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An Introduction to This Special Issue

Comenius, writing in the middle of the seventeenth century, called spelling "that most troublesome torture of wits." The American educational reformer J. M. Rice wrote at the end of the nineteenth century on "The futility of the spelling grind." And Leonard Bloomfield, in calling for a complete reform of English spelling in 1933, claimed that "The difficulty of our spelling greatly delays elementary education and wastes even much time of adults." But in 1977 we spell as did Bloomfield and Rice, and pretty much the same as did a literate Englishman at the time of Comenius. Spelling is still taught in our elementary schools, albeit not with the furvor and fanaticism that Rice witnessed in the 1890's, and the same features that led a 1930's spelling reformer to exclaim "that of languages of culture English has the most antiquated, inconsistent, and illogical spelling" continue to interest linguists, psychologists, and educators.

What one group finds as illogical and unconscionable in English spelling, others find as valuable data for the history of the English language, the nature of sound change, the habits of trade-name makers, and the information processing abilities of children and adults.

The papers presented here portray this richness of interest in English spelling from several uncommon viewpoints. Two of the papers concern psychological aspects of spelling ability. In one (Gates and Chase), the spelling abilities of deaf children are compared to those of normal hearing children matched for mental age and for reading ability. The results of this study seem as unexpected today as they did 51 years ago when the study was first published. The second psychological paper (Secrist) represents one of the few studies in print of the specific phoneme-grapheme patterns which literates use. Most spelling reformers have assumed that phonemic spellings would facilitate reading and spelling while non-phonemic spellings would impede these processes. Until now, however, little empirical evidence has been applied to this argument.

Related to this latter paper is the Kerek study of spelling pronunciations,

a topic which since Jespersen has been largely ignored by linguists. Kerek's data suggest that spelling pronunciation, as an extra linguistic factor, should be considered in any linguistic description of English.

In contrast to spelling pronunciations, Jacquith examines variant spellings, and in particular those of trade names like Kleenex and Whey-Fers, and demonstrates that what appear on the surface to deviate markedly from traditional spellings in fact are generated by a set of highly predictable rules which are based on English orthography.

Why we spell both cinder and coal with an initial c, and related orthographic issues, are explored by Venezky in three vignettes on the history of English spelling. And finally, a section from a spelling book that is almost totally unknown today, but which sold over 24 million copies in the United States between 1783 and 1842, is reprinted. This textbook, referred to in its day as the "blue-back speller" due to its cover and binding, was Noah Webster's first contribution to American linguistics and provided for him both the financial resources and the lexicographic basis for first his Compendious Dictionary of the English Language *(1806) and then the* American Dictionary of the English Language *(1828).*

Richard L. Venezky

Diagraphia in Advertising: The Public as Guinea Pig

James R. Jaquith

Orthographic conventions adopted by advertisers for many consumer products depart significantly from ordinary standards of correctness, e.g., ARRID, BISKIT MIX, DETANE, KLEEN, WHEY-FERS. This paper analyzes more than 1,500 expressions of this practice and suggests that advertising spelling (1) constitutes the graphic analog of what linguists call diglossia, (2) has influenced the criteria by which English readers judge correctness in spelling, and (3) is made possible by special properties of the graphic-phonological system with which English is written.

"Da-da-doo! When a California firm named Dy-dee-Wash sued Tidee-Didee Diaper Service for advertising itself as Didee-Tidee, a superior-court judge ruled against Dy-dee, saying that Tidee-Didee's advertising as Didee-Tidee did not confuse customers of either firm." *Playboy*, October 1974.

0. It is impossible to stroll through a supermarket, pharmacy, sporting goods, or department store without observing a few expressions of the kind of data with which this study is concerned. Closer examination would reveal more—probably upwards of a hundred on any given day. Moreover, these data occur in high frequency in popular magazines and on television. I refer to the practice of advertisers of modifying conventional or dictionary spellings of names and descriptions of products. This practice is so pervasive that we are no longer consciously aware that there is a "clean" in KLEENEX, a "school" in PLAYSKOOL, a "gleam" in GLEEM, a "rye" and a "crisp" in RY-KRISP, or a "kissed" in SUNKIST. These examples barely hint at the dimensions of this phenomenon: spelling innovations promulgated by advertisers, presumably to attract customer attention through orthographic novelty.

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The present study represents an attempt: (1) to gather a reasonably large sample of these data, (2) to analyze their structural relations with corresponding dictionary forms, and (3) to make tentative general statements about their nature and functions in contemporary North American society. Analysis focuses on the data themselves. Subsequent publications will consider such spelling modifications from the perspective of advertisers who create them.

1. The sample consists of 1,512 modified advertising spellings (AF's, advertising forms) which contrast in certain environments with corresponding DF's (dictionary forms[1]). The sample is comprehensive in the sense that I recorded all the AF's that I could find in seven months of intensive searching in stores of all kinds, in popular publications, and in television advertising. Probably 75% of the sample came from supermarkets and "discount" stores. About 90% of the sample has as referents products which are sold in stores. The rest are the names of businesses, particularly restaurants of the fast food type. About 7% of the sample came from Nova Scotia, about 3% from the west coast of the United States, the rest from a large urban area of the American Midwest.[2]

Since the resources which can be exploited to effect DF-AF transformations are numerous, I shall discuss at some length the kinds of forms which constitute the present sample. In so doing I shall consider explicitly both the attributes which define AF's as a category and those which do not, but which, nonetheless, are employed in other kinds of word transformations designed by advertisers.

In general, an advertising transformation will be regarded as an AF if three conditions coexist: (1) the spelling change does not simultaneously condition a pronunciation change. This criterion will exclude a form like MIRRO-MATIC,[3] for example, since the spelling change (mirror/MIRRO) obliges a change in pronunciation (/mírər-míròw/);[4] (2) the AF or an isolable segment thereof must have a clear referent in a dictionary form (e.g., KLEEN/clean). This criterion will exclude a form like FOSTEX; (3) the advertising form must be orthographically non-dictionary, a condition not fulfilled by such forms as BAND-AID or EASY-ON. In addition, forms were

excluded from the sample if their transformations were generated solely by one or more of the following: (1) space was modified, e.g., BETTERWEAR, STAYFREE; (2) punctuation was modified, e.g., AĆCENT, SUPRE-MACY; (3) a nonstandard alternate of a dictionary morpheme has been introduced with a customary spelling, e.g., GEE-TAR /gíytàr/ for DF guitar /gìtár/, 'N / ən) 'and', 'O / ə/ 'of'; (4) two sequential forms have been made to overlap, e.g., EVERAIN, ENDUST. In sum, to be an AF, the transformation must be pronounced identically with its corresponding DF; it must be spelled differently, the difference involving letter changes, not merely space or punctuation change; it must consist of more than mere overlap; and the presence of more or less standardized spellings of nondictionary allomorphs (e.g., 'ER / ər/ 'her') cannot by themselves be sufficient to include a given transformation in the AF sample.

2. *Classification of Advertising Forms by Length.*
By prior definition one or more spelling changes must be involved in any DF-AF transformation. From one point of view—length—there can be but three kinds of AF's: those that are longer than their DF starters, those that are the same length, and those which are shorter. Much of the discussion that follows is oriented to these three classes of AF's. Length as a criterion was not selected randomly or capriciously; from at least two perspectives other than length these three categories constitute a realistic classification. One is that frequency of expression varies conspicuously: longer-than-dictionary AF's=7.3% of the sample; DF-length same as AF's=31%; shorter-than-dictionary AF's=73%[5] This suggests that distinct cognitive models have been exploited by AF designers (for the most part professional advertisers) to generate the data. Moreover, while there is overlap, the kinds of transformations involved in the production of the three classes of AF's differ appreciably.

Examples of each AF length class and their transformational analyses follow. Each entry includes a DF or segment thereof and its AF transformation.

2.1 *Longer-than-Dictionary Advertising Forms.* Some examples of this class are: air/AIRE busy/BIZEE canine/KAY-NYNE complex/COMM-PLEX epoxy/E-POX-E handy/HANDEE pocket/POK-ETTE shop/SCHOPPE wink/WHINK.

The total array comprises 81 DF's and DF-partials (12% of those available in the sample), 93 corresponding AF's and AF-partials (11.7% of the sample), and 110 serial-number representations (7.3% of the sample). 187 transformations constitute this array, as follows:

Reduction transformations (6, 3.2%).[6] E.g., [-ah-]=/ /→[-U-], [-ck-]=/k/ → [-K-], [-hnn-]=/n/ → [-HN-], [-ll-]=/l/ → [-L-].

Same-length transformations (35, 18.6%). E.g., [c-]=/k/ → [K-], [-i-]=/ay/ → [-Y-], [-ie-]=/iy/ → [-EE].

Expansion transformations (102, 54.8%). E.g., [-y]=/iy/ → [-EE], [-r]=/r/ → [-RE], [-y]=/iy/ → [-IE], [-p]=/p/ → [-PPE].

In addition, apostrophe, hyphen, and space have been utilized in the lengthening of AF's, as follows: apostrophe (3, 1.6%), hyphen (40, 21.3%), space (1, 0.5%).

2.2 *Same-Length AF's.* This group comprises 258 DF's and DF-partials (38.6% of the sample), 279 corresponding AF's and AF-partials (35% of the sample), and 475 serial number representations (31% of the sample). A total of 631 transformations constitute this group, as follows: reduction transformations (86, 13.6%), same-length transformations (439, 69.9%), expansion transformations (66, 10.5%).

In addition, hyphen and apostrophe have been used as transformation components, as follows: apostrophe (8, 1.3%), hyphen (32, 5%).

2.3 *Shorter-than-Dictionary AF's.* This group comprises 350 DF's and DF-partials (52% of the sample), 405 AF's and AF-partials (51% of the sample), and 1,109 serial number representations (73% of the sample). A total of 1,560 transformations constitute this group, as follows: reduction transformations (1,186, 76%), same-length transformations (162, 10.4%), expansion transformations (178, 11.4%).

In addition, hyphen has been used in this group 34 times (2.2%).

3. *Conscious Change Devices.*
The transformation formula illustrated above has been applied uniformly to all DF-AF relationships and has yielded a total of 2,378 transformations for the sample of 1,512 AF's. These transformations have not been put forth here as directly reflective of cognitive exercises of their designers. Rather, they represent the sum total of a series of devices or models employed by AF designers. The data themselves encourage certain inferences regarding processes consciously exploited by advertisers to generate AF's.[7]

3.1 *Digraph Reduction.*[8] Overwhelmingly, conscious change devices are used to reduce a DF to a shorter AF. A total of 297 DF's (44% of all DF's in the sample and 85% of all *shortened* forms) have been reduced with this technique. Some example of this process are: ac*c*urate/AKURET blo*ck*/BLOK d*oo*r/DOR fl*ow*/FLO v*iew*/VU.

3.2 */ə/-Graph Deletion.* This group is made up of 43 AF's (4.1% of the shorter-than DF group), all but one of which are characterized by the following: (1) two syllables, of which (2) the first is stressed and (3) the nucleus of the second is unstressed /ə/. The feature which sets this group apart is that the DF graph(s) which spells /ə/ has been deleted and *not* replaced in the AF. Examples are: BLISTER /blistər/, CHIK-N /cikən/, FLAV-R /fleyvər/, TYTN /taytən/.

3.3 *Past Participle Reduction.* A small group (9) of past-participle DF's has been changed in such a way as to allow for the inference of a consciously operating reduction device: e.g., dipped/DIPT equipped/EQUIPT hopped/HOP'D tipped/TIPT.

3.4 *Reduction by Homonym Substitution.* In excess of 30 DF's have been reduced by the substitution of all or part of the form by graphic material in representation of a homonym with the DF.[9] Spelling difference and reduced length are prior conditions for substitutability. There are a few cases (e.g., heart/HART locks/LOX new/NU) in which it is not possible from the data alone to determine whether homonym substitutions or another process was operative at the time of the transformation. Some example are: old/OL are/R barbecue/BAR B Q butter/BUT-R extend/XTEND.

3.5 [g] *Reduction.* One of what some regard as the bane of English spelling is the frequency with which some vowels are part-graphed with [gh], e.g., /dow/=[dough], /hay/=[high], /eyt/=[eight]. Advertisers have de- [gh] ed 28 DF's a total of 300 times (20% of inventory serial numbers); e.g., bright/BRITE delight/DELITE dough/DO height/HITE.

3.6 *Conscious Change Devices in Same-Length Advertising Forms.* AF's that are the same length as their DF starters (2.2 above) also appear to have been transformed by conscious devices. These are fewer in number than shorter-than-dictionary AF's (2.3 above). Moreover, reduction per se is operative in but 13.6% of the sample, while same-length transformations constitute just under 70% of the same subsample. And of these, 41.5% are products of a single transformation: [c-]=/k/ → [K -]. That is, in 41.5% of cases in which a [c]-initial DF was transformed to an AF of the same length, the change was to [K]-initial AF's. That 12% of the entire AF sample should be expressed by a single transformation can hardly be regarded as random response by designers.[10] Thus, it seems reasonable to hypothesize that change in graphic appearance per se is a device consciously exploited by advertisers, alone or in conjunction with other conscious devices.

3.7 *Conscious Change Devices in Longer-than-Dictionary Advertising Forms.* These are very few—110, or 7.3% of the entire AF inventory. Several devices operate here, including homonym substitution, e.g., (daisies → DAYS-EASE), (forgone → FOURGONE), (time → THYME). One that seems to be isomorphic with this class is a product of the presumption that "older" or "earlier" spellings convey an image of enduring quality, of the simpler (hence preferable in these complex and troubled times) virtues of yore. Public understanding of "older" spellings involves another kind of presumption—that they should be longer than contemporary spellings, manifesting extra, nonfunctioning letters. Exploitation by advertisers of these mass perceptions has resulted in such forms as OLDE THYME SHOPPE, TOWNE HOUSE, PUBLICK HOUSE, GLAYZE.

4. *Cultural Domains Represented by Advertising Forms.*
One way to view the AF sample is as representing 1,512 distinct product/service names. Even a cursory examination of the inventory, however, illustrates that some classification is possible. There is a plurality of AF's for restaurants, for example, but they tend not to be restaurants we would term "elegant," "posh," "gourmet," or "high class." "Fast food franchise" focuses on the criteria which overwhelmingly are characteristic of AF products/services: (1) high volume, (2) low price, (3) quick turnover, (4) quick expendability.

Among the 270 AF's which seem classifiable as foods/beverages, there are crackers, salad dressings, breakfast cereals, candy bars, "diet" foods, fruit juices. And under household maintenance items there are laundry detergents, floor waxes, toilet bowl cleaners, light bulbs, household deodorizers, paints, pesticides, and garbage bags. By contrast, few AF's exist for products which appear to be the opposites of those just mentioned: automobiles, expensive furniture and clothing, funeral homes, big electrical appliances, medical and scientific equipment, office equipment and machines (but office "supplies" are well represented by AF's). That is, when the projected image is of permanence, low volume, high price, and relative endurance, AF's tend not to occur. This is not to suggest that the criteria specified are binary predictors of AF/non-AF.

I have attempted to group the 1,512 numbers in the AF inventory into categories. In descending order of occurrence, these seem to be:

1.	Household maintenance items	338 (22.4%)
2.	Foods and beverages	270 (17.9%)
3.	Hobby/recreation	181 (12.0%)
4.	Household furnishings	139 (9.2%)
5.	Automotive supplies, services	129 (8.5%)
6.	Toiletries/beauty aids/health aids	119 (7.9%)
7.	Clothing	77 (5.1%)
8.	Pets	66 (4.4%)
9.	Children's toys	49 (3.1%)
10.	Tools	47 (3.1%)

11. Other-than-automobile transportation/communication	41	(2.7%)
12. Miscellaneous businesses	31	(2.1%)
13. Baby items	25	(1.7%)

Examples of the five most frequently occurring domain or referent categories (those numbered 1-5 above):

Household maintenance: ALUM-A-LUB (aluminum window lubricant), ANT-PRUFE (insecticide), BLOXROT-R (wood preservative), CANT MISS (mousetrap), COVERZIT (priming paint), DAZ-L (spray paint).

Foods and beverages: AYDS (low-calorie candy), BAKE-N-SERV (frozen food), BEANEE WEENEE (canned beans), BEEKIST (honey), CHEES POPS (crackers), CHEEZ-IT (crackers), DAN-DEE LUNCH (restaurant).

Hobby/recreation: AIREQUIPT (slide magazine), AQUA-KEM (portable toilet deodorizer), DEDLY DUDLY (fishing lure), DURA PAK (fishing tackle), EASI-LITE (camp light), GLA-MUR (bowling lanes).

Household furnishings: BILTRITE (garden hose), DIGI-GLO (clock), FLEX-O-WIP (egg beater), FRIGIDAIRE (refrigerator), GLYDES (table-leg caster), KWIK PIK (storage box).

Automotive supplies: BRITE-VUE (auto reflector), EZE PAK (battery fluid), FYR FYTER (fire extinguisher), HEET (gas line antifreeze), JET-CIT-THRU (car wash), KAR-KARE (auto oil filter).

5. *Advertising Forms as a Kind of Graphic "Diglossia."*

"Diglossia" is a sociolinguistic phenomenon associated with the scholarship of Charles Ferguson. He observed that there are many speech communities in which two or more varieties of the same language are used by some speakers in different social circumstances; e.g., an educated speaker of German who uses the national standard language for professional reasons and a local dialect at home and with neighbors. An example familiar to Americans is the use of "Ghetto" English by Blacks with peers and family, but standard American English in circumstances (school, job) where it is perceived as necessary or useful. Ferguson points out that national standard/local dialect is not the only dimension along which diglossia can be expressed; Christian Arabs in Baghdad

speak a "Christian Arabic" dialect when talking among themselves but speak the general Baghdad dialect ("Muslim Arabic") when talking in a mixed group (Ferguson 1959). Diglossia, then, is the use of different forms of a language in a speech community, each under known and patterned social circumstances, such that the different forms of the language are in complementary distribution with one another.

There appears to exist a more or less exact analogy between diglossia in Ferguson's sense and the relationships between DF and AF. That is, there are many circumstances in which DF is considered the only acceptable spelling of a word. We are taught DF's in school; DF norms are reinforced daily in most of what we read and in all of what most of us write. Nonetheless, there exists one arena in which orthographic conventions (spelling rules) are different. They are not random, for they exploit genuine English phonographemic relationships. AF's are generated by a set of conditions in which experimentation, variety, and option maximization are known to pay off. The result is that at the same time it is orthographically distinct from DF and in complementary distribution with it. Thus, advertising spelling constitutes the graphic analog of diglossia. I suggest that "digraphia" would appropriately specify situations in which different versions of a written language exist simultaneously and in complementary distribution in a speech community.

6. *Relations between Widespread Use of Advertising Forms and Inherent Properties of the English Alphabet.*

Some basic understanding of how English is written is necessary in order to appreciate why its properties are so abundantly exploitable for AF's. An alphabet is a system of writing in which, ideally, a one-to-one isomorphism exists between grapheme and phoneme. Put another way, a reader knows that any given letter is pronounced with the appropriate allophone of a known phoneme and that this relationship is consistent and predictable. Conversely, when the stimulus is an allophone of the phonemic system being written, the writer can predict with complete accuracy into which of a set of graphemes (letters) he should translate that allophone.

The precision of fit between components of phonemic and graphemic systems suggested by the above does not exist in the practical world of writing natural languages. Numerous historical and structural factors interrelate in ways which reduce the predictability of phoneme-grapheme correspondence. An example from Mexican Spanish (a relatively very efficient alphabet) is that while [s z] are always predictable as /s/, the reverse is not true. Moreover, in some environments, [c sc x] are also predictable as /s/, but not the reverse. Depending on one's perspective (say, English teacher by contrast with AF designer) English writing is either enormously worse or better than Spanish from this point of view.[11]

Even a cursory inspection of English sound-letter correspondences tells us that we do not, for example, write the English consonant /t/ with but one letter, say [t], but that we also write it in a number of other ways: [te tte th ed d ct cht bt tt pt]. It tells us that we do not—as an ideal or high-efficiency alphabet would constrain us—write the English vowel /uw/ with only one letter, but with the following: [ey ioux oue ougha oup ough ou oo oe o ieu ew out u ue ui w we wo au]. And so on, through the inventory of phonemes.

