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ABSTRACT

An illustrative taxonomy for some patterns for initially stressed two-syllable words which can be used in word attack instruction is presented and discussed in this paper. It is designed to be a part of an integrated communication skills program produced by Southwest Regional Laboratory (SWRL). Examples of word patterns whose primary dimension of classification is word ending are listed. The terminal design requirement was to sequence letter-sound rules used in phonics-based word attack instruction so as to optimize the rate at which items from the speech lexicon become decodable and hence potentially items of the sight lexicon. Thus, since a majority of the two-syllable words of English are initially stressed, variations of this pattern are suggested for introduction systematically and early in reading instruction. (MKM)

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SOME PATTERNS FOR INITIALLY-STRESSED TWO-SYLLABLE WORDS

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ABSTRACT

An illustrative taxonomy--whose function is to guide the generation of an instructional lexicon underlying the design of integrated Communication Skills and allied instruction--is presented, exemplarized, and preliminarily evaluated.

SOME PATTERNS FOR INITIALLY-STRESSED TWO-SYLLABLE WORDS

Word attack instruction seeks to transfer items from a speech lexicon to a sight lexicon. The course of word attack instruction depends in part on characteristics of the speech lexicon, which has two major components: a) items imputed to the child on entry into word attack instruction and b) items introduced over time to serve the unfolding requirements of instruction in all of the primary areas. If one's orientation to the second component is laissez-faire and descriptive, then the developing speech lexicon should serve the needs of word attack instructional objectives less well than if the component is in part engineered to serve those needs. Optimization of word attack instructional design necessitates that certain items be introduced into the speech lexicon somewhat earlier than under prevailing current practice. That is not to say that the second component of the speech lexicon should be designed in isolation from anticipated treatments of the technical terminology of unfolding primary instruction. That requirement should be carefully attended to. Rather, the view asserts that word attack instruction, for its own purposes, is as legitimate a consumer of new speech lexicon items as is mathematics or music.

New items are introduced into the speech lexicon in word comprehension instruction, a significant component of programs in all of the primary instructional areas. One facet of word comprehension skill is semantic-operational. The child is to understand the lexical meaning of base forms or of base components of morphologically-complex words. The other is morphological or syntactic. The child is to understand the structural meaning of affixes (particularly suffixes) and other components having such meaning.

Some common word endings--e.g., the Cle element of table, sable, rattle, tattle--are without structural significance in contemporary English. Such an ending tends to signal that the word belongs to a subset of the form classes of English--noun or verb in the case of Cle--but little else. While other word endings--e.g., the Cal ending in legal, regal, final, tonal--better establish form class, even here exceptions can be found--e.g., the noun sense of total. A requirement to design word attack instruction often will be served by presence in the speech lexicon of a set of words sharing a given word ending, whatever the grammatical status of that ending--yes, no, mixed. However, the word comprehension instruction that places such items into the speech lexicon sometimes will take a different form when the shared ending has grammatical status than when it does not. Instruction relating to certain word endings having grammatical significance might well be analogous to phonics-based word attack instruction. That is, the former seeks to promote an efficient or optimal rate of speech lexicon expansion by providing the child with a basis for generalizing word comprehension skill, whereas the latter seeks to promote an efficient or optimal rate of sight lexicon expansion by providing the child with a basis for generalizing word attack skill.

The foregoing comments suggest that production of the second, or developing, component of the speech lexicon is an engineering job that must serve several somewhat-related masters. All of these masters are not yet clearly in view. However, word attack and prerequisite word comprehension instructional requirements alone suggest that an early step in forming the second component of the speech lexicon will involve inventorying contents of word patterns whose primary dimension of classification is word ending.

This paper will deal illustratively with a portion of the word pattern domain germane to word attack instruction. An illustrative approach to the underlying taxonomic problem will be sketched. Certain of the word patterns identified will be extensively exemplarized.

