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A Message from the Chairman:
Christopher Jolly, Chairman of the Simplified Spelling Society

Chris Upward, editor of the *Journal of the Simplified Spelling Society* for almost 20 years, has sadly had to retire because of ill health. He has raised the standard of the publication from that of a newsletter to that of an academic journal. Under his direction, the JSSS covered all aspects of spelling reform, in English and other languages.

For this edition, we are very grateful to John Reilly, who has agreed to be guest editor for this one issue. His willingness to step in so readily is much appreciated. It is a reflection of communication today that transferring editorship across the Atlantic has been so relatively easy.

We are now seeking an editor for subsequent issues of the *Journal*, and would like to hear from anyone who might be interested.

[John J Reilly: see **Journals**]

1. In This Issue

John J. Reilly Acting Editor Jersey City, NJ, USA.

This has been an exciting year for the cause of spelling reform in English. In the spring, the magazine *Science* published a widely reported cross-cultural study on the causes of dyslexia among speakers of English, French, and Italian. Millions of people were introduced to the idea that traditional English orthography about doubles the incidence of dyslexia among English-speakers over that of Italians, whose spelling is far more transparent. The text is reproduced here in its entirety. Meanwhile, media all around the world took some notice of the Web-based "Freespeling.com" project, created by marketing expert Richard L. Wade. In this issue, Mr. Wade explains his plans for this singularly democratic approach to spelling simplification.

All this attention to spelling reform had a downside: some members of the Society suddenly found themselves talking to reporters who needed short answers to questions about reform and the organizations that support it. (At any rate, that's what happened to me.) Several of the items in this issue should make fielding questions about reform easier the next time around:

—Joe Little, in "The Optimality of English Spelling," confronts the more sophisticated arguments in favor of traditional orthography. (Finally, we get to learn what Noam Chomsky *really* thinks.)

—Steve Bett reviews Marilyn Vos Savant's *The Art of Spelling: The Madness and the Method*. While the book opposes spelling reform, the review answers a host of common objections.

In addition to apologetics, we have two explorations of the spellings English-speakers find intuitive. Peter Whitmore gives us tantalizing results from his informal study, "Perceived Spelling Rules for Vowel Sounds in Single Syllable Words." Valerie Yule provides a historical perspective in "How People Spelled When They Could Spell as They Liked." (This article should help anyone who wants to be "more traditional than thou" in argument with spelling conservatives.)

The history of spelling reform in English has not been one of uninterrupted success. "The Significance of the ITA Experiment for Spelling Reform," by Masha Bell, is an important reminder of what can happen when a well-meant project goes awry. Still, we study history so we can do better in the future. Many members of the Society around the world are engaged in promising initiatives involving computer-transcription systems and the Internet. This issue has an update on one of these, Tom Zurinskas' "Truespel" project.

There is increasing reason to suppose that the concept of spelling reform will become as familiar to the early 21st century as it was to the early 20th.

[Journal of the Simplified Spelling Society, 29, 2001 pp4–13 in the printed version]
[Joe Little: see **Journal 29**, **Newsletters**, **Media**]

2. The Optimality of English Spelling
by Joseph R. Little

Joe Little is the Managing Director of the American Literacy Council

Abstract
Despite the literacy problems associated with traditional English orthography (T.O.), many linguists have sought to justify it as a highly optimal system for English word families. They advocate curricula based on this morphographemic concept. In order to quantify the morphographemic optimality of T.O., i.e., the degree to which word families retain the base spelling, a simple algorithm was applied to the derived and inflected forms of 100 bases. A relative optimality percentage was determined for each form, each family, and the corpus as a whole. Simultaneously, T.O., which was determined to be 95 percent optimal, was compared with a more phonemically reliable orthography, which was found to have a higher (97 percent) basic optimality. Finally, for purposes of determining the gradated difficulty of subject matter, the word families were ranked according to their optimality.

Introduction
It is…noteworthy but not too surprising that English orthography, despite its often-cited inconsistencies, comes remarkably close to being an optimal orthographic system for English. (**Chomsky & Halle, 1968,** p.49)

Problem
How close is remarkably close? What would an optimal orthographic system for English look like? In order to answer these questions, especially as they relate to the teaching of English, consider what this influential aside from *The Sound Pattern of English* assumes. The authors presuppose at least a perceived problem with traditional English orthography (T.O.). Otherwise, Chomsky and Halle would not consider the noteworthy optimality of T.O. to be noteworthy. If T.O. were obviously optimal, it would not sometimes be called a serious "obstacle to literacy acquisition" (**Carney, 1995**, p.xvi). Studies about the difficulties for writer and reader abound. According to Carney,

> Such a view has been [often] stated. Ever since English spelling settled down in the seventeenth and eighteenth centuries, the consensus seems to have been that the conventions we have inherited are ill-suited…yet well-educated natives seem to cope with [T.O.], though only after a heavy investment of time and effort. (p.xviii)

Anecdotes of variability beg the question: just what is orthographic optimality? Chomsky and Halle state that an ideal orthography has one representation for each lexical entry (p.49). Others suggest that an optimal orthography uses one grapheme (i.e., letter) to signify one phoneme (i.e., a sound that distinguishes one word from another). The difference between these criteria reflects, to some extent, an emphasis on reading on one hand and a writing emphasis on the other. In short, definitions of optimal orthography differ, let alone how T.O. measures up.

Background literature
A benchmark for the optimal spelling of English is available in Eastern Europe, where we find an active orthographic continuum. The Russian spelling system, for example, cannot be read "by a purely sequential, phonic method: it requires a combination of the phonic and look-and-say

methods" (**Knowles, 1988**). This is the morphemic end of the spectrum. It retains the integrity of morphemes (i.e., meaningful, minimal linguistic units, namely words) at the expense of one-to-one, sound-to-spelling, spelling-to-sound correspondences. The other end of the spectrum, characterized by near-100% phonemic integrity, is represented by the Serbo-Croatian orthography. In Serbo-Croatian, phonemes reign supreme: there is no such concept as the integrity of the morpheme (Knowles). Between the Serbo-Croatian and Russian orthographies lies Byelorussian. Rather than maintaining morphemic integrity, this system partly overrides morphemes with assistance from a system that spells according to pronunciation. For instance, <o> is pronounced /o/ until a stress shift renders a pronunciation of /a/; then the spelling also shifts to <a>. Yet Byelorussian has adopted this principle only for vowels, not consonants. Knowles reports claims that this alphabetic system has helped improve literacy in Byelorussia). He concludes:

> In the Slavonic languages a spectrum of spelling systems exists, from the predominantly morphophonemic (Russian) to the predominantly phonemic (Serbo-Croat); there is no representative of the English 'antisystem'!.

The optimality of this so-called English 'antisystem' can be systematically analyzed using theoretical assumptions underlying any point along this orthographic spectrum. Perhaps the best-known systematic analysis of any kind was performed by **Hanna, Hanna, Hodes and Rudorf (1966)**. In order to determine how closely T.O. approximates the alphabetic principle, these Stanford University linguists incorporated a linguistically based research design into a computer program, thru which they fed 17,000 different words.

Their work, published as *Phoneme Grapheme Correspondences as Cues to Spelling Improvement*, began with the sound of the words as represented by phonetic respellings. Then, by devising rules, they attempted to spell those words correctly. To summarize, they found that 90 percent of the correspondences the program found between phonemes and graphemes were correct. However, fewer than 50 percent of the words they analyzed could be spelled correctly on the basis of phonological principles. Nevertheless, Carney states, while the 50 percent figure suffers from under- and overstatement, "this 50 percent success rate of correctly spelt words is probably too generous for the rules as they stand" (p.94). Despite 308 rules and 88 exception (i.e., set-aside) words, this analysis suggests that T.O. is 50% optimal on a phonemic sound-to-letter basis. Hanna, et al., admit that, when other phonological factors are not taken into consideration, T.O.'s phoneme-grapheme relationships only inconclusively approximate the alphabetic principle (p.39).

More recent research, with an eye toward speech synthesis, has emphasized the spelling-to-sound optimality of T.O. Ainsworth's algorithm (1973) stands out among those devised to account for English spelling with basic correspondence rules. Just as success for Hanna, et al, is correct spelling, success for Ainsworth's algorithm is the intelligibility of the synthesized speech output (Carney, p.260). Ainsworth has no set-aside table of irregular words and uses 159 correspondence rules — although a quarter of these rules have to do with single words or morphemes. While Carney cautions that such an algorithm cannot be quoted as an unqualified index of the optimality of T.O., Ainsworth's results are suggestive:

> Listeners judged the comprehensibility of the synthetic speech output. The best results came from the more experienced listeners who were used to… synthetic speech. The best of these identified 90 percent of synthesized words correctly; the poorest listeners could only manage 50 percent (Carney, p.266).

In other words, Ainsworth made 50 to 90 percent of words in a text identifiable using an algorithm of 159 correspondence rules. Therefore, in terms of one-to-one, spelling-to-sound

correspondences, Ainsworth's results suggest an optimality of approximately 70 percent, with a practical margin of error of plus or minus 20 percent.
In terms of basic one-to-one correspondences, then, if one were to average the success rates and, thus, the phonemic optimality results of Hanna, et al, and Ainsworth, then the optimality average of 50 and 70 percent, or 60 percent, could be an approximation.

Both analyses are based on surface or self-evident phonemic principles. Beneath the surface, however, are morphophonemic patterns, which have been explored by researchers since the 1960s. **Venezky (1967)**, who defines T.O. as a phonemically based system that maintains morphemic identity whenever possible, provides word pairs as evidence of these patterns: *labor/laborious*, *rigor/rigorous*, and *curious/curiosity* — altho *curios*ity fails to maintain the morphemic identity of its base form (*curious*). **McDonald (1970)** suggests "it is more valuable to have an orthography which protects the obvious visual similarity in word families than one which obliterates such relationships in favor of broad phonetic accuracy" (p.325).

"Making efficient reading easier" is the target of widely cited morphophonemic pedagogist **C. Chomsky (1970**, p.292), who advocates the close correspondence of T.O. and underlying abstract forms rather than their phonetic realizations. While she may be faulted for not seeking to make all forms of reading easier, her word pair samples such as *nation/national* and c*ourage/courageous* appear to make efficient reading easier by "permitting immediate direct identification of the lexical item, without requiring the reader to abstract away from irrelevant phonetic information" (p.289). Yet other orthographers counter that, tho these morphophonemic theories are valid on their face, a lack of reader cognitive awareness of these patterns may make the issue moot. Indeed, Chomsky expresses concern when she asks: "Does [this abstract lexical representation] have a psychological reality for language users, [i.e.,] is it based on something a reader can honestly be said to know?" (p.295). Her own reply — "it seems to me [that it does]" — is hardly persuasive, betraying a lack of available hard evidence in 1970.

Among the first to note specific flaws in morphographemic theory were Simon and Simon (1973), who argue that there are too few word pairs of this type to be useful and that such analogies will often lead to misspellings (e.g., remember-remembrerance; proceed-proceedure)" (cited in **Marsh, Friedman, Welch & Desberg, 1980**, p.353). Frith (1980) points out that, tho learners do use such analogies and rules when spelling novel words,

> linguistic rules are complex and of a large and unknown number [and often] known by hindsight only. For instance, one could theoretically know how to spell *nation* (rather than *nashen*) because of the morphological relationship to native; on the other hand, one probably only knows of the relationship because one can spell *nation*. Moreover, relationships [often] give misleading cues. For instance, *pronunciation* might be spelled *pronounciation* as it relates to *pronounce*; *spatial* might be spelled *spacial* as it relates to *space, and deceit* might be spelled *deceipt* as it relates to *deception*. (p.504)

Moreover, **Baker (1980**) tested the orthographic cognizance of students. He found that, in terms of derivationally related words, "the overall tendency is against preserving these particular visual relationships, suggesting little support for this function of English spelling" (p.58).