What we write with are not individual letters of the alphabet, but with phoneme-grapheme relationships or functional equations, symbolizable, for example, as follows: /š/=[sh ch t], /i/=[i o ee], /t/=[t ed pt]. Elsewhere (Jaquith 1969) these relationships have been called phonographemes, the term indicating that on the one hand they derive their components from distinct kinds of cultural inventories and, on the other, that they function as units. That is, our alphabet is better described as consisting of 363 or so phonographemes than of 26 letters. In terms of the cognitive operations involved in making graphic-phonological and phonological-graphic translations (i.e., reading and writing), our 26 letters are but the raw materials from which the functioning units are fashioned.

It would appear—perhaps ironically—that advertisers are keenly aware of this. Moreover, if one can judge from the pervasiveness and intensity of the AF phenomenon, advertisers have discovered ways to use them effectively. Canons of spelling cor-

rectness do not apply. It is not that they are ignored; it is, rather, that they are manipulated. The several hundred phonographemes utilized for English spelling have been collected into a kind of thesaurus, the retrieval procedures for which free its users from many of the constraints of correctness. Utilization of these resources assure advertisers continuing access to a vastly augmented supply of graphic materials, one which DF defenders cannot exploit. Why—competition being what it is—would a supermarket display a thematically related group of products AF-tagged as *SANI-BLUE, *DAINTY BOWL, *FLUSH BRIGHT, and *TIDY BOWL when they can feature SAN-E-BLU, DAINTY BOL, FLUSH BRITE, and TY-D-BOL?

7. *Influence of Advertising Forms on Spelling Conventions.* By the time he/she reaches middle age, a consumer in the English-speaking world will have been the target of AF stimuli numbering in the millions. In spite of the tune-out response we all develop to protect against the exhausting necessity of consciously processing inordinately large numbers of stimuli, I suspect that AF's must leave their mark. Aside from other possible consequences of smoking KOOL, of shampooing with LUSTRE-CREME, and of pre-filling with PRE-FIL, one is forced or strongly encouraged to play the alternative spelling game an enormous number of times. We are thus conditioned to an appreciation that we need not remain bound to one-way correct spelling. We see *quick* spelled KWIK, QUIK, and QWIK. We see *safety* spelled SAFE-T, SAF-T, SAF-TE, SAFTEE, and SAFTI. And, I suspect, we come to a kind of understanding that some of the AF experiments are shorter or clearer or more rational than the right (DF) way to spell the word.[12] Consider these examples of letter reduction: kissed/KIST minute/MINIT light/LITE stick/STIK heart/HART spread/SPRED slow/SLO snacks/SNAX.

What effects might lifelong exposure to AF's have on the criteria by which we judge acceptability of a spelling? Put another way, can AF's be shown to feed back into and influence DF's? When I was a child in California, d-o-u-g-h-n-u-t was the way to spell that word, while the very occasional AF D-O-N-U-T was regarded by many as daring. By contrast, one can find "DONUTS

(see doughnuts)" in a 1974 telephone business index. Under "doughnuts" in that directory are listed 58 businesses, all of which use DONUT in the name of the business or the product description. Moreover, both the *American Heritage Dictionary of the English Language* and *Webster's New World Dictionary of the American Language* list DONUT independently as "variant of doughnut" and "a doughnut," respectively.

Long-term consequences are difficult to predict. One is already manifest: that our culture and its bearers are sufficiently flexible to tolerate, even encourage, something like two writing systems for one language. One is DF: tried, true, predictable, and dependable —something which is an intimate and permanent part of our lives and which we choose to pass on to our children. The other is AF: ever-shifting, elusive, now amusing, now infuriating, existing in a kind of fairyland where nothing is permanent. Each carries on in its own place, neither seriously challenged by the other.

Such comprehension as English readers ultimately come to possess of the structure of their writing system owes a certain debt to AF. Years of frequent AF translation serve as a kind of consciousness-raising experience. We are forced into awareness that our way of writing offers not just one, not just a few, but many spelling alternatives. We approach an appreciation of the arbitrariness of relations between grapheme and phoneme, that letters and letter combinations can be shuffled about endlessly in seeking new ways to spell the same old word. To put it another way, AF reading appears to have a pedagogical function—to teach us that we write and read with hundreds of phonographemes of which our 26-letter alphabet is only the external manifestation. Why has education ignored this tool? Why have such basic and exciting things about our way of writing been available only as spin-off from a different kind of enterprise? Anyway, thanks, ad guys; THANX, that is.

1. I selected *The American Heritage Dictionary of the English Language* as the DF standardizer, primarily because it was handy.
2. Areas where the data were recorded are probably not significant statistically, since almost all AF's have as referents nationally-distributed products.
3. While AF's are in practice written in upper- and lower-case letters, in all colors and sizes and in many type styles, to avoid confusion they and segments thereof are represented exclusively in SMALL CAPITAL letters. DF's and segments thereof are represented in lower-case letters.
4. Phonemic representation is as postulated by Hockett (1959:60) with two modifications: (1) /o/ is not represented at all, since it does not occur in the speech (my own) which was used to transcribe DF's; (2) following more common practice, I use /y/ for Hockett's /j/ and /iy ey ay oy/ for his /ij ej aj oj/.
5. These total 111.3%. This is because some inventory serial numbers (e.g., 75, 1296) reflect more than one transformation and, thus, appear more than once.
6. "Reduction" transformations are those wherein AF is shorter than its DF starter, e.g., [-ck]=/k/ → [-K]. "Same-length" transformations are those wherein AF is neither longer nor shorter than DF, e.g., [ai-]=/e/ → [-AY]. "Expansion" transformations result in an AF longer than its starter, e.g., [-t]=/t/ → [-TE].
7. What is tagged "transformation formula" represents a strictly etic analytical device, previously available and imported by the analyst *ad hoc* into the cultural domain under consideration. By contrast, what I have called "conscious change devices" are emic in the senses that they are suggested by the data themselves, were unavailable before examining the data, and appear to coincide with cultural behavior of the natives under consideration herein: commercial advertisers.
8. "Digraph" is defined as a sequence of two letter graphs which has as its referent one phoneme, e.g., [ea]=/e/, [ck]=/k/, [wr]=/r/. A few trigraphs and one sequence of four letters ([cque]=/k/) are included in this array.
9. Homonym is herein defined as a morpheme (conspicuously including conventional letter names) with the same phonemic shape as another English morpheme. For example, [R]=/ar/ "name of a letter" is a member of a homonymous set which includes [are]=/ar/ "plural present of *to be*."
10. Another factor contributes to the high percentage of [c-]=/k/ → [K-] noted: DF's in general begin more often (17%) with [c]=/k/ than with any other phonographeme.
11. Considerable searching has yielded only one French AF (KÉBEC — Québec) and three Spanish AF's (KAWAMA ← Cagüama; FOTO-KOLOR ← Foto-Color; KORECTOR ← corrector). These languages have relatively quite efficient alphabets in the sense discussed in the text. They are correspondingly poor in AF-building resources.
12. This statement should not be interpreted as imputing altruism or any other motive to advertisers. Another reason for so much reduction might be that it is cheaper to produce shorter AF's. Still another possibility is that orthographically simplified AF's are thought to reach a larger audience of potential buyers. That is, some will be attracted through novelty. Others—the barely- or partly-literate —might be reached through simplified spelling per se.

REFERENCES

Ferguson, Charles A. 1959. Diglossia. *Word* 15:325-340.

Gelb, I. J. 1952. A study of writing. Chicago: University of Chicago Press.

Gleason, H. A., Jr. 1961. An introduction to descriptive linguistics (rev. ed.). New York: Holt, Rinehart, and Winston.

Hecht, George J. 1962. English needs a phonetic alphabet. *Parents Magazine* (February).

Hockett, Charles F. 1958. A course in modern linguistics. New York: Macmillan.

Jaquith, James R. 1969. Alphabet and speech: a study of the relations between graphic and phonological symbolism. Unpublished MS.

Morris, William (ed.). 1970. The American heritage dictionary of the English language. Boston, *et al.*: American Heritage Publishing Company.

Pulgram, Ernst. 1959. Phoneme and grapheme: a parallel. *Word* 7:15-20.

Shaw, Bernard. 1962. The Shaw alphabet edition of *Androcles and the lion.* Baltimore: Penguin Books.

Voegelin, C. F., and F. M. Voegelin. 1961. Typological classification of systems with included, excluded, and self-sufficient alphabets. *Anthropological Linguistics* 3:55-96.

Webster's New World Dictionary of the American Language. Cleveland and New York: World Publishing, 1968.

Internalization of English Orthographic Patterns

Robert H. Secrist

This paper examines (1) the patterns of regularity underlying the largely superficial chaos of English orthography, (2) the extent—or the lack—of internalization of both these patterns and the graphic representations of specific phonemes in different environments, (3) the reactions of literate native speakers as to the relative "rightness" or naturalness of the different phoneme-grapheme correspondences in these situations, and (4) the reactions of these informants to recognition tests involving alternative solutions to certain special problems involved in English spelling reform—such as lexicographic separation of agnates, polymorphic representation of inflectional affixes, and graphic distinction of homophones.

In analyzing the history of proposals for the reformation of English orthography, from the twelfth century to the present, one becomes increasingly aware of an emerging consensus that radical respelling with new graphemes in rigidly phonemic transcription is at best impracticable, and that a more moderate proposal, based on comprehensive orthographic revision within the context of the traditional alphabet and spelling patterns, is the only realistic approach to this problem.

It becomes quite apparent, however, that, while some would-be spelling reformers who share this view have made some effort to determine the extent of the patterns and regularities already existing in English orthography (Hall 1961, Wijk 1959, Zachrisson 1932, et al.), none has even attempted to determine to what extent those who already write the language are aware of these regularities—nor, when such regularity is lacking, which of the various alternative spellings is most acceptable to the already literate. Neither has there been, to my knowledge, any research that might lead to solutions to the various non-phonetic problems that have troubled these otherwise rational and realistic spelling reformers:

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namely, the extent to which spelling should be strictly phonemic (rather than partially morphological and/or semantic), whether homophones need be distinguished graphically, whether agnate relationships (between forms with the same base) must be considered or may be ignored, and whether the spelling of inflectional affixes should be invariable or morphophonemically conditioned.

In view of the multiplicity of patterns in the choice and deployment of graphemes, and in the approaches to, and the treatment of agnates, homophones, and affixation among any group of proposals for spelling reform, it seemed obvious to me that research was needed to determine—in an objective and psycholinguistically sound manner—which are most valid, or at least defensible, considering both linguistic principles and psychological factors.

In this paper I shall report and analyze the findings of such research, conducted over a three-year period, into the nature of traditional English orthography (referred to henceforth as TO), the degree to which both its regularities and its vagaries have been internalized by literate native speakers, and the most vexing non-phonetic problems involved in its comprehensive but realistic reform.

Procedures

The basic procedure followed in the research on internalization of orthographic patterns was to dictate imaginary English words to some 270 literate native English speakers, high-school and community-college students enrolled in French or in English-composition courses. (Since I wanted a random sampling, with all levels of intelligence and proficiency in English—given basic literacy—represented, entire classes were involved.) The subjects were asked to write these words as they would most likely be spelled if they were genuine English vocabulary—that is, in what form they would first be sought out in a dictionary.[1]

In most cases, ten words were invented to test each phoneme in each environment in question. In some cases, however, when dealing routinely with sounds which are overwhelmingly regular in conventional spelling and the responses to which could reasonably be expected to conform, only five words were used. Since separate, individual reactions and responses were desired, not

simply unthinking repetitions of the first—and since the words had been painstakingly devised to include virtually every possible sort of environment with the position-category being tested (e.g., after voiced consonants, before atonic syllables, and intervocalic)—I ordinarily tested several dissimilar sounds at once, in alternation, in order to minimize the effects of mutual contamination. In several cases, where the results were especially remarkable, unexpected, or inconclusive, the tests were repeated with one or more different groups of subjects—and the results compared and averaged.

In this way data were gathered as to the most "natural," automatic spellings of all English phonemes in every kind of environment. These data were then compared and correlated with others of a similar nature from various sources—such as literary "eye" dialect, advertising, popular journalism, newly-coined words, and analogical misspellings of unfamiliar words by children and other semi-literates.

Since literacy in an orthographic system involves reading as well as writing, further research was undertaken, on the basis of the data compiled and analyzed by the above methods, to test whether currently irregularly spelled words could easily be recognized when respelled according to the most regular existing pattern and/or the most frequently indicated "felt" response—both in isolation and, if necessary, in sentence contexts. In this way I could determine whether those orthographic patterns already internalized and felt appropriate for unfamiliar words would also be acceptable for real words presently outside the system in an unfamiliar form—i.e., whether the "felt" responses were merely spelling preferences based on familiarity with unpatterned phenomena, or true indications of the "rightness" or naturalness of the phoneme-grapheme correspondence in question, within the larger context of systematic patterns.

For the sounds noted in Tables II and III the testing provided a more or less routine confirmation of the results of the regularity tests. For those in Tables I and IV, however, this research was more necessary—since in neither group did regular responses obtain, though in Table I there is at least some regularity in the conventional spelling (TO) to provide a base or starting point

Table I. Traditional Orthographic Regularities Not Well Internalized

Phoneme-Position	*TO*	% *Responses*	*Well-recognized alternative(s)* *
1. /a/ before final /m/	al	44	o
2. /o/ between /w/ & /r/	a	37	o
3. /æu/ in closed syllable before /n/	aw	62	au
4. /ou/ in closed syllable before /n/	ow	54	ou
5. /æe/ before /n/ or /l/	ai	57	a . . . e
6. /ʊ/ before velar stop	oo	65	uu
7. /k/ after initial atonic vowel	cc	6	c, k
8. /k/ before non-front vowel, /æe/, or diphthong (except /ie/)	c	23	k
9. /k/ before consonant	c	52	k
10. /f/ final after short vowel	ff	58	f
11. /s/ final after short vowel	ss	67	(none)
12. /s/ final after /or/ or /ur/	se	39	ce
13. /s/ final after /en/	se	48	ce, s
14. /j/ final after short vowel	dge	61	(none)
15. /j/ final after long vowel	g(e)	65	(none)
16. /j/ post-tonic before /u/ or /ʊ/	d	36	
17. /ʒ/ between long vowel or /i/ & atonic syll.	s	35	zi, zh
18. /ʃh/ medial after /n/ (exc. /en/) or /l/	si	20	
19. /ʃh/ intervocalic before /ʊ/ or /ʊ/	ssi	57	
20. /ʃh/ between long vowel & /un/	ti	43	
21. /ʃh/ between long vowel & /ul/ or /us/	ci	53	
22. /ʧh/ before atonic /un/	ti	65	
23. /ʧh/ before atonic /ʊ/ or ur/	t	63	

*For 16-23, see discussion of Results of the Tests of Recognition.

Table II. Strong Preferences Despite Traditional Irregularities

Phoneme-Position	*Preference*	*Per cent*
1. /u/ in tonic syllable (except before /r/)	u	97
2. /u/ in atonic syllable	e	85
3. /ʊ/ in closed syllable	u	71
4. /ʊ/ in closed syllable	oo	64
5. /ʊ/ before velar stop	oo	74
6. /z/ final after short vowel	z	85
7. /s/ initial before /i/, /e/, or /ur/	s	80
8. /s/ between tonic short vowel & /un/ or /ul/	ss	78
9. /z/ intervocalic	z	78

Table III. Strong Preferences Contrary to Traditional Regularities

Phoneme-Position	*TO*	*Preference*	*Per cent*
1. /ɪe/ in closed syllable before /t/	igh	i . . .e	88
2. /v/ final after tonic short vowel	ve	v	93
3. /j/ before /i/, /e/, /ɛɛ/, /ɪe/ or /ur/	g	j	76*
4. /æu/ in closed syllable before /s/	o	au	79

*This is the average of the five, which were tested separately, with results ranging from 67% to 82%

Table IV. Unpredictable Spelling Variations Tested for Recognizability

Phoneme-Position	*Well-recognized alternative(s)* *
1. /aɛ/ before final /r/	a . . . e, eh
2. /ɛɛ/ in closed syllable	ee
3. /æu/ in closed syllable before /l/, /t/ or /k/	au
4. /oe/ final	o, ow
5. /ʊʊ/ final (with invariable pronunciation)	oo
6. /ue/ final (with invariable pronunciation)	iew
7. /ʊʊ/ } final (with variable pronunciation)	u
/ue/ }	yu
8. /ʊʊ/ in closed syllable	oo
9. /ʊʊ/ in non-final open syllable	u, oo
10. /ue/ in non-final open syllable	u . . . e
11. /s/ final after long vowel or diphthong	c(e), s(e)
12. **/k/ between short vowel or consonant & final /s/	
13. **/ ʃh/ intervocalic after short vowel	ti, ssi
14. **/ ʃh/ medial after /en/	si, ti
15. /u/ tonic before non-intervocalic /r/	u, e, i
16. /u/ tonic before intervocalic /r/	u

*In order of preference.

**See discussion of Results of the Tests of the Reality of Certain "Problems."

point. For the sound-environments in Table IV there is no such readily discernible base or starting point; hence they required more extensive investigation into the preferences of literate informants for different phoneme-grapheme correspondences.

Ordinary English words with the sounds and environments to be tested—plus others about whose recognizability there was little doubt—were placed in lists of fifty, spelled according to the conventional pattern or the most frequently indicated "felt" response, whichever was more regular or reasonable. Every sound sequence in question was represented by at least three examples, with at least five examples for each particularly unpredictable situation. The words chosen were fairly common ones which were otherwise regular in their spelling, thus focusing attention on the single orthographic change being tested—without interference from other, extraneous factors. Obviously, it was necessary to avoid here words whose respelling would have resulted in homographic association with words already spelled that way, though with different pronunciations—e.g., /word/ *(ward)* was not respelled *word*. Testing was done on an oral and individual basis—orally to enable me to note any hesitation or uncertainty on the part of the informants, individually to prevent them from being influenced by others' responses.

After collation and analysis of the data from these responses in isolation, those cases in which the responses had been significantly inconsistent, hesitant, or dubious were retested in sentence contexts. Here too, contexts were selected to offer minimal interference with the testing of the word in question, i.e., the other words in the sentence were regularly—or at least rationally—spelled, or required no more than minor alterations. Furthermore, the entire sentence was respelled regularly, so that undue attention would not be focused by the informant on the particular word being tested—the informant, of course, being completely unaware of the identity of this word.

Results of the Tests of Internalization

In these ways was the extent of the internalization of English orthographic patterns determined. Table I shows those which were found to be regular in TO, but whose regularity has not been well internalized. By "regularity" is meant, of course, not a one-to-one correspondence between sound and symbol, phoneme and grapheme. "Regularity" implies—and requires—simply that the spelling of a particular phoneme in a particular environment be predictable with a high degree of accuracy. There are, of course, "exceptions" to almost any orthographic "rule" or principle in English. Yet, except in the cases noted in Tables I-IV, a remarkable degree of consistency and regularity is both apparent and recognized.

In this study regularities in TO were not considered "well internalized" unless they appeared in at least 75% of the responses —a watershed percentage determined by an examination of the results, which showed a remarkable tendency to cluster above 75% and below 50%; there were very few in this middle range— "fairly well internalized"—and are thus noted. Analysis also revealed that most non-traditional spellings appearing alongside the "well internalized" patterns were either very rare (e.g., *oe* for /ɷ/), or clearly errors in comprehension (e.g., *v* for /f/) or due to carelessness (e.g., *g* for *q*).

With this in mind, it can readily be seen (from Table I) that only six of the normal, regular spellings of vowels in all positions have failed to be well internalized (#1-6)—and that only the first two were actually rejected by the informants, presumably by analogy with the more general patterns involving these sounds in less restricted environments (cf. *calm* with *comma* and *combat, war* with *for* and *horse*). The other four (#3-6) have actually been fairly well internalized, but not to a degree consonant with their conventional frequency. Of these, *ai* for /æ/ is very common before /n/ and /l/ (#5) but anomalous in other closed syllables—as is *ow* for /o͡u/ before final /n/ or /l/ (#4), which spelling is otherwise restricted to open syllables, while the closed-syllable form of this diphthong is *ou*—even before /n/ when another consonant follows (cf. *town* with *count* and *bounce*). A very similar pattern obtains with *aw* for /a͡u/ (#3) (cf. *lawn* with *launch* and *flaunt*). Thus it could be

said that, even in these cases, the larger patterns have been internalized—if not the deviations from them. Even in the anomalous spellings there is a pattern of sorts, since nasals and liquids have clearly influenced the spelling of historical diphthongs. In all of these cases, however, a more common or less restricted pattern appears to be interfering with the full internalization of the aberrant pattern; in other words, analogical leveling seems to be operating on the level of orthographic internalization.