Taxonomic Considerations

The terminal design requirement is to so sequence letter-sound rules used in phonics-based word attack instruction as to optimize the rate at which items from the speech lexicon (Lexicon A) become decodable and hence potentially items of the sight lexicon (Lexicon B). What words transfer from Lexicon A to Lexicon B is a function of the effectiveness of word attack instruction and of the particular rules covered by that instruction up to any point (see TN-1-71-9). And, of course, a function of what words are contained in Lexicon A, the problem at hand.

In building Lexicon A, we assume that one factor that should receive systematic consideration is item productivity referenced to word ending. This can only be established at a specified point in word attack instruction--that is, in consequence of the prior introduction of certain rules. Ideally, the instructional point selected would be at or near the end of such instruction, that is, at a point where at least all of the more productive rules have been introduced. Manual generation of exemplars requires a less ambitious undertaking. Hence, item productivity referenced to word ending will be predicated on a previously-instructed set of rules on the order of those that would be introduced during an initial 10 units of word attack instruction--or First Year. Only two-syllable words whose second syllable is a common ending will be considered. In view of the foregoing constraints, one might think of the immediate objective as one of defining test item universes consisting of such words. Assuming that suitable word comprehension instruction parallels introduction of the first 10 units of word attack instruction, then testing for word attack skill using two-syllable words whose second syllable is a common ending might become apt soon after such instruction is completed.

A majority of the two-syllable words of English are intially-stressed--that is, of form 'Syl-Syl. The word patterns to be identified constitute a major portion of the 'Syl-Syl component of a taxonomy of word patterns for two-syllable words. Many 'Syl-Syl words have the form 'Syl + C-ending— e.g., canning, basic, brandy. For such

words, a small number of the simpler rules--e.g., those introduced during the first 10 units of word attack instruction--account for the 'Syl + C component; a few additional rules account for the more productive endings (which could in some instances be taught as sight word elements). We begin by assuming that the 'Syl + C-ending form is the most productive one for patterns of interest. That is, we assume the form regular in the sense that an alternative pattern--e.g., 'Syl + ending--yields appreciably fewer items.

Those words will be considered whose first syllable ends with $\bar{V}$ (a simple long vowel) or VC (a simple short vowel with consonant) and whose second syllable begins with C. Intersyllable patterns will be defined on these interior elements of the word. The intersyllable patterns considered regular at the outset are:

1. $\bar{V}$ + C; e.g., able, baby, staple.

2. VC + C; e.g., Betty, bladder, scribble.

3. VC + C'; e.g., dandy, trample, splendid.

Typical first-syllable forms end in $\bar{V}$ or VC. For coding purposes, first-syllable forms are as follows:

1. $\bar{V}$ or VC.

2. $C\bar{V}$ or CVC.

3. $CC\bar{V}$ or CCVC.

4. $CCC\bar{V}$ or CCCVC.

5. Other; e.g., CCVCC.

For purposes of exemplarizing items for the different word patterns of interest, the following rules referencing to the 'Syl + C component will be used: B10, C10, D10, F10, G12, H10, J10, K10, L10, M10, N10, P10, R10, S10, T10, V10, W10, Y10, SH10, or TH10 before a vowel; CK10 or any of the above except H10, J10, R10, W10, or Y10 after a vowel; A15, E15, I15, O15, or U15 (short vowels); and A11, E11, I11, O11, or U11 (long vowels). (Rule notation is that of Berdiansky, et al., TR15.)

Primary classification will be by word ending. Only some of the possible word endings will be surveyed. Each 'Syl-Syl word pattern will be coded to reflect word ending (digits to the left of the decimal), intersyllable pattern (first digit to the right of the decimal), and first-syllable form (second digit to the right of the decimal). Word endings of interest are:

10. y, ie, ey

20. C

21. ɘck

22. ɘd

23. ɘl, le

24. ɘm

25. ɘn

26. ɘr

27. ɘs

28. ɘt

29. Other ɘC.

30. ɘge

40. ess

41. ness

42. less

50. ion or i n, ive, ure

51. tion, sion

52. Other Cion

53. tive, sive

54. ture, sure

55. Other Cure

60. ish, ly, ful

61. ish

62. ly

63. ful

70. ing

80. ow

81. low

82. Other Cow

Word Pattern 10.12 would be exemplarized by baby; 10.22, by cabby; 10.32, by candy; 23.13, by stable, etc. The n.12, n.22, and n.32 word patterns, taken as a group, tend to be moderately to quite productive and to reference well to a First Year emphasis on CV and CVC constructions. These word patterns will be extensively exemplarized below. The n.n1, n.n3, n.n4, and n.n5 word patterns will be treated only perfuntorally.