Even so, morphophonemic theory has informed much of the orthographic literature, and for good reason. Baker gives one such good reason, citing Jarvella and Snodgrass' (1974) demonstration that subjects find it easier to make judgments of meaning-relatedness when pairs of written words are barely different from one another, as in *revise-revision*, than when they are not, as in *divide-division* (p.53). Morphophonemic reasoning merits systematic analysis, but no one has yet attempted a quantifiable analysis in the manner of Ainsworth and Hanna, et al.

Purpose and Rationale

The main reason for developing and applying an optimality algorithm is to quantify the degree to which T.O. retains the base spelling in word families. A second reason is to compare the optimality of T.O. to an external reference (in this case, is a simplified English spelling system called Soundspel (S.S.)). The third is to provide teachers and curricula designers with a quick, logistical way to determine the gradated difficulty of word pairs as well as word families.

Regarding the first reason: though there has been little statistical proof to date of the morphophonemic optimality of T.O., the dearth of quantifiable analysis has not prevented provocative declarations like those of Chomsky and Halle. The following are representative:

> For the adult native speaker, English orthography is surprisingly maximal… [and] nearly optimal. (O'Neil, cited in McDonald, p.325)
>
> There is no valid reason…for claiming that the current orthography should be anything in particular other than what it is. (Venezky, p.122)

In short, advocates of T.O., basing their analysis on a great deal of observation and much anecdotal evidence, have made insightful claims, but unverified ones.

Regarding the second reason for analysis: systematically unsubstantiated claims regarding the morphemic costs of using a spelling system with greater phonemic reliability appear thru-out the literature. For instance:

> It is clear that a broad phonetic orthography [such as proceed/procejure] would be more difficult for native adult speakers to read. (McDonald, p.323)
>
> [These phonetic variations] need not be represented in the lexical spelling of words, and indeed, underlying similarities which are real in the language would be lost…if these differences were to be represented on the lexical level. (Chomsky, p.292)
>
> It is not at all true that any kind of "regularized" English orthography (however inconsistent or rigorous it may be in application) is in any sense an improvement on what we already have…" (McDonald, p.325)

Yet the rationale for a reliably phonemic orthography is simple. **Cummings (1988)** states that the phonemic is first among competing aspects of orthography. Among the aspects or demands made of orthography, "the first, the phonetic, urges that sounds be spelled regularly from word to word. This… [stems] from the invention of alphabetic writing in ancient times" (p.461). According to Marsh, et al, "simple invariant and reversible spelling to sound correspondences [provide the learner with] an algorithm for decoding and encoding printed words" (p.351). Therefore, one could hope for an orthography that is optimally phonemic and also optimally morphemic.

Regarding the third reason: increased recognition of word forms and the ties that bind them together can only serve the process of reading for meaning. Toward this end, an awareness of which word pairs and families are simpler can aid teachers as they plan their literacy strategy. In spite of evidence to the contrary, Smith and Baker (1976) remind us that, given an appropriate level of content, even "linguistically unsophisticated [language learners] can squeeze a huge amount of information out of a word's spelling" (cited in Cummings, p.32).

Method

Subject matter

The analyzed base word forms are taken from Basic Reading Vocabularies (Harris and Jacobson, 1982). The authors describe their work as a comprehensive professional reference, based on a computerized analysis of eight reading series. All but one were published after 1979. In particular, their

> Frequency List provides the rank, the [base] word representing the [inflectionally] merged entry, and the frequency. Words with the same frequency [are] assigned the same rank. If, for example, five words are tied for rank 151, they are all given the rank of 151 and the next word is ranked 156. Within the tie, the words are listed alphabetically. (p.6)

While a representative sample could have included 1000 or 10,000 words, such a quantity goes well beyond the scope of this work. Even so, a representative word sample is necessary for the sake of reliability and general application. Dewey says that "…in any short list of commonest words, short and Anglo Saxon words predominate. The result is that analytic data based on commonest words only will give, inevitably, a seriously distorted portrait of English as a whole" (cited in **Fries, 1965**, p.7). As a compromise between wide distribution and high frequency, 100 words were chosen, or every 25th word from number 25 (*have*) to number 2500 (*caution*).

The Harris and Jacobson corpus includes words without inflected or derived forms (such as *me* with a rank of 50). It was decided that in such cases, the word would be replaced by the next word (such as *like* with a rank of 51) with inflected or derived forms. As opposed to *like*, which serves as the basis of inflected (e.g., *liking*) and derived (e.g., *liken*) forms, *me* serves as the basis of neither. Thus, comparison is impossible and, so, *me* is moot and excluded.

Another type of excluded word is referred to by Chomsky and Halle, who disregard exceptional word pairs such as *I/we* because "given the grammar of English, if we delete reference to the item *we*, there is no way to predict the phonetic form of the plural of *I*" (pp.11–12). In the same manner that such word pairs are dismissed, for the purposes of this analysis it was decided that an exceptional word pair is any pair in which the inflected/derived form does not retain the same first letter in the base word. For instance, *be/been* is an acceptable subject for study, whereas *be/were* is unacceptable because *were* fails to retain a semblance of the base form. It was decided that in each such case of word families marked by an exceptional form, the base word (such as *be* with a rank of 25) would be replaced by the next base word (such as *have* with a rank of 26).

The word forms subject to analysis were the inflected and derived forms; excluded from analysis were inflected forms of derivatives. In other words, *whiting* and *whiten*, an inflected and a derived form of *white*, respectively, were included; *whitens* and *whitener*, an inflected and a derived form of *whiten*, respectively, were excluded. This parameter is due in part to the limited scope of this work and to Cummings' timely suggestion that "[more distantly related word forms] are less interesting to orthographers than sets" (p.46).

In each set, i.e., word family, the word forms are listed generally in alphabetical order and order of length. Cummings says the distinctions between inflection and derivation are problematic. Therefore, suffice it to say that if orthographers have trouble distinguishing between inflection and derivation, the man or woman on the street can hardly be expected to make the distinction. This analysis does not try.

For the sake of reference and comparison, each word and word form was respelled using Sound-spel, then listed beside the T.O. spellings in a parallel column. A second look at the words containing the /iy/ phoneme demonstrates that, for the purposes of this analysis, Sound-spel (S.S.) is more phonemically reliable: *keen*, *kee*, *skee*, *deseet*, *feeld*, *peepl*, *teem*, *leev*, *raveen*, *beleev*,

cheez, *leeg*, *debree*. Carney refers to the summary logic of S.S. when he talks of its representation of the traditional English long vowel sounds with a so-called silent-e: "the moving forward of the <e> marker for long vowels (*biet*, not *bite*) is [not] startling, since the digraph is familiar…from open syllables such as *lie*, *toe*, and *due*" (p.478). See Appendix B for more details.

Optimality algorithm and procedure

An algorithm was developed to determine the optimality of English spelling in terms of its morphophonemic, or rather, its morphographemic basis. As with the assumptions pertaining to a formula, the shift to the term *morphographemic* is based predominantly on the anecdotal strategies of Chomsky among others. Chomsky's morphophonemic logic betrays its dependence on graphic or visual appearance with her use of the word pair *anxious/anxiety*. As opposed to pairs such as *critic/criticism* and *national/national*, *anxious* and *anxiety* share no readily apparent morphemes, altho Chomsky posits the sequence anxi as a shared underlying lexical spelling. The question is, why posit anxi rather than anx when neither is especially lexical nor morphemic? The circularity of her response that "…this common item is recognized by the language user as a common item" (p.290) suggests that Chomsky posits anxi, which is not more common than anxi, because it consists of an additional grapheme. Chomsky's actual emphasis, then, is morphographemic girth or length; so is the emphasis of the algorithm.

Regarding the algorithm proper, Chomsky's *nation/national* word pair is assumed to be 100% optimal. Any change is quantifiably for the worse. In lieu of more involved algorithms for determining a quantifiable optimality, it was decided that the percent of base word (letters) retained by a derived or inflected form is equal to the morphographemic optimality of that form. For instance, the spelling of the word national does not disturb the integrity of the six letters that constitute the morpheme nation. In order to obtain a specific percentage, the six morpheme letters of national are divided by the six morphemic letters of nation for a resulting figure of 1, or 100 percent. When a letter in the morpheme is changed, or when a letter is added into or subtracted from the morpheme, morphemic integrity is disturbed, which reduces optimality, as in the case of *use* and *usable*. In transition from use, usable disturbs (i.e., subtracts) one of the three letters, thus, the undisturbed two letters are divided by the three letters of the base for the resulting figure of .66, or 66%. Finally, given each form's optimality, an average for the word family was determined. An average was taken for the corpus as a whole.

Results

Optimality of Traditional Orthography (T.O.)

The morphographemic optimality of T.O. was found to be 95 percent, which was determined by averaging the optimality percentages of 100 word families. An example of one such words family, drawn from Appendix A, appears in Table I.

Table I

Sample T.O. word family with optimality percentages

frq.	*T.O.*	*optimal*	
50.	like	-	
	liked	100	
	liken	100	
	likes	100	
	likely	100	
	liking	75	
	likable	75	
	likeness	100	
		93	

Note: frq.=frequency ranking indicated in Basic Reading Vocabularies (Harris & Jacobson, 1982);
T.O. = traditional orthography;
optimal%= percentage of base form retained in the inflected or derived form

Comparison with Sound-spel (S.S.)
By comparison, the optimality of Sound-spel was found to be 97 percent. See Table II for an example of three such word families as they appear beside their traditionally spelled T.O. counterparts in Appendix A. In the first sample, T.O. is more optimal overall. In the second sample, T.O. and S.S. are equally optimal. In the third sample, S.S. is more optimal on the whole.

Table II

Three sample comparisons of T.O. and S.S.

frq.	*T.O.*	*optimal%*	*optimal%*	*S.S.*
225.	hear	-	-	heer
	heard	100	75	herd
	hears	100	100	heers
	hearer	100	100	heerer
	hearing	100	100	heering
		100	94	
250.	high	-	-	hie
	higher	100	100	hieer
	highly	100	100	hiely
	highest	100	100	hieest
	highness	100	100	hienes
		100	100	
275.	voice	-	-	vois
	voiced	100	100	voist
	voices	100	100	voises
	voicing	80	100	voising
	voiceless	100	100	voisles
	invoice	100	100	invois
		96	100	

Note: S.S. = Sound-spel, trade name of the orthography introduced by **Rondthaler and Lias** in *Dictionary of Simplified American Spelling* (1986).

Word family ranking
For purposes of determining the gradated difficulty of subject matter, the traditionally spelled bases were ranked according to the average optimality of their related forms, in descending order from 100 percent. For the optimality rank of these word families, see Table III, which also breaks down optimality ties between families — such as the 53 families with 100 percent optimality — according to frequency.

Table III

Optimality of 100 Word Families, in Descending Order

frq.	*T.O.*	*opt*%	frq.	T.O.	*opt*%	frq.	T.O.	*opt*%
75.	just	100	1500.	bet	100	2175.	angle	95
125.	year	100	1525.	bug	100	2325.	choke	95
150.	water	100	1550.	cast	100	400.	fall	94
200.	hard	100	1750.	destroy	100	475.	figure	94
225.	hear	100	1775.	greet	100	625.	spring	94
250.	high	100	1800.	grip	100	1450.	exclaim	94
350.	pick	100	1825.	award	100	1250.	advise	94
375.	pass	100	1875.	chain	100	50.	like	93
525.	guess	100	2000.	barrel	100	1600.	bend	93
575.	shop	100	2025.	accident	100	2225.	graduate	93
650.	record	100	2050.	crop	100	2275.	blade	93
675.	dead	100	2100.	edit	100	775.	proud	92
700.	clean	100	2125.	deliver	100	2300.	awake	92
725.	surround	100	2200.	pack	100	175.	move	91
750.	seat	100	2350.	contact	100	600.	suppose	91
800.	slip	100	2375.	act	100	1325.	recognize	91
850.	check	100	2400.	ax	100	1425.	lay	91
875.	fair	100	2425.	buzz	100	1675.	fade	91
900.	subject	100	2450.	charm	100	1975.	advance	91
925.	milk	100	1050.	strong	97	2250.	admire	91
975.	fit	100	2075.	physic	97	500.	notice	90
1000.	crawl	100	275.	voice	96	1150.	guide	90
1025.	strange	100	325.	woman	96	100.	use	87
1075.	belong	100	825.	center	96	725.	speak	86
1100.	gun	100	1125.	bare	96	1275.	awe	86
1175.	joy	100	1700.	current	96	1625.	copy	85
1200.	danger	100	1850.	converse	96	1925.	capture	85
1225.	blanket	100	2475.	appear	96	425.	study	83
1250.	direct	100	2500.	caution	96	950.	receive	83
1300.	dish	100	300.	white	95	1575.	family	83
1350.	doubt	100	450.	build	95	550.	ice	80
1375.	clue	100	1650.	draw	95	25.	have	58
1400.	drift	100	1900.	bore	95			
1475.	cream	100	1950.	feast	95		Average= 95	

Note: frq. = frequency rank;
T.O. = traditional orthography;
opt. = morphographemic optimality of word family associated with that base.
Average = morphographemic optimality of the corpus as a whole.