This also seems to be the case with many of the consonantal spelling patterns which have failed to be well internalized—especially the intervocalic *cc* for /k/ after atonic vowels (#7), and the gemination of final *f* and *s* after short vowels (#10 & 11)—both of which violate the more general pattern of consonant gemination, which normally occurs only intervocalically (or in weak preterits) after tonic short vowels. Likewise the relatively frequent use of *ce* for /s/ finally after /en/, /or/, and /ur/ (#12 & 13) instead of the traditional *se* apparently reflects the internalization of the normal spelling of this sound after /r/ or /n/ preceded by any other vowel. This normal pattern has, in fact, even affected the orthography in modern times, several words in *ens* having given way to *ence*, especially in British usage (*defence, licence,* etc.) American orthographic practice, under the influence of Noah Webster's linguistic nationalism, apparently reflects an attempt to resist, or even reverse, the trend.

There are, however, other factors that may be playing a part in this lack of full internalization—such as the inability to distinguish, in unfamiliar words, between historical affricates or palatal fricatives and the results of recent assibilation and/or palatalization of alveolar consonants in reciprocal assimilation with historical /y/ (#16-23), especially in medial position before common suffixes like *-ure* and *-ion*, particularly the former (cf. *teacher* with *feature, bashin'* with *passion*). A different element is apparently operative with /k/ before consonants, non-front vowels, and diphthongs (#7 & 8), where the internalization of the *c* of TO has probably been impeded—or at least eroded—by the prevalence of so many commercial names with *k* in these positions (e.g., *Kool-Aid, Go-Kart, Kleenex*). Finally there is the problem of those consonants that occur homophonically both in monomorphemic final

phonemic clusters and in bimorphemic inflected forms. These are not indicated in Table I, since they could not meaningfully be tested for internalization—only for recognition (see discussion of Results of Reality of Certain "Problems").

In contrast to the regular but uninternalized spellings noted in Table I were those which are quite unpredictable in TO, but for which the informants showed remarkably strong preferences (Table II).

There are even a few cases (noted in Table III) for which TO provides fairly regular patterns, but for which the respondents displayed not only a lack of internalization of those patterns but a distinct—even overwhelming—preference for another pattern. In each case of both types, a more common spelling of the sound in other positions seems to have been generalized at the expense of the minor, deviant—albeit traditional—pattern. Here too, analogical leveling seems to operate on the semiconscious level of orthographic internalization.

There are, of course, other phonemes whose unpredictability in certain positions in TO was reflected in the lack of clear-cut patterns among the responses (Table IV).

Results of the Tests of Recognition

Tables I-IV also record the results of further research that I conducted to determine whether the spellings preferred by the informants—or suggested by the application of the principles of analogy, structural symmetry or graphic economy—could be easily recognizable in words currently spelled in other ways, that is, if reading comprehension would be impeded by the indicated respelling.

It should be noted in Table I that some successful experimentation was done with non-traditional digraphs: with *uu* for / ʊ/ (#6), when neither *oo* nor *u* was recognized consistently before velar stops; and with *zi* and *zh* for / ʒ / (#15), because neither *si* nor *s* of TO has been well internalized, and both have much more common pronunciations—/ ʃ / never having had its own graphic representation. Although *zh* is commonly used in dictionaries for this sound, *zi* proved to more easily recognizable—especially in isolation. While the former is structurally symmetrical with the

TO spelling of / ʃh/ in positions not involving assimilation, this is irrelevant for / ʒ / since it does not occur in those positions.

In Table IV the preference of *are* for final /æer/ (#1) is probably due to the normal lengthening of vowels—and the consequent neutralization of their usual quantity contrast in this environment, with the subsequent application of the VC*e* pattern normal for long vowels in closed syllables. The use of *ee* for /ɛɛ/ in closed syllables (#2) does, of course, violate the structural symmetry of this more general pattern, but the symmetrical form occasioned considerable hesitation and confusion. This is only one of many cases where data, principles, and/or patterns conflict.

Results of the Tests of the Reality of Certain "Problems"

Finally I will more or less briefly summarize the results of my research into the validity of certain conservative principles often espoused by would-be spelling reformers reluctant to eliminate the few advantages TO possesses: graphic distinction of homophones, graphic differentiation of monomorphemic simple words and bimorphemic inflected forms with homophonic final consonant clusters, and graphic resemblances between heterophonic agnates.

The first "problem" is easily disposed of, since in my tests of reading comprehension, 96% of homophones spelled identically in sentence contexts (i.e., new homonyms) were unhesitatingly recognized, and 91% of them were easily written in TO—the balance revealing problems only in spelling ability, not recognition or discrimination.

In the case of inflectional affixes, the problem is also homonymic, since a respelling of plural nouns, third-singular-present verbs, and weak preterits on the same phonemic basis as uninflected forms would result in a great deal of new homonymy. These fall into four categories: (a) weak preterits and past participles after voiceless consonants (cf. *mist/missed, pact/packed, rapt/rapped*), (b) weak preterits and past participles after long vowels, diphthongs, or voiced consonants (cf. *road/rowed, suede/swayed; side/sighed, proud/prowed; build/billed, find/fined*), (c) plural nouns and third-singular-present verbs after /k/ (cf. *tax/tacks, minx/minks, coax/cokes*), and (d) plural nouns and third-singular-present verbs after long vowels, diphthongs, or /æu/ (cf. *freeze/frees, graze/grays; prize/pries,*

browse/brows; clause/claws, pause/paws). However, I found that by spelling base and affix separately, neither appeared to lose its identity, and monomorphemic words could be clearly distinguished from their bimorphemic homophones. My research indicated, though, that preterits in *d* were much more easily recognized than those in *t*—presumably both because *-(e)d* is normal in TO and because /d/ is automatically assimilated to /t/ anyway after voiceless consonants. Another possibility, after tonic short vowels, is the gemination of the final base consonant—but the informants tended to reject this method of avoiding homonymization.

Finally the matter of preserving the graphic resemblances between derivatives and their base forms (and each other)—despite (1) the variations in vowel quantity and/or quality accompanying stress changes (e.g., cf. *compete, competitor* and *competition*), and (2) the palatalization involved in affixation with historical /y/ following alveolar consonants—proved to be a "problem" of considerable complexity, but very small magnitude. The former difficulty could be obviated by employing the same grapheme for both long and short vowels, which is already normal and generally internalized in TO. And in the latter situation, there are only six suffixes involved (*-ian, -ion, -ious, -ial, -ual,* & *-ure*), and their spellings have been fairly well internalized, while phonemic respellings of them evoked considerable difficulty in recognition. But the degree of difficulty varied according to the degree of resemblance obtaining between base and derivative—and thus presumably the degree of internalization of the relationship. Those with a free base (e.g., *spirit/spiritual, expose/exposure, music/musician*) were almost all (97%) recognized as being related in TO, but only 52% when phonemically respelled. Those whose base is bound but retains its vowel sound (e.g., *construct/structure, motor/motion, visible/vision*) have rates of recognition of 82% and 26%, respectively. When the base vowel changes (e.g., *face/superficial, native/natural, price/appreciate*), these rates fall to 22% and 9%, respectively.

Analysis, Summary, and Commentary

One of the most significant results of these investigations was a verification of Robert Hall's contention that there has been a tendency to overemphasize the capriciousness of English orthography—that, in fact, there are "only a few instances in which an English phoneme does not have an independent regular representation of its own." (Hall, 1961, p.23). Equally important, there are many combinations and patterns of phonemes that also have "regular representations" in TO—even though they are sometimes at variance with (or at least outside) conventional phonemic analysis. A good example of the disparity—one might even say conflict—between graphemic and phonemic patterns is the distribution of *k* and *c* for initial, prevocalic /k/. While *k* normally occurs only before front vowels and *c* before non-front vowels, this situation is reversed before /i͡e/ and /æ͡e/—thanks to the Great Vowel Shift, which altered the sounds after their spellings had been frozen.

A far more complex example of this disparity is the relationship between vowel quantity, syllabic type, and graphic shape. For instance, short (or lax) vowels normally appear only in closed syllables and are represented by a single grapheme. However, while /æ͡u/ and /ʊ͡ʊ/ are phonemically short vowels, their distribution and their usual spellings differ strikingly from those of the other five—primarily in that they normally require two graphemes each in TO. But while /ʊ͡ʊ/ behaves like a true short vowel by appearing solely in closed syllables, /æ͡u/ occurs also, and with spelling differentiation, in open syllables, like long vowels.

Similarly, the distinction normally made by linguists (except in Trager-Smith analysis) between "long vowels" and diphthongs is only partially valid graphically—since both sound types share many characteristics and privileges of occurrence in English, such as appearing freely in final position and being usually represented there by digraphs. However, /o͡i/ and /o͡u/ differ markedly from other diphthongs—and "long vowels"—by requiring at least two graphemes at all times, whereas the other six normally use a single grapheme in non-final open syllables and a digraph in closed syllables.

This digraph often involves another important—and often underestimated—feature of TO: so-called "silent *e*"—which is, in reality, usually the second element of a discontinuous digraph; hence it is no more "silent" than the *y* of *ay* or the *h* of *th*. In fact, far from being "silent," this letter—by affecting the quality of at least seven vowels and six consonants (sometimes two at once: cf. *breath/breathe, stag/stage, hears/hearse*)—is an extremely active and even useful feature of English orthography. Besides being essential to the pronunciation of many words (e.g., *face, shone, hinge*), it helps compensate for TO's deficiency in vowel graphemes (thus distinguishing many graphemic minimal pairs—like *pin/pine, her/here, cut/cute, nap/nape, cod/code,* etc.) and its failure to distinguish voiced from voiceless interdental fricatives (cf. *mouth/mouthe, bath/bathe, teeth/teethe*). (This letter is, of course, truly "silent" in a few words [*have, score, definite, bronze, giraffe,* etc.], but these are a distinctly minority group.)

It is facts like these that have rendered this research valid—or even possible. For, as the accompanying data illustrate, not only do regular spellings exist for many—if not most—English phonemes and phoneme sequences, but many are also recognized as such, i.e., internalized, by literate native speakers. Only those not so internalized appear in Table I. In other cases, where the spelling is not predictable, it can be seen (in Table II) that certain representations are, nevertheless, considered by these speakers to be more "normal," i.e., more "regular," than others—even if in conflict with TO (Table III). In only a few cases is there real confusion or unpredictability on both counts (Table IV). Similarly, there is only a relatively small group of "hard-core" irregularly spelled words in English. Most bizarre spellings are simply rare—sometimes unique—exceptions to the basic, regular orthographic patterns. Unfortunately, their appearance in words of very high frequency has tended to exaggerate the significance of the problems they pose.

This is, of course, only a brief sampling of some of the results of my research into the internalization of English orthographic patterns. It does, however, give some indication of both the regularities involved in TO and the problems involved in any serious attempt to change it. It was not intended as a brief in favor of

spelling reform per se—much less a blueprint for any specific proposal in that direction. It does, however, provide some hard, objective data in an area which heretofore has been prey to subjectivity, conjecture, and caprice. In so doing, I have attempted to throw a little light into certain dark corners that no one else, to my knowledge, has ever probed in any systematic way.

1. Examples of the tests referred to here and subsequently may be found in my doctoral dissertation, entitled *Investigations Toward a New Approach to the Reformation of English Spelling* (q.v. under "References").

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REFERENCES

Hall, Robert A., Jr. *Sound and spelling in English.* Philadelphia: Chilton Co., 1961.

Secrist, Robert H. *Investigations toward a new approach to the reformation of English spelling* (Doctoral Dissertation, New York University, 1965). *Dissertation Abstracts International*, 1966, *27*, 762A. (University Microfilms No. 66-5754)

Wijk, Axel. *Regularized English.* Stockholm: Almqvist & Wiksell, 1959.

Zachrisson, R. E. *Anglic, an international language—with a survey of English spelling reform.* Uppsala: Almqvist & Wiksell, 1932.

The Phonological Relevance of Spelling Pronunciation

Andrew Kerek

Although commonly viewed as an isolated, haphazard, and hit-or-miss, chancy affair, spelling-pronunciation is in fact capable of patterning and may yield profound phonological effects in at least two ways. It may induce the restructuring of the underlying form of morphemes within an orthographic paradigm, and thus trigger a redistribution of functional loads in the phonemic system; this often happens through a "reversal" of historical changes that are no longer operative. Spelling-pronunciation may also repeatedly block (and hence weaken) synchronic phonological rules, thus often resulting in the phonetic surfacing of underlying or near-underlying phonemic forms; in this way it not only slows down phonological change, but may in the long run alter the phonetic character of a language. Although it commonly obliterates etymological distinctions, as a mechanism of iconicity spelling-pronunciation promotes spelling-sound isomorphism and thus tends to reduce purposeless variety in language. Widespread literacy has rendered the influence of the orthography on the phonology a significant external variable which linguistic description can no longer ignore.

Spelling pronunciation (henceforth SPP) is one side of the relation between orthographic form and phonetic form (cf. "pronunciation spelling," e.g., *thru, tho, nite;* or "eye-dialect," e.g., *enuff, gotcha*), a relation motivated by the tendency in language toward "iconicity" (Anttila 43), i.e., isomorphism (in this case) between letter and sound. Thus SPP fulfills the same function at one end of this relation as spelling reform could accomplish at the other. Insofar as iconicity is the driving force behind analogical processes, SPP is itself a form of analogy (Householder 69, Anttila 90), and as such it has a regularizing effect on spelling-sound correspondence; it comes about—generally in the absence of a strong oral tradition for a word—when "people say (or think) that the word ought to be pronounced in such-and-such a way, because 'that's the way it's spelt'" (Barber 69). Although in modern "alphabetic" languages in general and in English in particular SPP is wide-

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spread (e.g., the standard pronunciation of a surprising number of common English words was originally SPPs) and in recent times has become increasingly so, it is commonly considered a rather haphazard and sporadic event, a "hit-or-miss, chancy affair" (Thomas 10), inherently devoid of the sort of regularity attributed to phonetic change. Unlike other "spontaneous" changes that occur by phonemes rather than by allophones (Lehmann 166), however, SPP typically fails to be granted linguistic legitimacy; and on the social side, its use is often highly stigmatizing. It has been alluded to by pejorative terms such as "pedantic," "grotesque," a form of "schoolmastering" and of a "pseudo-cultured or hyper-urban style," of "overcorrection," "hypercorrection," and a "simple garden-variety blunder." According to Lambert, SPPs "go above and beyond the standards of normal linguistic decency," for they are a "conspicuously aggressive" and "intimidating form of snobbery [which] few people feel prepared to withstand" (81). Even Bolinger in what is an otherwise useful classification distinguishes among influences of SPP which he calls "conservative," "reactionary," and "subversive" (402). And linguists often take pains to make clear that their proposed analyses are valid without an appeal to SPP (Kazazis 1969, Nessly 1973).

This dismal view of both the social appropriateness and the linguistic relevance of SPP is in part an inevitable consequence of the unduly low esteem in which linguists (unlike ordinary speakers) have held the conventional orthography as a representation of the spoken language, because of the latter's "primacy" as a coding medium. It seems that arguments based on the obvious phylogenetic and ontogenetic implicational priority of the spoken over the written channel lose some of their force and relevance when applied to adult language in societies enjoying universal or near-universal literacy, where the functional load of the graphic-visual mode in normal communication may equal (and even surpass for some individuals) that of the phonetic channel, and where the ultimate extent of graphic interference in linguistic coding cannot as yet even be envisioned. Not the least importantly, by being associated with learning and hence knowledge, writing has since its inception enjoyed popular prestige and authority, and has served as a model for highly-valued linguistic form. The influence

of writing on the spoken language is a "hazard of literate societies," and although "universal literacy is too recent a phenomenon to reveal long-range effects" (Bolinger 401), its impact—especially through the mechanism of SPP—on not only performance but on some aspects of the phonological system itself in "alphabetic" languages is no longer just a matter of conjecture. Especially with the recent recognition by linguists of the need to place grammar in its socio-cultural context and to study the effects of external variables such as the speakers' regional background, educational level, socio-economic status, age, sex, ethnicity, and style on linguistic behavior (cf. Weinreich, Labov, and Herzog 1968; Wolfram and Fasold 1974), the exclusion of the potential influence of visual exposure to language as a similar significant variable cannot be justified.

I would like to cite some evidence in this paper for the systemic character of orthographic influence via SPP: sound change—that is, phonologically relevant change—occurs when the balance or the normal operation of a phonological system has been disrupted (Lehmann 159). SPP can trigger precisely such disruption. First of all, there is ample historical data to show that SPP may induce the remodeling of the (underlying) phonemic form of a large number of morphemes, and thus lead to a redistribution of functional loads in the phonemic system; in many cases the remodeling process shows a temporal patterning that is reminiscent of the diffusion of more regular changes in the phonology. This process is usually initiated by the introduction of new spelling-pronounced forms as additional phonetic variants for morphemes; these increase the repertoire of phono-stylistic choices available to speakers and may function as significant socially diagnostic phonological features. Perhaps most importantly, SPP can have the effect of at least partially "reversing" some historical processes: more precisely, though not equivalently, it can block the application of phonological rules, hence in time weaken them and perhaps cause their eventual loss, thus often resulting in the resurfacing of phonemic shapes in which not only an earlier, historical structure, but the synchronic underlying form is more explicit (cf. Kerek 1974a). In this way, SPP not only contributes to a slowing down of linguistic change (which is one likely effect of literacy: cf. Zengel

1968, Samuels 6, R. Bailey 388, Bolinger 401), but also in the course of time, *ceteris paribus*, may substantially alter the phonetic character of a language.

Restructuring

The inducing effect of the iconic principle of "one graphic form-one phonetic form" in the historical reshaping of morphemes in some languages has been indirectly but extensively demonstrated (Buben 1935, Buchmann 1940), and may be illustrated here by cases in English where the graphic unit has acquired through SPP an invariant or near-invariant phonetic value, or is in the process of doing so. Take, for example, the iconic relation *th* : / θ / (or / ð /, in the case of a limited set of function words), which has historically established itself in a score of words borrowed from French (e.g., *theater, theme, throne, author, Catholic, anthem, apothecary, amethyst, arthritic, authentic, authority, lethargy, panther*) and is currently exerting pressure in others *(thyme, asthma, clothes, isthmus, waltham, Thames, height,* etc., in the latter case via visual metathesis), leaving only a small residue still apparently untouched *(Thomas, Thomson)*. At the time of their borrowing (thirteenth-fifteenth century), those in the first set had the spelling *t* (though some had an alternate *th* variant from the beginning), phonetically only [t]. At this point the underlying phonemic form of these words had /t/, which continued even after—by the end of the sixteenth century and following classical models—the current *th* spelling had replaced *t* in all the words in this set, and the spelling-pronounced form [θ] had appeared as a variant. A speaker of Modern English no longer thinks of the *th* in *theater,* etc., as /t/ but rather as / θ /, since no options in the pronunciation are available. Thus the morpheme has undergone simple restructuring, in at least one current sense of the term, where restructuring means "any change in underlying representations" (King 81). It is important to emphasize that changes like the restructuring of /t/ to / θ / here are not necessarily random and isolated events, but may form a coherent pattern of analogical leveling within an orthographically defined paradigm; such patterning renders suspicious the common practice of stereotyping the sporadic and isolated character of some occurrences of SPP and of generalizing them to the entire class of such events. In

this case the wholly SPP-motivated optional change realizing /t/ as [θ] was at some point introduced in the grammar of English and first applied, over a period of time, to the *theater*-set, and later to *thyme*, etc., but not to *Thomas*. At a still later stage, after this pronunciation rule had become obligatory for the *theater*-group (which, in some cases, did not occur until the late eighteenth century or later: for *apothecary*, for example, Walker acknowledges as late as in 1826 "a corrupt pronunciation, not confined to the vulgar, as if written *apotecary*;" cf. Buchmann 193), and a new generation learned only the [θ] form, restructuring to /θ/ took place. *Thyme* appears to be headed for a similar remodeling, although not *Thomas*; the latter, like common native words in general, appears to enjoy a measure of immunity to analogical processes, and thus to SPP. The correlation between relative frequency of occurrence and resistance to SPP is well known (e.g., Kenyon calls it "an underlying principle of spelling pronunciation" that words which a child is likely to learn thoroughly before learning how to read and write are the most resistant to SPP [114]; also cf. Householder 253); this relative resistance has been proposed as a basis for dividing the vocabulary into "native" and "foreign" layers (Vachek 1973; cf. also Robertson and Cassidy 177, Brengelman 1971).

