.
[3] Shaw, in his will, chose & required, "the pronunciation of His Late Majesty, King George V," of which there are plenty of audio-recordings.

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4. The Gohst, by Frank T. du Feu

Mie frend Commander Dennis Shales,
Aulbeit near as hard as nails,
Cuod not, I promiss yoo, hav toeld
Precicely whie, despite a coeld,
And after such a hevy squaull,
He shuod hav ventured out at aull
So very late. The time? Ahem!
A little after 1 A.M.

Whot made his dog remain behiend?
He wunderd, then it crossd his miend
That peeple in the loecal train
Wuod offen heatedly maintain
The churchyard he wos passing thru
Wos haunted. No, it wosn't true.
Yet writers to "The Daily Poest"
Wuod sweir that they had seen a gohst
Like Charles 1. Of coarce, smaull frie,
Not men hoo wore an Eeton tie.

Peeter is nowhare to be found.
And nou a bat floets idly round
Within sum inches of his face.
Whot rends the sielence of the place?
It is an oul's unnerving hoots.
His hart is nearly in his boots –
He gasps – his eyes begin to roell –
He struggles hard for self-controel –
'T is no mistake, the ievyd doer,
Unoepend for a year or more,
Hoose kee is rusted in the word,
Is oepening of its own accord!

His very flesh begins to creep.
Ah! dare he – can he – moove to peep?
Sheer terror roots him to the spot,
So he decides he'd better not.
Nou Dennis givs a sudden lurch,
Behoeld, emerjing from the church,
A form that flesh and blud disdains,
Behedded, dragging hevy chains,
And hoelding an enormous knife,
He knows that it will take his life!

Not Mr. Pickwick in the pound
With missiles flying aull around,
Pending Sam's opportune arrival
Wos more despairing of survival.
Don Quixot, synonym for valor,
Wuod hav betrayd a certain pallor,
And Sanko Panza died of fright.

In such a grim and dredfuol plight,
Can he be blamed, I beg to ask,
For taking sumthhing from a flask?
Soon he becums composed and mield,
As caam as eny sleeping chield.
Nou Dennis, of brave men the furst
Defies the gohst to doo its wurst.

Impaetient reader, doen't be vexd
When I disclose whot happend next.
'T wos nearing mid-day, so a poke
Between the ribs and he awoke;
For thhings ar rarely whot they seem
And thiss ordeeal wos but a dream.

(written in *Eurospelling,* du Feu's own ideas of a minimal change system of simplified spelling.)

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5. Linguistic Awareness, English Orthography & Reading Instruction, by John Downing, Ph.D.*

Abstract. One common characteristic of reading instruction is the teacher's attempt to describe the "phonic" rules of the writing system. But modern linguists question whether English spelling is related simply to what phonic teachers call "sounds." The classical linguistic view of English orthography was that it is a graphemic code for the abstract units of speech technically termed "phonemes" but that this code is marred by numerous irregularities of grapheme-phoneme relations. In recent years this has been challenged in two revolutionary proposals. Though their theories are different, both Chomsky and Venezky deny that English orthography is a phonemic system. A third possibility is that neither the classical nor the revolutionary view of English orthography is correct. Albrow, Lefevre, and Vacheck have each independently proposed that English orthography is a system of systems. One system is phonemic but, in addition, there are others representing non-phonemic aspects of language. Teachers of reading who believe that their pupils need to understand the underlying system of English orthography must consider these alternative explanations if they are to choose which one should be the basis of their instruction. This article reviews the evidence for these alternative descriptions and discusses their feasibility as a basis for teaching young beginners.

Linguistics: Reading and Listening.

Recently Mattingly (1972) has stated the following conclusion about the relationship between reading & listening:

> Reading is seen not as a parallel activity in the visual mode of speech perception in the auditory mode; there are differences between the two activities that cannot be explained in terms of the difference of modality. They can be explained only if we regard reading as a deliberately acquired, language-based skill, dependent upon the speaker-hearer's awareness of certain aspects of primary linguistic activity. By virtue of this linguistic awareness, written text initiates the synthetic linguistic process common to both reading and speech enabling the reader to get the writer's message and so to recognize what has been written (Mattingly, 1972: 145).

This linguistic awareness, according to Mattingly, is to be distinguished from primary linguistic activity itself. Much of the latter is not accessible to immediate awareness. However, speaker-hearers are aware of certain aspects of their own language behavior, and some of these are related to the writing system of their language. Mattingly states that the reader "must be thoroughly familiar with the rules of the writing system" (Mattingly, 1972: 142).

These rules relate written language to the elements of speech that are accessible to awareness. Doubtless the designers of English orthography during its long history of development based their rules on what Mattingly has described as linguistic awareness. Thus, in reading instruction, teachers and pupils can use this same fundamental linguistic awareness to develop an understanding of the intentions of the designers of the orthography. Learning to read in English therefore consists, at least in part, in re-inventing the alphabet and spelling through the child's natural endowment of linguistic awareness.

In the method of "phonics," teachers instruct their pupils in the rules of the relations between letters

and "sounds." This method assumes that English orthography is basically a code for those units of sound termed technically in linguistics "phonemes." However, this assumption has been challenged by some linguists and today several alternative descriptions of the rules of English orthography are being debated. If reading teachers desire to explain the rules of the English writing system to their pupils, they must choose between several alternative and quite different descriptions of those rules.

The Classical View

The classical view of the linguistic basis of the English writing system is that its graphemes are symbols for phonemes. For example, Bloomfield wrote: "Alphabetic writing. . . directs the reader to produce certain speech-sounds" (Bloomfield 1942: 129). Fries stated. "Alphabetic *writing is basically phonemic."* He explained: *"An alphabet* is a set of graphic shapes that can represent the separate vowel and consonant phonemes of the language. All alphabets are phonemically based, and the procedures of teaching the process of reading alphabetic writing must take into account this essential fact of the structural base of alphabetic writing." (Fries 1963: 155–156).

Bloomfield and Fries (and numerous other linguists) considered that, although English orthography does not have a perfect one-to-one system of grapheme-phoneme relations, it nevertheless is essentially phonemic. Fries, for instance, saw the many divergencies from the phonemic principle as arising out of the vicissitudes of history, spelling changes lagging behind" pronunciation changes, the "ignorance" of false etymological spellings, the stabilizing of spelling by printers without consideration for linguistic knowledge, and so on. But despite these irregularities, English orthography remained "basically phonemic in its representation" (Fries 1963: 169).

Fries preferred to use the term "spelling-pattern" for the grapheme representing a phoneme because he considered that often in English a group of letters has come to stand for a phoneme and often also the members in such a letter group are not adjacent, for example, the letters *a* plus *e* for the vowel phoneme in the printed word *late*. With this phonemic analysis Fries was able to describe English orthography clearly and simply in only ten pages. Any class-room teacher can understand it and use it as a basis for teaching children to read, which was Fries' purpose. Thus Fries' description was viable as a basis for phonic instruction.

In summary, the classical view of English orthography is that it is a system with a basic principle of regular relationships between graphemes and phonemes but with a considerable residue of irregular spellings. This description is simple and understandable to most teachers and children in their application of linguistic awareness to understanding the writing system of English. But there have been many failures in phonic instruction on this basis. One reason for these may be that the classical description is more or less inadequate.

The Revolutionary View.

In recent years the classical view has been challenged by some authors, notably Chomsky and Venezky. They seem to deny that English orthography is a graphic code for phonemes.

Chomsky asserts that "there is little reason to expect that phoneme-grapheme correspondences will be of much interest because it appears that phonemes are artificial units having no linguistic status." Furthermore, "the rules of sound-letter correspondence need hardly be taught"(Chomsky 1970: 15). Chomsky proposes instead that English orthography is "a direct point-by-point transcription of a system that the speaker of English has internalized and uses freely, a system that I will refer to as 'lexical representation' " (Chomsky 1970: 4). He claims that his description of English orthography shows it to be "a near-optimal system for representing the spoken language!' This is a direct challenge to the classical view that English orthography is marred by considerable divergence from its basic phonemic principle.

Chomsky's assertion that English orthography is a code for "lexical representation" and not for phonemes follows logically from his general linguistic theory (Chomsky 1957, 1965; Chomsky and Halle, 1968). Briefly, this states that a language consists in all its possible sentences and that the rules of grammar should be able to predict any of these sentences and distinguish them from impossible sentences. Every sentence is said to have "a deep structure" and a "surface structure." Certain phrase structure rules in a syntactic component base generate deep structures. Transformational rules operate on the deep structures to map them on the surface structure that is their final form. Deep structures are said to hold all the information necessary for the semantic interpretation of a sentence. Similarly, a sentence's surface structure holds all the syntactic information needed for phonological analysis.

Important for this present discussion is the "lexicon" component in Chomsky's grammar. The lexicon is a bank of lexical information about spoken words. Each lexical item is said to consist in a collection of information including the phonetic representation of its constituent sounds, and its bundles of syntactic and semantic features. More precisely, the lexical items are morphemes, not words. Each morpheme in the lexicon consists in a sequence of phonological feature sets indicating its consecutive sounds. These sounds are not the classical "phonemes" of observed utterances. The phonological entries of the lexicon represent underlying "absolute" sound features of morphemes. These absolute sounds are said to change when morphemes are assembled in the context of a sentence, in accordance with the phonological rules applied in a series of "cyclical transformations." In this way a "phonetic representation" is reached corresponding to the actual sounds of the sentence. Chomsky claims that there is no intermediate stage between "absolute" representation of the sounds of morphemes in the lexicon and the phonetic representation of the actual spoken sounds in the final product.

Since the phoneme is rejected in Chomsky's description, it cannot be used to explain English orthography – "The reader who knows English would be best served by an orthography that leads him directly to the single-semantic unit (of the lexicon) and that eliminates all irrelevant phonetic detail that is determined by automatic processes of the spoken language. Conventional orthography, in this as in many other cases, serves this function quite well, whereas phonetic or phonemic notation would be quite inappropriate." Chomsky asserts again that it is "lexical representation that is directly related to orthography." (Chomsky 1970: 13–14).

Chomsky's Evidence.

Chomsky offers three pieces of evidence for his claim that English orthography is related to lexical representation rather than to phonemes.

Firstly, Chomsky points to the way in which English spellings preserve a semantic link at the cost of sacrificing grapheme-phoneme correspondence. For example, in *courage* and *courageous* the syllable age is pronounced differently, but its consistent spelling signals the semantic link. Chomsky claims. "The reader who knows English would be best served by an orthography that leads him to the single syntactic-semantic unit courage that appears in the two phonetic forms and that eliminates all irrelevant phonetic detail. . ." (Chomsky 1970: 13).

Carol Chomsky (1970) has applied Noah Chomsky's ideas more directly to the reader's task. She takes as examples the spellings *medicate/medicine, prodigal/prpdigious, grade/gradual, quest/question, sign/resign,* and comments. "By being 'unphonetic' in all of these cases, by not exhibiting grapheme-phoneme correspondence, the orthography is able to reflect significant regularities which exist at a deeper level of the sound system of the language, thus making efficient reading easier." She concludes: "Thus on the lexical level and in the orthography, words that are the same look the same. In phonetic transcription they look different. . . The spelling system leads the reader directly to the meaning-bearing items that he needs to identify, without requiring that he

abstract away from superficial and irrelevant phonetic detail" (C. Chomsky 1970: 293–294).