First Syllable = $\bar{C}V$ or CVC

Where an n.n2 pattern is skipped below, either it was not possible to find even one exemplar for it or the exceptions seemed to be more abundant than members of the pattern. Some exceptions to pattern are noted at the end of the section. A few items were repressed as probably not needed for purposes of word attack instruction and other primary instruction. Many items would be deleted when the form of an integrated Comprehension Skills instructional program design comes into clearer focus. Other items were missed due to unreliability of manual generation of exemplars, which is tedious. Some items may have been set aside on a too-narrowly idiolectic basis. Others may have been included that, for the same reason, should not. However, all factors considered, the listings that follow, even though not definitive, at least should indicate something about item extensiveness for each of the word patterns. (Only a few exemplars are shown for the ing ending, which is by far the most productive ending.)

Pattern Exemplars

10.12	baby	lady	Sadie	Daly	Jamie	Mamie	Janey
	Katie	Casey	matey	Davy	navy	wavy	Riley
	wily	tiny	viny	Doby	Moby	Cody	bogie
	dogie	Foley	holy	homey	Romy	pony	Tony
	dopey	ropy	Ruby	Judy	duly	Julie	ruly
	fumy	puny					
10.22	cabby	gabby	shabby	tabby	caddy	daddy	paddy
	daffy	taffy	baggy	Jaggy	shaggy	dally	rally

	Sally	tally	hammy	jammy	mammy	Sammy	Tammy
	canny	Danny	fanny	nanny	happy	pappy	sappy
	sassy	batty	catty	fatty	patty	galley	valley
	laddie	Maggie	Fannie	lassie	Hattie	Mattie	Teddy
	Peggy	belly	jelly	Kelly	Benny	Denny	Jenny
	Kenny	Lenny	penny	Betty	jetty	petty	Debbie
	Tessie	Libby	biddy	jiffy	piggy	Billy	dilly
	filly	hilly	nilly	silly	Willy	Jimmy	shimmy
	finny	ninny	shinny	tinny	dippy	hippy	nippy
	missy	sissy	Kitty	witty	middie	Millie	Tillie
	Timmie	Bobby	hobby	lobby	shoddy	toddy	foggy
	loggy	soggy	dolly	folly	golly	holly	jolly
	Molly	mommy	Tommy	Donny	poppy	mossy	potty
	doggie	collie	Ronnie	Bonnie	Lottie	cubby	hubby
	Buddy	muddy	ruddy	Duffy	Guffy	huffy	puffy
	buggy	muggy	gully	sully	dummy	mummy	funny
	gunny	runny	sunny	guppy	puppy	fussy	mussy
	gutty	nutty	putty	Gussie			
10.32	bandy	candy	dandy	handy	Randy	sandy	pansy
	shanty	Patsy	nasty	Wendy	Betsy	testy	lefty
	hefty	pesky	nifty	shifty	milky	silky	Lindy
	Mindy	windy	misty	risky	bitsy	Bobsy	lofty
	softy	topsy	sudsy	dumpy	jumpy	dusky	husky
	bumpy						
21.22	haddock	hammock	hassock	paddock	mattock		