The pattern of restructuring just discussed is summarized in Table I. The changing pattern of underlying forms suggests that the analogical extension of restructuring to new morphemes creates an increase in the incidence of /θ/ in the language; this, in turn, generates new minimal pairs (e.g., *thyme* : *time, theme* : *team, Thames* : *tames*) and thus enlarges the functional load of /θ/, strengthening its phonological status. In other words, the influence of the spelling has resulted here in an orthographically conditioned partial phonemic split; on a large-enough scale the effects of such a change may be no less disruptive of the system than modifications induced by regular phonetic change.

In a similar way SPP has strengthened the phonological status of /h/ in English by forcing its "de-silencing," especially in initial position (also cf. *forehead, vehicle*, etc.). Although the spelling-induced reestablishment of initial [h] is in most cases now (at least in the standard language) a historical fact, in some words it is still

Table I

	Pronunciation		*Underlying form*
	[t]	[θ]	
	theater	—	/t/
Stage I.	thyme	—	/t/
	Thomas	—	/t/
	theater ~	theater	/t/
Stage II.	thyme ~	(thyme)	/t/
	Thomas	—	/t/
Stage III.	—	theater	/θ/
(present)	(thyme) ~	thyme	/t/
	Thomas	–	/t/
Stage IV.	—	theater	/θ/
(hypothetical)	—	thyme	/θ/
	Thomas	?	/t/

in progress, while in a few it has not (yet?) gotten off the ground. Kenyon notes that even such words as *hospital, hostler, heritage,* and *humble* "had no [h] sound as late as the eighteenth century, and often still lack it" (140), although no longer in America; but we still have alternation between [h] and its absence in the *hu-* -set *(human, humus, humor, humid, huge)* with the SPP clearly winning out, as well as in *herb, homage,* and *heir,* where the SPP is at least a well-established variant. Only some of the most frequent h-words *(hour, honor, honest)* still successfully resist SPP, and perhaps ultimate remodeling. Again, the slow but almost purposeful manner in which the iconic principle takes effect within an orthographic paradigm is clearly evidenced.

Other evidence abounds. SPP is currently forcing the elimination of the few remaining exceptions to the correspondence *ph* : /f/ (already complete word-initially), such as in *diphtheria, diphthong, naphtha,* and (in America) *nephew.* More complex is the function of the digraph *ch,* which has three principal phonetic values: (1) [k], obligatory when *ch* is initial before liquid consonants and common before vowels especially in technical and scientific terms of Latin or Greek origin, some of which are now in the familiar vocabulary and likely to resist change (e.g., *character, chemical,*

chaos); (2) [š], mostly of French origin and borrowed, with the spelling *ch* retained unchanged, subsequent to the change of /č/ to /š/ in early modern French (cf. Pyles 326, and doublets such as *chief* vs. *chef, chair* vs. *chaise, crotchet* vs. *crochet*); and (3) [č], which is the unmarked phonetic value of *ch* and its most common form. Predictably, and with few exceptions (such as *conch, chiropodist,* and sporadically *architect, chameleon,* etc., where [k] is affected), recently SPP has made inroads especially into (2), depleting it in favor of the unmarked category (3). Thus the spelling-pronounced [č] in many words including *chef, chic, chalet, chassis, chaise, cache, chasm, chamois, chagrin, challis, chandelier, chant(e)y, charqui, chibouk,* etc., is becoming standard for some speakers of American English, and the trend can be expected to grow, although it is difficult to predict what counter-currents might retard or set the limits of the analogic influence of SPP. Such might be in this case the desirability for many speakers (or advertisers?) of retaining the foreign flavor of names for imported products *(Chablis, champagne, chambray, champignon, château)* or for prestigious concepts *(chauffeur, chaperon, chivalry)* or simply of emulating "continental" pronunciations, such as that of stressed *a* as [a] rather than earlier [æ] in *Bahamas, Mazda, patio, plaza,* etc. (cf. Bolinger 402, Barber 72). Here one sociolinguistic variable interferes with the effect of another; the replacement of [æ] by [a] clearly counters the spelling-inspired trend in the direction of [æ] for the spelling *a* (*sadist, drama, data, catsup, status, strata, aviation, apricot, pecan, pajamas, ballet, valet, chassis,* etc.). In other cases the trend is less disturbed, although variation may be substantial; [ʌ] for *o* is being or has been replaced, presumably via spelling-induced innovation (cf. *bottom, bottle, lodge, pod, hot* for the model), by [a] in a host of words (*bomb, bombast, combat, honest, common, astonish, constable, compass, donkey, comrade, dromedary, grovelling, hover,* etc., as well as restressed *con-*, and *lexicon, Oregon,* etc.), but not, as expected, in *come, son, some,* or *love,* where [ʌ] remains invariant.

It goes without saying that similar restructuring also occurs—and is even more likely because of the conspicuousness of the anomaly—in isolated and idiosynchratic exceptions to strong iconic relations, such as *breeches, corps, victuals, viscount, February,* and the like. Note that the idiosynchracies lie in the spelling, and not

in the pronunciation by spelling: the effect of SPP is wholly iconicizing, and hence regularizing, though often counter-etymological. It clearly supports the underlying principle that "purposeless variety" tends to be eliminated from language (Anttila 143).

Rule Weakening and "Reversals"

Most local residents pronounce the last vowel of *Oregon* as unstressed [ə], following the rather general productive rule in English that unstressed lax vowels are reduced to [ə] (Chomsky and Halle 111). But the same syllable is spelling-pronounced by many outsiders with a somewhat restressed [a]. Mencken noted the "considerable difference between the pronunciation of a name by natives of a place and its pronunciation by those who are familiar with it only in print" (658), and the same is true when outsiders use the vocabulary of a specialized field (Barber 67), both observations supporting the role of the frequency and familiarity factor noted above. But the restressing of unstressed syllables in American English (and the consequent spelling-pronunciation of the vowel) is sociolinguistically significant in a broader, historical sense also. Already Dr. Johnson declared that "In pronunciation, the best general rule is to consider those as the most elegant speakers who deviate least from the written word" (cited by Kenyon, 112), and in the United States the dictum he advocated found some particularly fertile ground, for complex reasons but especially through the influence of John Walker who, among other "pedantic prescriptions, . . . demanded full vowel sounds and secondary stresses on normally unaccented syllables" (Schlauch 140; see also Sheldon 1947). From a sociolinguistic point of view, the increasing absence of unstressing and of vowel reduction in certain contexts may be one clear effect of the much-noted "widespread reverence for the printed word" in America (e.g., R. Bailey 388); this reverence, evidenced by frequent hypercorrections via SPP, is characteristic especially of the socially mobil and upward-bound "second highest social class" (Labov 1972; C. Bailey 176)—in a different terminology, of "social upstarts, who are always fond of showing off their new gained superiority in this and similar ways" (Jespersen 294), and of

"people who are not quite at ease in their literacy" (Thomas 10). Here we see a strong socially-motivated force reinforcing the iconic relation between letter and sound at the cost of fostering the curtailment of a productive phonetic process. I shall return to this point below. In this instance, by blocking vowel reduction, SPP replaces the expected [ə] (here in the last syllable) by weakly stressed [a] in *Oregon, lexicon* (for *o* before *n*; cf. *Don, Ron*), and in *registrar* (for *a* before *r*; cf. *far, mar, scar*); by [o] in *mentor, vector, thorough*; by [i] in the plural suffix in *bases, processes, instances, premises, atlases, complexes, prospectuses,* etc.; by [ai] plus consonant for the graphic pattern *-iCe* in *agile, favorite, docile, juvenile, versatile, genuine*; and it replaces [ɪ] by [e] in *yesterday, Sunday, Monday;* and so on. What seems to be happening to this rule is a good example of how, as suggested above, SPP can ultimately be the prime triggering mechanism for rather profound changes in the phonetic character of a language. The absence of vowel reduction with the concomitant presence of secondary stress in the penultimate syllable of *secretary, military, laboratory, advertisement,* etc., for instance, has been for some time a characteristic trademark of American pronunciation (i.e., vis-à-vis British Received Pronunciation).

The blocking and hence weakening of synchronic processes by SPP should be clearly distinguished from the phonetic resurrection, through a "reversal" of historical changes (Thomas 10, Barber 70, Anttila 42), of earlier phonemic forms more or less preserved by the spelling. The latter amounts, in fact, to restructuring. Furthermore, while in some cases, and often by chance, SPP results in the phonetic recovery of something like the historical phonemic source that originally motivated the spelling, the reversal is normally only partial: the SPP of the last syllable of *yesterday* cannot produce the "recovery" of the historical source /æɪ/, for SPP fails to reverse the Great Vowel Shift; nor will, for the same reason, the SPP of *breeches* yield Middle English /e:/. Since SPP is an agent of iconicity, it is sensitive to historical processes only insofar as their reversal serves a synchronic-iconic end. Thus one often finds diverse diachronic sources for a particular spelling to which phonetic value is newly assigned by SPP in a given orthographic context; SPP, in other words, may erase etymological distinctions.

For example, the phonetic reappearance of *l* in *folk, yolk, walk, balk, stalk,* etc., undoes the actual historical loss of (etymological) [l] following late Middle English *au* and *ou* and before certain consonants *(m, f, v, k),* a change that also affected *psalm, calm, holm, half, calf, halves, calves,* and so on (cf. Dobson 989). Exactly the same "rule" of SPP is responsible for the historical phonetization of preconsonantal *l* in numerous other words (e.g., *adultery, assault, (de)fault, emerald, pulse, Ralph, realm, ribald, solder* [in British usage], *soldier, vault*), in which, however, the [l] is not etymological (cf. *th* above; see Buchmann 184). Thus while in the latter instances SPP induced morphological restructuring, in the former it is "reversing," and thus obliterating the effect of, a historical process. But this is also restructuring, since the underlying forms /fok/, /yok/, etc., which allowed for no phonetic alternation (since there was no way to predict, short of listing, when [l] should be inserted), are being replaced once again by /folk/, /yolk/, etc., the phonemic form having run full cycle from historical /-lk/ to /-k/ again back to /-lk/. And the new /-lk/, presumably like the original one, is subject (for the time being) to the optional dropping of [l] by speakers who have such variation in their speech. The point here is that SPP honors only the spelling, and not the historical reasons for the absence of any phonetic value for it; while it can almost "systematically" destroy (by repeated blocking) the effectiveness of a synchronic rule, it no more strictly reverses all cumulative historical changes by design than by chance. Actually the precise reason for "silent letters," while in some cases transparent (e.g., the insertion of *l* in *could* "in mechanical [i.e., analogical] imitation of *should* and *would,* where an etymological *l* had become silent, so that these words now rimed with *coud* . . ."; OED, vol. II, 57), sometimes appears difficult to pinpoint. *Salmon* (from Old French *saumon*) appeared early as both *saumoun* and (under Latin influence) *salmon* (cf. also *palm, almond, calm, calk, falcon*). The current SPP of the word may reflect (1) the insertion of *l* (and hence [l]) into the variant *saumoun,* or (2) the reestablishment of [l] in *salmon* (where the sound was presumably lost by rule but the spelling retained); the result is the same. There is a third possibility, incidentally: (3) that [l] in *salmon* was never lost, and its current surfacing reflects a dialectal preservation of an old (though

in this case originally spelling-pronounced?) variant. A similar possibility exists in other apparent cases of SPP as well (e.g., *-tu-* in *literature, nature,* etc., pronounced with unaffricated [t^{y}] rather than [č]; cf. Jespersen 294, Householder 253).

Morphologically complex (affixed and compound) words are, of course, even more vulnerable to phonemic reinterpretation through change-reversals, since by largely preserving the historical morphological analyzeability of such words, the conventional orthography facilitates meaning-form iconicity through SPP. Insofar as such analyzeability is still linguistically motivated, SPP amounts to a surfacing of underlying or near-underlying phonological forms (see below). Thus synchronically underlying (and, of course, historically affixed) *oft+en, soft+en, chaste+en,* and *haste+en* fail to drop their [t] when spelling-pronounced (similarly, in *Christmas, chestnut, hostler,* etc.) and show up phonetically to that extent unaltered; as before, SPP blocks a rule (here "*t*-deletion") and thereby reduces its function. (Note, however, that [t] appears by SPP also in *epistle, pestle, apostle,* etc., which are not similarly analyzeable. Again, SPP is motivated only by synchronic surface iconicity, although the conditioning for the analogy may be very specific; here [t] is reestablished only between a voiceless spirant and a resonant consonant; cf. *Boston, Preston, Austin, hostile, hostel.*) When SPP revives an older morphological analysis which implies unproductive rules, once again the result is restructuring, generally in the direction of semantic interpretability; remodeled /forhɛd/ or /botswen/ "makes sense" to a speaker of Modern English in a way /fɔrɪd/ or /bosn/ does not (cf. folk etymology, which is based on the same principle). As usual, relatively unfamiliar items are the easiest prey to SPP (note the reversal of *w*-loss in *Norwich, Southwark, Greenwich, Woolwich, coxswain, lightwood, gunwale, swoon,* though also *toward* and even *sword*). By reviving essentially the pre-change morphological structure preserved by the spelling, SPP closes the iconic gap between meaning and form.

Underlying forms

SPP would be optimal (and hence uninteresting) in a language with a phonetic alphabet for an orthography, for in such a system the correspondence between symbol and sound is by definition one-to-one, and therefore every phonetic event would be a case of SPP. Even in a purely phonemic or morphophonemic orthography the relation between spelling and pronunciation would be wholly predictable by conversion rules, and SPP would simply amount to the failure of some such rule(s) to apply. Significantly, in such a system the spelling would fully represent the underlying phonemic forms, and the spelling-to-sound conversion rules would be phonologically motivated; thus SPP would, in effect, induce the surfacing of underlying forms. Such an ideal system probably does not exist in real languages. English is certainly not such a language, although we have seen that even here in some instances the blocking of a rule by SPP can have this effect *(soften, hasten)*. On the other hand, in languages with a more consistently morphophonemic orthography, and where the "derivational distance" between underlying and phonetic forms is relatively short (i.e., where, by implication, spelling and pronunciation closely correspond), pronunciation according to the spelling commonly "exposes" a sub-surface form, sometimes the underlying form itself. Thus in Greek, *áfantos* "invisible" or *emporikí* "commercial" might be (incorrectly) pronounced as spelled, rather than, if the expected rule(s) had applied (i.e., the obligatory voicing of post-nasal stops, and the subsequent optional deletion of the nasal), [áfandos ~ áfados] and [emborikí ~ eborikí] (Kazazis 202). Or in Hungarian, the blocking by SPP of a palatalization rule results in [adja] and [la:tja] for *adja* /ad+ja/ "one gives it" and *látja* /la:t+ja/ "one sees it," instead of the standard pronunciations [aɟ:a] and [la:c:a] (Varga 162). Since in such cases SPP causes (or contributes to) the failure of an obligatory phonetic rule to apply as expected, again we see its disruptive effect: rules that should apply are repeatedly blocked and are to that extent weakened. Reports on standard Hungarian, for example, show a dramatic recent decrease in the occurrence of certain supposedly obligatory assimilations (such as above), and attribute this phenomenon to a large degree directly to the influence of the orthography on pro-

nunciation (Szántó 1962, Elekfi 1968, Varga 1968). (I am begging the empirical and for now unresolvable question as to what extent the phonetic surfacing of orthographically represented (near-) underlying forms such as in the preceding examples is brought on by SPP, rather than by the "psychological reality" of these forms; the two, as Kazazis implies, probably reinforce one another. Although the question remains open, here I am assuming the relevance of orthographic influence.)

Speech Style

The nonapplication of some obligatory phonetic rule(s) has the further interesting implication that it results in a distinct, "over-careful" speech style (generally in lento speech) which may become consistent and habitual and thus idiolectally or dialectally diagnostic. In classical transformational-generative grammar style is a function of choice among optional rules, so that if some such rule is chosen we get Style A, otherwise Style B. The speaker is invited to make such choices at various points along the stylistic spectrum moving from formal (standard) toward more casual and colloquial speech styles, such as from [aɪæm ˈgowɪŋtu ˈhɪtyuw] *I am going to hit you* to something like [əmə ˈhɪčə]. In Hungarian the following (simplified) derivation yields the standard pronunciation for *azt mondja* "he says it":

	/az+t##mond+ja/	
	↓	by voice assimilation (obl)
SPP	*astmondja	
	↓	by palatal coalescence (obl)
	*astmonɟa	
	↓	by nasal palatalization (obl)
STANDARD	[astmonɟa]	

and subsequent optional rules produce progressively more casual-style pronunciations ([asmoñɟa—asmõñɟa—asõñɟa—asə̃ñɟa—asñɟa]). Any one of these pronunciations could occur, but while 'sub'-standard variants imply rule options and are to that extent grammatical, 'supra'-standard forms are the result of the violation of the obligatoriness of some rule(s) (here palatalizations) and are therefore ungrammatical, although of course socially the outcome

Table II

		Rule applies	*Rule does not apply*		
	Rule may apply (optional)	G	G		
APPLICABILITY STATUS	Rule may not apply (optional)	G	G		OUTPUT RATING
	Rule must apply (obligatory)	G	[U] ←	*Rule blocked by* SPP	
	Rule must not apply (inapplicable)	U	G		

where G = grammatical, U = ungrammatical.

may be equally unacceptable and stigmatizing. Thus once again, by forcing ungrammatical outputs, SPP interferes with the normal operation of the phonological system, here motivating a type of phonetic behavior which the grammar, as currently envisioned, cannot even predict, as the boxed output in Table II shows (cf. Kerek 1974b).

The precise nature and extent of orthographic influence on the phonology is of course subject to much further empirical research; the foregoing should suggest that this influence is a significant extralinguistic factor which linguistic description cannot ignore.

REFERENCES

Anttila, Raimo. 1972. *An Introduction to Historical and Comparative Linguistics*. New York: Macmillan Co.

Buben, V. 1935. *Influence de l'orthographe sur la pronunciation du français moderne*. Bratislava.

Bailey, Charles-James N. 1973. "The Patterning of Language Variation." In *Varieties of Present-Day English*, ed. by R. W. Bailey and J. L. Robinson. New York: Macmillan Co. Pp. 156-186.

Bailey, Richard W. 1973. "Write Off Versus Write On: Dialects and the Teaching of Composition." In *Varieties of Present-Day English*, ed. by R. W. Bailey and J. L. Robinson. New York: Macmillan Co. Pp. 384-408.

Barber, Charles. 1964. *Linguistic Change in Present-Day English*. University: University of Alabama Press.

Bolinger, Dwight. 1975. *Aspects of Language*. Second Edition. New York: Harcourt.

Brengelman, F. H. 1971. "English Spelling as a Marker of Register and Style." *English Studies* 52.201-209.

Buchmann, Eberhard. 1940. *Der Einfluss des Schriftbildes auf die Aussprache im Neuenglischen*. Breslau: Verlag Priebatsche Buchhandlung.

Chomsky, Noam, and Morris Halle. 1968. *The Sound Pattern of English*. New York: Harper & Row.

Dobson, Eric J. 1957. *English Pronunciation 1500-1700*. Vol. II. Oxford: Clarendon Press.

Elekfi, László. 1968. "Beszédhangjaink kapcsolódása." *Magyar Nyelvőr* (Budapest) 92.4.379-389.

Householder, Fred. 1971. *Linguistic Speculations*. Cambridge: University Press.

Jespersen, Otto. 1964. *Language: Its Nature, Development, and Origin*. New York: W. W. Norton Co.

Kazazis, Kostas. 1969. "Distorted Modern Greek Phonology for Foreigners." *Glossa* 3.2.198-209.

Kenyon, John S. 1946. *American Pronunciation*. Ninth Edition. Ann Arbor: George Wahr Co.

Kerek, Andrew. 1974a. "Spelling Pronunciation as a Factor in Rule Weakening." Paper read at the Kentucky Foreign Language Conference.

_____. 1974b. "On Speech Styles." Paper presented at the Midwest Modern Language Association meeting.

King, Robert D. 1969. *Historical Linguistics and Generative Grammar*. Englewood Cliffs: Prentice-Hall.

Labov, William. 1972. *Sociolinguistic Patterns*. Philadelphia: University of Pennsylvania Press.

Lambert, J. J. 1972. *A Short Introduction to English Usage*. New York: McGraw-Hill.

Lehmann, Winfred P. 1973. *Historical Linguistics: An Introduction*. Second Edition. New York: Holt.

Mencken, H. L. 1963. *The American Language*. Abridged edition by R. I. McDavid, Jr. New York: Knopf.