The first point of the Chomskys seems intuitively satisfying. One immediately recalls many examples of such words where non-phonemic spellings preserve the semantic connections. However, further reflection reveals that only *some* words have this feature. There are other cases where semantically or morphemically related words have spellings which prefer a phonemic rendering, for instance *beast/bestial*. Also the most common situation is that English spellings reflect *both* the "surface phonetic variation" and the underlying semantic relationship without conflict, for example, *law/lawful, call/recall.*

One must consider also the historical evidence as to how these lexical or morphemic spelling conventions were introduced. For example, Scragg's A *History of English Spelling* states: The fixing of c for /s/ in English was aided by the fact that in many words with the final sequence *se* the consonant sound represented was /z/, e.g., *lose, surprise, wise.* Use of *ce* in the final position thus clarified the representation of final /s/: *ace, pence, since.* The device was particularly useful in noun/verb pairs where the spelling difference reflects one in pronunciation *advice, advise, device, devise*, and in the seventeenth century it was extended by spelling book compilers to similar pairs which involve no sound change: *licence, license; practice, practise.* "American usage has preferred *se* in all such cases since Webster" (Scragg 1974:43, note). This kind of change by analogy was often given as a justification for modifying English spellings in the seventeenth century. The history of English orthographic changes suggests that such newer principles as morpheme representation were added to an older phonemic system. Sometimes the new and older orthographic principles worked harmoniously but sometimes they resulted in conflict. Francis comments about Chomsky's first point: "In the light of the facts about the history of English... it would be remarkable indeed if his claims were true..." (Francis 1970: 51). Vacheck remarks: "Clearly as a piece of apology for present-day English spelling, the argumentation adduced by Chomsky and Halle is hardly convincing..." (Vacheck 1973: 68).

Francis also makes a fundamental criticism of Chomsky's central postulate. He questions the existence of lexical representation as a psychological reality: "The assumption that all speakers store the same lexical items in the same way runs counter to the great individual diversity that obtains in other forms of memory." Francis finds Chomsky's claims for the psychological reality of lexical representation "extravagant and unsupported" and concludes that "the claim is too sweeping" and advises that "Chomsky's assertion must be taken with more than a grain of salt" (Francis 1970: 49–54).

Psychologists interested in Chomsky's description of language have used the conventional scientific method of their discipline – experimental behavioral tests of his hypotheses.

One such hypothesis is that sound-letter correspondences need not be taught because children will arrive at the correct pronunciation through their "unconscious linguistic equipment" (N. Chomsky 1970. 16) which operates automatically. Carol Chomsky also finds phonetic details "irrelevant" in spelling because the reader can arrive at these "by means of automatic phonological rules" (C. Chomsky 1970: 292). Barganz (1974) compared the performance of forty good readers with that of forty poor readers on a series of tasks predicted to differentiate their abilities according to the Chomskys' claims. In particular, Barganz proposed to investigate "whether conventional English orthography may he considered 'optimal' in contrast to a more 'phonemic' orthography" (Barganz 1974: 105). For this question the most relevant test was the "visual/visual task. . . For example, the word 'revere' was presented by an overhead projector while a sentence, in which the word was used, was read aloud by the experimenter. The position of 'revere' in the sentence was indicated by the sound of a toy cricket. A second sentence was read aloud by the experimenter. The word 'reverence', was not said, but the position of it was indicated by the sound of a toy cricket. Four

orthographic depictions of reverence were presented by an overhead projector; one item was to be selected as correct" (Barganz 1974: 107).

The poor readers were significantly less able to choose the correct spelling. From this result, Barganz argues: "By their knowledge of the phonological rules of the language and of the 'morphophonemic' nature of the orthography, good readers... were to the grapheme/phoneme correspondences and to relate the surface structures of words and orthographically to deep structures. The functional stimuli for the good readers appear to be the underlying form of lexical items; that is, a search for the semantic correspondence in derived words seems existent in the good readers." The poor readers' weaker performance was said to be due to their tendency to "cling to the alphabetic principle." (Barganz 1974: 116).

Unfortunately, Barganz's experimental design seems the have failed to cope with some of the logical problems in Chomsky's hypothesis. Firstly, the subjects' task was hardly "reading." One cannot know from it how the subjects interpreted either *revere* or *reverence* either phonologically or semantically. Furthermore, a simpler explanation of these results might be that the poor readers couldn't read the visual stimuli as well as the good readers – which was known before the experiment began.

Furthermore, poor readers have less practice with the orthography and, therefore, are less likely to recognize the correct spelling or to guess it by analogy with other printed words in their past experience. Barganz's conclusion that poor reading is caused by clinging to the alphabetic principle also may not follow. The cause-effect relationship could be in the opposite direction. His subjects were fifth grade pupils. The good readers had had long experience and may have learned not to rely on regularity of grapheme-phoneme relations because of their experience of the many exceptions in English orthography.

In another recent experiment, Simon tested two hypotheses derived from Chomsky and Halle and from Carol Chomsky: (1) "that English spelling corresponds to an underlying lexical level of representation rather than a surface phonetic level, i.e. pronunciation;" and (2) "that learning to read involves learning the spelling-lexical level correspondences" (Simons 1975: 49). Simons tested eighty-seven second and third grade subjects on a paired-associate and reading task for the two types of word pairs: morphologically related word pairs, e.g. *hide/hid,* and unrelated word pairs, e.g. *pine/pin.* The words were printed on individual cards. The experimenter read the words to the subject. After this the subject's task was to read the words presented on an individual card and to respond verbally with the other member of the word pair. If Chomsky were correct, the subjects should have performed better on the morphologically related pairs than on the unrelated pairs since presumably "the organization of the internal lexicon corresponds to the way words are stored in memory" (Simons 1975: 52).

The results show no significant differences. Simons comments that the evidence from other studies by Moskowitz (1972), Robinson (1967), and Steinberg (1973) showed also that Chomsky's phonological rules have no psychological reality: "All three studies have shown that children and adults have great difficulty applying stress and vowel shift rules in producing the correct pronunciation of affixed words where these rules should apply. If the phonological rules have no psychological reality there is reason to question the psychological reality of lexical level of representation " (Simons 1975: 58).

Chomsky's two other pieces of evidence that English orthography is related to lexical representation rather than to phonemes are more indirect and peripheral: "Conventional orthography is highly appropriate... for a wide range of dialects" (N. Chomsky 1970: 4); "The level of lexical representation is highly resistant to change and persists over long historical periods...

Correspondingly one finds that conventional orthographies remains useful, with minor changes, over long periods" (N. Chomsky 1970: 12).

There are difficulties with both of these statements. The present author has reviewed the empirical evidence on the effects of dialect differences on learning to read (Downing 1973: 185–192). There is no doubt at all that children with dialects which differ noticeably from the so-called "standard English" of school have more problems in learning to read. The incidence of reading failure in areas of non-standard dialects is considerably above the normal level. There may be a variety of reasons for this high rate of failure, but, until these have been investigated, Chomsky's assertion that English orthography is "highly appropriate... for a wide range of dialects" must be questioned.

Chomsky's third point of evidence has been commented on in the quotation from Francis given earlier in this article. It is hard to accept Chomsky's judgement that English orthography has undergone only "minor changes" over the past ten centuries when one considers the historical evidence. For example, Scragg's *A History oi English Spellinq* shows a wide range of complex changes in the orthography derived from many different causes including many consciously motivated reforms.

Venezky's Morphophonemic Proposals.

Another attack on the classical view of English orthography as a code for phonemes comes from Venezky. He proposes that the units of language coded by written symbols are "morphophonemic, "from which phonemes are derived. Venezky used a computer program to derive and tabulate spelling-to-sound correspondences in the 20,000 most common words in English. This analysis took account of the position of written symbols and sounds in the context of words. Venezky's aim was "to discover and describe the underlying patterns of the current orthography" (Venezky 1970: 126).

He found that two types of "functional units" at the "graphemic level" were significant for predicting how written English words are pronounced: (1) "Relational units" each of which is "a string of one or more graphemes which has a morphophonemic correspondent which cannot be predicted from the behavior of the unit's smaller graphemic components;" (2) "Markers" each of which "is a cluster of one or more graphemes whose primary function is to indicate the correspondence of relational units or to preserve a graphotactical or morphological pattern" (Venezky 1970: 50). For example, the "*gn* in *cognac* and *poignant* is a single relational unit which corresponds to a certain morphophonemic cluster, "but *gn* in *sign* and *malign* is not a relational unit but rather a combination of two relational units which correspond" to two separate morphophonemes. Morphophonemic rules determine whether what corresponds to *g* is silent or not, as in *signal* and *malignant*. Some examples of markers are: (1) final *e* in *notice* which indicates that *c* corresponds morphophonemically to what we usually think of as "the *s* sound;" (2) final *e* in argue to avoid final *u* which is never permissible in English orthography. Such markers are "dropped before a suffix which begins with a letter that will perform the same function as the *e*" (Venezky 1970. 5 2), for instance, *noticing* and *arguing*.

Venezky lists fifty-nine relational units, six of which have an alternative spelling, for example, *oi* or *oy*. There are four groups of markers. (1) "Markers of Consonant Correspondences," for example, *e* in notice; (2) "Markers of Graphotactical Patterns," for example *e* in *argue*; (3) "Markers of Vowel Correspondences," for example, final *e* in *mate, mete, site, note, cute*, to mark the vowels' free pronunciation in contrast to *mat, met, sit, not, cut*; (4) "Markers of Morphemic Patterns," for example, final *e* "to avoid the appearance of a final inflectional *s* in *moose, goose, mouse*. Several different markers exist for each type in addition, a set of rules is listed for describing the "graphemic alternations" *i* and *y, u* and *w, ous* and *os,* and *i* and *e* (Venezky 1970: 55–62).

Venezky's evidence.

Venezky's computer analysis of the 20,000 most common words in English is impressive scholarship. This is the empirical foundation for his morphophonemic description of English orthography. For instance, Venezky claims: "When viewed from the direct spelling-to-sound standpoint, the patterns for these units reveal no regularity. *O* corresponds to seventeen different sounds, *a* to ten, *e* to nine, and the combined group to forty-eight. When the morphophonemic structure and consonant environments of the words in which these units appear are analysed, however, a single major pattern emerges, from which regular sub-patterns can be derived."

Despite such confident claims, Venezky admits that "Exceptions still remain, large numbers of them in some cases." Nevertheless, Venezky believes that "the under-lying pattern is so dominating that the exceptions which were once the rule become mere oddities begging for historical justifications (Venezky 1970–101). To judge the validity of this claim, it is essential to examine Venezky's complicated lists of rules in detail. Then an important problem becomes clear. Many words are not "exceptions" in Venezky's scheme because he often employs the "rule" that a certain idiosyncratic spelling simply is the case. Most people would assume that "rule" implies a general regularity observable in numerous instances, in which case there are more exceptions than Venezky admits. Despite this exaggeration of the extent of regularity in English orthography according to Venezky's morphophonemic description, his empirical analysis is rather convincing.

