

SPELLING AS A CATEGORICAL ACT

by

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Learning to spell is an activity which consumes a significant portion of each student's academic life. How great a portion depends upon the vagaries of time, place and the emphasis directed toward its study by parents, teachers, and/or the particular instructional program used in a classroom.

A great deal has been written about the external aspects of the orthographic system which determines how and why we spell words as we do. And yet, there is virtually nothing known about the internal functioning of the brain itself as each man struggles to learn a greater or lesser number of the approximately 4,500,000 words comprising our English orthographic system.

Although it will not be the major purpose here to explain in detail the neural aspects of spelling, an effort will be made to shed new light upon the workings of the orthographic system, and in so doing, relate the spelling act to the internal sensory-motor-perceptual-conceptual network of neural operations through which every other aspect of human activity must pass and be processed.

For too long have theorists and educators alike contributed to the myth of the "outsidedness" of spelling which permeates most of the thinking done thus far on the subject. Considering the infinitely complex and invariant sequence of abstract letter symbols used to represent such diverse meanings as there and incomprehensibility, to be mere accidentals of language, existing somehow outside of the total cognitive framework, is on its face an absurdity. To assume that the human brain has the capacity to rote memorize several millions of letter sequences, in the absence of some underlying categorical unity binding them all together in an associative network with speech symbols, is to make spelling a unique processing act, qualitatively and quantitatively different from the oral processing system from whence these external sequences derived originally.

The major purpose here will be to demonstrate and explain that there is a deep structural unity and order in the medium itself which governs the English orthographic system. It is a unity with an essential and all encompassing rhythm and simplicity. It is a unity whose essence lies within the medium itself, functioning independently and transcending even the linguistic meanings encompassed within its structural boundaries.

Although but a relative few of its secrets have as yet been rendered clear, it is already apparent that we have grossly misunderstood the essential character of this underlying structure. Our feeble individual and collective human attempts to superimpose a thousand different artificially constructed instructional techniques, spelling rules and generalizations, and homely sayings, have distorted that essential character and rendered the spelling act virtually incomprehensible to those who must fathom its meanings. Learning to spell has become for most a tortuous, disparate series of fragmented activities, whose totality does not even remotely equal the sum of the parts. For those who do not overcome these faulty instructional systems, and allow their own internal processing systems to pierce the veil of confusion thrown over this essentially simple and unified act, spelling becomes a nightmare. The debilitating effects include at the least, faulty reading and writing, and at worst, disorientation and complete loss of learning motivation.

Learning to spell is a categorical act. In short, there can be no irregular words, only categories whose number may incorporate as few as one, or as many as a thousand within its familial confines. To think of spelling in any other manner is to make it an act lying outside the framework used by the brain to process and react to all other incoming and outgoing stimuli.

Perhaps the greatest barrier to clear thinking about our orthographic system has been the chaos caused by confusing knowledge about the derivation and meaning of words, with the medium used to express these equally complex aspects of language. The English orthographic system has but twenty-six letter symbols, representing approximately forty-four speech sounds. Although the number of spelling combinations conceivable within the framework of these numbers is infinite, there are in reality a large number of specific limitations placed upon the construction of these letter sequences. They have been placed there by the unconscious forces of linguistic evolution.

Our receptive mechanism simply will not readily accept and store certain combinations of letters for normal processing. The only way deviant combinations such as sxfgoqa or rooogb are accepted for at least short term processing and storage, is by resorting to unusual memory responses when the individual is urged to act for some highly motivating reason. Such combinations fall outside of the categorical framework used to process all other speech related incoming letter sequences. And yet, much longer sequences can be accepted and remembered with little difficulty for the mature speaker and speller when the input is categorical and integrally related to the overall speech-print processing network, as in quicozylophonography and interbiservicalistic.

Another detriment to a clearer understanding of our orthographic system has been the attempt of spelling reformer to develop spelling systems with a constant one-to-one relationship to spoken English. Such efforts, though well intended, have been based upon a misunderstanding, not only of the psycholinguistic and evolutionary nature of our orthographic system, but also of a failure to recognize the great variance in the pronunciation of individual sounds and words within the boundaries of a country, a small community, and even within the limits of a single family. Our orthographic system has evolved according to a set of underlying structural unities which may never be fully grasped since they are in a state of constant flux. Nevertheless we are capable of a fuller understanding than has been exhibited to now, one which should allow us to respond more effectively than in the past.