22.12	jaded	naked	bated	dated	gated	hated	mated
	rated	David	sited	coded	doted	noted	toted
	voted	humid	cupid	muted			
22.22	ballad	pallid					
22.32	candid	cuspid					
23.12	cable	fable	gable	label	Mabel	sable	table
	bagel	banal	maple	papal	basal	fatal	navel
	legal	regal	renal	venal	fetal	bible	libel
	tidal	rifle	final	title	rival	noble	yodel
	mogul	Vogel	tonal	total	ruble	bugle	pupil
23.22	babble	dabble	rabble	faddle	paddle	raffle	haggle
	waggle	hassle	battle	cattle	rattle	tattle	mammal
	tassel	passel	vassal	saddle	pebble	fettle	peddle
	vessel	nibble	fiddle	middle	piddle	riddle	riffle
	giggle	jiggle	wiggle	nipple	ripple	tipple	little
	bobble	cobble	gobble	hobble	wobble	boggle	goggle
	joggle	pommel	Donnell	fossil	topple	bottle	mottle
	bubble	rubble	cuddle	huddle	muddle	puddle	muffle
	ruffle	shuffle	juggle	supple	tussle	shuttle	Tuttle
	duffel	pummel	funnel	tunnel			
23.32	gamble	ramble	shamble	sample	candle	handle	mantle
	damsel	mantel	sandal	vandal	Randall	temple	dental
	mental	gimble	nimble	thimble	dimple	pimple	simple
	tinsel	pistol	fondle	tonsil	bumble	fumble	humble

	jumble	mumble	rumble	tumble	rumple	bundle[1]	
24.12	datum	Tatum	totem				
24.22	possum	bottom					
24.32	bantam	hansom	random	ransom	seldom	talcum	tandem
	victim						
25.12	taken	waken	shaken	laden	Fagin	Hagen	pagan
	basin	Jason	mason	Satan	haven	raven	Regan
	demon	liken	widen	Finan	ripen	bison	Tobin
	Shobin	token	woken	Wodin	Cogan	Hogan	Logan
	Mogen	shogun	colon	Dolan	Nolan	Roman	woven
	Cuban	Dugan	human	lumen			
25.22	bobbin	button	cannon	kitten	cotten	Dillon	Dobbin
	Dutton	fatten	gibbon	Gannon	hidden	happen	Hatten
	Hutton	gallon	lesson	Litton	madden	muffin	mitten
	mutton	noggin	pollen	pippen	Patton	ribbon	sadden
	sodden	sudden	sullen	summon	Sutton	Shannon	
25.32	canyon	goblin	napkin	salmon	silken		
26.12	Haber	labor	saber	Tabor	baker	fakir	Laker
	maker	raker	taker	waker	shaker	Nader	shader
	Rafer	safer	Shafer	paler	gamer	lamer	namer

[1] Certain other rules must be introduced before such items as the following can be added: bangle, dangle, jangle, mangle, tangle, rankle, cancel, channel, Bengal, pencil, single, jingle, tingle, shingle, tinkle, symbol. Perhaps such words as the following do not classify as 23.32: jostle, bustle, hustle, muscle, rustle.

	tamer	shamer	caner	saner	caper	gaper	paper
	taper	vapor	shaper	baser	caser	cater	dater
	gator	hater	later	mater	pater	rater	favor
	Laver	raver	savor	waver	shaver	femur	lemur
	Jeter	meter	Peter	fever	Tiber	hiker	liker
	piker	Riker	rider	wider	lifer	tiger	filer
	miler	tiler	viler	rimer	timer	diner	finer
	Kiner	liner	miner	shiner	piper	riper	wiper
	biter	miter	diver	jiver	sober	joker	poker
	Boder	coder	Cofer	molar	polar	solar	Gomer
	Homer	boner	loner	toner	doper	hoper	roper
	motor	noter	rotor	toter	voter	Dover	rover
	cuber	Huber	Luger	ruler	rumor	tumor	lunar
	tuner	duper	super	cuter	muter	tutor	
26.22	buffer	beggar	bigger	banner	batter	Hiller	hammer
	hotter	jabber	jigger	jitter	ladder	logger	latter
	better	bitter	butter	killer	fitter	letter	Miller
	manner	mutter	pillar	pepper	patter	putter	matter
	collar	kipper	copper	kisser	litter	robber	rubber
	suffer	simmer	summer	sinner	supper	sitter	cutter
	differ	duffer	dagger	rudder	Sutter	shudder	shimmer
	shopper	shutter	teller	tiller	tatter	dollar	dimmer
	dinner	dapper	shatter	dipper	fodder	filler	fatter
26.32	banter	camber	camper	captor	copter	damper	doctor
	dander	factor	fendor	filter	folder	gander	hamper