Unfortunately, the impressive scholarship in this excellent empirical work is somewhat impaired by Venezky's attempts to find other indirect supports for his position. He offers three additional arguments in this way.

Firstly, Venezky asserts that, "For centuries philologists have approached the study of English orthography with the purblind attitude that writing serves only to mirror speech, and that deviations from a perfect letter-sound relationship are irregularities" (Venezky 1970: 11). This polemical tone is coupled with an historical survey that is shallow and selective. According to Venezky, from the time of Alfred the Great nearly everyone has been mistakenly overemphasizing the sounds of letters. Detailed study of the history of English spelling (such as that completed by Scragg) reveals a much more complex background to present-day orthography.

Even more polemical in tone is Venezky's second supporting claim that English spelling reform is doomed because linguistic experts have discovered that English orthography is not based on the phonetic principle. He writes, "The twentieth century reformers have in general presented an even more distorted picture of the orthography than their predecessors. Their arguments, instead of being based on the true irregularities which exist, generally are based upon non-existent patterns like the celebrated ghoti ..." for "fish" (Venezky 1970: 32). Venezky's assertion is so distant from the truth that it may undermine rather than support his thesis. Ghoti was one of Bernard Shaw's literary jokes, not taken seriously by any reputable spelling reform organization. It is also quite untrue, as Venezky asserts, that the Simplified Spelling Society (in Britain) and other such bodies have *"faded from existence"* (Venezky 1970: 32). In actual fact, the Simplified Spelling Society's membership is increasing. Among its members are numerous linguistic scholars and leaders in education, including three former presidents of the United Kingdom Reading Association. In December 1975 the Simplified Spelling Society acquired official royal patronage in the person of His Royal Highness the Duke of Edinburgh. Spelling reform organizations are flourishing also in Australia and the United States.

It seems unfortunate that Venezky felt it necessary to support his empirical evidence with such polemic, especially since the latter reveals a scanty knowledge of the historical development of English spelling including current trends in the behavior of its more creative users.

In this article, the feasibility of the alternative descriptions of English orthography as models for classroom instruction is being considered. Venezky actually claims that his description of English orthography could be used as a basis for the teaching of reading. This implies that his morphophonemic analysis is more than a linguistic description and has psychological reality. For example, "except where whole words are recognized, a sequence of units within the word is observed in the translation process. The relevance of this to the teaching of reading is in the instructions given to a child who is first learning to read. Should he be told to scan left to right, letter by letter, pronouncing as he goes, or is there a more efficient scheme? In the first place, a person who attempts to scan left to right, letter by letter, pronouncing as he goes, could not correctly read most English words. Many of the English spelling-to-sound patterns require, at a minimum, a knowledge of succeeding graphemic units. How, for example, is the initial *e* – to be pronounced if the following units are not known (cf. *erb, ear, ewer, eight*)? This is just the beginning of the problem. In some patterns, the entire word must be seen – and this is true of almost all polysyllabic words since stress patterns are significant for vowel quality" (Venezky 1970: 128–129).

No modern reading specialist would disagree with Venezky on this point. But it is irrelevant in the choice between his morphophonemic description and a classical phonemic account of English orthography. These examples of the unproductive effect of left to right, letter by scanning may be quite true without any dependence on Venezky's system. Fries' classical view of English orthography would point to the same conclusion, for example.

More directly on the question of Venezky's morphophonemic description as a practical basis for reading instruction, it seems doubtful if it could ever be applied in teaching young children to read. Very few teachers, let alone young children, could understand or remember its seventy or more pages of rules. For instance, the following is one of Venezky's *simpler* sets of rules:

"In some cases the discrimination of a morphemic spelling from an identical non-morphemic spelling is necessary for the prediction of sound from spelling. Consider the following two word lists:

A	B
boys	*melodius*
judges	*stylus*
cats	*apropos*
manes	*careless*

The pronunciation of final *s* in any column A word can be predicted by the following rules (these rules must be applied in the order shown here):
(1) /iz/ after /s, z, c, j, s, z/.
(2) /z/ after any other voiced sound.
(3) /s/ in all other cases.

These rules, however, apply only to *s* when it is one of the following morphemes –
(1) regular noun plural.
(2) third person singular, present indicative marker for the verb.
(3) singular or plural possessive marker.
(4) any of the contractions like *John's* (from *John is*)" (Venezky 1970: 42–43).

Venezky uses fifteen pages to explain his rules of the graphemic system. Then follow thirty-eight pages describing the distributions, correspondences and alternations of consonants in written or printed English. Fricative alternations occupy nine pages, and nineteen pages are needed to describe the distributions, correspondences and alternations of vowels in written English.

An Eclectic View.

If English orthography does not code phonemes, it seems odd that for more than a thousand years, scribes, printers, and teachers all behaved as if they were encoding or decoding phonemes. Scragg's *History of English Spelling* shows that the most common motivation for changing English spelling was to make it more *phonemic.* Writers and printers continually strove to bring the orthography back into line with pronunciation, as the latter changed. When they failed reformers urged them to return to a more phonemic representation. For example, Richard Hodges' *The English Primrose* published in 1644 introduces his plea for a more phonemic spelling with the text "If the trumpet giveth an uncertain sound who shall prepare himself to the battle?"

In more recent times, linguists who have specialized in applying their scientific knowledge to the practical problems of creating new writing systems have preferred to use the phoneme as their basis. For example, Pike in his well-known chapter on "The Formation of Practical Alphabets" states: "A practical orthography should be phonemic. There should be a one-to-one correspondence between each phoneme and the symbolization of that phoneme" (Pike 1947: 208). This is not because such categories as morphophonemes have been overlooked. For example, Crofts discusses this problem in developing an orthography for the Mundurukú language: "We have sets of words with two phonologically-conditioned allomorphs (forms with the same meaning but differing phonetically) i.e. post-positions that begin with d- following vowels, and with i- following consonants. We could choose a base to use throughout, but since *d* and *t* are full phonemes, we write these phonetically, not morphophonemically.

We have not found that this causes any confusion" (Crofts 1971: 52). Smalley recognizes that "there are some important cases where non-phonemic writing may be of great value" (Smalley 1964: 7) but these are the exception rather than the rule. He cites such instances as the plural morpheme *-s* in *boys* and *ships.*

Several linguists have proposed that other types of coding overlap with the general phonemic basis in English orthography.

Levevre concludes: "Despite the irregular and inconsistent relationships we have noted between phonemes and graphemes, an exhaustive listing would show that there are families and groups of words where the correspondences between sounds and spellings are fairly regular. Moreover ... word-form changes, prefixes, suffixes, and other systematic clues to language structure are generally spelled quite regularly without regard to differences in sound: this regularity corresponding to important structural signals probably compensates for irregular spellings at the phonemic level" (Lefevre 1964: 184). Lefevre's numerous examples include: (1) the regular noun plural inflection *-s* in *cats,* where the phoneme is /s/ and in *dogs* where the phoneme is /z/; (2) the regular verb inflection for the past tense spelled -d and pronounced /t/ in *dropped*, but /d/ in *learned.*

Vachek's view is that "most of the written norms do respect the correspondences between phonemes and graphemes to a degree (and some of them to a relatively high one) but alongside this basic type of correspondence one can also ascertain in these norms at least some specimens of correspondences on some higher language level" . . . (Vachek 1973: 21–22). These "higher" levels, according to Vachek, are the word and the morpheme.

At the word level, correspondence is produced by "the operation of the logographic principle," for instance, the homophonous but not homographic words, *right, rite, wright, write.* On the morphemic level, Vachek notes "the grammatical morphemes. Well-known cases of the kind are the Modern English -s endings of the plurals of nouns and of third person singular present indicative: in both grammatical categories the graphemic shape of the morpheme -(e)s is retained despite the

existence of the phonemically different allomorphs /-s/, /-z/, /-iz/, alternating according to well-known morphophonemic rules of Modern English" (Vachek 1973: 23–25).

Vachek recognizes that non-phonemic and phonemic principles may both be active in written English. He concludes that "there do not exist written norms based on an exclusive correspondence on one and the same language level. It seems certain, in other words, that all written norms constitute various kinds of compromises between the correspondences established at various levels" (Vachek 1973: 25).

Vachek emphasizes the shift in the function of writing which took place with the spread of literacy. In particular, "a tendency emerges aimed at establishing a direct link between the written utterance and the extralingual reality to which it refers. Such a direct link implies that the originally existing detour via the corresponding utterances is becoming gradually abandoned..." (Vachek 1973: 37). The silent reader needs writing "to speak quickly and distinctly to the eyes" and this is why "written norms often deviate from the correspondences on the basic level of language in the direction of logographic and/or morphological correspondences" (Vachek 1973: 53).

Vachek's eclectic view is consistent with the history of English orthography. When the seventeenth century schoolmaster grammarians began to publish their proposals for stabilizing spelling, these non-phonemic correspondences were given some explicit recognition. Vachek accepts also that shifts in written language may occur rather unconsciously as do shifts in pronunciation. For example, the tendency against two-letter words in English spelling such as *doe, rye, toe, see,* did not effect: *to*, *of*, *do, no, so, be*, etc. because "the early users of the English written norm unconsciously felt the difference of the non-formal and formal words and expressed the distinction between the two categories by the susceptibility of the former, and non-susceptibility of the latter, to the tendency against the two-letter words..." (Vachek 1973: 54).

This unconscious shift in written language conventions may explain why such curious spellings as *ghastly, ghost, ghetto, ghoul* have crystalized in present-day English orthography. Earlier English spelling always used *g*, not *gh*. The latter came in as a spelling error produced by Caxton. He spelled "girl" as *gherle*, "goose" as *ghoos*, "goat" as *ghoot*, and so on. But most of the *gh* spellings did not become popular. The only ones retained are those with "*strongly negative emotional colouring*" as Vachek notes.

Although his analysis is different, Albrow comes to a rather similar conclusion, i.e. that "the English writing system... is not one system of symbols corresponding rather superficially to sounds only (or rather to sound groupings called phonemes), but a system of systems, reflecting the phonological structure of the language, with different conventions for representing the grammatically (and lexically) different elements" (Albrow 1972: 10). The apparent irregularities of English orthography, Albrow proposes, are often due to the overlapping of these several systems.

In summary, the eclectic linguists such as Albrow, Lefevre, and Vachek accept that the primary basis of English orthography was a code for what are now called phonemes. However, they recognize that other spelling principles have developed alongside the phonemic one. The historical and phenomenological evidence seems to give greater support to this eclectic view than to the classical and revolutionary views discussed earlier in this article. English orthography was originally a code for phonemes and this phonemic principle has been consciously maintained and persists to the present day. Modern English spelling, however, is only partly phonemic because of unconscious changes in pronunciation, deliberate orthographic innovations of several different kinds, unconscious orthographic trends, spelling errors that became crystalized, and so on. The large majority of words are spelled phonemically and some spellings are irregularities from the phonemic rules, but a full understanding of English orthography as it presently exists can be

reached only through the recognition that other non-phonemic rules coexist with the phonemic ones.