Learning to spell is initially an associative act, just as learning to speak is. The task of the learner in developing spelling competency is to associate a specific sequence of orally produced sounds with a specific sequence of visually perceived letters. At the outset, it should be a play activity, one in which the learner experiments while developing secure associations between the two media involved speech and print. Optimally, the learner should have facility in four requisite areas of receptive and expressive function from the beginning of instruction. He should start with a) relatively clear speech and good hearing, b) facility in his discriminate ability to visually observe and recognize letter symbols, c) facility in the graphic reproduction of the letter symbols and words he will be asked to work with, and finally, d) the ability to integrate all of these areas of function into a smoothly functioning whole. Lack of facility in one or more of these areas of function lays the groundwork for most of the problems observed in cases of faulty spelling.

For the child who has limitations in any of the requisite spelling readiness skills, delay in formal instruction is to be preferred to starting with a faulty functional base.

What is essential for all who work with children is a clear perception of the differences in meaning carried by the words spelling and writing. Writing is the ability to express ideas and emotions graphically for external processing by one's self and others. A picture is a form of writing, just as much as any of the thousands of coded systems developed for the purpose of conveying meaning. The difference between pictographic and abstract writing systems lies in the representativeness of the end result. A picture is directly representative, while a code (alphabetic writing in the case at hand) is only indirectly representative. A dog cannot in any way be construed as resembling the letters d-o-g.

In essence, learning to write alphabetically involves the ability to understand that printed letters and words are related to spoken sounds and words only in that they are both sequences of abstract symbols which can be uttered or written, if the producer adheres to the sequence governing their production. Once the learner has made that associative neural relationship internally and develops facility in the reproduction of the printed form of the sounds flowing from his mouth when he speaks, he has reached the highest level of abstract functional ability man has yet achieved. He can place spoken abstractions on paper and, in so doing, communicate both with himself and others.

Spelling is not writing but rather an artifact of it. It is however, a marvelously sophisticated skill, one which eventually becomes essential in maturing to the fullest uses of language. Although it is possible to develop superior ability with abstract language in the absence of maximum spelling proficiency, such occurrences are the exception rather than the rule. Those who learn to function in a sophisticated manner with print in both its decoding and encoding aspects, in the absence of secure spelling ability, are those who have been subject to a relatively unique experience. They have, in effect, developed a compensation allowing them to experience a rich and full awareness of all the complexities of language. In the absence of the most secure and useful feedback mechanism available in the development of such awareness, the human hand.

Learning to deal with the more formal aspects of our language system, uniformly occurs over an extended period, and for the most part, through the agency of those unconscious linguistic forces which have shaped our language to its present state. Too often, sight is lost of the remarkable complexity of our language and its reciprocal function. Both the speech and print media, working in concert with internal neural mechanisms, permit us to transcend reality and deal with abstract concepts which have no reality outside of each man's cognitive system. These reciprocal forces allow us to learn not only to express our ideas and emotions orally and on paper, through the use of combinations of sounds and letters standing for concrete reality, as in dog, house, smile, and walk. They permit us in time to represent abstractions which flow from these elements of concrete experience, but which have no external existence of their own. No one has ever sensed such abstract concepts as decency, justice, or democracy directly, only countless acts involving concrete reality which in their totality we have come to recognize as acts to be so identified.

To assume that this mature level of abstract symbolic function will be automatically or easily experienced to its fullest extent in the absence of facility with all aspects of the print act, is to make an extremely doubtful assumption. Those who do are truly examples of great uniqueness and individuality who give testimony to the human brain's infinite compensatory adaptability.

Just as the ability to deal with abstractions such as decency, justice and democracy, is the result of unconscious forces activated through a long oral and graphic experience with symbols representing concrete reality in virtual infinite variation, so also is the ability to spell at the highest levels of structural function. It is a result of unconscious forces activated through a long and varied written experience with letters, words and word groupings, which most accurately and consistently reflect the close structural relationship existing between speech and print.

Expecting children to deal easily with complex combinations of these elements in the print medium, even when fluent speech is present, is akin to expecting an infant to pronounce the words mother or bottle with immediate clarity, simply because it has perceived the relationship between the sounds ma-ma and ba-ba and the realities represented by those two significant early words. It is clear that we have grossly misunderstood the complexity of the print medium, and in so doing, have placed the emphasis during the early learning stages of both spelling and reading upon the association of meaning with words on a page, rather than upon the development of sensory-motor, perceptual, associational and integrative facility, prior to asking the learner to make the connection between what he says and the complex combinations of line and curve segments he observes somewhere on a page before him.

Learning to spell should not be a difficult experience for any individual who is not grossly impaired, if he is not initially exposed to the act lacking in sufficient sensory motor, perceptual and conceptual readiness, and continues to be exposed to systematic instruction for a significant period of time. Such instruction should be active and geared constantly to building associations between spelling and all other aspects of the total language experience.