	helper	hinder	holder	hunter	jumper	limber	lumber
	member	milker	mister	muster	number	master	pander
	panther	pastor	pester	poplar	silver	sister	temper
	tamper	tender	thunder	vulgar	winter	yonder	Gunther
27.12	shamus*	basis	Davis	Mavis	Bemis	penis	fetus
	Dicus	Midas	minus	pinus	sinus	Titus	focus
	hocus	locus	pocus	bogus	bonus	lotus	mucus
	Judas	Rufus	humus				
27.22	callus	Dallas	hammus	Dennis	Dulles	Gillis	Hollis
	Pettis	tennis					
27.32	cactus	canvas	fungus	mantis	pelvis		
28.22	ballot	bonnet	gullet	mallet	pellet	russet	billet
	faggot	maggot	pallet	rabbit	summit	tappet	basset
	Moffet	buffet*					
28.32	bandit	basket	gasket	magnet	tablet	goblet	casket
	hamlet	velvet	gambit	pulpit			
30.22	cabbage	baggage	message	pillage	village	college	cottage
	pottage	luggage	rummage	dunnage			
30.32	bandage	bondage	vantage	vintage	tentage	mintage	dumpage
	vestige	hostage					
41.32	badness	fatness	madness	sadness	redness	wetness	bigness
	dimness	fitness	sickness	thickness	hotness	witness	
42.32	backless	capless	hatless	hemless	legless	hitless	winless
	jobless	topless	luckless	sunless			
51.12	nation	lotion	motion	notion	potion		

51.22	passion	Hessian	session	fission	mission	Russian	
51.32	caption	mansion	mention	pension	tension	faction	bastion
	section	diction	fiction	suction			
52.22	billion	million	hellion				
53.12	dative	native	motive				
53.22	massive	passive					
53.32	captive	pensive	restive				
54.12	nature	future	suture				
54.22	fissure						
54.32	capture	culture	denture	pasture	posture	picture	rapture
	rupture	vulture					
61.22	faddish	maddish	mannish	tannish	hellish	reddish	tennish
	wellish	wettish	biggish	piggish	dullish	rubbish	
62.32	badly	dimly	fatly	Godly	madly	manly	sadly
	sickly	thinly	thickly				
63.32	damful	manful	fitful	willful	wishful		
70.12	baking	faking	making	raking	taking	waking	etc.
70.22	dabbing	gabbing	bagging	gagging	lagging	nagging	etc.
70.32	camping	damping	tamping	banding	handing	landing	etc.
81.22	callow	fallow	gallow	hallow	sallow	shallow	tallow
	bellow	fellow	mellow	yellow	billow	pillow	willow
	follow	hollow					
82.22	minnow	winnow					
83.32	window	Ludlow					

Near-Pattern Exemplars

CK10 is analogous to a geminate consonant. That is, when /k/ occurs following a short vowel, the spelling is ck (rather than cc or kk). However, whereas dictionaries follow the practice of splitting a geminate consonant for purposes of syllabifying words in which it occurs in the boundary region, the practice when CK10 is involved is to place all of ck in the earlier syllable. If we ignore this convention, which seems arbitrary, then many additional words would classify as n.22. For example:

10.22	tacky	wacky	picky	Ricky	Dickie	lackey	Jackie
23.22	shackle	tackle	cackle	jackel	hackle	tickle	fickle
	nickel	sickle	buckle	Hickle	Bickel		
25.22	beckon	reckon	sicken	thicken			
26.22	backer	sacker	Becker	Decker	ticker	thicker	locker
	rocker	shocker	pucker	sucker	Tucker		
27.22	ruckus						
28.22	Hackett	jacket	racket	packet	Becket	picket	ticket
	wicket	thicket	docket	locket	pocket	rocket	socket
	bucket	Puckett					