Discussion

Based as it is on the alphabetic principle, the nature of phoneme alteration, such as the change from *receive* to *reception*, suggests that many pairs (and, thus, families) can never reach a morphographemic optimum — unless much of the current phonemic correspondence of T.O. is reduced in favor of drastic word-sign oriented measures. For example, an overly zealous

morphographemic spelling of *reception* relative to *receive* would be *receiption* or even *receivtion*. Be that as it may, morphographemic compromise is struck by Sound-spel, a spelling system that has greater phonemic reliability and was found to be better able to protect morphemes.

Appropriately enough, in his reply to an account of how his words have been used to justify the claim that T.O. is so optimal that it cannot be improved, Chomsky writes,

I'm surprised to learn that the work of Morris Halle and I did on English phonology is being used in [that way]… It has no such implications… I cannot image that anyone doubts that…we could easily design a spelling system for English that would be much easier for everyone to use… (personal communication, July 26, 1994)

Recommendations

In order to better "enrich the pupil's vocabulary so as to enable him to construct… the [patterns of regularity based on word relationships]" (Chomsky, p.302), particularly in the stages of reading for meaning, the optimality of word pairs and word families should be considered during text selection and manipulation. In other words, since a word pair like *courage/courageous* is more obviously related than guide/guidance, instructors should be advised to include and emphasize more obviously related pairs — all other things being equal.

Suggested research

Orthographic value (and weight) is in the eye of the orthographer. In short, someone else may decide that specific generalities or facets of T.O. are valuable and worth factoring into a new algorithm. Among the facets that have suggested themselves during this analysis — and perhaps should be considered in designing more complex versions of this optimality algorithm — are the following:

* The ability to distinguish homophones without recourse to context: how valuable is it to the reader? Cummings regards a distinguishing of homophones thru orthographic means as an "advantage for readers [but] a disadvantage for spellers, in that it provides them with one more slight but important contrast to keep straight" (p.42). That being said, what are the quantifiable drawbacks to the speller?

* The predictability of phonemic alternations and rules. If the predictability of <c> having a value of /s/ before <e,i,y> is 75 percent, would such a morphographemic switch be counted as .25 change? What if its predictability is 95 percent? Does that mean the weightiness is .05 percent? Or is there a point short of 100 percent that such changes may be considered null and moot? Does this relativist theory then call into question the value and weightiness of other letter changes? Moreover, should predictable rules be somehow factored into an equation or formula? Cumming, for instance, posits a rule for deleting silent final-e, as follows: "with very few holdouts, a silent final-e that marks a long vowel that heads a Vce# string is deleted whenever a suffix is added that starts with a vowel" (p.155). Given Carney's reminder that a spelling rule should be "easy to state and understand" (p.76), what weight if any should be given such a rule?

* The length of each word in a word pair or word family given the benefits of shorter content length. What if greater letter quantity in a spelling means that a letter disturbance between base and form is less distracting and thus the family tie is more evident? What are the tradeoffs between short and long spellings of particular base words?

* By the same token, while this analysis has emphasized the reading aspect of literacy, a writing emphasis might give rise to different values and weights. For example, if a pupil is encoding rather than decoding, the interruption of a short morphographeme (such as *lay/laid*) may be more

memorable and more optimal than the interruption of a longer morphographeme (such as *exclaim/exclamation*). Thus, the incentives for short spellings in cases where the morphographeme is interrupted would dovetail with the aforementioned incentives for shorter spellings overall.

* The number of letters into a word in which a disturbance occurs: if a grapheme is changed, added, or subtracted in the second position of the word, is that somehow weightier than a disturbance which occurs in the final position of the word?

* The spelling system of other languages: how does spelling elsewhere compare with T.O. in terms of morphographemic rates of optimality?

Summary

Despite the literacy problems associated with traditional orthography (T.O.), linguists have sought to justify T.O. as a near optimal system for English word pairs and families. In order to quantify the morphographemic optimality of T.O., a simple algorithm was applied to the inflected and derived forms of 100 words. An optimality percentage was determined for each form, each family, and the corpus as a whole. At the same time, T.O., which was determined to be 95 percent optimal, was compared with a more phonemically reliable spelling system called Sound-spel, which was found to have an optimality rating of 97 percent. Finally, in order to determine the gradated difficulty of the sample families, the base words — representing the optimality of their extended families — were ranked in descending order.

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3. Dyslexia: Cultural Diversity and Biological Unity

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Abstract

The recognition of dyslexia as a neurodevelopmental disorder has been hampered by the belief that it is not a specific diagnostic entity because it has variable and culture-specific manifestations. In line with this belief, we found that Italian dyslexics, using a shallow orthography which facilitates reading, performed better on reading tasks than did English and French dyslexics. However, all dyslexics were equally impaired relative to their controls on reading and phonological tasks. Positron emission tomography scans during explicit and implicit reading showed the same reduced activity in a region of the left hemisphere in dyslexics from all three countries, with the maximum peak in the middle temporal gyrus and additional peaks in the inferior and superior temporal gyri and middle occipital gyrus. We conclude that there is a universal neurocognitive basis for dyslexia and that differences in reading performance among dyslexics of different countries are due to different orthographies.

Developmental dyslexia is increasingly acknowledged to be a disorder of genetic origin with a basis in the brain [1]. However, there continues to be doubt about the universality and specificity of the syndrome because behavioral studies have shown that the nature and prevalence of dyslexia differs across languages [2]. The prevalence estimates of dyslexia in different countries seem to be related to the shallowness of the orthography. For instance, using one of the most respected behavioral definitions of dyslexia (word recognition accuracy in relation to IQ), the prevalence of dyslexia in Italy was half that in the United States [3].

Current theories of dyslexia favor a neurocognitive explanation with the implicit assumption of a universal application. There is considerable agreement that a causal link between brain abnormality and reading difficulties involves phonological processing deficits [4, 5]. The cause of these deficits is, however, less clear. Recently, more general perceptual problems have been postulated, either auditory [6] or visual deficits associated with dysfunction of the magnocellular system of the brain [7]. At a neurological level, it has been shown that dyslexics have microscopic cortical abnormalities, particularly in the perisylvian language areas in the form of

cortical ectopias and dyslamination of cortical layers [8]. These diffuse neurological abnormalities may reduce corticocortical connectivity, as suggested by recent positron emission tomography (PET) and magnetic resonance imaging (MRI) studies [9, 10]. Until now, most of the biological studies used English-speaking subjects; none have directly compared dyslexics across different orthographies.

In languages with transparent or shallow orthography (e.g., Italian), the letters of the alphabet, alone or in combination, are in most instances uniquely mapped to each of the speech sounds occurring in the language [11]. Learning to read in such languages is easier than in languages with deep orthography (e.g., English and French), where the mapping between letters, speech sounds, and whole-word sounds is often highly ambiguous [12, 13]. Adult skilled readers show a speed advantage in shallow orthographies [14, 15]. Differences have also been demonstrated at the physiological level [15].

Our aim was to contrast dyslexic and normal adult readers in deep (English and French) and shallow (Italian) orthographies in order to explore similarities and differences at both the behavioral and neurophysiological level. If dyslexia has a universal basis, then substantial similarities should be found, either at the cognitive or the brain level, or both. We investigated single-word reading at explicit and automatic levels, because differential response to the written word is the most widely agreed defining behavioral feature of dyslexia. Given that stimuli differ between different orthographies, and given that orthographic depth affects reading difficulty, any commonality found in underlying physiological responses in dyslexics would be strong evidence for a unitary biological basis.

Normal controls and subjects with dyslexia were matched for age and IQ, and all had achieved tertiary levels of education. This ruled out certain causes of reading impairment, e.g., poor general ability or poor education, that often bedevil the diagnosis of dyslexia. It also ensured that all participants could perform the simple word-reading task in the scanning experiments to a satisfactory level. In France and the United Kingdom, we recruited volunteers who had been diagnosed as dyslexic and had documented histories of reading and spelling difficulties. In Italy, such diagnosis is rare among university-level adults, and we therefore used a screening procedure to identify individuals showing impaired reading speed and defective phonological processing. The criteria for inclusion in the Italian dyslexic group involved two stages. First, about 1200 students were given group tests of spelling and stress assignment, a test where subjects have to mark the stressed syllable of 90 printed multisyllabic words [16]. Those scoring in the bottom 10% were then assessed individually on word and nonword reading speed, digit naming, short-term memory, and spoonerisms, all of which are tests thought to be sensitive to phonological processing deficits (4). Those who performed in the bottom 10% (of a normative sample based on 40 consecutive students) on three or more of the six tasks were classified as dyslexic. These same experimental tests were also used with the French and English samples [16, 17].

The results of the Wechsler intelligence test scales for adults (WAIS) [Fig. 1 omitted] and Web table 1 [16] demonstrate a characteristic pattern that has been found previously [18]: the dyslexics performed most poorly on those subtests that involve phonological short-term memory (digit span, arithmetic, and digit symbol). On all other subtests, dyslexics showed unimpaired performance. This was similar across the three countries and suggests that we were comparing like with like.

Performance on the reading and phonological tests is shown in Fig. 2 [omitted] and in Web table 1 [16]. There was a consistent advantage on the reading tests in favor of the Italian dyslexic sample when compared to the French and English dyslexic samples. In particular, the Italian dyslexics showed fewer errors for both words and nonwords (Mann-Whitney U test:

$P < 0.001$). Yet, as Fig. 2 [omitted] shows, Italian dyslexics performed significantly worse than their controls on reading and phonological tasks, and differed as much as did the English and French dyslexics from their controls. This and the fact that the French and English dyslexics had not been selected for phonological impairments, supports the idea that dyslexia is associated with a phonological deficit. Moreover, this deficit appears to be independent of orthography.

Our PET data link the psychological findings to brain physiology. Two regional cerebral blood flow (rCBF) PET activation experiments [19], one on explicit and one on implicit reading [15], were conducted with a total of 72 participants. In all, six groups of normal controls and six groups of dyslexics were scanned (six subjects per group, four groups from each country). We combined the results of the two experiments, so that we only report the most reliable activations elicited by exposure to print [20].

For normal controls, and in line with previous results [21], we identified a number of cortical language areas of the perisylvian cortex (Broca's area and Wernicke's area including the planum temporale), the left middle and inferior temporal gyri, and the fusiform gyrus (Web table 2 and Fig. 3A [omitted]). Activations were also seen in the cerebellar hemispheres and in subcortical gray structures (thalami and basal ganglia). These areas represent the common activation for exposure to printed material relative to baseline. The same analysis applied to the dyslexic readers revealed a greatly restricted pattern of activation. This is illustrated in Fig. 3B [omitted], whereas Web table 2 shows the coordinates of the peak activations [16].

A direct comparison of the areas of activation in normal controls and dyslexics (Fig. 3C [omitted]) identified a large region in the left hemisphere of significantly greater activation for the controls ($P < 0.001$ corrected for spatial extent), with the maximum peak in the middle temporal gyrus and additional peaks in the inferior and superior temporal gyri and middle occipital gyrus (Web table 2) [16]. There were no areas of significantly greater activation in dyslexics compared to controls.