For those who have already been exposed to the agony of years of instruction and have reached maturity and still can't spell, the task is possible, but more difficult, since there has been a significant build-up of anxiety about print. Teaching teenagers and adults to spell depends for success upon the total life needs, motivation, perseverance and regularity of instruction possible at this relatively late date in each individual's development.

The new key to learning to spell being presented, here, is contingent upon the development of a new awareness of the inherent categorical unity existing in our orthographic system, when one bases a spelling system upon the vowel and its relationship to oral speech. Within the framework of each individual vowel, it is possible to construct a developmental spelling system which has unity, order, sequence and logical adaptability. Within such a framework, categorization is eminently possible, for such a system permits the establishment of a comprehensive set of principles for use in classifying or describing the members of a category or class. It is also possible to provide for a line of demarcation between those members of a class having a direct sound-to-symbol, or phonic relationship, and those class members whose relationship is indirect, or structural.

In this framework, the gradual increase in complexity observable, as word forms ascend the hierarchic chain from direct phonic relationships to indirect structural relationships, can be categorized at each level of transformation, since these levels of transformation have a significant degree of class consistency and regularity. Although relationships at the phonic level are less difficult to perceive and respond to, they are no less consistent, and adhere no less stringently, to categorization at the more complex structural level of orthographic function.

As with the conceptual data involved in formal dealings with abstract concepts, such as decency, justice and democracy, word formations at the structural level have an existence and integrity of their own, transcending meaning and beyond any need for directness in the sound symbol relationship. At this level, their external existence depends solely upon the internal neural mechanisms which have evolved gradually and are activated by, and associated with, their underlying oral, visual and kinesthetic structures, structures whose external form involves subtle transformations of affixes and inflections interacting with essential root constructions.

In our studies, my associate, Phillip Trembley and myself, have succeeded in developing a categorical system which has great unity in both horizontal and vertical directions. Thus far our examinations have been directed primarily toward letter forms which carry the long and short sounds of the vowels a, e, i, o, and u. The number of words able to be classified within the organizational framework already developed constitute a significant portion of the English orthographic system.

The fifteen vowel forms, including individual vowels and vowels and their signal, categorized thus far are referred to for our purposes as Stages. These fifteen stages, which as a totality constitute the horizontal organization of the new system, are as follow:

HORIZONTAL ORGANIZATION

Stage 1 - <u>ee</u> (need)	Stage 9 - <u>u-e</u> (mule)
Stage 2 - <u>e</u> (pet)	Stage 10 - <u>u</u> (bug)
Stage 3 - <u>a-e</u> (lake)	Stage 11 - <u>ai</u> (rain)
Stage 4 - <u>a</u> (cat)	Stage 12 - <u>ea</u> (team)
Stage 5 - <u>i-e</u> (five)	Stage 13 - <u>ie, y</u> (pie, my)
Stage 6 - <u>i</u> (sit)	Stage 14 - <u>oa</u> (coat)
Stage 7 - <u>o-e</u> (rope)	Stage 15 - <u>ue</u> (Sue)
Stage 8 - <u>o</u> (hot)	

Simultaneous with their function in the horizontal classification system each of these fifteen stages are individually a part of a vertical hierarchy constituting a second form of categoricity in the new system. This vertical organization consists of five distinct levels of specific linguistic function which are referred to as Levels of Difficulty. This vertical classification system lends itself to still further sub-division, one allowing for the demarcation of words into those which respond to direct sound symbol processing, referred to as Phonic Processing, and words responding to indirect processing, and referred to as Structural Processing.

The levels are organized as follows:

Vertical Organization

Levels of Difficulty

Phonic Processing	-	Level I - phonic processing with vowels and individual consonants
		Level II - phonic processing with vowels and blends of consonants
		Level III - phonic processing with vowels and consonant digraphs
Structural Processing	-	Level IV - structural processing with inflected endings
		Level V - structural processing with prefixes, suffixes and inflections

Horizontal processing as it occurs in Levels I, II, and III, incorporates all those words having the same direct sound to symbol relationship in each of the fifteen stages. Words at these three levels all respond regularly and systematically to direct phonic processing as they are categorized for internal storage and recall, and external graphic representation.