This eclectic description is only slightly more complex than the classical ones of Bloomfield and Fries. The additional non-phonemic rules described by Vachek are few in number and readily understood by reading teachers and their pupils. Furthermore, the historical development of these principles of English orthography provides a logical basis for studying its present day form. Teachers and pupils need not be confined to the rote learning methods of traditional phonic instruction in reading and of most traditional approaches to spelling instruction. The eclectic view of English orthography encourages instructional approaches based on an intelligent understanding of why English words are written the way they are. In this manner the linguistic awareness of today's teachers and children can communicate more directly with the linguistic awareness of their antecedents who consciously and unconsciously developed the systematic foundations of English orthography.

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6. Language, Orthography, and the Schwa, by Katherine P. Betts, Ph.D.*

[*Note: this page is set to display International Phonetic Alphabet characters. If your browser over-rides this setting, by default or by choice, the IPA characters may not show.*]
Katherine Betts: see Bulletins.

*Winter Haven, Fl, U.S.A.
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This treasure, this symbolic storehouse of all man's recorded knowledge, this uniquely human behavior we call *language* does not readily yield insights and solutions to its mysteries. To those few whose artistry flows from their pens, we assign immortality. To those of us captivated by the study and analysis of language structure, we offer the inevitable debates arising from different disciplines and from various vantage points.

In the annals of language description and analysis, linguistics is a relatively recent discipline, as is its off-spring – psycholinguistics. Hence, lack of concensus and pluralism are appropriate and predictable. Contrastively, as we know, the battle for changing the vagaries and complexities of English spellings (orthography) has raged for centuries.

Despite their efforts, orthographers and alphabeteers have not changed, to any great degree, the way we spell the English language. (We have, in a limited way, used other alphabets, e.g., i.t.a., for beginning reading instruction.) But their greatest contribution, at this juncture, is the elevated status of orthographic study (e.g., included in college textbooks on reading instruction). That day is here, long overdue ultimate dream of orthographic practitioners has been cohesive, as illustrated by Dewey (1971, p. 6) a few years before his death:

> A wholly simple phonemic spelling of English would have only one grapheme corresponding to each phoneme, and only one phoneme corresponding to each grapheme. Our currently accepted T.O. (traditional orthography) is deficient in that it has only 26 letters, 3 of which (*c, q, x)* are for all practical purposes duplicates to represent about 41 sounds – probably the optimum number for a phonemic notation for general use. Largely in consequence of this deficiency, it is also defective in having a multiplicity of spellings for the sounds and a multiplicity of pronunciations for the spellings. Several symbols for one sound are a major obstacle to writing (more particularly spelling); several sounds for one symbol are a major obstacle to reading. The impact of this confusion is the most obstructive single factor in elementary education – in effect, a roadblock to reading, which is not only itself the most important subject of elementary education but also the medium thru which much of the rest of elementary education is carried on.

But the problems of fruitition have, for one, been captured by Wijk (in Haas, 1969, p. 58):

> The problem of devising a suitable new system of orthography for English may perhaps at first seem to be a comparatively easy one; but anyone who endeavours to penetrate more deeply into the question will soon find that it is fraught with formidable difficulties. The mere fact that the numerous attempts which have been made to solve it, both by eminent individual scholars and by societies specially founded for the purpose, have all failed to produce an acceptable solution, is in itself a sufficient indication of the intricate nature of the problem.

Is the goal of one-to-one phoneme-grapheme correspondence for English orthography an impossible dream? Or has it been achieved? These and other questions will be explored in this discussion of the schwa /a/ and its implications.

Admittedly, the schwa /ə/ phoneme is a miniscule element in the tapestry of the English language. Yet it serves as a classic example of problems plaguing any re-definition of English orthography and the teaching of reading/ writing skills.

The sound of *a* in *about,* or the *schwa* (a German modification of the Hebrew word *sheva,* originally meaning a diacritical marking of a vowel), entered the English language more than nine centuries ago, as explained by Scragg (1974, pp. 11–12):

> As a whole, Old English spelling as developed in the West Saxon tradition was much newer a one-to-one relationship with sounds than its Modern English descendant. . . The widespread use of a single stable spelling system for an extended period meant that the accuracy of phonemic representation was increasingly disturbed in the eleventh century, and spellings which had a one-to-one relationship with sounds gradually lost it as the phonemic pattern altered. . . Vowels in unstressed syllables gradually fell together in /ə/ [schwa], so . . ., for example, the symbols
> *a, e, o* all represent the same unstressed vowel; eleventh century scribes frequently confused these graphemes (and also u) in inflectional endings and affixes.

Some pertinent points regarding stress and its effects on sounds have been summarized by Classen (1919, p.209):

> It is found that all language sounds in stressed syllables have not the same [historical] development as sounds in unstressed syllables. This is only another way of saying that all sounds are combinatory, since their development is bound up with stress. But setting aside this point for the moment, it is clear that a sound which is stressed will have more resistance to changes of a certain kind than a sound which is not stressed, for it will not be slurred over in pronunciation, it will be more clearly pronounced and any divergence from the normal will be more noticeable than if it were unstressed. On the other hand, an unstressed sound tends to be slurred and shortened, especially in those languages in which the stress tends to fall on the syllable which really conveys the meaning, for in such languages unstressed syllables are less important from the point of view of significance. Hence there is usually in language less variety of sound and quantity in unstressed syllables than in stressed ones.

Definition

The schwa /ə/, e.g., the sound of *u* in *but,* one of nine simple (or "short") vowels in the English language, is articulated in the mid-central, lax position in American English dialects, somewhat farther back in British English dialects. It is an unrounded vowel in the respect that the lips do not enter into its articulation. Phonetically, the schwa /ə/(represented by *o* in *abbot)* is differentiated from its stressed allophone /ʌ/ (represented by the *o* in *mother);* phonemically, these variant sounds of schwa appear to be allophones of a single phoneme, a family of sounds in complementary distribution. Phonetically, the schwa-plus-*r* (e.g., *er* in *mother*) is considered *one* phoneme /ɚ/; phonemically (particularly in dictionary respellings), it has been interpreted as *two* phonemes /ər/. The schwa-plus-*r*, beyond the scope of this discussion, has been delineated in a companion paper by Emmett Albert Betts. "Implications of Spellings: "Graphic R".

In G & C Merriam's Webster's New Elementary Dictionary (1970, p. 26a), the *phonemic* definition of schwa is evident:

The sound represented by the symbol ə (called schwa) is one of the most common in the English language. When stressed this sound is spelled with the letter *u* in *cut. . . .* with *oo* as in *blood*, and with *o* as in *son, done,* and *color*.

When unstressed this sound may be spelled with any of the vowel letters as in *about* /ə-baut/, *silent* /'sī-lənt/ *maritime* /'mer-ə-tīm/, *collect* /kə-lekt/, *suppose* /sə-'pōz/, and *cylindrical* /sə-'lin-dri-kəl/.

Phonemic Basis

General Comments

The delineation of *phonemes* (a linguistic abstraction) and the differentiation between *phonetics* and *phonemics* (branches of phonology) appear crucial to this discussion. Hence, Gleason's (1961) interpretation:

> The *phoneme* is the minimum feature of the expression system of a spoken language by which one thing that may be said is distinguished from any other thing that may be said. (p. 16)

> A *phoneme* is a class of sounds which: (1) are phonetically similar and (2) show certain characteristic patterns of distribution in the language or dialect under consideration.

> The simplest of the patterns of distribution is free variation. The human vocal apparatus operates with an incredibly high degree of precision, but it is still far from exact. If the word key [two phonemes is pronounced, even by a single speaker, a hundred or so times and all the measurable features of each /k/ are measured, it will be found that no two are exactly alike. They will, however, cluster about certain average characteristics. . . Any two sounds (e.g., stressed and unstressed schwa) which are always in free variation cannot be two phonemes but only two points within the range that constitutes one phoneme. (pp. 261–267)

Linguistic pluralism regarding the classification of English phonemes was pinpointed by Wise in 1957; his comments, still valid today:

> The specific phonemes of the English language have never been completely agreed upon; on the contrary, those who have thought most deeply and effectively on designating them still change their minds occasionally as to what the phonemes are and what they include. . . two [definitions] have proved more useful than any others, viz., [Daniel] Jones' statement that a phoneme is a *family of sounds,* and Bloomfield's that a phoneme is a *minimum unit of distinctive sound features.* (pp. 74–75)

Pike's (1947, p. 57) metaphor clarifies the differing linguistic objectives of phonetics and of phonemics; as he points out:

> Phonetics gathers the raw material. Phonemics cooks it. Practical phonetics provides a technique for describing sounds in terms of movements of the vocal apparatus, and for writing them in terms of articulatory formulas., i.e., as letters of a phonetic alphabet. Practical phonemics provides a technique for processing the rough phonetic data in order to discover the pertinent units and to symbolize them in an alphabet easy for the native to read. The purpose of practical phonemics, therefore, is to reduce a language to writing.

Phonemic Status of the Schwa

That the phonemic status of the schwa /ə/ has been diversely interpreted in extant dictionaries and by eminent scholars cannot be denied. The schwa is the most frequent vowel sound in English

discourse (i.e., speech); its phonemic status, clouded by several factors: (1) the use of two symbols (/ə/ for *a* in *sofa,* /ʌ/ for *u* in *cut*) in phonetic alphabets, (2) a plethora of symbols in dictionary respellings (e.g., Emmett Betts, 1973, p. 13, identified 12 dictionary pronunciation symbols used between 1944 and 1953 for the schwa sound), (3) diverse interpretations in orthographic studies (e.g., Venezky, 1970, versus Dewey, 1971), (4) the ambiguous relationship of the schwa and its stressed allophone to the phonetic schwa-plus-*r* /ɚ/ e.g., *broth(er)* and its stressed allophone /ɝ/ (e.g., *b(ir)d*), and (5) shifts of stress in speech utterances (e.g., *ham and eggs* versus *ham 'n eggs*).

If one accepts the premise that the schwa and its stressed allophone are separate phonemes, then logically one also accepts the notion of separate phonemes for: the unstressed (e.g., *moth(er)*) and stressed (e.g., *b(ir)d*) allophones of /ər/, 8 other simple vowels, as well as 27 additional vowel nuclei (not all of which appear in any one dialect) articulated as off-glides with one of three semi-vowels (*h, w, y*), plus two diphthongs (as in *(ou)t, b(oi)l*), and the on-glide /yü/ (as in *c(u)te*). All of these, beyond the scope of this discussion (see Gleason, 1961, or Trager Smith, 1957); all of these, only the vowels!

A few years ago, Emmett Betts (1973, p. 13), discussing the schwa as part of a comprehensive article on the phonemic basis of word perception, made this observation:

"It will be noted that the schwa /ə/ is used phonemically in both the 1956 and 1970 editions of *Webster's New Elementary Dictionary.* This phonemic approach simplifies the use of pronunciation symbols and, therefore, makes the pronunciations more accessible to both child and adult." Further on, he provided a list of scholars who address the schwa phonemically and a list of scholars who have a phonetic orientation. An independent compilation made for this discussion is a bit longer and includes all the names on his list, with a change for Trager and Smith, who are now on the phonemic side of the fence. Also, Robert Hall, depending upon his objective, appears on both lists.