In general, when the last phoneme of the first syllable is expressed as a pair of consonant graphemes--e.g., sh, th, ck--dictionary syllabification preserves the graphemic expression intact as the terminal element of the first syllable. Unlike ck, no case can be made that sh and th operate analogously to a geminate consonant after a short vowel. However, words whose first syllable ends in sh or th classify as near to pattern even though the doubling consonant element of n.2n is not present. Some n.22-like examples are:

fishy, fathom, gather, lather, Mather, rather, hither, bother,

masher, gusher, bishop

Exceptions to Pattern

There probably are exceptions to most of the word patterns exemplarized above. A few of the n.1n patterns are not shown because the spellings envisioned by the pattern tend preponderantly to have the

vowel be short. Some exceptions noted in the course of generating pattern exemplars are the following:

10.22	body*	copy*	pity*[2]				
22.22	rabid*	valid*	vapid*	rapid*	salad*	solid*	vivid*
23.22	camel*	pedal*	petal*	rebel*	metal*	sisal*	medal*
24.22	madam*	denim*	venom*				
25.22	cabin*	wagon*	talon*	Latin*	satin*	Helen*	melon*
	lemon*	linen*	robin*				
26.22	valor*	Weber*	lever*[3]				
27.22	Janus*	Manus*					
28.22	bigot*	habit*	Janet*	limit*	vomit*		
30.22	damage*	manage*	homage*				
51.22	ration*						
61.22	radish*	famish*	banish*	vanish*	relish*	finish*	polish*
	punish*						

Other Word Patterns

Filled word patterns of n.n1, n.n3, n.n4, and n.n5 form are listed below. One exemplar is provided for detected filled word patterns of n.n1, n.n3, and n.n4 form.

First Syllable = $\bar{V}$ or VC

Few if any of the n.n1 word patterns are very productive.

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2 These exceptions also could be referenced to 10.12: All exceptions shown could be referenced to n.1n as legitimately as to n.2n.

3 A second level of irregularity is illustrated by cover, hover, lover. Here the vowel is both short and not what one would expect, being short u, rather than short o.

10.11	Amy	10.21	abbey	10.31	Apley
22.11	Ovid				
23.11	able	23.21	apple	23.31	anvil
24.11	item	24.21	Occam	24.31	album
25.11	Aden	25.21	Allen	25.31	aspen
26.11	Iber	26.21	upper	26.31	actor
27.11	Avis	27.21	Ellis	27.31	Indus
		28.21	Abbott	28.31	ingot
				41.31	illness
				42.31	eggless
				51.31	option
				53.31	active
				55.31	injure
61.11	Irish				

First Syllable = $\overline{CCV}$ or CCVC

In productivity, these word patterns--of form n.n3--rank next to those of form n.n2, although it is doubtful that any of these patterns rivals the most productive of the n.n2 patterns.

10.13	gravy	10.23	crabby	10.33	brandy
				22.33	slanted
23.13	stable	23.23	grapple	23.33	trample
		24.23	blossom	24.33	transom
25.13	graven	25.23	glutton	25.33	Blanton
26.13	griper	26.23	bladder	26.33	scamper
27.13	fracas	27.23	trellis	27.33	grampus
		28.23	skillet	28.33	brisket

	30.23 cribbage	
		41.33 blackness
		42.33 dripless
51.13 station		51.33 fraction
		53.33 tractive
54.13 cloture		54.33 fracture
	61.23 clannish	61.33 brandish
62.13 scaly		
		63.33 skillful

First Syllable = CCC$\bar{V}$ or CCCVC

There are not so many filled word patterns of form n.n4; most are of quite limited productivity. Some of the n.n4 patterns are:

26.14 scraper	26.24 scrapper	25.34 Stranton
23.24 straddle	22.34 splendid	26.34 splendor
25.24 Stratton	23.34 scramble	42.34 scrubless

First Syllable is Some Other Form

There is a scattering of other types of word patterns than those considered above. Some employ $\bar{V}$Ce in the first syllable--e.g., hateful, gamely. The following items exemplarize some other patterns--thankful, sampler, crispness, strictness. A few of these patterns might turn out quite productive.