Horizontal processing as it occurs in Levels IV, and V, incorporates all those words having the same indirect relationship in each of the stages. This second subdivision of process, Structural Processing, includes words which can no longer be considered solely in terms of their simpler and direct sound to symbol relationship. At this level they must be conceived of as words which may or may not have a direct sound symbol relationship, but which are nevertheless, bound by a set of secure and consistent principles. Their spelling and pronunciation are closely allied to both the speech system and the particular evolutionary origins from whence the words and their peculiar orthography were derived.

If one looks at the vowel e as represented first by the symbols ee and carrying the sound heard in meet, and then e as represented by the single symbol e and arraying the sound heard in met, the essential unity and integrity of a spelling system based upon the vowel can be readily observed. These two forms of the same vowel sound, referred to in the system as contrasting vowels, were chosen for a specific reason. In this new system there are five sets of contrasting vowels –

a – a-e, e – ee, i – i-e, o – o-e, u – u-e. Within the framework of these pairs there exists an extremely close familial bond, one which becomes obvious as one traverses up the hierarchic ladder.

A brief description of the five Levels of Difficulty, through the agency of these two specific Stages, will explain and exemplify how our orthographic system can be more regularly studied and understood. Such a clarification should serve the purpose of assisting those who must learn to make essential structural relationships in the development of spelling mastery at all levels of linguistic function. Continuation of our language as a viable system may depend upon the degree to which those who will use that system of expression in the future can be assisted to make operative the fullest uses of the collective and individual forces governing its operations.

Level I - Phonic processing with vowels and Individual consonants

It includes all total word units formed by combining a single vowel, or a vowel and its signal, with a single or double consonant.

ee as in meet

see
jeep
meet
deer
feed
eel

e as in met

pet
ten
red
egg
tell
mess

Level II – Phonic processing with vowels and blends of consonants it includes all total word units formed by combining a vowel, or a vowel and its signal, with individual and blends of consonants.

ee as in sleep

sleep
bleed
green
street
kneel
queen

e as in sled

(final position)		(initial position)
kept		sled
bend		stem
went		Fred
elf		dress
best		knelt
tempt		quest

Level III – Phonic processing with vowels and consonant digraphs

It includes all total word units formed by combining a vowel, or a vowel and its signal, with individual, double and blends of consonants, and consonant digraphs.

<u>ee as in sheep</u>		<u>e as in check</u>	
(initial position)	(final position)	(initial position)	(final position)
sheep	beech	when	Beth
cheer	speech	shed	mesh
wheel	screech	Chet	bench
thee	teeth	chess	sketch
three		thresh	squelch

Virtually every word in the English language bearing the vowel symbols ee and e and carrying the respective sounds heard in the words meet and met, can be placed categorically within the framework of the first three Levels of Difficulty. Lists containing most of these words can be found in THE SPELLING MASTERY AND DIAGNOSTIC REFERENCE KIT¹ and in SPELLING MASTERY².

These three Levels of Difficulty constitute a phonic category able to be learned for writing and spelling purposes, through the integrated use of all relevant sensory-motor input and output systems. The inference being drawn from what has been said to this point, is that this new system's external form is closely allied structurally to the internal neural processing mechanism. In short, it is believed that there has been, and continues to be, a reciprocity in the evolution of the external orthographic structure used to categorize the English language which parallels the evolution of the internal neural structuring mechanisms which the human brain has devised for purposes of storing and retrieving the information contained in graphic symbols. It is a system which of necessity must bear a close relationship with the speech storage and retrieval systems evolved for use in the development of spoken language.

In keeping with the view just espoused, it is necessary to further infer that the next two Levels of Difficulty, those involving Structural Processing, must bear an equally close relationship in the evolution of the external and internal structures used to categorize graphic symbolic information. These structures are those developed to deal with indirect or formal categorical information. They are structures which must of necessity bear a close relationship to those used on the oral level when dealing with abstractions arising from the prolonged use of language having direct or concrete associations. They are structures which permit

the brain to store and retrieve the symbolic data needed to represent words which do not have a direct sound to symbol relationship, such as decency, justice and democracy.

Level IV - Structural processing with Inflected endings

It includes all total word units formed structurally by the addition of inflected endings to those words already formed through phonic processes in the first three Levels of Difficulty. Included are those words formed structurally by the regularized addition of the inflections s, es, ing, ed, en, et, er, est, y, ier, iest.

<u>ee as in agreement</u>			<u>e as in petting</u>		
keeping	sweeter	cheery	lets	bending	checker
feeler	sleepy	wheeled	wetter	rests	shelled
seedy	fleeting	screeching	selling	melts	shredded
weedier	sneered	beeches	begged	crested	meshes
neediest	greediest	sheerest	penny	tempting	clenched
reeled	queerest	sheerest	messiest	wrecker	squelching
deepen	kneeled		pecking	quested	stretcher

Level V – Structural processing with prefixes, suffixes and inflections

It includes total word units formed structurally by the addition of prefixes, suffixes and inflections to those words already formed through phonic processes in the first three Levels of Difficulty.