Nessly, Larry. 1973. "Nativization and Variation in English Phonology." In *New Ways of Analyzing Variation in English*, ed. by C. J. N. Bailey and R. W. Shuy. Washington: Georgetown University Press. Pp. 253-264.

Robertson, Stuart, and Frederick G. Cassidy. 1954. *The Development of Modern English*. Second Edition. Englewood Cliffs: Prentice-Hall.
Samuels, M. L. 1972. *Linguistic Evolution with Special Reference to English*. Cambridge: University Press.
Schlauch, Margaret. 1965. *The English Language in Modern Times (since 1400)*. Warszawa: Polish Scientific Publishers; and London: Oxford University Press.
Sheldon, Esther K. 1947. "Walker's Influence on the Pronunciation of English." *PMLA* 42.130-146.
Szántó, Éva. "A magyar mássalhangzó-hasonulás vizsgálata fonológiai aspektusban." *Magyar Nyelv* (Budapest) 58.4.449-458.
Thomas, Charles K. 1958. *An Introduction to the Phonetics of American English*. Second Edition. New York: Ronald Press.
Vachek, Josef. 1973. *Written Language: General Problems and Problems of English*. Janua Linguarum, Series Critica 14. The Hague: Mouton.
Varga, G. Györgyi. 1968. *Alakváltozatok a budapesti köznyelvben*. Budapest: Akadémiai Kiadó.
Weinreich, Uriel, William Labov, and Marvin I. Herzog. 1968. "Empirical Foundations for a Theory of Language Change." In *Directions for Historical Linguistics*, ed. by W. P. Lehmann and Y. Malkiel. Austin: University of Texas Press. Pp. 95-195.
Wolfram, Walt, and Ralph W. Fasold. 1974. *The Study of Social Dialects in American English*. Englewood Cliffs: Prentice-Hall.
Zengel, Marjorie S. 1968. "Literacy as a Factor in Language Change." In *Readings in the Sociology of Language*, ed. by J. A. Fishman. The Hague: Mouton. Pp. 296-304.

Methods and Theories of Learning to Spell Tested by Studies of Deaf Children

Arthur I. Gates and Esther H. Chase

Research is reported on the reading and spelling ability of children congenitally deaf. In comparison with their other linguistic abilities and with normal children of similar reading experience, deaf children (1) greatly excell in spelling ability, and (2) possess extraordinary word-perception ability. Both abilities appear due to a peculiarly effective type of perceiving which relies on a visual reaction to words. For normal children learning to spell, much may be gained by visual study of the word and mastering the habit of writing the word.

A series of studies of the acquisition of various linguistic abilities by children congenitally deaf were begun two and a half years ago for the purpose of discovering certain facts which might be applied to the improvement of methods of teaching and learning of normal children. In this paper will be described the results of one of the preliminary studies and some of the plans for further investigations now under way or contemplated.

The first study, begun in November 1923, was designed to throw some light on the influence of phonic[1] and phonetic experience and training upon reading and spelling. For several decades various good and ill effects have been attributed to these types of experience and training of which there are nearly innumerable varieties of formal and informal procedures. Among those most competent to appraise these practices in the light of established principles of learning agreement does not, by any means, prevail. Nothing short of extensive experimental work is likely to yield a valid estimate of the merits of phonic and phonetic training. A system of teaching so widespread in use and yet so varied in character as phonetics in America merits most careful investigation.

While developing plans for a comprehensive experimental attack upon the problem, it occurred to the writer that one method of discovering what abilities or deficiencies result from phonic and

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phonetic experiences would be to study, analytically, the achievements and performances of children who had had no such training. Children born deaf fulfill perfectly this requirement; having never heard sounds, they could not be given phonetic work of any sort.

Through the courtesy of Harris Taylor, Principal, and Edith Buell of the Institution for the Improvement of the Instruction of Deaf-mutes of New York, children suitable for investigation were found. The status of these children is indicated below. The "Institution Grade" indicates the grouping within the school; the "Approximate School Grade" suggests a roughly equivalent level in the ordinary public school:

Institution grade	*Approximate school grade*	*Number of pupils*	*Extreme ages*	*Average age*
VIIB	IIIB	12	12–17	13.6
VIIIB	IV	11	13–16	14.2
IXB	VB	9	15–19	16.4
XIB	VIII	13	16–20	18.1

Since it was our purpose to compare the achievements of these pupils with those of normal children as nearly as possible equivalent by nature except in auditory capacity, a measure of general intelligence was sought. Of several instruments tried, the Pintner Non-language Tests seemed most satisfactory. The results of the measurements need not be given in detail since they indicate that the pupils studied were but slightly lower in intelligence than normal individuals of corresponding age.

Reading Ability of the Deaf

Before giving the tests of spelling ability, the achievements of the pupils in reading were ascertained since there are good reasons for believing that absolute spelling ability is greatly influenced by the level of ability and amount of experience in reading. Once the spelling of a word is learned it is probably kept alive in no small measure by being perceived repeatedly in the process of reading as well as by experience in writing.[2] Spelling ability should, therefore, be evaluated in connection with the evidence concerning reading ability and experience.

The Burgess Reading Test was given to all pupils. The paragraphs of which this test is composed are approximately equal in difficulty to the following:

"These ducks are out walking on a cold winter day. The black duck is ahead; but she is unhappy because the cold snow hurts her feet. Make one short line under her feet to represent a board for her to stand on. Then make one more short line for the white duck to stand on. Now both ducks will keep their feet warm."

This material is easy reading for normal Grade III children and not too difficult for many in Grade II. The scores of the several grades on the test—which is five minutes in length—were as follows:

Institution grade	*Average chronological age*	*Per cent making 0 score*	*Per cent reading 1 or 2 paragraphs*	*Per cent reading 3 or 4 paragraphs*	*Per cent reading 5 or more paragraphs*	*Average number of paragraphs*	*Average reading, age*	*Average reading, grade*
VIIB	13.6	50	50	0	0	0.8	?	?
VIIIB	14.2	18	18	45	18	3.0	8.2	2.5
IXB	16.4	0	55	11	33	3.6	8.5	2.8
XIB	18.1	0	25	17	68	5.0	10.0	3.5

The results revealed in this table were the most surprising outcome of the study. Half of those in Grade VIIB (whose ages varied from 12 to 20 years) failed completely to read a single paragraph of this easy material in five minutes and the other half read but one or two passages. In the higher grades, the reading was usually so slow and laborious that it could be neither very enjoyable or profitable. How significant this deficiency is and what the theoretical possibilities of remedying it are will be discussed in a later paper. At present, we shall utilize the results merely to illuminate the achievements in spelling.

Spelling Ability of the Deaf

The test of spelling ability was a list of 36 words from the Ayres-Buckingham Scale. The list comprised nine groups of 3 words each of the same length beginning with 2-letter words and culminating with 11-letter words. The nine groups of words, when applied to

normal children, form a series of approximately equal steps of difficulty. Since an age scale has been constructed for scores on this test, it is possible to appraise the achievements of the deaf by translating their raw scores into the chronological age of normal children who average the same score. The results are given in the accompanying table:

Grade	*Average actual age of deaf*	*Average spelling age*
VIIB	13.6	11.2
VIIIB	14.2	11.6
IXB	16.4	12.6
XIB	18.1	13.0

While the absolute achievements of the deaf are not as high as those of normal children of corresponding ages, they are distinctly excellent when certain relevant factors are taken into account. First, the meagerness of the reading and other linguistic experiences of the deaf constitutes a highly potent handicap. Compared to their ability in reading, the deaf pupils' spelling achievements are very high. Secondly, the examination as given proved to be not only a test of spelling but also of lip-reading ability. Despite all efforts to make the dictations intelligible, many quite obviously misinterpreted the pronunciations. For example, among the "misspellings," of *estimate* appear the following: *examine, depend, expect, Easter,* etc., and a number of blanks which meant inability to catch the word. Such "misspellings" and omissions ran through all of the records. Such words were called wrong, with a few exceptions: *build* substituted for *built* in over half of the cases; *difficulty* for *difficult; teacher* for *teach* and a few similar spellings were counted correct. These allowances, however, scarcely provided equal spelling opportunity for the deaf. Finally, some of the words appeared to be utterly unknown to the deaf. For example, *information* was attempted by only three pupils in the entire group and of these only one apparently had any idea what the word was. Unfamiliarity with abstract words of this type was very evident in the deaf children's reading and was doubtless in no small measure responsible for their difficulty in this subject.

Since it has been established that reading experience and as a

consequence, reading ability exert a pronounced influence on spelling it will be illuminating and probably not unfair to compare the spelling of deaf children with that of normal children *of the same reading ability*. This may be done in terms of the age scale for normal children. The results are as follows:

Deaf group	*Spelling age of deaf children*	*Spelling age of normal children of same reading ability*	*Superiority of deaf, in years*
VIIB	11.2	6.9	4.3
VIIIB	11.6	8.1	3.5
IXB	12.6	8.4	4.2
XIB	13.0	9.4	3.6

The table shows that, with reading ability equal, the deaf greatly excel the normal children in spelling ability; the differences average but a trifle less than four years on a spelling age scale based on normal children. The spelling ability of the deaf, thus computed, is about 150 per cent that of the normal child.

To appraise in another way the spelling ability of the deaf, a further test was devised. This was termed a "spelling recognition" test. It consisted of 36 words ranging in length and difficulty, each presented with four misspellings, as in the following samples:

7. nime, nin, nyme, nine, nein.
20. circular, sircular, circlear, cirkilar, sirculer.
36. consensions, kontientions, conscientious, konsienscious, constientious.

The task was to underline the correct word. Neither for deaf nor normal pupils were the words pronounced.

In this test the deaf children in the lower grades did relatively poorly—mainly I judge because they were quite unfamiliar with many of the words in speech, writing, or print—but relatively well in the upper grades. In the highest group all scored 31 or more correct out of 36 and averaged 33.8, a figure which is about equal to the score of normal pupils in the seventh grade at midyear.

When the deaf children are compared in this test with normal pupils of equal reading ability, the results are as follows:

Deaf group	*Deaf spelling recognition age*	*Normal subjects of same reading ability*	*Difference in favor of deaf in years*
VIIB	9.4	6.9	2.5
VIIIB	10.8	8.1	2.7
IXB	12.7	8.4	4.3
XIB	14.6	9.4	5.2

The superiority of the deaf, when reading ability is rendered constant, is very marked and increases perceptibly with longer school experience. If these data are reliable and valid, the deaf child's ability to distinguish correct from incorrect spellings increases with extraordinary rapidity, in comparison with normal children, as their reading experience is extended.

In order to avoid the handicaps of the deaf due to unfamiliarity with abstract words and the earlier difficulty of conveying them the word to be spelled, a test of 16 names of concrete objects was presented by means of the lips in combination with a drawing to suggest the proper word. The words were: *hatchet, bicycle, soldier, umbrella, elephant, scissors, children, policeman, cigarette, telephone, butterfly, automobile, typewriter, battleship, locomotive, phonograph.* The number of correct spellings (out of a possible 16) on these tests was as follows:

Grade	*Number Words Correct*
VIIB	12.1
VIIIB	12.7
IXB	13.6
XIB	15.2

Since no scores for representative normal children on this list of words were available the test was given to the pupils in Grades IV, VI, and VIII in one New York City school and to Grades VA, VB and VIB in another. The scores were as follows:

Grade	*School A*	*School B*	*Average A and B*	*Scores of deaf in corresponding grades*
IV	7.8	—	7.8	12.7
VA	—	8.6	8.6	—
VB	—	9.8	9.8	13.6
VI	11.0	10.6	10.8	—
VIII	13.6	—	13.6	15.2

While the deaf children are older chronologically than the normal children in the corresponding grade, they have had much less reading and other language experience. The results shown in this table suggest a real superiority of the deaf.

On the whole, the evidence indicates that the deaf children possess, in comparison with their other linguistic abilities and in comparison with the achievements of normal children of similar reading experience, at least, superior spelling ability. If the sources of this superiority can be discovered, facts may be revealed which may make possible improvements in teaching spelling to normal children.

High spelling ability might be the result of extensive reading, extensive writing composition, extensive drill in spelling or of specially effective methods of learning and teaching in spelling. In this instance, it is certainly not due to extensive reading or writing (composition). It is quite surely not due to the amount of drill in spelling specifically, since except for occasional dictations of word lists, little time is devoted specially to spelling lessons. The means of teaching the pupils to learn to spell words, therefore, merit careful examination.

The spelling tests to which specific instruction in spelling is largely limited are of two forms: (1) mere requests to write words that occur to the pupils, (2) spelling words dictated by speech (lip-movements). In the first type of test no special teaching is used; in the second, a form of spelling technique is suggested. First the child tries to get the word by lip-reading and demonstrates his perception by pronunciation. This, in fact, is the way new words are introduced. The teacher speaks the word at the same time demonstrating its meaning by action or object. The pupils then try to pronounce the same word. If they cannot get it as a whole, they are assisted time after time in approximating the pronunciation of the word syllable by syllable, until they can reproduce the syllables in order perfectly or nearly so. Then the pupil writes the word as nearly as he can, usually syllable by syllable, on the board. When errors occur, the teacher gives the correct spelling by writing on the board the word with which the pupils compare their own written forms. It would seem that this method of developing the ability to lip read, speak, spell, and write all new

words would tend to set up spelling habits not unlike those which prevail among normal children, namely, the device of relying primarily upon phonetic translation but closer examination may reveal significant differences. Normal children, enjoying phonic and phonetic experience, learn to depend primarily upon a phonetic rendering—translation of the sounds into letters which represent them—when attempting to recall the spelling of words. In several analytic studies, published[3] and unpublished, of good and poor spellers this habit was found to be almost universal. That this method alone should function unsatisfactorily is due to the fact that English spelling is not systematically phonetic in the sense that a given sound is invariably represented by the same letters. *Claim* may be phonetically spelled as *clam, clame, klam, klame, claim, klaim,* etc. The majority of spelling errors among normal persons are not due to erroneous phonetic rendering but to the inability to select the form which happens to be the traditional one from the many equally phonetic equivalents. In other words, by relying upon the device of simply translating sounds into a series of letters which does represent them, they are prone to error because so many possible translations are phonetically accurate.

The dictation lesson for the deaf encourages a habit of translating the lip-movement equivalents of syllables—which to the normal would be phonic units—into letters. The same difficulty prevails here as in phonetic translation, namely, the existence of many letter combinations which have been associated with the same lip-movements. But unlike the deaf, normal children have a life-time of phonic experience with language; long before they can read or write or spell they can recognize and articulate the word sounds. It is probably the greater facility in recalling the sounds and articulation of words that results in the common tendency to resort to utilizing the sound equivalents in spelling. The deaf, of course, are incapable of thinking first of the sounds and then recalling a combination of letters which represent them and despite the system of encouraging them to spell by recalling combinations of letters associated with the lip-movements of others or their own acts of pronunciation, it seems probable—both from observing the deaf during spelling and learning tests and from study of their misspellings—that they depend mainly on another

learning device. This device, I believe, consists in a more careful visual study of the word forms in the final stages of learning when their written word is compared with the correct form placed on the board and in the attempt to recall not the lip-movement-letter combination associations but the visual appearance of the word during attempts to spell words not yet firmly habituated as writing habits. This hypothesis we tested by further examinations.

The first procedure consisted in comparing the abilities of deaf and normal children to learn to spell words misspelled previously in a test. Immediately after completing the test on the 16 words—*hatchet, bicycle,* etc.—these words in mimeographed form were distributed to the pupils who were instructed to study them for another test to be given a minute later. They were required to study by observing the printed words; but they were not permitted to spell the words aloud or to write them. After a minute of study, the lists were collected and the words again dictated. In the accompanying table are given the results for 23 deaf pupils each paired with a normal child of identical score on the first test.

Score for Normal Pupils

Average initial score	*Average final score*	*Average gain*	*PE gain*	*PE difference*
11.5	13.9	2.4	0.18	—
		Score for Deaf Pupils		
11.5	15.5	4.0	0.15	0.23

That the deaf learned more during the one minute period of study is apparent in the table. They acquired the spelling of 4 words while the normal learned 2.4. The difference between the gains (1.6 words) is approximately seven times the probable error of the difference. This superiority, under the conditions of the test, is in my judgment evidence that the deaf have a sharp perception for word-forms which is utilized in learning to spell. Another test of this hypothesis was also applied.

The "Word Perception" tests used considerably heretofore in

the diagnosis of difficulties in reading and spelling among normal children were applied to the deaf. Both tests were designed to measure the speed and accuracy of perceiving words. The first, known as the Word Selection Test, measured the speed and accuracy with which a person can perceive an isolated word and immediately perceive it again in the midst of several other very similar (hence confusing) words. Two sample exercises follow:

hat	sat	pot	rat	bat	hat
magnificent	mountainous distinction magnifficant	everlasting magnificent illustrious	magnifersant merchandise measurement	appointment maggnifsunt composition	

The second test, known as the Word Perception, Same-different Test, requires the subject to underline the pairs of words which are unlike leaving unmarked those identical, as in the following:

it	it	ground	grourd	children	chuldren
as	ar	behind	bekind	mountain	mountain
am	am	butter	butter	remember	remember
he	ha	rushed	rushed	thousand	thosand
me	me	marble	mardle	question	quastion

The tests obviously do not measure word-perception in exactly the same way but according to available evidence they are both symptomatic of the kind of perceptive skill which we desire here to measure. Since the tests correlated highly with familiarity with the words—that is, with reading experience and skill in which the normal and deaf differ widely—the two groups should be equated for reading ability before their achievements in this task are compared. Instead of presenting the data in this form, however, we shall show the scores in reading, spelling and word-perception since from these figures the significant facts may be estimated together with certain others. The scores below show the age of average normal children which the deaf equal in the four functions.

Deaf group	*Actual age*	*Reading age*	*Spelling age*	*Word selection age*	*Word perception same-different*
1	13.6	6.9 *	11.2	12.4	16.5
2	14.2	8.1	11.6	12.4	16.0
3	16.4	8.4	12.6	15.5	17.7

*Approximately.

The results are as striking as they are unequivocal. The deaf Group 1, for example, which could scarcely read at all and which, consequently, could have enjoyed but little reading experience shows a word perception ability in one test as great as that of average 16.5 year normal children, that is, normal children approximately three years above their own average chronological age. The results for the other groups were similar; Group 4 was omitted because their word perception ability exceeded all available norms for hearing children. There can be no doubt about the extraordinary word-perception ability of the deaf pupils.

Spelling ability, it may be observed, falls about midway between reading and word perception. Lack of reading experience tends to pull spelling ability down whereas keenness of word-perception tends to lift it up. This, at least, is our interpretation. The deaf owe their remarkable spelling ability primarily to a peculiarly effective type of perceiving, of reacting visually to words. Normal children, despite wider opportunities in reading and writing, do not seem to acquire as effective a type of word-perception. The hypothesis here offered is that normal children fail to develop this precise, accurate and—as far as the effects on spelling are concerned—effective form of word observation because they rely mainly on the easier, perhaps more natural—yet for spelling less productive—device of phonetic translation.

The results of the study of spelling by the deaf contribute certain suggestions for improving spelling ability among normal children. Practice in spelling may be directed to give primary emphasis to:

1. The motor activities of articulating the constituent letters (or letter-units such as syllables) silently or aloud.
2. The motor activities of writing the letters.
3. The mental activities of translating recalled word-sounds into letters which may be imaged, articulated or written.

4. The visual-perceptive activities of "seeing" the visual word as a whole of clearly distinctive parts.

5. The recall and application of spelling or phonetic rules which, in combination with (3) assist the learner to select from the many possible the one correct phonetic rendering.

Studies of spelling already presented and others to be published soon indicate that normal pupils rely greatly upon (1) and (3). The success of the deaf indicates that much may be gained by establishing better habits of visual study of words in learning to spell and then of exercising until firmly mastered the habit of writing the word. Studies to be reported indicate that elementary school pupils write or articulate the spelling only after recalling the letters by translation of sounds to letters or by visualization of letters or by both combined. Since English is so unphonetic, the most reliable device for determining which of the many genuine sound-to-letters translation is the correct one is to be able to recall some impression of the visual appearance of the word. This, I believe, is the method adopted by the deaf—with excellent results as we have seen. While the use of spelling rules has largely fallen into disrepute there are theoretical reasons and some experimental evidence[4] tending to show that when used as one of the means of emphasizing the visible similarities and differences among groups of like and unlike word forms they may be fruitfully employed to improve word-perceptive habits and, consequently, spelling ability.