We also explored whether there were orthography-specific effects in the dyslexic groups. Our previous study of skilled Italian and English readers showed that Italians have greater activation in left superior temporal regions [15], which have been associated with processing phonemes [22]. In contrast, and for nonwords in particular, English normal readers had greater activations in left posterior inferior temporal gyrus and anterior inferior frontal gyrus, areas which have been associated with word retrieval during both reading and naming tasks [23–25]. This result was confirmed when the French group was added. However, when dyslexic readers were compared across orthographies, no such differences were evident. This is most likely because dyslexics have a less developed reading system that cannot adapt to some subtle specific requirement of their orthography.

Reduced activation in the left middle, inferior, and superior temporal cortex and in the middle occipital gyrus was the robust universal feature of dyslexia for word reading in the three language groups; reduced activation in this region was found previously with PET and functional MRI in English-speaking dyslexics [26, 27] and with magnetoencephalography in Finnish-speaking dyslexics [28].

Why did we find a reduction of activity? We consider two possibilities. One is the disconnection hypothesis [9, 10] which assumes that the connections between the different components of the language system are weak. If so, this could result in reduced activation of the major components of the system with the consequence of slower processing of spoken and written language. Another explanation is that the brains of dyslexics are more idiosyncratic in modularizing the reading system. The reduced activation in dyslexics, i.e., more restricted in extent and significance, could be due to more variability in the individual pattern of activation. These two explanations are not

mutually exclusive. If there were diffuse differences in organization, the acquisition of written language would be slow in consequence and subject to idiosyncratic strategies.

Is dyslexia a disorder with a universal neuro-anatomical basis, or is it a different disorder in shallow and deep orthographies? Our results are clear-cut. They show that dyslexia has a universal basis in the brain and can be characterized by the same neurocognitive deficit. Clearly, the manifestation in reading behavior is less severe in a shallow orthography. However, our results show that if more sensitive tests were available, the neurocognitive deficit would be detected. Although Italian dyslexics read more accurately than French or English dyslexics, they showed the same degree of impairment on reading latencies and reading-related phonological tasks relative to their controls. We conclude that a phonological processing deficit is a universal problem in dyslexia and causes literacy problems in both shallow and deep orthographies. However, in languages with shallow orthography, such as Italian, the impact is less, and dyslexia has a more hidden existence. By contrast, deep orthographies like that of English and French may aggravate the literacy impairments of otherwise mild cases of dyslexia.

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[17] Behavioral study: Male, right-handed students with tertiary education participated in the study. Italy: 40 controls (mean age, 21.5; SD, 2.4); 18 dyslexics (mean age, 21.7; SD, 2.3). France: 18 controls (mean age, 28.2; SD, 4.8); 18 dyslexics (mean age, 27.2; SD, 5.9). United Kingdom: 18 controls (mean age, 23.5; SD, 2.9); 18 dyslexics (mean age, 23.6; SD, 4.7). All subjects were tested with the WAIS. Reading accuracy and speed, and phonological processing were also assessed. Words and nonwords were presented on a computer, and naming latency was recorded via a voice-key. All words had two or three syllables, avoiding irregular patterns. Nonwords were created from the words by maintaining the "word envelope" while changing internal consonants. Simple reaction times for a dot stimulus provided a baseline. Spoonerism task: Subjects heard pairs of words with the instruction to repeat back the two words after having swapped the initial sound around (e.g., Basket and Lemon repeated as Lasket and Bemon). Auditory short-term memory: Subjects recalled 10 lists of six short words and 10 lists of six long words. Digit naming time: Participants read aloud, as fast as possible, strings of 50 single digits.
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[20.] PET experiments: There were two PET scan experiments involving 72 of the aforementioned subjects (17) (36 subjects for each experiment, 24 for each country, half of whom were dyslexics). In the explicit reading experiment, subjects read bisyllabic words and nonwords aloud. In the implicit reading experiment, participants performed a feature detection task. Subjects detected the presence or absence of ascenders (graphic features which go above the midline of the word, e.g. "b," "l," and "t" as opposed to "a," "c," and "o") within visually presented words, nonwords, and false font strings. The false fonts were created by substituting letters in the real words with nonletters matched for size and presence or absence of ascenders [Scheme 1 omitted]. Subjects pressed one key with their right-hand index finger if one or more ascender was present, and another key with their right middle finger if no ascenders were present. These studies were approved by the ethics committees of the Institute of Neurology (London) and Institute H San Raffaele (Milan). Informed consent was obtained after the nature and possible consequences of the studies were explained to the volunteers. Data analysis: rCBF was measured by recording the distribution of radioactivity following the intravenous injection of 15O-labeled water (H215O). Twelve consecutive scans were obtained for each subject in each experiment. Task-related differences in rCBF were examined using Statistical Parametric Mapping (SPM'96) software (Wellcome Department of Cognitive Neurology, London, UK) on stereotactically normalized and smoothed PET images. For each experiment, data were analyzed according to a random effects model: replications of each task were collapsed into average images to give one average scan per reading task per subject. The analysis was based on a 2 (controls versus dyslexics) × 3 (French, English, Italian subjects) × 2 (implicit, explicit reading) × 3 (words, nonwords, baseline) factorial design. The pattern of activation associated with reading was identified as the conjunction of the six main effects of reading (reading minus baseline) in each of the six groups of controls (Fig. 3A) and in each of the six groups of dyslexics (Fig. 3B). We then calculated the differences between controls and dyslexics as the conjunction of the six groups × task interaction effects (Fig. 3C). The interaction effects were computed on the voxels identified by the linear contrast of the relevant main effects.
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4. Perceived English spelling rules for vowel sounds in single syllable words

by Peter Whitmore

Peter Whitmore started his career as a chemical engineer. He currently manages a company, started with his wife in 1981, that publishes classified advertising. He has lived in New Zealand, Australia and Canada. Because of his long-standing interest in English spelling, he has been an SSS member for several years and, more recently, a member of the SSS email group. His email address is peterw@trade-exchange.co.nz.

Abstract

In order to test what people perceive to be the inherent spelling rules that govern English, 20 participants were each asked aurally to write down 108 non-existent words. The spellings were then analysed. The test was confined to vowel usage in single-syllable words. The results showed strong consensus about the spelling of the short vowels (*a, e, i, o* and *u*) and, when they are followed by single consonants, the long vowels (*a, e, i, o, and u as in both "fume" and "boot"*). There was also consensus about the long *a, e, o* and *u* (goo) as word endings, about the long *e,* and about *u* (mooch) sounds before consonant clusters. The same was true of the *ar* and *or* sounds in all positions, as well as the *ou* (now) sound as a word ending. Addtionally, the results provide support for some non-traditional spelling patterns. Further work based on this technique might yield useful results in other areas of English spelling. A spreadsheet template for conducting this test is available from the author.

Introduction

One way to simplify English spelling would be to build on the existing spelling patterns in the language. Ideally, to do this so that the resulting text looks familiar and is easy to read, one would need to adopt patterns that people intuitively feel comfortable with. At the same time, the patterns must fit together to produce a clear, consistent and cohesive spelling system.

The main problem with this approach seems to be deciding which patterns to adopt. For example, the long *o* sound at the end of a word is commonly spelt as *oe* (toe), *ow* (flow) or just *o* (go). Which, if any, of these is the appropriate form to accept? How does one take into account that there are a limited number of words in very high usage that end in *o*, such as go, so and no, but many more words that end in *ow,* such as flow, slow, and glow, which tend to be less common?

In this study we sidestep the difficulties of working from an analysis of the existing written language. Instead, we test for what people intuitively perceive to be the appropriate pattern for spelling certain sounds. The study was limited to vowel sounds in single syllable words.

Method

Twenty people were each asked to write down a series of 108 non-existent, one-syllable words that were read out to them, using whatever spelling they felt was clear and obvious. Although the objective was to look specifically at vowel sounds, the participants were not told this.

The participants were all female, with good spelling compared to the general population. (They are all employed to take classified advertising for a New Zealand publication.) They generally have a New Zealand style of speech, which is somewhat similar to that in Southern England. In particular, with relevance to this study, they do not tend to pronounce the letter *r* strongly or at all in words like

hard, shirt and pork. They also use the long soft *a* in words like class, dance and aunt, and pronounce the long *u* in words like due and neutral with a yu sound.

Three different words were asked for each vowel sound and each position of the vowel in the word examined, except in the case of the short vowel sounds, *a, e, i, o* and *u*, for which only one word was asked. An attempt was made not to choose words which, when read out, were obviously reminiscent of existing words.

For presentation to the participants, the words were grouped. Each of the tables below represents one group. For example, the first group is short vowels in the medial position in the word. Within each group the words were given in a mixed order so that words requiring the same vowel sound were not asked consecutively.

The test was first tried on four people who were not part of the main study. This trial led to some minor modifications to the words used, where these were being misinterpreted. Because the results were so consistent, it also lead to a reduction, from three words per vowel sound to one word per vowel sound, for the short vowels *a, e, i o* and *u*.

The vowel sounds included in the study were:
The short vowels *a, e, i, o* and *u*
The long vowels, *a, e, i, o u* (yu, fume) and *u* (oo, boot)
The sounds *ar, air, er* and *or*
The vowels *aa* (palm), *au* (caught), *ou* (shout) and *uu* (book)

The trial showed that special care was needed in presenting words containing the *ar, er, or* and *air* sounds, the *aa* and *au* sounds, and the *st* word ending. For the vowel-plus-r sounds, I explained to the group how US pronunciation would sound the *r* in words like 'start', and I then pronounced these words with (my best effort at) a US accent. For *aa* and *au* words, I explained that in US pronunciation one would not hear an *r* sound in these words. There was a tendency for people to spell the *st* ending as *sed* (as in used) and I had to explain that such words did not contain a *d* sound.

The trial showed an unexpectedly strong propensity to give spellings involving the *gh* pairing, which in combination with other letters can produce a wide variety of vowel sounds. Because I did not believe that such spellings would be useful in simplifying English, I suggested to the participants in the full study that they steer away from such spellings unless they clearly thought them to be the best option.

One particularly literate woman pointed out that two of the words actually did exist — thew and dorp. However, no one else tested knew these words, so the effect on the test results would have been minimal.

Results and discussion

Spelling patterns that received less than 5% support are reported as "other." Replies where the participant had changed the form of the word, so that it did not conform to what was being tested, were discarded from the analysis.

The support for a specific spelling pattern is determined by the number of words written using that pattern, as compared to the total number of valid replies. For example, the result of *ee* (76%) for long *e* in the medial position followed by a single consonant means that 76% of the valid words for the vowel sound in that position contained the *ee* spelling.

In these results an arbitrary consonant is represented by C and a cluster of two consonants by CC.

The short vowels, a e i, o and u

The test for these vowels was done only for the medial position within a three character word. (Short vowel sounds do not normally occur as word endings, and their spelling is not normally affected when they precede consonant clusters.) The results are shown in Table I.

Table I

Vowel	short a	short e	short i	short o	short u
Model word	mat	met	bit	mop	mud
Test word	pab	tep	pif	yom	fub
Results	pab = 20	tep = 19 other = 1	pif = 11 piff = 8 other =1	yom = 19 other = 1	fub = 18 fubb = 1 other = 1
	total = 20	total = 20	total = 20	total = 20	total = 20

Using the case of short *i* as an example of how to interpret the Table I, the vowel is pronounced as in the model word 'bit' and the word asked was 'pif'. There were 20 valid replies of which 11 were 'pif', 8 were 'piff' and one was another spelling.

The results show that there is a very clear understanding of how the short vowel sounds should be spelt (though not such a clear understanding about doubling of the trailing consonant). The four answers that did not follow the pattern can probably be put down to mis-hearing of the word required.

The long vowels *a, e, i, o, u* (yu) and *u* (oo)

For all the remaining cases, including this one, each participant was asked to spell three different words for each vowel sound, and for each position of the vowel in the word. The results for the vowel in the medial position, followed by a single consonant, are given in Table II.