Effects of Adding Rules

Augmentation of the rule base will be accompanied by augmentation of many of the word pattern item universes sketched above. When R10 or RR10 occur at the end of the first syllable, the preceding vowel undergoes a characteristic shift whose value depends on whether R10 or RR10 follows. If the required additional vowel rules are added to the base, then certain additional items become legitimate to the item universe. This is illustrated for 23.22, 23.32, and 81.22 word patterns, where the 81 domain is extended to include row.

23.22	barrel	carrel	Darrell	Farrell	Harrell	Jarrell	Merrill
	sorrel						
23.32	garble	marble	gargle	carnal	carpal	carpel	tarsal
	Shartle	marvel	verbal	dermal	thermal	vernal	girdle
	curdle	hurdle	burgle	gurgle	purple	turtle	
81.22	barrow	Darrow	farrow	harrow	marrow	narrow	yarrow
	borrow	morrow	sorrow	burrow	furrow		

Optimizing the letter-sound rule sequence used in word attack instruction entails ordering rules so that each rule added to the base optimizes the slope value of a frequency function of the number of rules introduced. A significant component of the rule located at any point in the optimal sequence is its "single productivity" (see TN-1-71-9). The rule A22 characterizes the first-syllable vowel of such words as barrel and borrow; the rule A21, that of such words as garble and gargle. Were the task simply to choose whether A21 or A22 should be the next rule added to the base described earlier, then a first step would be to calculate single productivity values for these two rules in the position of interest in an overall rule sequence. A question remaining is whether these productivity values should reference to all word patterns reflected in Lexicon A or just to some portion of these patterns. Considering that the most crucial period of word attack instruction probably finds the typical child of an age characteristic of first through the middle of second grade, a case might be made for referencing productivity computations to 'Syl-Syl constructions or even more-narrowly to n.n2 word patterns.

To get some feel for the relative single productivities of the two illustrative rules as a function of word domain, we enumerate the items that each adds to n.n2 and n.n3, given the rule base described earlier.

The taxonomy in its present form is not entirely consonant with the requirement to evaluate A21 and A22. The spelling patterns characteristic of the n.1n and n.2n forms signal A22; those characteristic of the n.3n forms signal A21. Thus, A22 does not undergo a shift in value as one moves from n.2n to n.1n. Setting aside the fact that the taxonomy does not reflect well the case where the consonant at the syllable boundary is R10 or RR10, we enumerate items for A21 and A22 according to the view that n.1n and n.2n spelling patterns characterize A22 and n.3n patterns A21.

n.n2 Universe for A22

10.	Cary	Gary	Mary	nary	vary	wary	Barry
	carry	Harry	Larry	marry	parry	tarry	
20.	carol	carom	harem	Karen	Sharon	barer	darer
	rarer	sharer	Karas	Paris	tariff	Garrick	barrel
	carrel	Darrell	Farrell	Harrell	Jarrell	barren	Harris
	Barrett	carrot	garret	Jarrett	parrot	larrup	
60.	garish	parish					
70.	baring	caring	daring	faring	paring	sharing	
80.	barrow	Darrow	farrow	harrow	marrow	narrow	

n.n2 Universe for A21

10.	Barbie	barky	barley	Barney	Darby	Darley	Farley
	Garby	Garvey	hardy	Harley	harpy	Harvey	lardy
	Marty	marshy	parley	party	tardy	Sharkey	sharpie
20.	carted	parted	garble	marble	gargle	carnal	carpal
	carpel	tarsal	Shartle	marvel	Harlem	Barnum	Farbin
	Darden	garden	harden	pardon	Vardon	Gargan	jargon
	Carlin	Harlan	marlin	Carmen	tarpon	sharpen	Carson
	Larson	parson	Barton	carton	Martin	tartan	Garvin
	Marvin	Darwin	barber	Farber	harbor	barker	darker
	marker	Parker	harder	larder	Marler	farmer	garner
	Harper	sharper	barter	Carter	garter	parter	tartar
	Carver	harlot	varlet				
30.	garbage	yardage	carnage				
40.	farness	harness	carless				

50. Martian

60. barkish darkish sharkish lardish tarnish varnish harpish sharpish

70. barking marking parking darling farming harming darning harping carting darting parting carving