Thus the schwa /ə/ for designating both stressed (e.g., *m(u)d*) and unstressed (e.g., *(a)bove*) allophones is used by John B. Carroll *(Language and Thought),* 1964, W. Nelson Francis (*English Language,* 1965), H. A. Gleason, Jr. (*An Introduction to Descriptive Linguistics,* 1961), Robert A Hall, Jr. (*Sound and Spelling in English,* 1961), Archibald A. Hill (*Introduction to Linguistic Structures,* 1958), Chas. F. Hockett (*A Course in Modern Linguistics,* 1958), Herbert Landar (*Language and Culture, 1966*), Donald L. Lloyd and Harry Warfel (*American English in its Cultural setting,* 1963), Kenneth L. Pike (*Phonemics,* 1947), Clifford R. Prator, Jr. (*Manual of American English Pronunciation,* 1957), Paul Roberts (*Patterns of English,* 1956), Peter H. Salus (*Linguistics,* 1969), Norman C. Stageberg (*An Introductory English Grammar,* 1965), Richard L. Venezky (The *Structure of English Orthography,* 1970), Henry R. Warfel *(Language – A Science of Behavior, 1962*).

Authors espousing the phonetic interpretation of the schwa /ə/ and, therefore, classifying the schwa and its stressed variant /ʌ/ as separate phonemes include Arthur J. Bronstein (*The Pronunciation of American English, 1960*), Jon Eisonson and Paul H. Boase *(Basic Speech, 1956),* Louis H. Gray *(Foundations of Language,* 1939), Robert A. Hall, Jr. (*Introductory Linguistics,* 1964), C laude E. Kantnet and Robert West (*Phonetics,* 1941), John S. Kenyon (*American Pronunciation,* 1950), Ralph R. Leutnegger (*The Sounds of American English,* 1963), Albert H. Marckwardt (*Introduction to the English Language,* 1942), Dorothy Mulgrave (*Speech,* 1954), Thomas Pyles (*The Origins and Development of the English Language,* 1964), Charles K. Thomas (*Phonetics of American English,* 1958), Axel Wijk (*Rules for the Pronunciation of the English Language,* 1966).

One of these authors, Charles K. Thomas (1958, p. 58) pinpoints some problems with perceiving the schwa in unstressed syllables:

Many people remain completely unaware of the existence of /ə/, partly because of the variations in spelling conceal it, partly it is often interchangeable with un stressed /i/, and partly because of the natural tendency when an unstressed syllable is examined, to add stress to it, thereby changing its quality. The vowel /ə/ is, however, *one of the most frequent in English,* and its use is essential to good English pronunciation. Proper balance between emphatic and unemphatic material is as important in speech as is balance between singer and accompanist, or between foreground and background in a painting.

Thomas (1958, pp. 10–11) also concurs with Emmett Betts in reference to dictionary respellings of the schwa:

> . . . With rare exceptions we are visually minded; we rely more on our eyes than on our ears. We feel uncertain about an unfamiliar word till we can visualize its spelling, however odd that spelling may be. Our dictionary makers encourage this visual tendency, else we should not have so many symbols in all but the most recent dictionaries for the unstressed vowel [schwa] common to *(a)count, sod(a), sil(e)nt, Apr(i)l, c(o)nnect, and circ(u)s.*

Arthur Bronstein (1960, pp. 180–181), another of these phoneticians, has addressed the complex phonemic status of the schwa, noting the absence of "a satisfactory and generally adopted conclusion" on either side:

The /ə/ vowel is the lax, central vowel that can occur in any position of a word. . . It is probably best described as a sound made with the articulators in neutral position, with neither spread nor rounded lips, and with the tongue neither forward nor back. . . It is variously called the *schwa* sound, the indeterminate, weak, obscure, or un-stressed vowel . . .the schwa sound may be spelled with any vowel [letter] . . .The variations of the sound are dependent an the phonetic surroundings of the vowel. It is not an unstressed variety of other vowels, for any stressed vowel may also have an unstressed form. . .

/ə/ is the vowel commonly found in the monosyllabic definite and indefinite articles, prepositions, conjunctions, pronouns, and helping verbs as well as many other words not so easily classified: *a, an, the, but, or, for, from, of, her, them, shall, was, can, as* are normally spoken with /ə/, unless stressed. Many other words possess this intermediate vowel, that cannot be assigned to any other phonemic entity. . .

Because of the extensive unstressing of syllables in our language, /ə/ is our most commonly used vowel. . .

It is probably not necessary to mention that many linguists do not agree with the conclusion that recognizes /ə/ as a separate phoneme. . . The widely followed Trager-Smith system. . . describes the unstressed and stressed vowels of *above* and *under* as /ə-bəv/ and /ənd-ər/, and there is strong phonemic justification for this on the basis of complementary distribution (i.e., /ə/ and /ʌ/ do not signal differences in meaning). . .

Some linguists, then, prefer using /ə/ as a separate phoneme in American English, recognizing /ə/ and /ʌ/ as belonging to /ə/.

Syllabic *l, m, n*
In relation to syllabic *l m, n,* – as in *coup(le), har(um), poll(en)* – the equivocal status of the schwa /ə/ has yet to be resolved. Evidence of ambiguity in this area abounds, particularly obvious in dictionary respellings of word forms with one of these syllabic phonemes. Differences are found, not only across dictionaries but also in different editions of the same dictionary. A consistent

rationale for the examples below has not been discovered:

Words	G. & C. Merriam Webster's New Elem. Dict.		G. & C. Merriam Webster's Secondary Dict.	Random House Collegiate Dictionary	Thorndike-Barnhart World Book Dict. (2 vol.,)
	1975	1970	1959	1969	1979
people	/'pē-pal/	(same)	/'pēp-l/	/pē'-pəl/	/pē'-pəl/
bottle	/'bät-l/	(same)	(same)	/bot'-ᵊl/	/bot'-əl/
shuttle	/'shət-l/	(same)	(same)	/shut'-ᵊl/	/shut'-əl/
hovel	/'həv-əl/	(same)	/'həv-l/	/huv'-əl/	/huv'-əl/
counsel	/'kaüns-əl/	(same)	/'kaün(t)s-l/	/koun'-səl/	/koun'-səl/
column	/'käl-əm/	(same)	(same)	/kol'-əm/	/kol'-əm/
bottom	/'bät-əm/	(same)	/'bat-m/	/bot'-əm/	/bot'-əm/
custom	/'kəst-əm/	/'kəs-təm/	/'kəst-m/	/kus'-təm/	/kus'-təm/
token	/'to-kən/	(same)	/tok-n/	/to'-kən/	/to'-kən/
carton	/'kärt-n/	(same)	(same)	/kar'-tᵊn/	/kar'-tən/
pigeon	/'pij-ən/	(same)	/'pij-n/	/pij,-ən/	/pij'-ən/

One may note in these examples that syllabic *l*, *m*, *n,* have been respelled (often for the same word) in three ways (e.g., /-əl/, /-l/, /-ᵊ/ (The term *same* in the above chart refers to agreement with the respelling in the first column.) Incidentally, the syllabication of these respellings also varies (e.g., *people, custom, carton*).

Morphophonemic Alternations

The phonemic status of the schwa /ə/ can also be observed in morphophonemic alternations (e.g., phonemic variations of morphemes). Of the several options in this complex category, the following examples illustrate the effects of shifts in syllable stress in pairs of identical word forms. Merely by shifting primary stress from the first to the second syllable in each pair of words, one may observe a shift in form class, in meaning, and in pronunciation (i.e., the formerly stressed vowel shifts to schwa /ə/). (The respelling symbols are from the 1975 edition, G. & C. Merriam's phonemically based *Webster's New Elementary Dictionary.*):

contract	/'kän-trakt/	(noun) vs.	*contract*	/kən-'trakt/	(verb)
convert	/'kän-vərt/	(noun)	*convert*	/kən-'vərt/	(verb)
convict	/'kän-vikt/	(noun)	*convict*	/kən-'vikt/	(verb)
content	/'kän-tent/	(noun)	*content*	/kən-'tent/	(adjective, verb, noun)
entrance	/en-'trans/	(verb)	*entrance*	/'en-trəns/	(noun)
moderate	/'mad-ə-,rāt/	(verb)	*moderate*	/'mad-ə'rət/	(adjec.)
annex	/'an-eks/	(noun)	*annex*	/ə-'neks/	(verb)

In each of the above, (and other) examples, the schwa /ə/ phoneme contrasts with each of the stressed vowel phonemes to signal differences in meaning. However, no example could be found in which the schwa /ə/ contrasted with its stressed allophone /ʌ/ to signal different meanings, *an important criterion in determining separate phonemes.*

Graphemic Basis

General Comments

As we know, alphabetic symbols – or graphemes – are the other side of the phonic coin. The degree

to which graphemes represent phonemes has been assigned various terms: *relationships, correspondence,* or *fit.* As orthographic scholars and practitioners have so often pointed out: phoneme-grapheme relationships in the English language are notoriously complex, often irregular, sometimes inscrutable. However, they are not irrational; else none of us could have learned to read and write English.

In addition to the phonemic reference of graphemes, Gleason (1961, pp. 409–411), for example, illustrates their morphemic reference:

> A writing system consists of a set of *graphemes* plus certain characteristic features of their use. Each grapheme may have one or more *allographs*. . . the relationship of graphemes to allographs is similar to that between phonemes and allophones. . .

> The most familiar type of grapheme is that with a *phonemic* reference. . . The reference of a grapheme may be single-valued or multi-valued. These complexities are merely instances of the intricate fit which exists between the English writing system and English phonology. . .

> A second type of grapheme has *morphemic* reference. This is the case with English &. . .

> Another somewhat different instance of an English grapheme with morphemic reference is English 'in boys' [' refers to possession; morphemic -s refers to plural]. . . . *Boys, boy's* and *boys'* are phonemically identical, but are morphemically distinct.

Other queries regarding graphemic reference will be raised in relation to the schwa; for example:
1. How do relational versus marking functions of graphemes (see Venezky, 1970) enter into decisions regarding specific phoneme-grapheme relationships?
2. How does the "silent-letter" debate affect similar decisions?
3. How should graphemes within word forms be segmented to provide generalizable data regarding phoneme-grapheme relationships?
4. How important is frequency-of-occurence in reporting the spellings of sounds and the sounds of spellings?