1. By *phonic* is here meant any experience or training either in hearing or pronouncing words or both. Training in pronunciation, of course, involves experience in hearing one's voice. By *phonetic* is here meant training in either translating visual (printed or written) words or word elements—letters, syllables, phonograms—into sounds as in reading or conversely, sounds into letters and letter combinations, as in spelling.

2. For a defense of this belief see A. I. Gates; *The Psychology of Reading and Spelling.* New York: Teachers College, Bureau of Publications, 1922.

3. Gates, *op. cit.*

4. Alice Watson: Experimental Studies in the Psychology and Pedagogy of Spelling. Teachers College, Contribution to Education, forthcoming number.

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Notes on the History of English Spelling

Richard L. Venezky

To introduce non-specialists in English linguistics to the diversity and complexity of influences which have shaped Modern English spelling, three problems in the history of English spelling are presented. The first traces the evolution of the hard and soft pronunciations of word-initial *c* and centers on historical reconstruction of proto-Old English forms, Old English, Old French, and Latin sound changes, and soft pronunciations of word-initial *c* and centers on reconstruction of pre-historic Old English forms, Old English, Old French, and Latin sound changes, and Anglo-Norman scribal practices. The second problem concerns the avoidance of sequences of short down strokes (minims) as a motivating factor in certain role of the English chancery scribes in reforming English spelling along classical lines is examined.

A history of English spelling is first a history of those events which directly influenced the relationship between spelling and sound. Of these there are three: sound change, lexical borrowing, and changes in scribal practices. Yet a history of spelling which stops with these internal influences, while filling, is far from satisfying, since it fails to account for how spelling changes were related to the broader political, social, and technological milieu from which they emerged. For English spelling especially these concerns are important, in that unlike other countries where strong language academies have existed, no single authority has ever been empowered to legislate over our spelling.

For students and specialists in English linguistics several excellent sources on the history of English spelling are available. The most important among these are the letter entries and occasional word entry notes on spellings in the *Oxford English Dictionary,* a chapter entitled "Letters and Sounds: A Brief History of Writing" in T. Pyles, *The Origins and Development of the English Language* (1964), and a recent book by D. G. Scragg, *A History of*

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English Spelling (1974). But for the psychologist, graphic artist, or educator there is no single work which gives a full flavoring of the richness and variation in the history of English spelling without also giving the full history itself.

English spelling, more so than that of any other language, reflects both the internal and the external history of the language. Spellings such as *sure, then,* and *nation* reveal as much about sixteenth-century printing conventions and the classical enthusiasm of the Renaissance as they do of palatalization, voicing of initial consonants, and French borrowings. To understand even the most regular correspondences between spelling and sound in Modern English often requires attention to such matters as phonological reconstructions from pre-historic Old English; Latin, and French sound changes; the habits of Anglo-Norman scribes; and the language attitudes of the major centers of political power and scholarship in Anglo Saxon England.

The notes which follow attempt to sample this diversity by presenting three isolated problems in this history. First is the evolution of the hard (/k/) and soft (/s/) pronunciations of the letter *c*. This seemingly simple dichotomy of pronunciations derives from sound changes in three different languages, changes in scribal practices, and analogical extensions of new spellings.

The second problem, that of the role of short downstrokes (minims) in certain spelling innovations of the Middle English period, requires attention to the consistency of scribal practices, as well as to sound changes which occurred in the late Old English and early Middle English periods. The last problem differs radically from the first two in its emphasis on the institutions which promulgated certain spelling changes.

Together these three vignettes cover nearly the full range of influences which must be examined in a thorough treatment of English spelling. By themselves they represent neither a comprehensive presentation of the evolution of English spelling practices nor a totally original contribution to this history. To the contrary, they draw heavily upon the sources cited above as well as others which are acknowledged throughout. For those whose interests go beyond the notes presented here, both Pyles and Scragg are recommended; the former for a brief but comprehen-

sive treatment of letter-sound relationships from Old to Modern English, the latter for a more detailed treatment of the spelling conventions of different periods in the history of the English language and the institutions which were responsible for the most important spelling changes.

PROBLEM 1: *Pronunciations for the Letter c*

The letter *c* in word initial position has two pronunciations: a fricative, /s/, which occurs when *c* is followed by *e, i,* or *y*; and a stop, /k/, otherwise. This pattern holds for *c* in other positions, but is complicated by the palatalization of /s/ to /š/ in certain phonological environments (e.g., *ocean, social, gracious*).[1] Behind the simplicity and regularity of this pattern, however, is a complicated mixture of sound changes, lexical borrowings, and changes in scribal practice which involve not only spellings for /s/ and /k/, but for /č/ as well. How these processes interacted to produce the existing *c* pattern demonstrates how intentional change (i.e., scribal modifications) can combine with random change (i.e., sound change and lexical borrowing) to produce a highly regular pattern. In other circumstances, such as with some vowel pronunciations, similar circumstances have yielded less orderly results.

By the time of the earliest English writings the letter *c* represented two phonemically distinct sounds, /k/ as in present day *king* and a phonemically distinct palatalized form before most occurrences of front vowels. This latter sound has evolved into modern /č/ as in *church* (OE *cirice*). The evolution of /k/ and /č/ began in prehistoric OE with the development of allophones for /k/: a palatal form before front vowels and a velar form otherwise. After this change, a process now called i-umlauting led to the change of back vowels to front vowels when the former were followed by a high front vowel or glide in the following syllable. These latter sounds, reconstructed as /i/ and /j/ respectively, were either lost or changed into /e/ before the historic period of English, so that by the time of the first English records the palatal and velar allophones of /k/ had become separate phonemes.

As pointed out by Penzl (1947), the shift from allophones to phonemes for the variants of /k/ did not occur with the develop-

ment of the palatal variant, but with the merging of the umlauted back vowels with earlier front vowels, thus allowing the velar /k/ to contrast with palatal /k/ before front vowels. Thus, OE *cennan (beget)* had a velar /k/ while *cest (chest)* had a palatal /k/ which developed into MnE /č/. According to Vachek (1959), the functional yield for this phonemic opposition, particularly in the OE dialect which Penzl (1947) bases his argument on (Early West Saxon) was quite low. However, with late Old English and early Middle English sound shifts, and with a heavy importation of loan words into Middle and early Modern English, the functional load for this contrast increased markedly.

At the same time that *c* was used in OE for the velar and palatal /k/ phonemes, the sound /s/ was spelled almost exclusively with the letter *s* (e.g., OE *mys*, *lys*, *sinder*; MnE *mice*, *lice*, *cinder*).[2] The letter *k*, although not unknown to OE scribes, was infrequently employed until after the conquest. When it was used, nevertheless, it represented the velar /k/ phoneme almost without exception.[3]

Had the writing of Middle English not been dominated so fully by Anglo-Norman scribes and had French and Latin words not been imported wholesale into Middle English, the subsequent histories of *c*, *k*, and *s* might have been no more than a continuation of the OE practices. But the Norman Conquest brought not only a new view of how native words should be written, but an influx of French and Latin words of such magnitude that many of their spellings became the dominant models for English.

One of the earliest spelling changes made by Anglo-Norman scribes was to substitute *k* for *c* to represent the velar /k/ phoneme before front vowel spellings. By this change such OE forms as *cent*, *cyng*, and *seoce* were rewritten as *kent*, *kyng*, and *seoke* in Middle English. In addition, by at least as early as 1160, *ch* assumed the duties of *c* when it represented the palatal /k/ phoneme, which by the Middle English period is assumed to have completed its shift to /č/ (Mossé, 1952).

With this realignment, *c* in native words had only one sound, /k/ as in *callen* (call) and *cole* (coal). But in Latin and French, a sequence of sound changes paralleling those in English for /k/ produced a second major pronunciation for *c*. Late Latin /k/ before /e/; and /i/; palatalized, giving /č/ in Italian and /ts/ in French.

Thus, *c* in Old French as in Old English represented both a velar stop and a phonemically distinct, palatalized or affricated derivative of this stop.[4] By the end of the thirteenth century French (and Latin) /ts/ was reduced to /s/, thus giving the correspondence *c* →/s/ in a large number of words which were later borrowed into English; e.g., *cease, ceiling, cement, cider, circle, civic, cist.* By analogy, *c* then replaced certain *s* spellings in the fifteenth and sixteenth centuries in English, e.g., *ice, mice, lice, cinder.* The resulting pattern for *c* pronunciations gives /s/ in MnE for *c* before *e, i* or *y,* and /k/ otherwise.[5] As stated earlier, this pattern is obscured somewhat in medial position for those occurrences of /s/ which palatalize to /š/ (e.g., *ocean, special*). Nevertheless, the basic correspondences for *c* are almost totally predictable.

PROBLEM II: *The Minim Problem*

According to some writers (e.g., Mossé, 1952) a series of orthographic changes were instituted in the thirteenth century to make handwritten documents easier to read. In each case the major concern was to avoid a sequence of downstrokes or minims, since in the carolingian script which was used at that time such succesions were difficult to read. A sequence of three downstrokes, for example, could be read as *in, ni, m, iii, ui, iu,* or *w.* Some of the indicated changes such as the use of *y* as a variant of *i* resulted from similar Norman practices; others like the inversion of *hw* were devised especially for English. In the latter change a more phonologically accurate spelling *(hw)* was sacrificed for a more legible one *(wh).* Thus, OE hwaet *(what)* was respelled *whaet* in Middle English (ME).

Several purely graphic changes also occurred at this time and in each the avoidance of minim sequences was clearly a motivating factor. One such change was the addition of the dot over the lower case *i,* which according to Pyles (1964) developed from a "faint sloping line" which ME scribes introduced to distinguish *i* from contiguous *m, n,* and *u,* and to distinguish *ii* from *u.* A second change involved the distribution of the curved and angular forms of *u (u* and *v)* which were used in OE and ME indiscriminately for both consonant and vowel values. Middle English scribes tended to use *v* initially and *u* elsewhere, regardless of whether they

represented consonants or vowels. However, when *u* would be adjacent to *m* or *n*, an exception was made for legibility through the substitution of *v* (Pyles, 1964).

In these changes the desire to increase legibility appears to be the major concern. However, the role of legibility in four other spelling changes requires closer examination. These are: (1) *y* used as a variant of *i*; (2) *hw* inverted to *wh*; (3) *o* substituted for *u* in the vicinity of *u (v, w)*, *m*, and *n*; and (4) *k* replacing *c* before *i, e, n, l.*

y as a variant of i

In early OE the graph *i* represented both long and short forms of a high front unrounded vowel, while *y* represented phonemically distinct high front rounded vowels (long and short). By late OE, at least in the dominant OE dialect, unrounding merged these four vowels into two high front unrounded vowels: a long one and a phonemically distinct short one. Both *i* and *y* were used in late West Saxon for these vowels and while some scribes preferred one symbol over the other, others used both of them seemingly without discrimination.

In Middle English the Anglo-Norman tradition brought the letter *u* for high front rounded vowels, which occurred in native words in certain dialects (up to about 1200) and in French loan words. The symbol *y* therefore remained available for breaking up sequences of minims, as claimed by Mossé (1952). As plausible as this hypothesis appears, no convincing evidence has ever been adduced in its favor.

To the contrary, an inspection of the better known Middle English texts shows a clear lack of such practice. In the *Owl and the Nightingale* (c.1250) and Layamon's *Brut* (c.1250), for example, there is no use of *y* at all, while in *Handlyng Synne* (c.1400) *y* is preferred to *i* in all positions. In *King Horn* (c.1260?), *Ayenbite of Inwyt* (1340) and *Sir Gawayn and the Grene Knyght* (c.1380-1420) both *i* and *y* are used without apparent concern for minim sequences.

wh for hw

Whether the conversion of OE *hw* to ME *wh* was due more to the minim problem or to analogy with the other h-diagraphs (viz., *ch, sh, th, ph,* and *gh*) cannot be answered with the available evidence. In early ME and particularly in Kentish, *hw* occurs alongside *hu*. The normal progression to *wh* passes through a *w*-spelling, indicating that the cluster /hw/ had been leveled, perhaps to /ʍ/ or to /w/. *Wh* spellings occur as early as the eleventh and twelfth centuries, but do not become established until at least the middle of the thirteenth century (see *OED*, s.v. *wh*). If OE /hw/ remained unaltered in ME, the reversal of *hw* to *wh* would be unprecedented in that it would have reversed the order of pronunciation. The most plausible hypothesis is, therefore, that /hw/ was leveled to a single sound just as initial /hr/, /hl/, and /hn/ were leveled to /r/, /l/, and /n/ respectively in early Middle English. The occasional extension of *wh* in ME to /w/ words which were not /hw/ forms in OE (e.g., *wife, wild, willow, win*) seems to support a claim for /w/. But this leaves unexplained the retention of *h* in the *wh* spellings, as opposed to a simple deletion such as occurred with the *hn, hr,* and *hl* spellings.

If /hw/ had merged with /w/, we might expect many Modern *wh* spellings in words which were not historically /hw/ forms. However, except for *whelk* (OE *weoloc*) no such forms exist now, even though as noted above, occasional *wh* spellings did occur in Middle English in words which did not originally begin with /hw/. Furthermore, as noted by Scragg (1974), no old English *wh*-word which has survived into Modern English is spelled other than with *wh*. These facts strongly support a shift from the Old English cluster /hw/ to a phoneme which contrasted with Middle English /w/, that is, /ʍ/.

It doesn't seem unreasonable to speculate, given the circumstances just stated, that Middle English scribes found *hw* no longer acceptable for the single sound /ʍ/, but resisted employing *w* for both this sound and /w/. *Wh* would have been a logical substitute, based on analogy with the other consonant plus *h* spellings which they had introduced or reintroduced, especially since these latter spellings also represented single sounds, or in the case of /č/, a complex sound that evolved from a single sound. The desire to

avoid minim sequences may have been an additional factor in the adoption of *wh*, but there is little support for the minim problem as the sole justification for an *hw* to *wh* shift.

o for u

The strongest evidence for an overt attempt to avoid long sequences of minims appears to be found in the substitution of *o* for *u* in the vicinity of *m, n, u, v,* or *w*. By the middle of the thirteenth century a number of OE words which had either long or short /u/ (spelled *u*) had been respelled with an *o*; e.g., *above, come, honey, love, son, tongue, wolf, wonder.*

The convention of using *o* for earlier *u* begins in late Latin and is extended first to French and then to English. Anglo-Norman scribes, in contrast to their Old English counterparts, did not adopt distinct scripts for the languages they wrote (Scragg, 1974). Nevertheless, as Craigie (1942) points out, the change of *u* to *o* was probably not based entirely upon graphic considerations, in that a number of *um* and *un* words escaped permanent alteration; e.g., *crumb, dumb, dun, gun, hum, run.* Many such words did, however, have alternate *o* forms which did not survive.

Vachek also points out a second cause for variation between *u* and *o*, the graphical differentiation of homophones. For example, the native English and the Anglo-Normans. "Traditional scribal practice of English rendered such /u/-phoneme by the letter *u*, while the Anglo-Norman usage, guided by purely technical considerations of graphical clearness, regularly availed itself of the grapheme *o* in such situations."

Vachek goes on to point out that a second cause for variation between *u* and *o*, the graphical differentiation of homophones. Modern English *sun* and *son* both derive from identical OE noun stems, which were spelled *sun* in OE. However, since the fourteenth century, the current spelling distinction has been maintained.

Scragg (1974, p. 44) doubts that the *u-o* change was motivated by legibility, but bases his argument upon the assumption that "it is unlikely that English readers of the Middle Ages read letter by letter any more than modern readers do." This argument can be objected to on two grounds. First, the average reader in the Middle Ages probably read considerably less than the average

modern reader and may therefore have relied on different reading strategies, of which letter-by-letter reading is a likely candidate. Second, the word recognition strategies of experienced readers, while not letter-by-letter in the sense implied by Scragg, still require visual resolution of individual letters (Massaro, 1975). Any graphical device which broke up sequences of minims would therefore have aided in segmenting letters within a word, regardless of whether the words were recognized visually or through letter-by-letter decoding.

All-in-all, the minim problem as a basis for the *o-u* change is quite plausible, in spite of Scragg's reservation about Medieval word recognition habits. Yet, when viewed in light of the spelling changes themselves, as reflected in the orthography of representative Middle English manuscripts, the case for overt scribal interference is not totally convincing. The substitution of *o* for *u* in the vicinity of *v, u,* and *w* appears to be more consistent than in the vicinity of *m* and *n*. But in all of these cases, other considerations can not be entirely eliminated.

k for c

Mossé (1952, p. 9) claims that "[the letter *k*] was fairly regularly used before letters like *i, e, n, l* where *c* would have produced in the writing a succession of downstrokes or 'minims' difficult to distinguish." Of these letters *i* and *e* represent a special case, in that a preceding *c* might be pronounced either hard or soft (see above). Thus, the use of *k* for an earlier *c* in these environments has a strong phonological basis (e.g., *kind, keep,* and *kitchen*; ME *kynde, kepe, kuchene*; OE *cynde, cepan, cycene.*

For *c* before *l,* no *kl*-spellings have survived into MnE, and only a few can be found in earlier periods judging from *OED* data. For the OE spelling *cn-, kn-* is the regular ME form by the middle of the thirteenth century, but the number of words in this category is exceedingly small. This leaves as evidence the *c* environments in which *k* was not substituted, and in particular those which had a curved letter after *c*. But in this class, which includes such basic terms as *cow* and *care, k* spellings appeared occasionally from the middle of the thirteenth until the first quarter of the fourteenth century. In short, although words like *knight* and *knave* were

respelled with a *k* even though either *c* or *k* would suffice, they are hardly sufficient evidence for invoking the minim problem as a basis for the change.

In summary, it is difficult to establish the minim problem as the basis for any of the four changes introduced above. The strongest cases can be made for *o* in the vicinity of *u, v,* and *w,* and for *c* before initial *n,* but even these are not without question. The most plausible hypothesis is the one advanced by Vachek (1959); that is, that different scribal practices co-existed and that only the Anglo-Norman scribes made a strong effort to avoid minim sequences.

PROBLEM III: *The Influence of the Chancery Scribes*

The fifteenth and sixteenth centuries mark the peak of the Renaissance and the beginning of the modern period. It was the time of Machiavelli and Tasso, of Leonardo, Michelangelo, and Raphael, of Luther and Calvin, of Rabelais and Montaigne, and of Erasmus. The study of man flourished, the classics were revived and education became a property of the middle class. Few, if any areas of human interest escaped renovation—art, religion, literature, education, all were affected. Mannerism and anti-Mannerism, the Reformation and the Counter-reformation, Humanism, and the reform of Greek and Latin pronunciation, all reflected the view that the noblest study of mankind was man. The Renaissance brought, along with an awakening nationalistic spirit, a new concern for education. For centuries education had been an ecclesiastical concern, open primarily to those entering religious orders. But now, for the first time in England, control of learning was placed in secular hands, and education soon became an essential concern of the intellectually liberated middle class. "So long as the monasteries furnished a safe and easy refuge from the struggle of existence, and monasticism forced celibacy on churchmen, who largely depended on the patronage of the monasteries for their chances of promotion, education made little impression on society at large. . . . The expansion of Elizabethan England . . . was due to the immense extension of lay initiative and effort in every department of national life; and not least in the sphere of education and the schools" (Leach, 1915, pp. 331f).

With the Renaissance came also a renewed interest in the English language. The first English grammars, the first English readers, and the first spelling reform tracts for English all appeared in the course of the sixteenth century.[6] Interest in the orthography reached a new height, and while John Hart was arguing for reform in the direction of phonetic spelling, the remainder of the populace quietly accepted reforms based upon etymology and morphology.

The flavor of the Renaissance is evident in the restoration of Latin spellings in hundreds of English words, but other influences were also present. Printing was an established force by the middle of the sixteenth century and the more consistent orthographic conventions of the early printers gained acceptance. The runic thorn (þ), for example, was not present in the Roman type stocks of the first printers of English, and therefore was replaced by *th*.[7] Caxton's *gh-* in *ghost* and *ghastly* (but not in *guest* and *geese*) and an increased use of *z* were adopted also and became permanent fixtures in the orthography. In addition, the mass production of books brought about a subtle change in the function of orthography. With limited production of handwritten documents, writing was intended in most instances for reading aloud. But with the rise of printing, the written appearance of words gained in importance. The graphic differentiation of homonyms and the graphic identity of allomorphs became essential. Such factors were also influential in French orthography, according to Pope (1934, p. 282): "The works written in the vernacular in the older period has been destined to be sung or read aloud, but the great mass of legal documents were composed to be read, and thus spelling came to be regarded more and more as a matter for the eye, a tendency that was increased when printing multiplied the number of readers. It became therefore more and more usual to use spelling both to distinguish homonyms and to link together related words wherever possible."