Table II

Vowel	long a	long e	long i	long o	long u (yu)	long u (oo)
Model	mate	meet	line	note	fume	boot
Test words	vate rabe mave	leeb veen reep	ribe kime yive	tobe rofe voze	pyude vyune nyupe	moog roop zoob
Results	aCe = 50 ai = 4 other = 5	ee = 44 ea = 4 e = 4 ei = 3 other = 3	iCe = 57 other = 2	oCe = 36 oC = 6 ooCe = 4 other = 14	uCe = 36 ewC = 8 euC = 6 other = 7	oo = 38 uCe = 15 ouCe = 3 other = 4
	total = 59	total = 58	total = 59	total = 60	total = 57	total = 60

While the results are not as unequivocal as for the short vowels, there is clearly a very strong understanding of how the long vowel should be formed. For long *a, i, o* and *u* (yu) the predominant patterns were *aCe* (85%), *iCe* (97%), *oCe* (60%) and *uCe* (63%). For long *e* and *u* (oo) they were *ee* (76%) and *oo* (63%).

In all cases support was much higher than for the next most popular spelling. Note in particular that the fairly common *ea* spelling for long *e* gained only 7% support. Surprisingly, for the long *u* (oo)

sound, the *uCe* spelling gained 25% support, even though this spelling would normally make the yu sound.

The results for the spelling of the long vowels at the end of a word are shown in Table III.

Table III

Vowel	long a	long e	long i	long o	long u (yu)	long u (oo)
Model	day	tree	pie	go	due	too
Test words	chay blay vay	dree stee vree	snie clie zie	clo dro vo	gyu thyu tyu	froo thoo
Results	ay = 43 ey = 3 a = 3 other = 10	ee = 48 e = 3 other = 9	i = 24 y = 16 ie = 10 igh = 3 other = 7	o = 39 oe = 7 ough = 6 ow = 5 other = 3	ew = 17 u = 16 ue = 10 eu = 4 ui = 4 other = 6	u = 30 oo = 20 ew = 3 ue = 3 other = 4
	total = 59	total = 60	total = 60	total = 60	total = 57	total = 60

The long *a, e* and *o* endings, *ay* (73%), *ee* (80%) and *o* (65%) received strong support. Results for the other vowels were not so clear. For long *i*, the *i* ending (40%) had moderate competition from *y* (27%) and *ie* (17%). For long *u* (yu), the *ew* ending (30%) narrowly edged out *u* (28%) with *ue* (18%) further back. And for long *u* (oo), the *u* ending (50%) was moderately challenged by the *oo* ending (33%).

What is particularly interesting in these results is that the participants are strongly putting forward very simple spellings that are not actually common in current English. For long *i*, their preferred ending *i* (hi) is far less common in English that the *y* (fly) and *ie* (pie) endings. For long *o*, their strongly preferred *o* ending (go) markedly outstripped *oe* (12%) and *ow* (8%), even though this spelling appears in only a small number of current English words. For long *u* (yu), the untraditional *u* ending (28%) gained almost as much support as *ew* (few, 30%), and substantially more than *ue* (due, 18%). And for long *u* (oo) the uncommon *u* ending (guru) clearly outranked *oo* (goo, 33%), while *ue* (blue, 5%) received very little support.

The results for the vowel in the medial position, followed by a consonant cluster, are given in Table IV.

Table IV

Vowel	long a	long e	long I	long o	long u (yu)	long u (oo)
Model	faith	least	mind	coach	neutral	mooch
Test words	kaich vaist maish	feech reest geeth	liich viist miith	goath voast loach	peuch feuth veust	booch noost coosh
Results	ai = 13 aCCe =13 a = 10 atCC = 5 ay = 4 aa = 3 other = 6	ee = 31 e = 8 ea = 5 other = 9	I = 14 iCCe = 12 y = 10 ie = 7 yCCe = 4 other = 7	o = 14 oCCe =14 oa = 9 ow = 6 oo = 4 oe = 3 other = 5	u = 15 eu = 11 ew = 8 uCCe = 8 other = 12	oo = 47 ooCCe =3 other = 6
	total = 54	total = 53	total = 54	total = 55	total = 54	total = 56

While there is strong consensus about the *ee* spelling (58%) for long *e*, and the *oo* spelling (84%) for long *u* (oo), consensus regarding the other vowels is much less clear. This is perhaps not surprising given the variation in spelling patterns English uses for such words.

For long *a*, the spellings *ai* (faith, 24%) and *aCCe* (bathe, 24%) received equal support. For long *i*, the single *i* spelling (mind, 26%) edged out the *iCCe* spelling (tithe, 22%). For long *o*, the *o* (most, 25%) and the *oCCe* (clothe, 25%) spellings gained equal support, while *oa* (roast, 16%) was somewhat behind.

The stressed long *u* (yu) sound before a consonant cluster is uncommon and may not occur at all in single syllable words. The two most popular spellings chosen were *u* (fuchsia, 28%) and *eu* (neutral, 20%).

Even though in current English the use of a modifying *e* after the consonant cluster is rare for some of these vowels, the approach gained some support in all cases except for long *e*. This is probably a reflection of how strongly understood the pattern is for words in which a single consonant follows the vowel.

The *ar, air, er* and *or* vowel sounds

The results for these sounds in the medial position are summarised in Table V.

Table V

Vowel	ar	air	er	or
Model	part	cairn	herd	cord
Test words	parb larn zarf	mairt vairn tairb	gern lerf mert	norb dord zorp
Results	ar = 54 other = 6	er = 21 air = 5 ear = 5 other = 16	ur = 23 er = 22 ir = 3 e = 3 other = 8	or = 51 o = 3 other = 3
	total = 60	total = 47	total = 59	total = 57

The results show strong consensus about the *ar* spelling (90%) and *or* spelling (80%) in this position.

The *air* sound caused some difficulty, perhaps because it is not very common other than as a word ending. The preferred *er* spelling (45%) is not traditional. In the medial position, neither is the *ear* spelling (11%), though it received the same support as the *air* spelling (cairn, 11%).

The three common ways of spelling the *er* sound all received support, with *ur* (39%) edging out *er* (37%) and *ir* (5%) trailing well behind.

The results for the vowel-plus-r sound as word endings are summarised in Table VI.

Table VI

Vowel	ar	air	er	or
Model	far	fair	her	for
Test words	var nar lar	sair gair nair	ner ger zer	vor zor blor

Results	ar = 38 arr = 9 are = 4 a = 4 other = 4	ear = 17 are = 9 air = 8 err = 4 er = 4 ere = 4 eer = 3 ir = 3 other = 8	ur = 18 er = 15 ir = 12 urr = 3 e = 3 other = 7	or = 35 ore = 12 orr = 5 o = 3 other = 5
	total = 59	total = 60	total = 58	total = 60

As with these sounds in the medial position, there was strong consensus about *ar* (far, 64%) and *or* (for, 58%).
Support was split among the three common spellings of the *air* ending, *ear* (bear, 28%), *are* (care, 15%) and *air* (fair, 13%). Support for the *er* ending was split in a similar manner to the case when this sound appears within the word, with *ur* (fur, 31%), *er* (her, 26%) and *ir* (sir, 21%).

The *aa, au, ou* and *uu* sounds

The results for these sounds in the medial position are summarised in Table VII. The *aa, au,* and *ou* sounds were not tested before a consonant cluster because these sounds are typically made by a two-letter group that preserves its pronunciation, whether followed by a single consonant or a cluster.

Table VII

Vowel	aa	au	ou	uuC	uuCC
Model	palm	caught	shout	book	push
Test words	paab vaat saan	daup paug zaul	foub goup boug	chuub tuup zuud	muuth fuunt zuuch
Results	ar = 20 aa = 19 a = 7 aCe = 6 other = 7	or = 21 aw = 9 all = 7 ou = 3 au = 3 oo = 3 other = 14	ow = 14 ou = 13 au = 7 ouCe = 5 al = 4 el = 4 other = 6	oo = 23 u = 14 ou = 6 au = 4 o = 4 uCe = 3 other = 6	u = 19 oo = 14 o = 10 oot = 4 other = 11
	total = 59	total = 60	total = 53	total = 60	total = 58

Despite telling the participants that none of the test words in this group contained an *r* sound, for the *aa* sound the *ar* spelling (34%) narrowly edged out the *aa* spelling (32%). The same situation was repeated for the *au* sound. If you remove the *all* spelling (which makes sense in the test word zaul but not in the others), then the *or* spelling (40%) gained more support than the *aw* spelling (pawn, 17%), with the *au* spelling (daub, 5%) well behind.
Support in the *ou* sound was almost equally divided between *ow* (town, 26%) and *ou* (shout, 25%).

Because the *uu* sound can be spelt in English with just the letter *u*, it was tested prior to a consonant and prior to a consonant cluster. The leading choice prior to a single consonant was *oo* (book, 38%), followed by *u* (put, 14%). Prior to a consonant cluster the order of preference was reversed with *u* (push, 33%) and *oo* (whoosh, 24%).
Of the sounds in this group, only *aa, au* and *ou* appear as word endings. The results for these vowel sounds are summarised in Table IX.

Table IX

Vowel	aa	au	ou
Model	baa	paw	now
Test words	chaa glaa snaa	gau vau zau	fou jou zou
Results	a = 25 aa = 12 ar = 11 other = 10	or = 18 aw = 16 ore = 10 o = 4 other = 12	ow = 26 ou = 4 other = 18
	total = 58	total = 60	total = 48

Again with the *aa* and *au* endings we have the difficultly of participants using spellings containing the letter *r* when there is no *r* sound. For the *aa* sound, the preferred choice was *a* (ma, 43%), followed by *aa* (baa, 21%) and *ar* (19%). For the *au* sound the *or* ending (30%) predominated, followed by *aw* (paw, 27%) and another *r* ending, *ore* (17%).

For the *ou* sound, there was a reasonable consensus for the *ow* ending (now, 54%), with no other spelling gaining significant support.

Conclusion

While we may view the spelling of our language as rather chaotic, the study revealed a perception that it actually has some very strong rules, if we define a rule as a pattern that receives over 50% support.

The strongest and clearest of the rules relate to the spelling of the short vowel sounds, *a, e i, o* and *u*. However, there are also very strong perceived rules relating to all the long vowel sounds followed by single consonants, the long *a, e, o* and *u* (oo) word endings, the long *e* and and *u* (oo) sounds before consonant clusters, the *ar* and *or* sounds in all positions, and the *ou* sound as a word ending.

The strength of these results indicates that simplifying English by building on the underlying rules already present in the language is a real possibility. The results also indicate that, based on the perceptions of the participants in this test, there are areas where it is not clear what rule should be adopted.

In the broader context, the results also raise questions about how one ascertains what pattern should be adopted as a rule for the purposes of simplifying spelling when there are several alternatives. For example, after examining the existing vocabulary, one would presumably opt for *y* (try) or possibly *ie* (pie) as the appropriate rule for the long *i* word-ending, at least for single syllable words. However, the participants in this test opted primarily for *i* (hi), which is simpler.

These results need to be treated with some caution. The test was limited to 20 people in one area of the English-speaking world, and the response received depends to some extent on the test word given. Nevertheless, I believe they provide a useful guide, and that the same technique might yield useful results if extended to other areas of English spelling.

[Journal of the Simplified Spelling Society, 29, 2001 pp26–28 in the printed version]
[Masha Bell: see **Journals**, **Newsletters**, **Pamphlet**, **Leaflet**, **Media**. **PV13**, **Book**,

5. The Significance of the ITA Experiment
by Masha Bell

Masha Bell is an educator and one-time Secretary of the Simplified Spelling Society. She has long been an effective publicist for reform.

The ITA experiment is now generally regarded as a failure. A full-page piece about ITA in the Daily Telegraph on 2 June 2001 was entitled "A cleer case of educashunal lunacie." Few people have any idea why ITA ever came to be used in the first place.

In 1953, a private member's Spelling Reform Bill was carried in the House of Commons by 65 votes to 53 after its Second Reading. It was then approved in Committee, too, against the wishes of the Conservative government of the day. Without government support, the Bill had no chance of being passed by the House of Lords.