Graphemic Status of the Schwa
In stressed syllables, the schwa /ə/ is spelled by:
1. *u* as in *fun, rug, run, luck* (the most frequent spelling)
2. *au* as in *rough, country, trouble* (highly frequent spelling)
3. *a* as in *ton, other, mother* (frequent spelling)
4. *o-e* as in *come, love, done* (infrequent spelling)
5. *oo* as in *flood, blood* (rare spelling)
6. *oe* as in *does* (rare spelling)
7. *a* as in *tam-tam* (rare spelling)

In unstressed syllables, spellings of the schwa /ə/ include:
1. *a* as in *away, about, cereal* (the most frequent spelling)
2. *e* as in *wanted, pavement, taken* (highly frequent spelling)
3. *a* as in *pilot, carbon, atom* (frequent spelling)
4. *i* as in *habit, civil, devil* (infrequent spelling)
5. *u* as in *upon, column, hocus-pocus* (infrequent spelling)
6. *ai* as in *captain, fountain, mountain* (infrequent spelling)
7. *au* as in *glorious, famous* (infrequent spelling)
8. *y* as in *analysis, paralysis* (rare spelling)
9. *eo* as in *luncheon* (rare spelling)

10. *ai* as in *captain, fountain, mountain* (infrequent spelling)
11. *au* as in *restaurant* (rare spelling)
12. *io* as in *fashion, legion, region* (infrequent spelling)
13. *ei* as in *forfeit, counterfeit* (rare spelling)
14. a-e as in *capsule* (rare spelling)

Therefore, it seems that three spellings (*u, ou, o*) of the schwa predominate in *stressed* syllables; all other spellings of this sound are infrequent or rare. Interestingly enough, three spellings (*a, e, a*) most frequently represent the schwa in unstressed syllables; all other spellings, again, are infrequent or rare. Although frequency of occurence is not unique to this discussion, it remains an important criterion in evaluating the spellings of sounds and the sounds of spellings.

Next, conclusions regarding the number and variety graphemes representing the schwa /ə/ vary, being highly dependent upon the approach taken. If, for example, the schwa and its stressed allophone are classified as separate phonemes in reporting spellings of this sound and if (as has often been done) the schwa-plus-*r* (excluded from this study) is separated and reported as spellings of schwa, then understandably the data regarding the spelling of this sound will be considerably different from study to study.

There are, also, other sources of variety in reporting the spellings of the schwa /ə/. For instance, one can be quite tidy, accounting for ambiguous vowel graphemes in word forms, and assign split digraphs (e.g., *o-e* in *come)* and split-digraph combinations (e.g., *u-ue* in *brusque)* to spellings of schwa /ə/. Or one can espouse the "silent-letter" syndrome and thus eliminate the *e* in *come* and the *ue* in *brusque* from any further consideration. (Actually, all letters are silent; their function, complexly symbolic!) Still another way to deal with these troublesome orthographic features is to describe the *e* in *come* and the *ue in brusque* as serving neither a marking function (i.e., signaling the sound of a previous vowel in the word) nor a relational function (ie., representing a phoneme) and to classify these graphemes in terms of graphotactics (i.e., serving only a spelling convention).

Other Orthographies

Many have addressed their efforts to orthographic change. Some have published their rationale and proposals for change; others have not. Fortunately, a compilation of fifty-plus orthographic proposals (Emmett A. Betts, Editor, *Orthographies;* 1974) was completed during two years of Phonemic Spelling Council activities. This compilation has provided a rich resource for an analysis of the schwa in stressed and unstressed syllables: consistency in the treatment of the schwa and recommendations for spelling this phoneme. The purpose of this analysis is not to endorse any one proposal over another, but rather to draw some conclusions regarding the interpretation of the schwa.

Corpus
All of the authors submitted their rationale, their proposed alphabet, and an approved transliteration of Lincoln's *Gettysburg Address* (177 words, including the title). Altogether, there were originally 54 orthographic samples in the 1974 edition (the first one, T.O., or traditional orthography). Of the 54, 5 were deleted: two at the request of the authors; three, shorthand systems requiring special training to read.

Procedure
l. The T.O. sample was examined to determine frequency of occurence of the schwa /ə/ in stressed and unstressed syllables, including syllabic *l, m, and n*.
2. The proposed spellings for the schwa were examined in the rationale and in the sample.
3. The results were tabulated, classified, and converted to percentages without reference to specific authors.

Results
1. In the T.O. sample, 62 (or 35%) of 177 words in the *Gettysburg Address* include the schwa /ə/ in their pronunciation – 9 in stressed syllables and 53 in unstressed syllable s.
a. In T.O. stressed syllables, the schwa /ə was spelled most frequently by *u* (n=5), less frequently by *o-e* (n=2), *o* (n=l), and *a* (n=1).
b. In T.O. unstressed syllables, the schwa was spelled most frequently by *e* (n=12) with 3 of the remaining *e* spellings also shifting to unstressed /i/ (e.g, *r(e)maining, d(e)votion, r(e)solve,* Less frequent spellings were *o (n=9), a* (n=7), and *i* (n=2).

2. The various recommended spellings of the schwa /ə/ in 48 orthographic proposals were tabulated and classified in the table which follows; the results reveal some interesting trends, as well as variability within individual proposals and across proposed systems of spelling:
a. An overwhelming majority (83%) of the proposed orthographies opted for the *u* spelling of schwa in stressed syllables. (Two of these added diacritical marks to *u*. One also used the same symbol *u* to represent /ü/ as in n(ew).) Note:– *new* is also pronounced /nyü/.
b. The remaining 17% recommended 6 different symbols for stressed schwa; two of these used the ə symbol for their spelling of the sound.
c. Almost half (or 40%) made no provision for the schwa in unstressed syllables, instead using their stressed representation of the vowel grapheme (as in *contin(e)nt).* However, about a third of this number did provide for syllabic *l* (as in *peop(le)).*
d. A few proposals (13%) used *m* for syllabic /m/, and 15% used *n* for syllabic /n/ (as in *nati(o)n)).*
e. Interestingly, 60% proposed symbols for unstressed schwa; of this number, two-thirds recommended *u* for spelling schwa in unstressed syllables.

The Schwa /ə/ in 48 Proposed Orthographies for English

Stressed Syllables			*Unstressed Syllables*				
Grapheme	*No.*	*Spelling of "but"*	*Grapheme*	*No.*	*Syllabic 1,*	*m,*	*n*
u	38	but	* No provision	12	N= 25	6	7
			No provision		%= 52	13	15
ʉ	1	b~~ut~~	except for /l/	7			
u	1	but		N= 19 (or 40%)			
			u	18 (or 38%)			
N= 40 (or 83%)							
ə	2	bət	ə	4			
(or 4%)							
v	1	bvt	a	2			
e	1	bet	(apostrophe) '	1			
.	1	b.t	i	3			
			(alternate with ə)				
ʌ	1	bʌt	e	1			
				29 (or 60%)**			
q	1	bqt					
o	1	bot					
8 (or 17%)							

*No provision indicates that the schwa /ə/ in unstressed syllables was ignored, i.e., transliterated as the stressed representation of the vowel grapheme (e.g., the e in judge- m(e)nt).
**12 of 29 (or 41%) of orthographic proposals having a symbol for unstressed schwa /ə/ were not consistent in the use of this spelling.

Implications for Reading and Spelling

The title originally opted for this paper, "Implications of Spellings for the Schwa," was revised after a preliminary review of orthographic studies and relevant linguistic publications; the approach, deemed inadequate. As a result of the broader base which was developed and the diversity of positions therein, one can draw a variety of implications for reading and writing.

Of course, the one which has captured the motivations of almost all orthographic practitioners has, after all these years, been aptly summarized by Bloomfield (1933, p. 500):

> Although our writing is alphabetic, it contains so many deviations from the alphabetic principle as to present a real problem, whose solution has been indefinitely postponed by our "educationalists' " treatises on methods of teaching children to read. . . The primers and first reading books which embody these doctrines, present the graphic forms in a mere hodgepodge, with no rational progression. At one extreme, there is the metaphysical doctrine which sets out to connect the graphic symbols directly with "thoughts" or "ideas" – as though these symbols were correlated with objects and situations and not with speech sounds. At the other extreme, are the so-called "phonic" methods, which confuse learning to read and write with learning to speak, and set out to train the child in the production of sounds – an undertaking complicated by the crassest ignorance of elementary phonetics.

Of many implications for reading and writing, here are some major ones which merit consideration:
1. English orthography is multi-faceted, having phonemic, morphemics and grammatical bases. Therefore, one can simplify one facet (e.g., phoneme-grapheme relationships) and, at the same time, complicate another facet (e.g., morphophonemic change, as in *s(ig)n* versus *s(ig)nal)*.
2. Frequency of occurence (not only of words but also of Phonemes and graphemes) appears to be a significant variable in analyzing the implications of sounds of spellings and spellings of sounds in orthographic studies and in developing materials for reading/writing instruction.
3. Lack of concensus regarding the phonemes of English and the functions of graphemes (elaborated in Graphemic Status of the Schwa) within word forms causes some difficulty in forming valid generalizations across orthographic studies. Ibis vacillating pluralism underscores a need for greater emphasis on the theoretical underpinnings of orthographical proposals and of reading/writing instructional materials.
4. Methodology in reading and writing instruction is allied, but does not have a linear correspondence with consistent phoneme-grapheme relationships. Many other factors, beyond the scope of this discussion, must be taken into account in developing, planning, and delivering effective reading and writing instruction.

In Conclusion

This discussion has focused on a somewhat exhaustive examination of the schwa /ə/: its definition, phonemic basis, occurence in syllabic *l, m*, and *n*, morphophonemic alternations, variability in dictionary respellings, graphemic basis, and a mini-study of its interpretation in 48 proposed orthographics for English. However, the undercurrent of this discussion propels the schwa in terms of its broader implications for reading and writing. Thus the schwa has served as a classic example of several controversial facets of the English phonemic-graphemic system, as well as an example of the morphemic basis of English spellings. Also pondered upon – but briefly – have been the effects of syllable and phrase stress on English phoneme-grapheme relationships which shift in discourse (as they should). Furthermore, syllable and phrase stress combine with pitch and juncture to form the melody – or intonation – of language.

Consistency and simplicity of phoneme-grapheme relationships in the English language are viable objectives, worthy of pursuit, particularly for the beginner attempting the acquisition of reading and

writing skills. That English spellings are notoriously complex in their representation of speech, is a valid premise. That several languages (e.g., Spanish, Greek) have a more nearly consistent phonemic representation in their writing systems must also be accepted. However, a one-to-one phoneme-grapheme correspondence is a goal in conflict with the melody of the English (or most any other) language and the many dialects it represents.

In any event, may our efforts be guided by empirical evidence in the classroom, by professional objectivity, and by the practical application of a sound theoretical structure. Whatever the state of our knowledge, we have achieved it, via the miracle of language, by standing on the shoulders of giants in their field, as they have stood on the shoulders of those before them*. It has been said that when our information is structured, it becomes knowledge and that, finally, the appropriate application of that knowledge is wisdom. To bring complex, worthwhile goals to fruition requires the collaborative efforts of many and, above all, a genuine concern and love for mankind.

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7. Appendix – Orthographies: 1974. by Emmett Albert Betts, Ph.D., LL.D.

See main article above.

Appendix – Orthographics: 1974

by Emmett Albert Betts, Ph.D., LL.D.
Research Professor, Emeritus, Adjunct Prof. of Psychology, Reading Research Laboratory Univ. of Miami, Coral Gables, Fla.

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21. Sistematïzd Ënglish.Ali Fiumedoro, Boston, Mass.
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43. Britic. Reg. Deans, World Language Assoc. Leeds, England.
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47. Compatible Phonemics. Jules E. Dieudonné, New Iberia, Louisiana.
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51. Letẹr Ritẹr's Alfẹbet. Walter Schneider, Edmonton, Alberta, Canada.
52. A Symbol for Each Sound. Emma B. Johnson, Canal Winchester, Ohio.
53. Sound-Spell. Kingsley Read, Abbots Morton, Worcester, England.
54. a.i.t.a. Ralph Leighton, Altadena, Calif.