<u>ee as in agreement</u>	<u>e-a as in complete</u>	<u>e as in intended</u>
disagreeable	completed	convent
indiscreetly	incompleteness	perfection
freedom	concretely	investment
proceeded	interceding	propellers
exceedingly	inconvenience	aggressively
needless	legalistic	remembered
cheerfully	cohesiveness	helplessness
redeeming	alleviate	impregnable

It is at Level V, the highest level of formal categorization, that the greatest subtlety appears. The interrelationships become ever more sophisticated, and yet, ever more capable of generalization. Once a consistency of transformation can be discovered within a stage, or vertical category, it can be presumed that the same transformational activity will most probably appear horizontally in related categories or stages.

For example, a group of words can be categorized in Stage I, Level V, which all have the spelling root ede as in cede, concede, accede, intercede, recede, secede, and precede.

When the affix ion is added to the root, the final e is dropped and the d is transformed into ss. Thus, a group of words able to be classified grammatically as verbs, are transformed into a group of nouns all bearing an identical orthographic configuration – cession, concession, accession, intercession, recession, secession and precession. Simultaneous with this shift in grammar and spelling, there occurs a regular change in pronunciation in the root vowel. It shifts from the long sound as heard in concede, to its short and contrasting sound in concession.

This same transformation can be found to occur with spelling roots involving the final d in each of the remaining long vowel stages – invade – invasion, divide – division, conclude conclusion. In the case of the vowels a, o, and u, only the orthographic change occurs, while in the case of the vowel i, both the orthographic and the pronunciation shift to its contrasting relative occur. The grammatic shift from verb to noun occurs in the case of all five vowels.

The advantages in this type of categorical approach in developing sound instructional procedures are myriad, for it allows for complete integration of instruction both horizontally and vertically.

To this point in time, it has been a virtual impossibility to differentiate instruction geared to assisting children to learn good spelling procedures in demarcating those to be used for words having a direct or phonic relationship, and those having an Indirect or structural relationship. A hierarchic system based upon the vowel allows for both differentiation and integration of procedures to be used in teaching and learning proficient spelling. For example, with the emphasis placed upon the sound aspects of the spelling act as it has been, the traditional approach for teaching children how to learn to make differentiated responses to words which ended in the same sound, but which had a different visual appearance, as in invention, complexion and expression was to instruct them in improved methods of rote memorization. Our mind set has been so conditioned to thinking of printed language as a disparate collection of fragments, we have failed to make even the simplest associations in related areas involving structure, function and meaning as aids in spelling. A better, and more systematic method for learning the proper spelling of words such as those given, is to cease thinking of them solely in terms of their syllabicate pronunciation, since the pronunciation of the final syllable is the same and has at the least four common possibilities - shun, sion, tlon, and xion.

Rather than persist in such difficult and ambiguous procedures,' children should be conditioned from the outset of instruction to break mind sets concerning the purity of sound relationships, and consider other linguistic aspects in their development of useful spelling attack procedures. In addition to sound relationships, they should be trained to consider also root meanings, syntax and pronunciation as aids in retrieving orthographic configurations in their exact sequence. A return to the root meaning and its proper pronunciation as aids in retrieving orthographic configurations in their exact sequence. A return to the root meaning and its proper pronunciation gives an immediate cue to the correct spelling to use prior to the addition of the affix ion – invent, complex, and express.

Teaching spelling outside of a total framework, divorced from its meaningful setting, results in fragmentation for the learner. It produces a learning environment which literally conditions him to fail to observe the overall structure and unity of the medium, as he expends his energies responding to the accidentals rather than the essence of the orthographic structure. In the absence of a categorical approach, he is forced to consider each word as a unique sequence of letter symbols, unrelated to all other members of its category.

Those who learn to spell in the face of such instruction are those whose internal resources have been mobilized to resist the illogic of such fragmented instruction. Instead they have allowed the unconscious forces available to each human being to perceive and respond to the inherent structure of the medium. The burden of proof for those who may disagree with this explanation of spelling as a categorical activity, related integrally with an internal neural structure governing all other aspects of human behavior, lies not with the author, but with those who disagree. To explain spelling in any other manner demands an explanation which would make it an act both qualitatively and quantitatively different from all other cognitive functioning, one which would make spelling a truly unique, and uncharacteristically unparsimonious, example of evolutionary activity.

References

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