Classical influences worked on both ends of the spelling-sound relationship. On the one hand, reforms in Latin pronunciation occasionally led to reforms in the pronunciation of English words borrowed from Latin, without a corresponding change in the orthography. On the other hand, orthographic changes were made

to display classical origins, usually without changes in the pronunciation. The pronunciation reform came primarily in the relationships based on *s* and *x*. According to Dobson (1958, II, p. 929) "The English pronunciation of Latin . . . must . . . have used [z] for Latin intervocalic *s*; . . . but the 'reformed' pronunciation of the sixteenth century substituted [s] for [z] in the pronunciation of Latin *s*. . . ." Thus, for example, *asylum* and *desolate* have *s* corresponding to /s/ where we would expect /z/.

Both of these pronunciation reforms are unusual in that they represent sound change by fiat. Latin, however, was the basis of all school curricula in England. Students were weaned on Lily's *Carmen Monitorium*, cut their baby teeth on Aesop and Terence, and reached maturity on Lily's *Grammar*. Latin was also used in religious and legal proceedings. It seems natural, therefore, that changes in the pronunciation of Latin would be extended immediately to cognate forms in English. Why more Latin influence is not present or why under similar conditions other languages were not altered in a similar way cannot be answered. We know only that the sound changes appeared to be derived from similar changes in Latin pronunciations and that Latin was a thriving concern at the time.

The spelling reform was restricted mostly to changes that helped reflect the classical origins of certain words. The most important of these involved the addition of letters, e.g., *b* in *debt, doubt, subtle,* and *subject* (cf. ME *dette, dout, sutle, suget*); *h* in *heritage, hostage, hour, myrrh,* and *rhyme* (cf. ME *eritage, ostage, ore*; OE *myrra, rim*); and such substitutions as *c* for *s,* and *ch* for *c* (see above); *ph* for *f* in *pheasant, philosophy,* and *physics*; *t* for *c* or *s* before *ion* (cf. ME *nacion*); *dg* for *cch, ck* for *cc (kk),* and *dg* for *gg*.[8] In some cases, silent letters became pronounced, like the *b* in *subject* (cf. ME *suget*), the *c* in *perfect* (cf. ME *perfit*), and initial *h* in *hermit* and *hostage* (neither had initial /h/ in Latin or French). In other cases, however, the spelling change had no influence on pronunciation.

Some of these changes occurred in the last quarter of the fifteenth century, but the majority became established in the first twenty to thirty years of the sixteenth century. How could so many spellings be overhauled so rapidly, especially without any recognized authority for such alterations? Who decided what the spellings were to be and how were the decisions disseminated?

The answers to these questions are found in the office of the English chancery at Westminster which was, next to Parliament, the highest court of judicature in England. According to Marckwardt (1975, p. xiv) "Standard English had its origin in the kind of language employed in the courts of law and the government offices of Westminster." From the tenth century on, the chancery (or secretariat) was responsible for the daily affairs of government, including the recording of acts and ordinances and the keeping of financial records.

The king's proclamations and other official documents were written by the royal scribes and distributed to the major towns where scriveners and their apprentices made further copies. Until about 1430 these documents were written in Latin or French, but with the restoration of English as an official language early in the fifteenth century, the movement toward a standard English orthography began. "Not until a body of professional scribes with a close common bond appeared in London was a uniform orthography established there, and such a body was not supplied until the scribes of the royal chancery adopted English as their usual written medium" (Scragg, 1974, p. 34).

With the renewed emphasis on English and a nation-wide dissemination system, the royal scribes in the chancery were in a position to mold the course not only of spelling, but of vocabulary, syntax, and usage as well. The documents they produced, especially towards the end of the fifteenth century, demonstrate that they made full use of their power. "Starting with the documents of Henry VIII [1509-1547], the royal government exhibits an astonishing facility in its command of language. . . . The best of them have a felicitous Shakespearean ring, and in fact this excellence of language appears in sixteenth-century political documents before it is found in belletristic literature" (Cantor, 1972, pp. 296f).

Pending a thorough analysis of the spellings in royal documents of this period—which remains to be done—it seems justified to claim that the chancery scribes were the agents of orthographic change from the end of the fifteenth century until at least a century later. Printing probably played a role in consolidating what changes were made, but not until about the middle of the sixteenth century. From the inauguration of printing in England in

1476 until at least the 1530's, printers showed little interest in consistent orthography. Caxton, for example, spells the town where he spent the major part of his life before returning to England in at least six different ways: *brugges, bruges, brudgys, Brugis, bruggis, brudgis.* The other early English printers, in particular Wynkyn de Worde and Richard Pynson, were not English by birth and all three were, in the words of Scragg (1974, p. 67) "outside the mainstream scribal tradition."

Thus when classical learning was the vogue, the royal scribes were able to promulgate an extensive overhauling of English spellings based on Latin and Greek models. Who the particular scribes were who led this movement and how well trained they were in the classical languages remains to be discovered. Perhaps the answers to these questions still lie within the royal archives.

1. In general, /s/ palatalizes to /š/ before a high front vowel or glide, but only when the primary word stress falls on the immediately preceding vowel. The /s/ which palatalizes is generally spelled *c (ocean, social)* or *t (nation, rational)*. This latter spelling is a Renaissance replacement for an earlier *c* or *s*.
2. However, /s/ in the cluster /ks/ was usually spelled with the letter *x* while /ts/ in Biblical names and occasional English words was spelled with the letter *z* (Campbell, 1959).
3. The Runic alphabet differentiated the velar and palatal variants of /k/, but OE scribes failed to adopt similar mechanisms.
4. The use of *c* for the cluster /ts/ occurs in a few Middle English words but was not widely used (Mossé, 1952).
5. *ch* is assumed to be a spelling unit separate from *c*.
6. The *Ormulum*, a Northeast Midlands religious text written about 1200, contains the earliest example of a reformed spelling system for English. No information has survived, however, about the author (other than his name) or about the motivation for the spelling system.
7. *th* was used in the earliest English texts before thorn and eth were introduced. Thereafter it appeared occasionally in words of Greek derivation.
8. In some instances the change began at an earlier date but was not widely accepted until the Renaissance.

REFERENCES

Campbell, A. *Old English grammar.* Oxford: Oxford University Press, 1959.

Cantor, N. F. *The English.* New York: Simon and Schuster, 1967.

Craigie, W. A. Some anomalies of spelling. *Society for Pure English,* tract No. 59. London, 1942.

Dobson, E. J. *English pronunciation 1500-1700.* 2 vols. Oxford: Oxford University Press, 1957.

Leach, A. F. *The schools of Medieval England.* New York: Macmillan, 1915.

Marckwardt, A. H. Usage. In S. Landau (Ed.), *The Doubleday dictionary.* Garden City, New York: Doubleday, 1975.

Massaro, D. W. Primary and secondary recognition in reading. In D. W. Massaro (Ed.), *Understanding language: an information processing analysis of speech perception, reading, and psycholinguistics.* New York: Academic Press, 1975.

Mossé, F. [*A handbook of Middle English.*] (James A. Walker, trans.). Baltimore: John Hopkins Press, 1952.

Murray, J. A. H. (Ed.), *The Oxford English dictionary.* 12 vols. Corrected re-issue. Oxford: Oxford University Press, 1933.

Penzl, H. The phonemic split of Germanic 'K' in Old English. *Language,* 1947, *23,* 33-42.

Pope, M. K. *From Latin to Modern French with especial consideration of Anglo-Norman.* Manchester: Manchester University Press, 1974.

Pyles, T. *The origins and development of the English language.* New York: Harcourt, Brace & World, 1964.

Scragg, D. G. *A history of English spelling.* Manchester: Manchester University Press, 1974.

Vachek, J. Two chapters on written English. *Brno studies in English,* 1959, *1,* 7-34.

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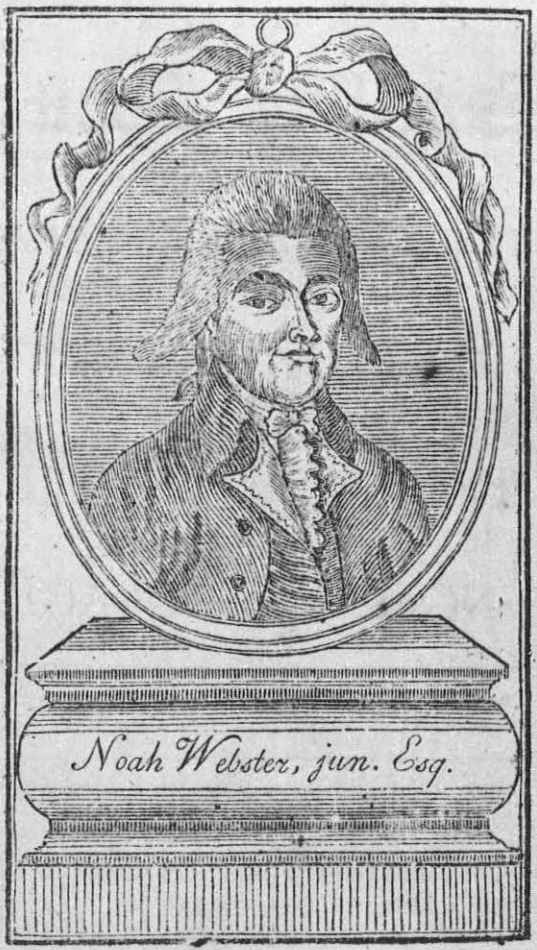

THE

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MDCCLXXXIX.

Noah Webster's blue-back speller was the most popular spelling book in American educational history, and even rivals the Dick and Jane readers in influence on the teaching of reading. Noah Webster graduated from Yale in 1778 and began teaching school shortly thereafter in Orange County, New York. Due to the War, textbooks from England were scarce, so Webster compiled his own spelling book, which was printed in Hartford in 1783 under the cumbrous title *The First Grammatical Institute of the English Language*. A grammar and reader were issued soon after. By the time of Webster's death in 1842, the title had been changed, first to *The American Spelling-book* and then to *The Elementary Spelling-book*—and over 24 million copies of the text had been sold.

Due either to the popularity of Webster's text, or the spirit of the times, or some combination thereof, spelling had assumed by the beginning of the 19th century a major role in the elementary school curriculum. Daily and weekly spelling matches were common, as were awards for the top spellers. By the time of the Civil War, however, the Webster speller had fallen from favor, and in time spelling itself began a slow decline in curricular popularity from which it has never recovered.

The pages reprinted here (through the courtesy of the American Antiquarian Society) are from the introduction to a 1789 edition of the speller and reflect the state of the art in phonology at the end of the 18th century. Webster held that the letter *h* had no sound, but acknowledged that others classed it among the gutteral letters. *W*, as in *will*, he classed as a vowel, forming a diphthong with the succeeding vowel sound. But Webster was not "strenuous in this opinion," as he states in a footnote on page 12, and conceded that *w* might in fact be a consonant. (Note also the variations in spelling for *diphthong*. These may be due to Webster, but are more likely attributable to Isaiah Thomas and Ebenezer T. Andrews, the printers of this edition.)

All-in-all, Webster's orthography was a reasonable pedagogical description, and his speller succeeded both in elevating spelling in the school curriculum and in providing his sole support through its royalties for the 20 years during which he wrote *The American Dictionary of the English Language*.

Richard L. Venezky

THE

AMERICAN SPELLING BOOK.

ANALYSIS *of* SOUNDS *in the* ENGLISH LANGUAGE.

IN the Engliſh alphabet there are twenty five ſingle characters that ſtand as repreſentatives of certain ſounds.

A, b, c, d, e, f, g, i, j, k, l, m, n, o, p, q, r, ſ, t, u, v, w, x, y, z. *H* is not a mark of ſound*, but it qualifies or gives form to a ſucceeding ſound.

In order to underſtand theſe letters, or rather the ſounds they repreſent, it is neceſſary to define the meaning of the words vowel, dipthong and conſonant.

A *vowel* is a ſimple articulate ſound. A ſimple ſound is formed by opening the mouth in a certain manner, without any contact of the parts of it. Whenever a ſound can be begun and completed with the ſame poſition of the organs, it is a ſimple ſound.

A *dipthong* is a union of two ſimple ſounds, pronounced at one breath. To form a dipthong there are neceſſarily required two different poſitions of the organs of ſpeech.

A *conſonant*, or, as it was called by the ancients, a *cloſe letter*, forms no diſtinct articulate ſound of itſelf. In pronouncing moſt of the Engliſh conſonants, there is required a contact of the parts of the mouth, and the union of a vowel; though ſome of the conſonants form imperfect ſyllables of themſelves.†

According to theſe definitions, let us examine the letters of the Engliſh alphabet.

The letters *a*, *e*, *o*, are vowels. With the ſame poſition of the organs, with which we begin the ſounds of

*It is, however, queſtioned by ſome critics, whether *h* may not be ranked among the gutteral letters.

† This is the caſe with the ſemivowels in the words *feeble*, *baptiſm*, and with almoſt all terminations in *le*.

theſe letters, the ſounds may be prolonged at pleaſure; they are therefore ſimple ſounds or vowels.

The letters *i* and *y* are either vowels, dipthongs or conſonants. They are both characters for the ſame ſounds, in different words and different ſituations. In the words *die, defy*, they are the ſame dipthong; we begin the ſound with nearly the ſame poſition of the organs as we do broad *a*, though not quite the ſame; but not being able to continue that ſound, we run into *e*, and there cloſe the ſound. Two different poſitions of the organs are required; conſequently two different ſounds are formed, which being cloſely united in pronunciation, are denominated a *dipthong*.*

In the words *ſight, pit, glory, Egypt, i* and *y* are vowels. The ſound of *i* in *ſight*, would run into *e*, and ſo form a dipthong, if it were not prevented by the following conſonant. But the ſhort ſound of *i* and *y*, as in *pit, glory*, is always a ſimple ſound.

In the words *valiant, youth, i* and *y* have a liquid ſound, which is formed by a contact of the tongue and upper part of the mouth, and certainly deſerves a place among the conſonants.

U is a vowel or a dipthong. Its ſhort ſound, as in the word *tun*, is a vowel; its long ſound in *truth* is a vowel; its long ſound when it cloſes a ſyllable, as in *due*, is a dipthong, compoſed of its ſimple ſound in *truth*, and the ſound of *oo*. In a few words it anſwers the purpoſe of the conſonant *y* before *a*, as in *union, unanimity*, which are pronounced *yunion, yunanimity*.

W is a vowel; its ſound being nearly the ſame as *oo* ſhort, in *root*. Before another vowel it is uſed to form a dipthong; as in *will, dwell*, which are pronounced *ooill, dooell*. Some authors contend that it is a conſonant; but according to the foregoing definitions, it is rather a vowel.†

As theſe characters have different powers, ſo there are other vowels expreſſed by the ſame characters. The ſound of *a* in *hall*, which is called broad *a*, is a diſtinct vowel;

* This has been ſometimes called a *double vowel*, which is in ſtrict propriety abſurd; for if a vowel is a *ſimple* ſound, then a *double* vowel muſt be a *double ſimple* ſound. Nor can we pronounce a compound ſound; for in all dipthongal ſounds, we pronounce one ſimple ſound firſt, then the other, and each diſtinctly. The definition of a dipthong given above appears to me accurate.

† I am not ſtrenuous in this opinion; it approaches ſo near a conſonant that it can hardly be diſtinguiſhed from one.

vowel; in *father, huzza*, it is another; *o* in *move*, is another; and the ſhort *u* is alſo a diſtinct vowel. Several of the vowels have a ſhort ſound or quantity, and, what is very ſingular, the ſhort and long ſounds are in moſt inſtances repreſented by different characters. Thus,

Long { a in late, makes ſhort e in let.
e in feet, makes ſhort i in fit.
o in pool, makes ſhort u in pull.
a in hall, makes ſhort { o in holly, *or* a in wallow.
a in father, makes ſhort a in fathom. }

The ſhort ſounds of the four firſt, are almoſt always repreſented by other characters, as may be obſerved in the examples.

That *e* in *let* is the ſame vowel as *a* in *late*, is demonſtrable by this conſideration, that no more than one articulate ſound can be formed by the ſame poſition of the organs of ſpeech. The only difference in the ſound that can be made by the *ſame* configuration of the parts of the mouth, is to prolong or ſhorten the *ſame* ſound. According to this principle we obſerve, that *late* and *let*, being pronounced with the ſame aperture of the mouth, and with the ſame diſpoſition of the organs, as nearly as the conſonant *t* will permit, muſt contain the ſame vowel. The ſame rule will apply to the other examples.

All the long and ſhort ſimple ſounds in Engliſh are found in the following words:

Long.

1	2	3	4	5	6	7	8
a	a	a	e	i	o	o	u

late, aſk, hall, here, fight, note, move, truth.

Short.

2	1	4	9	7	3
a	e	i	u	u	o *or* a

hat, let, fit, but, buſh, not, *or* what.

By theſe it appears that all the vowels, except the 5th, 6th, 8th, and 9th, have duplicates—that thoſe vowels that are placed under the ſame figure, are only different qualities of the ſame ſound—and that deducting the five duplicates, there remain nine diſtinct ſimple ſounds or vowels*.

* *I* and *u* are vowels only when followed by conſonants. The proper vowels are *ſeven*.

According to the foregoing theory of ſounds, *oi*, *oy*, *ou*, and *ow*, are diphthongs. The two former are different combinations for the ſame ſound, which is always compoſed of broad *a* and long *e*. The two latter are alſo repreſentatives of the ſame ſound, which is compoſed of a ſound peculiar to itſelf, and that of *oo*. Example of the former we have in the words, *voice*, *joy*; of the latter in *loud*.

The other diphthongs in the language are attended with no difficulty, as a juſt pronunciation of them naturally reſults from the cuſtomary ſounds of the letters that compoſe them.

The conſonants are divided into mutes and ſemivowels.

The mutes are b, d, g, k, p, t. In pronouncing theſe ſyllables, eb, ed, eg, ek, ep, et, eſpecially the three laſt, which are perfectly mute, the voice is wholly intercepted by the conſonant. But in pronouncing the ſemivowels, f, l, m, n, r, ſ, v, z, in the ſyllables ef, el, em, en, er, eſ, ev, ez, we may obſerve the voice is not wholly intercepted at once, but the ſound of the conſonant is prolonged. Beſides theſe there are five conſonants, which for want of ſingle characters we expreſs by double letters; *ſh* in ſhall; *th* in think; *th* in thou; *ſ* in deluſion, and *ng* in ſing. Theſe are all ſimple conſonants and ſemivowels. It would be well if they were called by the names, *eſh*, *eth*, *ezh*, *ing*.

H is not a mark of ſound, but only of a ſtrong aſpiration or emiſſion of breath.

C is totally ſuperfluous; being always ſounded like *k* or *s*.

Q is always followed by *u*, and is the ſame as *k*.

J is a mark of the ſounds of *dzh*.

X is always ſounded like *ks*, *gz*, or *z*.

The conſonants therefore will ſtand thus;

Mutes; eb, ed, eg, ek, ep, et.

Semivowels; ef, el, em, en, er, es, ev, ez, eth, eſh, ezh, ing.

Note; l, m, n, r, are diſtinguiſhed by the name of liquids.

The ſounds of our vowels are ſo exceedingly capricious and irregular, particularly in monoſyllables, that they are hardly reducible to rules; for which reaſon, the learner is referred to the tables for his knowledge of them. A few general rules reſpecting the conſonants, will be advantageous.

B has one invariable ſound, as in *bird*; before *t* and after *m* it is ſilent, as in *doubt, dumb*; as alſo in *ſubtle*.

C before a, o, u, ſounds like *k*; before e, i, y, like *s*.

Thus, ca ce ci co cu cy.
ka ſe ſi ko ku ſy.

It is uſeleſs when followed by *k* in the ſame ſyllable, as in *ſtick*. It is always hard like *k* in the end of words, as in *public*, pronounced *publick*. It ſounds like *ſh* in the terminations *ceous, cious, cial*; as in *cetacious, gracious, ſocial*, pronounced *cetaſhus, graſhus, ſoſhal*. It is ſometimes ſilent, as in *indict*.

D has always the ſame ſound, as in *rod*. It is ſometimes ſilent, as in *handkerchief*.

F has always its own ſound, as in *offer*; except in the word *of*, where it ſounds like *v*, *ov*.