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8. Acceptable to Whom? How Progressives and Reformers view Spelling Reforms, by Kenneth H. Ives*

*Chicago, Ill.

In a previous article (Acceptability of Proposed Spelling Reforms, *Spelling Progress Bulletin,* Summer, 1979), ratings of some proposed spelling reforms by a sample of progressive minded people were given. A questionnaire was enclosed for readers to send in their own reactions. These they marked from +3 to –3 after each proposed reform.

Hence it is now possible to compare the views of these two groups. Excluded below are those progressives who opposed or were neutral toward all spelling reforms.

Both groups firmly favored the first six steps of Progressiv Spelling, and two of three parts of PS7, as the scores in Table 1 indicate. Several other reforms were favored moderately by both groups, but less by Progressives than by reformers.

Table 1:

	Favored by both groups	Progressives	Reformers
PS1:	altho, tho, thru, thoro	+2.7	+ 2.4
PS2:	catalog, -er; dialog, prolog, synagog	+3.0	+ 2.0
PS3:	programmer, traveled, canceled	+1.9	+ 1.6
PS4:	dropt, fixt, mixt, stopt	+2.7	+ 2.3
PS5:	livd, seemd, tumd	+1.0	+ 1.4
PS6:	clipt, dript, dwelt, publisht	+0.9	+ 2.7
PS7a	enuf, ruf	+1.4	+ 1.9
PS7c	foto, fotograf	+1.6	+ 2.3
	sherif, tarif	+0.6	+ 0.7
	givz, livz, telz	+0.6	+ 0.9
	scool, caracter	+0.4	+ 1.7

Differing reactions
Eight changes favored by reformers were opposed or faintly favored by Progressives. On the other hand, two were favored by Progressives but not by reformers. Chance probabilities "p" for these differences (their "statistical significance") range from .001 to .185, or 1 in 1,000 to 1 in 5.

Table 2: Differing reactions

		Progressives:	*Reformers*	*p's*
SRI:	agen, deth, hed, heith	− 0.7	+ 3.0	.001
	clas, les, mis	− 1.0	+ 2.4	.002
	stil, tel, wel	− 0.3	+ 2.6	.02
	noe (know), noen, nolij	− 1.0	+ 1.4	.02
	giv, liv, mor, sens	+ 0.3	+ 2.6	.02
	adishn, atenshn	− 0.4	+ 0.6	.06
	fors, ofis	− 0.6	+ 1.3	.10
PS8:	levl, locl, totl	+ 1.1	− 0.1	.10
PS7b	nabor, naborly, naborhood	+ 0.3	+ 1.1	.125
	aftr, ovr, undr	+ 0.8	0.0	.185

The unanimous backing by spelling reformers of SR1 (Spelling reform, first step) proposed by Harry Lindgren, appears to be a "bandwagon" effect, inspired by the publicity it has aroused in Australia. This enthusiasm is clearly not shared by Progressives unfamiliar with that proposal and its attendant controversy. On 8 of these changes, reformers are far ahead of their "constituency" of Progressives who might be persuaded to urge and adopt limited reforms.

How to proceed?

The questionnaire also askt reformers their preferences for rules for each sound, or a short list of examples. Half preferred both, 1/3 a short list, 1/6 rules. Should reformers offer a complete system? 1/3 Yes, 1/3 no, 1/3? Gradual steps? 5/7 yes, 2/7 no.

While the number of respondents is small, the differences between progressive adults and spelling reformers is large enuf to have a small probability of occuring by chance. If we wish to get some reforms adopted, we will probably have to stay closer to what progressive adults are ready to favor, rather than to succumb to the enthusiasms of spelling reformers.

Reformers can design steps which progressives will favor, in such a way that these steps will lead toward a consistent phonemic system. But for the sequence and timing of steps, the reactions of progressives, and to some extent of the public at large, need to be known and largely followed.

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9. DIGRAFS & DIPTHONGS, – in STABLE Inglish

Altho the wuds seem ful ov thoze prone tu foist thare opiniuns upon uthers, feu indeed, ar thoze
hu hav eny praktikal konsept ov kumparativ analisis and/or kunstruktiv kritisizm. Feu wud-be spelling reformers hav
given the matter enuf study tu diskus it komprehensivly. Ex:– Not so long ago a felo-krusader rote asking WHY I keep
harping on the EU digraf (which iz really a *dipthong*), – and then proseded tu diskus the true digrafs (ch, ng, sh, th, zh),
– with no further refrens tu the EU notashun, – thus revealing that he didnt no the difrens between a digraf and a
dipthong. POINT:– Akording tu miy WEBSTERS (?) dikshunary, a "digraf" iz *TU* letters indikating *WUN* sound, (ch,
ng, sh, th). Konvursly, a "dipthong" iz a 2-letter inskripshun indikating *TU* sounds. Az I see it, a dipthong kan be broken
doun and pronounsed az individual fonemes, (oil, out, feud, beauty, o-il, ah-oot, fee-ood, bee-ooty), – which iz not true
ov digrafs.

Tu the best ov miy noleje, the EU sequens iz always a dipthong – never a singl sound! Further,
az a rezult ov more thuro analisis, I find that EU iz the dominunt spelling for the U–dipthong, (feud, eunuch, euchre,
eulogy, eucalyptus, euphony, eugenics, Eugene, Europe, agenst yule, Yukon, Yucatan, you, yours, youth), POINT:–
Insurting E, – within the wurd, – ofers less distorshun ov pattern than Y duz (formeulate-formyulate: -formeula-
formyula:- foucher-fyucher). Houever Y seems more f onetik, inishally, – without preventing an unfamilier pattern
(yunuk, yulojy, Yujene). Thus, YU inishally and EU elswhare mite be most praktikal.

But more siriusly, – The promoters ov the long voul E-digrafs "gufed" biy spelling the U-dipthong kontrary tu foniks,
UE rather than EU and/or YU, – eech ov which iz akseptably fonetik, – and wel established in that role. POINT:– The
"UE" sequens iz wun ov the most *UN*-reliabl notashuns with which reformers ar fased. Altho we du hav a FEU komun
wurds in which turminal UE iz arbutrarily pronounsed az a dipthong (ague, argue, value, continue, venue), it iz more
ofen silent, even in that pozishun, (brogue, tongue, league, plague, renigue, colleague, morgue, intrigue, botique, pique,
antique, unique, critique, cheque, grotesque, oblique, technique, etc., etc.). Sumtimes only U iz silent, (guest, guess,
bouquet, croquet, coquette, marquee, communique, etc.) Uther times the E iz silent, (rue, true, blue, flue, glue, sue).
Further, – Perhaps the UE notashun iz pronounsed az indivjuual fonemes more ofen than eny uther way, (cruel, cruet,
duel, duet, gruel, suet, quench, quell, queer, queen, squeezes squeal, squeak, quest, question, fluent, inuendo, minuend,
minuet, bequeath, frequent, sequence, etc. etc. Thus it iz obvius that spelling the U-dipthong bakwerds iz not only
unreliabl,– but also inexkeuzabl, – even ridikeulus!

It iz miy understanding that this deplorabl blunder kame about sum jenerashuns bak, when sumbody, – nobody seems
to no just HU, – desided that treeting the NAMES ov the vouls az thare "long" sounds wud fasilitate inishal foniks
instrukshuns. Altho this may hav pruven true ov A, E, I, O, it kannot be true ov U, – bekoz its name iz a DIPTHONG, –
TU sounds (pllural), therefore it kannot indikate a (singl) long sound. Obviusly, thoze "authoritys" wur not kunsidering
fonetik spelling! Nor did the orijinaters ov the E-digraf long vouls giv it du kunsiderashun!

Around turn ov the senchery, we wur tot that the TRUTH-TOOTH voul woz the "long" -U, – same az in Spanish, – and
that OO iz an imposter in eny role. POINT: –The TRUTH-TOOTH voul iz spelled with U more than 4 times az
frequently az with OO, akording tu miy chek ov 17,000 komun wurds. Ov korse that iz kounting the U in existing
dipthongs, -al ov which involv the TRUTH-TOOTH voul. Altho we havnt cheked the PUT-FOOT voul frequensys, thay
seem quite evenly divided, – until we kunsider the meny potenshal "-ful" suffixes, – which givs U the ej. Biy no strech
ov normal imajinashun iz OO a modifikashun ov ither long or short O. Konvursly, thare kan be no queschun about the
PUT-FOOT voul being the medial U. Thus OO haz no plase in fonetik spelling.

The point we wish tu kary iz just this:– Thoze projekting the E-digraf long vouls ar admonished
tu yuze YU and/or EU az the U-dipthong, and UE az the long-U, in keeping with the uther long vouls, singl sounds
identified by a foloing silent-E (ae, ee, ie, oe, UE, -brae, bee, die, doe, *sue*, –
baet, beet, biet, boet, b<u>ue</u>t)

When we furst chalenjed the UE spelling ov the dipthong, we wur informed that the E-digrafs had
bin wurked out biy a "select" grup ov wel traned and "highly respekted" ejukaters, – tharebiy infuring that "selected"
and/or "respected" ejukaters ar not given tu arer, – nor subjekt tu kritisizm. POINT:– Rite thare lies a majer stumbling-
blok tu spelling reform, krusaders negativ atitudes tord eech uther, – and refeuzal tu aksept kritisizm, – tu kompromize
or kooperate.

Leo 9. Davis, Palm Springs, Ca. U.S.A.

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Our Readers Write About:

10. How is type set?

To the Editor of *SPB*:   **Edward Rondthaler**

Only a few years ago the mathematical chore of balancing checking accounts and filling out income tax forms was a big one. Today we can do the arithmetic quickly and accurately with a little electronic calculator bought at the supermarket for $6.98. Everybody knows about electronic calculators, but writers in *Spelling Progress Bulletin* seem not to know that almost all typesetting today is done on computerized keyboards that are just as magic with letters as the little calculators are with numbers.

With certain adjustments, the typesetting keyboards in use today could be programmed to accept traditionally spelled manuscript and convert it miraculously into letter-perfect typesetting in SR-1, SR-2, SR-3, SR-50 or any other reformed system that uses the Roman alphabet – the word "any", for example, would go into the keyboard as a-n-y and come out typeset, as e-n-y.

Virtually all books, newspapers, magazines, journals, annual reports, instruction booklets, and even most repeated form letters are typeset on such keyboards – almost everything you read except what is handwritten, typewritten, or mimeographed (or painted-signs). In the world of business, this new technology is as commonplace as the ballpoint pen.

It is difficult to understand why spelling reformers have been so slow to grasp the enormous significance of this new tool. Overnight it could transform all printed English into whatever system of reform is agreed upon – without requiring any retraining of authors, editors, copywriters, typesetters, or anybody else.