The Bill's success in the House of Commons did, however, persuade the Secretary of State for Education, Miss Florence Horsbrugh, that some further action should be taken as a result of it. Consequently, she gave her consent for a large-scale investigation to establish whether traditional spelling had adverse effects on children's progress with learning to read and write, when compared with the use of a simplified spelling system.

The prestigious Institute of Education of the University of London and the National Foundation for Educational Research were entrusted with the project. They took great care with its design. Since participation in the study was voluntary, it took several years to persuade enough directors of education and school heads to take part in the experiment. The study eventually took place the academic year 1963–64.

The study compared 873 children who learned to read and write in the normal way with 873 children who were taught using the Initial Teaching Alphabet (ITA). There were no plans at that stage to continue using ITA beyond the experiment. However, its designer, Sir James Pitman, hoped that it might be. He did not favour a proper spelling reform. Rather, he believed that the use of ITA as a transitional alphabet for teaching beginners to read and write would obviate the need for reform.

Some Precedents

Sir James Pitman's ITA was based on his grandfather's, Sir Isaac Pitman's, Fonotypy. This had already been tried in the US in the 1850s, in 10 schools in Waltham, Massachusetts. According to a summary of the results made by the American Philological Society in 1899, the use of Fonotypy enabled children to learn to read much faster. It brought other benefits, too. The savings in time led to better development of "observation, skill in drawing and writing, and geometrical ability." A further reported outcome was the following: "The phonetic print corrected the brogue of the Irish children and the Yankee dialect of the American in a surprising manner."

A large-scale experiment, with a different transitional alphabet, had also been used in St. Louis between 1866–86. The US Bureau of Education claimed that this saved 1–2½ years in the time needed for learning to read. Furthermore, as a result of the experience, children "took more pleasure in reading books and newspapers at home." After an experiment with the same transitional alphabet in Boston, it was claimed that it enabled the basics of reading to be taught in just one year, instead of the usual two years. Several experiments in Britain had also found that learning to read and write English can be dramatically speeded up when using a more regular spelling system. They had, however, not been conducted according to strict scientific criteria.

Results of the ITA Study

The more scientifically conducted ITA experiment of 1963–1964 led to many of the same conclusions as the various earlier studies. It demonstrated very clearly that children can learn to read and write English much faster when using a more consistent spelling system. Children using ITA moved more quickly through the five books of the Janet and John reading scheme. For example, the average pupil using ITA was on the fourth book by the beginning of the fifth term, while the average pupil using traditional spelling had not advanced beyond the second book. The ITA children scored higher in reading tests: reading more fluently, with fewer errors and attaining higher comprehension scores. The writing of children using ITA was also superior. Their compositions were longer and they used a much wider vocabulary. Teachers of the ITA groups repeatedly also commented on a more favourable attitude to learning among their pupils.

The original purpose in using ITA was to establish whether traditional spelling had adverse effects on children's progress with learning to read and write, when compared with the use of a simplified spelling system. About that, the investigation provided totally unambiguous results. The study demonstrated conclusively that traditional spelling impedes the acquisition of literacy in English.

ITA enabled children to grasp more easily what reading and writing is all about. Still, eventually they had to memorise the erratic spellings of 3,500 common English words, which all have some element of spelling unpredictability in them.

Although children made a good start on the road to literacy with ITA, ultimately they had to confront the difficulties of the current system. The least able pupils suffered the most severe setbacks when they eventually had to switch to normal, unreformed English spelling.

If English spelling itself were to be simplified, then children would be able to continue learning to read and write English in the same satisfactory and confident way in which they progressed with ITA. They would no longer need to experience the setback that initial users of ITA had to face when eventually confronted with traditional spelling.

To summarise, the ITA experiment proved 2 things:

(1) A simplified English spelling system makes learning to read and write English far easier and more enjoyable than it is now.
(2) A transitional learning system cannot enable learners to cope with the difficulties of the current English spelling system.

Personal Experience

My own experiences have confirmed the second conclusion. By the time I started to learn English, I already knew perfectly well how alphabetic systems are meant to operate. I had acquired this insight, not from ITA, but from learning Lithuanian and Russian. This knowledge proved very useful when I next went on to learn German, another language with a fairly alphabetic spelling system. But it was of no help to me when I subsequently came to learn English. Because English spelling so often fails to adhere to the alphabetic principle, the really hard part of becoming literate in English is memorising the thousands of exceptional spellings, after the basics of reading and writing have been grasped. A spelling system riddled with contradictions (like learn/fern, steady/teddy, knew/new/due, how/low, alphabet/Alfred, system/sister) will always take a long time to master. Only spelling reform can ameliorate that.

Misuse of ITA

That still leaves us with the question: why did so many teachers continue to use ITA after the original 1963–64 experiment was completed?

The teachers using ITA were impressed by the immediate benefits of ITA. Those teachers had previously watched many of their pupils struggle and get stuck for a long time on one reading book. They saw their students' writing being severely handicapped by the contradictions of English spelling. With ITA, by comparison, all children were speeding along and enjoying their learning, too. There is nothing that gives teachers more satisfaction than seeing their pupils succeed. How could they *not* want to continue using ITA?

Unfortunately, ITA transported both pupils and teachers into the more idyllic world of reformed spelling, which existed as yet only in their own classrooms. The heady success of ITA made the teachers using it ignore the grim reality of traditional spelling, which their pupils would have to confront before long. This was easy to do because, in primary schools, teachers usually teach just one age group. How those children later coped with traditional spelling would be someone else's problem. Pitman kept reassuring everyone that there would be no difficulty making the transition to traditional written English. Unfortunately, ITA no more helped the children cope with the vagaries of English spelling than learning Lithuanian, Russian and German helped me carry the same learning burden. Only lots of intensive practice with traditional spelling can do that, or a proper reform of English spelling.

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[Journal of the Simplified Spelling Society, 29, 2001 pp29–31]
[Richard Wade: see ***JSSS 2002/1 30*** Item 7]

6. Freespeling.com — A Vehicle of Change, Not a Rubric for Reform

by Richard Lawrence Wade

Richard Lawrence Wade is the sometime editor of "Tomorrow's World" (science and technology TV-magazine programme) on BBC 1, the deputy to the Controller of BBC Radio 4 (UK's main speech channel), and Director General of the Advertising Association. He is also the founder of www.freespeling.com

Freespeling.com is the website campaining, not for formal reform or new rules, but for a reawakening of the freespeling of the Shakespearean age. Thus we can move towards an easier set of standard spelings.

Between the launch of www.freespeling.com in mid January 2001 and mid June there were three quarters of a million hits from over 50 countries. There were also many emails to me, as author of the site. Some were very rude, but far more made comments, offered suggestions, and gave support to the project. Major articles have featured freespeling.com in the New York Times, the Independent (UK), Liberation (Morocco), The Age (Melbourne). There were interviews and fone-ins to South Africa, the US, the UK and Canada. Many mentions elsewhere I discovered only later, using search engines on the Web. So, a bandwagon is starting to move.

Time to Modernise

Rigid orthography, locked in a cage since the egregious Dr. Samuel Johnson finished his admirable dictionary in 1755, is no longer appropriate in an era of the Internet, text messages and emails. The spelling of English remains a hurdle to all who learn the language, a rampart to dyslexics and a barbed-wire barricade to those who end up illiterate. My campain aims to modernise the speling and so to improve the language of universal communication. But this is not an academic exercise or a filosofical thesis. This is a political and social campain for chanj.

Chanj, but how? By enrolling those who already "break the rules" when sending text messages to their friends, using abbreviations and codes on their mobile cell-fones or pagers. Or those who hit the "send" key without spellchecking their email messages with the same rigor as for printed letters. The spirit of the Internet is an esprit libre, fearless of convention, rebellious against regulation. This is not a force to be harnessed, but a current to swim in, a wave to surf.

Freedom & Anarchy

Does freedom promote anarchy? No, it need not. Before I address that crucial question, however, let me ask this: why on earth we have endured an orthography fossilised for two centuries and a half, trapped in the sediment of the Age of Enlightenment, no less? There have been many attempts at new top-down rules for English spelling, new reforms, even new alphabets, but none has made much impact. It is the educated and influential who are to blame.

They (we?) may now have accepted a wide range of accents; they may eagerly embrace neologisms (unlike the French, who have built a ring fence against foreign invasions); they may even allow oddities of grammar. Nonetheless, they brand anyone who is a bad at spelling with the stigmata of ignorance and stupidity. Job application? Business pitch? Future son-in-law? Oh dear, no!

Why Chanj?

We may argue that language needs absolute continuity of script to allow immediate "pattern recognition" and thus comprehension by the widest possible readership, and, yes, it does. But that must never disallow improvement and modernisation.

Imagine if automobile design was stuck in, say, 1955, with carburettors that flooded, indicators that snapped off, and tyres (tires?) that punctured frequently. Chanj has always been a major problem for the motor industry because of the inertia of the capital invested. And yet they overcome that inertia to optimise their bottom lines.

Why don't we do the same with our beloved English? Because the majority of us who manage or who govern have invested too many hours in reading, marking and inwardly digesting the contrary spellings of this magnificent, rich and flexible language that is English. We try to pronounce it well (though we may never have reflected on why the noun is "pro*nun*ciation"!), we may hate split infinitives (I do!), and we certainly strive to spell it correctly. So, we are loath to waste that investment. But we are, in effect, merely polishing the leather upholstery of a vintage Rolls Royce. The car is no longer British, nor a match, performancewise, for its competitors.

The Old Freespeler

Some of us may defend this stance by calling on the mantra of that Master of English, William Shakespeare, but in that they are wrong. He himself wrote in spelings free of inhibition:

First folio 1623 MACBETH
Seyton:
The **Queene** (My Lord) is dead.
Macbeth:
She should have **dy'de** hereafter;
There would have been a time for such a word:
Tomorrow and tomorrow and tomorrow,
Creepes in this petty pace from day to day,
To the last Syllable of Recorded time:
And all our **yesterdayes**, have lighted **Fooles**
The way to dusty death. Out, out **breefe** Candle,
Life's but a walking Shadow, a **poore** Player,
That struts and frets his **houre** upon the Stage,
And then is heard no more. It is a Tale
Told by an **ideot**, full of sound and fury
Signifying nothing.

That was, of course, before the codification of English by Johnson. Most of those freespelings are instantly recognisable. They are few and cause little difficulty.

What I now promote with frespeling.com is to freespel those words you find tricky, illogical or overweight but — very importantly — to write for "the comprehension, clarity and cumfert" of your *reader*. I exhort practitioners to freespel "only a few words on each page. Resist temptashun!" If you litter a document with freespelings, the messij becums kwite difikult to reed (c wot I meen?). I recommend a self-disciplined freedom (if that's not a paradox), for all freedoms should be exercised with care.

The Website

There are said to be 16 billion telefone text-messages per month. And emails? Who knows? If people do exercise such a freedom, how can we ensure that English does become a simpler language that people can understand more easily? Certainly we do need a new Standard Speling. The aim of freespeling.com is to produce a set of preferred freespelings that most people will feel cumfertable with and start to use. In due course, they'll regard them as acceptable and so the words will become Standard Spelings.
How do we achieve that? Let me quote the website:

"Each week I plan to post up 10 words on the FREESPELING WORD WALL — tricky ones or spelings that don't seem to make much sense…phlegm, plait, pursue, slaughter, build, cough,

eschscholtzia (the California poppy)…for each one you will find a number of alternative candidate spelings to choose from.

You look at the alternatives and then vote for the candidate you prefer (if none appeals, you may offer your own suggestion).

It will be a WORLD VOTE — anyone, from any country, can vote.

We count up the votes and publish these new preferd spelings in the FREESPELING NEW WORDBOOK which you can download anytime you want and put them in your spelcheker (!).

If you don't like a preferd speling, you don't hav to use it!

The following week, we'll write up a new bunch of candidate words and you vote again. Gradually we shall build up what will become a new Global English Dictionary containing all the old conventional spellings but the new preferd freespelings too.