G has two ſounds; one, as in *go*; the other like *j*, as in *gentle*. It has its firſt or hard ſound before *a, o, u*; in general its ſecond or ſoft ſound before *e* and *y*; and is either hard or ſoft before *i*. See table 35.

It is very frequently ſilent. 1ſt, before *m*, as in *phlegm*; 2dly, before *n*, as in *ſign*; 3dly, before *h*, as in *fight*; except when *gh* ſound like *f*, as in *laugh*.

H is a mark of ſtrong breathing, but is ſilent in *heir, hour, honeſt, honour*, and their derivatives.

J is the mark of a compound ſound, which is always the ſame, viz. that of *dzh* or ſoft *g*, as in *joy*. It is never ſilent.

K has but one ſound, as in *king*. When it precedes *n*, it is always ſilent, as in *know*; and when united with *c*, at the end of words, either *c* or *k* is ſuperfluous, as in *ſtick*.

L has one ſound only, as in *lame*, and it is ſometimes ſilent, as in *ſalmon, walk*.

M has but one ſound, as in *man*, and is never ſilent.

N is alſo uniform in its ſound; but is always ſilent after *m*, in the ſame ſyllable, as in *hymn*.

P has but one uniform ſound, as in *pit*; and is ſilent between *m* and *t*, as in *contempt, ſumptuary*.

Q has the power of *k*, and is always followed by *u*. In ſome words of French original it terminates the ſyllable, as in *pique, oblique, burleſque*, where *ue* are not ſounded. It is never ſilent.

R has always the ſame ſound, as in *barrel*, and is never ſilent.

S has four ſounds; that of ſoft *c*, as in *ſo*; of *z*, as in *riſe*; of *ſh*, as in *miſſion*; of *zh*, as in *oſier*, *braſier*. But theſe ſounds can hardly be reduced to general rules. It is ſilent in *iſle*, *iſland*. Its various ſounds may be found in the 26th and 28th tables.

T has its own proper ſound, as in *turn*, at the beginning of words and end of ſyllables. It has the ſound of *ſh* in all terminations in *tion* and *tial*; as *nation*, *nuptial*; except when preceded by a *t* or *x*, when it ſounds like *ch*, as in *queſtion*, *mixion*.

V has always the ſame ſound, as in *voice*, and is never ſilent.

X has two compound ſounds, viz, thoſe of *ks* and *gz*. When followed by an accented ſyllable beginning with a vowel, it has the ſound of *gz*, as in *exiſt*, *example*. See table 39. In almoſt every other ſituation, it has the ſound of *ks*, as in *vex*, *exerciſe*, *exculpate*.

In the beginning of ſome Greek names, it ſounds like *z*, as, *Xerxes*, *Xenocrates*, *Xenophon*.

Z has two ſounds; its proper ſound, as in *zeal*; and that of *zh*, as in *azure*. Its place is commonly uſurped by *s*, as in *wiſdom*, *reaſon*.

Simple Conſonants marked with double letters.

Th has two ſounds, aſpirated and vocal. Aſpirated in *think*, *bath*. Vocal in *thou*, *that*. For the different ſounds of *th*, ſee the 12th and 32d tables, where the words are collected and the ſounds diſtinguiſhed.

Sh has but one ſound, as in *ſhall*, and is never ſilent. But its ſound is expreſſed by ſeveral other characters; by *c*, in *ſocial*; by *t*, in *motion*; by *s*, in *paſſion*. The French *ch* has preciſely the ſame ſound as *ſh* in Engliſh, as in *machine*, *chevalier*.

The ſound of *s* in *diffuſion*, *occaſion*, &c. which is the French *j*, is beſt repreſented by *zh*. For the words in which this ſound occurs, ſee table 28.

Ng form a ſimple ſound, which at the end of words is always uniform, as in *ſing*, *ſtrong*. When the word ends in *e*, the *g* is ſoft like *j*, as in *range*. When a ſyllable is added, the ſound of *ng* flows into the next ſyllable; as in *hang*, *hanger*. Except *long*, *ſtrong*, *young*, the derivatives of which are pronounced, ſtrong-*ger*, young-*ger*. Beſides theſe we have ſeveral combinations of conſonants, but one

of which is pronounced; theſe Mr. Sheridan calls *digraphs*, that is, *double written*.

Sc before *a*, *o*, *u*, and *r*, are pronounced like *ſk*; as, *ſcale*, *ſcot*, *ſculptor*, *ſcribble*; before *e*, *i*, *y*, like ſimple *s*, or ſoft *c*; as, *ſcene*, *ſcience*, *ſcythe**.

Sc before the ſeveral vowels are thus pronounced:

ſca	ſce	ſci	ſco	ſcu	ſcy
ſka	ſe	ſi	ſko	ſku	ſy

Ch in words originally Engliſh ſound like *tſh*, as in *charm*.

In words derived from the Greek and Hebrew, and in technical terms, like *k*; as, *chorus*, *Melchiſedeck*.

In words derived of the French, generally *ſh*, as in *chivalry*, pronounced *ſhivalry*. See the 33d and 34th tables.

Gh ſound like *f*, as in *laugh*; or are ſilent, as in *light*. This rule admits of no exception.

Ph have invariably the ſound of *f*, unleſs in *Stephen*, where the ſound is that of *v*.

N. B. The ſounds of the vowels digraphs, ſuch as *ea*, *ei*, &c. can hardly be reduced to general rules; and it is rather unneceſſary in this work, as moſt words where they occur are collected into the proper tables, where their ſounds are diſtinguiſhed.

RULES,

For placing the accent in words of more ſyllables than one, and for pronouncing certain terminations.

Accent is a ſtreſs of voice on ſome word or letter of a word, that diſtinguiſhes it from others. If it falls on a vowel, it renders it long, as in *glory*; if it falls on a conſonant, the preceding vowel is ſhort, as in *habit*.

Simple diſſyllables are generally accented on the firſt ſyllable: But there are many exceptions that are not reducible to rules.

In the following catalogue, the nouns are accented on the firſt, and the verbs on the laſt ſyllabls.

Nouns.	*Verbs.*
A or an ab'ſtract	To abſtract'
ac'cent	accent'
af'fix	affix'
cem'ent	cement'

* More accurately ſpelled *ſthe*.

THE ALPHABET.

Roman Letters.		Italic.		*Names of the Letters.*
a	A	*a*	*A*	a
b	B	*b*	*B*	be
c	C	*c*	*C*	ce
d	D	*d*	*D*	de
e	E	*e*	*E*	e
f	F	*f*	*F*	ef
g	G	*g*	*G*	ge
h	H	*h*	*H*	aytch *or* he
i	I	*i*	*I*	i
j	J	*j*	*J*	ja
k	K	*k*	*K*	ka
l	L	*l*	*L*	el
m	M	*m*	*M*	em
n	N	*n*	*N*	en
o	O	*o*	*O*	o
p	P	*p*	*P*	pe
q	Q	*q*	*Q*	cu
r	R	*r*	*R*	er
s	S	*ſ s*	*S*	es
t	T	*t*	*T*	te
u	U	*u*	*U*	u
v	V	*v*	*V*	ve
w	W	*w*	*W*	double u
x	X	*x*	*X*	eks
y	Y	*y*	*Y*	wi *or* ye
z	Z	*z*	*Z*	ze
& *		&		and

Double LETTERS.

ct, ff, ffi, ffl, fi, ſſ, ſk, ſh, ſi, ſb, ſl, fl, ffi, ſt.

* This is not a letter but a character ſtanding for *and*. Children ſhould therefore be taught to call it *and*; not *and per ſe*.

Résume des Articles

Traduction: Fernand Baudin

Les digraphies en publicité; le public-cobaye *par James R. Jaquith*

Les publicitaires (anglo-saxons) donnent souvent aux noms des articles de grande consommation une orthographe très éloignée de la forme régulière: ARRID, BISKIT MIX, DETANE, KLEEN, WHEY-FERS. L'article donne 1500 specimens et démontre (1) que ces orthographes publicitaires correspondent à ce que les linguistes appellent diglossies (2) qu'ils ont influencé les critères orthographiques du public et (3) qu'elles sont rendues possibles par certaines particularités graphico-phonologiques de l'anglais.

L'intériorisation des schémas orthographiques en anglais *par Robert H. Secrist*

Les auteurs examinent (1) les constantes sous-jacentes à la confusion apparente de l'orthographe anglaise (2) le degré ou l'abscence d'intériorisation des unes et des autres ainsi que les graphies attribuées à quelques phonèmes identiques inscrits dans des groupes différents (3) les réactions de quelques anglais cultivés quant à la correction et à la recevabilité des correspondances entre les phonèmes et les graphèmes envisagés et (4) les réactions des mêmes aux différentes solutions proposées pour la réforme de l'orthographe anglaise -telles que la séparation- des collatéraux lexicographiques, la différentiation graphique des affixes d'inflexion ainsi que des homophones.

Les implications phonologiques de la prononciation orthographique *par Andrew Kerek*

La prononciation orthographique est généralement considérée comme un phénomène isolé, contingent et hasardeux. Elle est pourtant susceptible de structuration et peut produire de profonds effets phonologiques. Elle peut induire des restructurations de la forme sous-jacente des morphèmes d'un paradigme orthographique et déclancher par là une redistribution des valeurs dans le système phonologique. Elle peut aussi à plusieurs reprises bloquer -et affaiblir du même coup- les règles phonologiques synchroniques, faisant ainsi apparaître les formes phonologiques sous-jacentes. Ce faisant elle ralentit l'évolution phonologique et peut même, à la longue, attirer le caractère phonétique d'une langue. En raison de l'alphabétisation généralisée l'influence de l'orthographe sur la phonologie est devenue une variable externe importante dont les linguistes devront désormais tenir compte dans leurs descriptions.

L'enseignement de l'orthographe et les enfants sourds de naissance *par Arthur I. Gates et Esther H. Chase*

Quelques méthodes et théories d'enseignement de l'orthographe ont été expérimentées sur des enfants sourds de naissance. Par rapport aux résultats qu'ils obtiennent dans d'autres disciplines linguistiques et par rapport aux enfants normaux de même niveau scolaire, les enfants sourds (1) l'emportent de loin (2) témoignent d'une perception globale extraordinaire. L'une et l'autre performance semble due à une perception visuelle plus aigüe des mots. L'orthographe s'améliorerait considérablement chez les enfants normaux si l'on s'attachait davantage à la perception et à l'écriture des mots.

Quelques observations au sujet de l'orthographe anglaise *par Richard L. Venezky*

Afin de donner aux non-spécialistes une idée de la diversité et de la complexité des influences qui ont marqué l'orthographe anglaise contemporaine. L'article retrace trois problèmes historiques. Le premier concerne la prononciation du c initial, doux ou dur, et s'efforce d'en suivre l'évolution à travers l'histoire du proto-anglais, de l'anglais primitif, du vieux français et du latin; ainsi que dans les usages des scribes anglo-normands. Le deuxième problème concerne l'omission des successions de petits traits descendants comme source possible de certaines modifications orthographiques dans l'anglais moyen. L'auteur examine au passage les différentes traditions scripturaires, les modifications phonétiques, et la cohérence des pratiques scripturaires. Troisièmement, l'allteur relève le rôle des chancelleries dans la réforme de l'orthographe anglaise selon des modèles classiques.

Kurzfassung der Beiträge

Übersetzung: Dirk Wendt

Digraphie in Anzeigen: Die Öffentlichkeit als Versuchskaninchen *von James R. Jaquith*

Die orthographischen Konventionen der Werbemedien weichen für viele häupige Konsumartikel beträchtlich von der gewöhnlichen richtigen Schreibweise ab: z. B. ARRID, BISKIT MIX, DETANE, KLEEN, WHEYFERS. In diesem Aufsatz werden mehr als 1500 Ausdrücke dieses Brauchs analysiert und es wird gezeigt, daß die Orthographie der Anzeigen (1) ein graphisches Analogon zu dem darstellen, was Linguisten Diglossie nennen, (2) die Kriterien beeinflußt hat, nach denen englische Leser die Richtigkeit der Rechtschreibung beurteilen, und (3) ermöglicht wird durch besondere Eigenarten des graphisch-phonologischen Systems, in dem die englische Sprache geschrieben wird.

Verinnerlichung englischer orthographischer Muster *von Robert H. Secrist*

Dieser Aufsatz untersucht (1) die regelmäßigen Muster, die dem weitgehend oberflächlichen Chaos der englischen Rechtschreibung zugrundeliegen, (2) das Ausmaß—oder das Fehlen—von Verinnerlichungen sowohl dieser Muster als auch der graphischen Wiedergaben bestimmter Phoneme in verschiedenen Umgebungen, (3) die Reaktion von Lesern in ihrer Muttersprache hinsichtlich der "Richtigkeit" oder Natürlichkeit der verschiedenen Phonem-Graphem-Entsprechungen in diesen Situationen, und (4) die Reaktionen dieser bei Wiedererkennungs-Tests, bei denen alternative Lösungen für bestimmte besondere Probleme der englischen Rechtschreibungsreform angeboten werden—wie beispielsweise eine lexikographische Trennung von Wörtern mit gemeinsamer Wurzel, polymorphe Darstellung von Beugungs-Endungen, und graphische Unterscheidung von Homophonen (gleichklingenden Wörtern).

Die phonologische Bedeutung buchstabengetreuer Aussprache *von Andrew Kerek*

Obwohl die buchstabengetreue Aussprache gewöhnlich als eine isolierte zufällige, Treffer- oder Fehler produzierende Glückssache betrachtet wird, hat sie doch strukturierende Eigenschaften und vermag erstaunliche phonologische Wirkungen zu produzieren. Sie vermag die Umstrukturierung der zugrundeliegenden Form von Morphemen innerhalb eines orthographischen Schemas einzuleiten und so die Neuverteilung funktionaler Ladungen im Phonemsystem auszulösen. Sie kann ebenso wiederholt synchrone phonologische Regeln blockieren (und dadurch schwächen), mit dem Ergebnis einer phonetischen Gliederung der zugrundeliegenden Phonemformen; auf diese Weise verlangsamt sie nicht nur die phonologische Veränderung, sondern kann auf lange Sicht die phonetische Eigenart einer Sprache ändern. Die Verbreitung des Lesens hat den Einfluß der Rechtschreibung auf die Phonologie zu einer bedeutsamen äußeren Variablen gemacht, welche die linguistische Beschreibung nicht länger außer acht lassen kann.

Methoden und Theorien zum Rechtschreibungslernen, erprobt an tauben Kindern *von Arthur I. Gates und Esther H. Chase*

Es werden Forschungsergebnisse über die Lese- und Rechtschreibefähigkeit von taubgeborenen Kindern berichtet. Im Vergleich an ihrer sonstigen linguistischen Fähigkeit und zu normalen Kindern ähnlicher Leseerfahrung (1) übertreffen taube Kinder diese beträchtlich in ihrer Rechtschreibefähigkeit, und (2) besitzen sie außergewöhnliche Wortauffassungsfähigkeit. Beide Fähigkeiten scheinen auf eine besonders wirksame Art der Wahrnehmung zurückzuführen zu sein, die auf ihrer visuellen Reaktion auf Wörter beruht. Für normale Kinder, die Rechtschreibung lernen, kann viel gewonnen werden durch visuelle Untersuchungen des Wortes und die Beherrschung der Gewohnheit, das Wort zu schreiben.

Bemerkungen zur Geschichte der englischen Rechtschreibung *von Richard L. Venezky*

Um Nicht-Fachleute der englischen Linguistik in die Vielfalt und Komplexität der Einflüsse auf die moderne englische Rechtschreibung einzuführen, werden drei Probleme aus der Geschichte der englischen Rechtschreibung vorgestellt. Das erste betrifft die Entwicklung der harten und weichen Aussprache des Buchstaben *C* am Wortanfang und konzentriert sich auf die

historische Rekonstruktion von Formen aus dem Proto-Altenglischen, altenglische, altfranzösische und lateinische Lautverschiebungen sowie anglo-normannische Schreibgewohnheiten. Das zweite Problem betrifft die Vermeidung von Folgen kurzer senkrechter Striche (minims) als motivierende Ursache für gewisse Rechtschreibungsänderungen im Mittelenglischen. Mitberücksichtigt bei der Betrachtung dieses Problems werden gleichzeitig herrschende Schreib-Traditionen, Lautverschiebungen, und Schreib-Konsistenz. Schließlich wird noch die Rolle der Schreiber des obersten englischen Gerichts bei der Reformation der englischen Rechtschreibung im Rahmen klassischer Richtungen untersucht.

Resumen de los Aríctulos

Traducción: Ana Fisch

Digrafía en la publicidad: el público como conejo de indias *por James R. Jaquith*

Las convenciones ortográficas adoptadas por empresas publicitarias en relación con muchos productos de consumo de alta frecuencia parten significativamente de comunes medios de corrección, como por ejemplo: ARRID, BISKIT MIX, DETANE, KLEEN, WHEY-FERS. Este estudio analiza más de 1500 expresiones de este uso y muestra que el deletreo publicitario (1) constituye el análogo gráfico de lo que los linguistas llaman diglossia, (2) ha influenciado el criterio por el cual lectores de habla inglesa juzgan la corrección en el deletreo, y (3) se hace posible por propiedades especiales del sistema gráfico-fonológico con el cual el idioma inglés se escribe.

Internalización de modelos de ortografía inglesa *por Robert H. Secrist*

Este artículo examina (1) los modelos de regularidad que subrayan el caos, en su mayor parte superficial, de la ortografía inglesa, (2) la extensión o la falta de internalización de ambas normas y de las representaciones gráficas de fonemas específicos en diferentes ambientes, (3) las reacciones de nativos letrados de habla inglesa sobre la relativa "rectitud" o naturalidad de las diferentes correspondencias de fonemas-grafemas en esas situaciones y (4) las reacciones de estos elementos informadores con respecto a experimentos de reconocimiento que contienen soluciones alternada sobre ciertos problemas especiales que se encuentran en la reforma del deletreo inglés—como por ejemplo la separación lexicográfica de agnates, la representación polimórfica de afijos inflexionales y la distinción gráfica de homófonos.

La relevancia fonológica de la pronunciación en el deletreo *por Andrew Kerek*

Aunque comunmente visto como un asunto aislado de dar al blanco, de azar, el deletreo puede crear normas y producir profundos efectos psicológicos. Puede inducir a la reestructuración de la subrayada forma de morfemas dentro de un paradigma ortográfico y así dar lugar a una redistribución de pesos funcionales en el sistema fonémico. Puede también bloquear (y por lo tanto debilitar) repetidamente reglas fonológicas sincrónicas que resultan en la capa fonética de subrayadas formas fonémicas; de esta manera no solo detiene el cambio fonológico pero puede a lo largo, alterar el carácter fonético de una lengua. El extendido alfabetismo ha hecho que la influencia de la ortografía en la fonología sea una variante externa significante cuya descripción linguística no se puede ignorar.

Métodos y teorías de aprendizaje de deletreo obtenidos de estudios sobre niños sordos *por Arthur I. Gates and Esther H. Chase*

Se ha dado anuncio a la investigación sobre la abilidad en la lectura y el deletreo de niños congenitalmente sordos. En comparación con sus otras abilidades linquísticas y a su vez con niños normales de similar experiencia en el leer, se ha hallado que los niños sordos (1) sobresalen en su habilidad de deletreo y (2) poseen extraordinaria abilidad en la percepción de palabras. Ambas abilidades aparecen a raíz de la efectiva y peculiar forma de percepción que se basa en la reacción visual hacia palabras. En el caso de niños normales el buen deletreo se puede obtener a través del estudio visual de la palabra y del dominar la costumbre de escribir la palabra.

The Authors

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Notas sobre la historia del deletreo ingles
por Richard L. Venezky

Para introducir a personas no especializadas en linguística inglesa la diversidad y complejidad de las influencias que han formado el deletreo inglés moderno, tres problemas se presentan en la historia del deletreo inglés. El primero traza la evolución de la pronunciación dura y blanda de la letra inicial *c* y se centra en la reconstrucción histórica de formas de inglés proto-antiguo, inglés antiguo, francés antiguo y cambios en sonidos latinos y en prácticas escribas anglo-normandas. El segundo problema concierne el evitar las secuencias de rasgos cortos descendientes (minims) como un factor motivador de ciertos cambios de deletreo en el inglés medio. En los problemas examinados aquí se incluyen tradiciones escribas que coexisten, cambio de sonido y consistencia escriba. Finalmente se examina el papel de los escribas ingleses en la reforma del deletreo.

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