Reforming the *printed* word is 90% of the battle. When print is simplified, then handwriting and typesetting will ultimately follow its lead – just as we find ourselves beginning to use the Metric system as a natural result of seeing it printed more and more frequently on cans, packages, thermometers, in text books, on highway markers, etc. etc. Reformed spelling is best learned through absorption, not through compulsion, and automatically transliterated typesetting offers a practical way to achieve this. Some day we will look back and wonder why spelling reformers were so slow to recognize this fact, and regarded it largely as a way-out gimmick. Future generations will wonder why we reformers of the '70s were unable to grasp the relationship between automatic computerized transliteration and the ultimate achievement of spelling reform. Yours sincerely,

Ed. comment: But don't overlook the fact that Congress and Parliament had to pass acts before Metric was established and utilized on those cans and hiway signs.

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11. Comments on Digrafs and Difthongs
Dear Newell: **Helen Bonnema Bisgard**

Leo Davis frowns upon the *ue* digraf of World English spelling (WES). I do not know who is the "crusader" whom Davis takes to task for preferring *ue*, but I am happy to defend that correspondent's point of view. Davis says that since a difthong can be broken down and pronounced as individual phonemes, *feud* equals */fee-ood/*, and therefore *eu* is a more appropriate symbol for WES. His *eu* might be acceptable in a system where the single letter *e* is pronounced as in /bee/ and the letter *u* as in /food/, but not in WES where *e* sounds as in /bet/ and *u* as in /but/, /eh-uh/

Why was *ue* selected for WES? Godfrey Dewey explained in his book, *English Spelling: Roadblock to Reading,* ". . . the commonest fault is failure to recognize that a digraph is a unit quite independent of the values of the component letters, and therefore should be devised for *maximum compatibility with T.O. usages,* rather than striving for a forced or logical relationship to the component letters." Also since *ae, ee, ie, oe* symbolize the long vowels, it follows logically that long *u* would be *ue.*

In 364,381 running words of representative material in traditional orthography, Davis' recommended *eu* as in /feud/ occurs 18 times (in only 6 different words). In the same sample, WES's *ue* as in /due/ occurs 53 times (14 different words). In addition, *u-consonant-e* as in /use/ occurs 248 times (in 81 different words). Surely the letter sequence *ue* for the difthong under consideration is more familiar to the reader.

Why Davis allowed the words *quench, quell, queer, quest, queen, squeeze, squeal, squeak,* and *question* to slip into his argument is a puzzle. The digraf *qu* pronounced /kw/ has no place in this discussion. And the *e* in these examples is separate from the *u* (neither a digraf nor difthong).

Also I fail to see why Davis should be so meticulous about whether the symbol for the difthong is referred to as a digraf, since the *Merriam Webster III New International Dictionary* (1976) indicates that "a digraph is any group of two successive letters," and that a diphthong can be referred to as a digraph, but the two terms are not synonomous.

To assuage his pique about the exclusiveness of board membership in the Phonemic Spelling Council, I suggest that Davis organize a council of his own. He can select anyone he chooses. As the saying goes, "This is a free country."

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12. The Chicago Tribune's Adventure in Spelling

Mrs. Lee Major, Archivist,   **Raymond H. Pierson**

A Tribune Company Archives,
Chicago, Ill.

Dear Mrs. Major: Thank you for your kind and comprehensiv lettr of May 17, 1979. I had often wondered about the word lists and dates that you gave me.

Now I do not consider myself an expert in regard to the problem of simplifying our language but I hav aquird some background from sources such as Harry Lindgren's book, *Spelling Reform – A New Approach, 1969,* and a number of articles in publications such as *Spelling Progress Bulletin.*

Hindsite is ever so much better than foresite. Looking back now at the lists you sent me, it is in my opinion very easy to see why the Tribune finally had to abandon its revised spellings!! I had previously thought "How tragic; what a pity; a step backward." But now I say the project shoud hav ben abondond erlier – not even started on the "shotgun" plan on which it began.

Don't take these comments as being *too harsh* or from an ungrateful person.

If you consider Lindgren's approach in which all common words with the soft /e/ sound in "head, said" is spelled "hed, sed" etc., I think you will see the advantage of a gradual approach, i.e., *one* type of change at a time, but *all* words so involvd affected.

Your lists indicate the Tribune's erly efforts involvd no less than *26 types* of change, and that in only 3 cases (doubl *f,* doubl l, and *ue* after *log*) were numerous exampls given. Even these categories leave room for meny other words *not coverd* by the proposd changes. Remember now, *hindsite* sez, "No wonder the paper met resistance and complaints." Even Lindgren's SR-1 has had only limited success so far (and only in parts of Australia)!

Because (1) I really appreciate your efforts on my behaf and (2) because there is considerable interest in some areas in doing something about our awful spellings, I took the trubl to set up the enclosed analysis of your lists.

Some "lite at the end of the tunnel" re: regularizing exists. Without going into detail, (1) we hav fonetic spelling in shorthand (altho subject to the riter's interpretation, i.e., how he (or she) pronounces words; (2) there ar committees in out government interested in English (Inglish) as a universal language for *foren trade;* and (3) the computer may be a big booster: we alredy hav computerized tapes for (so far) limited amounts of translations from one language to another and it is easy to tell a computer to transcribe eny word ritten in T.O. (Traditional Orthography) into eny spelling we program it to produce for that word. For example, we can rite "said" in T.O. and the computer sees it in T.O. and prints it out as "sed."

You may not be personally interested in regularizing spellings but you may know others at the Tribune who woud like to see my comments.

Agen, meny thanks, sincerely yours,
Raymond Pierson

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13. SOME KEYBOARD OPTIONS AND CLOSE PHONETIC REFORM
by Arnold Rupert, Lunenburg, Ontario.

Tho Dr. Godfrey Dewey was closely associated with practice and teaching of shorthands, as well as with several good plans for spelling reform within Roman letter design principles, he did not think eny steno type alphabet practical as a general use orthography & even despaired of public acceptance of alphabets adequate for one to one, sound to symbol simplicity, like the SSA Fonetik, used in compiling his phoneme frequency tables. His fingers must be adjusted to fit a closely phonemic reform code, which I have attempted to do below, so that fingering action on prospective keyboards of 40 symbol adequacy can be estimated.

Dewey Data & as adjusted to American & Rit: % USAGE

VOWELS			CONSONANTS					LETTERS		FONEMES	
3.80	a	3.79	%ages:	2.09	p	2.08		e	12.68	n	7.39
.50	aa	.50		1.84	b	1.83		t	9.78	t	7.28
3.50	e	3.53		7.30	t	7.28		a	7.88	r	7.00
2.15	ae	2.10		4.32	d	4.31		o	7.76	sva	5.61
8.04	i	5.08		.53	ch	.53		i	7.07	i	5.08
1.95	ee	1.89		.44	j	.44		n	7.06	s	4.67
4.12	sva	5.61		2.75	k	2.74		s	6.31	d	4.31
.71	uu	1.42		.77	g	.77		r	5.94	l	3.81
1.66	oo	1.96		1.89	f	1.88		h	5.73	a	3.79
1.72	u	1.50		2.31	v	2.30		l	3.94	e	3.53
1.67	oe	1.66		.38	thh	.38		d	3.89	th	3.48
2.89	o	2.88		1.49	th	3.48		u	2.80	z	3.03
1.27	au	1.26		4.68	s	4.67		c	2.68	o	2.88
				3.04	z	3.03		f	2.56	m	2.81
DIPHTHONGS				.84	sh	.83		m	2.44	k	2.74
				.05	zh	.05		w	2.14	v	2.30
1.64	ie	1.63		1.86	h	1.85		y	2.02	w	2.11
.64	ou	.64		2.82	m	2.81		g	1.87	ae	2.10
.09	oi	.09		7.40	n	7.39		p	1.86	p	2.08
.31	ue			.98	ng	.97		b	1.56	oo	1.96
36.66		35.54		7.00	r	7.00		v	1.02	y	1.92
				3.82	l	3.81		k	.60	ee	1.89
		64.46		2.12	w	2.11		x	.16	f	1.88
WORDSIGN		100.00		.62	y'	1.92		j	.10	h	1.85
								q	.09	b	1.83
2.00 the				61.34		64.46		z	.06	oe	1.66
										ie	1.63
61.34										u	1.50
100.00										uu	1.42
										au	1.26
										ng	.97
										sh	.83
										g	.77
										ou	.64
										ch	.53
										aa	.50
										j	.44
										thh	.38
										oi	.09
										zh	.05

There was some educated guesswork in the adjustment of Dewey's careful counts to an analysis of English, sufficiently phonetic to enable discovery & synthesis of spellings purely by sound. I considered this essential in a system designed for optimal operation long after letters are out of use as the general literacy. I continued Dewey's use of th & thh in the above tables, but I usually use dh & th as still considered best in Britain, for the voiced & un-voiced alviolar lisps. These figures are important in eny consideration of keyboard placement of symbolism. A child will be able to learn typing a lot easier if he has learned his foniks from diagrams related to keyboard.

SHOLES KEYBOARD

DVORAK SIMPLIFIED KEYBOARD (DSK)

The keyboard below is one I will have on a machine to type Rit shorthand in lower case with letters, numerals & most punctuation in upper case but with 30 pitch spacing for the Rit, which will enable the expected 55% economy of space.

Typing action with TO spelling on the Dvorak keyboard, home row, is improved to 71% from 32% for the Sholes keyboard, home row, is improved to 71% from 32% for the Sholes keyboard, but 40 symbol keyboards, with infrequent symbols on the top row, will have no symbols as frequent as the first 4 letters in TO spelling, that Dvorak could put on his 'home' row. If we go to a 40 or 40 plus alphabet, we must accept the disadvantage of at least 8 symbols on the top row of keys, & hope that 15 or 20% fewer key strokes will more than compensate. We will also have to drop capitals or have a 3rd. shift level, but I consider this even an advantage (more on this point later).

The Rit-TO keyboard will type Rit steno as well as TO, but without capitals, which are better gone & replaced by ., !, ?or * according to mood, etc. before the sentence or name, where it will be seen in time. Keyboards for 40 symbol letter alphabets would have to drop caps or go to a 3rd. case also, but would have more space left for special signs. However, a steno type alphabet enables a single form for handrit & print, saves far more space & avoids the conflict & confusion of using many of the same letters by two sets of spelling rules, for a long transition period. True enough, this confusion can be avoided, given a much slower transition (century slow perhaps). In contrast, reform to a steno code could be in use by progressive groups (of all ages) as quickly as the Pitman or Gregg shorthands were (in 5 to 10 years) & co-exist with TO as well, tho the cheaper code to print 'might' displace the inefficient, rather quickly, as Rit generations took over. They would buy only the cheaper publications. Reform in one step, but gradually accepted from an interim use as a shorthand. And a language study code. Like IPA.

KEYBOARD FOR TO–RIT TRANSITION

9	7	5	3	1	0	2	4	6	8		5.09%
t h	ng	sh	zh	sʍ	i e	aa	ou	oi			

ch	dh				svə	ae	ee	au	oe	oo	22.44%

| z | s | n | t | d | a | e | i | o | u | | 44.88% |
| | | | | | | | | | uu | |

| v | f | m | p | b | l | r | y | w | h | | 27.59% |

I have placed the WES digraphs below Rit strokes, where not paired with equivalent letters. They will not be on the keyboard. Machines with this keyboard & dual 30 –10 pitch escapements, need not be much more expensive than current models. Let us go all the way in reform, to an efficient & simple system, at one step. If interested, write to me!

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