Conventional speling doesn't disappear, it gradually absorbs new spelings and undergoes a process of metabolic chanj.

BUT, IMPORTANT: each set of alternatives for you to vote on will be carefully selected to try and make sure, if one can do so in English!, that other similar or related words will have similar alternatives on offer when its their turn.

For example we would not want to find we'd ended up with 4=for, 14=forteen BUT 40=FOURTY, would we!

To shape that process I want to enlist the help of a small group of Language Gurus, recognised experts, from the different continents where English is a major spoken language. They can help to select a coherent set of possible freespelings to stand for election.

But they wont be devising Rules you have to follow, nor Reformed Spelings, they'll be choosing some alternativ freespelings-in-harmony for you to vote on."

That group of experts will be central to achieving a coherent set of future Standard Spelings. The Simplified Spelling Society may have important input there!

Where do we go from here?

To achieve a meaningful World Vote, the project needs

- A small team of web experts to run the technical side
- A group of language gurus

Both require relatively modest funding, but most vital is publicity to make sure that people do log on and vote. My current task is to get the backing of an international brand, a "fast-moving consumer good" or an international service. A soft drink, a candy bar, an overnight delivery service? It will take courage by some marketer, but s/he will achieve a profile in six months that would take many brands a generation.

As my business card says:
"One good idea is worth a thousand elephants." *Chinese proverb*
"There is one thing stronger than all the armies in the world — and that is an idea whose time has come." *The Nation 15 April 1943*

[Journal of the Simplified Spelling Society, 29, 2001 pp32–37 in the printed version]
[Steve Bett: see **Journals**, **Newsletters**]

7. *The Art of Spelling*: The Madness and the Method
by Marilyn Vos Savant. Book Review: Steve Bett

W.W. Norton & Co., NY & London, 2000 US$22.95, 205 pages ISBN 0-393-04903-5]

Steve Bett is a former professor of typography and computer graphics. He is currently a communications consultant involved in training faculty on how to build better e-courses. He contributed two chapters to the book, Internet Based Learning, Kogan-Page, 1999. He maintains a resource site on alphabets, alternative transcription systems, and spelling reform. See links.

The Art of Spelling, by Marilyn Voss Savant, is divided into two parts. The first part, the madness, describes the problem by reviewing the work of historians, linguists, psychologists, and writers who have dealt with the issue. The second part, the method, describes the solution as prescribed by numerous books on spelling improvement.

The second part is a kind of synopsis of the strategies that might be of some value. There are no memory exercises or drills. However, the book mentions just about every suggestion, rule, or list that the author found to be useful: e.g., a list of the 500 most frequently misspelled words and a list of the most frequent spellings of 39 phonemes.

The author, a syndicated columnist, is the author of six other books. She does a good job of locating things that readers can relate to. Some of the early reviewers of the book were relieved to hear that bad spelling does not necessarily indicate low intelligence. Someone can be intelligent without being a good speller. However, Savant adds, low intelligence nearly always produces poor spelling. Whether or not simpler spelling would lead to a greater mastery of spelling among those with limited intelligence is not addressed.

Savant reviews a wide range books and reports on spelling, but she fails to come up with anything very enlightening. Spelling is said to be a skill that involves both lexical skills and phonological skills. There is some evidence that, when faced with a difficult word, good spellers rely more on their phonological skills than their lexical skills [Lennox, 41]. The terms are never fully defined. One presumes that lexical skill pertains to visual memory and the ability to memorize the dictionary, while phonological skill involves an understanding of the statistical connection between sounds and letters and the ability to break down long words into syllables.

Spelling & Character

Spelling bee champions were said to use three main spelling strategies: visual memory, writing or saying words aloud, and regular use of the dictionary. Good spellers use both phonological and visual cues. In trying to determine the characteristics of good spellers, Savant finds evidence that good spellers tend to be highly motivated, highly organized, and attentive to detail. In her survey of 42,000 readers, she found that spelling ability seemed to be correlated more with personality traits and habits than with problem-solving ability and intelligence. Half of the book is devoted to the psychology of good and bad spellers, so readers may want to score themselves. A self-scoring personality questionnaire is provided.

Unlike many writers on spelling improvement, the author has not only read many of the best works on the topic but has also interviewed their authors. I have rarely seen this newspaper device used so effectively in a book. The interviews are boxed and kept separate from the main text, like sidebars in a newspaper feature-article. In her chapter titled, "Spelling and Technology," she interviews Roger Mitton, author of *English Spelling and the Computer* (1996); Richard Venezky, author of *The American Way of Spelling*: The Structure and Origins of American English Orthography; and Uta Frith, University College, London, author of *Cognitive Processes in Spelling* (1980).

Fallacies about Reform

Donald Scragg, Professor of Anglo-Saxon studies (Manchester U.) and author of *A History of English Spelling*, is one of the authorities on spelling that Savant interviews (p72). Savant knows that Scragg is the president of the Simplified Spelling Society, an organization that has promoted reform since 1908. However, Savant apparently had already made her mind up that spelling reform was "a bad idea"; she does not raise the question with him. She does discuss it with Venezky. He supports limited reform, such as thru, tho, and thoro, which he says need to be established as the preferred alternative in schooling, spell checkers, and legal documents. However, he says "The claims that we lose one to two years of education because of spelling irregularities or that international business is hampered by the same cause are quite hollow and are rarely bolstered by any empirical evidence."

Who ever said spelling hurts trade? The problem is that many ESL people who can speak passable English cannot even begin to spell it. The claim that we lose one or two years of education is supported by every cross-cultural education study that I am aware of. See Margaret Harris & Giyoo Hatano, Learning to Read and Write: A Cross Linguistic Approach, Cambridge University Press (1999). Flesch (1980) mentions a report by Russian teacher, which indicated that Russian children master the Cyrillic grapheme-phoneme correspondences by Christmas of their first school year. Almost anyone can master a phonemic writing system in three months or less. The same level of mastery is not achieved by English-speaking school children until the fifth year. For that matter, we know from Downing's study of the Initial Teaching Alphabet [www.unfon.org/splbib.htm] that a consistent orthography made it possible for English-speaking school children to match the primary-school performance of their counterparts in Spain, Italy, Russia, Finland, etc. They lost that advantage in the 3rd grade, when they had to convert to the traditional system.

Savant never asks any questions that might correct her idea that all spelling reformers advocate phonetic spelling. (On p. 25 she says, "Phonetic spelling ...would complicate things," whatever its merits in theory.) Had she asked Scragg, she might have learned that there is a huge difference between phonetic spelling and the proposals supported by the SSS, such as cut spelling and broad phonemic spelling. Her critiques, which seem to be mostly borrowed from the essays by Cragie and Bradley, completely miss the mark. For instance, she suggests that since pronunciation changes with each new generation, spelling reform would require that dictionaries be updated every 10 years. In reality, the difference in pronunciation between two generations is nothing compared to the differences between various dialects of English. Any viable reform would have to work with most of the existing dialects.

What's Wrong with English Spelling

The Art of Spelling identifies the problem as "phonetic irregularity" — many words are not spelled the way they are pronounced [p116]. As Dr. Frith says, speakers of Italian and Spanish have a far easier time learning to spell. Unfortunately, the author follows this insight with a misleading quote from Edna Furness (p119): "Research in linguistics has shown that the English language is more phonetic than we realize (approximately 85%)."

To pick a nit, all languages are 100% phonetic: it is writing systems that go astray. As for that 85% figure, it includes the huge scientific vocabulary of English, most of which is mechanically borrowed Latin and Greek. Such spellings are quite regular, and, for the most part, quite rare. Thorndike and Lorge showed that 80% of the words we use are drawn from a set of 1000 basic words. However, Savant is wrong to claim [p120] that these high frequency words are relatively regular. The most frequently used words are among the most irregular.

There is some statistical regularity in English spelling. Ordinary English prose is about 40% predictable; most writing systems are about 85%. [See ww.unifon.org/predictability.html] Knowing the basic code does help narrow the field, and Vos Savant lists the five common spellings for 39 of the 40 or so sounds in English speech. She also provides some useful mnemonics for selecting the particular alternatives. Other practical advice includes how to use a spelling checker without being overly dependent on it.

All in all, this is a useful book that anyone with an interest in spelling will enjoy reading.

[Journal of the Simplified Spelling Society, 29, 2001 pp34–37 in the printed version]
[Valerie Yule: see **Bulletins**, **Anthology**, **Quarterly**, **Journals**, **Newsletters**, **Personal Views** 10 & 16, **Media**, **Books**.]

8. How People Spelled When They Could Spell as They Liked
by Valerie Yule

Valerie Yule researches in spelling, literacy and imagination. See her webpages (an index page on spelling with multiple links) and (an index page for literacy ideas and materials in progress). See links.

If people could spell as they liked, what sort of chaos would result? What happened when they could? People actually could spell as they liked before the late 18th-century dictionaries of Johnson and others. This was before the snobbery and "conspicuous consumption" common in 18th-century society, as well as the 19th century's emphasis on elite correctness. These combined to set English spelling in concrete, less than two hundred and fifty years ago. How earlier writers wanted to spell makes an interesting study, relevant to spelling reform now. The results are not quite what we might expect.

This study of "how people spelled when they could spell as they liked" is based on long reading in those earlier periods, supported by an analysis of samples of print, from around 1370 to 1670. The samples are not of the same length, and they are so short and limited that the findings can only be indicators. There is a rich supply of material that was printed or handwritten from the late middle ages onward to examine.

Spelling Before Dictionaries
From the time of the Anglo-Saxons, perhaps even until Chaucer's day, writers in English may have "spelled as they spoke." After the invention of printing, an interesting thing happened. Books and pamphlets multiplied phenomenally — everyone who could was reading like mad, and it sometimes seemed that they were all writing, too. According to my observations, the spelling habits of these people could probably be graphed. The less education and reading a person had, the more likely their spelling in their letters and other personal writing would be more closely fonetic, representing their own local speech. With more education and wide reading, the more likely that the chief determinant of a writer's own spelling would be the spelling in the books and pamflets that they read, even if this spelling did not reflect their own speech — and even if many of the commonest spellings they used were already capricious, answering to nobody's way of talking by that time. In their personal letters, however, all writers were liable to spell with more personal abandon.

Writers tended to conform with general usage in spelling the vocabulary they used frequently, but resorted to their own phonetics when they were not sure or were not familiar with any widely accepted spelling of a word. Pitman's stenographers used to be like that, too. Most of their originally-fonetic squiggles were heavily rote-lernt and then used by unthinking habit, but fonetically encoded when necessary.

One reason for this lack of "spelling as you speak" could have been the lack of a Received Pronunciation. There was none even in Johnson's time, as he complained. There was no prime way of speaking among all the dialects even of London. So it could be wiser, from Aberdeen to Tiverton, to share as common a spelling as possible, in order to communicate. Printers from Caxton on also put in their bit to support more standardised spelling — it suited them better to have some automaticity, when the hot metal had to be placed letter by letter.

These habits in the public spelling of English were setting even in Chaucer's time. Chaucer used many spellings, both regular and irregular, that we still use today — altho he would sometimes vary from them. The following words and their spellings are familiar today:

> "in age was dwelling a dale this of which I my tale day that she last simple for and by of such as God two (a few lines further on, spelled "tweye") three large sheep sooty many sauce never no morsel passed made never to drank neither served most milk were enclosed land crowing his peer than abbey nature knew degrees ascended amended comb redder coral."

The discerning reader can fill in the spaces, since there is sufficient vocabulary to recognise this as the beginning of the Nonne Preestes Tale.

Here are irregular spellings (in the sense of unpredictable) that are still with us, from the letters of Thomas Cartwright around 1590:

> "many trouble although reason come obedient voice whom who slaughter peace are most conscience words experience knowledge absurd declare prove sword used passionate third ascend have any beauty certain none worth possible people colour occasion weight prophecy measure breath receipt"

Note that writers still varied greatly from the inconsistent standards while these were slowly developing.

Sources

The word lists below come from samples from the following printed books, although backed by my recollections of reading old books and mainly 17th century handwriting.