80. Barlow Harlow

n.n3 Universe for A22

10. Clary scary glary

20. blarer flarer glarer scarer snarer sparer starer claret

70. blaring flaring glaring scaring snaring sparing staring

80. sparrow

n.n3 Universe for A21

10. sparky Starkey snarly blarney smarty

20. scarlet starlet snarler smarter smarted sparkle sparker sparser Spartan started startle starter starker

40. scarless sparless starless

60. smartish starkish

70. sparking smarting snarling starting

Summary of Universe Counts

The n.n2 and n.n3 universe counts for each rule are compared in Table 1. While the Table 1 data are not entirely consonant with the view that single productivities can be established using only a portion of the word patterns that are available, these data at least suggest that such a view may prove tenable. That is, the data lead one to entertain the view that the 'Syl-Syl n.n2 forms can be used to establish such productivity values in that the relative position established in this way might reflect the relative position for different rules when all possible forms charaterizing all poly-syllabic constructions are considered.

Table 1

The n.n2 & n.n3 Universe Counts for Rules A21 & A22

Class of Ending	A22 Counts			A21 Counts		
	n.n2	n.n3	$\frac{n.n3}{n.n2}$	n.n2	n.n3	$\frac{n.n3}{n.n2}$
10	13	3	.23	21	5	.24
20	27	8	.33	59	13	.22
70	6	7	X	12	4	.33
Other	8	1	X	17	5	.29
Total	54	19	.35	109	27	.25

Concluding Remarks

Even the most systematic attempts yet made to exploit a phonics basis for teaching children to read have been essentially one-dimensional with regard to skills to be considered. A speech lexicon in the sense of Lexicon A is approximated on the basis of effects of current instructional practices; the instructional design problem thereafter has been viewed as referencing just to a generalized word attack skill, with neither prelude nor prologue and so without any implication of servo effects. Prior efforts to design word attack instruction have, in consequence, failed to penetrate the potentially fertile field of an integrated primary instruction that seeks to optimize instructional cross-fertilization of related skills.

There is no compelling reason why we should predicate word attack instruction on a speech lexicon that is consonant with current instructional practices. Portions of such a lexicon can be engineered by the instructional designer to serve the needs of contemplated instruction that seeks to optimize the integration of related skills.

The first attempt to appply the illustrative taxonomy--made in the previous section--reveals it to require modification or even reformulation. A definitive taxonomy should permit comparison of any set of rules at any point in the word attack instructional sequence. Thus, it should have greater generality than the illustrative taxonomy. At a more detailed--but not too detailed--level, it should permit definitive evaluation of the contention that a portion of its word patterns could be used to

approximate rule productivity values that would be obtained if all items of the speech lexicon were used.

The taxonomy also should serve word comprehension, word attack, and related instructional requirements for sets of drill words. Not all of the items generated under the different classifications of the taxonomy would need be placed in speech and sight lexicons. Many would be deleted during the course of designing integrated instruction. However, some items that in the past would not have been placed in a speech lexicon of the Lexicon A type now would. Some of these items would enter Lexicon A because word attack instruction or evaluation required them; such words probably would define a word comprehension instructional requirement not currently in evidence in the schools. Other words placed in Lexicon A would address word-building requirements; contemplated instruction might take the form of the morphological component of an Anglo Saxon-Latin course for children at the primary level. Perhaps still other words would be placed in the lexicon to serve spelling requirements.

It appears reasonable to continue to delineate the entry component of Lexicon A as this has been done in the past. The portion of the lexicon that references to unfolding primary instruction that falls outside the Communication Skills domain probably can be approximated well in consequence of reviewing selected existing instructional treatments. The remainder of the lexicon should be conditional on instructional requirements in the Communication Skills domain--a domain that is certainly broader than that of its most important component, word attack. As one moves through an integrated instructional design operation, Lexicon A can be expected to grow until a time is reached where the design is sufficiently definitive to reveal the definitive Lexicon A requirement. Taxonomies of the sort considered above have the sober task of standing in for the definitive design until it makes its appearance.