Consecutive samples have been taken from:
—Chaucer, (1340–1400)
—Thomas Sackville (1536–1608)
—Christopher Marlowe (1563–1593)
—Samples from the letters of Thomas Cartwright, hand-written around 1590, first edited and published in 1951, so there is no question that the spellings were influenced by the printers of the time — as they could be with the other samples of print.
—Edmund Spenser (1551? –1599)
—Scots ballads (dates of writing down are uncertain)
—Scots prose 1662 and 1670
—Leveller pamphlets — English Civil War 1646–1649 (exerpts from seven pamflets)

Old & New Spelling Habits

Spellings from these texts differ from modern spelling in various characteristic ways. The word lists illustrate some prominent differences, as well as some surprising correspondences between old and new.

This brief comparison suggests points that any spelling reform might need to accommodate:

(1) Morfemic spelling — that is, compound words have been spelled by their word-components, rather than as single words. The old writers had to endure less changing of letters in spelling when words were amalgamated; e.g., "manyfold," not "manifold."

(2) Spellings that are shorter than today. So many antique spellings are longer because of the additional spoken inflexions and fondnesses for doubled consonants. Nonetheless, the older writers also seemed to employ the same principles as the Surplus-Cut spelling-reform scheme. They omitted letters that did not aid meaning or pronunciation. Exampls of every one of the streamlining principles of Surplus-Cut spelling appear in all eight samples — there were no cuts that went against those principles. "Streamlining principles" appear in all eight writings.

(3) Many ancient spellings are closer to present speech than their spellings today. Unnecessary complications bother lerners and spellers today — notably extra and unpredictable letters in vowel

spellings: "o" instead of "u" for the short vowel foneme /u/, "u" for /w/, simple CVC constructions for final syllables turned into CCV, and "quite mad" changes to construct spellings like "choir" and "tongue."

(4) Following the 18th-century obsession with genteel manners, we have been taught to be absolutely correct with our spelling, even more than with our morals. The old writers could be cavalier, and in letters particularly. (Cartwright's varying spellings of the same word could jostle each other on the same page.)

(5) Many spelling reformers insist that it would be easier for learners and spellers to spell the final sound in plurals and verbs "s" or "z" according to whether natural articulation made that sound /s/ or /z/. None of these early writers ever did. Not even a "woz." However, there was more fonetic discrimination between -d/ and -t/ in participles, which is less obvious grammar.

(6) Across the board, spellings that varied from our spellings today tended to be actually closer to how we pronounce the words, apart from inflexions.

1. Morphemic spelling

Chaucer: byside, fyry, housbond, slayn, trewely
Sackville: slayne, layd, woe begon, wurthyest
Marlowe: dayly
Cartwright: cryed, dayly, denyed, duety, gloryouslye, manyfold, middestruely, truethe, wisedom
Spencer: doen (done), prayses, theyr
Scots ballads: spyed, wellcum, wellcum
Scots prose: dyed, middest, rejoyce, tryals, payed
Levellers: chair-man, dayly, defyance, denyal, trible (cf dubl), tryall, wisedom

2. Shorter spelling

Chaucer: agast, agu, al, arys, bad (bade), berd (beard), bifel, blis, blisful, blody, bord, bour, chuk, cok, colerik, com, contree, cotage, cours, Cresus, dich, dout, ech, erly, fether, flour (flower), ful, fyn, fyr, groning, herd, lak, laxatyf, lege
Chaucer 2: litel, lyf, lyk, malencolye, maner, merier, mery, neded, nigard, peple, Pharao, resonable, romed, sleper, sleping, smal, solas, somtyme, syk, tarie, therfor, vois, wal, wel, wo, wyf, wyn, whyt, slayne, layd, woe begon
Sackville: agast, al, appered, approched, blud, bluddy, brest, breth, carkas, corps, delites, dredfull, drery, ful, gastly, gladsom, glas, godhed, gyltles, hart, hel, knobd, lothly, lothsome, ruful, savor, sorowing, spred, strayt, thre, tyl, unstedfast, wel, wil, woful
Cartwright: becom, brused, chuse, clense, comon, comunion, delite, doctrin, fal cal al, frends, ful, grudg, hart, holesome, immediatly, knowledg, maner, obstinat, oportunity, stif, thorow, undoutedly, unfained, straite, waied (weighed), wheras
Marlowe: brest, delite, faining, kis, moovd, opposite, peble, shal, shels, wandring
Spencer: bels, croking, delite, drery, dwels, fethered, gon, hed, ly, mischivous, roring, scatterd, spels, spred, sumd, yel
Scots: dyed, middest, rejoyce, tryals, befor, chuse, comunion, disciplin, doctrin, doubl, handl, immediately, peopl, requir, sumond, therof, therin, twelv, wher
Levellers: chair-man, dayly, defyance, denyal, trible (cf dubl), tryall, abreviations, adjurnable, al, badg, brests, chuse, disolvable, endevors, grevances, garding, greatned, heightned, entred, grosly, judg, lingring, opressions, hav, rendred, sel, selvs, shal, shufle, sutable, wil

3. Other spellings closer to modern speech than present spellings

None in the Marlowe sample
Chaucer: eet, Egipt, gentil, meel, middel, repleet, yeer
Sackville: candels, cristall, crummes, eckoed, iye, mantels, stomake, wurdes
Spenser: doo, dore, neer, obay, perle, quyre, yvory
Cartwright: sswaged, clyme, doo, eschue, perswasions, reconsiliaton, renued, suffise, tounges
Scots ballads: cumpanie, cuntrie, nobil, cumpanie, Inglish, luving, mault (malt)

Scots prose: dait, evrie, disswaded, meerly, onely, perswaded, theevish, yeeld
Levellers: arreers, axel, beleeve, center, cleer, cloaths, compairing, compleat, completely
Levellers 2: deer, gyant, neerly, onely, perswaded, supream, yeers

4. Varying spellings on the same page

None in the samples from Marlowe and Scots ballads; Scots prose — the only close variation was tym/tyme"
Chaucer: blak/blake, dreem/dremes, seide/seyde, seith/sey/seyn, shal/shul, wys/wyse
Sackville: assined/assynde, worthy/wurthyest, yel (but dwell)
Spenser: doen (done), doo
Cartwright's letters: beauty/beiuty, buisnes/ busines, curat/curate, extorcioners/extortioners, hainous/haynouse, obay/obey, sheepeheardes/shepheards/sheephearde (all within 6 lines), shuld/shoulde, solemne/solempne, physition/phisition. thretning/threatned (within 3 lines), vnfained/unfained, wel/well
Leveller pamflets: endevors/endevours, grevances/grievances, publique/publike

5. t- endings to verbs.

None in Chaucer, Spenser, Cartwright or Scots samples
Sackville: approcht dipt whypt slypt prest coucht opprest stretcht
Marlowe: reacht past brancht sipt stript
Leveller: opprest releast stopt

6. s/c/ variations — None in Marlow, Scots ballads or Leveller samples

Chaucer: compleccion, congregacioun, pacience, tribulaciouns
Sackville: pearst (pierced)
Cartwright: contricion, gratious, mencion, pacient, substanciall
Spencer: chace, disperst, noyce, sence, sences
Scots prose: caice, antient, antients, gratious, councellor

7. Obsolete distinctions of medial and final vowels

Only Chaucer — broun doun renoun toun hewed (hued)

8. Other variations from present spelling

Chaucer: abyde, adversitee, agayn, allas, beste, bigan, bihold, binethe, bisyde, byte, castel, casuelly, certeyn, citee, coude, daunce, deel, depe, dere, devyse, eres (ears), exercyse, fere, fy, fynde, grone, hevene
Chaucer 2: hir, kepe, lilie, necessitee, orgon, phisyk, pryme, saugh(saw), speke, superfluitee, swete, throtet, yme, vanitee, venimous, whyde, wikkednesse, wommanwyse, wyves, yow
Sackville: ayer, bemone, boyles, fyer, guyde, hugye hugie (huge), Iryshe, miserie, ougly (ugly), plaste (placed), portche, quyeteshoar, shoen (shone), skale (scale), skrip, slepe, speache, syxe, whurld, wyde, yong, yelding
Cartwright: appeereth, approchinge, bloud, deceaved, doon, ghoast, greeued, greeuous, hee bee mee, idyotes, outwardli, oyle, oyntement annoynted, prophane, publique, souldier, tirant, vertuous, yeilding, yow
Spencer: blew (blue), bynd, coche (coach), damzel, Eccho, yeeld, lillies, mattins, mayden, sprinnckled, trew, vertues, wemens, wize
Marlowe: asswage, blew (blue), deceaves, eies, nimph, roiallye, vaile, vailing, yron, monie, beneith, cauld (cold), heir (hwew?), meit, steids, wheit, yeir
Scots ballads: ayd, bettir, bi, castell, deir, desyre
dreirie, dyed, Erles, grene, gude, luke, mercie,
mete, nevir, pitie, speik, teirs, tuik (took), blude
Scots prose: bussiness, colledg, dyocess, oyl-colours, publick, subtil, vertue
Levellers: apparent, balance, carkasse, comptrouled, fellons, humaine, hazzarded, imbezelled, indempnitie, kernill, lyable, moneths, possitively, totall, mallice, evill, parrish, priviledges, probabilitie, randezvouz, saies, seised, shee, souldiers, soveraign, stiled, stincking, tyred, vertue, wee

[Journal of the Simplified Spelling Society, 29, 2001 p38 in the printed version]
[Tom Zurinskas: see ***JSSS 2008 34***, Item 12]

9. USA English Is Respelled in Truespel
by Tom Zurinskas

Thomas E. Zurinskas, creator of truespel, is a human-factors psychologist and quality assurance specialist for the FAA in the USA. He has 2 grown boys and lives with Bonnie, his wife of 32 years, near Atlantic City, NJ. He has been a member of the SSS email forum since 1997 and presented truespel to the world there. For English (USA) see www.foreignword.com/dictionary/transpel.htm

Truespel has been on the SSS email forum since 1997. After 2 years of development, the truespel dictionary is done. It is now up to 60,000 words and mature. Its format is a truly consistent phonetic spelling based on English, in General American accent. The design minimizes conflicts with traditional orthography. See truespel.com. Truespel establishes a reasonable set of 40 phonemes as a standard for respelling, not only English, but all languages. The intent is *not* to replace traditional orthography but to develop a new pronunciation/translation guide that (1) uses qwerty letters and (2) is based on English, the world's most important language.

The good folks at foreignword.com have made an English-to-truespel converter. The site is located at this address: www.foreignword.com/ dictionary/ truespel/transpel.htm.

Merely type or paste text into the converter and hit the convert button to respell it in truespelUSA. This means that anyone can now spell in truespel and any text file can be converted. This will help learners and teachers alike.

The implications are big
Truespel can now be used as another ita phonetic spelling guide for learners. It is better than the ita because after initial learning it does not go away, as the ita does. It is retained as a dictionary pronunciation guide. It can be used as such because it shows primary stress in a word, whereas ita does not. Thus, truespel can replace and combine the ita and IPA. It is better than the IPA because no special symbols are used and the schwa is spelled out.

Another special benefit of truespel is that because it uses qwerty letters, it can be analyzed by spreadsheet text-functions. I have "searched" on the 40 phonemes and counted them to find the frequency of use both in the dictionary and millions of words of newspaper text. This provided an interesting comparison. I have counted the number of ways each sound is spelled. I've found answers to questions we perhaps never thought of asking, such as which vowel is spelled only one way in English, or which is more popular, the voiced or unvoiced TH.

The Foundation
To respell all language needs a lot of work. A Truespel Foundation has been formed and will seek charitable status for donations. A volunteer is needed to develop a truespelUK version. UK/AUS/NZ readers will not agree with some truespelUSA spellings, but these are accent questions. The spellings of the truespel dictionary were taken from listening to the American Heritage talking dictionary, Softkey Inc., as the pronunciation reference. I hope the SSS will follow this lead, adopt this phonetic set and carry this work onward. One, united, qwerty, English-based pronunciation guide is what the world needs for all language.